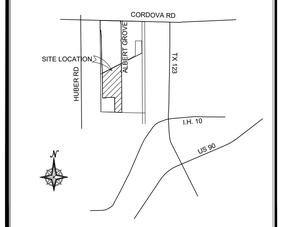
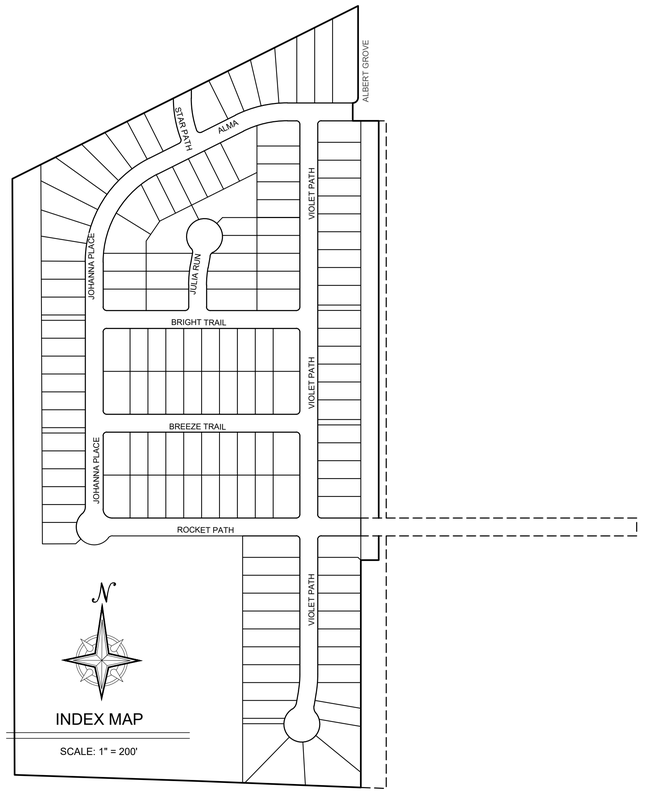


LOCATION MAP

NOT TO SCALE

CONSTRUCTION PLANS
for
SWENSON HEIGHTS
UNIT 4



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SCALE: 1" = 200'

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202	OVERALL UTILITY PLAN
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302	SANITARY SEWER OVERALL PLAN
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604	SEDIMENTATION & EROSION CONTROL DETAILS

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

OWNER/DEVELOPER:
BELLA VISTA C.M.I., LTD.
2714 N, LOOP 1604 E SUITE 105
SAN ANTONIO, TEXAS 78232
PHONE: (210) 402-0642

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

CONSTRUCTION COVER

SHEET NO.
100

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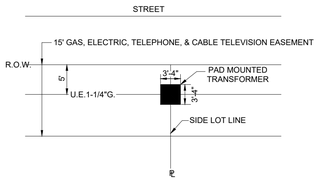
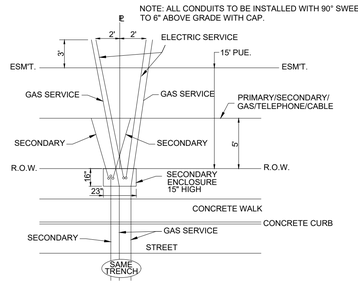
UTILITY PLANS
for
SWENSON HEIGHTS
UNIT 4



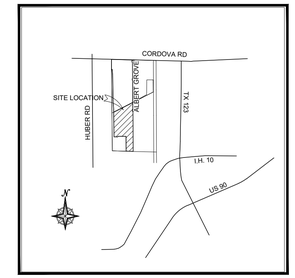
EASEMENT DETAILS

NOT TO SCALE



SECONDARY ENCLOSURE DETAIL

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

SHEET INDEX

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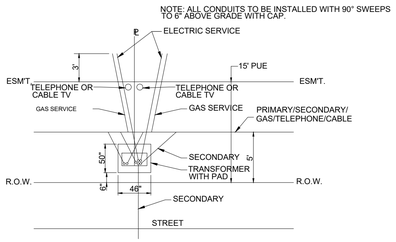
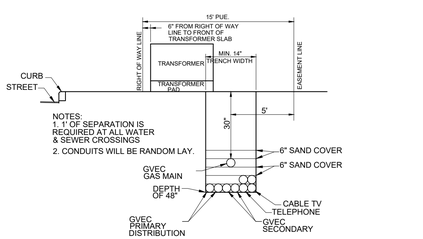


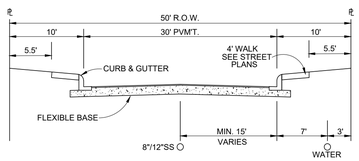
TYPICAL TRANSFORMER DETAIL

NOT TO SCALE



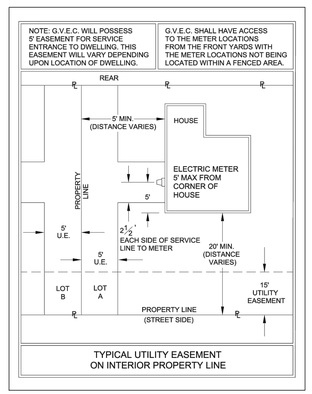
TRENCH DIAGRAM
STANDARDS FOR GAS & ELECTRIC TRENCH
OR ELECTRIC TRENCH WITH JOINT UTILITIES

NOT TO SCALE



TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL UTILITY EASEMENT
ON INTERIOR PROPERTY LINE

LOCATION OF DRY UTILITY INFRASTRUCTURE WITHIN 15' PUE.

GVEC: 2' - 6' FROM R.O.W.
DEPTH OF TRENCH: 48" - 54" DEEP

COMMUNICATIONS: 6' - 10' FROM R.O.W.
DEPTH OF TRENCH: 36" DEEP

GAS: 10' - 13' FROM R.O.W.
DEPTH OF TRENCH: 36" DEEP

NOTE: GVEC WILL NEED TO INSTALL FIRST TO AVOID DRY UTILITY CONFLICTS

OWNER/DEVELOPER:
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2714 N, LOOP 1604 E SUITE 105
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SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS / ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

LEGEND

EXISTING EDGE OF PAVEMENT	
EXISTING SANITARY SEWER MAIN	E8"SS
PROPOSED SANITARY SEWER MAIN	P8"SS
EXISTING WATER MAIN	E8"PVC
PROPOSED WATER MAIN	P8"PVC
EXISTING GAS MAIN	G
PROPOSED GAS MAIN	G
EXISTING UNDERGROUND TELEPHONE	T
PROPOSED UNDERGROUND TELEPHONE	T
EXISTING UNDERGROUND ELECTRIC	E
PROPOSED UNDERGROUND ELECTRIC	E
EXISTING OVERHEAD ELECTRIC	O.E.
PROPOSED OVERHEAD ELECTRIC	O.E.
EXISTING OVERHEAD TELEPHONE	O.T.
PROPOSED OVERHEAD TELEPHONE	O.T.
EXISTING UNDERGROUND CABLE T.V.	T.V.
PROPOSED UNDERGROUND CABLE T.V.	T.V.
EXISTING OVERHEAD CABLE T.V.	O.T.V.
PROPOSED OVERHEAD CABLE T.V.	O.T.V.
SANITARY SEWER MANHOLE	G.E.T.TV.E.
FIRE HYDRANT	L.P.
GAS, ELECTRIC, TELEPHONE & CABLE T.V. EASEMENT	L.P.(250)
PROPOSED STREET LIGHT (100 WATT/SINGLE ARM)	E.L.P.
PROPOSED STREET LIGHT (250 WATT/SINGLE ARM)	H.D.P.E.
EXISTING STREET LIGHT	ESS
HIGH DENSITY POLYETHYLENE	SS
EXISTING SANITARY SEWER LATERAL	W
SANITARY SEWER LATERAL	IS
WATER SERVICE	
IRRIGATION SERVICE	

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 SITE(S) 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 THE 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.

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

UTILITY COVER
SHEET & DETAILS

SHEET NO.
200

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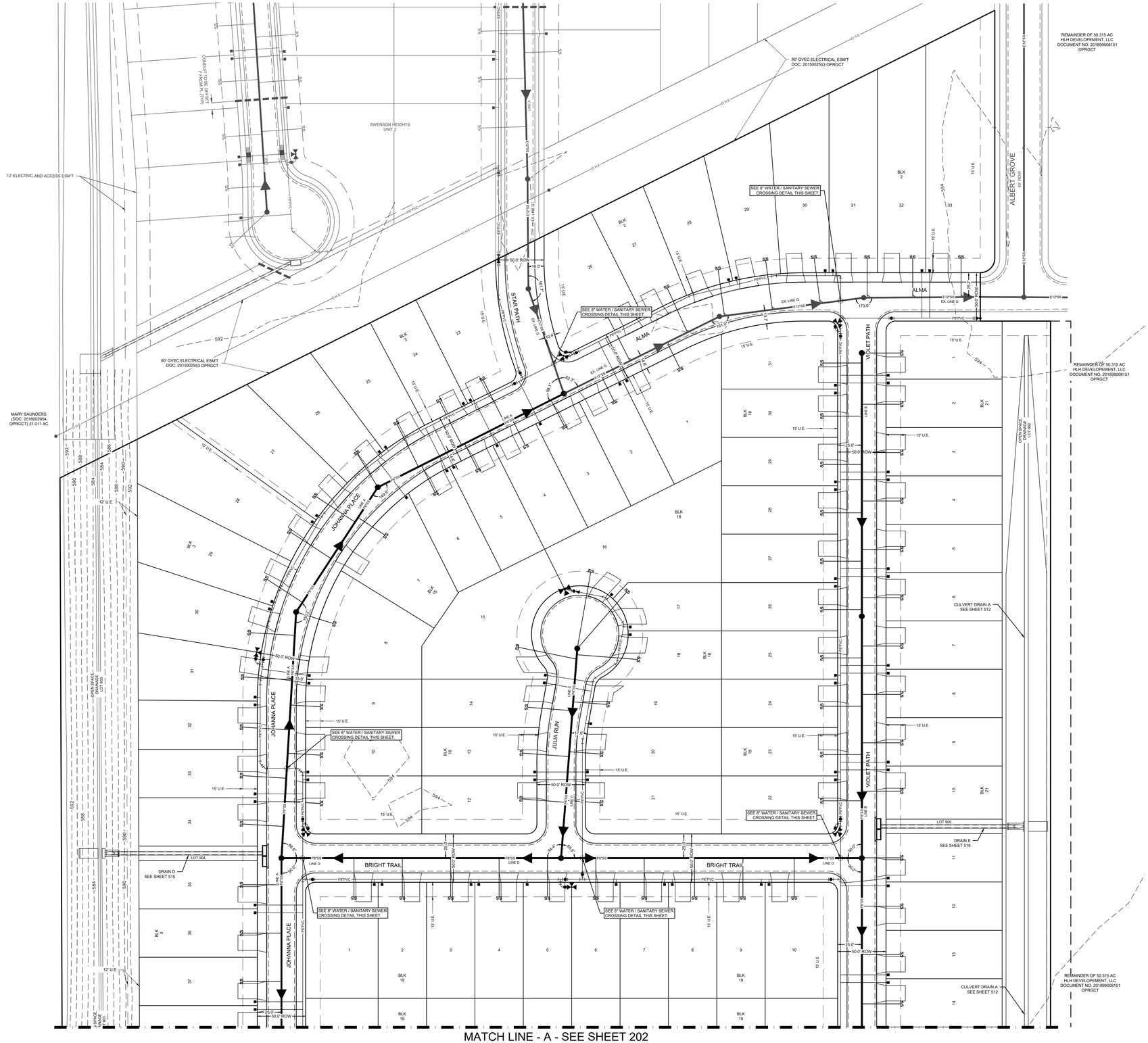
Date: Jun 16, 2023, 1:01pm User ID: Mary.Stewart Path: L:\develop\Proj_2021\0621202_Swenson Heights Unit 4\dwg\0621202 200 UTILITY COVER.dwg



LEGEND

EXISTING SANITARY SEWER MAIN	E8"SS
PROPOSED SANITARY SEWER MAIN	P8"SS
DIRECTION OF FLOW	
EXISTING WATER MAIN	E8"PVC
PROPOSED WATER MAIN	P8"PVC
PROPOSED LIGHT POLE (100 WATT LED)	L.P.
3/4" SINGLE SERVICE WITH 5/8" METER	
IRRIGATION SERVICE	IRR
PROPOSED FIRE HYDRANT	

N

0 50' 100'

1" = 50'

NOTES

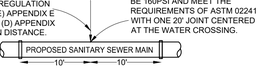
1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
2. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% THROUGH THE 15' UTILITY EASEMENT LOCATED IN THE FRONT OF THE LOT.
3. ALL SEWER PIPE TO BE SDR-26 UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO ENSURE LATERALS AT PROPOSED DRY UITLITY CROSSINGS ARE LOCATED AT A DEPTH TO AVOID ANY CONFLICT WITH DRY UTILITY INSTALLATION.
5. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, DRIVEWAY APRONS OR ROADWAYS. CITY OF SEGUIN WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREA IF DEVELOPER DOES NOT COMPLY.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

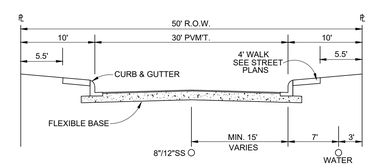
SCStP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



TYPICAL MINOR STREET SECTION

NOT TO SCALE

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 SITE(S) 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 THE 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.

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

CEC

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV'	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

OVERALL UTILITY PLAN

SHEET NO.

201

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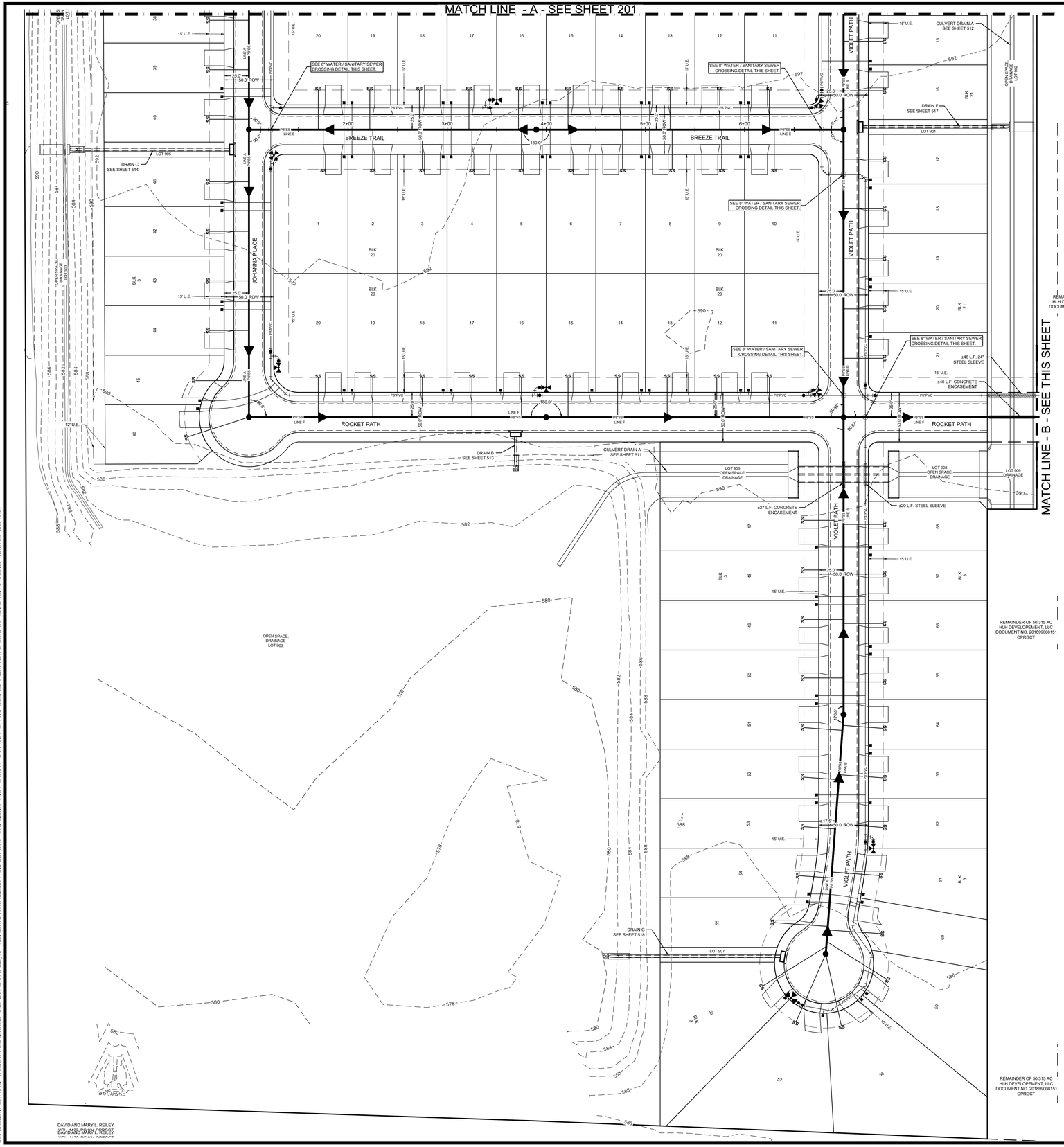
MATCH LINE - A - SEE SHEET 201



MATCH LINE - B - SEE THIS SHEET

LEGEND

- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.

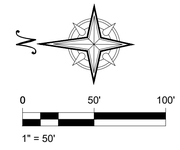
NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
2. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% THROUGH THE 15' UTILITY EASEMENT LOCATED IN THE FRONT OF THE LOT.
3. ALL SEWER PIPE TO BE SDR-26 UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO ENSURE LATERALS AT PROPOSED DRY UITLITY CROSSINGS ARE LOCATED AT A DEPTH TO AVOID ANY CONFLICT WITH DRY UTILITY INSTALLATION.
5. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, DRIVEWAY APRONS OR ROADWAYS. CITY OF SEGUIN WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREA IF DEVELOPER DOES NOT COMPLY.

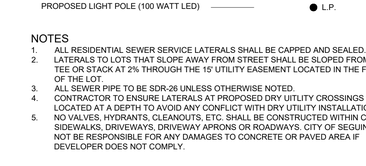
REMAINDER OF 50.315 AC
HLH DEVELOPEMENT, LLC
DOCUMENT NO. 201899008151
OPRGCT

N

0 50' 100'
1" = 50'

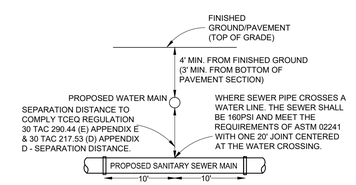


1" = 50'



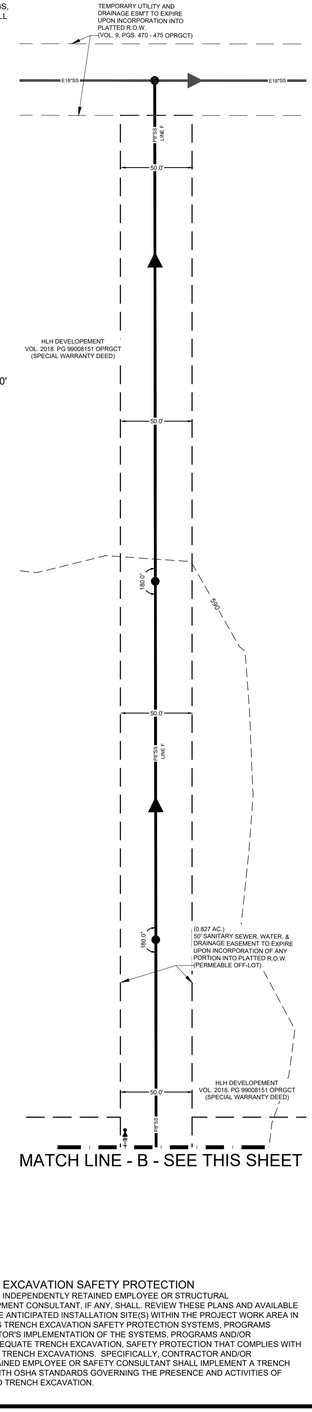
TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



MATCH LINE - B - SEE THIS SHEET

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

TRENCH EXCAVATION SAFETY PROTECTION

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DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9944
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

OVERALL UTILITY PLAN

SHEET NO.
202

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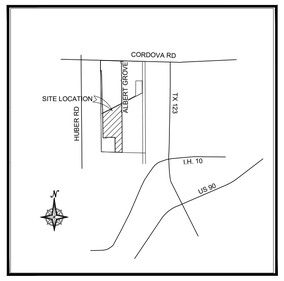
SANITARY SEWER CONSTRUCTION PLANS for SWENSON HEIGHTS UNIT 4

NOTES
1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
2. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% THROUGH THE 15' UTILITY EASEMENT LOCATED IN THE FRONT OF THE LOT.
3. ALL SEWER PIPE TO BE SDR-26 UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO ENSURE LATERALS AT PROPOSED DRY UITLITY CROSSINGS ARE LOCATED AT A DEPTH TO AVOID ANY CONFLICT WITH DRY UTILITY INSTALLATION.
5. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, DRIVEWAY APRONS OR ROADWAYS. CITY OF SEGUIN WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREA IF DEVELOPER DOES NOT COMPLY.
6. MANHOLES CONSTRUCTED WITHIN PAVED AREAS MUST HAVE NON-BOLTED LIDS. MANHOLES CONSTRUCTED OUTSIDE PAVED AREAS MUST HAVE BOLTED LIDS.

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 ADMINISTER, 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.



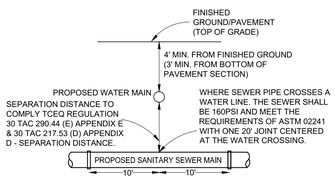
LOCATION MAP
NOT TO SCALE

SHEET INDEX

SHEET	TITLE
300	SANITARTY SEWER COVER
301	SANITARY SEWER OVERALL PLAN
302	SANITARY SEWER OVERALL PLAN
303	SANITARY SEWER LINE A PLAN & PROFILE
304	SANITARY SEWER LINE B PLAN & PROFILE
305	SANITARY SEWER LINE C & EX. LINE G PLAN & PROFILE
307	SANITARY SEWER LINE D PLAN & PROFILE
308	SANITARY SEWER LINE E PLAN & PROFILE
309	SANITARY SEWER LINE F PLAN & PROFILE
310	SANITARY SEWER DETAILS

SEWER QUANTITIES

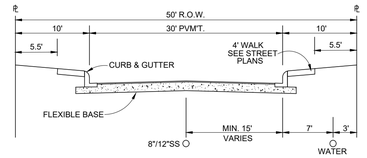
Item No.	Description	Unit	Quantity
1	6" Sanitary Sewer Laterals	L.F.	6211
2	8" Sanitary Sewer Pipe, SDR 26, 0'-6'	L.F.	383
3	8" Sanitary Sewer Pipe, SDR 26, 6'-8'	L.F.	2472
4	8" Sanitary Sewer Pipe, SDR 26, 8'-10'	L.F.	1106
5	8" Sanitary Sewer Pipe, SDR 26, 10'-12'	L.F.	797
6	8" Sanitary Sewer Pipe, SDR 26, 12'-14'	L.F.	542
7	8" Sanitary Sewer Pipe, SDR 26, 14'-16'	L.F.	482
8	Watertight Sewer Manholes/ Unless Specified Vented	EA.	17
9	Reconstruct & Tie To Ex. MH	EA.	2
10	Reconstruct Ex. MH	EA.	3
11	Extra Depth Manholes	V.F.	63.0
12	Concrete Encasment, Cradles, Saddles and Collars	C.Y.	12.2
13	Vertical Stacks (Includes Tees, Bends, and Wyes)	V.F.	114.2
14	Sewer Main Television Inspection	L.F.	5782
15	Trench Excavation Protection	L.F.	11993
16	6" One-Way Sanitary Sewer Cleanout	EA.	146



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
NOT TO SCALE

LEGEND

EXISTING SANITARY SEWER MAIN	E8"PVC
PROPOSED SANITARY SEWER MAIN	P8"SS
DIRECTION OF FLOW	
EXISTING WATER MAIN	E8"PVC
PROPOSED WATER MAIN	P8"PVC
PROPOSED LIGHT POLE (100 WATT LED)	L.P.
PROPOSED DRIVEWAY	DW



TYPICAL MINOR STREET SECTION
NOT TO SCALE

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 SITE(S) 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 THE 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.

OWNER/DEVELOPER:
BELLA VISTA C.M.I., LTD.
2714 N, LOOP 1604 E SUITE 105
SAN ANTONIO, TEXAS 78232
PHONE: (210) 402-0642

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

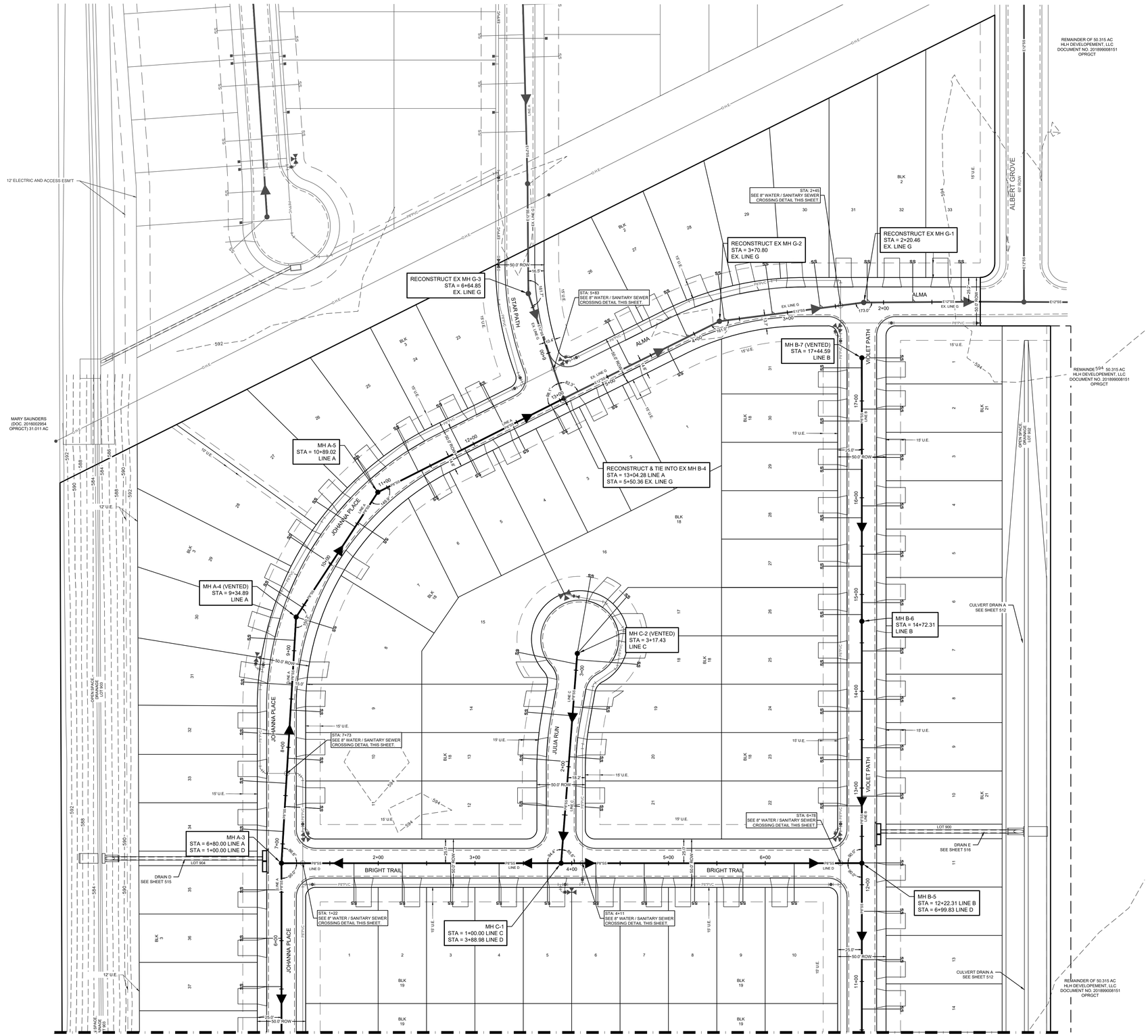
SWENSON HEIGHTS
SUBDIVISION UNIT 4

SANITARTY SEWER COVER

SHEET NO.
300

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

Date: Jan 16, 2023, 7:02pm User ID: Mary.Stewart File: L:\Develop\Proj_2020\E0621202_Swenson Heights Unit 4\Const\E0621202 300 SEWER COVER.dwg



LEGEND

- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.

N

0 50' 100'

1" = 50'

NOTES

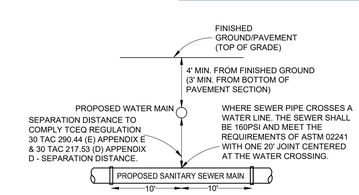
1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
2. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% THROUGH THE 15' UTILITY EASEMENT LOCATED IN THE FRONT OF THE LOT.
3. ALL SEWER PIPE TO BE SDR-26 UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO ENSURE LATERALS AT PROPOSED DRY UITLITY CROSSINGS ARE LOCATED AT A DEPTH TO AVOID ANY CONFLICT WITH DRY UTILITY INSTALLATION.
5. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, DRIVEWAY APRONS OR ROADWAYS. CITY OF SEGUIN WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREA IF DEVELOPER DOES NOT COMPLY.
6. MANHOLES CONSTRUCTED WITHIN PAVED AREAS MUST HAVE NON-BOLTED LIDS. MANHOLES CONSTRUCTED OUTSIDE PAVED AREAS MUST HAVE BOLTED LIDS.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

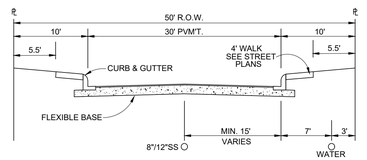
SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



TYPICAL MINOR STREET SECTION

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TRENCH EXCAVATION SAFETY PROTECTION

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DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER OVERALL PLAN

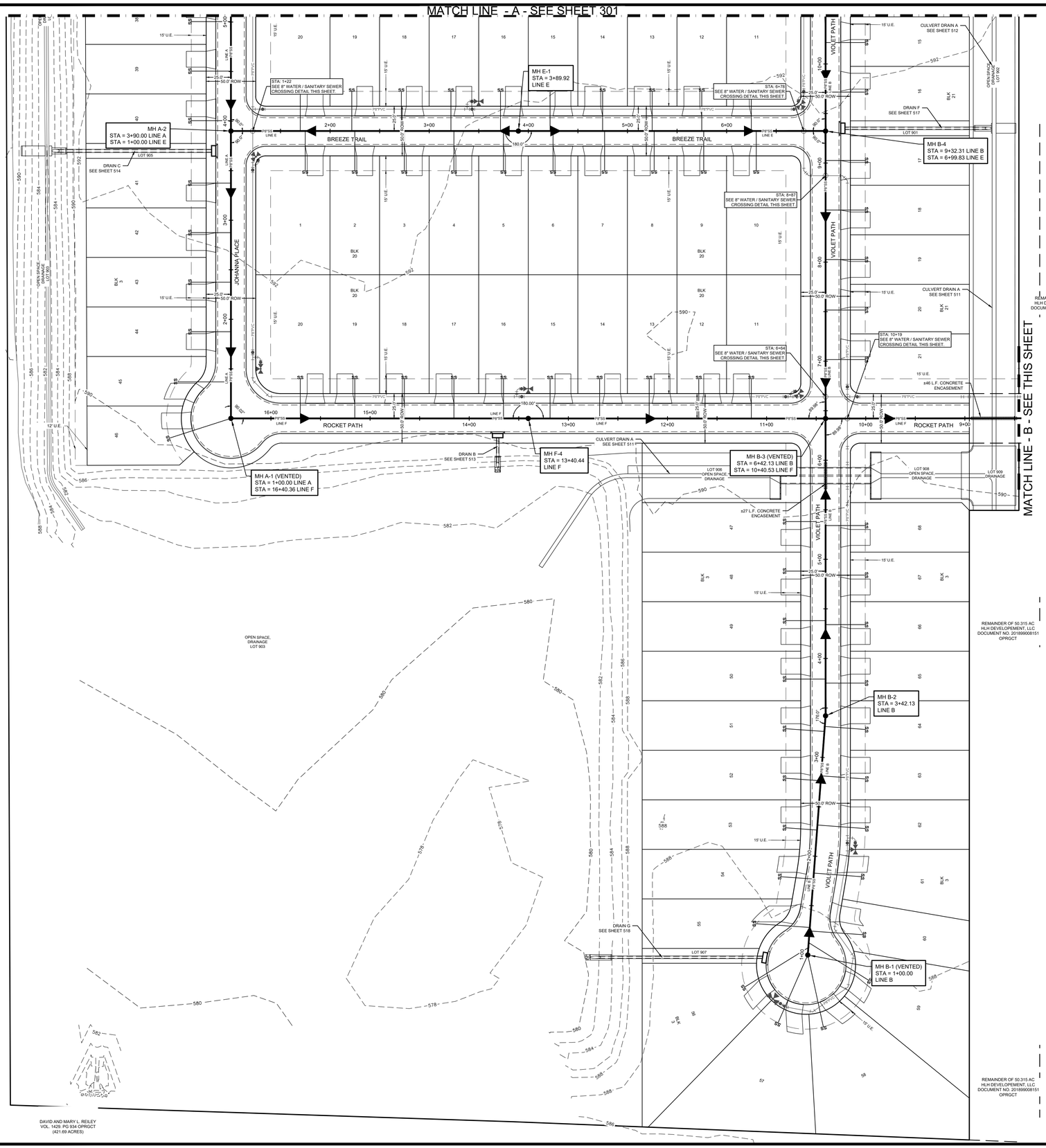
SHEET NO.
301

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

Date: Jun 16, 2023, 1:02pm User ID: MaryStewart File: L:\Drawings\Proj_2021\E0621202_Swenson Heights Unit 4 closed\E0621202_SWH SHEET PLAN.dwg

MATCH LINE - A - SEE SHEET 301

MATCH LINE - B - SEE THIS SHEET



LEGEND

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- PROPOSED SANITARY SEWER MAIN
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.

NOTES

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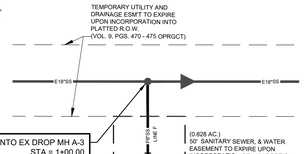
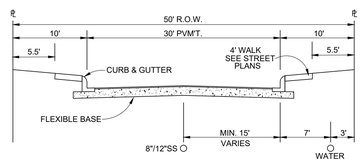
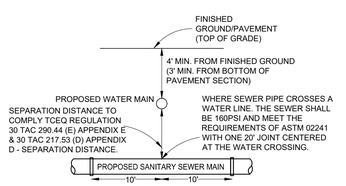




TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

TRENCH EXCAVATION SAFETY PROTECTION

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DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8944
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

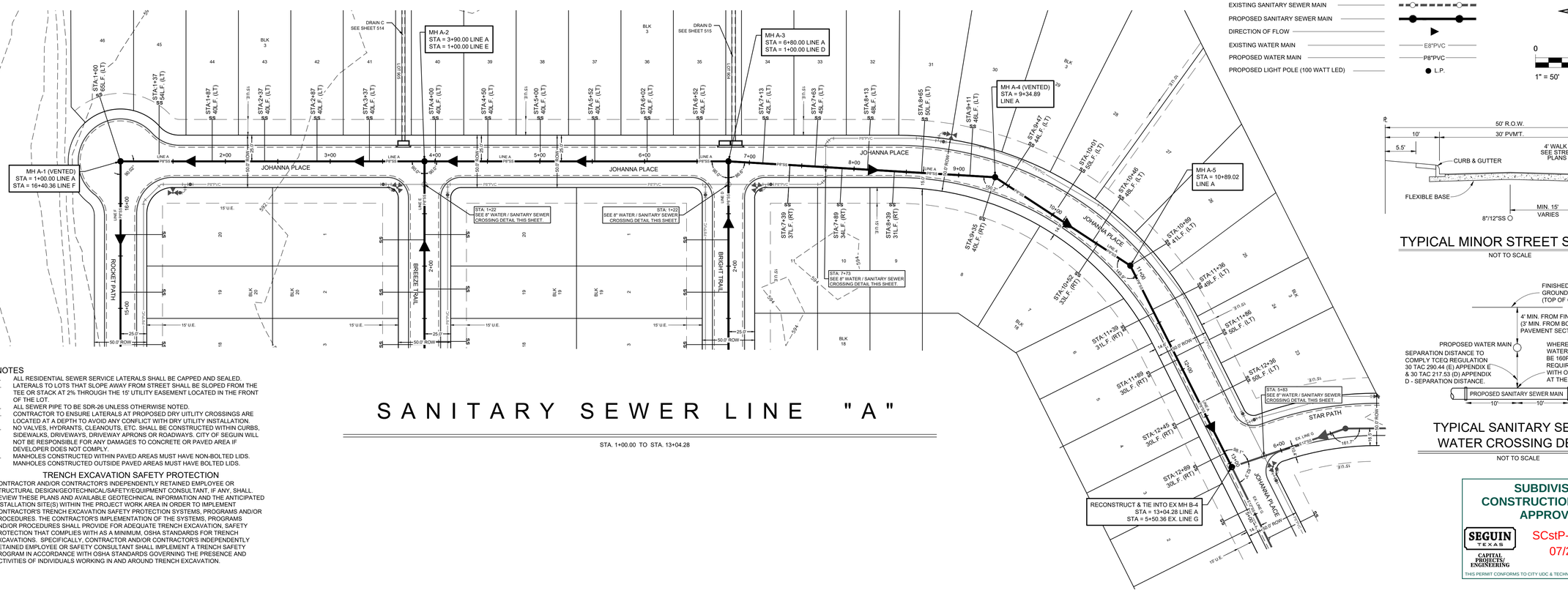
SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER OVERALL PLAN

SHEET NO.
302

THE DRAWINGS HAVE BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN MODIFIED INTENTIONALLY OR UNINTENTIONALLY. RELY ONLY ON FINAL HARD COPY MATERIALS BEARING THE ENGINEER'S ORIGINAL SIGNATURE AND SEAL.

Date: Jun 16, 2023, 1:02pm User ID: Mary.Stewart File: L:\Develop\Proj\2021\E0621202_Swenson Heights Unit 4\cad\E0621202 301-302 SEWER OVERALL PLAN.dwg



SANITARY SEWER LINE "A"

STA. 1+00.00 TO STA. 13+04.28

NOTES

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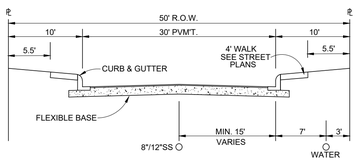
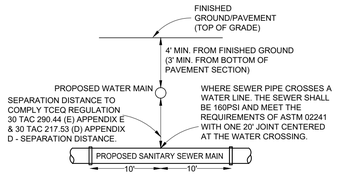


TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

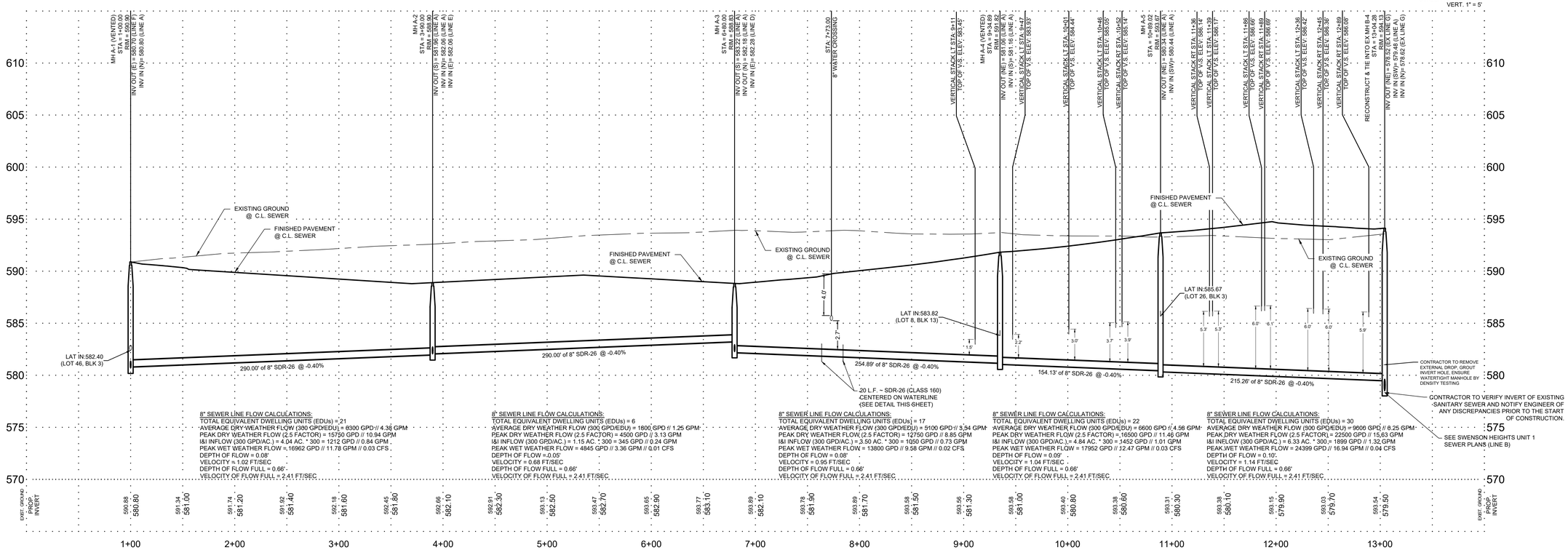
SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 21
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 6300 GPD// 4.36 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 15750 GPD // 10.94 GPM
I&I INFLOW (300 GPD/AC.) = 4.04 AC. * 300 = 1212 GPD // 0.84 GPM
PEAK WET WEATHER FLOW = 16962 GPD // 11.78 GPM // 0.03 CFS
DEPTH OF FLOW = 0.08'
VELOCITY = 1.02 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 6
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 1800 GPD // 1.25 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 4500 GPD // 3.13 GPM
I&I INFLOW (300 GPD/AC.) = 1.15 AC. * 300 = 345 GPD // 0.24 GPM
PEAK WET WEATHER FLOW = 4845 GPD // 3.36 GPM // 0.01 CFS
DEPTH OF FLOW =.0.05'
VELOCITY = 0.68 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 17
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 5100 GPD// 3.54 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 12750 GPD // 8.85 GPM
I&I INFLOW (300 GPD/AC.) = 3.50 AC. * 300 = 1050 GPD // 0.73 GPM
PEAK WET WEATHER FLOW = 13800 GPD // 9.58 GPM // 0.02 CFS
DEPTH OF FLOW = 0.08'
VELOCITY = 0.95 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 22
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 6600 GPD // 4.58 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 16500 GPD // 11.46 GPM
I&I INFLOW (300 GPD/AC.) = 4.84 AC. * 300 = 1452 GPD // 1.01 GPM
PEAK WET WEATHER FLOW = 17952 GPD // 12.47 GPM // 0.03 CFS
DEPTH OF FLOW = 0.09'
VELOCITY = 1.04 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITES (EDUs) = 30
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 9000 GPD // 6.25 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 22500 GPD // 15,63 GPM
I&I INFLOW (300 GPD/AC.) = 6.33 AC. * 300 = 1899 GPD // 1.32 GPM
PEAK WET WEATHER FLOW = 24399 GPD // 16.94 GPM // 0.04 CFS
DEPTH OF FLOW = 0.10'
VELOCITY = 1.14 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PH: (210) 641-8999
FAX: (210) 641-8998
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE A PLAN & PROFILE

SHEET NO.
303

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Date: Jun 16, 2023, 1:03pm User ID: MaryStewart File: L:\Drawings\Proj_2021\E0621202_Swenson Heights Unit 4\cloud\E0621202_303 SANITARY SEWER LINE A PLAN & PROFILE.dwg

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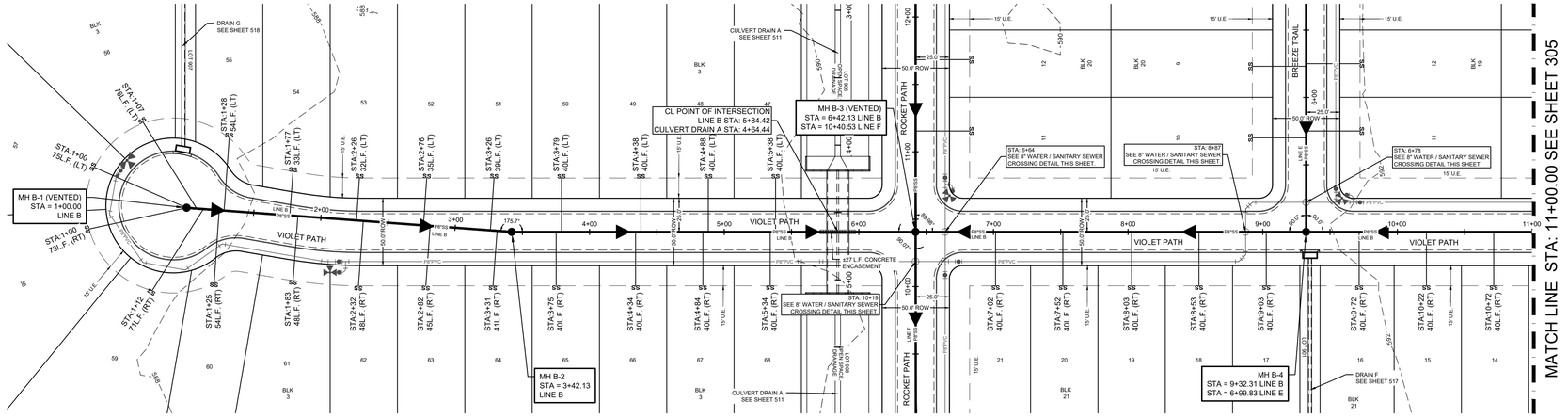
LEGEND

- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.

N

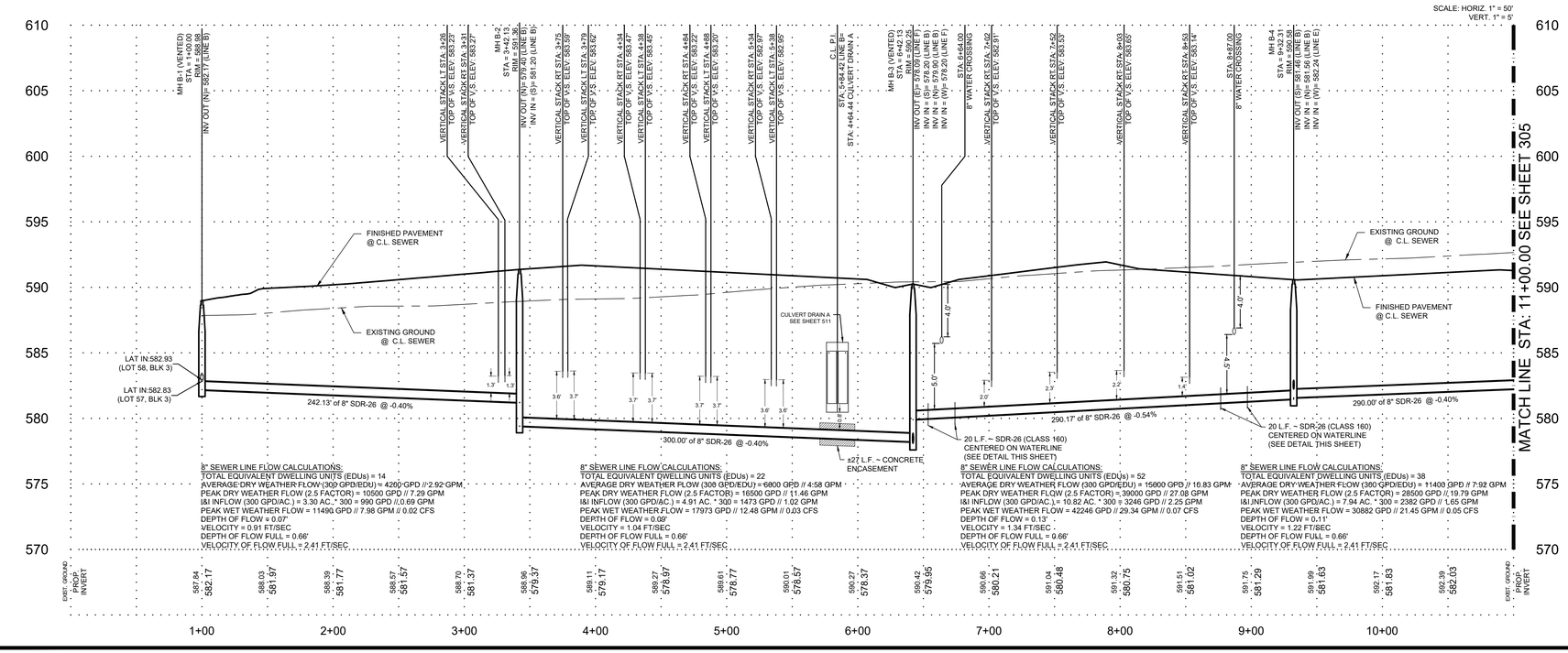
0 50' 100'

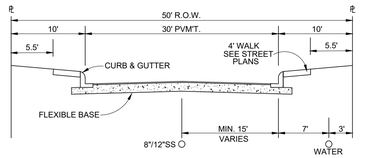
1" = 50'



SANITARY SEWER LINE "B"

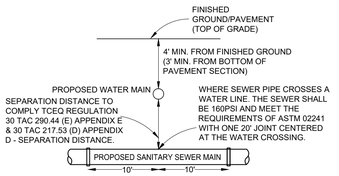
STA. 1+00.00 TO STA. 11+00.00





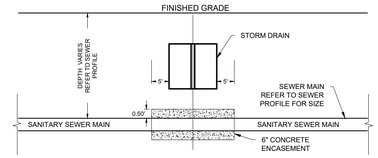
TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



SANITARY SEWER/STORM DRAIN CROSSING DETAIL

SCALE: NTS

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
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6. MANHOLES CONSTRUCTED WITHIN PAVED AREAS MUST HAVE NON-BOLTED LIDS. MANHOLES CONSTRUCTED OUTSIDE PAVED AREAS MUST HAVE BOLTED LIDS.

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 SITE(S) 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 THE 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.

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REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE B PLAN & PROFILE

SHEET NO.
304

Date: Jun 16, 2023, 1:03pm User: @ Mary.Stewart File: L:\Jennings\Proj_2021\E0621202_Swenson Heights Unit 4\Used\E0621202 304-305 SANITARY SEWER LINE B PLAN & PROFILE.dwg

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LEGEND

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- PROPOSED SANITARY SEWER MAIN — E8"PVC
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
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N

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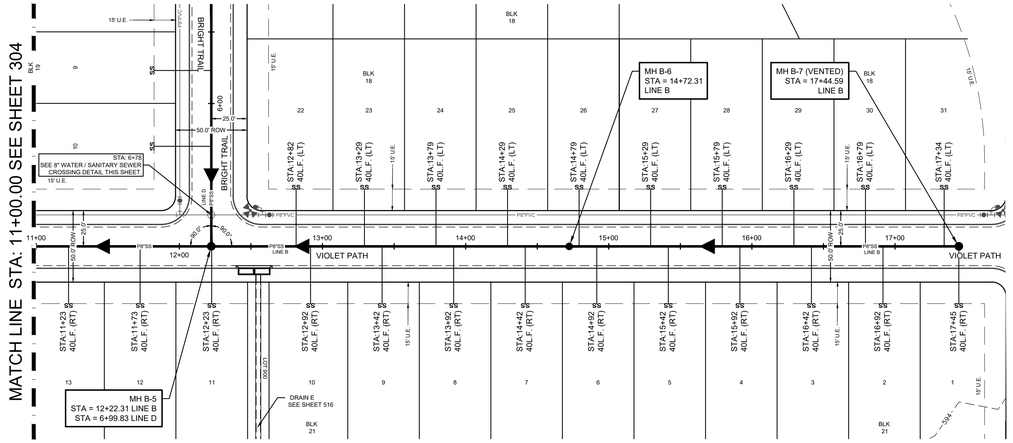
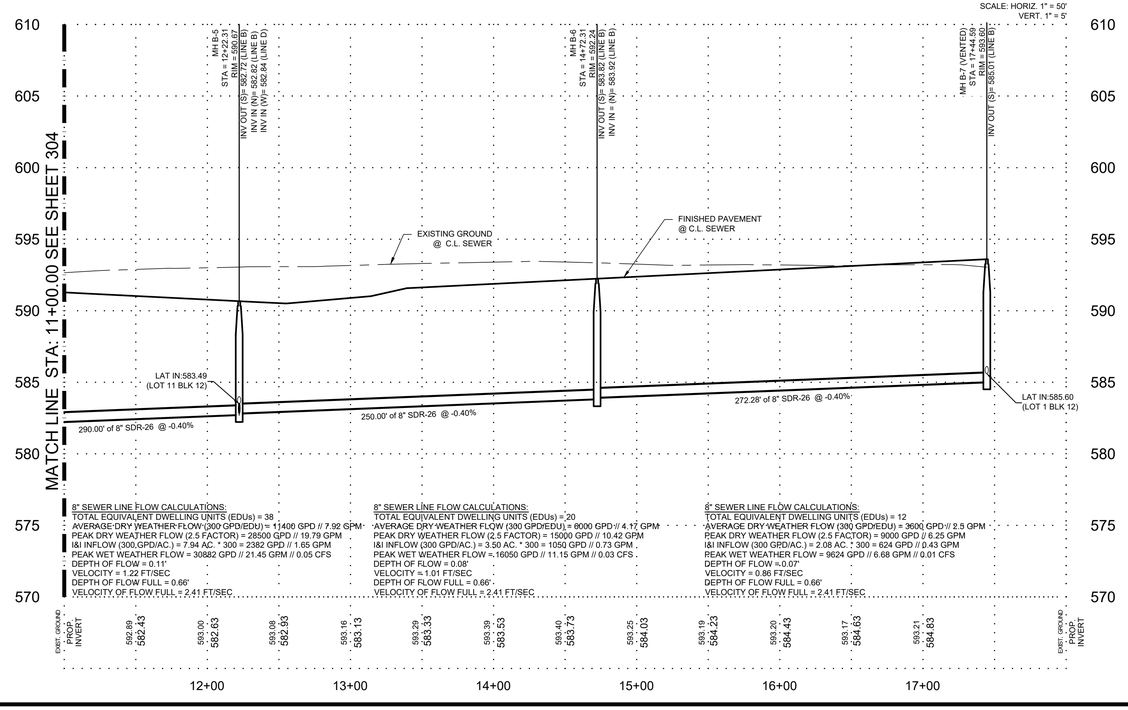
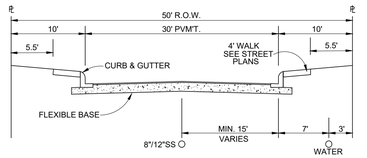


SANITARY SEWER LINE "B"

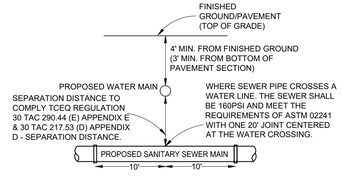
STA. 11+00.00 TO STA. 17+44.59





TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

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6/16/2023

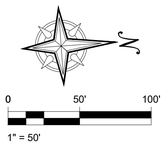
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV:	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4
SANITARY SEWER LINE B
PLAN & PROFILE

SHEET NO.
305

Date: Jun 16, 2023, 1:03pm User ID: Mary Stewart File: L:\Develop\Proj_2021\0621202_Swenson Heights Unit 4\cad\0621202 SH4-305 SANITARY SEWER LINE B PLAN & PROFILE.dwg



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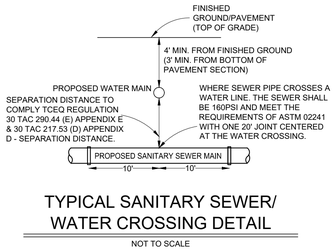
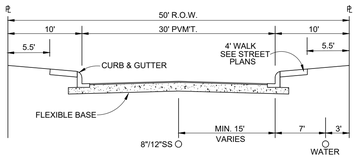


TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

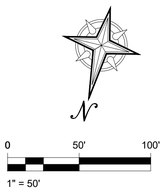


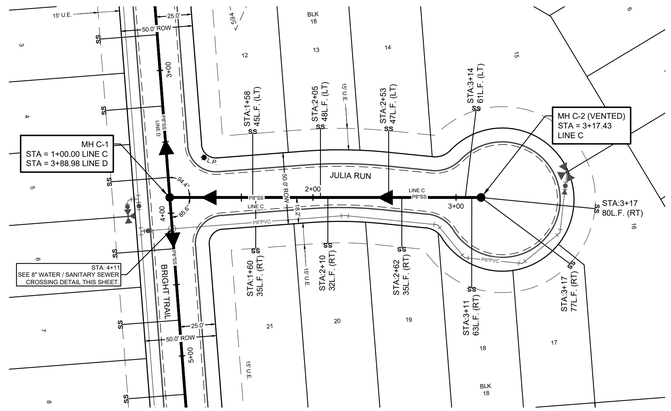
TYPICAL MINOR STREET SECTION

NOT TO SCALE

LEGEND

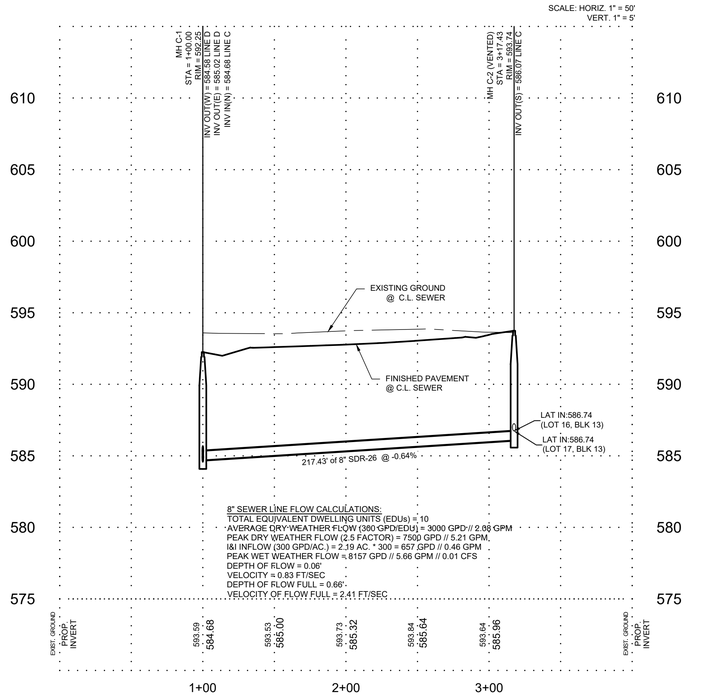
- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.





SANITARY SEWER LINE "C"

STA. 1+00.00 TO STA. 3+17.43



8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 10
AVERAGE DRY WEATHER FLOW (380 GPD/EDU) = 3000 GPD // 2.08 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 7500 GPD // 5.21 GPM,
I&I INFLOW (300 GPD/AC.) = 2.19 AC. * 300 = 657 GPD // 0.46 GPM
PEAK WET WEATHER FLOW = 8157 GPD // 5.66 GPM // 0.01 CFS
DEPTH OF FLOW = 0.08'
VELOCITY = 0.83 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

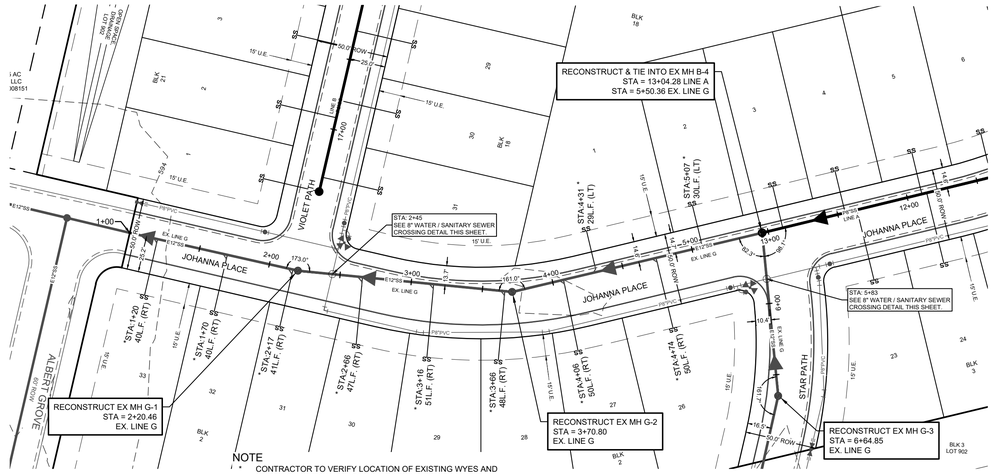
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

1. 12" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 270
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 81000 GPD // 56.25 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 202500 GPD // 140.63 GPM
I&I INFLOW (300 GPD/AC.) = 56.51 AC. * 300 = 16953 GPD // 11.77 GPM
PEAK WET WEATHER FLOW = 219453 GPD // 152.40 GPM // 0.34 CFS
DEPTH OF FLOW = 0.30'
VELOCITY = 1.73 FT/SEC
DEPTH OF FLOW FULL = 0.98'
VELOCITY OF FLOW FULL = 2.43 FT/SEC

2. 12" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 267
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 80100 GPD // 55.63 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 200250 GPD // 139.06 GPM
I&I INFLOW (300 GPD/AC.) = 55.47 AC. * 300 = 16641 GPD // 11.56 GPM
PEAK WET WEATHER FLOW = 216891 GPD // 150.62 GPM // 0.34 CFS
DEPTH OF FLOW = 0.30'
VELOCITY = 1.72 FT/SEC
DEPTH OF FLOW FULL = 0.98'
VELOCITY OF FLOW FULL = 2.43 FT/SEC

3. 12" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 264
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 79200 GPD // 55.00 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 198000 GPD // 137.5 GPM
I&I INFLOW (300 GPD/AC.) = 54.72 AC. * 300 = 16416 GPD // 11.4 GPM
PEAK WET WEATHER FLOW = 214416 GPD // 148.9 GPM // 0.33 CFS
DEPTH OF FLOW = 0.30'
VELOCITY = 1.71 FT/SEC
DEPTH OF FLOW FULL = 0.98'
VELOCITY OF FLOW FULL = 2.43 FT/SEC

4. 12" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 230
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 69000 GPD // 47.92 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 172500 GPD // 119.79 GPM
I&I INFLOW (300 GPD/AC.) = 46.03 AC. * 300 = 13809 GPD // 9.59 GPM
PEAK WET WEATHER FLOW = 186309 GPD // 129.38 GPM // 0.29 CFS
DEPTH OF FLOW = 0.28'
VELOCITY = 1.65 FT/SEC
DEPTH OF FLOW FULL = 0.98'
VELOCITY OF FLOW FULL = 2.43 FT/SEC

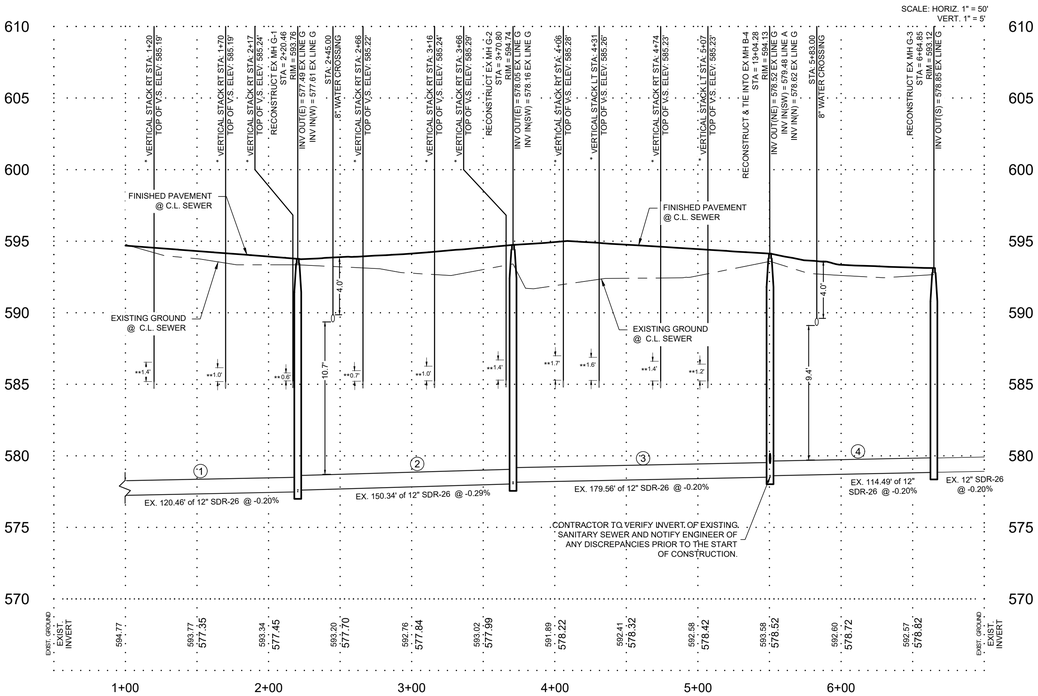


NOTE
* CONTRACTOR TO VERIFY LOCATION OF EXISTING WYES AND EXISTING VERTICAL STACKS ON EXISTING SEWER LINE G

EX. SANITARY SEWER LINE "G"

STA. 1+00.00 TO STA. 6+64.85

NOTE
** CONTRACTOR TO EXTEND EXISTING VERTICAL STACKS THE DISTANCE SHOWN AND ENSURE THAT VERTICAL STACKS ARE 8' BELOW FINISHED GRADE.



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6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV:	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE C & EX. LINE G PLAN & PROFILE

SHEET NO.
306

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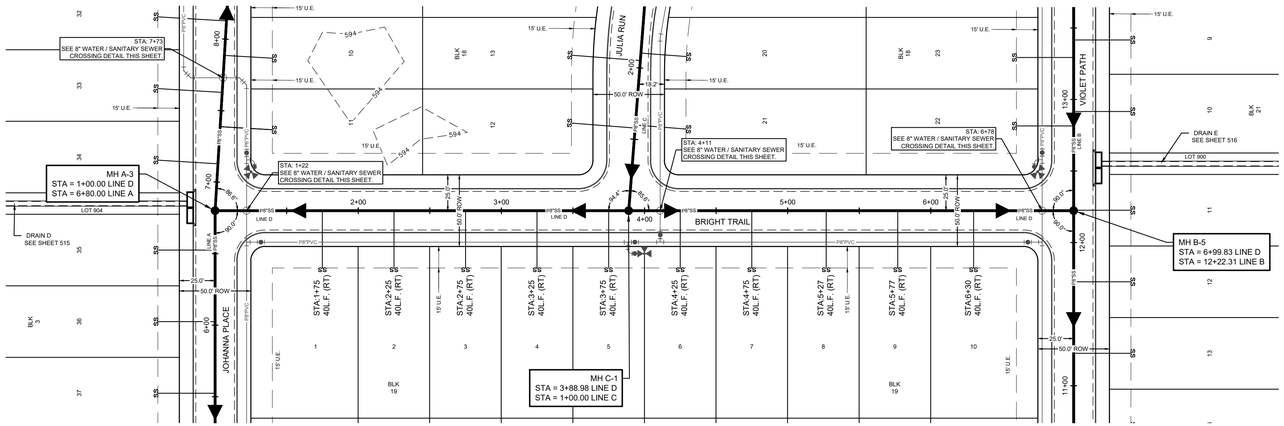
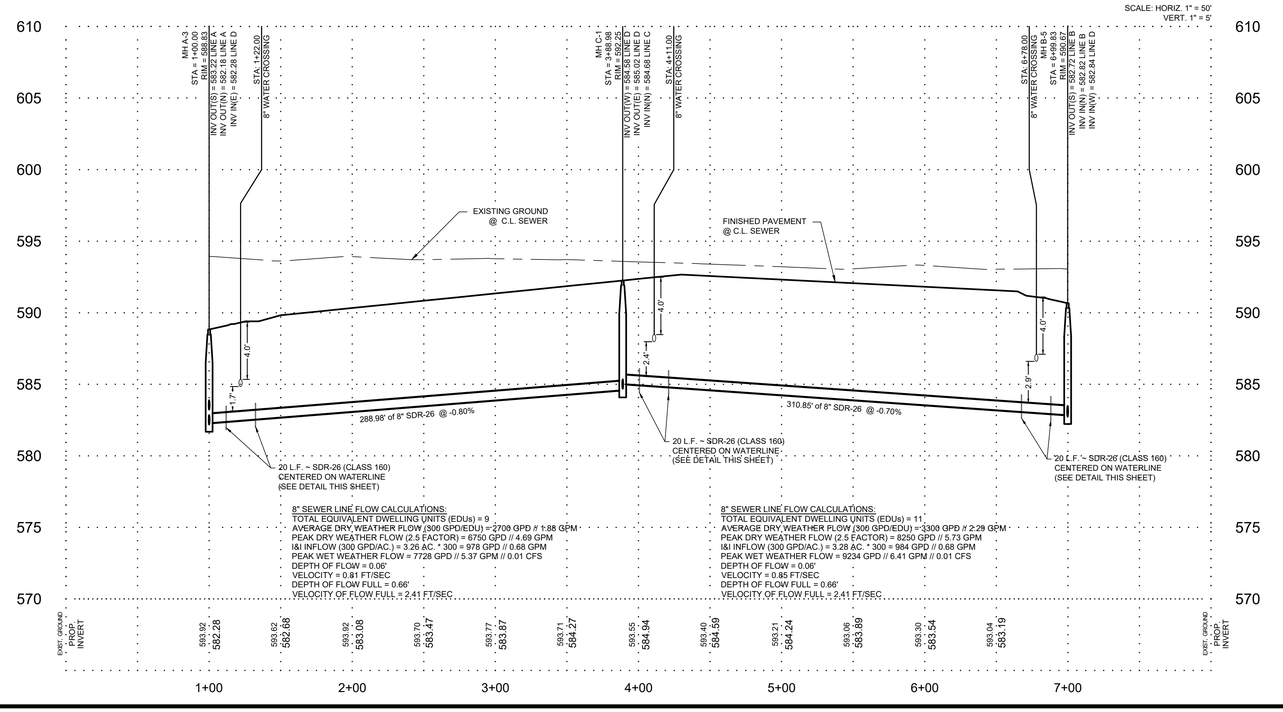
Date: Jun 16, 2023, 1:04pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\Exhibit\E0621202 306 SANITARY SEWER LINE C PLAN & PROFILE.dwg



SANITARY SEWER LINE "D"

STA. 1+00.00 TO STA. 6+99.83



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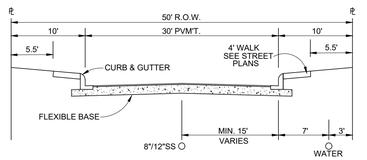
N

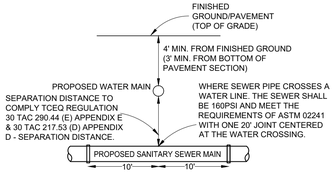
0 50' 100'

1" = 50'



TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

SCStP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE CAPPED AND SEALED.
2. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% THROUGH THE 15' UTILITY EASEMENT LOCATED IN THE FRONT OF THE LOT.
3. ALL SEWER PIPE TO BE SDR-26 UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO ENSURE LATERALS AT PROPOSED DRY UITLITY CROSSINGS ARE LOCATED AT A DEPTH TO AVOID ANY CONFLICT WITH DRY UTILITY INSTALLATION.
5. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, DRIVEWAY APRONS OR ROADWAYS. CITY OF SEGUIN WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREA IF DEVELOPER DOES NOT COMPLY.
6. MANHOLES CONSTRUCTED WITHIN PAVED AREAS MUST HAVE NON-BOLTED LIDS. MANHOLES CONSTRUCTED OUTSIDE PAVED AREAS MUST HAVE BOLTED LIDS.

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 SITE(S) 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 THE 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.

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-3440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE D PLAN & PROFILE

SHEET NO.

307

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Date: Jun 16, 2023, 1:04pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\E621202_Swenson Heights Unit 4\dwg\E621202 307 SANITARY SEWER LINE D PLAN & PROFILE.dwg

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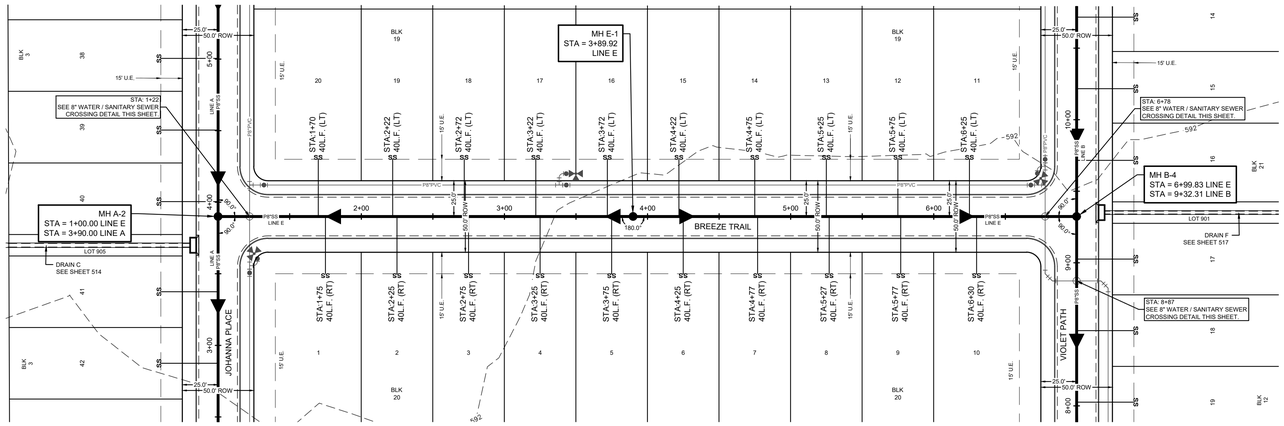
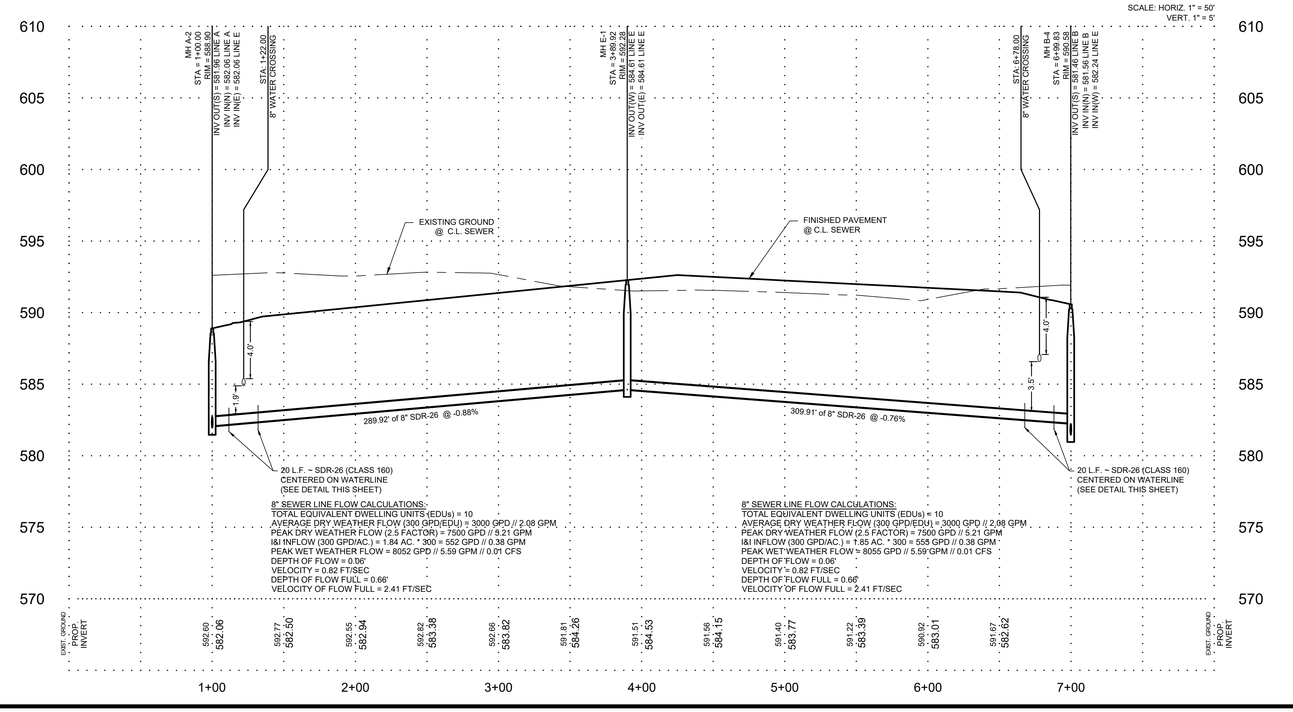


SANITARY SEWER LINE "E"

STA. 1+00.00 TO STA. 6+99.83



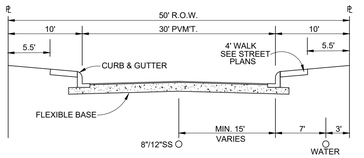
LEGEND

- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN — ▶
- DIRECTION OF FLOW
- EXISTING WATER MAIN — E8"PVC
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — ● L.P.

N

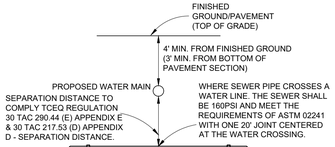
0 50' 100'

1" = 50'



TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

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DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
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REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

REV:	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE E PLAN & PROFILE

SHEET NO.

308

Date: Jun 16, 2023, 1:19pm User ID: Mary Stewart File: L:\Develop\Proj_2021\0621202_Swenson Heights Unit 4\dwg\0621202 308 SANITARY SEWER LINE E PLAN & PROFILE.dwg

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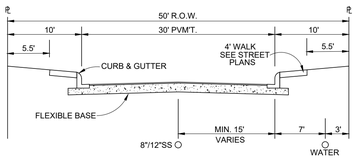
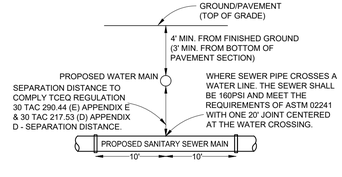


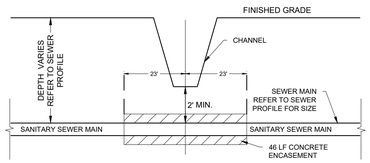
TYPICAL MINOR STREET SECTION

NOT TO SCALE



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



SANITARY SEWER/ CHANNEL CROSSING DETAIL

NOT TO SCALE

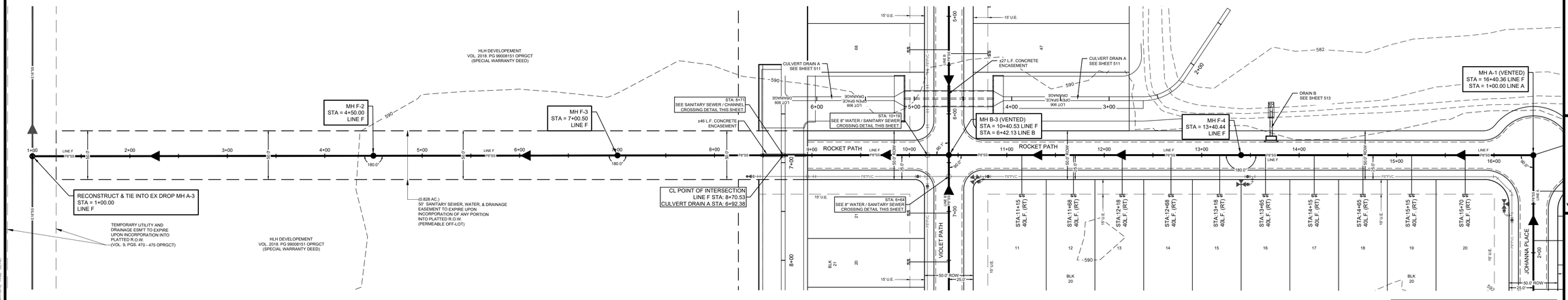
LEGEND

- EXISTING SANITARY SEWER MAIN
- PROPOSED SANITARY SEWER MAIN — E8"PVC
- DIRECTION OF FLOW
- EXISTING WATER MAIN
- PROPOSED WATER MAIN — P8"PVC
- PROPOSED LIGHT POLE (100 WATT LED) — L.P.

N

0 50' 100'

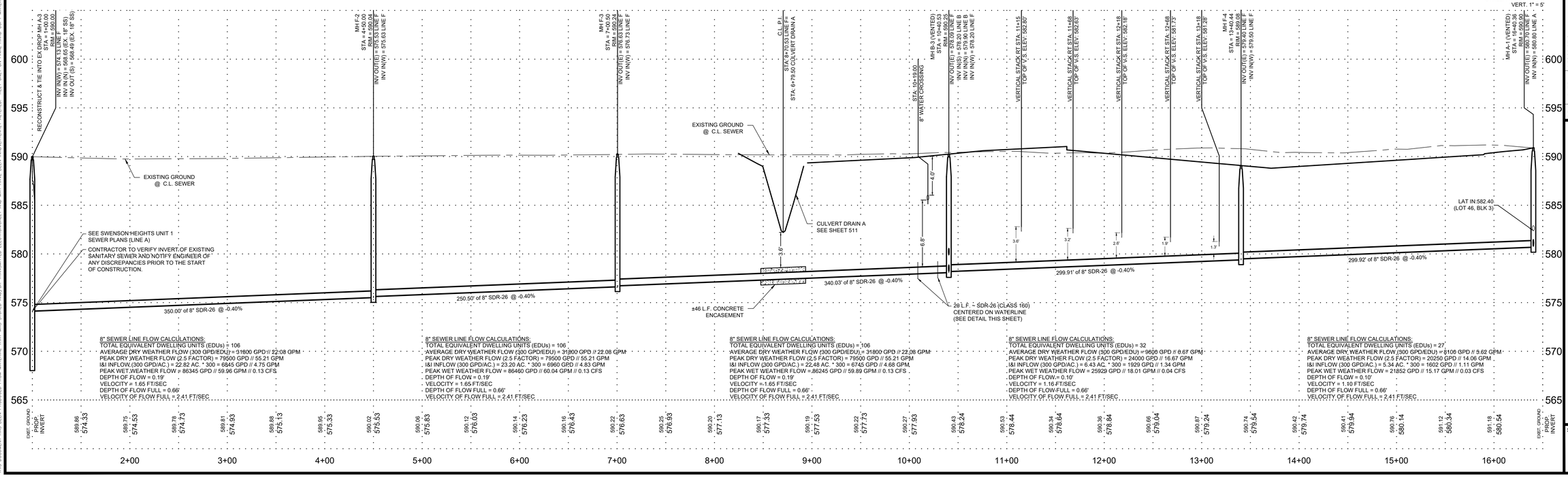
1" = 50'



SANITARY SEWER LINE "F"

STA. 1+00.00 TO STA. 16+40.36

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 106
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 31800 GPD // 22.08 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 79500 GPD // 55.21 GPM
I&I INFLOW (300 GPD/AC.) = 22.82 AC. * 300 = 6845 GPD // 4.75 GPM
PEAK WET WEATHER FLOW = 86345 GPD // 59.96 GPM // 0.13 CFS
DEPTH OF FLOW = 0.19'
VELOCITY = 1.65 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 106
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 31800 GPD // 22.08 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 79500 GPD // 55.21 GPM
I&I INFLOW (300 GPD/AC.) = 23.20 AC. * 300 = 6960 GPD // 4.83 GPM
PEAK WET WEATHER FLOW = 86460 GPD // 60.04 GPM // 0.13 CFS
DEPTH OF FLOW = 0.19'
VELOCITY = 1.65 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 106
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 31800 GPD // 22.08 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 79500 GPD // 55.21 GPM
I&I INFLOW (300 GPD/AC.) = 22.48 AC. * 300 = 6745 GPD // 4.68 GPM
PEAK WET WEATHER FLOW = 86245 GPD // 59.89 GPM // 0.13 CFS
DEPTH OF FLOW = 0.19'
VELOCITY = 1.65 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 32
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 9606 GPD // 6.67 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 24000 GPD // 16.67 GPM
I&I INFLOW (300 GPD/AC.) = 6.43 AC. * 300 = 1929 GPD // 1.34 GPM
PEAK WET WEATHER FLOW = 25929 GPD // 18.01 GPM // 0.04 CFS
DEPTH OF FLOW = 0.10'
VELOCITY = 1.16 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

8" SEWER LINE FLOW CALCULATIONS:
TOTAL EQUIVALENT DWELLING UNITS (EDUs) = 27
AVERAGE DRY WEATHER FLOW (300 GPD/EDU) = 8108 GPD // 5.62 GPM
PEAK DRY WEATHER FLOW (2.5 FACTOR) = 20250 GPD // 14.06 GPM
I&I INFLOW (300 GPD/AC.) = 5.34 AC. * 300 = 1602 GPD // 1.11 GPM
PEAK WET WEATHER FLOW = 21852 GPD // 15.17 GPM // 0.03 CFS
DEPTH OF FLOW = 0.10'
VELOCITY = 1.10 FT/SEC
DEPTH OF FLOW FULL = 0.66'
VELOCITY OF FLOW FULL = 2.41 FT/SEC

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS / ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
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REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

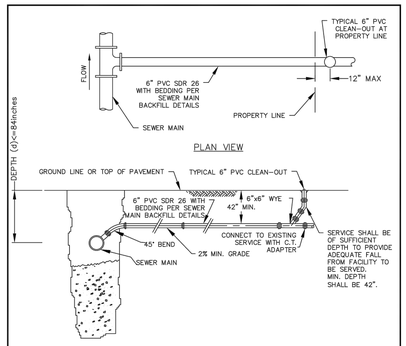
SWENSON HEIGHTS SUBDIVISION UNIT 4

SANITARY SEWER LINE F PLAN & PROFILE

SHEET NO.
309

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY MARY P. STEWART, P.E. ON 6/16/2023. THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY MARY P. STEWART, P.E. ON 6/16/2023. THIS DOCUMENT HAS BEEN PROVIDED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REV / DOC / PK FINAL HARD COPY MATERIALS BEARING THE ORIGINAL SIGNATURE AND SEAL

Date: Jun 16, 2023, 1:16pm User ID: MaryStewart File: L:\Develop\Proj\2021\E0621202_Swenson Heights Unit 4\cad\E0621202 309 SANITARY SEWER LINE F PLAN & PROFILE.dwg

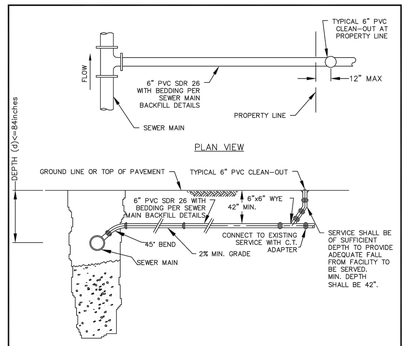


SHALLOW SANITARY SEWER RESIDENTIAL SERVICE CONNECTION

NOTE:
1. SEWER SERVICE LINE BACKFILL SHALL BE IDENTICAL TO SEWER MAIN (WW-8).
2. CITY INSPECTOR SHALL APPROVE DEPTHS UNDER 42" (MIN.).
3. LATERAL DEPTH TO BE 42" MINIMUM TO ENSURE POSITIVE FLOW.
4. SDR 26 PRESSURE RATED PIPE SHALL BE USED IF TRENCH DEPTH IS OVER 15'
5. DUPLEXES, TRIPLEXES AND QUADPLEXES MUST HAVE INDIVIDUAL SERVICE CONNECTIONS PER EACH LIVING UNIT.(DUAL OR SHARED CONNECTIONS TO A SINGLE LATERAL IS NO LONGER ACCEPTED).

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SHALLOW SANITARY SEWER RESIDENTIAL SERVICE CONNECTION
1ST REVISION	8/10/18	DB	
2ND REVISION	6/18/20	DB	
3RD REVISION	10/21/21	DB	
			SCALE: N.T.S. DRAWING No. WW-1

SEGUIN TEXAS — It's real.



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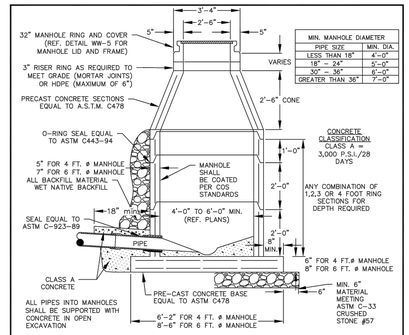
DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SANITARY SEWER RESIDENTIAL SERVICE CONNECTION
1ST REVISION	8/10/18	DB	
2ND REVISION	6/18/20	DB	
3RD REVISION	10/21/21	DB	
			SCALE: N.T.S. DRAWING No. WW-1.2

SEGUIN TEXAS — It's real.

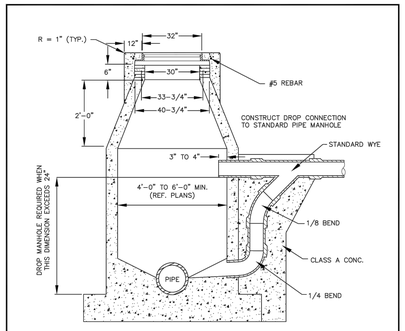


MIN. MANHOLE DIAMETER	
PIPE SIZE	MIN. DIA.
LESS THAN 18"	4'-0"
18" - 24"	5'-0"
30" - 36"	6'-0"
GREATER THAN 36"	7'-0"

NOTES:
1. MANHOLE INVERTS: THE BOTTOM OF THE MANHOLE SHALL BE PROVIDED WITH A "U" SHAPED CHANNEL THAT IS AS MUCH AS POSSIBLE A SMOOTH CONTINUATION OF THE INLET AND OUTLET PIPES. FOR MANHOLES CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER THE CHANNEL DEPTH SHALL BE AT LEAST HALF THE LARGEST PIPE DIAMETER. FOR MANHOLES CONNECTED TO PIPES 15 TO 24 INCHES IN DIAMETER THE CHANNEL DEPTH SHALL BE AT LEAST THREE FOURTHS THE LARGEST PIPE DIAMETER. IN MANHOLES WITH PIPES OF DIFFERENT SIZES, THE TOES OF THE PIPES SHALL BE PLACED AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT SLOPED ON AN EVEN CURVE FROM PIPE TO PIPE. THE BENCH PROVIDED ABOVE THE CHANNEL SHALL BE SLOPED AT A MINIMUM OF 0.5 INCH PER FOOT.
2. CONTRACTOR SHALL GROUT THE INTERNAL AND EXTERNAL JOINTS FOR EACH RING SECTION.
3. 0.1' DROP SHALL BE PROVIDED WITHIN THE MANHOLE.
4. MANHOLE SHALL BE COATED PER APPROVED MANUFACTURER'S SPECIFICATIONS OUTLINED IN COS STANDARD PRODUCTS LIST.
5. MANHOLE OUTSIDE OF PAVEMENT SHALL HAVE BOLTED COVERS.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SANITARY SEWER PRECAST CONCRETE MANHOLE
1ST REVISION	7/29/15	TN	
2ND REVISION	8/10/18	DB	
3RD REVISION	12/08/20	DB	
			SCALE: N.T.S. DRAWING No. WW-2

SEGUIN TEXAS — It's real.



NOTES:
1. CONTRACTOR SHALL GROUT THE INTERNAL AND EXTERNAL JOINTS FOR EACH RING SECTION.
2. DROP SECTION OF PIPE SHALL BE SAME DIAMETER AS SEWER MAIN.
3. PER TCEQ, CHAPTER 217, SECTION 55.L.2.H., "A WASTEWATER COLLECTION SYSTEM PIPE ENTERING A MANHOLE MORE THAN 24 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE."

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SANITARY SEWER DROP MANHOLE
1ST REVISION	7/29/15	TN	
2ND REVISION	5/25/18	DB	
3RD REVISION			SCALE: N.T.S. DRAWING No. WW-3

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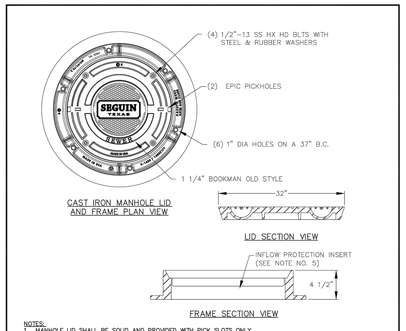
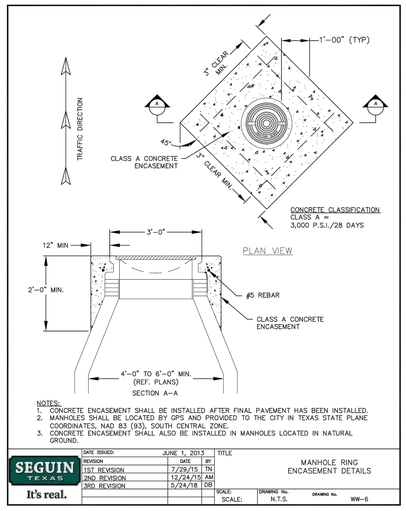


NOTES:
1. MANHOLE LID SHALL BE SOLID AND PROVIDED WITH PICK SLOTS ONLY.
2. 50" HEAVY DUTY MANHOLE FRAME AND COVER IS TO BE CAST 400 LBS WITH A DESIGN STRENGTH OF 5,000 PSI.
3. THE HORIZONTAL BEARING SURFACES ARE TO BE MACHINE FINISHED.
4. THE SOLID LID WILL BE PROVIDED WITH MANUFACTURER'S STANDARD LETTERING SHOWING "SANITARY SEWER".
5. INFLOW PROTECTION INSERT, MINIMUM THICKNESS OF ONE-EIGHT INCH (1/8"), MADE OF HDPE MEETING ASTM D 1248 CLASS A, CATEGORY 5, TYPE 111. INSERT SHALL INCLUDE A LIFT STRAP AND VENT HOLE WITH VENT DISK AS MANUFACTURED BY KNUTSON MANHOLE INSERTS OR APPROVED OTHER.
6. MANHOLE SHALL BE ENCASED PER DETAIL ON SHT. WW-6, MANHOLE RING ENCASEMENT DETAIL.
7. INSTALL BOLTED COVER FOR STRUCTURES LOCATED OUTSIDE OF PAVED AREAS. INSTALL UN-BOLTED COVERS WHEN PLACED WITHIN THE STREET OR PAVED AREAS.
8. FRAME AND COVER ARE MANUFACTURED BY EAST JORDAN IRON COMPANY,
   8.1: BOLTED: COVER V1430APT RING: V1420/1480ZIPT
   8.2: NON-BOLTED: COVER: V1430 RING: V1420/1480ZI

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	CAST IRON MANHOLE LID AND FRAME
1ST REVISION	06/12/15	TN	
2ND REVISION	12/24/15	AM	
3RD REVISION	03/05/18	MS	
			SCALE: N.T.S. DRAWING No. WW-5

SEGUIN TEXAS — It's real.



NOTES:
1. CONCRETE ENCASEMENT SHALL BE INSTALLED AFTER FINAL PAVEMENT HAS BEEN INSTALLED.
2. MANHOLES SHALL BE LOCATED BY GPS AND PROVIDED TO THE CITY IN TEXAS STATE PLANE COORDINATES, NAD 83 (93), SOUTH CENTRAL ZONE.
3. CONCRETE ENCASEMENT SHALL ALSO BE INSTALLED IN MANHOLES LOCATED IN NATURAL GROUND.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	MANHOLE RING ENCASEMENT DETAILS
1ST REVISION	7/29/15	TN	
2ND REVISION	12/24/15	AM	
3RD REVISION	5/24/18	DB	
			SCALE: N.T.S. DRAWING No. WW-6

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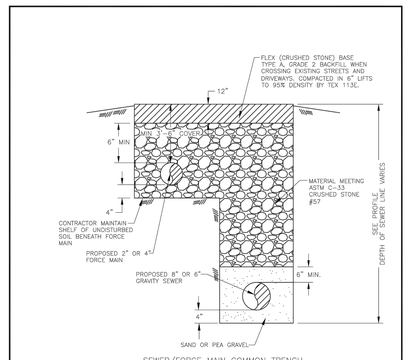

SEWER/FORCE MAIN COMMON TRENCH DETAIL (WHEN IN PAVEMENT)

NOTE:
CONTRACTOR IS ALLOWED TO CONSTRUCT SEPARATE DITCHES FOR THE TWO PIPELINES, MAINTAINING PROPOSED SPACING BETWEEN PIPELINES SHOWN ON PLAN AND PROFILE SHEETS.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SEWER/FORCE MAIN COMMON TRENCH DETAIL (WHEN IN PAVEMENT)
1ST REVISION	7/29/15	TN	
2ND REVISION	6/11/18	DB	
			SCALE: N.T.S. DRAWING No. WW-7

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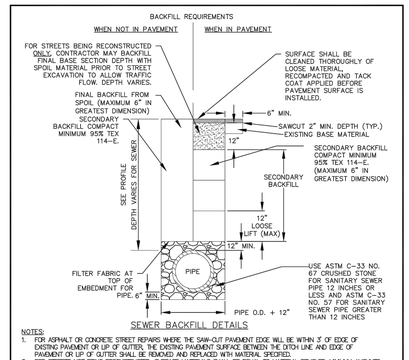

SEWER BACKFILL DETAILS

NOTES:
1. FOR ASPHALT OR CONCRETE STREET REPAIRS WHERE THE SAW-CUT PAVEMENT EDGE WILL BE WITHIN 3' OF EDGE OF EXISTING PAVEMENT OR LIP OF GUTTER, THE EXISTING PAVEMENT SURFACE BETWEEN THE DITCH LINE AND EDGE OF PAVEMENT OR LIP OF GUTTER SHALL BE REMOVED AND REPLACED WITH MATERIAL SPECIFIED.
2. FOR STREETS NOT BEING RECONSTRUCTED, SURFACE MATERIALS SHALL BE EQUAL TO MATERIAL REMOVED-MINIMUM AMOUNTS: 2" HMAC (TxDOT ITEM 340), TYPE D); FLEX (CRUSHED STONE) BASE (TxDOT ITEM 247, TYPE A, GRADE 2) COMPACTED IN 6" LIFTS TO 100% DENSITY BY TEX 113E. EXISTING ASPHALT TO BE SAW CUT.
3. SECONDARY BACKFILL SHALL CONSIST OF 12" LIFTS COMPRISED OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE OF BRUSH, DEBRIS AND TRASH. MAXIMUM 6" IN GREATEST DIMENSION.
4. A DENSITY TEST SHALL BE PERFORMED ON EACH 12" LIFT, EVERY 200 FEET.
5. INDUCTIVE TRACER DETECTION TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF ALL NON-METALLIC PIPE A MINIMUM OF 12" BELOW SUBGRADE OR, IN AREAS OUTSIDE THE LIMITS OF PAVEMENT, A MINIMUM OF 18" BELOW FINISHED GRADE. THE TRACER TAPE SHALL BE ENCASED IN A PROTECTIVE, INERT, PLASTIC JACKET AND COLOR CODED ACCORDING TO THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE, EXCEPT FOR MINIMUM DEPTH OF COVER, THE TRACER TAPE SHALL BE PLACED ACCORDING TO THE MANUFACTURE'S RECOMMENDATIONS.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	SEWER BACKFILL DETAIL
1ST REVISION	6/13/15	TN	
2ND REVISION	12/11/15	AM	
3RD REVISION	5/25/18	DB	
			SCALE: N.T.S. DRAWING No. WW-8

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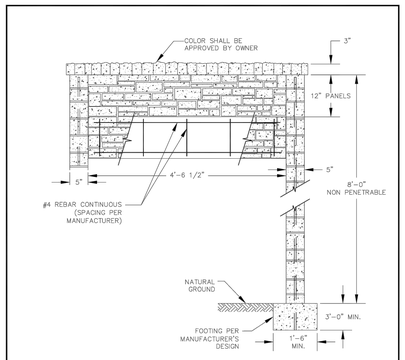

PARTIAL LIFT/GRINDER STATION FENCE ELEVATION

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	PARTIAL LIFT/GRINDER STATION FENCE ELEVATION
1ST REVISION	7/29/15	TN	
2ND REVISION	5/25/18	DB	
			SCALE: N.T.S. DRAWING No. WW-11

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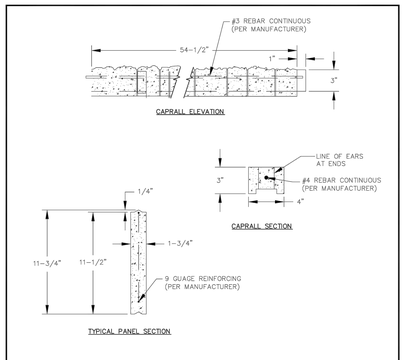

LIFT/GRINDER STATION FENCE DETAIL

NOTES:
1. ALL CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 5,000 P.S.I.
2. ALL REINFORCEMENT SHALL BE A.S.T.M. 615 GRADE 60.
3. ALL EXPOSED SIDES SHALL HAVE ROCK-LIKE TEXTURE.
4. ALL GATES SHALL HAVE ADDITIONAL STEEL SUPPORTS ADJACENT TO CONCRETE COLUMNS OR AS REQUIRED BY MANUFACTURER.
5. CONTRACTOR SHALL USE FENCRETE AMERICA LTD. OF SAN ANTONIO, TX (210)492-7911 OR APPROVED EQUAL FOR ALL FENCING AND GATES.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	LIFT/GRINDER STATION FENCE DETAILS 1 OF 2
1ST REVISION	7/29/15	TN	
2ND REVISION	5/25/18	DB	
			SCALE: N.T.S. DRAWING No. WW-12

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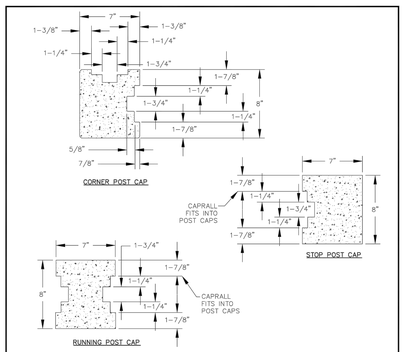
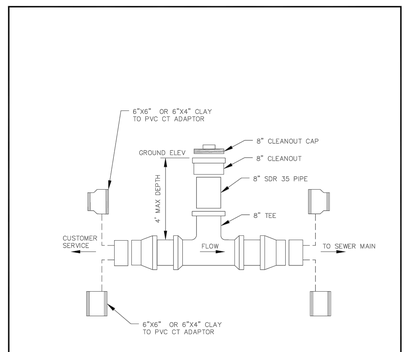


LIFT/GRINDER STATION FENCE DETAIL

NOTES:
1. ALL CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 5,000 P.S.I.
2. ALL REINFORCEMENT SHALL BE A.S.T.M. 615 GRADE 60.
3. ALL EXPOSED SIDES SHALL HAVE ROCK-LIKE TEXTURE.
4. ALL GATES SHALL HAVE ADDITIONAL STEEL SUPPORTS ADJACENT TO CONCRETE COLUMNS OR AS REQUIRED BY MANUFACTURER.
5. CONTRACTOR SHALL USE FENCRETE AMERICA LTD. OF SAN ANTONIO, TX (210)492-7911 OR APPROVED EQUAL FOR ALL FENCING AND GATES.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	LIFT/GRINDER STATION FENCE DETAILS 2 OF 2
1ST REVISION	7/29/15	TN	
2ND REVISION	5/25/18	DB	
			SCALE: N.T.S. DRAWING No. WW-13

SEGUIN TEXAS — It's real.



DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	WASTEWATER SAMPLING SITE
1ST REVISION	7/29/15	TN	
2ND REVISION	5/25/18	DB	
			SCALE: N.T.S. DRAWING No. WW-15

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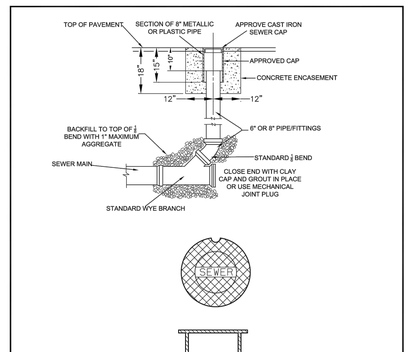

NOTES:
1. DEPENDING UPON THE TYPE OF SERVICE THAT AN 8 INCH LATERAL (ON A DEAD END MAIN) IS PROVIDING, A STANDARD MANHOLE IN LIEV OF IS CLEANOUT MAY BE REQUIRED. CONSULT WITH THE INSPECTOR.

DATE ISSUED:	FEBRUARY 1, 2019		TITLE
REVISION	DATE	BY	TYPICAL 6" TO 8" CLEANOUT DETAIL (ON DEAD-END MAIN)
			SCALE: N.T.S. DRAWING No. WW-20

SEGUIN TEXAS — It's real.

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8998
REGISTRATION #F-2214 / #10041000

CEC

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SWENSON HEIGHTS SUBDIVISION UNIT 4

SEWER DETAILS

SHEET NO.
310

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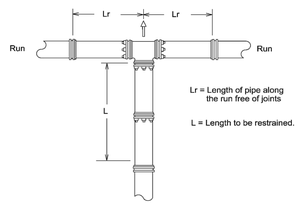
Date: Jun 16, 2023, 11:08pm User ID: Mary Stewart File: L:\Develop\Proj\2021\E0621202 Swenson Heights Unit 4\cad\E0621202 310 SANMAP SEWER DETAILS.dwg

WATER CONSTRUCTION PLANS
for
SWENSON HEIGHTS
UNIT 4

SPRINGS HILL WATER SUPPLY CORPORATION _____ Date

Note: The Springs Hill Water Supply Corporation (SHWSC) signature above indicates that SHWSC has reviewed this document for general conformance with SHWSC requirements. SHWSC assumes no responsibility for the completeness and/or accuracy of these documents. Responsibility for the engineering adequacy of the facilities depicted in this document lies solely with the Texas Licensed Professional Engineer whose seal and signature is affixed to this document.

RESTRAINED LENGTHS
FOR TEES & VALVES



RESTRAINED LENGTH FOR TEES

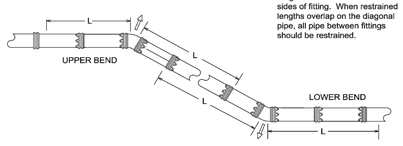
PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	0	42	31
6	4	5	7	1
6	4	10	1	1
6	6	0	59	44
6	6	5	35	20
6	6	10	11	1
8	4	0	42	31
8	4	5	1	1
8	6	0	59	44
8	6	5	28	13
8	6	10	1	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe.The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

RESTRAINED LENGTHS
FOR VERTICAL OFFSETS

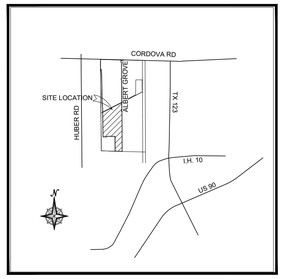
L = Length to be restrained on both sides of fitting. When restrained lengths overlap on the diagonal pipe, all pipe between fittings should be restrained.



PIPE SIZE (inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi
6	45	5	24	8	18	6
6	22.5	5	12	4	9	3
6	11.25	5	6	2	4	1
6	45	10	24	5	18	4
6	22.5	10	12	2	9	2
6	11.25	10	6	1	4	1
8	45	5	32	11	24	8
8	22.5	5	15	5	11	4
8	11.25	5	8	3	6	2
8	45	10	32	7	24	5
8	22.5	10	15	3	11	2
8	11.25	10	8	2	6	1
12	45	5	45	16	34	12
12	22.5	5	22	7	16	6
12	11.25	5	11	4	8	3
12	45	10	45	10	34	7
12	22.5	10	22	5	16	3
12	11.25	10	11	2	8	2

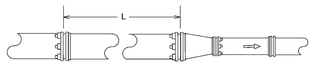
RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.



LOCATION MAP
NOT TO SCALE

RESTRAINED LENGTHS
FOR REDUCERS



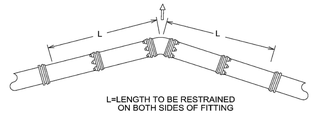
L=Length to be restrained

PIPE SIZE (inch)	SMALL SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	55	42
8	6	32	24
12	4	95	71
12	6	80	60
12	8	58	43

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. Th restrained length shall be designed based upon the conditions encountered during the installation.

RESTRAINED LENGTHS
FOR HORIZONTAL BENDS



L=LENGTH TO BE RESTRAINED
ON BOTH SIDES OF FITTING

PIPE SIZE (inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

SHEET INDEX

SHEET	TITLE
400	WATER COVER SHEET
401	WATER OVERALL PLAN
402	WATER OVERALL PLAN
403	WATER DETAILS
404	WATER DETAILS

SWENSON HEIGHTS SUBDIVISION, UNIT 4 EDU CALCULATION TABLE:

SWENSON HEIGHTS UNIT 4 = 146 LOTS

3/4" SERVICE W/ 5/8" WATER METER = 1 EDU/WATER SERVICE

146 RESIDENTIAL WATER SERVICES = 146 EDUs

SWENSON HEIGHTS UNIT 4= 146 EDUs

TOTAL AVAILABLE 900 EDUs (FROM SWENSON FEASIBILITY ANALYSIS)

PREVIOUSLY USED EDUs:
SWENSON HEIGHTS UNIT 2: 230 EDUS
(ALL OTHER UNITS WERE DESIGNED BY OTHERS)

REMAINING EDUs EDUs:
900 EDUs - 230 EDUs (U2) - 146 EDUs (U4) = **524 EDUs REMAINING**

OWNER/DEVELOPER:
BELLA VISTA C.M.I., LTD.
2714 N, LOOP 1604 E SUITE 105
SAN ANTONIO, TEXAS 78232
PHONE: (210) 402-0642

LEGEND

EXISTING SANITARY SEWER MAIN — E8"SS
PROPOSED SANITARY SEWER MAIN — P8"SS
DIRECTION OF FLOW
EXISTING WATER MAIN — E8"PVC
PROPOSED WATER MAIN — P8"PVC
PROPOSED LIGHT POLE (100 WATT LED) — L.P.
3/4" SINGLE SERVICE WITH 5/8" METER
RESTRAIN LENGTH — R.L.
PROPOSED FIRE HYDRANT

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

WATER QUANTITIES
Onsite Water

Item No:	Description	Unit	Quantity
1	Trench Protection	L.F.	6321
2	8" Pipe, P.V.C. C-900, Class 235 (DR-18)	L.F.	5715
3	8" D.I. Pipe, Class 52	L.F.	606
4	3/4" Single Water Service - Short (5/8" Meter)	EA.	84
5	3/4" Single Water Service - Long (5/8' Meter)	EA.	62
6	8" Gate Valve MJ W/ Box	EA.	18
7	Meter Box	EA.	146
8	Standard Fire Hydrant w/ Storz Adaptor	EA.	13
9	D.I. MJ Compact Fittings (C153)	TON	2.6
10	8" PVC Water Tie-In To Existing 8" PVC	EA.	1
11	Hydrostatic Test	LS	1
12	2" Blowoff (Temporary)	EA.	1
13	2" Blowoff (Permanent)	EA.	2
14	24" Steel Sleeve	L.F.	57

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 SITE(S) 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 THE 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.

SPRINGS HILL WATER SUPPLY CORPORATION NOTES:

1. EXISTING WATER INFRASTRUCTURE IN THE VICINITY OF THE TRACT IS AVAILABLE TO SERVE THE PROPOSED DEVELOPMENT. IF THE DEVELOPMENT EXCEEDS THE CAPACITY OF THE EXISTING WATER INFRASTRUCTURE, THEN IT WILL BE THE DEVELOPER'S RESPONSIBILITY TO MAKE THE NECESSARY IMPROVEMENTS TO THE EXISTING WATER INFRASTRUCTURE TO PROVIDE SUFFICIENT CAPACITY. THE EXTENT OF THE NECESSARY WATER IMPROVEMENTS WILL BE OUTLINED IN A MEMORANDUM OF UNDERSTANDING OR NON-STANDARD SERVICE AGREEMENT PRIOR TO THE APPROVAL OF ANY FINAL PLAT.
2. SHWSC SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT BEING WITHIN A FENCED AREA.
3. ANY EASEMENT DESIGNATED AS A SHWSC UTILITY EASEMENT SHALL REMAIN OPEN ACCESS AT ALL TIMES AND SHALL NOT BE WITHIN A FENCED AREA.
4. ALL SHWSC EASEMENTS ARE FOR CONSTRUCTION, MAINTENANCE (INCLUDING BUT NOT LIMITED TO REMOVAL OF TREES AND OTHER OBSTRUCTIONS), READING OF METERS, AND REPAIR OF ANY SHWSC FACILITY LOCATED WITHIN SAID EASEMENT.
5. WATER LINE IS TO BE CONSTRUCTED IN ACCORDANCE WITH SPRINGS HILL WATER SUPPLY CORPORATION STANDARD DRAWINGS AND SPECIFICATIONS.
6. WATER MAIN SHALL HAVE A MINIMUM OF 30 INCHES OF COVER, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
7. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
8. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOX SET IN A DRIVEWAY WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
9. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, OR ROADWAYS. SHWSC WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREAS IF DEVELOPER DOES NOT COMPLY.
10. PERMANENT TIE-INS TO IN-SERVICE MAINS SHALL ONLY BE CONSTRUCTED FOLLOWING FLUSHING, DISINFECTION, TESTING, AND APPROVAL BY SHWSC. TEMPORARY CONNECTIONS FOR FILLING, FLUSHING, AND TESTING MUST BE EQUIPPED WITH SHWSC-PROVIDED BACKFLOW PREVENTION TO MAINTAIN CROSS-CONNECTION CONTROL

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

WATER COVER SHEET

SHEET NO.
400

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REV'T ONLY ON FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

Date: Jun 16, 2023, 1:05pm User ID: Mary.Stewart Path: L:\Drawings\Proj_2021\E0621202_Swenson Heights Unit 4\Civil\E0621202 400 WATER COVER.dwg

SPRINGS HILL WATER SUPPLY CORPORATION NOTES:

1. EXISTING WATER INFRASTRUCTURE IN THE VICINITY OF THE TRACT IS AVAILABLE TO SERVE THE PROPOSED DEVELOPMENT. IF THE DEVELOPMENT EXCEEDS THE CAPACITY OF THE EXISTING WATER INFRASTRUCTURE, THEN IT WILL BE THE DEVELOPER'S RESPONSIBILITY TO MAKE THE NECESSARY IMPROVEMENTS TO THE EXISTING WATER INFRASTRUCTURE TO PROVIDE SUFFICIENT CAPACITY. THE EXTENT OF THE NECESSARY WATER IMPROVEMENTS WILL BE OUTLINED IN A MEMORANDUM OF UNDERSTANDING OR NON-STANDARD SERVICE AGREEMENT PRIOR TO THE APPROVAL OF ANY FINAL PLAT.
2. SHWSC SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT BEING WITHIN A FENCED AREA.
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REMOVE EXISTING 2" BLOWOFF

CONTRACTOR SHALL TIE INTO EXISTING 8" WATER MAIN AFTER DISINFECTION. EXISTING VALVE TO REMAIN CLOSED UNTIL DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY SHWSC.

AFTER RELEASE FOR SERVICE CONTRACTOR TO TIE NEW 8" MAIN TO EXISTING 8" MAIN
2-8" SOLID SLEEVES, M.J.
4-8" RETAINER GLANDS, M.J.

CONTRACTOR TO MACHINE CHLORINATE:
INSTALL FOR CHLORINATION (N.S.P.I.)
2-1" CORPORATION STOP C.C. X I.P.
2-1 1/4" THD SOLID CAPS, THR.
2-1" COPPER TUBING, CUT AS REQ'D
2-1" COMP. X 1 1/4" COUPLING CURB STOP

2" BLOWOFF (TEMP.)
77 L.F. R.L.
(SEE SHWSC DETAIL WA-46)

EXISTING 8" GATE VALVE

8" X 6" M.J., TEE
6" X 1/4 BEND
6" GATE VALVE, M.J.
6" VALVE BOX, COMPLETE
6" SOLID ADAPTER
STD. FIRE HYDRANT
W/ STORZ CONNECTOR
(SEE SHWSC STD. DWG WA-21)

1-8" 1/4 BEND, M.J.
77 L.F. R.L. EACH WAY

2-8" 1/32 BEND, M.J.
3 L.F. R.L. EACH WAY

SANITARY SEWER / WATER CROSSING
SEE TYPICAL DETAIL THIS SHEET

2-8" 1/32 BEND, M.J.
3 L.F. R.L. EACH WAY

1-8"x8" ANCHOR TEE, M.J.
2-8" GATE VALVE, M.J.
2-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

1-8"x8" ANCHOR TEE, M.J.
77 L.F. R.L. EACH WAY

8" X 6" M.J., TEE
6" X 1/4 BEND
6" GATE VALVE, M.J.
6" VALVE BOX, COMPLETE
6" SOLID ADAPTER
STD. FIRE HYDRANT
W/ STORZ CONNECTOR
(SEE SHWSC STD. DWG WA-21)

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

2" BLOWOFF (TEMP.)
77 L.F. R.L.
(SEE SHWSC DETAIL WA-46)

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

5-8" 1/32 BEND, M.J.
3 L.F. R.L. EACH WAY

1-6" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
59 L.F. R.L. EACH WAY
(INCLUDED W/ FIRE HYDRANT ASSEMBLY)

8" X 6" REDUCER, M.J.
32 L.F. R.L. EACH WAY

8" X 6" M.J., TEE
6" X 1/4 BEND
6" GATE VALVE, M.J.
6" VALVE BOX, COMPLETE
6" SOLID ADAPTER
STD. FIRE HYDRANT
W/ STORZ CONNECTOR
(SEE SHWSC STD. DWG WA-21)

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

STD. FIRE HYDRANT
W/ STORZ CONNECTOR
HYDRANT TO INCLUDE AUTOMATIC
FLUSH DEVICE ON THE 2 ½-INCH NOZZLE
(SEE SHWSC STD. DWG WA-21)

4-8" 1/8 BEND, M.J.
12 L.F. R.L. EACH WAY

8" X 6" M.J., TEE
6" X 1/4 BEND
6" GATE VALVE, M.J.
6" VALVE BOX, COMPLETE
6" SOLID ADAPTER
STD. FIRE HYDRANT
W/ STORZ CONNECTOR
(SEE SHWSC STD. DWG WA-21)

1-8" 1/32 BEND, M.J.
3 L.F. R.L. EACH WAY

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

2-8" 1/8 BEND, M.J.
12 L.F. R.L. EACH WAY

2-8" 1/8 BEND, M.J.
12 L.F. R.L. EACH WAY

1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

1-8"x8" ANCHOR TEE, M.J.
1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

8" X 6" M.J., TEE
6" X 1/4 BEND
6" GATE VALVE, M.J.
6" VALVE BOX, COMPLETE
6" SOLID ADAPTER
STD. FIRE HYDRANT
W/ STORZ CONNECTOR
(SEE SHWSC STD. DWG WA-21)

1-8"x8" ANCHOR TEE, M.J.
1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

1-8"x8" ANCHOR TEE, M.J.
1-8" GATE VALVE, M.J.
1-6" VALVE BOX, COMPLETE
77 L.F. R.L. EACH WAY

MATCH LINE "A" SEE SHEET 402

REMAINDER OF 50.315 AC
HLH DEVELOPEMENT, LLC
DOCUMENT NO. 20189900151
OPRGCT

REMAINDER OF 50.315 AC
HLH DEVELOPEMENT, LLC
DOCUMENT NO. 20189900151
OPRGCT

MARY SAUNDERS
(DOC. 2016002954
OPRGCT) 31.011 AC

OPEN SPACE
DRAINAGE
LOT 903

OPEN SPACE
DRAINAGE
LOT 902

OPEN SPACE
DRAINAGE
LOT 901

LOT 904

LOT 900

STAR PATH
ALMA
VIOLET PATH
JOHANNA PLACE
JULIA RUN
BRIGHT TRAIL
ALBERT GROVE
60' ROW

BLK 2
BLK 3
BLK 18
BLK 19
BLK 21

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

N

0 50' 100'

1" = 50'

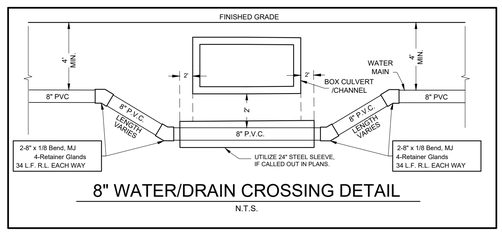
LEGEND

EXISTING SANITARY SEWER MAIN	E8"SS
PROPOSED SANITARY SEWER MAIN	P8"SS
DIRECTION OF FLOW	
EXISTING WATER MAIN	E8"PVC
PROPOSED WATER MAIN	P8"PVC
PROPOSED LIGHT POLE (100 WATT LED)	L.P.
3/4" SINGLE SERVICE WITH 5/8" METER	
RESTRAIN LENGTH	R.L.
PROPOSED FIRE HYDRANT	

FIRE HYDRANT NOTE: ONLY APPROVED SPRING HILL WATER SUPPLY CORPORATION FIRE HYDRANT ASSEMBLIES CAN BE UTILIZED, BUT LOCATION OF FIRE HYDRANT AND 6" CLEARANCES FROM SIDEWALK AND WHEELCHAIR RAMPS MUST BE ACHIEVED.

NOTES

1. CONTRACTOR TO ENSURE DUCTILE IRON PIPE IS INSTALLED UNDER ANY PROPOSED PAVEMENT.
2. CONTRACTOR TO ENSURE NO VALVES ARE LOCATED IN PROPOSED PAVEMENT OR SIDEWALK.

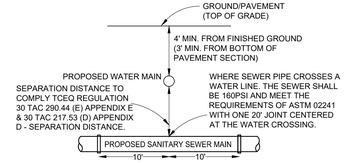


8" WATER/DRAIN CROSSING DETAIL

N.T.S.

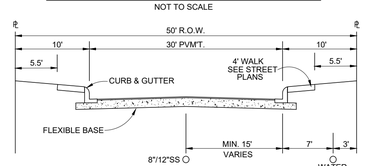
ALL WATER PIPE TO BE C-909, CLASS 200 UNLESS OTHERWISE NOTED

CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES AND TIE-IN POINTS. CONTRACTOR TO CONTACT ENGINEER WITH ANY DISCREPANCIES.



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



TYPICAL MINOR STREET SECTION

NOT TO SCALE

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 SITE(S) 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 THE 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.

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

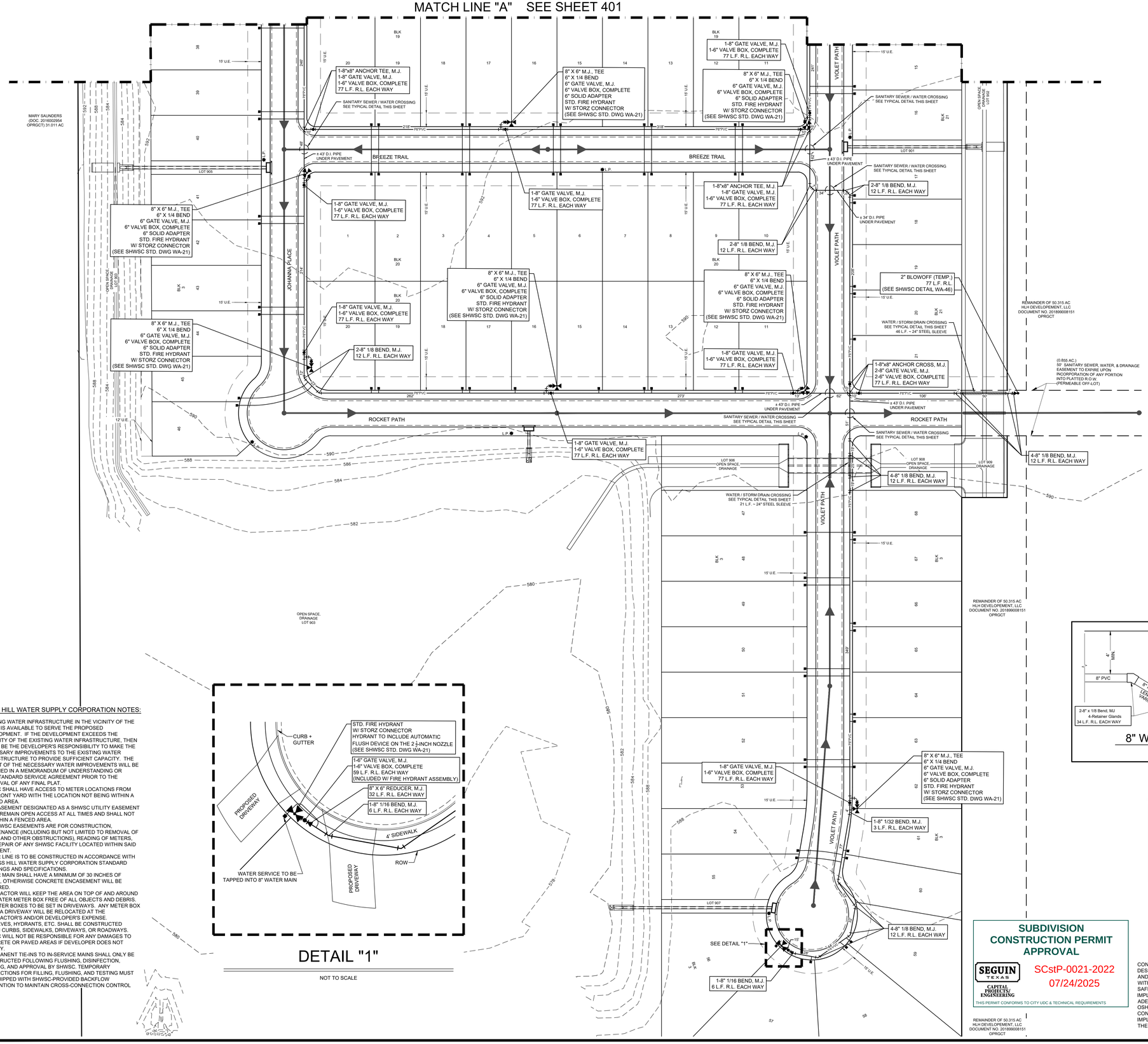
WATER OVERALL PLAN

SHEET NO.
401

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

Date: Jun 16, 2023, 7:03pm User ID: MaryStewart File: L:\Develop\Proj\2021\02621202_Swenson Heights Unit 4\plots\02621202 401 WATER OVERALL.dwg

MATCH LINE "A" SEE SHEET 401



SPRINGS HILL WATER SUPPLY CORPORATION NOTES:

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DETAIL "1"

NOT TO SCALE

N

0 50' 100'

1" = 50'

LEGEND

EXISTING SANITARY SEWER MAIN	E8"SS
PROPOSED SANITARY SEWER MAIN	P8"SS
DIRECTION OF FLOW	
EXISTING WATER MAIN	E8"PVC
PROPOSED WATER MAIN	P8"PVC
PROPOSED LIGHT POLE (100 WATT LED)	L.P.
3/4" SINGLE SERVICE WITH 5/8" METER	
RESTRAIN LENGTH	R.L.
PROPOSED FIRE HYDRANT	

FIRE HYDRANT NOTE: ONLY APPROVED SPRING HILL WATER SUPPLY CORPORATION FIRE HYDRANT ASSEMBLIES CAN BE UTILIZED, BUT LOCATION OF FIRE HYDRANT AND 6" CLEARANCES FROM SIDEWALK AND WHEELCHAIR RAMPS MUST BE ACHIEVED.

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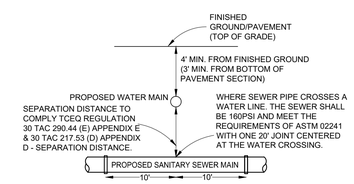
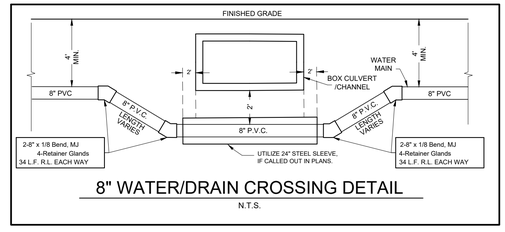
ALL WATER PIPE TO BE C-909, CLASS 200 UNLESS OTHERWISE NOTED



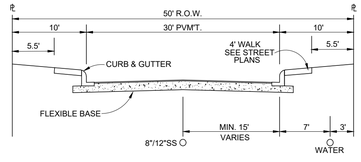
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE



8" WATER/DRAIN CROSSING DETAIL

N.T.S.



TYPICAL MINOR STREET SECTION

NOT TO SCALE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022

07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

TRENCH EXCAVATION SAFETY PROTECTION

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DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS MARY P. STEWART 108905 LICENSED PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE

SWENSON HEIGHTS SUBDIVISION UNIT 4

WATER OVERALL PLAN

SHEET NO.

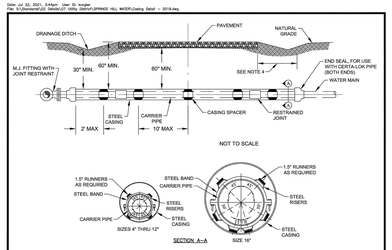
402

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

Date: Jun 16, 2023, 10:05pm User: ID: \\dfp\Shared Files - L:\Swenson Prop\2021\E0621202 Swenson Heights Unit 4\civil\E0621202 401 WATER OVERALL.dwg

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

Date: Jul 22, 2021, 3:44pm User ID: kreigler
File: X:\Standards\CE Details\07 Utility Details\SPRINGS HILL WATER\Casing Detail - 2019.dwg

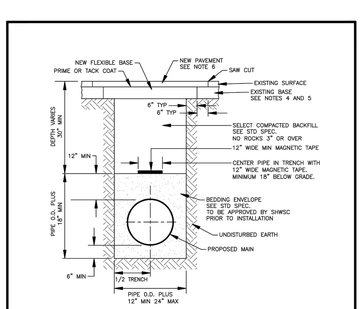


CARRIER PIPE			STEEL CASING					CASING SPACERS	
NOMINAL SIZE (IN)	PIPE OUTSIDE DIAMETER (IN)	RESTRAINT OUTSIDE DIA. (IN)	MIN. NOMINAL SIZE(IN)	OUTSIDE DIAMETER (IN)	INSIDE DIAMETER (IN)	WALL THICKNESS (IN)	WEIGHT CLASS	BAND WIDTH	No. OF SPACERS PER PIPE
4	4.80	9.25	10	10.750	10.25	0.25	STANDARD	8"	2 TOP, 2 BOTTOM
6	6.90	11.25	12	12.750	12.250	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
8	9.05	13.40	16	16.500	16.000	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
12	13.20	16.90	20	20.000	19.150	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
16	17.40	25.51	30	30.000	29.250	0.375	STANDARD	8"	2 TOP, 4 BOTTOM

NOTES:

1. CARRIER PIPE SIZES ARE BASED ON CERTA-LOK C900/RJ FOR 4" TO 12" PIPE DIAMETER AND CERTA-LOK C905/RJ FOR 14" TO 24" PIPE DIAMETER.
2. STEEL CASING SHALL BE STANDARD WEIGHT OR HEAVIER PIPE CONFORMING TO ASTM A-36, ASTM A-568, ASTM A-135, ASTM A-139 OR OTHER ACCEPTABLE STANDARD SPECIFICATION. PIPE SHALL BE COATED AND LINED IN ACCORDANCE WITH AWWA C-210 OR APPROVED EQUAL. PIPE JOINTS SHALL BE WELDED IN ACCORDANCE WITH AWWA C-206. STEEL CASING SHALL BE NEW OR USED IN GOOD CONDITION ACCEPTABLE TO SPRINGS HILL WATER SUPPLY CORPORATION AND TO THE ROADWAY AUTHORITY.
3. SUBSEQUENT CASING SPACERS ARE REQUIRED FOR 4" TO 14" PIPE SIZES TO BE AT 10 FEET APART AND FOR 16" TO 30" PIPE SIZES TO BE AT 8 FEET APART WITHIN THE CASING WITH AT LEAST 3 SPACERS PER JOINT ON PIPE. ONE CASING SPACER SHALL BE REPLACED WITHIN 2 FEET OF ENDS OF CASING FOR ALL PIPE SIZES.
4. CASING PIPE SHALL EXTEND A MINIMUM OF 10 FT. PAST EDGE OF PAVEMENT ALONG TXDOT ROADWAYS AND A MINIMUM OF 5 FT. PAST EDGE OF PAVEMENT ALONG ALL OTHER ROADWAYS UNLESS OTHERWISE DIRECTED BY ENGINEER OR REGULATORY AUTHORITY.
5. CASING SPACERS SHALL BE MADE FROM T-304 STEEL OF A MINIMUM 14 GAUGE THICKNESS.
6. CASING SPACERS SHALL HAVE A SYNTHETIC RUBBER OR PVC LINER TO INSULATE THE PIPELINE FROM THE SPACER.
7. CASING SPACERS SHALL HAVE A 1.5" WIDE GLASS REINFORCED PLASTIC OR UHMW POLYMER RUNNERS TO INSULATE THE SPACER FROM THE CASING

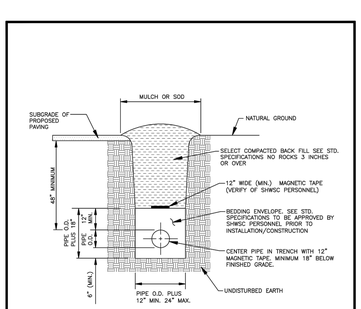
SPRINGS HILL WATER SUPPLY CORPORATION	CASING DETAIL		
	DATE: 03/03/2010	REVISIONS: 07/22/2021	STANDARD NO. WA-1



NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN THE UNDISTURBED SIDES OF THE EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT PAVING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND, OF EQUAL THICKNESS, OR WITH MINIMUM BASE THICKNESS OF 10 INCHES WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT AREA SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 8 INCHES OF BASE OR MATCH EXISTING, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 2 INCHES, WHICHEVER IS GREATER.
7. ALL WATER LINES SHALL HAVE A MINIMUM PRESSURE CLASS OF 200 PSI.

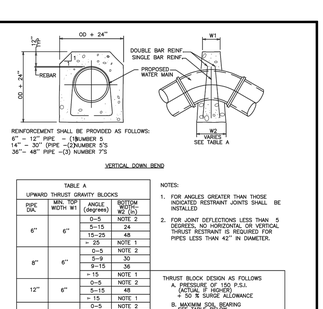
SPRINGS HILL WATER SUPPLY CORPORATION	TRENCH WITH PAVED SURFACE		
	DATE: 07/26/2010	REVISIONS:	STANDARD NO. WA-4



NOTES:

1. ALL WATER LINES SHALL HAVE A MINIMUM PRESSURE CLASS OF 200 P.S.I.
2. BEDDING AND BACKFILL SHALL BE COMPACTED TO 90% STANDARD PROCTOR

SPRINGS HILL WATER SUPPLY CORPORATION	TRENCH WITH UNFINISHED SURFACE		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA-5



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS:
6" – 12" PIPE – (1)NUMBER 5
14" – 30" (PIPE –(2)NUMBER 5'S
36" – 48" PIPE –(3) NUMBER 5'S

VERTICAL DOWN BEND

TABLE A UPWARD THRUST GRAVITY BLOCKS			
PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6"	6"	0–5	NOTE 2
		5–15	24
		15–25	48
		> 25	NOTE 1
8"	6"	0–5	NOTE 2
		5–9	30
		9–15	36
		> 15	NOTE 1
12"	6"	0–5	NOTE 2
		5–15	48
		> 15	NOTE 1
16"	12"	0–5	NOTE 2
		5–10	60
		10–15	96
		> 15	NOTE 1
24" THRU 36"		> 3.0	NOTE 1
42" THRU 48"		> 3.0	NOTE 1

NOTES:

1. FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINT JOINTS SHALL BE INSTALLED
2. FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

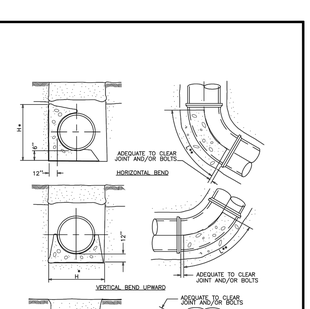
THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I.
(ACTUAL IF HIGHER)
+ 50 % SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING
SEE TABLE BELOW

SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb./Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb./Sq.Ft.

NOTES:

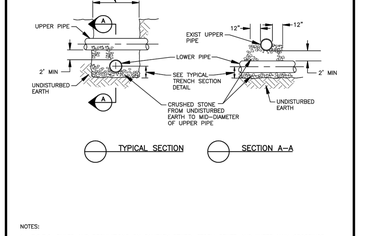
1. THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL. IF NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL ADEQUATE THRUST BLOCKING. THE CONTRACTOR SHALL MAKE THE DETERMINATION IN THE FIELD AS TO TYPE OF SOIL AND USE THE "THRUST BLOCKING DESIGN" TO ADJUST THE AMOUNTS OF THRUST BLOCKING REQUIRED AT EACH PLACE OF USE.
3. ALL FITTINGS SHALL BE BLOCKED REGARDLESS OF THE ANGLE OF DIRECTION.
4. ALL JOINTS WITHIN 30' OF BEND MUST BE RESTRAINED.

SPRINGS HILL WATER SUPPLY CORPORATION	THRUST BLOCK DETAILS SHT 1 OF 2		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA-6



* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

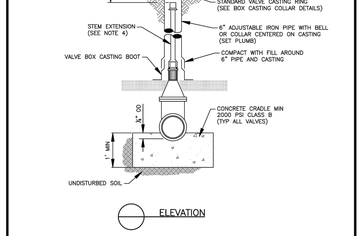
SPRINGS HILL WATER SUPPLY CORPORATION	THRUST BLOCK DETAILS SHT 2 OF 2		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA-6



NOTES:

1. T.C.E.Q. RULES AND REGULATIONS ON SANITARY SEWER, STORM SEWER AND WATER MAIN CROSSINGS AND SEPARATIONS SHALL BE STRICTLY ENFORCED, 30 TAC CHAPTER 290, SUBCHAPTER D.
2. ALL OTHER UTILITIES TO MAINTAIN 5 FOOT SEPARATION FROM WATER MAINS AND SERVICES, GAS, ELECTRIC, CABLE (ETC.) TO BE LOCATED OPPOSITE SIDES OF PROPERTY.
3. UTILITY CROSSINGS SEPARATED BY LESS THAN 12 INCHES, PIPES SHALL BE ENCASED WITH 6 INCHES OF CONCRETE ALL AROUND AND CENTERED TO CROSSING FOR A MINIMUM LENGTH OF 20 FEET TOTAL.
4. SPECIFICATIONS, BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED S.H.W.S.C. PERSONNEL, BEFORE START OF JOB.
5. AT ANY CREEK CROSSING THE MAIN SHALL BE STEEL ENCASED AND/OR 6" CONCRETE ENCASEMENT TO WITHIN 10 FEET OUTSIDE OF CREEK OR DRAINAGE DITCH AREA.

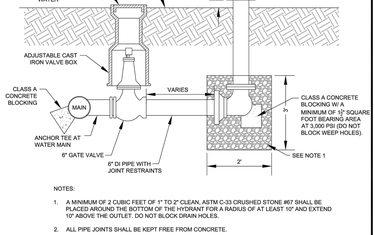
SPRINGS HILL WATER SUPPLY CORPORATION	UTILITY CROSSING		
	DATE: 06/15/2010	REVISIONS:	STANDARD NO. WA-7



NOTES:

1. WELD SOCKET 2⅜" X 3" DEEP TO 1" (SCH. 40) ROUND STEM EXTENSION. FITTED ON OPERATING NUT, SCH. 80 FOR LENGTHS OVER 10'.
2. STANDARD VALVE CASTING RING AND METAL LID IN UNPAVED AREAS.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18 TO 24 INCHES FROM FINISHED GRADE.

SPRINGS HILL WATER SUPPLY CORPORATION	4" TO 24" VERTICAL GATE VALVE WITH BOX ASSEMBLY		
	DATE: 06/15/2010	REVISIONS:	STANDARD NO. WA-19



NOTES:

1. A MINIMUM OF 2 CUBIC FEET OF 1" TO 2" CLEAN, ASTM C-33 CRUSHED STONE #67 SHALL BE PLACED AROUND THE BOTTOM OF THE HYDRANT FOR A RADIUS OF AT LEAST 10" AND EXTEND 10" ABOVE THE OUTLET. DO NOT BLOCK DRAIN HOLES.
2. ALL PIPE JOINTS SHALL BE KEPT FREE FROM CONCRETE.
3. ALL FITTINGS AND FITTING JOINTS MUST BE WRAPPED WITH THREE LAYERS OF 8-MIL POLYETHYLENE IN ACCORDANCE WITH AWWA C105-10, OR LATEST VERSIONS THERE OF.
4. POLYWRAP SHALL BE SECURED WITH A MINIMUM OF THREE CIRCUMFERENTIAL TURNS OF POLYTAPE.
5. THE FIRE HYDRANT SHALL BE PLACED A MINIMUM OF 5 FEET FROM ALL OBSTRUCTIONS.
6. ALL NEW FIRE HYDRANTS SHALL BE MARKED WITH A FOUR-INCH BY FOUR-INCH BY THREE-FOURTHS-INCH TALL, BLUE REFLECTIVE PAVEMENT MARKER (BLUE REFLECTIVE EYE) LOCATED THREE FEET OFF-CENTER OF THE STREET TOWARDS THE HYDRANT. ALL MARKERS MUST BE APPROVED BY FIRE AND UTILITIES DEPARTMENT.
7. FIRE FLOW SHALL BE TESTED WITH THE FLOWS AND PRESSURES PROVIDED TO SHWSC.
8. ALL VALVES AND FIRE HYDRANTS SHALL BE LOCATED BY GPS AND PROVIDED TO SHWSC IN TEXAS STATE PLANE COORDINATES, NAD 83 (93) SOUTH CENTRAL ZONE.
9. INSTALL ONE INLINE GATE VALVE AT ONE SIDE OF TEE THAT CONNECTS FIRE HYDRANT ASSEMBLY TO WATER MAIN.

SPRINGS HILL WATER SUPPLY CORPORATION	STANDARD FIRE HYDRANT INSTALLATION		
	DATE: 8/20/2021	REVISIONS:	STANDARD NO. WA-21

Date: Mar 15, 2022, 4:41pm User ID: kreigler
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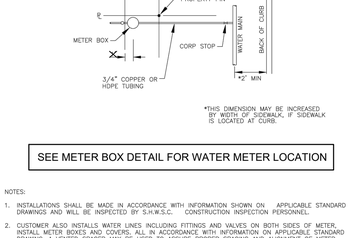


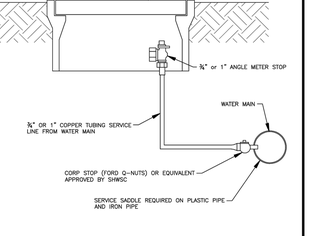
*THIS DIMENSION MAY BE INCREASED BY WIDTH OF SIDEWALK, IF SIDEWALK IS LOCATED AT CURB.

SEE METER BOX DETAIL FOR WATER METER LOCATION

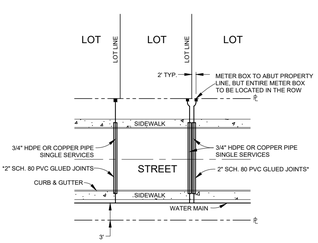
NOTES:

1. INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY S.H.W.S.C. CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS, ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO S.H.W.S.C. SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
4. S.H.W.S.C. ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO S.H.W.S.C. WATER SYSTEMS. FOR MAINTENANCE PURPOSES, S.H.W.S.C. RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT–OFF VALVE.
5. NO METER BOX SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM S.H.W.S.C.
6. PIPING AND TUBING IN STREET RIGHT–OF–WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIAL AS REQUIRED IN THE SPECIFICATIONS. SERVICE LINES SHALL HAVE A MINIMUM COVER BELOW FINAL GRADE OF 42–INCHES.

SPRINGS HILL WATER SUPPLY CORPORATION	SINGLE WATER SERVICE CONNECTION		
	DATE: 06/16/2010	REVISIONS: 03/15/2022	STANDARD NO. WA-22

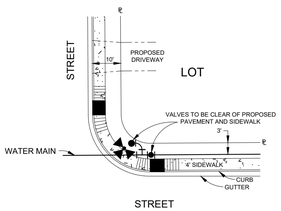


SPRINGS HILL WATER SUPPLY CORPORATION	3/4" AND 1" SERVICE INSTALLATION		
	DATE: 11/24/2009	REVISIONS:	STANDARD NO. WA-24



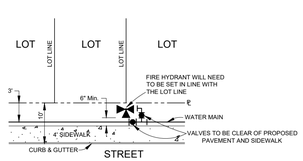
METER BOX DETAIL

NOT TO SCALE
*SERVICES MUST BE SLEEVED 5' PAST FACE OF CURB



FIRE HYDRANT DETAIL @ CORNER

NOT TO SCALE
FIRE HYDRANT NOTE: ONLY APPROVED SPRING HILL WATER SUPPLY CORPORATION FIRE HYDRANT ASSEMBLIES CAN BE UTILIZED, BUT LOCATION OF FIRE HYDRANT AND 6" CLEARANCES FROM SIDEWALK AND WHEELCHAIR RAMPS MUST BE ACHIEVED.



FIRE HYDRANT DETAIL ON LOCAL "A"

NOT TO SCALE
FIRE HYDRANT NOTE: ONLY APPROVED SPRING HILL WATER SUPPLY CORPORATION FIRE HYDRANT ASSEMBLIES CAN BE UTILIZED, BUT LOCATION OF FIRE HYDRANT AND 6" CLEARANCES FROM SIDEWALK AND WHEELCHAIR RAMPS MUST BE ACHIEVED.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8998
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

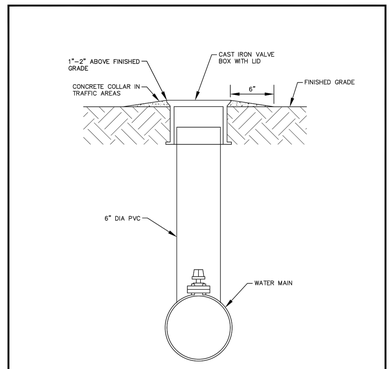
REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

WATER DETAILS

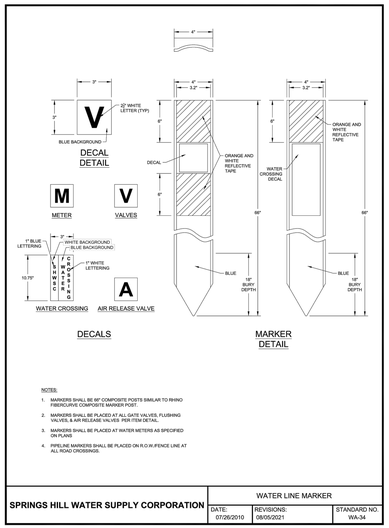
SHEET NO.
403

Date: Jun 16, 2023, 7:02pm User ID: MaryStewart File: L:\Drawings\Proj_2021\E0621202_Swenson Heights Unit 4\Cad\E0621202 403 - 404 WATER DETAILS.dwg



SPRINGS HILL WATER SUPPLY CORPORATION — STANDARD VALVE BOX INSTALLATION

DATE:	REVISIONS:	STANDARD NO.
11/24/2009		WA-27

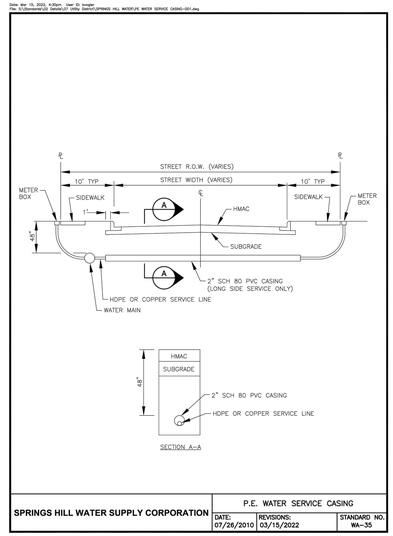


NOTES:

1. MARKERS SHALL BE 66" COMPOSITE POSTS SIMILAR TO RHINO FIBERCURVE COMPOSITE MARKER POST.
2. MARKERS SHALL BE PLACED AT ALL GATE VALVES, FLUSHING VALVES, & AIR RELEASE VALVES PER ITEM DETAIL.
3. MARKERS SHALL BE PLACED AT WATER METERS AS SPECIFIED ON PLANS
4. PIPELINE MARKERS SHALL BE PLACED ON R.O.W./FENCE LINE AT ALL ROAD CROSSINGS.

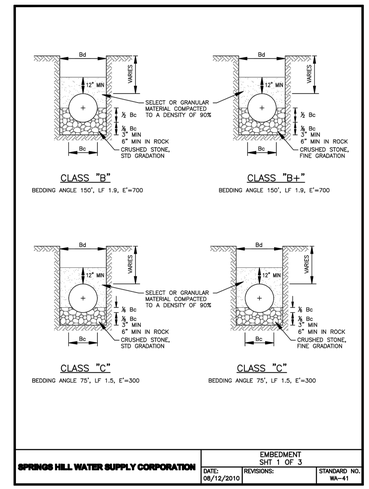
SPRINGS HILL WATER SUPPLY CORPORATION — WATER LINE MARKER

DATE:	REVISIONS:	STANDARD NO.
07/26/2010	09/05/2021	WA-34



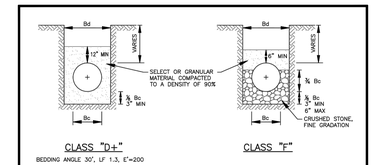
SPRINGS HILL WATER SUPPLY CORPORATION — P.E. WATER SERVICE CASING

DATE:	REVISIONS:	STANDARD NO.
07/26/2010	03/15/2022	WA-35



SPRINGS HILL WATER SUPPLY CORPORATION — EMBEDMENT SHT 1 OF 3

DATE:	REVISIONS:	STANDARD NO.
08/12/2010		WA-41



EMBEDMENT FOR WATER LINES						
	IN EARTH			IN ROCK		
TYPE OF PIPE	0'-8"	8'-16"	>16'	0'-8"	8'-16'	>16'
18" AND SMALLER DUCTILE IRON WATER LINE	D+	C	C	D+	C	B
18" AND LARGER DUCTILE IRON WATER LINE	D+	B	B	D+	B	B
ALL PVC WATER LINE	C+	B+	B+	C+	B+	B+
24" & 30" RCCP	D+	B	B	D+	B	B

NOTES:

1. PIPE EMBEDMENT SHALL CONFORM TO DETAILS SHOWN HEREIN.
2. SECONDARY BACKFILL SHALL EXTEND FROM ABOVE THE EMBEDMENT TO BELOW THE PAVEMENT REPAIR SECTION WITHIN PAVEMENT AREA AND TO BELOW THE TOPSOIL SECTION OUTSIDE PAVEMENT AREAS.
3. SECONDARY BACKFILL SHALL CONSIST OF SELECT MATERIAL INCLUDING GRAVEL, FINE ROCK CUTTINGS, SAND, SANDY LOAM, OR LOAM FREE FROM EXCESSIVE CLAY, ROCK CUTTINGS SHALL HAVE NO DIMENSION GREATER THAN TWO INCHES. TRENCH CUTTINGS MAY BE UTILIZED AS SELECT MATERIAL PROVIDED THE CONDITIONS OF THIS PARAGRAPH ARE MET.
4. SECONDARY BACKFILL SHALL BE MECHANICALLY COMPACTED TO 95% STANDARD PROCTOR DENSITY WITHIN PAVEMENT AREAS AND TO 90% STANDARD PROCTOR DENSITY OUTSIDE PAVEMENT AREAS.

SPRINGS HILL WATER SUPPLY CORPORATION — EMBEDMENT SHT 2 OF 3

DATE:	REVISIONS:	STANDARD NO.
08/12/2010		WA-41

EMBEDMENT DIMENSIONS			
PIPE DIAMETER (INCHES)	KIND OF PIPE	EXTERNAL DIAMETER Bc (INCHES)	TRENCH WIDTH Bd (INCHES)
6	PVC WATER	6.90	24
6	DI WATER	6.90	24
8	PVC WATER	9.05	25
8	DI WATER	9.05	25
8	PVC	8.40	25
12	PVC WATER	13.20	29
12	DI WATER	13.20	29
12	PVC	12.40	29
16	DI WATER	17.40	33
16	PVC WATER	17.40	33
18	DI WATER	19.50	36
18	PVC WATER	19.50	36
20	DI WATER	21.60	38
20	PVC WATER	21.60	38
24	PVC WATER	25.80	42
24	DI WATER	25.80	42
24	RCCP WATER	30.00	48
30	PVC WATER	32.00	48
30	DI WATER	32.00	48
30	RCCP WATER	32.00	48

NOTES:

1. RCCP = REINFORCED CONCRETE CYLINDER PIPE.
2. EMBEDMENT DIMENSION FOR HDPE PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.

SPRINGS HILL WATER SUPPLY CORPORATION — EMBEDMENT SHT 3 OF 3

DATE:	REVISIONS:	STANDARD NO.
08/12/2010		WA-41

NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. FINISH BY REMOVING FINS AND FLASHING; PAINT WITH BLACK ASPHALT COATING,
5. WEIGHT: APPROXIMATELY 17 LBS.

SPRINGS HILL WATER SUPPLY CORPORATION — VALVE BOX CASTING COLLAR (NOT IN PAVEMENT)

DATE:	REVISIONS:	STANDARD NO.
07/28/2010		WA-42

NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. TYPICAL FILLET IS 3/16" RADIUS.
3. LETTERING SHALL BE 1 1/2" HEIGHT AND LOCATED AS SHOWN.
4. THIS LID FITS INSIDE 6" I.D. PIPE.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING; PAINT WITH BLACK ASPHALT COATING,
8. WEIGHT: APPROXIMATELY 13 LBS.

SPRINGS HILL WATER SUPPLY CORPORATION — VALVE BOX CASTING LID (NOT IN PAVEMENT)

DATE:	REVISIONS:	STANDARD NO.
07/28/2010		WA-44

NOTE:
1. BURIED PIPING, FITTINGS, AND FITTINGS JOINTS SHALL BE WRAPPED IN POLYWRAP.
2. THE EARTHBEARING SURFACE SHALL BE THE UNDISTURBED TRENCH WALL.
3. ALL PIPE JOINTS SHALL BE KEPT FREE FROM CONCRETE.
4. POLYWRAP SHALL BE SECURED WITH A MINIMUM OF THREE CIRCUMFERENTIAL TURNS OF POLY TAPE.

NOT TO SCALE

SPRINGS HILL WATER SUPPLY CORPORATION — TEMPORARY BLOW OFF 8-INCH OR SMALLER

DATE:	REVISIONS:	STANDARD NO.
10/21/2021		WA-46

TYPICAL MINOR STREET SECTION

NOT TO SCALE

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

NOT TO SCALE

REV	DATE	DESCRIPTION

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8999
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS / ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SWENSON HEIGHTS SUBDIVISION UNIT 4

WATER DETAILS

SHEET NO.
404

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Date: Jun 16, 2023, 11:03pm User ID: MaryStewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\color\E0621202 403 - 404 WATER DETAILS.dwg

STREET & DRAIN CONSTRUCTION PLANS for SWENSON HEIGHTS UNIT 4

LEGEND

WHEELCHAIR RAMPS	
WHEELCHAIR RAMP TYPE (I-IV)	①②③④
SINGLE DIRECTIONAL WHEELCHAIR RAMP	D1
DUAL DIRECTIONAL WHEELCHAIR RAMP	D2
WASHOUT CROWN	
SIDEWALK TO BE BUILT BY DEVELOPER	
PROPOSED DRIVEWAY	DW
TOP OF PVMT. ELEVATION	940.00
EXISTING STREET LIGHT	• ELP
PROPOSED STREET LIGHT (100 WATT)	• LP

GENERAL NOTES

1. All materials and construction procedures within the scope of this project shall, be approved by the City of Seguin Public Works and comply with the following as applicable:
A. Reference to Current City of Seguin "Design Standards"

2. The locations and depths of existing utilities, including service laterals, and drainage structures shown on the plans are approximate only. The Contractor shall verify the exact location and depths of underground utilities at least 48 hours prior to construction whether shown on plans or not, and to protect the same during construction. Texas State Wide One Call Locator 1-800-545-6005 City Public Service AT&T Time Warner Valero Energy Co.

3. The Contractor shall notify the City prior to the start of each phase of street construction and call for inspections with a minimum of 24 hours notice.

4. Testing will be paid for by Developer, coordinated by Contractor, and witnessed by City.

5. Minimum Testing Schedule:

Densities - Subgrade	1 Per 500 Foot Minimum
Densities - Base	1 Per 500 Foot Minimum
Proctors - Subgrade	1 Per Material Per Subdivision
Proctors - Base	1 Per 5,000 C.Y.
Lime Series - Subgrade	1 Per Material Per Subdivision
Concrete - Structures	1 Set (3) Per 50 C.Y.

6. Transition washout crown to normal crown in 25'.

7. No extra payment shall be allowed for work called for on the plans, but not included in the bid proposal. This incidental work will be required and shall be included in the pay item to which it relates.

8. The contractor shall be responsible for restoring to its original or better condition any damage done to existing fences, concrete islands, street paving, curbs, shrubs, bushes or driveways. (No separate pay item).

9. Due to federal regulations Title 49, Part 192.171 GVEC must maintain access to gas valves at all times. The contractor must protect and work around any gas valves that are in the project area.

10. Contractor shall notify the city inspector twenty four (24) hours prior to backfill of any utility trenches to schedule for density test as required.

11. All waste material shall become property of the contractor and shall be his sole responsibility to dispose of this material off the limits of the project. No waste material shall be placed in existing lows that will block or alter flow limits of existing artificial or natural drainage.

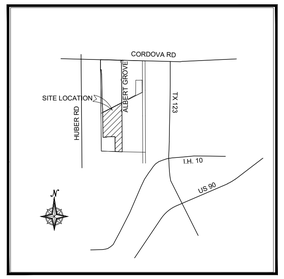
12. The contractor shall not place any waste material in the 100-year flood plain without first obtaining an approved Flood Plain Development Permit.

13. The contractor shall maintain all adjoining streets and traveled routes free from spilled and/or tracked construction materials and/or debris.

14. It is the contractor's responsibility to see that all signs and barricades are properly installed and maintained. All locations and distances will be decided upon in the field by the contractor, using the "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". The City's construction inspector will only be responsible to inspect barricades and signs. If, in the opinion of the construction inspector, the barricades and signs do not conform to established standards or are incorrectly placed or are insufficient in quantity to protect the general public, the inspector shall have the option to stop operations until such time as the conditions are corrected.

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 SITE(S) 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 THE 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.



LOCATION MAP
NOT TO SCALE

SHEET LIST TABLE

SHEET	TITLE
500	STREET COVER
501	OVERALL GRADING PLAN
502	OVERALL GRADING PLAN
503	VIOLET PATH PLAN & PROFILE
504	VIOLET PATH PLAN & PROFILE
505	JOHANNA PLACE PLAN & PROFILE
506	JOHANNA PLACE PLAN & PROFILE
507	ROCKET PATH PLAN & PROFILE
508	BREEZE TRAIL PLAN & PROFILE
509	BRIGHT TRAIL PLAN & PROFILE
510	STAR PATH & JULIA RUN PLAN & PROFILE
511	CULVERT DRAIN A PLAN & PROFILE
512	CULVERT DRAIN A PLAN & PROFILE
513	DRAIN B PLAN & PROFILE
514	DRAIN C PLAN & PROFILE
515	DRAIN D PLAN & PROFILE
516	DRAIN E PLAN & PROFILE
517	DRAIN F PLAN & PROFILE
518	DRAIN G PLAN & PROFILE
519	DRAIN DETAILS
520	DRAIN DETAILS
521	DRAIN DETAILS
522	DRAIN DETAILS
523	STREET DETAILS
524	STREET DETAILS
525	SIGN PLAN
526	SIGN PLAN

STREET IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
103.1	Remove Header Curb, Timber Guard Post, End of Road Markers	LF	64
104.1	Street Excavation	CY	17,606
107.1	Embankment (Final) (Dens. Cont.) (Type A)	CY	2,602
108.1	Lime Stabilized Subgrade (6" Compacted Depth)	SY	21,748
108.2	Lime (35#/S.Y.)	TON	338
200.1	12" Flexible Base - Local A	SY	21,748
202.1	Prime Coat	GAL	4,350
203.1	Tack Coat	GAL	1,808
205.4	2" Hot Mix Asphaltic Pavement (Type D) - Local A	SY	18,072
500.1	Concrete Curb and Gutter w/ Rebar	LF	10,939
500.1	Header Curb	LF	30
502.1	Concrete Sidewalk	SY	396
531.3	R1-1 Stop (30"x30") (High Intensity)	EA	10
531.6	W14-2P No Outlet Street Marker (36"x8") (High Intensity)	EA	2
531.57	City of Seguin Approved Street Name Signs (High Intensity)	EA	20
-	RDWY-13 Permanent Barricade	EA	1
-	Two-Way Blue Reflective Marker (Fire Hydrant)	EA	13

CULVERT DRAIN "A" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
105.1	Channel Excavation	CY	14,389
307.1	Concrete Structure (Headwall + Wingwall) (Upstream Culvert)	CY	10.8
307.1	Concrete Structure (Headwall + Wingwall) (Downstream Culvert)	CY	12.0
309.1	7' x 4' M.B.C.	LF	92
505.1	Rip-Rap (6" Thick)	SY	375
505.1	Concrete Pilot Channel	SY	575
520.1	Hydromulching	SY	6,711
522.1	Sidewalk Pipe Railing	LF	96
-	Rock Rubble (12"-18")	SY	46

DRAIN "B" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	24" R.C.P. (Class III)	LF	30
403.7	10' Inlet Type CI (Complete)	EA	1
407.4	Concrete Collars	CY	0.4
505.1	Rip-Rap (6" Thick)	SY	8
550.1	Trench Excavation Safety Protection	LF	30
-	Rock Rubble (12"-18")	SY	3

DRAIN "C" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	30" R.C.P. (Class III)	LF	162
403.7	10' Inlet Type CI (Complete)	EA	1
407.4	Concrete Collars	CY	0.4
505.1	Rip-Rap (6" Thick)	SY	41
550.1	Trench Excavation Safety Protection	LF	162

DRAIN "D" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	36" R.C.P. (Class IV)	LF	163
403.7	10' Inlet Type CI (Complete)	EA	2
407.4	Concrete Collars	CY	0.5
505.1	Rip-Rap (6" Thick)	SY	37
550.1	Trench Excavation Safety Protection	LF	163

DRAIN "E" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	36" R.C.P. (Class III)	LF	148
403.7	10' Inlet Type CI (Complete)	EA	2
407.4	Concrete Collars	CY	0.5
505.1	Rip-Rap (6" Thick)	SY	40
550.1	Trench Excavation Safety Protection	LF	148

DRAIN "F" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	24" R.C.P. (Class III)	LF	148
403.7	10' Inlet Type CI (Complete)	EA	1
407.4	Concrete Collars	CY	0.4
505.1	Rip-Rap (6" Thick)	SY	38
550.1	Trench Excavation Safety Protection	LF	148

DRAIN "G" IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	EST/QTY
401.1	24" R.C.P. (Class III)	LF	174
403.7	10' Inlet Type CI (Complete)	EA	1
407.4	Concrete Collars	CY	0.4
505.1	Rip-Rap (6" Thick)	SY	14
550.1	Trench Excavation Safety Protection	LF	174
-	Rock Rubble (12"-18")	SY	3

OWNER/DEVELOPER:
BELLA VISTA C.M.I., LTD.
2714 N, LOOP 1604 E SUITE 105
SAN ANTONIO, TEXAS 78232
PHONE: (210) 402-0642

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
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SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

STREET COVER

SHEET NO. 500

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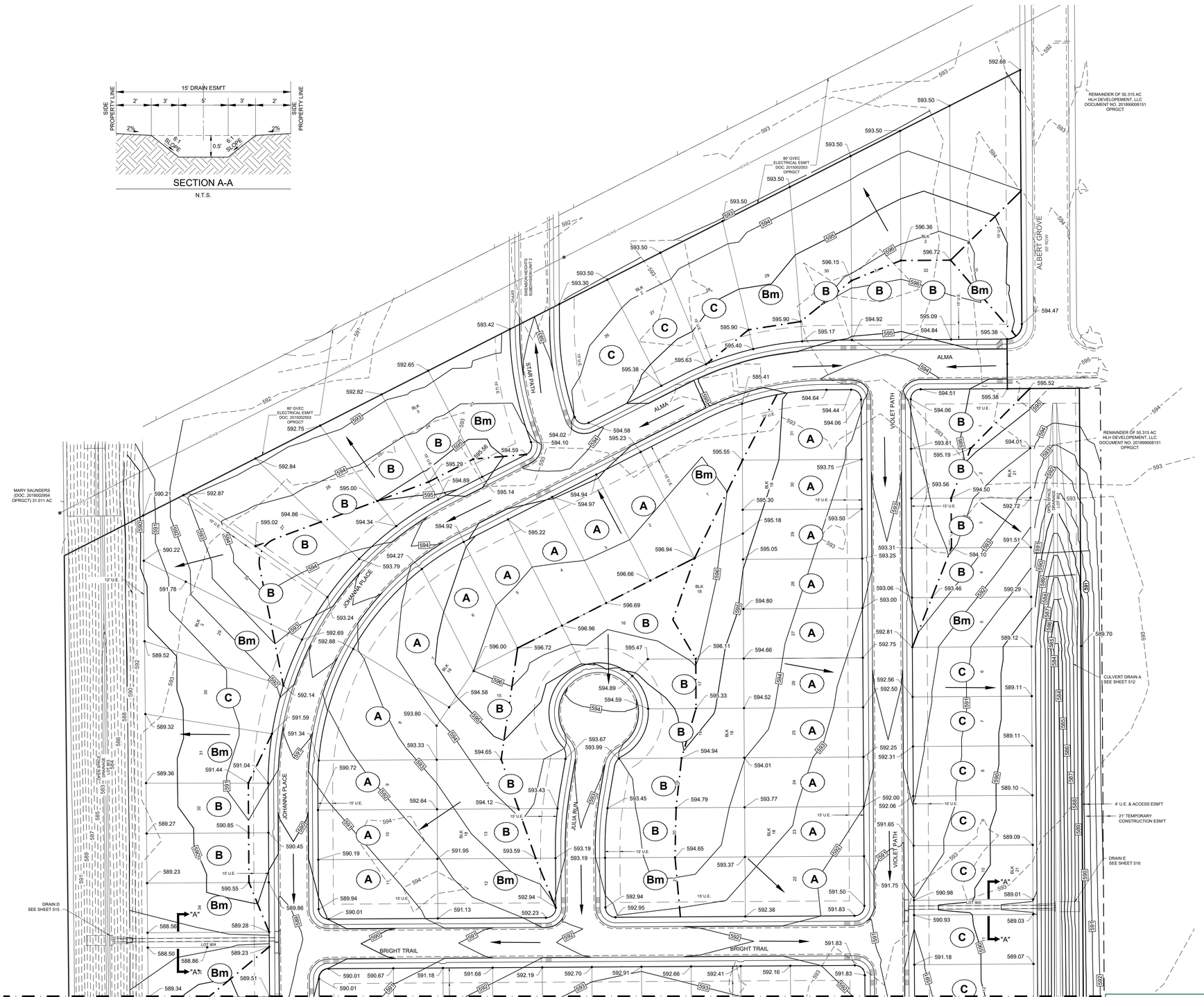
Date: Jun 16, 2023, 1:05pm User ID: MaryStewart File: L:\Drawings\Proj_2021\06\2021062_Swenson Heights Unit 4\closd\06212021 500 STREET COVER.dwg

SECTION A-A

N.T.S.



MATCH LINE "A" - SEE SHEET 502

0 50' 100'

1" = 50'

LEGEND

740 PROPOSED FINISHED CONTOUR

740 EXISTING CONTOUR

A, B & C LOT GRADING TYPE

A-LOT DRAINS TO FRONT
B-LOT DRAINS TO FRONT AND REAR
C-LOT DRAINS TO REAR

NOTES:

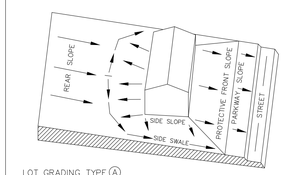
1. DRIVEWAYS SHALL BE LOCATED ON THE HIGH SIDE OF EACH LOT.
2. FINISHED FLOOR ELEVATIONS SHALL BE A MINIMUM OF 8" ABOVE FINAL GRADE AFTER PLACEMENT OF TOP SOIL AND SOD.
3. FINAL LOT SWALES SHALL BE PLACED WITH HOME CONSTRUCTION.
4. CONTRACTOR SHALL GRADE EXISTING 80' GVEC EASEMENT TO DRAIN AS PART OF THE PUBLIC IMPROVEMENTS AND GRADING OF UNIT 4. STANDING WATER AND PONDED AREAS ADJACENT TO NEW RESIDENTIAL CONSTRUCTION WILL NOT BE ACCEPTABLE. NOTIFY ENGINEER OF RECORD AND CITY CONSTRUCTION PROJECT MANAGER OF ANY DISCREPANCIES WHICH WOULD AFFECT COMPLETION OF GRADING.

TRENCH EXCAVATION SAFETY PROTECTION

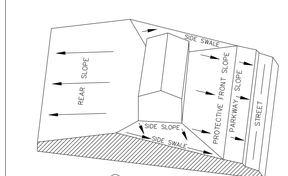
Contractor and/or contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall. review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures. The Contractor's implementation of the 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.

GENERAL NOTES

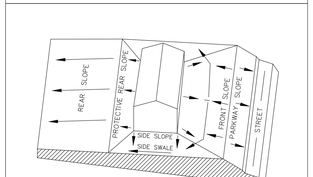
1. Fill Materials: Materials shall consist of soils approved by the Engineer from sources identified and approved. The soil shall be free of vegetable matter and other deleterious substance and shall not contain rocks or lumps having a diameter greater than six inches (6").
2. Depth and Mixing of Fill Layers: The selected fill material shall be placed in level, uniform layers which, when compacted, shall have a density conforming to required amount of compaction. Each layer shall be thoroughly blade mixed during the spreading to insure uniformity of material in each layer. Compacted layer thickness normally will be six inches (6"), however, it may be increased to twelve inches (12") if compaction equipment of demonstrated capability will be used.
3. Rock: When fill material includes rock; the maximum rock size acceptable shall be six inches (6"). No large rocks shall be allowed to nest and all voids must be carefully filled with small stones or earth, and properly compacted. No large rocks will be allowed within twelve inches (12") of the finished surface.
4. Moisture Content: The fill material shall be compacted at the appropriate moisture content specified for the soils being used and identified in soil and laboratory reports. Moisture content tolerances shall be plus or minus 3% from optimum.
5. Amount of Compaction: After each layer (lift) has been placed, mixed and spread evenly, it shall be compacted to the specified density. The specified density shall be stated as a percentage of the maximum density attainable using current ASTM D 698 to 95 percent density.
6. Compaction of Fill Layer: Compaction equipment shall be of such design that it will compact the fill to the appropriate specified density at the optimum moisture content. Compaction effort shall be continuous over each layer until density has been achieved.
7. Density Tests: Field density tests shall be made by the Soils Engineer after the compaction of each layer. When test indicate that the density of any layer or portion is below required density, the area shall be reworked until density is obtained. The number of tests shall be established by the Soil Engineer to certify to the required 79G letter requirements.



LOT GRADING TYPE (A)
ALL DRAINAGE TO STREET



LOT GRADING TYPE (B)
DRAINAGE TO STREET &
REAR LOT LINE



LOT GRADING TYPE (C)
ALL DRAINAGE TO
REAR LOT LINE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N . I N C .
11550 IH 10 WEST, SUITE 395
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TEL: (210) 641-8999
FAX: (210) 641-8440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

OVERALL GRADING PLAN

SHEET NO.

501

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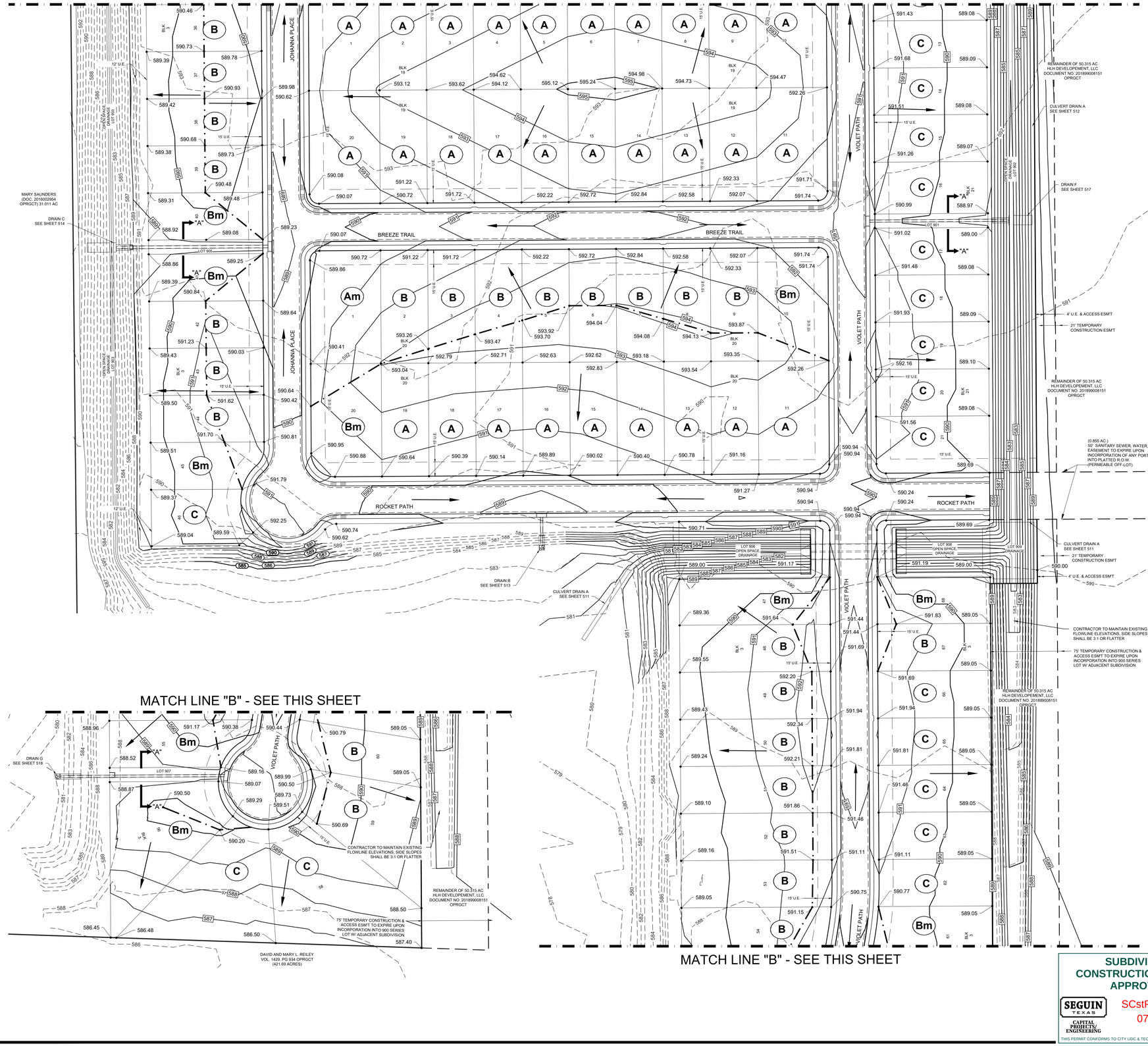
Date: Jun 16, 2023 10:58pm User: ID Xref: Sheet File: L:\Drawings\Proj\2021\E0621202_Swenson Heights Unit 4\cad\E0621202 501 SHEET GRADING PLAN.dwg

MATCH LINE "A" - SEE SHEET 501

MATCH LINE "B" - SEE THIS SHEET

MATCH LINE "B" - SEE THIS SHEET

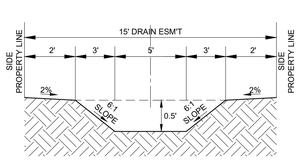


LEGEND

- 740 — PROPOSED FINISHED CONTOUR
- 740 — EXISTING CONTOUR
- A, B & C — LOT GRADING TYPE

A-LOT DRAINS TO FRONT
B-LOT DRAINS TO FRONT AND REAR
C-LOT DRAINS TO REAR

0 50' 100'
1" = 50'



SECTION A-A

N.T.S.

NOTES:

1. DRIVEWAYS SHALL BE LOCATED ON THE HIGH SIDE OF EACH LOT.
2. FINISHED FLOOR ELEVATIONS SHALL BE A MINIMUM OF 8" ABOVE FINAL GRADE AFTER PLACEMENT OF TOP SOIL AND SOD.
3. FINAL LOT SWALES SHALL BE PLACED WITH HOME CONSTRUCTION.
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GENERAL NOTES

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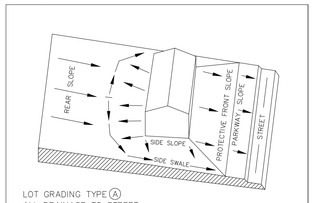
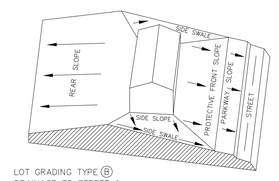
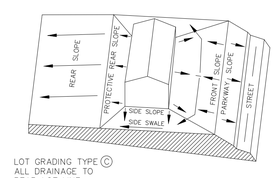
3. Rock: When fill material includes rock; the maximum rock size acceptable shall be six inches (6"). No large rocks shall be allowed to nest and all voids must be carefully filled with small stones or earth, and properly compacted. No large rocks will be allowed within twelve inches (12") of the finished surface.
4. Moisture Content: The fill material shall be compacted at the appropriate moisture content specified for the soils being used and identified in soil and laboratory reports. Moisture content tolerances shall be plus or minus 3% from optimum.
5. Amount of Compaction: After each layer (lift) has been placed, mixed and spread evenly, it shall be compacted to the specified density. The specified density shall be stated as a percentage of the maximum density attainable using current ASTM D 698 to 95 percent density.
6. Compaction of Fill Layer: Compaction equipment shall be of such design that it will compact the fill to the appropriate specified density at the optimum moisture content. Compaction effort shall be continuous over each layer until density has been achieved.
7. Density Tests: Field density tests shall be made by the Soils Engineer after the compaction of each layer. When test indicate that the density of any layer or portion is below required density, the area shall be reworked until density is obtained. The number of tests shall be established by the Soil Engineer to certify to the required 79G letter requirements.



LOT GRADING TYPE (A)
ALL DRAINAGE TO STREET



LOT GRADING TYPE (B)
DRAINAGE TO STREET &
REAR LOT LINE



LOT GRADING TYPE (C)
ALL DRAINAGE TO
REAR LOT LINE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV:	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

OVERALL GRADING PLAN

SHEET NO.
502

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Date: Jun 16, 2023, 1:08pm User: @ Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\Used\E0621202 SHT OVERALL GRADING PLAN.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

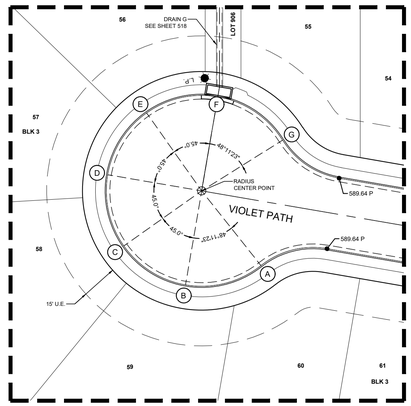
REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

LINE TABLE		
LINE	LENGTH	DIRECTION
L1	34.58'	N09°22'30"E
L2	411.38'	N00°22'00"W
L3	290.17'	N00°22'00"W
L5	580.29'	N00°22'00"W
L4	287.21'	N00°22'00"W

CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	51.01'	9°44'30"

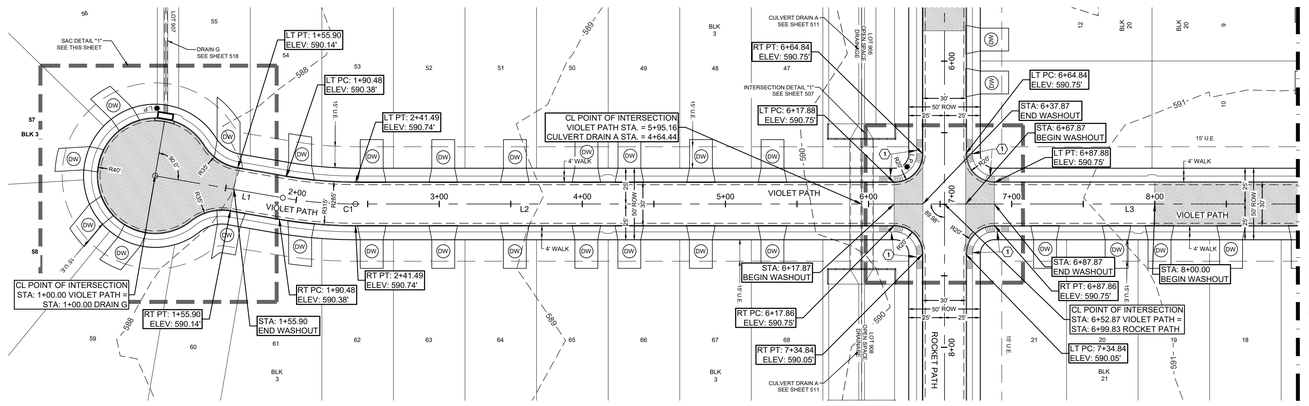
LEGEND
- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

0 50' 100'
1" = 50'



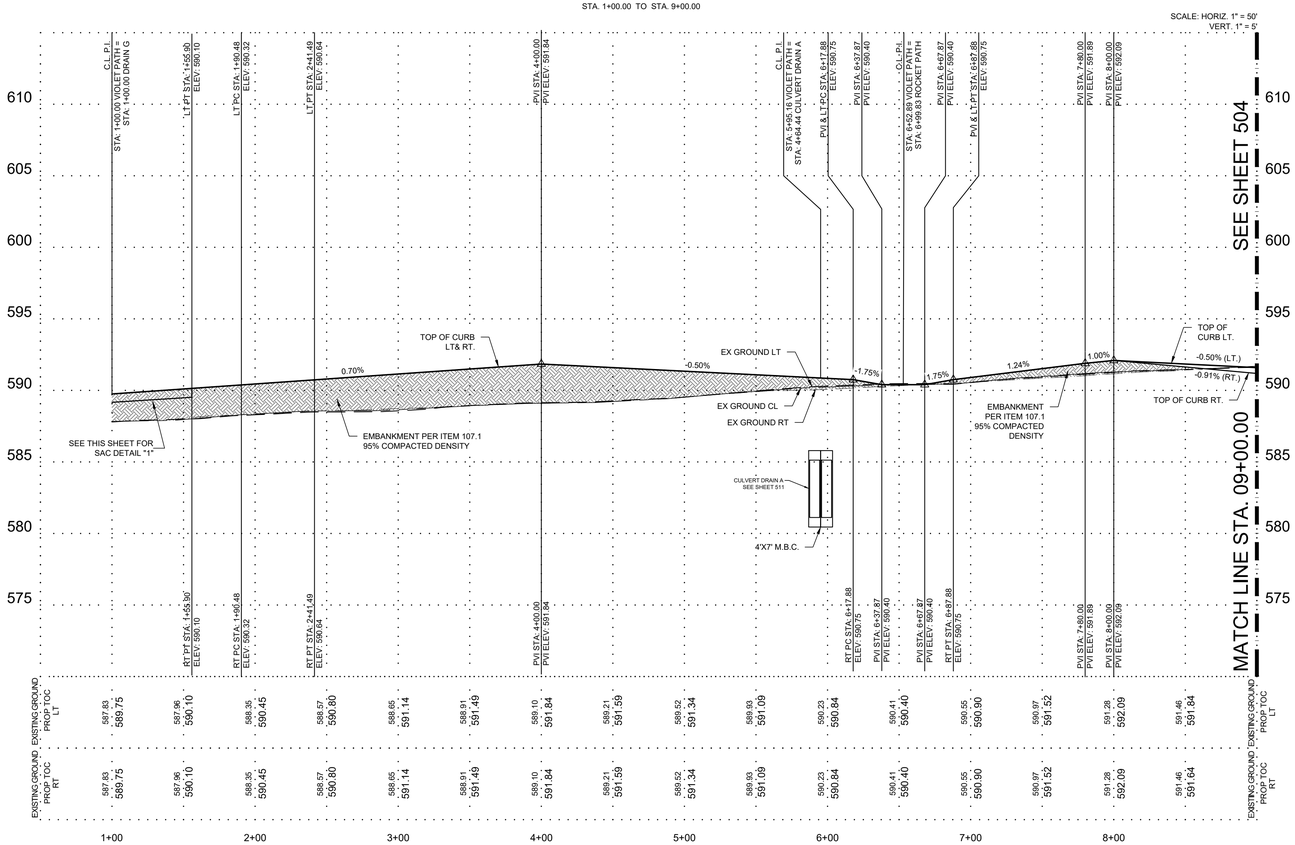
SAC DETAIL "1"
SCALE: 1" = 30'

POINT	CURB ELEV.	GUTTER ELEV.
RT. PC	590.10	589.60
A	589.90	589.40
B	589.68	589.18
C	589.47	588.97
D	589.26	588.76
E	589.05	588.55
F	588.84	588.34
G	589.51	589.01
LT. PT	590.10	589.60



VIOLET PATH
STA. 1+00.00 TO STA. 9+00.00

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



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DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SWENSON HEIGHTS SUBDIVISION UNIT 4
VIOLET PATH PLAN & PROFILE

SHEET NO.
503

Date: Jun 16, 2023, 10:48pm User ID: Mary.Stewart File: L:\Develop\Proj\2021\09\21202_Swenson Heights Unit 4\cad\SHEETS\503-504 VIOLET PATH PLAN & PROFILE.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

LINE TABLE		
LINE	LENGTH	DIRECTION
L1	34.58'	N09°22'30"E
L2	411.38'	N00°22'00"W
L3	290.17'	N00°22'00"W
L5	580.29'	N00°22'00"W
L4	287.21'	N00°22'00"W

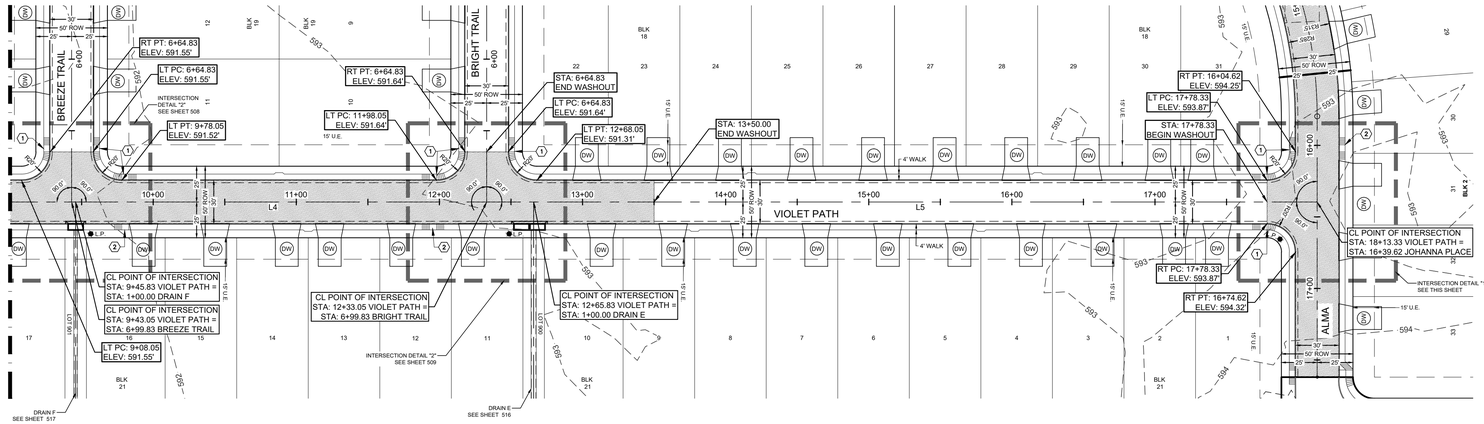
CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	51.01'	9°44'30"

LEGEND

- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY — DW
- TOP OF CURB ELEVATION — 940
- EXISTING STREET LIGHT — ELP
- PROPOSED STREET LIGHT (100 WATT) — LP
- CATCH CURB — C.C
- SPILL CURB — S.C.

0 50' 100'
1" = 50'

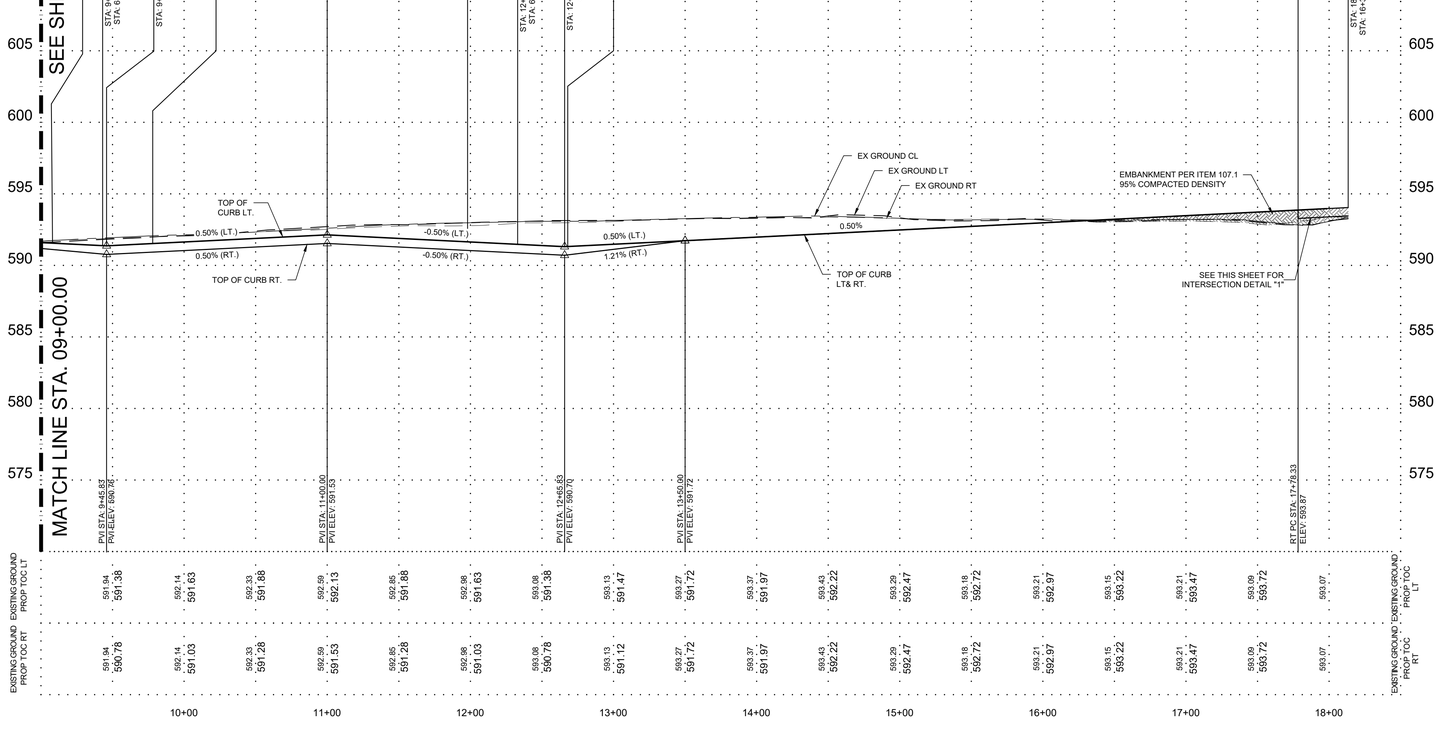
MATCH LINE STA. 09+00.00
SEE SHEET 503

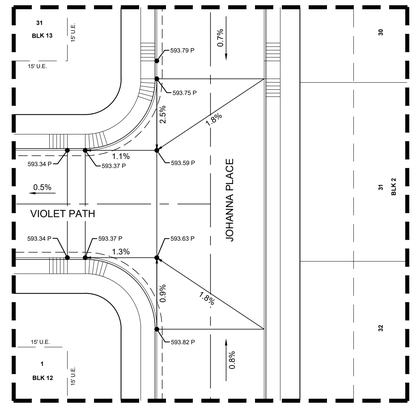


VIOLET PATH

STA. 9+00.00 TO STA. 18+13.33

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'





INTERSECTION DETAIL "1"

SCALE: 1" = 20'

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
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SWENSON HEIGHTS SUBDIVISION UNIT 4

VIOLET PATH PLAN & PROFILE

SHEET NO.
504

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Date: Jan 16, 2024, 1:01pm User: ID Mary Stewart File: L:\Develop\Proj\2021\E0621202_Swenson Heights Unit 4\cad\E0621202 SDD-504 VIOLET PATH PLAN & PROFILE.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

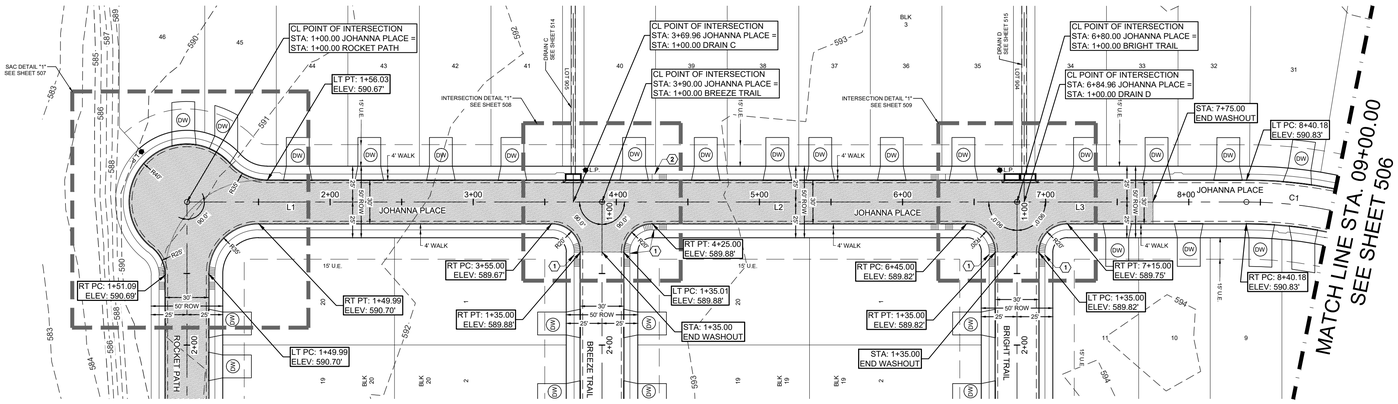
LINE TABLE		
LINE	LENGTH	DIRECTION
L1	290.00'	S00°22'00"E
L2	290.00'	S00°22'00"E
L3	160.18'	S00°22'00"E
L4	125.41'	S63°02'56"W
L5	142.99'	S63°02'56"W
L6	59.81'	S89°38'03"W
L7	122.40'	S89°38'00"W

CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	332.04'	63°24'56"
C2	300.00'	139.20'	26°35'04"

LEGEND

- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

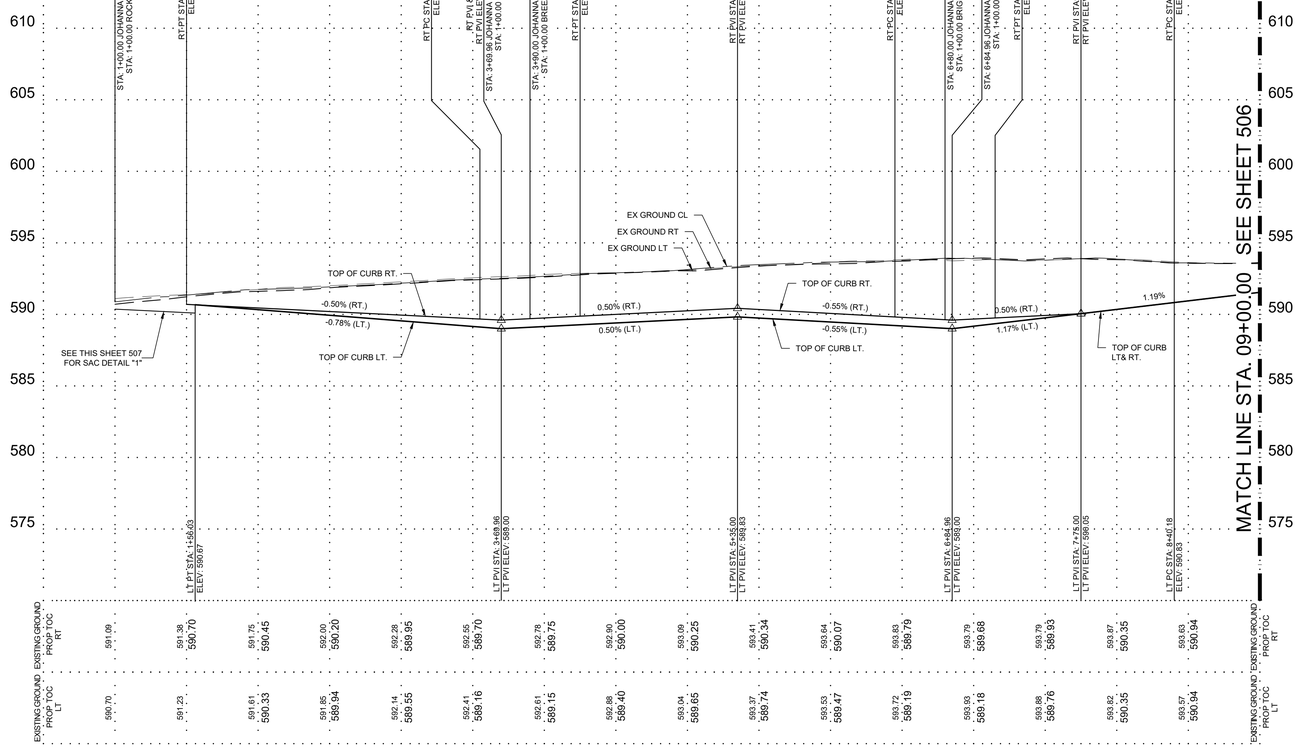
0 50' 100'
1" = 50'



JOHANNA PLACE

STA. 1+00.00 TO STA. 9+00.00

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



CIVIL ENGINEERING CONSULTANTS
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SAN ANTONIO, TEXAS 78230-1037
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REGISTRATION #F-2214 / #10041000

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
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SWENSON HEIGHTS SUBDIVISION UNIT 4
JOHANNA PLACE PLAN & PROFILE

SHEET NO.
505

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Date: Jun 16, 2023, 1:07pm User ID: MaryStewart File: L:\Develop\Proj\E0621202\Swenson Heights Unit 4\Used\E0621202 505-506 JOHANNA PLACE PLAN & PROFILE.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II
3. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE III

REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

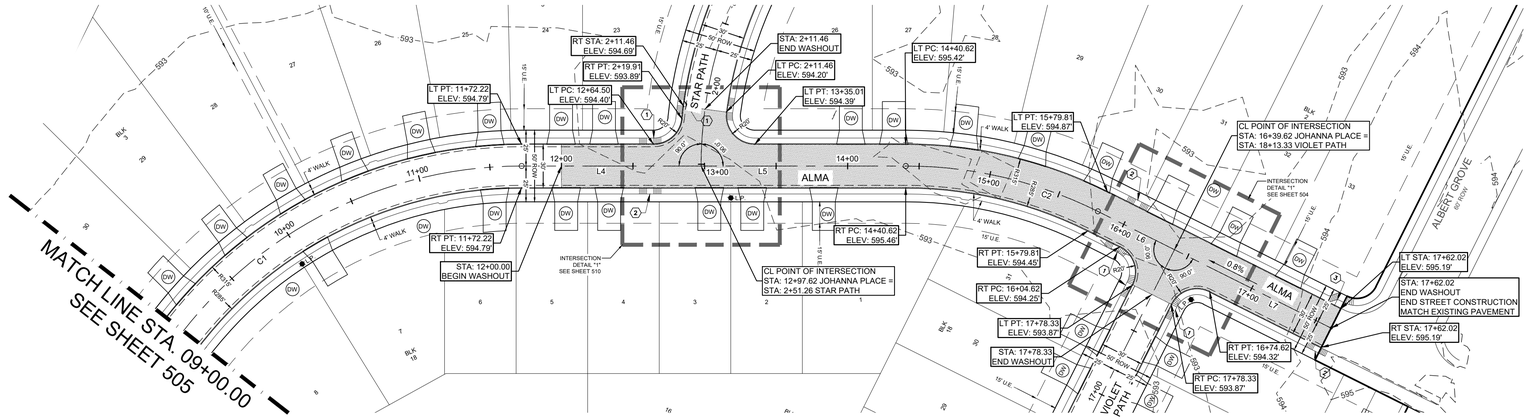
LINE TABLE		
LINE	LENGTH	DIRECTION
L1	290.00'	S00°22'00"E
L2	290.00'	S00°22'00"E
L3	160.18'	S00°22'00"E
L4	125.41'	S63°02'56"W
L5	142.99'	S63°02'56"W
L6	59.81'	S89°38'03"W
L7	122.40'	S89°38'00"W

CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	332.04'	63°24'56"
C2	300.00'	139.20'	26°35'04"

LEGEND

- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

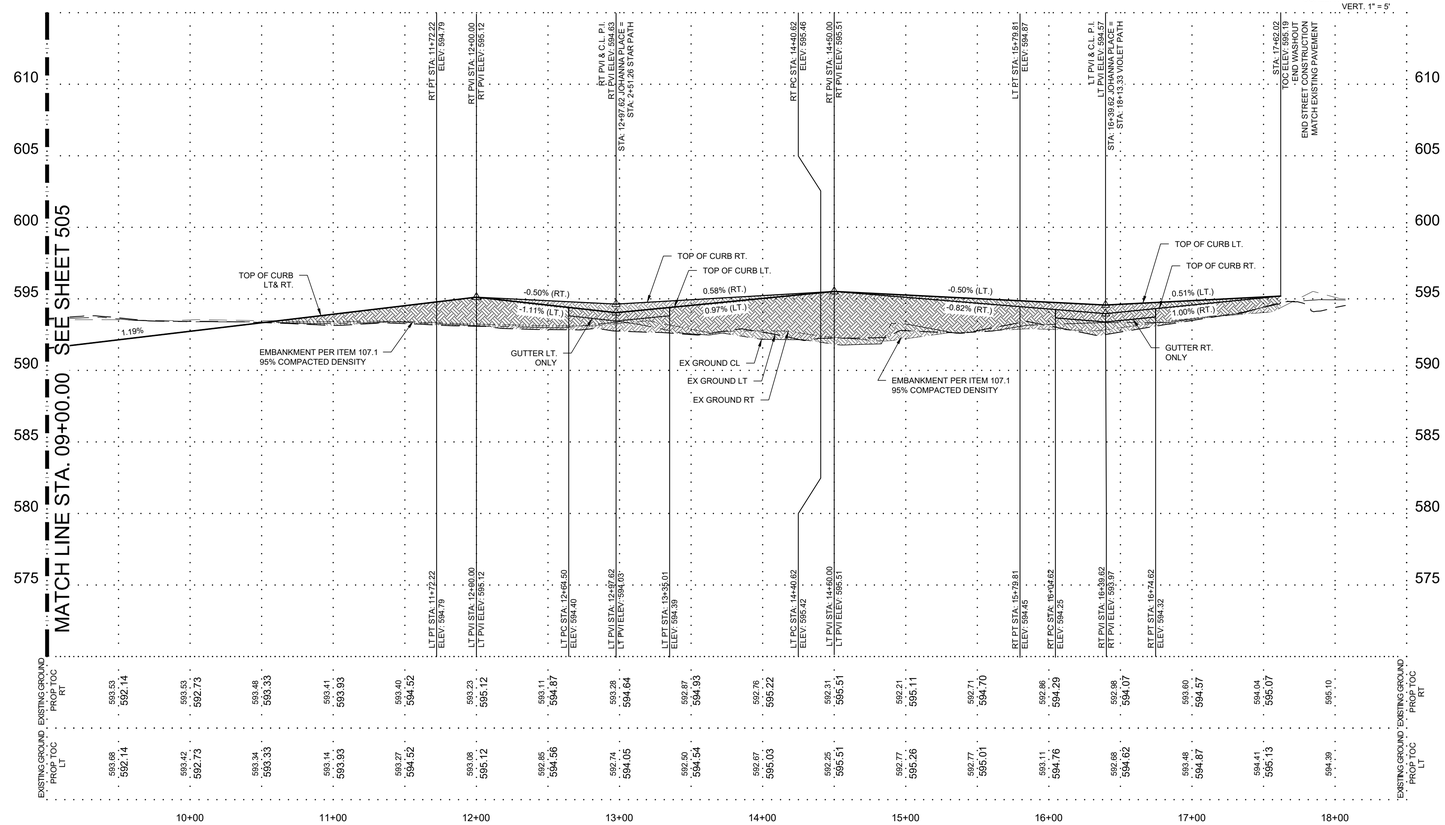
0 50' 100'
1" = 50'



JOHANNA PLACE & ALMA

STA. 9+00.00 TO STA. 17+62.02

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
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SCstP-0021-2022
07/24/2025
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SWENSON HEIGHTS SUBDIVISION UNIT 4

JOHANNA PLACE PLAN & PROFILE

SHEET NO.
506

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STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

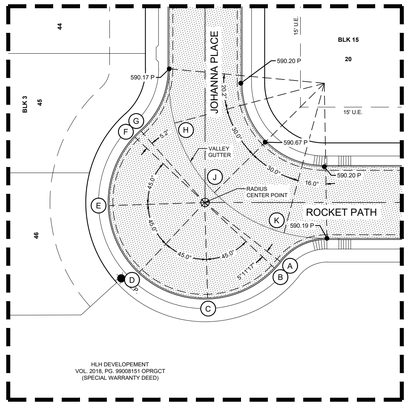
REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

LINE TABLE		
LINE	LENGTH	DIRECTION
L1	599.83'	N89°39'00"E
L2	145.00'	N89°39'00"E
L3	50.00'	N89°39'00"E

LEGEND
- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

N

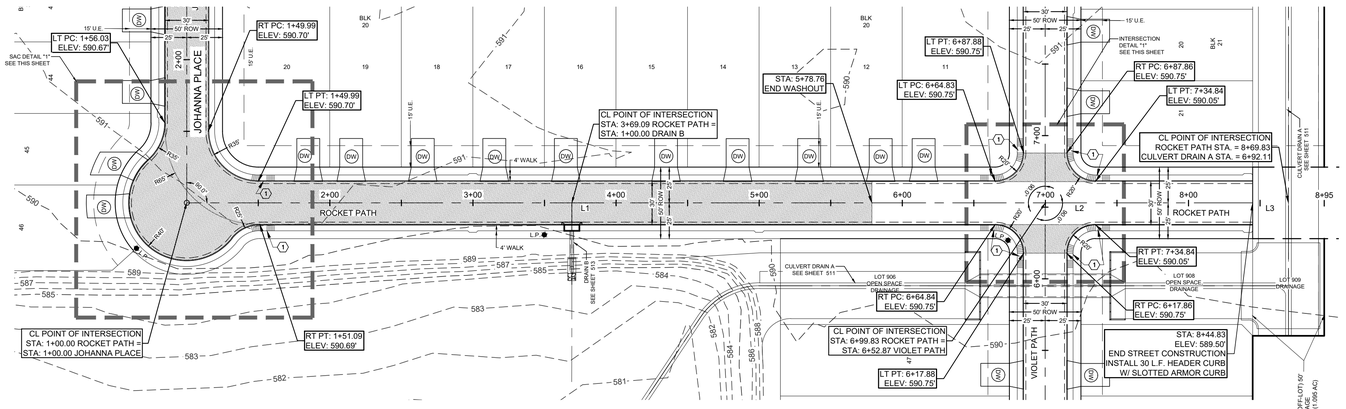
0 50' 100'
1" = 50'



SAC DETAIL "1"

SCALE: 1" = 30'

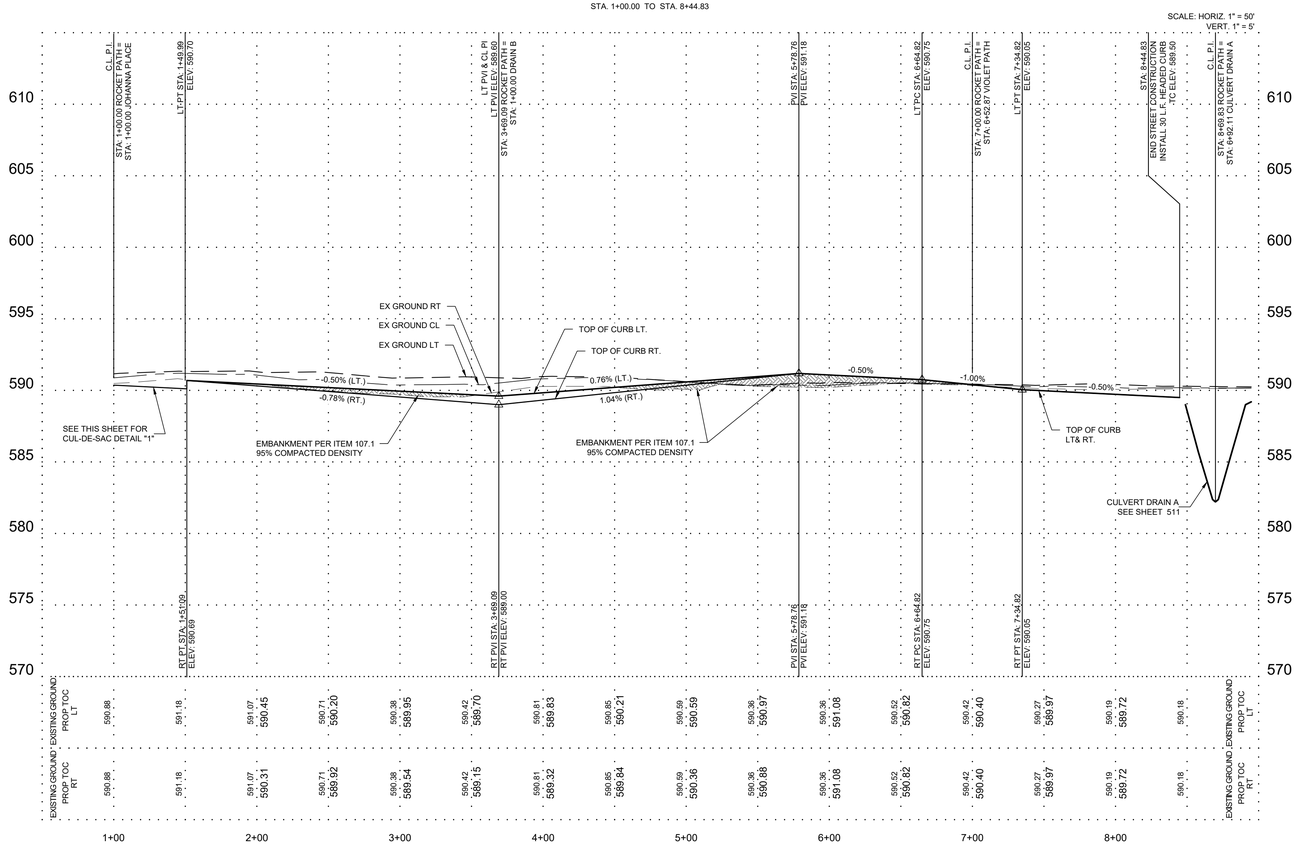
POINT	CURB ELEV.	GUTTER ELEV.
RT. PT	590.69	590.19
A	591.09	590.59
B	591.16	590.66
C	591.74	591.24
D	592.09	591.59
E	591.80	591.30
F	591.24	590.74
G	591.18	590.68
H		590.51
J		590.78
K		590.47
RT. PC	590.67	590.17

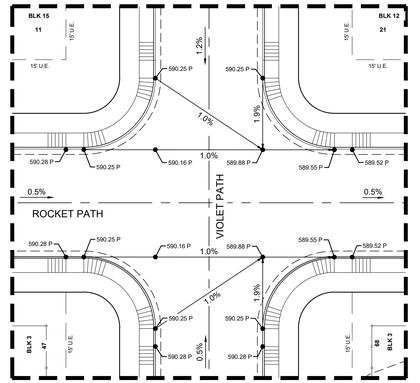


ROCKET PATH

STA. 1+00.00 TO STA. 8+44.83

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'





INTERSECTION DETAIL "1"

SCALE: 1" = 20'

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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TEL: (210) 641-8999
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SWENSON HEIGHTS SUBDIVISION UNIT 4
ROCKET PATH PLAN & PROFILE

SHEET NO.
507

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Date: Jun 16, 2023, 1:07pm User ID: MaryStewart File: L:\Swenson Ph4\Civil\1000\2023\Swenson Heights Unit 4\Used\1000-2023 507 ROCKET PATH PLAN & PROFILE.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

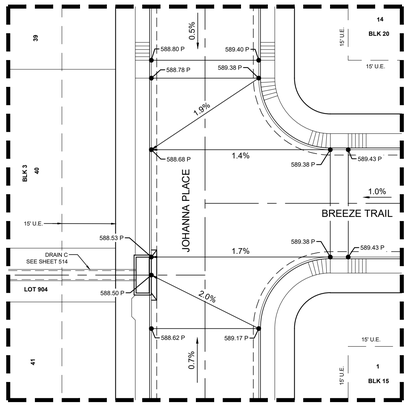
LINE TABLE		
LINE	LENGTH	DIRECTION
L1	599.83'	N89°38'00"E

LEGEND

- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

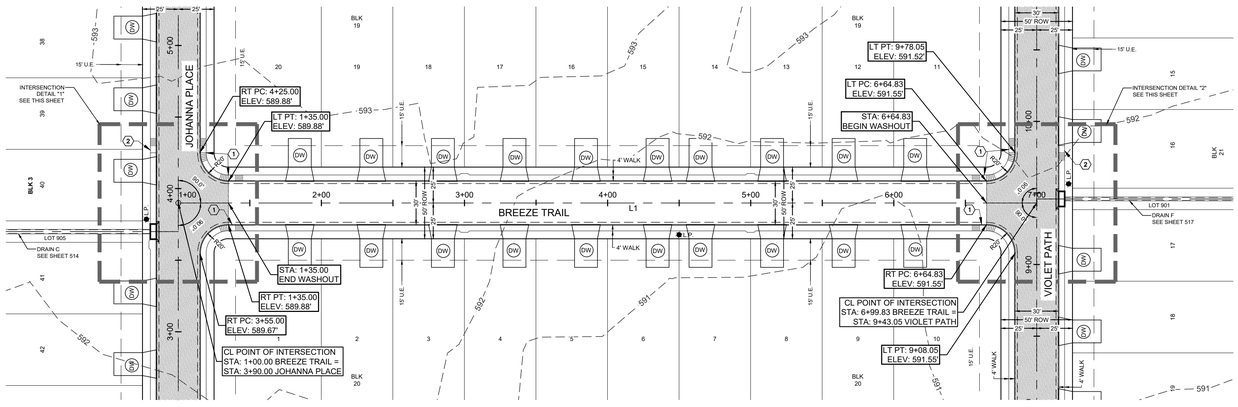
N

0 50' 100'
1" = 50'



INTERSECTION DETAIL "1"

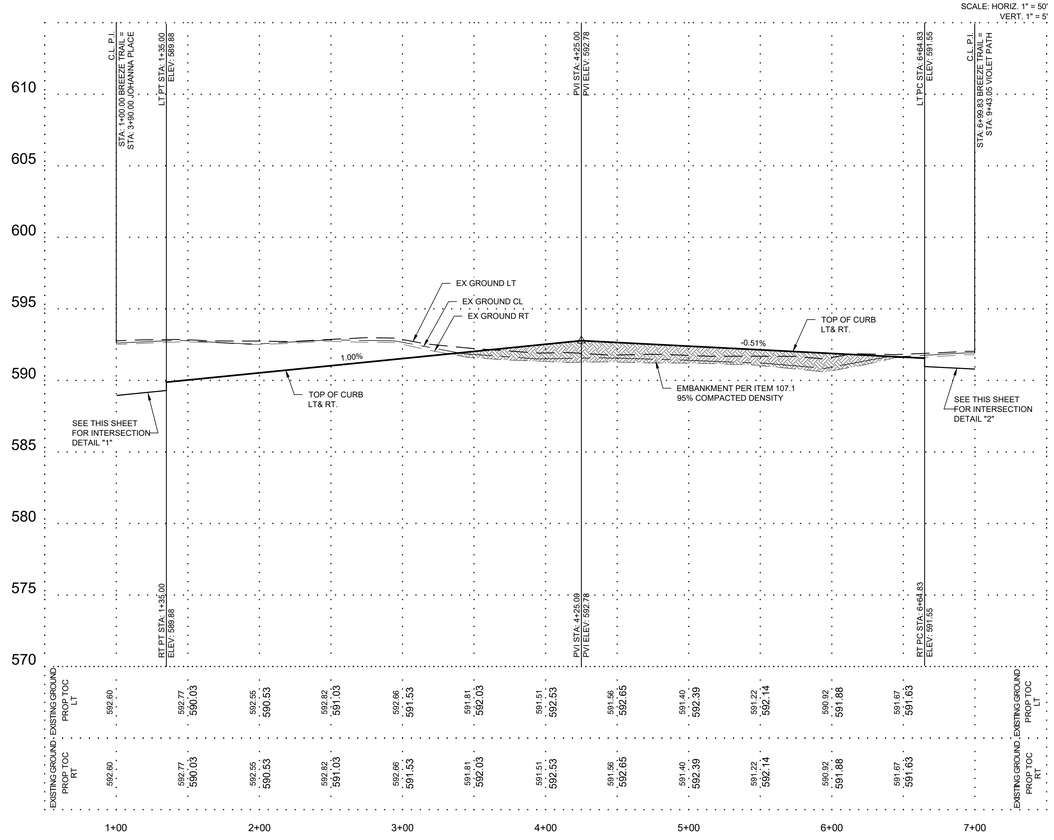
SCALE: 1" = 20'



BREEZE TRAIL

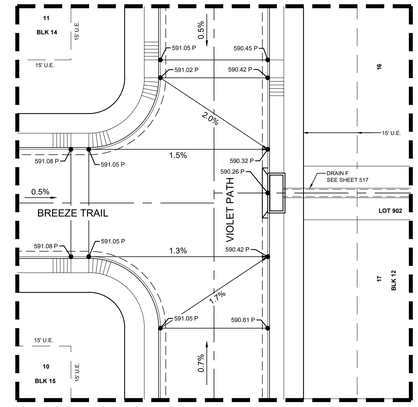
STA. 1+00.00 TO STA. 6+99.83

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



INTERSECTION DETAIL "2"

SCALE: 1" = 20'



DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
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REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

BREEZE TRAIL PLAN & PROFILE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SHEET NO.
508

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Date: Jan 16, 2024, 1:08pm User ID: Mary.Stewart File: L:\Develop\Proj\2021\E0621202_Swenson Heights Unit 4\cstd\E0621202 Std BREEZE PRel PLAN & PROFILE.dwg

STREETLIGHT NOTE
STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

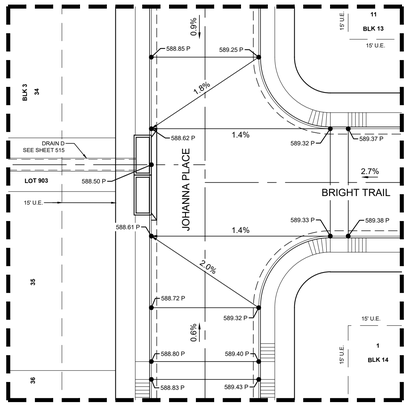
REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

LINE TABLE		
LINE	LENGTH	DIRECTION
L1	288.98'	N89°38'00"E
L2	310.85'	N89°38'00"E

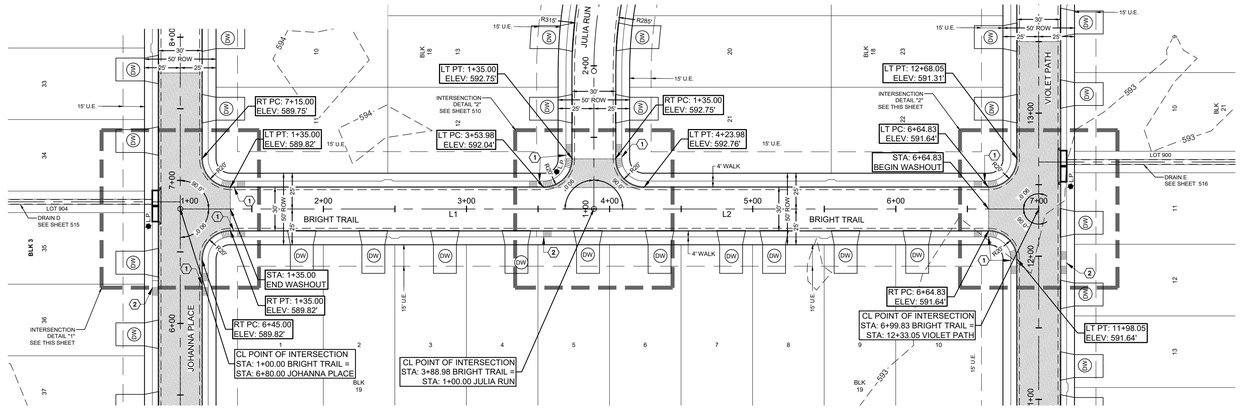
LEGEND
- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

N

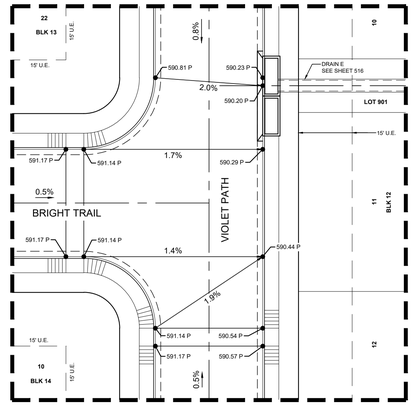
0 50' 100'
1" = 50'



INTERSECTION DETAIL "1"
SCALE: 1" = 20'

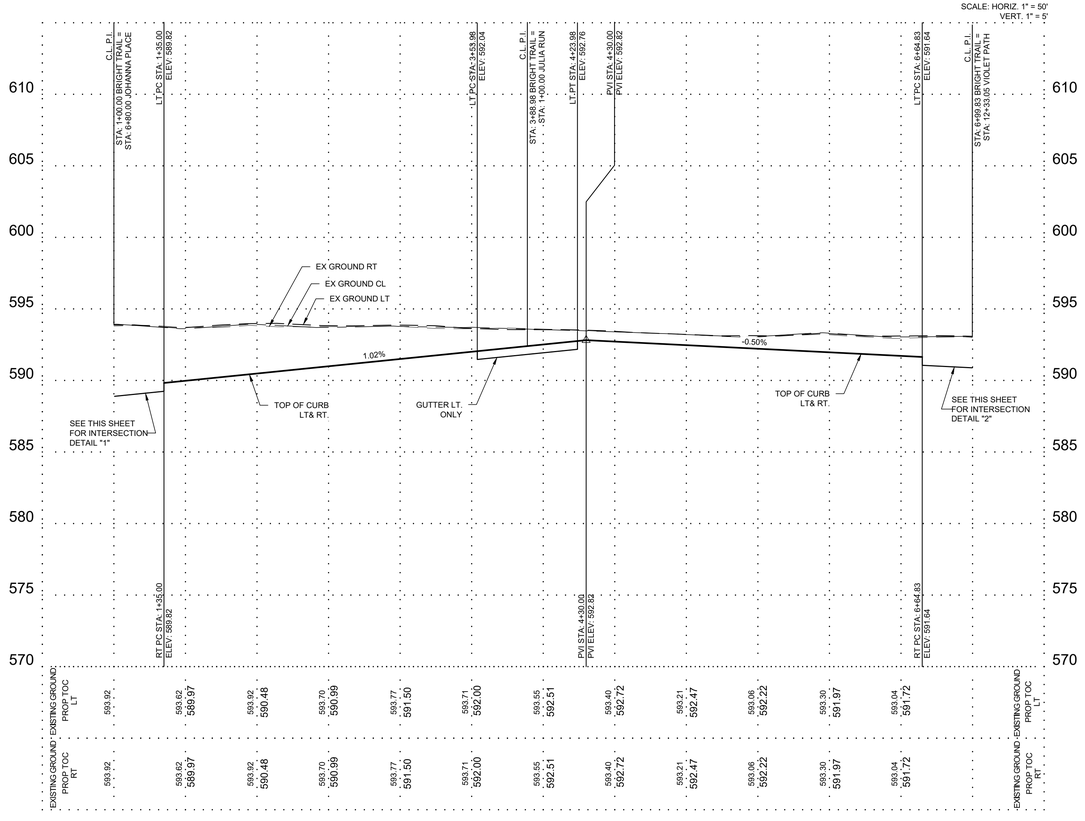


BRIGHT TRAIL
STA. 1+00.00 TO STA. 6+99.83



INTERSECTION DETAIL "2"
SCALE: 1" = 20'

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



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DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SWENSON HEIGHTS SUBDIVISION UNIT 4
BRIGHT TRAIL PLAN & PROFILE

SHEET NO.
509

Date: Jun 16, 2023, 1:08pm User: @ Mary.Stewart Plot: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\cad\E0621202 509 BRIGHT TRAIL PLAN & PROFILE.dwg

STREETLIGHT NOTE

STREETLIGHT POLES TO BE CENTERED IN 5.50' GREEN SPACE BETWEEN SIDEWALK AND PROPERTY LINE.

DRIVEWAY NOTE

DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT.

1. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE I
2. CITY OF SAN ANTONIO WHEELCHAIR RAMP ~ TYPE II

REFER TO WHEELCHAIR RAMP STANDARDS ON STREET DETAILS.

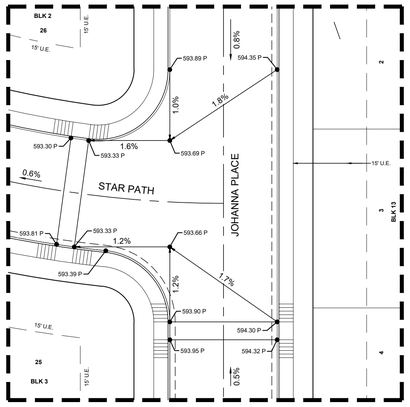
LINE TABLE		
LINE	LENGTH	DIRECTION
L1	12.51'	S00°22'00"E
L2	96.28'	N00°22'00"W
L3	83.88'	N09°45'01"E

CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	138.75'	26°30'00"
C2	300.00'	52.97'	10°07'01"

LEGEND

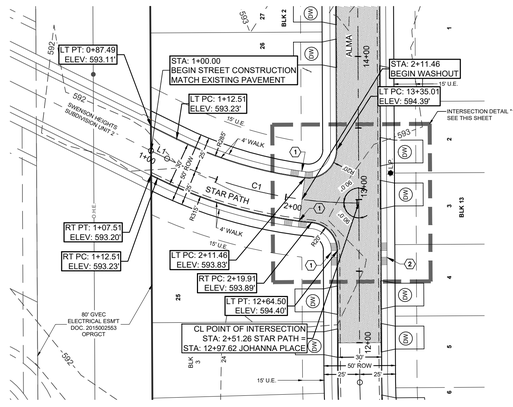
- WHEELCHAIR RAMPS
- WASHOUT CROWN
- SIDEWALK TO BE BUILT BY DEVELOPER
- PROPOSED DRIVEWAY (DW)
- TOP OF CURB ELEVATION (940)
- EXISTING STREET LIGHT (ELP)
- PROPOSED STREET LIGHT (100 WATT) (LP)
- CATCH CURB (C.C)
- SPILL CURB (S.C.)

0 50' 100'
1" = 50'



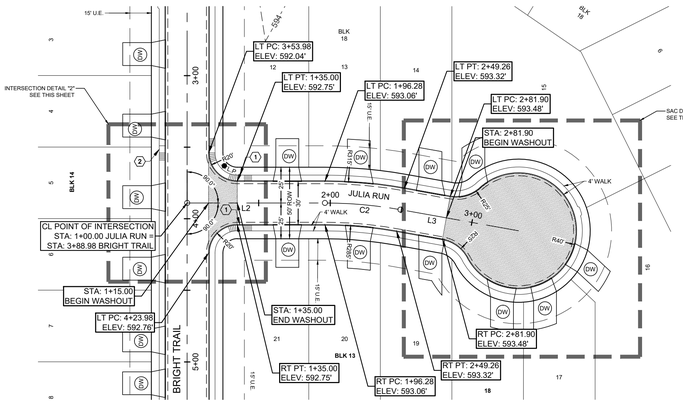
INTERSECTION DETAIL "1"

SCALE: 1" = 20'



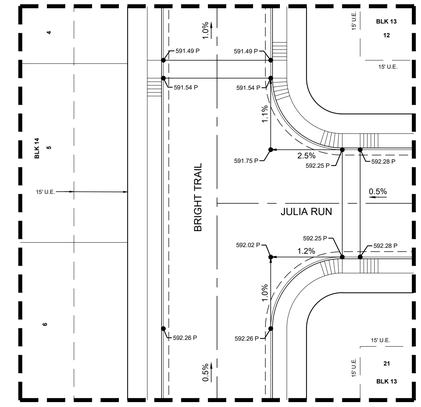
STAR PATH

STA. 1+00.00 TO STA. 2+51.26



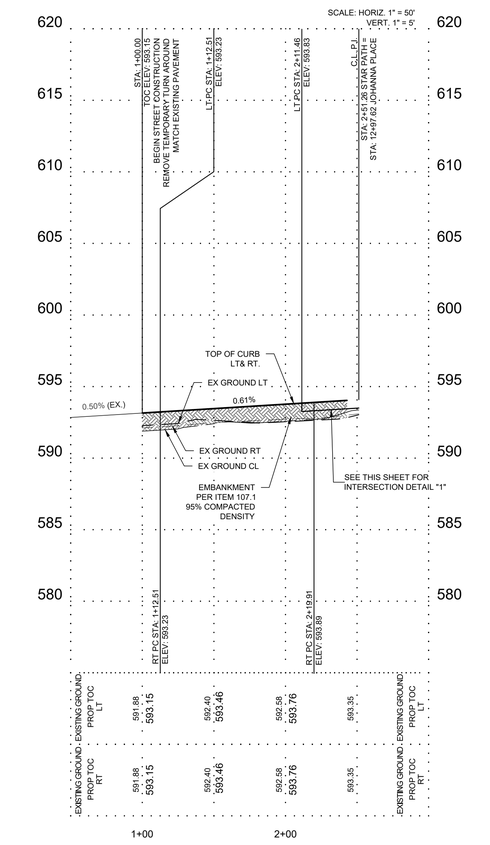
JULIA RUN

STA. 1+00.00 TO STA. 3+33.13



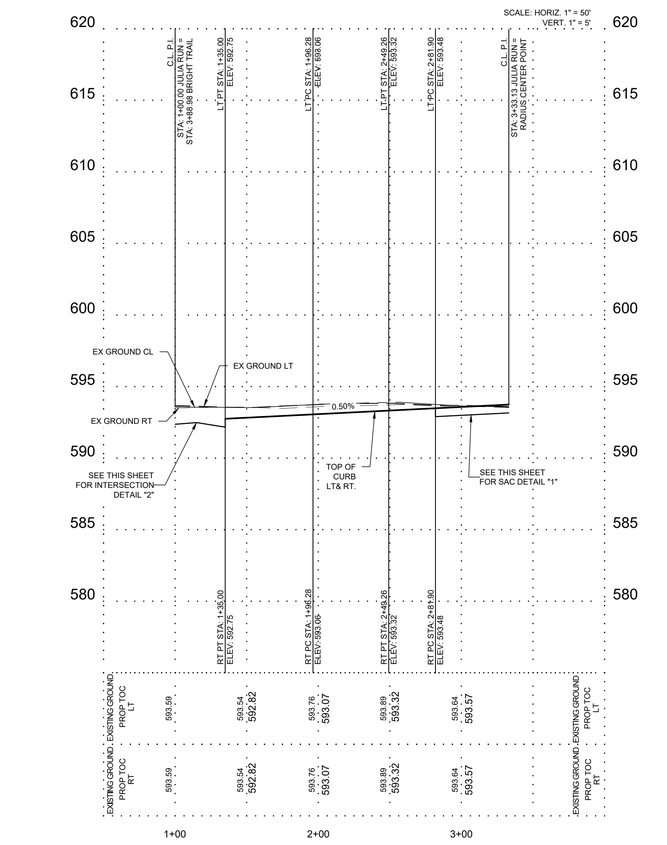
INTERSECTION DETAIL "2"

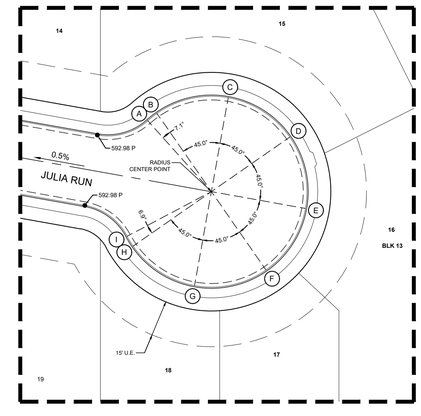
SCALE: 1" = 20'



STAR PATH

STA. 1+00.00 TO STA. 2+51.26





SAC DETAIL "1"

SCALE: 1" = 20'

POINT	CURB ELEV.	GUTTER ELEV.
RT. PC	593.48	592.98
A	593.93	593.43
B	593.98	593.48
C	594.30	593.80
D	594.61	594.11
E	594.93	594.43
F	594.30	593.80
G	593.98	593.48
H	594.48	593.98
I	593.93	593.43
LT. PT	593.48	592.98

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS / ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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TEL: (210) 641-8999
FAX: (210) 641-8410
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

STAR PATH & JULIA RUN PLAN & PROFILE

SHEET NO.
510

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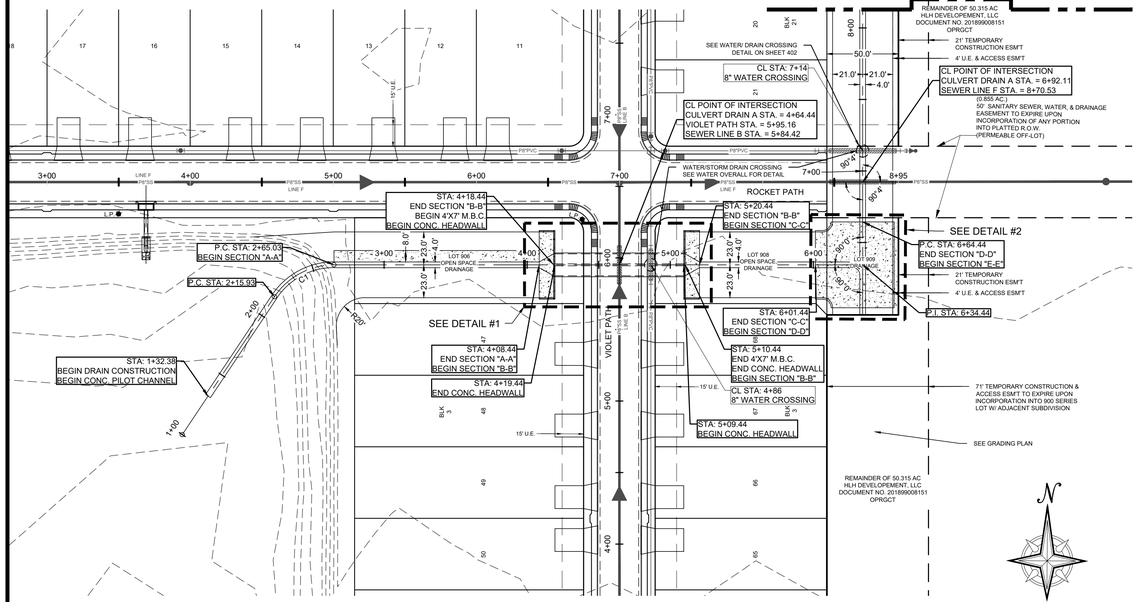
Date: Jan 16, 2024, 1:09pm User: ID Mary Stewart File: L:\Develop\Proj\2021\0621202 Swenson Heights Unit 4\cad\0621202 510 STAR Path & JULIA PLAN & PROFILE.dwg

NOTES:
1. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.
2. ALL CONCRETE SHALL BE CLASS "C" 3600 PSI. @ 28 DAY WITH COURSE AGGREGATE GRADE 2-5.
3. MINIMUM BAR DEVELOPMENT LENGTH FOR SPLICE AND BENDS SHALL BE 24 INCHES.
4. ALL REINFORCING STEEL SHALL BE GRADE 60.

NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE

Curve Table						
Curve	Length	Radius	Tangent	Chord Length	Chord Direction	Delta
C1	49.09'	50.00'	26.73'	47.14'	N61°30'18"E	056°15'24"

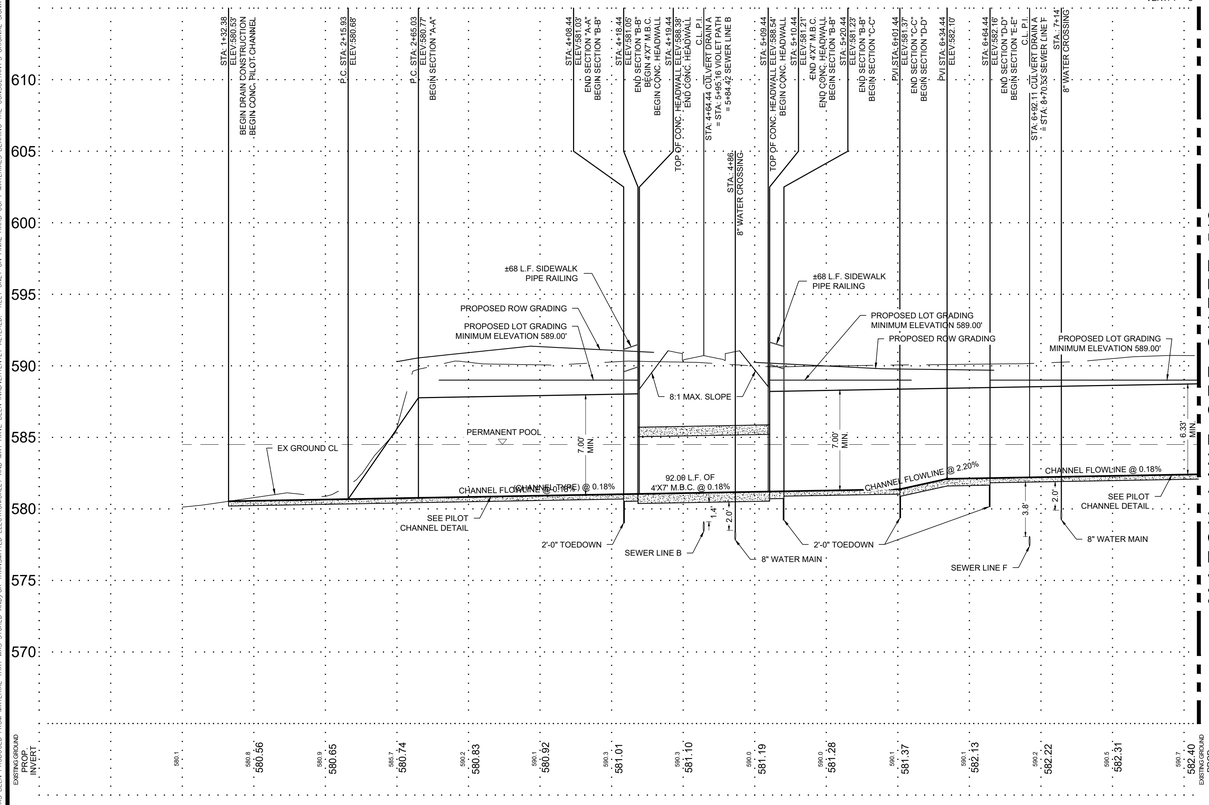
MATCH LINE SEE SHEET 512



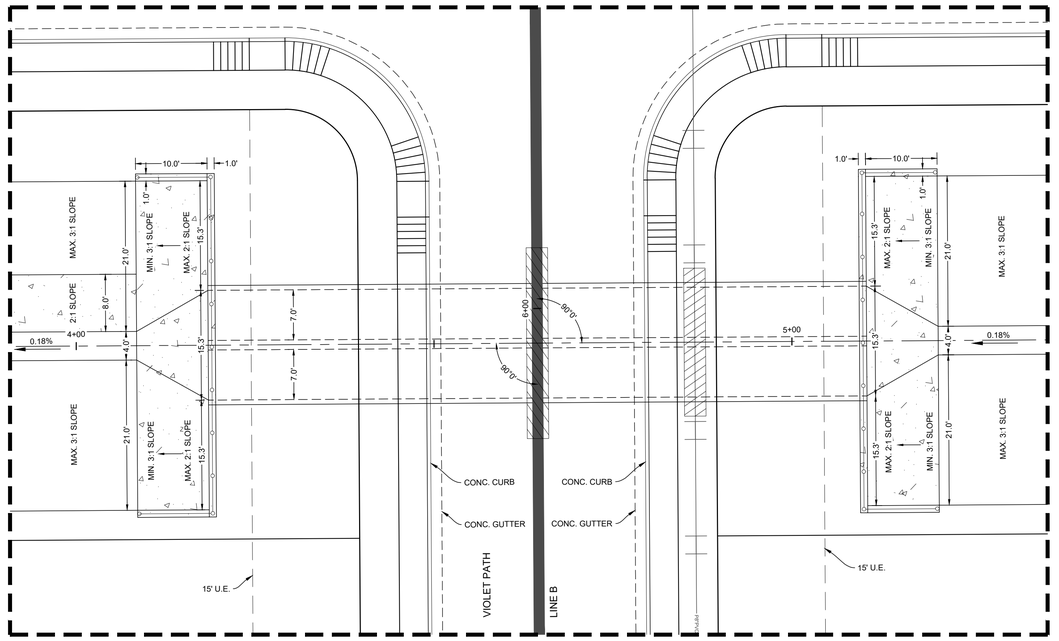
CULVERT D R A I N "A"

STA. 1+00.00 TO STA. 8+00.00

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

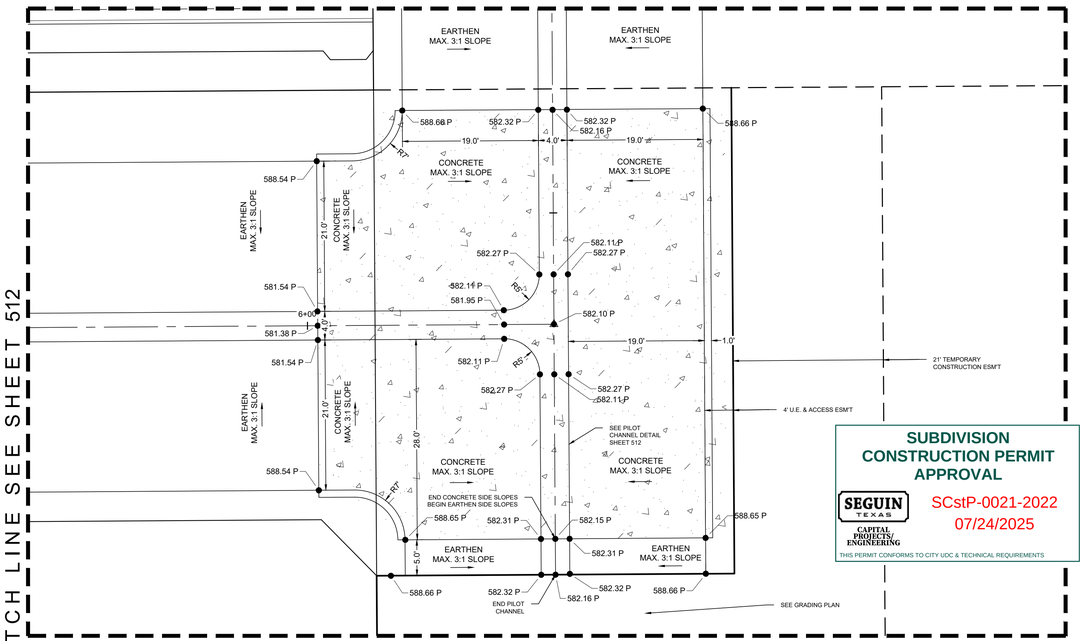


MATCH LINE SEE SHEET 512



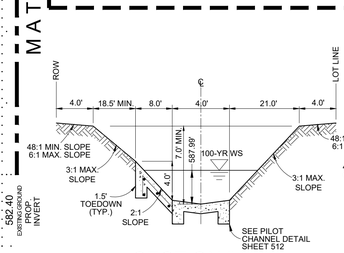
DETAIL "1"

SCALE: 1" = 10'



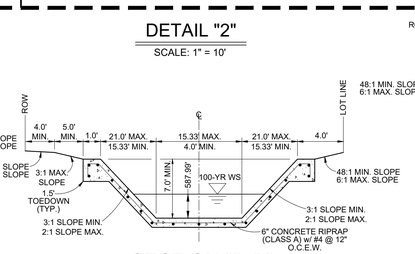
DETAIL "2"

SCALE: 1" = 10'



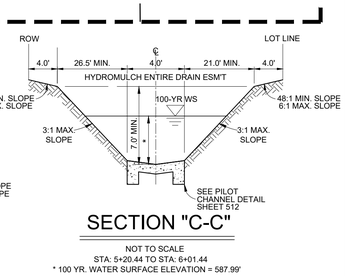
SECTION "A-A"

NOT TO SCALE
STA. 2+65.03 TO STA. 4+08.44



SECTION "B-B"

NOT TO SCALE
STA. 4+08.44 TO STA. 4+18.44
STA. 5+10.44 TO STA. 5+20.44



SECTION "C-C"

NOT TO SCALE
STA: 5+20.44 TO STA: 6+01.44
* 100 YR. WATER SURFACE ELEVATION = 587.99'

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

SEE SECTION "D-D" AND SECTION "E-E" ON SHEET 512

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
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TEL: (210) 641-8999
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REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

CULVERT DRAIN A
PLAN & PROFILE

SHEET NO.
511

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Date: Jun 16, 2023, 1:09pm User ID: MaryStewart File: L:\Develop\Proj\2021\E0621202\...\Swenson Heights Unit 4\Culvert D\E0621202 311-312 CULVERT DRAIN A PLAN & PROFILE.dwg

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SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

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dba. DON DURDEN, INC.
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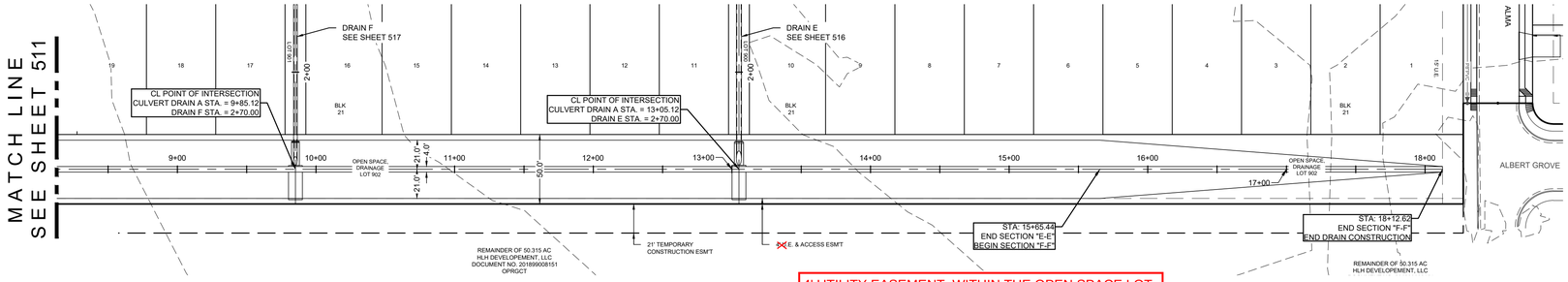
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8440
REGISTRATION #F-2214 / #10041000

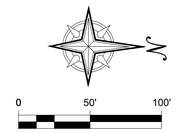
6/16/2023

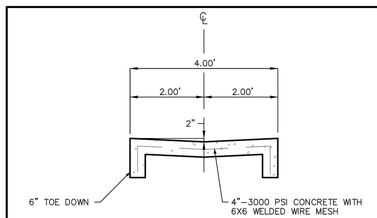
STATE OF TEXAS — MARY P. STEWART — 108905 — LICENSED PROFESSIONAL ENGINEER

MATCH LINE SEE SHEET 511



4' UTILITY EASEMENT, WITHIN THE OPEN SPACE LOT DEDICATED SPECIFICALLY FOR DRAINAGE, IS INSUFFICIENT AND WILL NOT BE APPROVED AS PART OF FINAL PLAT





PILOT CHANNEL DETAIL
(N.T.S.)

NOTES:

1. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.
2. ALL CONCRETE SHALL BE CLASS "C" 3600 PSI. @ 28 DAY WITH COURSE AGGREGATE GRADE 2-5.
3. MINIMUM BAR DEVELOPMENT LENGTH FOR SPLICE AND BENDS SHALL BE 24 INCHES.
4. ALL REINFORCING STEEL SHALL BE GRADE 60.

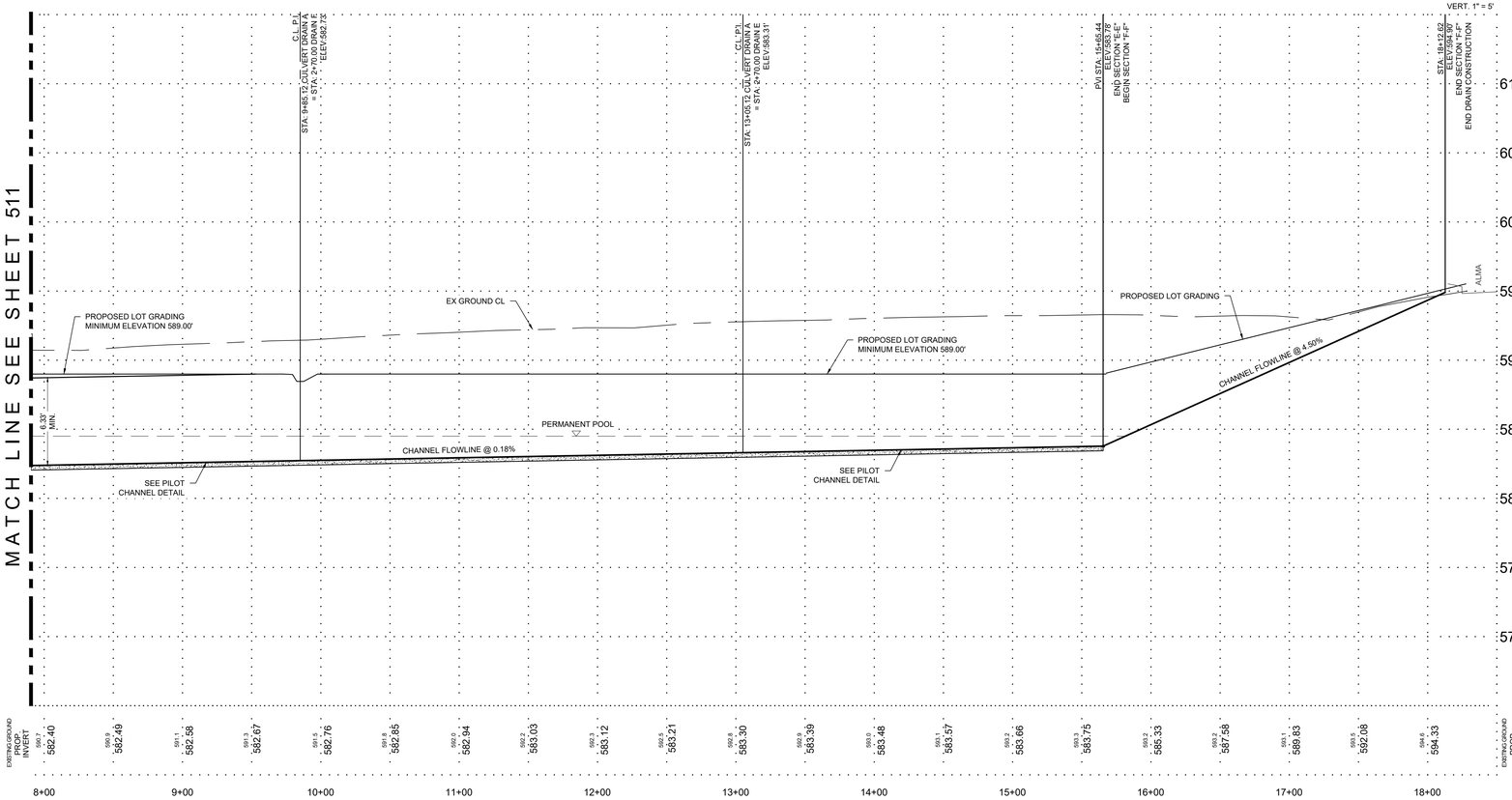
NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE

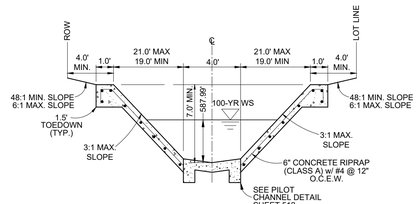
CULVERT D R A I N "A"

STA. 8+00.00 TO STA. 18+12.62

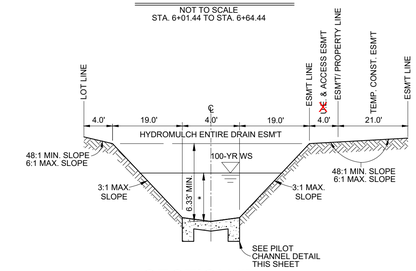
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

MATCH LINE SEE SHEET 511

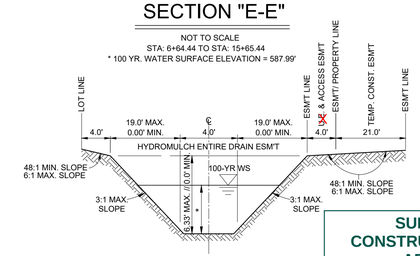




SECTION "D-D"
NOT TO SCALE
STA. 6+01.44 TO STA. 6+64.44



SECTION "E-E"
NOT TO SCALE
STA: 6+64.44 TO STA: 15+65.44
* 100 YR. WATER SURFACE ELEVATION = 587.99'



SECTION "F-F"
NOT TO SCALE
STA: 15+65.44 TO STA: 18+12.62
* 100 YR. WATER SURFACE ELEVATION = 0.36'

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS — CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

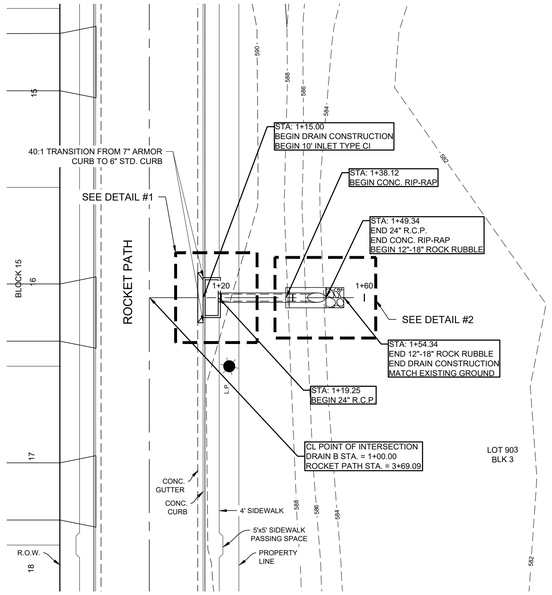
REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

CULVERT DRAIN A PLAN & PROFILE

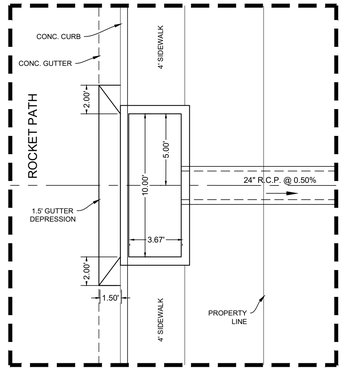
SHEET NO.
512

Date: Jun 16, 2023, 3:10pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\dwg\E0621202 SH-512 CULVERT DRAIN A PLAN & PROFILE.dwg



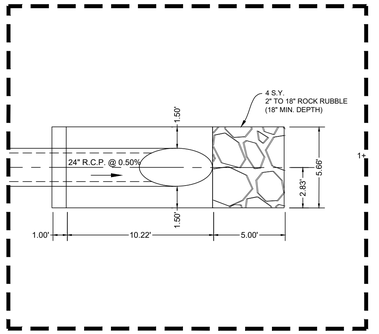
DRAIN "B"

STA. 1+00.00 TO STA. 1+54.34



DETAIL "1"

SCALE: 1" = 5'



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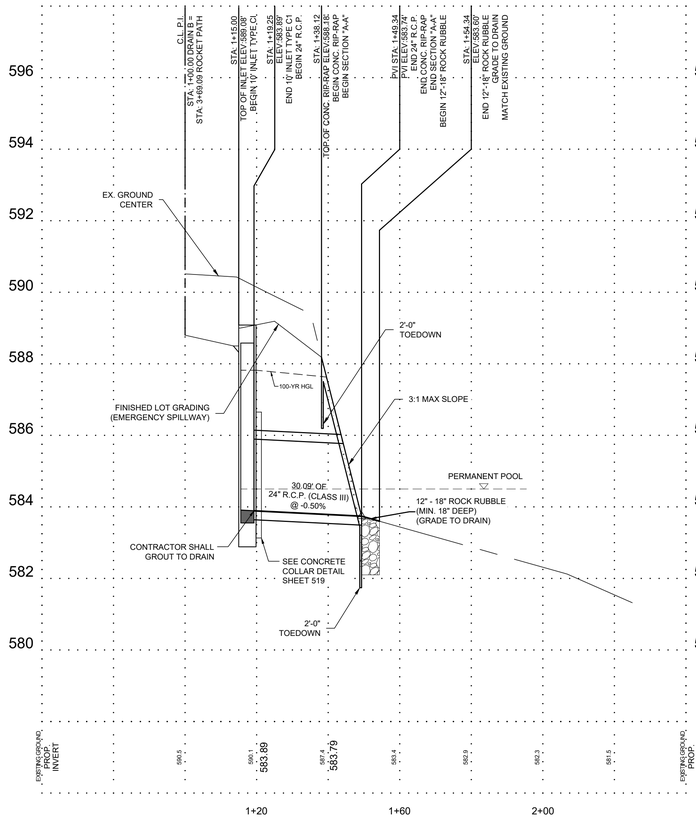
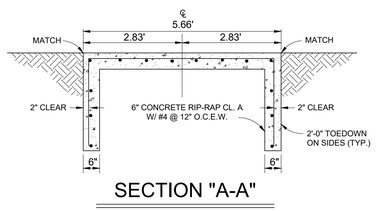
SCALE: 1" = 5'





SECTION "A-A"

NOT TO SCALE
STA: 1+38.12 TO STA: 1+49.34

NOTES:

1. CONTRACTOR TO GROUT INLET BOTTOM TO ENSURE DRAINAGE TO OUTLET PIPE.
2. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.
3. ALL CONCRETE SHALL BE CLASS "C" 3600 PSI. @ 28 DAY WITH COURSE AGGREGATE GRADE 2-5.
4. MINIMUM BAR DEVELOPMENT LENGTH FOR SPLICE AND BENDS SHALL BE 24 INCHES.
5. ALL REINFORCING STEEL SHALL BE GRADE 60.
6. MUD SLAB AND INLET BOLTING WILL BE REQUIRED FOR MULTIPLE ADJACENT INLETS. CONTRACTOR TO USE FLOWABLE FILL (COSA ITEM 413.2) FOR MUD SLAB. FLOWABLE FILL SHOULD BE 2" TO 6" THICK AND SHOULD EXTEND BENEATH TOTAL LENGTH OF PROPOSED INLETS.

NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE

POND NOTE:

THE DEVELOPER OF THE SUBDIVISION HAS AN ACTIVE PERMIT TO MODIFY THIS DETENTION FACILITY.

CONTRACTOR TO NOTIFY ENGINEER OF ANY FIELD CHANGES WHICH REQUIRE MODIFICATION OF THE PROPOSED UNIT 4 DRAINAGE OUTFALL.

CEC, AS THE ENGINEER OF RECORD WILL SUBMIT A POST PERMIT MODIFICATION TO ADDRESS FIELD CHANGES AS PART OF THE CONSTRUCTION OF THE UNIT 4 PUBLIC IMPROVEMENTS.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

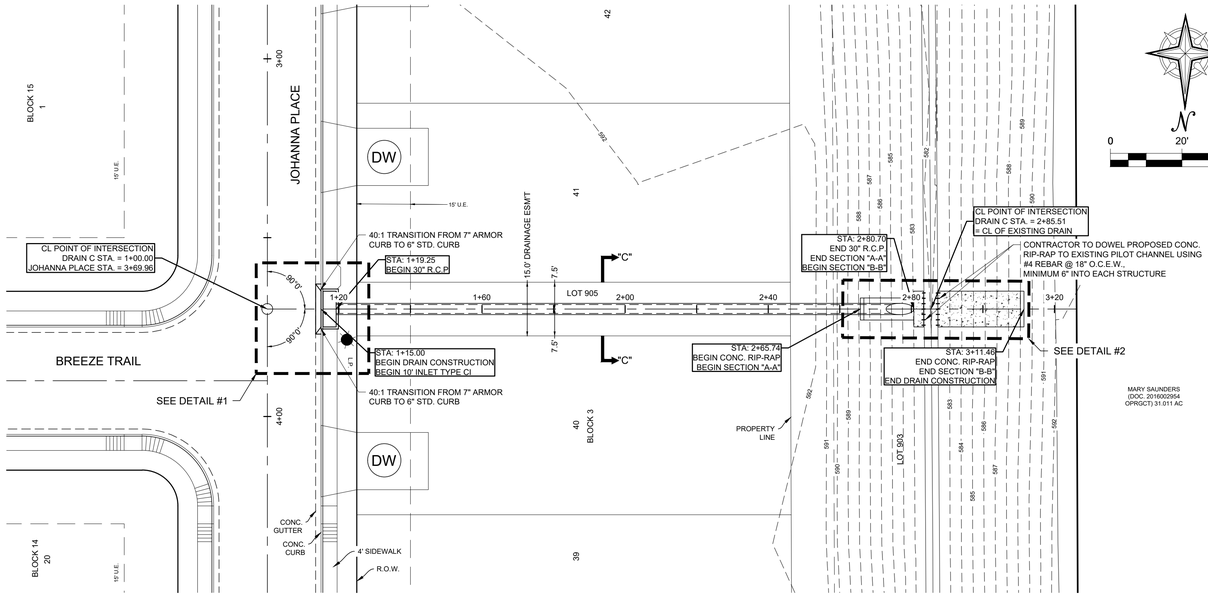
DRAIN B PLAN & PROFILE

SHEET NO.

513

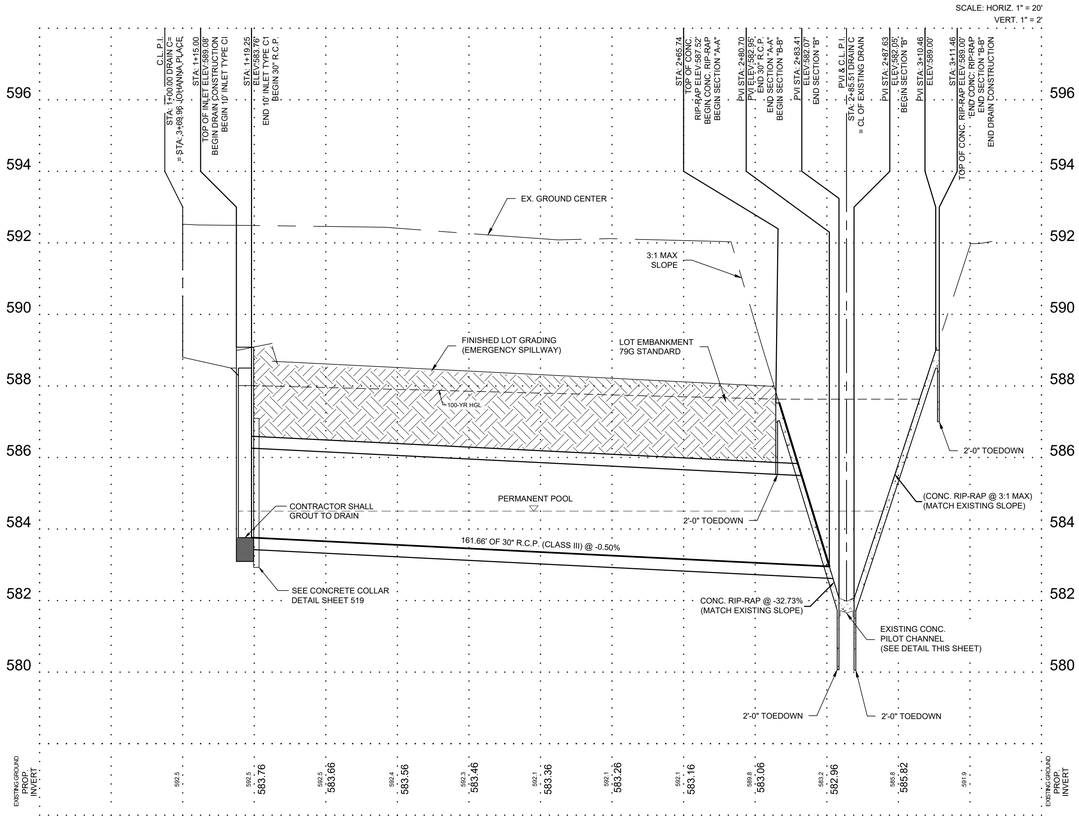
THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REFER ONLY TO FINAL HARD COPY MATERIALS BEARING THE CONSULTANTS ORIGINAL SIGNATURE AND SEAL.

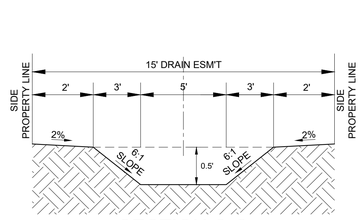
Date: Jun 16, 2023, 1:19pm User ID: MaryStewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\civil\E0621202 513 DRAIN B PLAN & PROFILE.dwg



DRAIN "C"

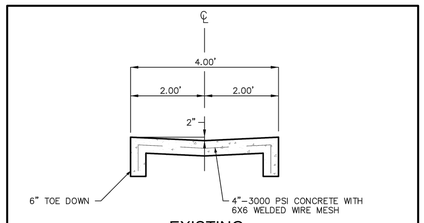
STA. 1+00.00 TO STA. 3+11.46





SECTION C-C

N.T.S.



EXISTING PILOT CHANNEL DETAIL

(N.T.S.)

NOTES:

1. CONTRACTOR TO GROUT INLET BOTTOM TO ENSURE DRAINAGE TO OUTLET PIPE.

2. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.

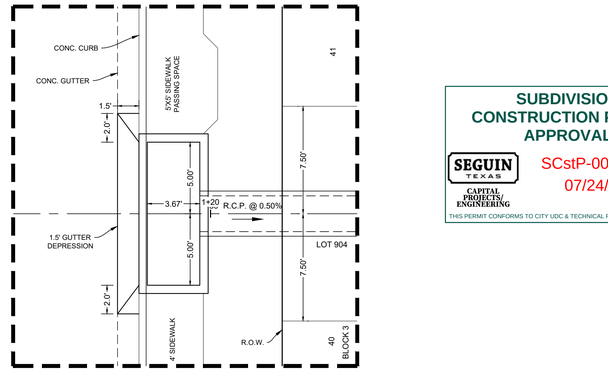
3. ALL CONCRETE SHALL BE CLASS "C" 3600 PSI. @ 28 DAY WITH COURSE AGGREGATE GRADE 2-5.

4. MINIMUM BAR DEVELOPMENT LENGTH FOR SPLICE AND BENDS SHALL BE 24 INCHES.

5. ALL REINFORCING STEEL SHALL BE GRADE 60.

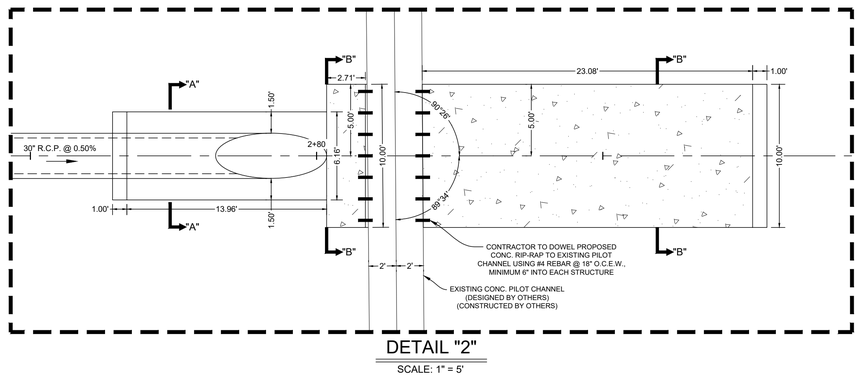
6. MUD SLAB AND INLET BOLTING WILL BE REQUIRED FOR MULTIPLE ADJACENT INLETS. CONTRACTOR TO USE FLOWABLE FILL (CCOSA ITEM 413.2) FOR MUD SLAB. FLOWABLE FILL SHOULD BE 2" TO 6" THICK AND SHOULD EXTEND BENEATH TOTAL LENGTH OF PROPOSED INLETS.

NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE



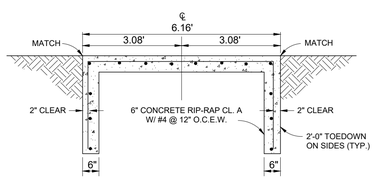
DETAIL "1"

SCALE: 1" = 5'



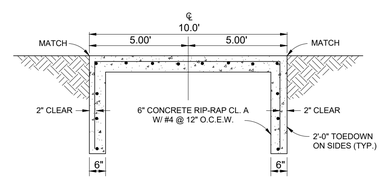
DETAIL "2"

SCALE: 1" = 5'



SECTION "A-A"

NOT TO SCALE
STA: 2+65.74 TO STA: 2+80.70



SECTION "B-B"

NOT TO SCALE
STA: 2+80.70 TO STA: 2+83.41
STA: 2+87.63 TO STA: 3+11.46

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

DRAIN C PLAN & PROFILE

SHEET NO.

514

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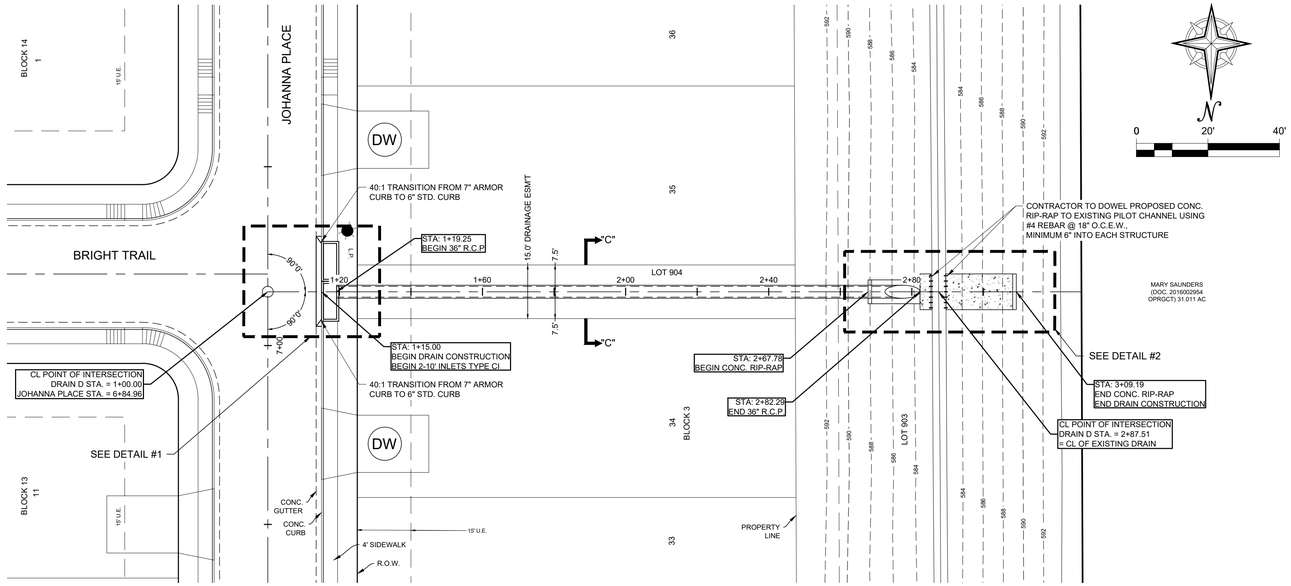
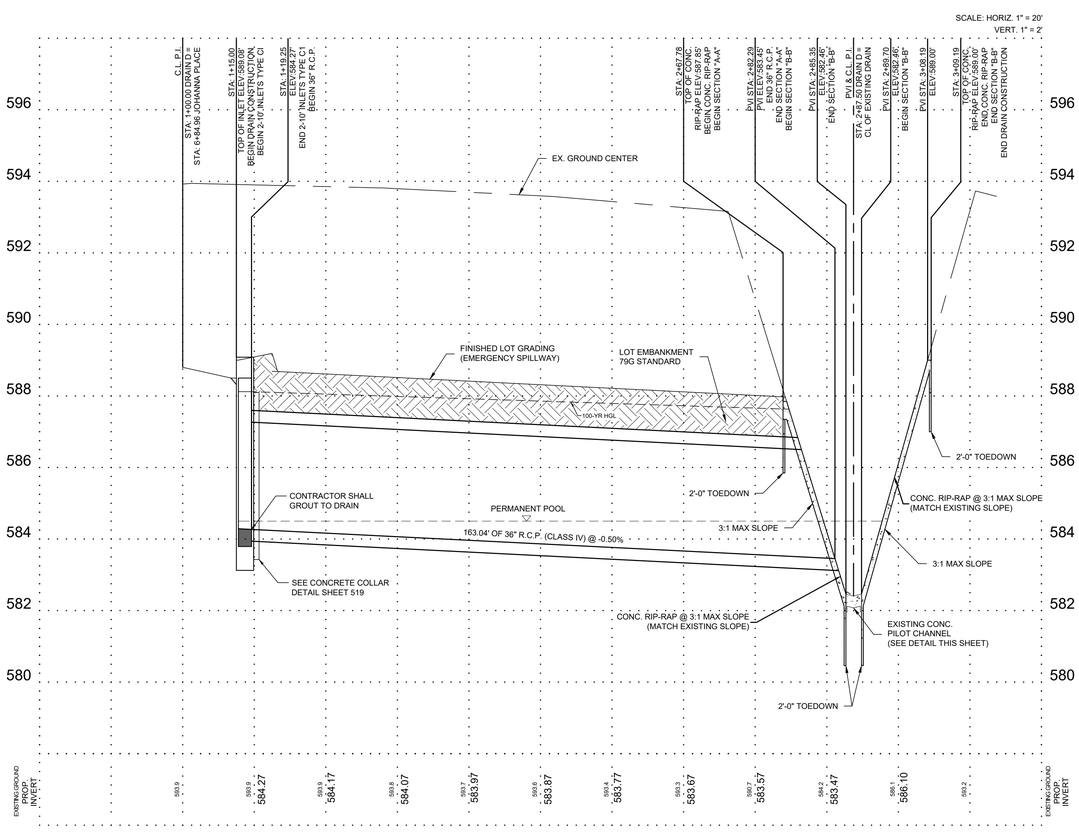
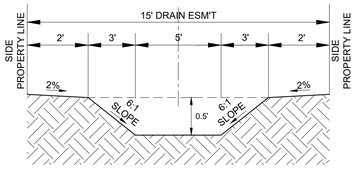
Date: Jun 16, 2023, 7:18pm User ID: MarySStewart File: L:\Develop\Proj\2021\E0621202_Swenson Heights Unit 4\cadd\E0621202 S-4 DRAIN C PLAN & PROFILE.dwg



DRAIN "D"

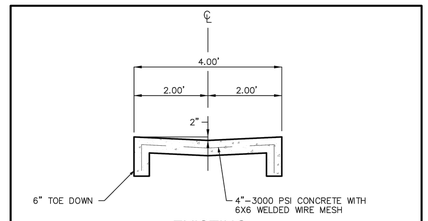
STA. 1+00.00 TO STA. 3+09.19





SECTION C-C

N.T.S.



EXISTING
PILOT CHANNEL DETAIL
(N.T.S.)

NOTES:

1. CONTRACTOR TO GROUT INLET BOTTOM TO ENSURE DRAINAGE TO OUTLET PIPE.
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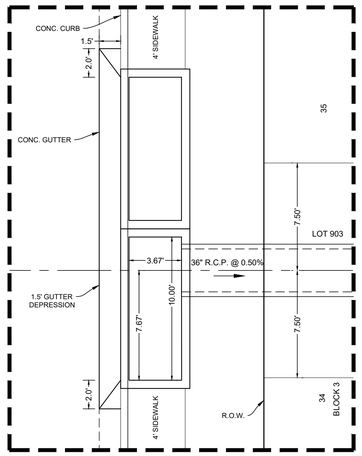
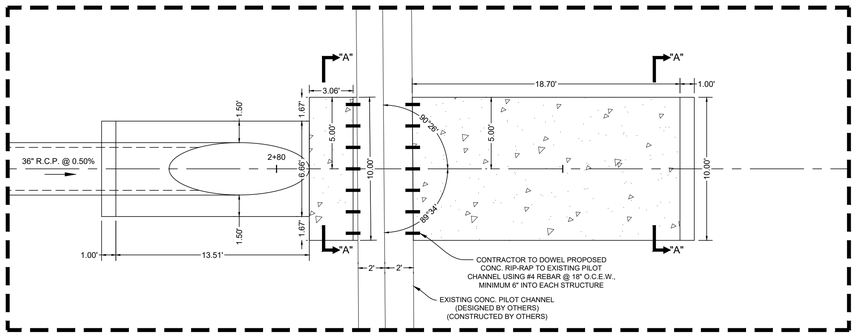
NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE



DETAIL "1"

SCALE: 1" = 5'



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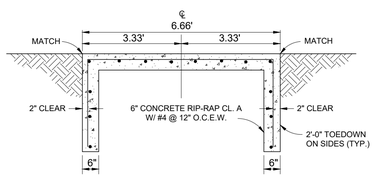
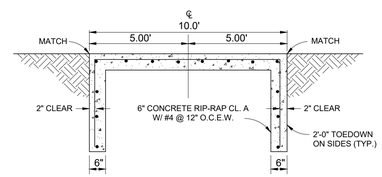
SCALE: 1" = 5'



SECTION "A-A"

NOT TO SCALE
STA: 2+67.78 TO STA. 2+82.29



SECTION "B-B"

NOT TO SCALE
STA: 2+82.29 TO STA. 2+85.35
STA: 2+89.70 TO STA. 3+09.19

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

DRAIN D PLAN & PROFILE

SHEET NO.
515

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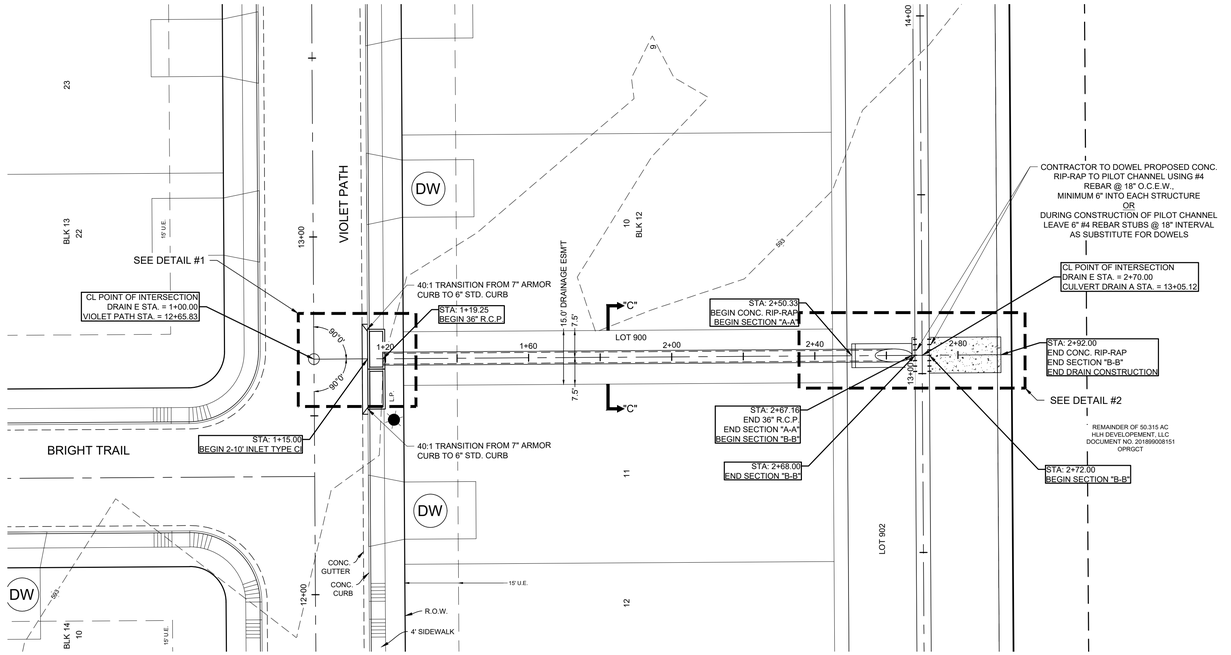
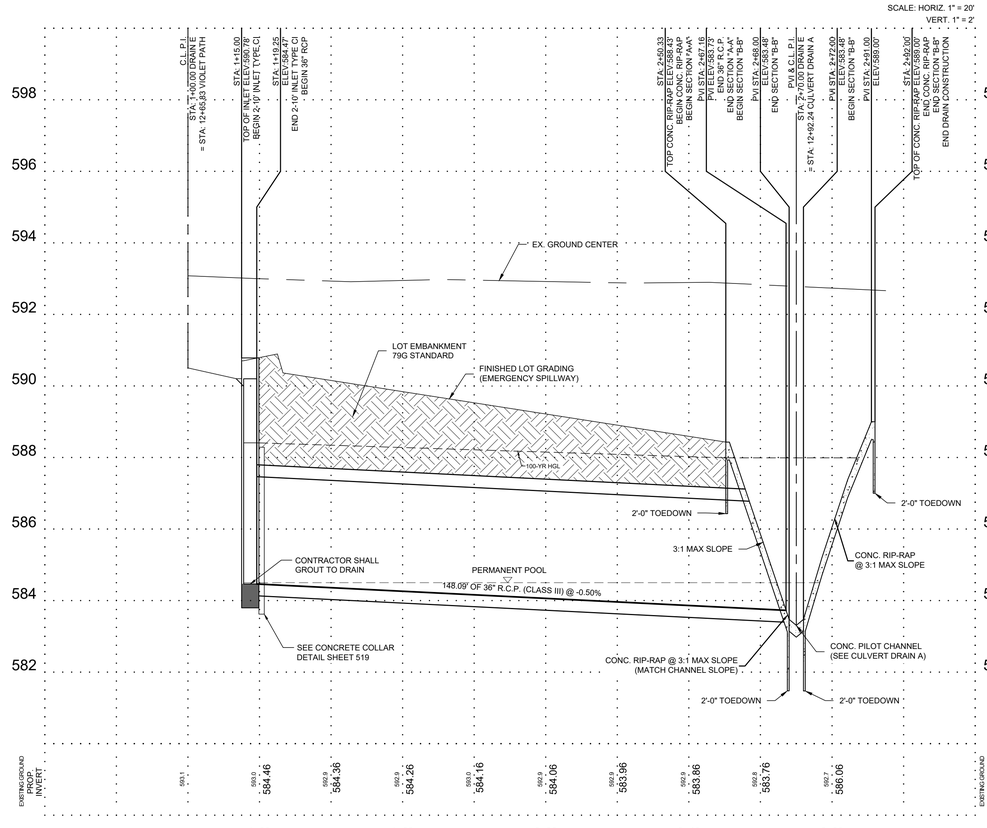
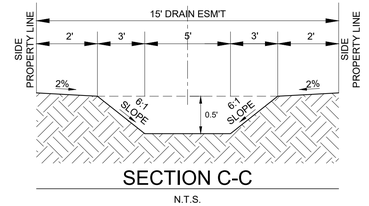
Date: Jun 16, 2023, 1:11pm User ID: Mary.Stewart File: L:\Active\Proj_2021\E0621202_Swenson Heights Unit 4\Xref\E0621202 215 DRAIN D PLAN & PROFILE.dwg



DRAIN "E"

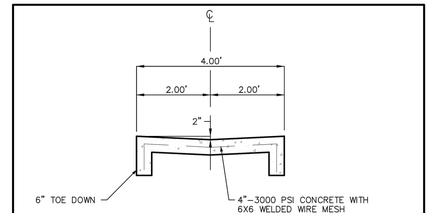
STA. 1+00.00 TO STA. 2+92.00





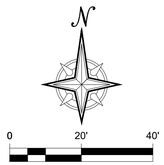
SECTION C-C

N.T.S.



CULVERT DRAIN A
PILOT CHANNEL DETAIL

(N.T.S.)



NOTES:
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2. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.

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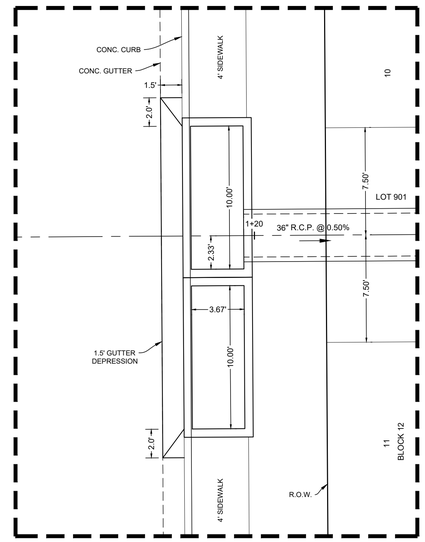
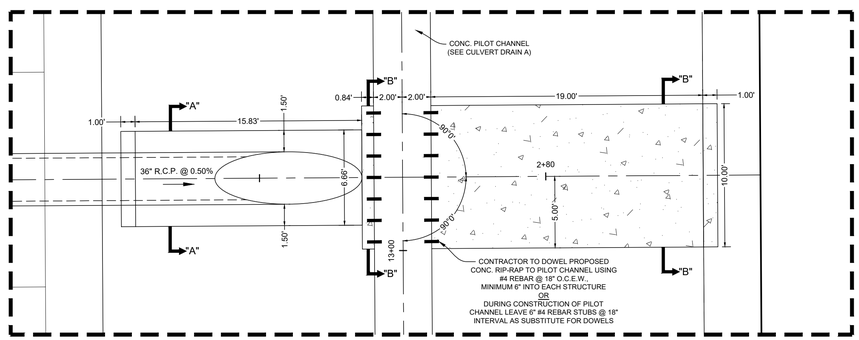
NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE



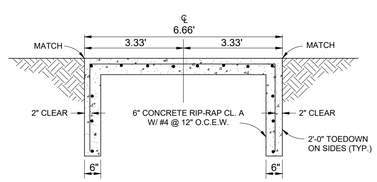
DETAIL "1"

SCALE: 1" = 5'



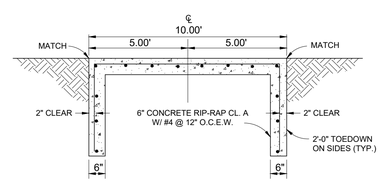
DETAIL "2"

SCALE: 1" = 5'



SECTION "A-A"

NOT TO SCALE
STA: 2+47.92 TO STA: 2+67.16



SECTION "B-B"

NOT TO SCALE
STA: 2+67.16 TO STA: 2+68.00
STA: 2+72.00 TO STA: 2+92.00

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4
DRAIN E PLAN & PROFILE

SHEET NO.

516

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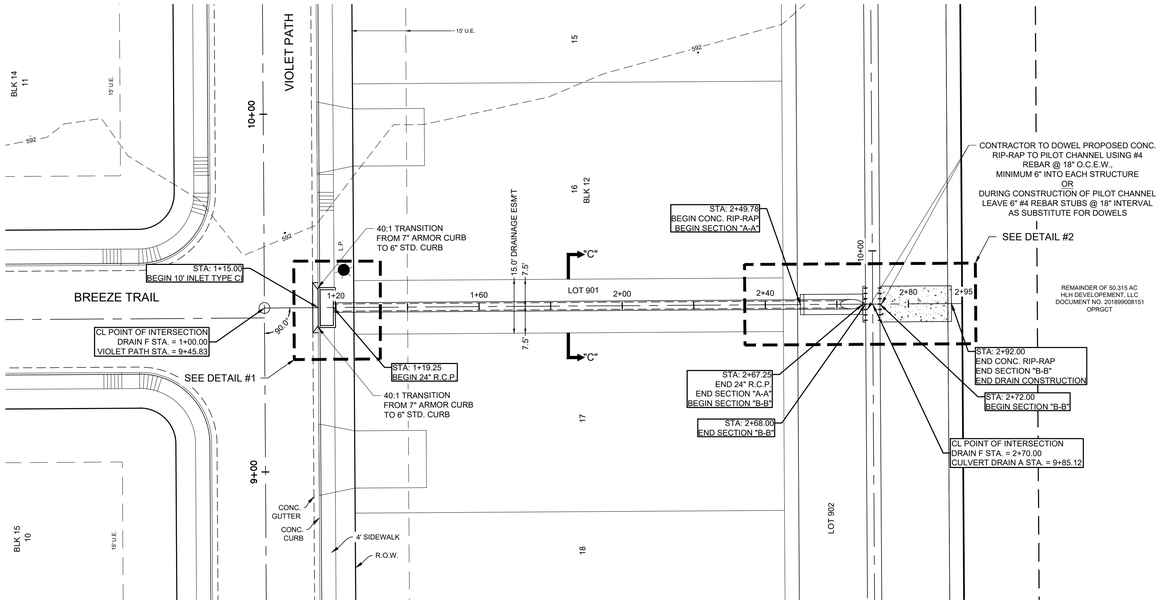
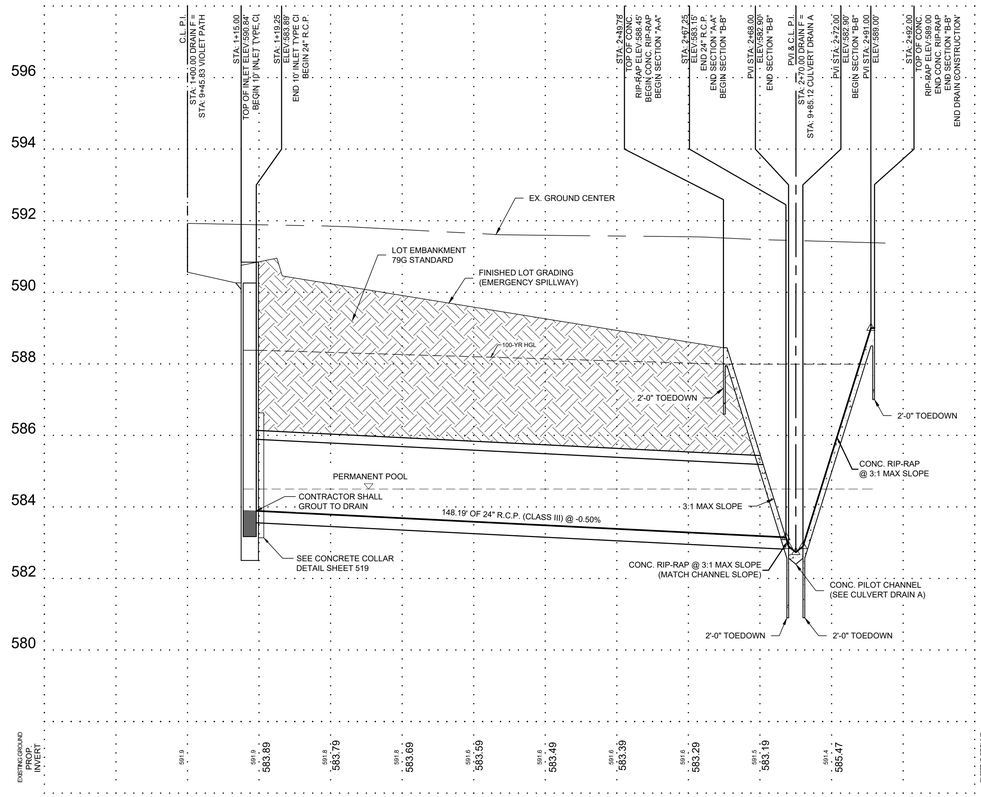
Date: Jun 16, 2023, 11:12pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\cadd\E0621202_SW Drain E PLAN & PROFILE.dwg

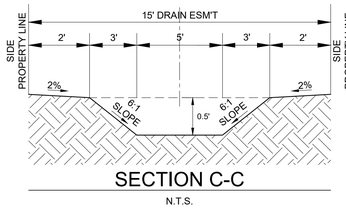


DRAIN "F"

STA. 1+00.00 TO STA. 2+92.00

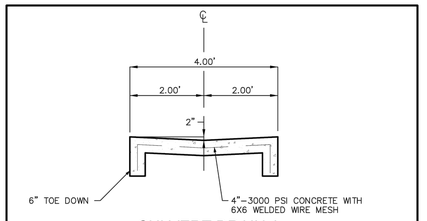
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'





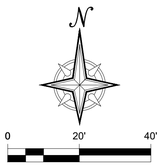
SECTION C-C

N.T.S.



CULVERT DRAIN A
PILOT CHANNEL DETAIL

(N.T.S.)



NOTES:
1. CONTRACTOR TO GROUT INLET BOTTOM TO ENSURE DRAINAGE TO OUTLET PIPE.

2. COVER FOR REINFORCING STEEL IS 2" UNLESS NOTED.

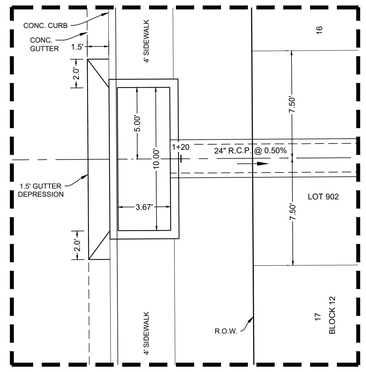
3. ALL CONCRETE SHALL BE CLASS "C" 3600 PSI. @ 28 DAY WITH COURSE AGGREGATE GRADE 2-5.

4. MINIMUM BAR DEVELOPMENT LENGTH FOR SPLICE AND BENDS SHALL BE 24 INCHES.

5. ALL REINFORCING STEEL SHALL BE GRADE 60.

6. MUD SLAB AND INLET BOLTING WILL BE REQUIRED FOR MULTIPLE ADJACENT INLETS. CONTRACTOR TO USE FLOWABLE FILL (COSA ITEM 413.2) FOR MUD SLAB. FLOWABLE FILL SHOULD BE 2" TO 6" THICK AND SHOULD EXTEND BENEATH TOTAL LENGTH OF PROPOSED INLETS.

NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE



DETAIL "1"

SCALE: 1" = 5'

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

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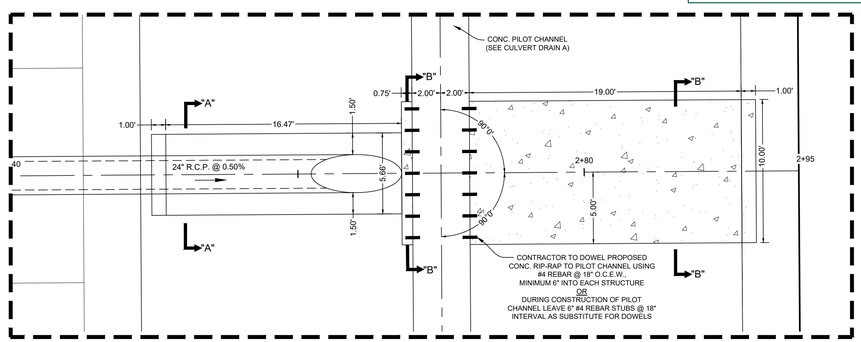

DETAIL "2"

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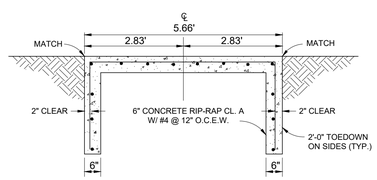

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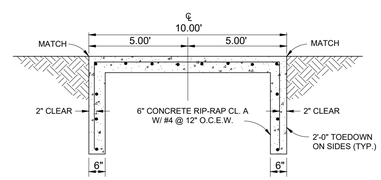

SECTION "B-B"

NOT TO SCALE
STA: 2+66.97 TO STA: 2+68.00
STA: 2+72.00 TO STA: 2+94.00

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

DRAIN F PLAN & PROFILE

SHEET NO.
517

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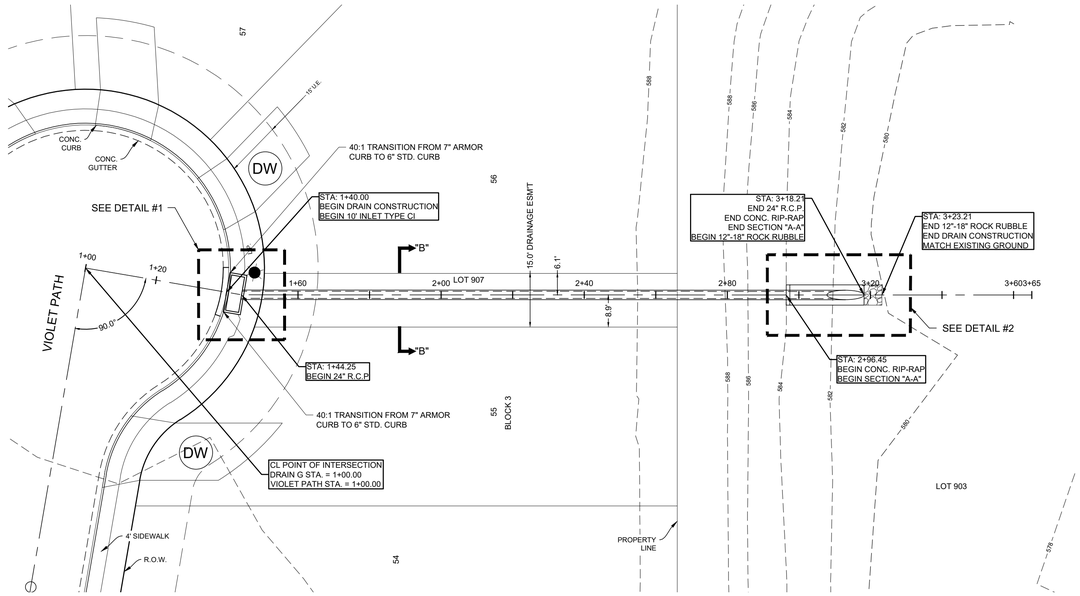
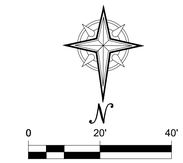
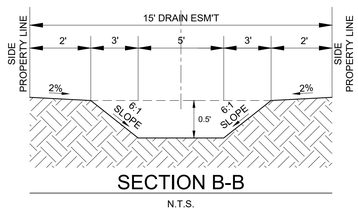


DRAIN "G"

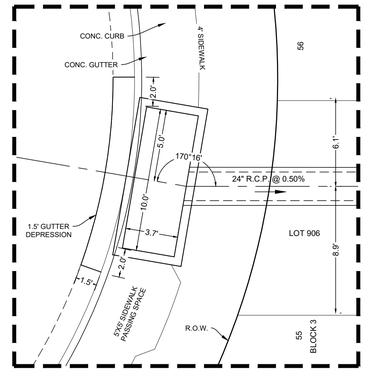
STA. 1+00.00 TO STA. 3+23.21





SECTION B-B

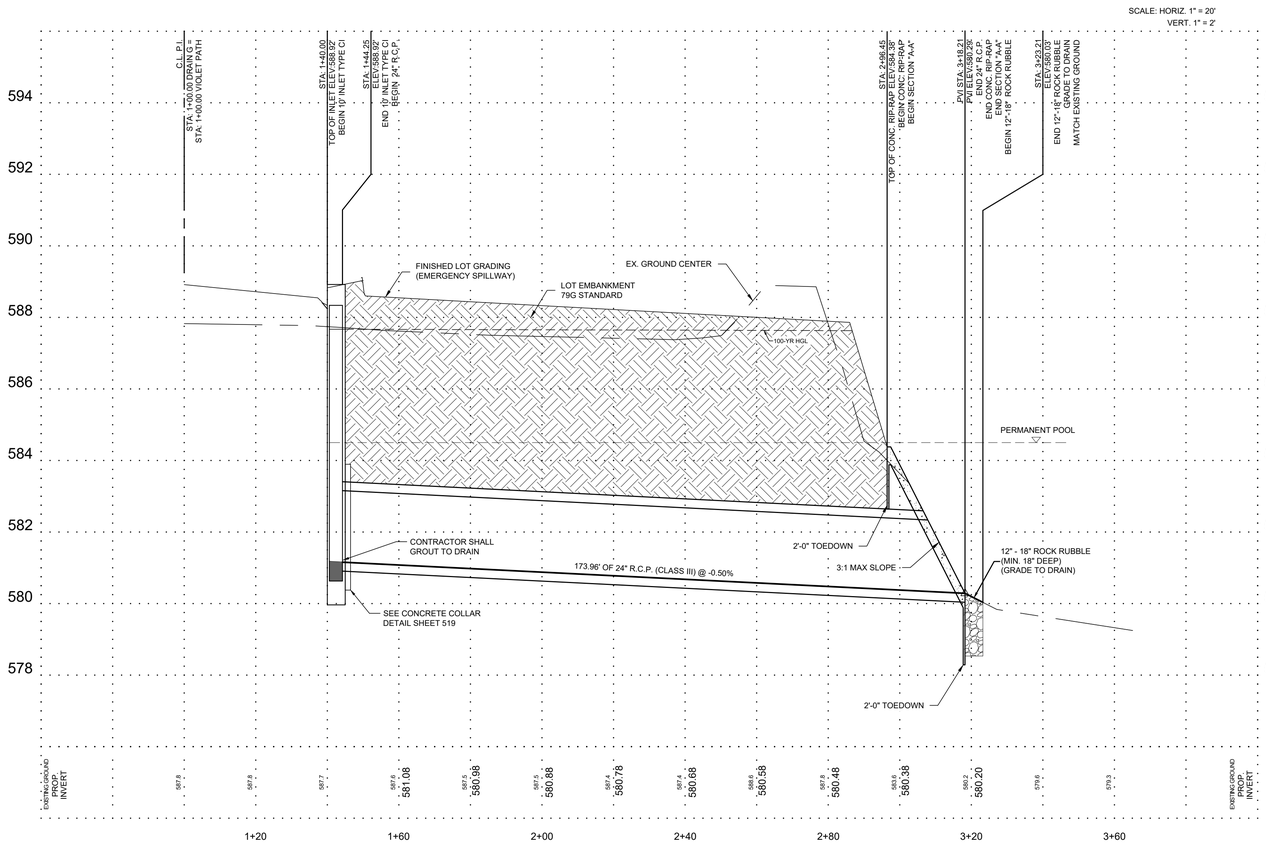
N.T.S.

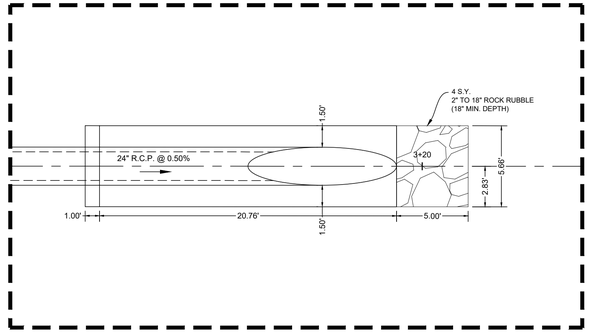


DETAIL "1"

SCALE: 1" = 5'

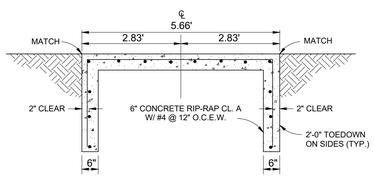
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'





DETAIL "2"

SCALE: 1" = 5'



SECTION "A-A"

NOT TO SCALE
STA: 2+96.45 TO STA: 3+18.21

NOTES:

1. CONTRACTOR TO GROUT INLET BOTTOM TO ENSURE DRAINAGE TO OUTLET PIPE.

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NO SEPERATE PAY ITEM ON ITEMS LISTED ABOVE

POND NOTE:

THE DEVELOPER OF THE SUBDIVISION HAS AN ACTIVE PERMIT TO MODIFY THIS DETENTION FACILITY.

CONTRACTOR TO NOTIFY ENGINEER OF ANY FIELD CHANGES WHICH REQUIRE MODIFICATION OF THE PROPOSED UNIT 4 DRAINAGE OUTFALL.

CEC, AS THE ENGINEER OF RECORD WILL SUBMIT A POST PERMIT MODIFICATION TO ADDRESS FIELD CHANGES AS PART OF THE CONSTRUCTION OF THE UNIT 4 PUBLIC IMPROVEMENTS.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
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REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

DRAIN G PLAN & PROFILE

SHEET NO.

518

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DATE:
FILE:

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

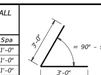
Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Spa	Bars J1 No.	Bars J2 Spa	Bars J2 No.	Estimated Quantities per ft of wing (2-wings) ④ Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per ft of Toewall (1-toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING (2-wings)

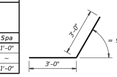
Bar	Size	No.	Spa
D1	#6	–	1'-0"
D2	#6	–	1'-0"
E1	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	–	8"
H1	#4	4	–
P	#4	–	1'-0"
V	#4	–	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	–	1'-0"
M2	#4	2	–
E2	#4	–	1'-0"



BARS D1



BARS D2

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

Hw = H + T + C
Lw = (Hw) (SL) + cosine (θ) for Type PW-1
= (Hw – T) (SL) + cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw – 0.5) (SL) + cosine (θ) for Type PW-2 and Hw < 4'

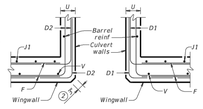
For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

For precast culverts:
Ltw = [(N) (2 U + S) + (N + 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings – SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) – 6 SF for Type PW-2 and Hw≥ 4'
= (2)(Hw)(Lw) – 1.5 SF For Type PW-2 and Hw< 4'

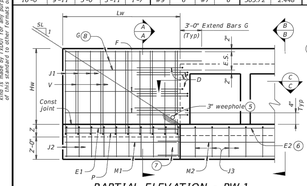
Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

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

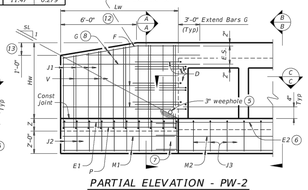
BARS J1 BARS J2 BARS J3 BARS V



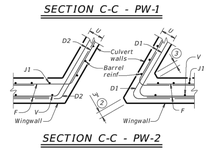
SECTION C-C - PW-1



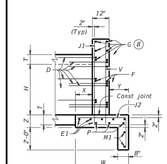
PARTIAL ELEVATION - PW-1



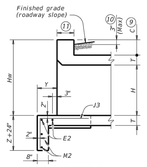
PARTIAL ELEVATION - PW-2



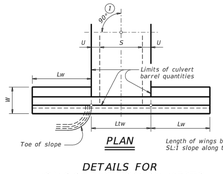
SECTION C-C - PW-2



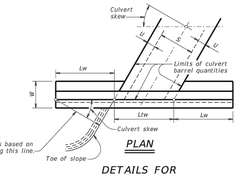
SECTION A-A
(Showing wing reinforcement.)



SECTION B-B
(Showing wing reinforcement.)



PLAN
DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN
DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew – 1"
   For 30° skew – 2"
   For 45° skew – 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
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.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" For Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

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.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the 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 PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE:	pw1dt01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
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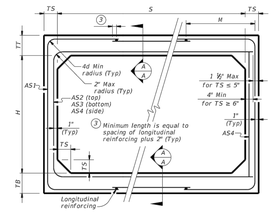
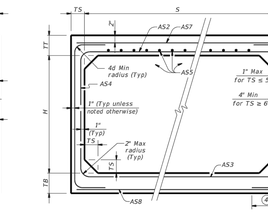
BOX DATA

SECTION DIMENSIONS S (Ft.)	H (Ft.)	TT (In.)	TB (In.)	TS (In.)	Fill Height (Ft.)	M (Min) (In.)	REINFORCING (sq. in. / Ft.) ② AS1	AS2	AS3	AS4	AS5	AS7	AS8	① Lift Weight (tons)
7	3	8	8	8	< 2	–	0.23	0.31	0.22	0.19	0.19	0.19	0.19	9.6
7	3	8	8	8	2 < 3	47	0.27	0.25	0.24	0.19	–	–	–	9.6
7	3	8	8	8	3 – 5	43	0.19	0.19	0.19	0.19	–	–	–	9.6
7	3	8	8	8	10	43	0.21	0.20	0.21	0.19	–	–	–	9.6
7	3	8	8	8	15	43	0.28	0.26	0.27	0.19	–	–	–	9.6
7	3	8	8	8	20	43	0.36	0.34	0.35	0.19	–	–	–	9.6
7	3	8	8	8	25	43	0.45	0.42	0.43	0.19	–	–	–	9.6
7	3	8	8	8	30	43	0.54	0.50	0.51	0.19	–	–	–	9.6
7	4	8	8	8	< 2	–	0.21	0.34	0.25	0.19	0.19	0.19	0.19	10.4
7	4	8	8	8	2 < 3	43	0.23	0.28	0.28	0.19	–	–	–	10.4
7	4	8	8	8	3 – 5	43	0.19	0.22	0.19	0.19	–	–	–	10.4
7	4	8	8	8	10	43	0.19	0.23	0.23	0.19	–	–	–	10.4
7	4	8	8	8	15	41	0.24	0.30	0.30	0.19	–	–	–	10.4
7	4	8	8	8	20	41	0.31	0.38	0.39	0.19	–	–	–	10.4
7	4	8	8	8	25	41	0.38	0.47	0.48	0.19	–	–	–	10.4
7	4	8	8	8	30	41	0.46	0.57	0.57	0.19	–	–	–	10.4
7	5	8	8	8	< 2	–	0.19	0.36	0.27	0.19	0.19	0.19	0.19	11.2
7	5	8	8	8	2 < 3	47	0.21	0.31	0.31	0.19	–	–	–	11.2
7	5	8	8	8	3 – 5	43	0.19	0.24	0.21	0.19	–	–	–	11.2
7	5	8	8	8	10	43	0.19	0.25	0.26	0.19	–	–	–	11.2
7	5	8	8	8	15	41	0.21	0.32	0.33	0.19	–	–	–	11.2
7	5	8	8	8	20	41	0.27	0.41	0.42	0.19	–	–	–	11.2
7	5	8	8	8	25	41	0.33	0.51	0.52	0.19	–	–	–	11.2
7	5	8	8	8	30	41	0.40	0.61	0.62	0.19	–	–	–	11.2
7	6	8	8	8	< 2	–	0.19	0.38	0.30	0.19	0.19	0.19	0.19	12.0
7	6	8	8	8	2 < 3	59	0.19	0.33	0.34	0.19	–	–	–	12.0
7	6	8	8	8	3 – 5	47	0.19	0.25	0.23	0.19	–	–	–	12.0
7	6	8	8	8	10	43	0.19	0.26	0.27	0.19	–	–	–	12.0
7	6	8	8	8	15	41	0.19	0.34	0.35	0.19	–	–	–	12.0
7	6	8	8	8	20	41	0.24	0.43	0.45	0.19	–	–	–	12.0
7	6	8	8	8	25	41	0.30	0.53	0.55	0.19	–	–	–	12.0
7	6	8	8	8	30	41	0.35	0.64	0.65	0.19	–	–	–	12.0
7	7	8	8	8	< 2	–	0.19	0.40	0.33	0.19	0.19	0.19	0.19	12.8
7	7	8	8	8	2 < 3	59	0.19	0.36	0.37	0.19	–	–	–	12.8
7	7	8	8	8	3 – 5	59	0.19	0.27	0.25	0.19	–	–	–	12.8
7	7	8	8	8	10	47	0.19	0.27	0.29	0.19	–	–	–	12.8
7	7	8	8	8	15	43	0.19	0.35	0.37	0.19	–	–	–	12.8
7	7	8	8	8	20	43	0.22	0.44	0.46	0.19	–	–	–	12.8
7	7	8	8	8	25	43	0.27	0.54	0.57	0.19	–	–	–	12.8
7	7	8	8	8	30	41	0.32	0.65	0.67	0.19	–	–	–	12.8

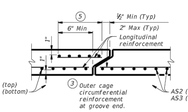
① For box length = 8'-0"
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

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 7'-0" SPAN

SCP-7

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11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-3340
REGISTRATION #F-2214 / #10041000

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

DRAIN DETAILS

SHEET NO.
519

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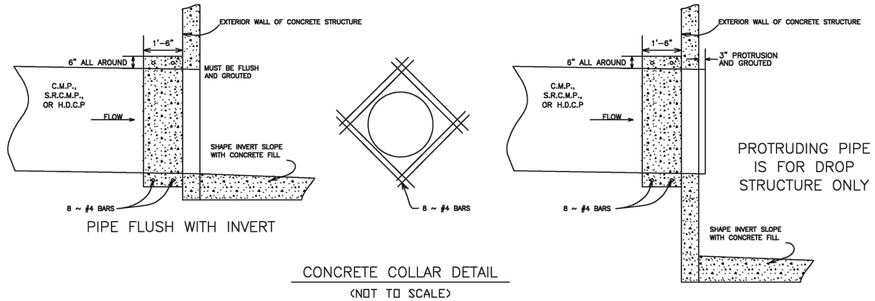
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A-15. THE DEFORMATION SHALL CONFORM TO ASTM. A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER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



CONCRETE COLLAR DETAIL
(NOT TO SCALE)

JANUARY 2006

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEVELOPMENT SERVICES

CONCRETE COLLAR DETAIL

DRAWN BY: ANDREW WINTER, P.E.	DATE	REVISIONS	SCALE: SEE ABOVE
CHECKED BY: SAM DENT, P.E.			DATE: 19 JANUARY 2006
			SHEET: 1 OF 1

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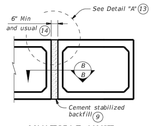
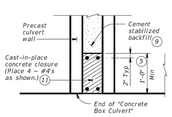
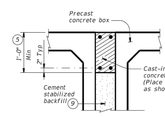


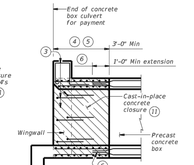
MULTIPLE UNIT PLACEMENT



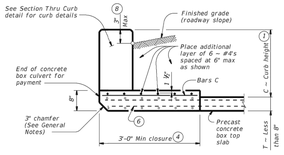
SECTION B-B



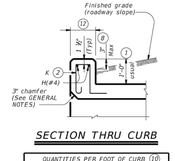
DETAIL "A" (13)



WINGWALL CONNECTION
(Also applies to safety end treatment.)

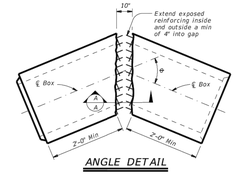


SECTION THRU TOP SLABS LESS THAN 8"



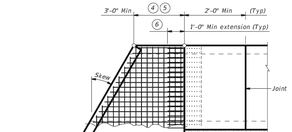
SECTION THRU CURB

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



ANGLE DETAIL

SECTION A-A



PLAN OF SKEWED ENDS
(Showing multi-box placement.)

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 7'-0" high, till 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 boxes 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 ASTM A1064 welded wire reinforcement.
Provide Class C 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.

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Texas Department of Transportation — Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

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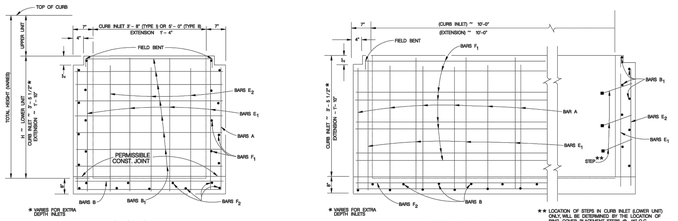
SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

Date: Jan 16, 2023, 1:12pm User ID: MaryStewart File: L:\Swenson Prop\2021\E0621202-Swenson Heights Unit 4\cad\E0621202 519-522 DRAIN DETAILS.dwg



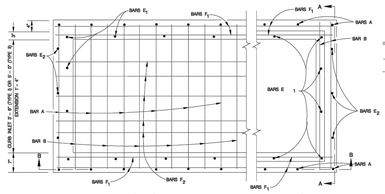
SECTION A–A

SECTION B–B

REINFORCING STEEL

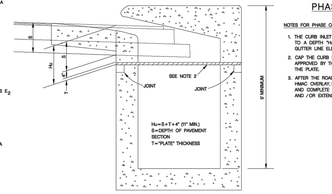
LOWER UNIT 10'X 3'– 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-8"
B_1	VARIES	#4	12"	4'-8"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	9	#4	—	10'-10"

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'-10"
F_2	11	#4	—	10'-10"



FLOOR STEEL

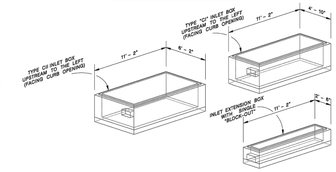
WALL STEEL



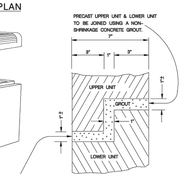
PHASE CONSTRUCTION

GENERAL NOTES

1. 5' INLETS AND 3' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE II (L–C).
2. TYPE C-II 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 BENT.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 9" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SIZE OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE PAIRED A MAXIMUM OF 9".



PLAN



JOINT DETAIL

WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND SPACE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.

CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

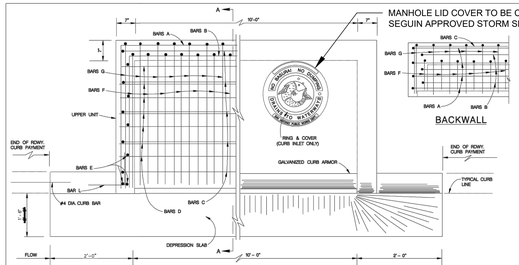
BARS A
(LOWER UNIT)

MAY 2009

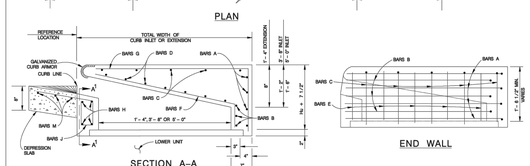
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

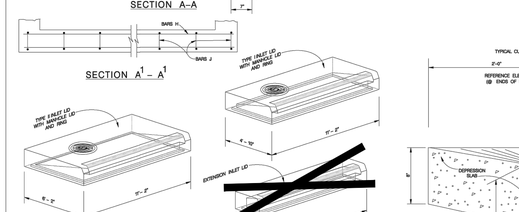
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3

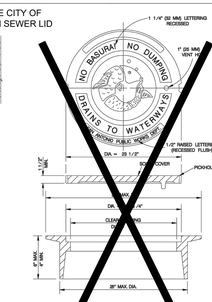
_____ % SUBMITTAL | PROJECT NO.: _____ DATE: _____
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: S.S. HOSSEINI, P.E. | SHEET NO.: ___ OF ___



PLAN







MANHOLE LID & RING DETAIL (ITEM 409)

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.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu = 11")

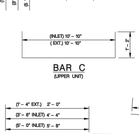
UPPER UNIT 10' X 3'-8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	10'-10"	53
B	3	#4	——	10'-10"	38
C	5	#4	11"	12'-2"	44
D	7	#4	6"	12'-10"	91
E	12	#4	11"	1'-2"	9
F	20	#5	6"	4'-0"	147
G	22	#5	6"	5'-8"	187
H	4	#4	——	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	——	3'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					820 LBS.

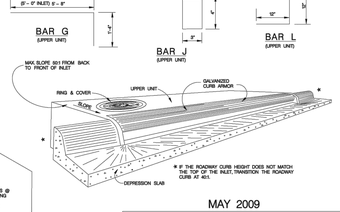
UPPER UNIT 10' X 5'-0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	10'-10"	60
B	3	#4	——	12'-4"	43
C	7	#4	11"	13'-2"	82
D	11	#4	6"	13'-10"	93
E	16	#4	11"	1'-2"	13
F	31	#5	6"	5'-8"	179
G	22	#5	6"	7'-0"	231
H	4	#4	——	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	——	3'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					759 LBS.

CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

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



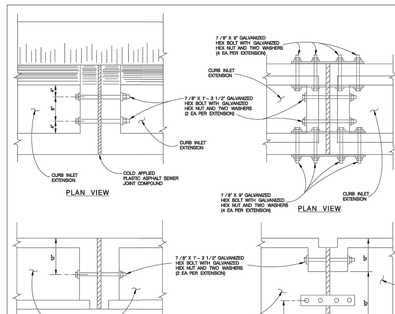


MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

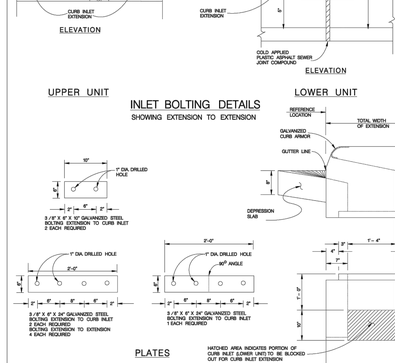
_____ % SUBMITTAL | PROJECT NO.: _____ DATE: _____
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: S.S. HOSSEINI, P.E. | SHEET NO.: ___ OF ___



UPPER UNIT

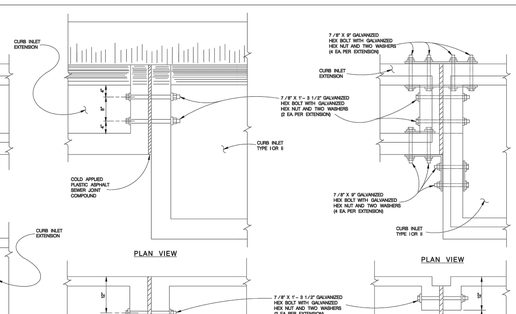
LOWER UNIT

INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION

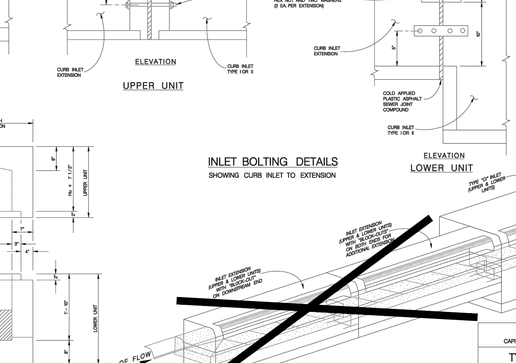


PLATES

SECTION A–A CURB INLET EXTENSION TYPE E



INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION



TYPE "CI" INLET WITH INLET EXTENSION BOXES

UPPER UNIT EXTENSION (FOR H_U = 11")

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	10'– 2"	41
B	3	#4	——	10'– 2"	28
C	3	#4	11"	12'– 2"	28
D	3	#4	6"	10'– 10"	22
E	8	#4	11"	1'– 2"	6
F	21	#5	6"	2'– 0"	63
G	22	#5	6"	5'– 4"	110
H	4	#4	——	10'– 10"	29
J	12	#4	12"	3'– 6"	28
L	4	#4	——	3'– 0"	5
M	3	#4	——	14'– 8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6'– 2"	49
B	11	#4	12"	2'– 2"	16
B_1	3	#4	6"	2'– 2"	4
E_1	18	#4	18"±	2'– 9"	27
E_2	4	#4	18"±	2'– 1"	6
F_1	16	#4	12"±	10'– 10"	116
F_2	5	#4	——	10'– 10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

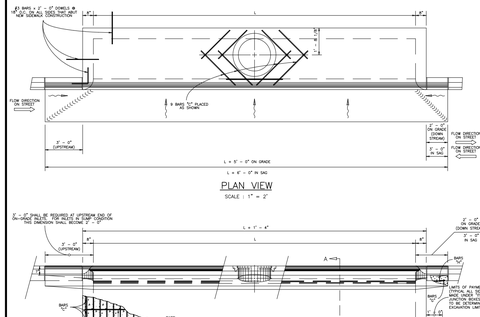
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSIONS SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS COVER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

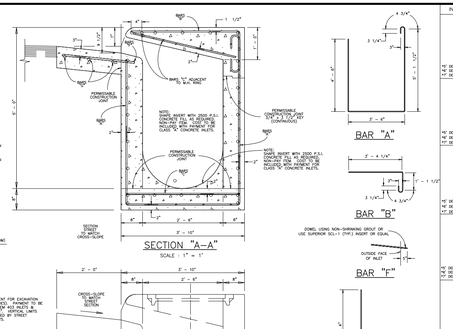
MAY 2009

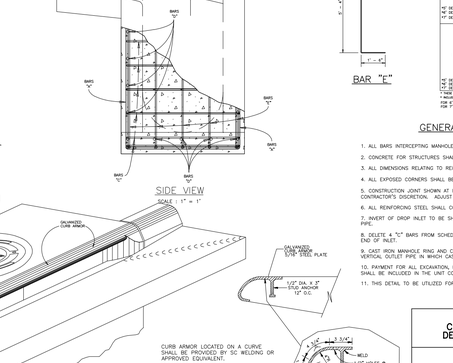
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

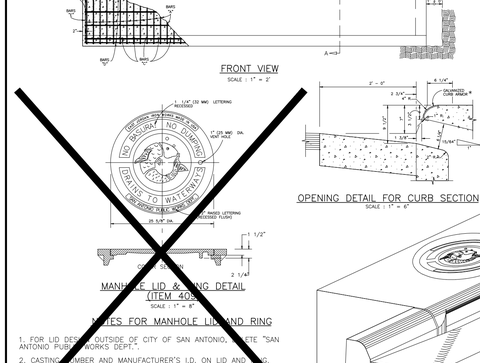
_____ % SUBMITTAL | PROJECT NO.: _____ DATE: _____
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: S.S. HOSSEINI, P.E. | SHEET NO.: ___ OF ___







OPENING DETAIL FOR CURB SECTION
SCALE : 1" = 6"



MANHOLE LID & RING DETAIL (ITEM 409)
SCALE : 1" = 6"

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.

CURB ARMOR LOCATED ON A CURVE SHALL BE PROVIDED BY SC WELDING OR APPROVED EQUIVALENT:

SC WELDING
521 FRIO CITY ROAD
SAN ANTONIO, TX
210–226–9237

CURB ARMOR DETAIL

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3/4"
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. 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.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
11. THIS DETAIL TO BE UTILIZED FOR CAST IN PLACE INLETS.

JANUARY 2005

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

TYPE "C" INLET
STANDARDS

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

****** IMPORANT NOTE: PLEASE SEE SHEET 521 FOR CITY OF SEGUIN APPROVED STORM SEWER MANHOLE LID ******

L.T.E.
DESIGNED BY: L.T.E.
DRAWN BY: 09/2021
DATE: E0621202
JOB NO.:

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
PH: (210) 641-8999
FAX: (210) 641-8998
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

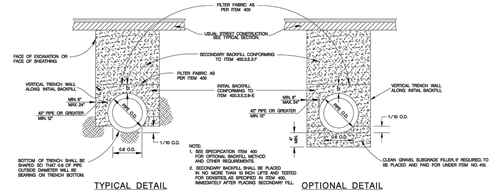
SWENSON HEIGHTS
SUBDIVISION UNIT 4

DRAIN DETAILS

SHEET NO.
520

THIS DOCUMENT HAS BEEN PROVIDED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REFER ONLY TO FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

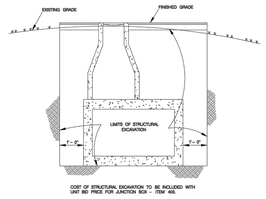
Date: Jun 16, 2023, 1:13pm User ID: MaryStewart File: L:\Drawings\Proj\2021\0621202_Swenson Heights Unit 4\Cover\0621202_SH-522 DRAIN DETAILS.dwg



TYPICAL DETAIL

OPTIONAL DETAIL

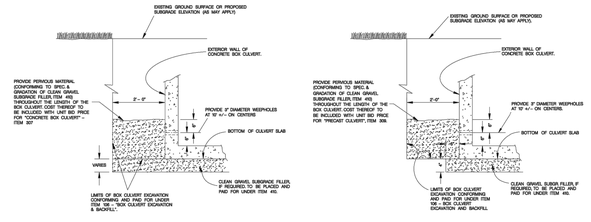
PIPE BEDDING & BACKFILL DETAILS



COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX – ITEM 465.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

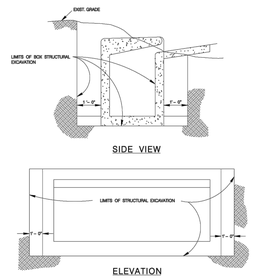
NO SCALE



CAST-IN-PLACE BOX CULVERT

PRECAST BOX CULVERT

CONCRETE BOX CULVERT



SIDE VIEW

ELEVATION

COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR INLETS – ITEM 465.

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

NO SCALE

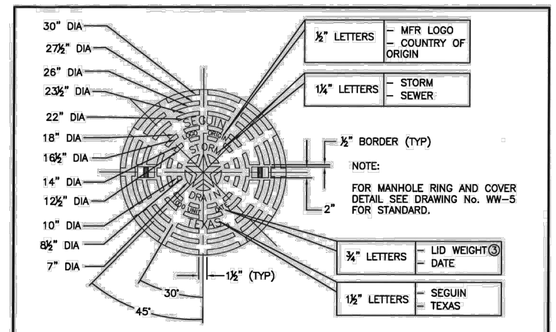
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

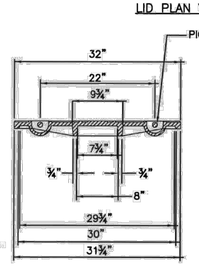
PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

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

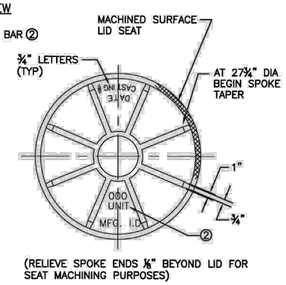
SHEET NO.: ___ OF ___



LID PLAN VIEW



LID SECTION VIEW



(RELIEVE SPOKE ENDS ⅛" BEYOND LID FOR SEAT MACHINING PURPOSES)

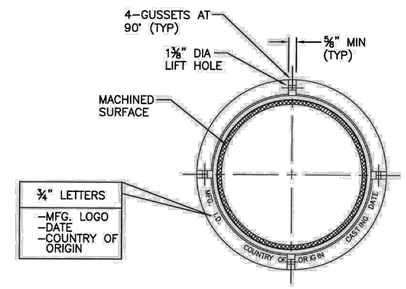
LID SECTION VIEW

SEGUIN TEXAS
It's real.

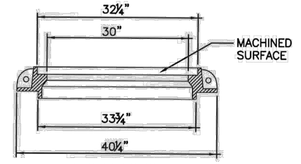
DATE ISSUED:	JUNE 1, 2013	
REV	DATE	BY

TITLE: STORM SEWER MANHOLE RING AND COVER SHEET 1 OF 3

SCALE: N.T.S. | DRAWING No.: STM-4



MANHOLE RING



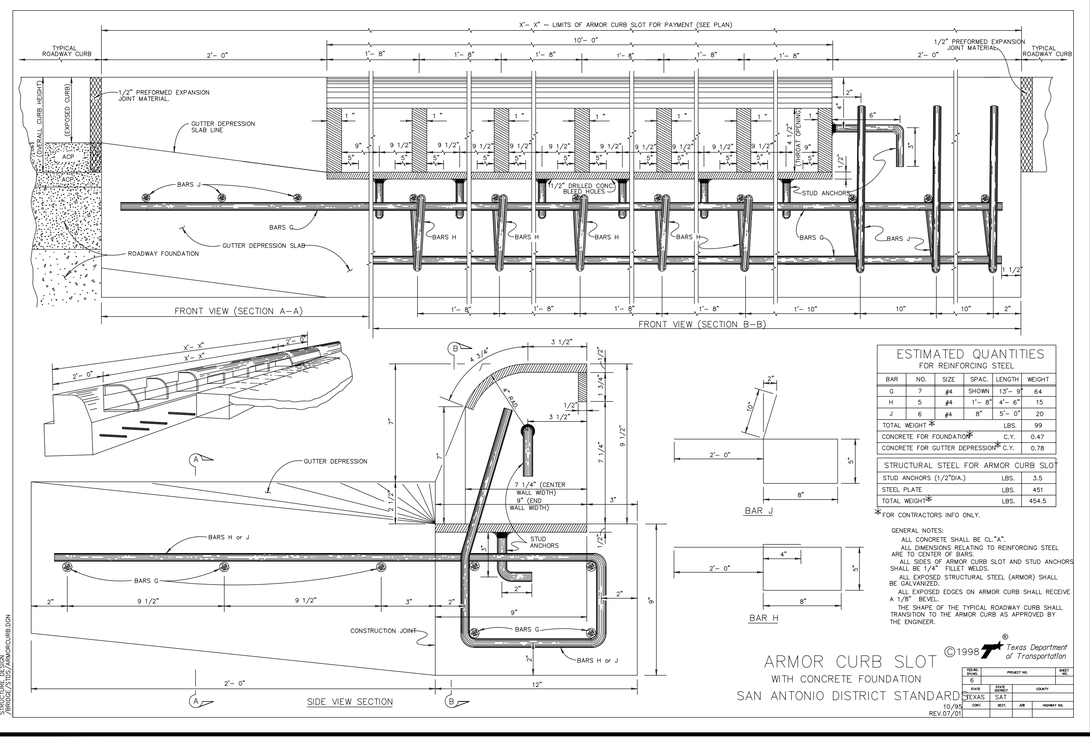
RING SECTION

SEGUIN TEXAS
It's real.

DATE ISSUED:	JUNE 1, 2013	
REV	DATE	BY

TITLE: STORM SEWER MANHOLE RING AND COVER SHEET 2 OF 3

SCALE: N.T.S. | DRAWING No.: STM-5



ESTIMATED QUANTITIES FOR REINFORCING STEEL

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'– 8"	64
H	5	#4	1'– 8"	4'– 6"	15
J	6	#4	8"	5'– 0"	20
TOTAL WEIGHT *				LBS.	99
CONCRETE FOR FOUNDATION *				C.Y.	0.47
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT

STUD ANCHORS (1/2"DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

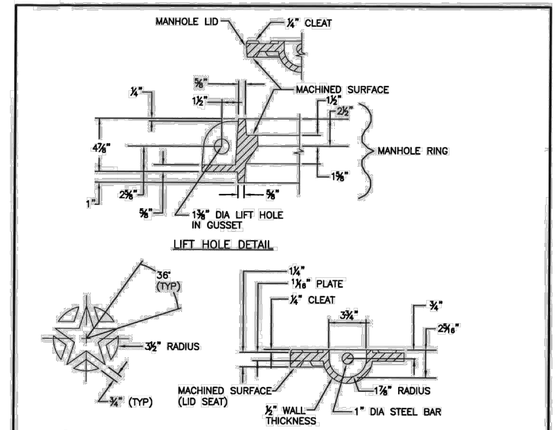
GENERAL NOTES:
ALL CONCRETE SHALL BE CL "A".
ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.
ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.
ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.
THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION
SAN ANTONIO DISTRICT STANDARD

©1998 Texas Department of Transportation

REVISIONS	PROJECT NO.	SHEET NO.
6		
CIVIL	STATE DIST. NUMBER	COUNTY
TEXAS	SAT	
CONT.	SECT.	JOB	HIGHWAY NO.

10/95
REV.07/01



NOTES:

1. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 1" DIA STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 210 LBS FOR CAST IRON OR 175 LBS FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 25,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
5. FILLETS SHALL BE ¼" RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

SEGUIN TEXAS
It's real.

DATE ISSUED:	JUNE 1, 2013.	
REV	DATE	BY

TITLE: STORM SEWER MANHOLE RING AND COVER SHEET 3 OF 3

SCALE: N.T.S. | DRAWING No.: STM-6

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS – CAPITAL PROJECTS/ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8998
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4

DRAIN DETAILS

SHEET NO.
521

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STRUCTURE DESIGN
PRIMOS / 21010 / ANNOVILMR.DGN

Date: Jan 16, 2024, 1:15pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\0621202_Swenson Heights Unit 4\Dgn\0621202 STM-522 DRAIN DETAILS.dwg

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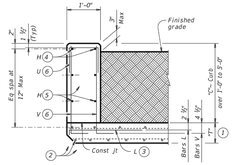
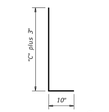
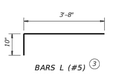


TYPICAL SECTION

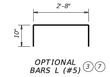
Used for curbs over 1'-0" to 5'-0"



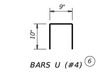
BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max



BARS U (#4) (6)
Spaced at 12" Max

TABLE OF ESTIMATED CURB QUANTITIES (8)		
Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	8.9
1'-6"	0.056	14.3
2'-0"	0.074	15.4
2'-6"	0.093	17.7
3'-0"	0.111	18.8
3'-6"	0.130	21.2
4'-0"	0.148	22.2
4'-6"	0.167	24.6
5'-0"	0.185	25.6

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 7" thick, see SCP-MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 ½" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class "C" concrete (f'_c = 3,600 psi) minimum for curbs.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR1, PR2 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

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

Texas Department of Transportation | Bridge Division Standard

EXTENDED CURB DETAILS
FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE:	ecdstet1.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
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REVISIONS					
03-16: General Notes added T631-CM.		DIST	COUNTY		SHEET NO.

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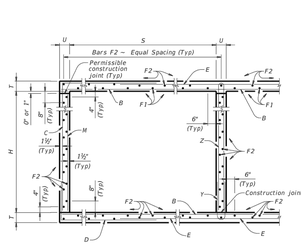
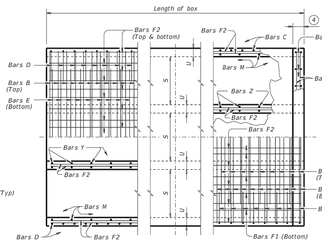


TYPICAL SECTION



BOTTOM SLAB — PART PLANS — TOP SLAB

(1) 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 Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) 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.

(3) 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.

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, H, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

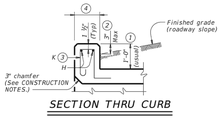
CONSTRUCTION NOTES:
Do not use permanent forms.
Construct the bottom edge of the top slab 3" at the entrance.
Optional construction joints shown at the Flow line by a maximum of 6". If this option is taken, Bars H may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-6" Min
- Uncoated or galvanized – #5 = 2'-1" Min
- Uncoated or galvanized – #6 = 2'-6" Min

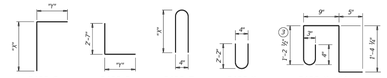
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
3'-0"	3'-6 ½"	4'-5"
4'-0"	4'-6 ½"	4'-5"
5'-0"	5'-6 ½"	4'-5"
6'-0"	6'-6 ½"	4'-5"
7'-0"	7'-6 ½"	4'-5"



BARS C — BARS D — BARS Z — BARS Y — BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

HL93 LOADING — SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
7'-0" SPAN
0' TO 10' FILL

MC-7-10

FILE:	mc710ste-20.dgn	DN: TXDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS					
		DIST	COUNTY		SHEET NO.

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

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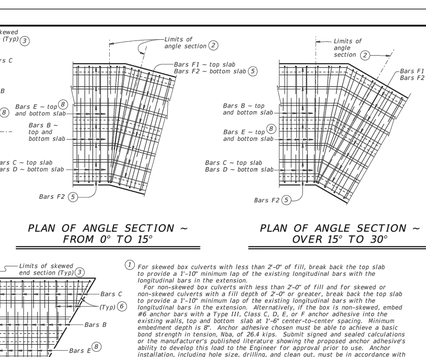
REGISTRATION #F-2214 / #10041000

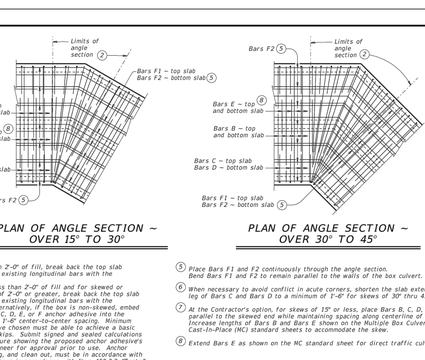
6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

BOTTOM SLAB — TOP SLAB

PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°

PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
Tilt bars as necessary to maintain the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B and Bars E will vary in the skewed end sections.

(4) (One half of overall width) x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.

(8) Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) with these exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-In-Place (MC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

FILE:	mc-mdste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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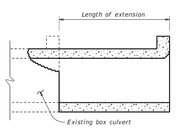
		DIST	COUNTY		SHEET NO.



LENGTHENING DETAIL (1)

BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																																		QUANTITIES					
NUMBER OF SPANS	SECTION DIMENSIONS				Bars B				Bars C & D				Bars E				Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H & 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	7'-0"	3'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	7'-11"	1,338	7'-0"	1	183	108	#6	9"	11'-5"	1,852	10	18"	39'-9"	266	54	18"	39'-9"	1,434	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	15'-6"	41	34	95	0.972	230.8	1.2	136	40.0	9,366
3	7'-0"	3'-0"	8"	7"	108	#6	9"	23'-1"	3,744	162	#5	6"	7'-11"	1,338	7'-0"	1	183	108	#6	9"	19'-0"	3,082	15	18"	39'-9"	398	77	18"	39'-9"	2,045	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	23'-1"	62	50	139	1.412	321.5	1.7	201	58.2	13,061
4	7'-0"	3'-0"	8"	7"	108	#6	9"	30'-8"	4,975	162	#5	6"	7'-11"	1,338	7'-0"	1	183	108	#6	9"	26'-7"	4,312	20	18"	39'-9"	531	100	18"	39'-9"	2,655	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	30'-8"	82	64	178	1.851	412.3	2.3	260	76.3	16,751
5	7'-0"	3'-0"	8"	7"	108	#6	9"	38'-3"	6,205	162	#5	6"	7'-11"	1,338	7'-0"	1	183	108	#6	9"	34'-2"	5,542	25	18"	39'-9"	664	123	18"	39'-9"	3,266	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	38'-3"	102	80	223	2.290	503.0	2.8	325	94.4	20,446
6	7'-0"	3'-0"	8"	7"	108	#6	9"	45'-10"	7,435	162	#5	6"	7'-11"	1,338	7'-0"	1	183	108	#6	9"	41'-9"	6,773	30	18"	39'-9"	797	146	18"	39'-9"	3,877	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	45'-10"	122	94	262	2.729	593.9	3.4	384	112.6	24,138
2	7'-0"	4'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	8'-11"	1,507	7'-0"	1	183	108	#6	9"	11'-5"	1,852	10	18"	39'-9"	266	54	18"	39'-9"	1,434	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	15'-6"	41	34	95	1.037	238.6	1.2	136	42.6	9,680
3	7'-0"	4'-0"	8"	7"	108	#6	9"	23'-1"	3,744	162	#5	6"	8'-11"	1,507	7'-0"	1	183	108	#6	9"	19'-0"	3,082	15	18"	39'-9"	398	77	18"	39'-9"	2,045	108	9"	4'-0"	289	108	9"	4'-7"	331	9'-3"	667	23'-1"	62	50	139	1.498	331.2	1.7	201	61.6	13,447
4	7'-0"	4'-0"	8"	7"	108	#6	9"	30'-8"	4,975	162	#5	6"	8'-11"	1,507	7'-0"	1	183	108	#6	9"	26'-7"	4,312	20	18"	39'-9"	531	100	18"	39'-9"	2,655	108	9"	4'-0"	289	162	9"	4'-7"	496	9'-3"	1,001	30'-8"	82	64	178	1.959	423.7	2.3	260	80.6	17,209
5	7'-0"	4'-0"	8"	7"	108	#6	9"	38'-3"	6,205	162	#5	6"	8'-11"	1,507	7'-0"	1	183	108	#6	9"	34'-2"	5,542	25	18"	39'-9"	664	123	18"	39'-9"	3,266	108	9"	4'-0"	289	216	9"	4'-7"	661	9'-3"	1,335	38'-3"	102	80	223	2.420	516.3	2.8	325	99.6	20,977
6	7'-0"	4'-0"	8"	7"	108	#6	9"	45'-10"	7,435	162	#5	6"	8'-11"	1,507	7'-0"	1	183	108	#6	9"	41'-9"	6,773	30	18"	39'-9"	797	146	18"	39'-9"	3,877	108	9"	4'-0"	289	270	9"	4'-7"	827	9'-3"	1,668	45'-10"	122	94	262	2.881	608.9	3.4	384	118.6	24,740
2	7'-0"	5'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	9'-11"	1,676	7'-0"	1	183	108	#6	9"	11'-5"	1,852	10	18"	39'-9"	266	60	18"	39'-9"	1,593	108	9"	5'-0"	361	54	9"	4'-7"	165	11'-3"	406	15'-6"	41	34	95	1.102	250.4	1.2	136	45.2	10,152
3	7'-0"	5'-0"	8"	7"	108	#6	9"	23'-1"	3,744	162	#5	6"	9'-11"	1,676	7'-0"	1	183	108	#6	9"	19'-0"	3,082	15	18"	39'-9"	398	85	18"	39'-9"	2,257	108	9"	5'-0"	361	108	9"	4'-7"	331	11'-3"	812	23'-1"	62	50	139	1.584	346.1	1.7	201	65.1	14,045
4	7'-0"	5'-0"	8"	7"	108	#6	9"	30'-8"	4,975	162	#5	6"	9'-11"	1,676	7'-0"	1	183	108	#6	9"	26'-7"	4,312	20	18"	39'-9"	531	110	18"	39'-9"	2,921	108	9"	5'-0"	361	162	9"	4'-7"	496	11'-3"	1,217	30'-8"	82	64	178	2.067	441.8	2.3	260	85.0	17,932
5	7'-0"	5'-0"	8"	7"	108	#6	9"	38'-3"	6,205	162	#5	6"	9'-11"	1,676	7'-0"	1	183	108	#6	9"	34'-2"	5,542	25	18"	39'-9"	664	135	18"	39'-9"	3,585	108	9"	5'-0"	361	216	9"	4'-7"	661	11'-3"	1,623	38'-3"	102	80	223	2.549	537.5	2.8	325	104.8	21,825
6	7'-0"	5'-0"	8"	7"	108	#6	9"	45'-10"	7,435	162	#5	6"	9'-11"	1,676	7'-0"	1	183	108	#6	9"	41'-9"	6,773	30	18"	39'-9"	797	160	18"	39'-9"	4,248	108	9"	5'-0"	361	270	9"	4'-7"	827	11'-3"	2,029	45'-10"	122	94	262	3.032	633.2	3.4	384	124.7	25,713
2	7'-0"	6'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	10'-11"	1,845	7'-0"	1	183	108	#6	9"	11'-5"	1,852	10	18"	39'-9"	266	66	18"	39'-9"	1,752	108	9"	6'-0"	433	54	9"	4'-7"	165	13'-3"	478	15'-6"	41	34	95	1.167	262.2	1.2	136	47.8	10,624
3	7'-0"	6'-0"	8"	7"	108	#6	9"	23'-1"	3,744	162	#5	6"	10'-11"	1,845	7'-0"	1	183	108	#6	9"	19'-0"	3,082	15	18"	39'-9"	398	93	18"	39'-9"	2,469	108	9"	6'-0"	433	108	9"	4'-7"	331	13'-3"	956	23'-1"	62	50	139	1.671	361.0	1.7	201	68.6	14,642
4	7'-0"	6'-0"	8"	7"	108	#6	9"	30'-8"	4,975	162	#5	6"	10'-11"	1,845	7'-0"	1	183	108	#6	9"	26'-7"	4,312	20	18"	39'-9"	531	120	18"	39'-9"	3,186	108	9"	6'-0"	433	162	9"	4'-7"	496	13'-3"	1,434	30'-8"	82	64	178	2.175	459.9	2.3	260	89.3	18,655
5	7'-0"	6'-0"	8"	7"	108	#6	9"	38'-3"	6,205	162	#5	6"	10'-11"	1,845	7'-0"	1	183	108	#6	9"	34'-2"	5,542	25	18"	39'-9"	664	147	18"	39'-9"	3,903	108	9"	6'-0"	433	216	9"	4'-7"	661	13'-3"	1,912	38'-3"	102	80	223	2.679	558.7	2.8	325	110.0	22,673
6	7'-0"	6'-0"	8"	7"	108	#6	9"	45'-10"	7,435	162	#5	6"	10'-11"	1,845	7'-0"	1	183	108	#6	9"	41'-9"	6,773	30	18"	39'-9"	797	174	18"	39'-9"	4,620	108	9"	6'-0"	433	270	9"	4'-7"	827	13'-3"	2,390	45'-10"	122	94	262	3.183	657.6	3.4	384	130.7	26,687
2	7'-0"	7'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	11'-11"	2,014	7'-0"	1	183	108	#6	9"	11'-5"	1,852	10	18"	39'-9"	266	66	18"	39'-9"	1,752	108	9"	7'-0"	505	54	9"	4'-7"	165	15'-3"	550	15'-6"	41	34	95	1.231	270.0	1.2	136	50.4	10,937
3	7'-0"	7'-0"	8"	7"	108	#6	9"	23'-1"	3,744	162	#5	6"	11'-11"	2,014	7'-0"	1	183	108	#6	9"	19'-0"	3,082	15	18"	39'-9"	398	93	18"	39'-9"	2,469	108	9"	7'-0"	505	108	9"	4'-7"	331	15'-3"	1,100	23'-1"	62	50	139	1.757	370.7	1.7	201	72.0	15,027
4	7'-0"	7'-0"	8"	7"	108	#6	9"	30'-8"	4,975	162	#5	6"	11'-11"	2,014	7'-0"	1	183	108	#6	9"	26'-7"	4,312	20	18"	39'-9"	531	120	18"	39'-9"	3,186	108	9"	7'-0"	505	162	9"	4'-7"	496	15'-3"	1,650	30'-8"	82	64	178	2.283	471.3	2.3	260	93.6	19,112
5	7'-0"	7'-0"	8"	7"	108	#6	9"	38'-3"	6,205	162	#5	6"	11'-11"	2,014	7'-0"	1	183	108	#6	9"	34'-2"	5,542	25	18"	39'-9"	664	147	18"	39'-9"	3,903	108	9"	7'-0"	505	216	9"	4'-7"	661	15'-3"	2,200	38'-3"	102	80	223	2.809	571.9	2.8	325	115.2	23,202
6	7'-0"	7'-0"	8"	7"	108	#6	9"	45'-10"	7,435	162	#5	6"	11'-11"	2,014	7'-0"	1	183	108	#6	9"	41'-9"	6,773	30	18"	39'-9"	797	174	18"	39'-9"	4,620	108	9"	7'-0"	505	270	9"	4'-7"	827	15'-3"	2,750	45'-10"	122	94	262	3.334	672.6	3.4	384	136.8	27,288

HL93 LOADING — SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
7'-0" SPAN
0' TO 10' FILL

MC-7-10

FILE:	mc710ste-20.dgn	DN: TBE	CK: BRP	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS					
		DIST	COUNTY		SHEET NO.

SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

REV	DATE	DESCRIPTION
1	7/7/2022	ADDED SHEET 2 OF 2

SWENSON HEIGHTS SUBDIVISION UNIT 4

DRAIN DETAILS

SHEET NO.
522

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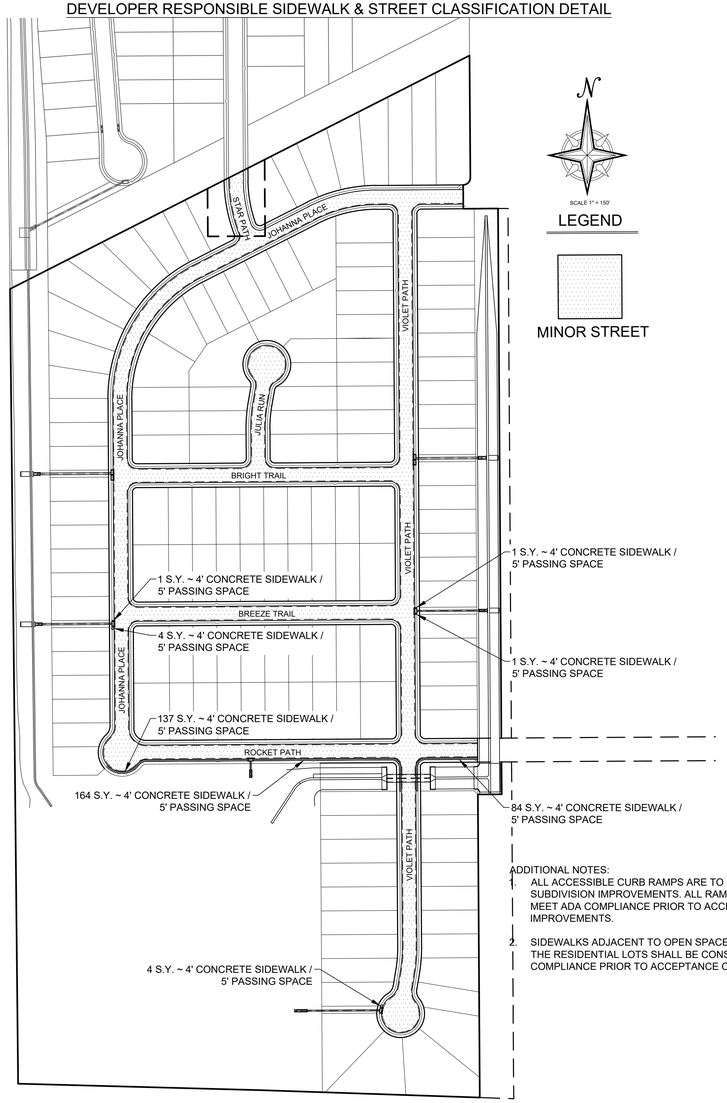
Date: Jun 16, 2023, 1:15pm User: ID: MaryStewart File: L:\Projects\Proj_2021\E0621202_Swenson Heights Unit 4\dwg\E0621202 STR-422 DRAIN DETAILS.dwg

DEVELOPER RESPONSIBLE SIDEWALK & STREET CLASSIFICATION DETAIL



ADDITIONAL NOTES:

1. ALL ACCESSIBLE CURB RAMPS ARE TO BE CONSTRUCTED AT TIME OF SUBDIVISION IMPROVEMENTS. ALL RAMPS SHOULD BE INSPECTED AND MEET ADA COMPLIANCE PRIOR TO ACCEPTANCE OF PUBLIC IMPROVEMENTS.
2. SIDEWALKS ADJACENT TO OPEN SPACE AREAS AND OUTSIDE LIMITS OF THE RESIDENTIAL LOTS SHALL BE CONSTRUCTED, AND MEET ADA COMPLIANCE PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS.

MINOR PRIMARY PAVEMENT DESIGN

PAVEMENT DESIGN WAS PREPARED BY INTEC

PAVEMENT STRUCTURE (DESIGN CBR=2.0)
2" HOT MIX ASPHALT TYPE D
12" FLEXIBLE BASE (TYPE A, GRADE 1 OR 2)
6" LIME STABILIZED SUBGRADE (35#/S.Y.)

STUCTRUAL NUMBER = 2.92

JOHANNA PLACE	STA. 7+75.00 TO 12+00.00
VIOLET PATH	STA. 1+00.00 TO 8+00.00
	STA. 13+50.00 TO 17+98.33
ROCKET PATH	STA. 5+78.76 TO 8+44.83
BREEZE TRAIL	STA. 1+15.00 TO 6+84.83
BRIGHT TRAIL	STA. 1+15.00 TO 6+84.83
JULIA RUN	STA. 1+15.00 TO 3+33.13
STAR PATH	STA. 1+00.00 TO 2+36.26

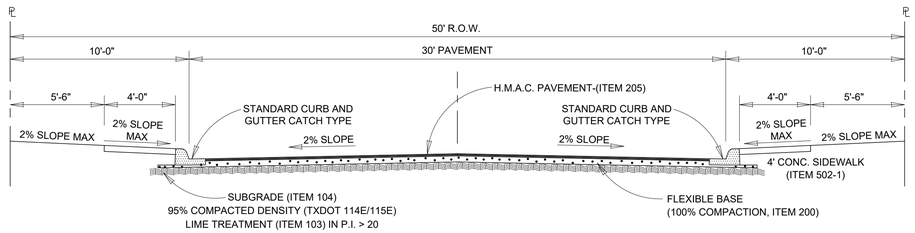
MINOR PRIMARY PAVEMENT DESIGN

PAVEMENT DESIGN WAS PREPARED BY INTEC

PAVEMENT STRUCTURE (DESIGN CBR=2.0)
2" HOT MIX ASPHALT TYPE D
12" FLEXIBLE BASE (TYPE A, GRADE 1 OR 2)
6" LIME STABILIZED SUBGRADE (35#/S.Y.)

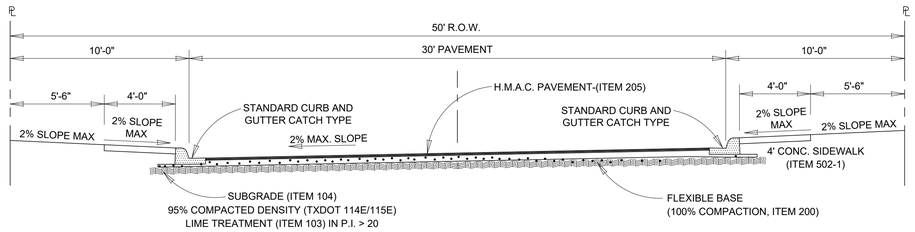
STUCTRUAL NUMBER = 2.92

JOHANNA PLACE	STA. 1+00 TO 7+75.00
	STA. 12+00.00 TO 17+62.02
VIOLET PATH	STA. 8+00.00 TO 13+50.00
ROCKET PATH	STA. 1+00.00 TO 5+78.76



TYPICAL MINOR STREET SECTION

NOT TO SCALE



CROSS SLOPE MINOR STREET SECTION

NOT TO SCALE

NOTES:

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

FILL MATERIAL NOTE:
IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL UNDERNEATH THE PAVEMENT SHOULD BE ON-SITE MATERIAL, FREE OF DELETERIOUS MATERIAL WITH MAXIMUM PLASTICITY INDEX VALUE OF 20 AND A MINIMUM CBR VALUE OF 3.5. THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN DIAMETER. LIME OR CEMENT APPLICATION RATES SHOULD BE RE-EVALUATED FOR THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY AND/OR COUNTY GUIDELINES.

SUBGRADE MATERIAL NOTE:

1. SUBGRADE SOIL PLASTICITY INDEX SHOULD BE LESS THAN OR EQUAL TO 20 FOR PRIMARY PAVEMENT DESIGN.
2. IF THE SUBGRADE SOIL PLASTICITY INDEX VALUE IS GREATER THAN 20, THEN ONE OF THE FOLLOWING OPTIONS SHOULD BE FOLLOWED:
   - 2.a. THE SUBGRADE SHOULD BE STABILIZED TO A DEPTH OF 6 INCHES (SEE ALTERNATE PAVEMENT DESIGN).
   - 2.b. THE EXPANSIVE CLAYS SHOULD BE REMOVED AND REPLACED WITH SOILS WITH A PLASTICITY INDEX VALUE OF 20 OR LESS.
3. GEOTECHNICAL ENGINEER SHALL BE ON SITE TO MAKE SUBGRADE DETERMINATION AND PROVIDE/SUBMIT LETTER INDICATING STATION TO STATION FOR PLACEMENT OF EACH PVM'T. DESIGN SECTION TO BE APPROVED BY ENGINEER PRIOR TO PLACEMENT OF BASE.

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

- AFTER INITIAL MIXING THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2 - 3) DAYS. MAINTAIN MOISTURE DURING MELLOWING.
- AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FROM THE SAMPLE):
  - -MINIMUM PASSING 1 ¾" SIEVE 100
  - -MINIMUM PASSING ¾" SIEVE 85
  - -MINIMUM PASSING NO. 4 SIEVE 60
- 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 WITH PROCEDURE OUTLINED ABOVE FOR MIXTURE DESIGN.
- COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% OF MDD REQUIRED);
- CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).
- VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN TO WITHIN +/- 1.0 INCH.

LIME STABILIZATION
TO INCLUDE A LIME STABILIZED LAYER AS PART OF THE STRUCTURAL PAVEMENT SYSTEM, THE APPLICATION RATE OF LIME SHALL BE DETERMINED BASED ON LABORATORY TESTING AND SHALL BE THE LOWEST PERCENTAGE OF LIME THAT PROVIDES:.

- A PH OF 12.4 OR THE HIGHEST PH ACHIEVED IN ACCORDANCE WITH ASTM D6276 STANDARD TEST METHOD FOR USING PH TO ESTIMATE THE SOIL-LIME PROPORTION REQUIREMENT FOR SOIL STABILIZATION,
- A PI OF LESS THAN 20 IN ACCORDANCE WITH ASTM D4318 STANDARD TEST METHODS FOR LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS,
- 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°C AND SPECIMENS SHOULD BE SUBJECTED TO 24-HR CAPILLARY SOAK PRIOR TO TESTING), AND
- [OPTIONAL CRITERIA FOR EXPANSIVE SOILS] A THREE DIMENSIONAL EXPANSION OF LESS THAN 1% (OR MAYBE 2%).

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4

STREET DETAILS

SHEET NO.
523

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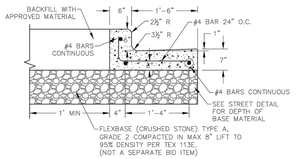
Date: Jun 16, 2023, 11:13am User ID: Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\cad\E0621202 523-524 STREET DETAILS.dwg



TYPICAL CATCH CURB AND GUTTER

NOTES:

1. FOR CONCRETE CURB AND GUTTER REMOVEL/REPLACEMENT, INSTALLED SECTION SHALL MATCH EXISTING CURB RADII.
2. CURB AND GUTTER SHALL BE 3000 PSI CONCRETE IN ACCORDANCE WITH TxDOT ITEMS 361, 421, & 529 UNLESS SPECIFIED OTHERWISE IN THE CONSTRUCTION DOCUMENTS.
3. CONTRACTOR MAY INSTALL TYPE B HMAC BELOW CURB AND GUTTER IN PLACE OF FLEX BASE; NO ADDITIVE COST.
4. EXPANSION JOINT EVERY 40'. SEE SPECIFICATIONS FOR DETAILS.
5. REFER TO PLANS FOR LOCATION FOR PROPOSED SIDEWALKS. REFER TO SW SERIES DETAILS FOR SIDEWALK CONSTRUCTION DETAILS.

SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REVISION	DATE	BY	STANDARD CURB AND GUTTER DETAIL CATCH TYPE
	1ST REVISION	11/01/18	MS	
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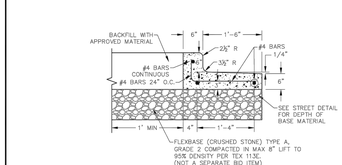

TYPICAL SPILL CURB AND GUTTER

NOTES:

1. SPILL GUTTER TO BE USED ON UPGRADE OF VALLEY GUTTERS.
2. FOR CONCRETE CURB AND GUTTER REMOVEL/REPLACEMENT, INSTALLED SECTION SHALL MATCH EXISTING CURB RADII.
3. CURB AND GUTTER SHALL BE CLASS A, 3000 PSI CONCRETE UNLESS SPECIFIED OTHERWISE IN THE CONSTRUCTION DOCUMENTS.
4. CONTRACTOR MAY INSTALL 4" TYPE B HMAC IN LIEU OF 4" FLEX BASE.
5. EXPANSION JOINT EVERY 40'. SEE SPECIFICATIONS FOR DETAILS.

SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REVISION	DATE	BY	STANDARD CURB AND GUTTER DETAIL SPILL TYPE
	1ST REVISION	11/01/18	MS	
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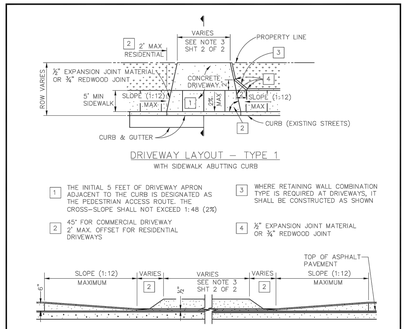


DRIVEWAY LAYOUT – TYPE 1

WITH SIDEWALK ABUTTING CURB

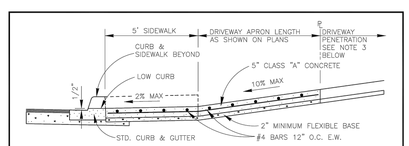
1. THE INITIAL 5 FEET OF DRIVEWAY APRON ADJACENT TO THE CURB IS DESIGNATED AS THE PEDESTRIAN ACCESS ROUTE. THE CROSS-SLOPE SHALL NOT EXCEED 1:48 (2%)
2. 45° FOR COMMERCIAL DRIVEWAY 2' MAX. OFFSET FOR RESIDENTIAL DRIVEWAYS
3. WHERE RETAINING WALL COMBINATION TYPE IS REQUIRED AT DRIVEWAYS, IT SHALL BE CONSTRUCTED AS SHOWN
4. ½" EXPANSION JOINT MATERIAL OR ¾" REDWOOD JOINT

TYPE 1 DRIVEWAY – CURB PROFILE

WITH SIDEWALK ABUTTING CURB

SHEET 1 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REVISION	DATE	BY	DRIVEWAY LAYOUT – TYPE 1
	1ST REVISION	11/01/18	MS	
				SCALE: N.T.S. DRAWING No. DRWY-1



TYPICAL RESIDENTIAL DRIVEWAY SECTION B

WITH SIDEWALK ABUTTING STREET WITH CURB & GUTTER

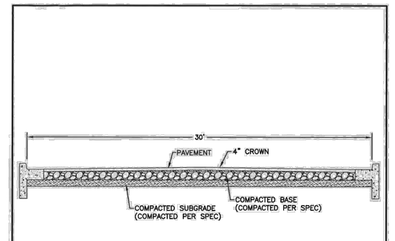
NOTES:

1. THE CURB CAN BE CUT HORIZONTALLY TO MATCH THE DRIVEWAY PROFILE PROVIDED THE WORKMANSHIP IS CLEAN AND WITHOUT DAMAGE TO THE REMAINING CONCRETE GUTTER. THE APRON SHOULD BE POURED INDEPENDENT OF THE EXISTING CURB AND GUTTER AS NOT TO UNDERMINE THE EXISTING ROADWAY STRUCTURE.
2. 24 INCH LONG CURB TRANSITIONS FOR EACH SIDE OF THE APRON WILL BE PROVIDED TO SLOPE THE STREET CURB FROM EXISTING HEIGHT TO THE 1/2 INCH EXPOSURE AT THE DRIVEWAY. NO SEPARATE PAY ITEM.
3. 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:

   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.
4. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE, UNLESS GRANTED OTHERWISE AS PART OF APPLICATION TO WORK ON CITY STREETS PERMIT.
5. 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.
6. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN (1:12) 8 % MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 1:48 (2%).
7. SIDEWALK RAMP SURFACE SHALL BE IN ACCORDANCE TO ADA SURFACE TREATMENTS.

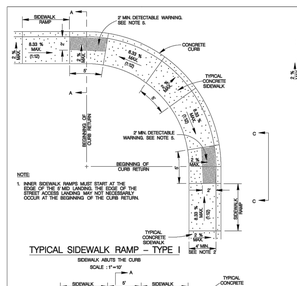
SHEET 2 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REVISION	DATE	BY	RESIDENTIAL DRIVEWAY SECTION B
	1ST REVISION	11/01/18	MS	
				SCALE: N.T.S. DRAWING No. DRWY-5



MINOR STREET SECTION

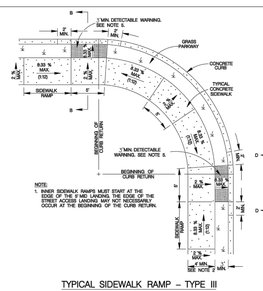
SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REV	DATE	BY	MINOR STREET SECTION WITH CURB AND GUTTER
				SCALE: N.T.S. DRAWING No. RDWY-6



TYPICAL SIDEWALK RAMP – TYPE I

SIDEWALK ABUTS THE CURB

SCALE: 1"=10'



TYPICAL SIDEWALK RAMP – TYPE III

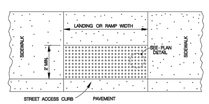
SIDEWALK SEPARATED FROM CURB

SCALE: 1"=10'

TYPICAL SIDEWALK RAMP – TYPE IV

USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB

SCALE: 1"=10'



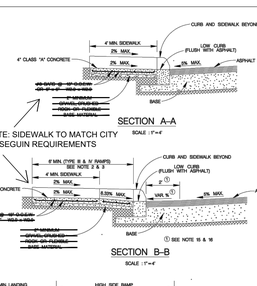
DETECTABLE WARNING SURFACE

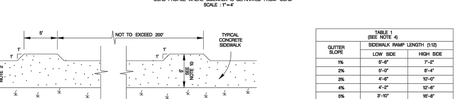
SCALE: 1"=4"

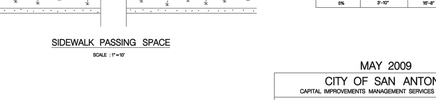
TYPICAL SIDEWALK RAMP – TYPE V

SIDEWALK ABUTS CURB

SCALE: 1"=10'







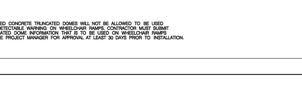


TABLE 1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'-6"	7'-0"
2%	5'-0"	8'-4"
3%	4'-6"	10'-0"
4%	4'-2"	12'-6"
5%	3'-10"	15'-8"

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED ON WHEELCHAIR RAMPS UNLESS THE CONTRACTOR SUBMITS A SHOP DRAWING SHOWING TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.

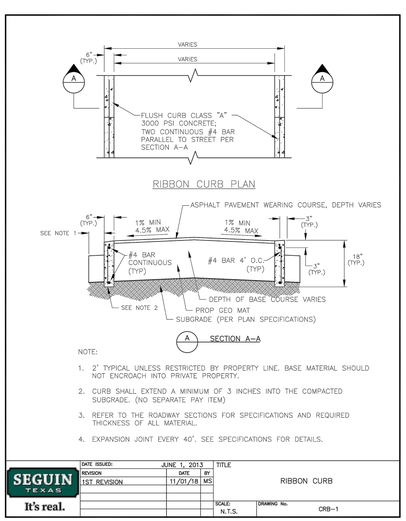
MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

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



NOTE:

1. 2' TYPICAL UNLESS RESTRICTED BY PROPERTY LINE. BASE MATERIAL SHOULD NOT ENCROACH INTO PRIVATE PROPERTY.
2. CURB SHALL EXTEND A MINIMUM OF 3 INCHES INTO THE COMPACTED SUBGRADE. (NO SEPARATE PAY ITEM)
3. REFER TO THE ROADWAY SECTIONS FOR SPECIFICATIONS AND REQUIRED THICKNESS OF ALL MATERIAL.
4. EXPANSION JOINT EVERY 40'. SEE SPECIFICATIONS FOR DETAILS.

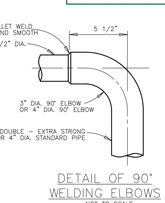
SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE
	REVISION	DATE	BY	RIBBON CURB
	1ST REVISION	11/01/18	MS	
				SCALE: N.T.S. DRAWING No. CRB-1

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

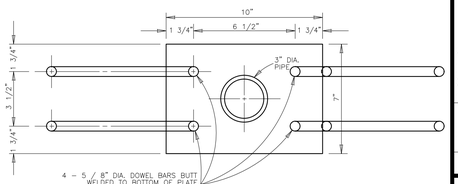
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

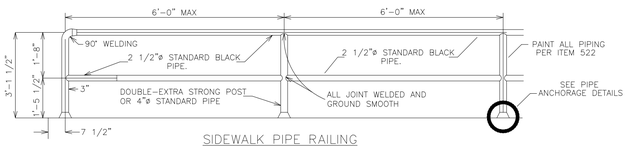


DETAIL OF 90° WELDING ELBOWS

NOT TO SCALE

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

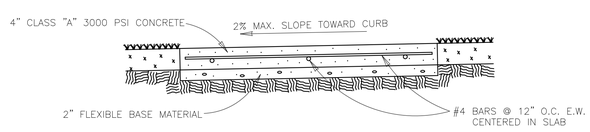




SIDEWALK PIPE RAILING

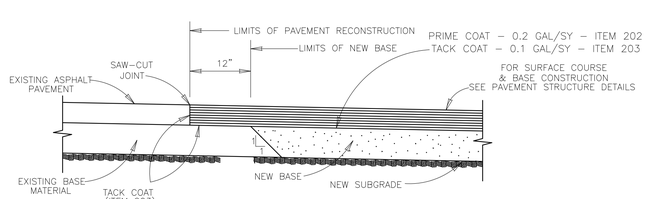
NOT TO SCALE

ITEM 522.1



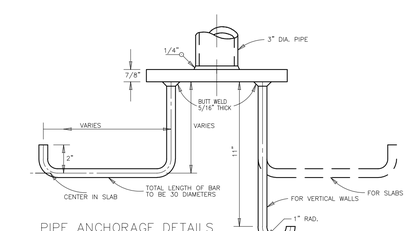
CONCRETE SIDEWALK SECTION

ITEM 502.1



PAVEMENT JUNCTION DETAILS

NOT TO SCALE



PIPE ANCHORAGE DETAILS

NOT TO SCALE.

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8940
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

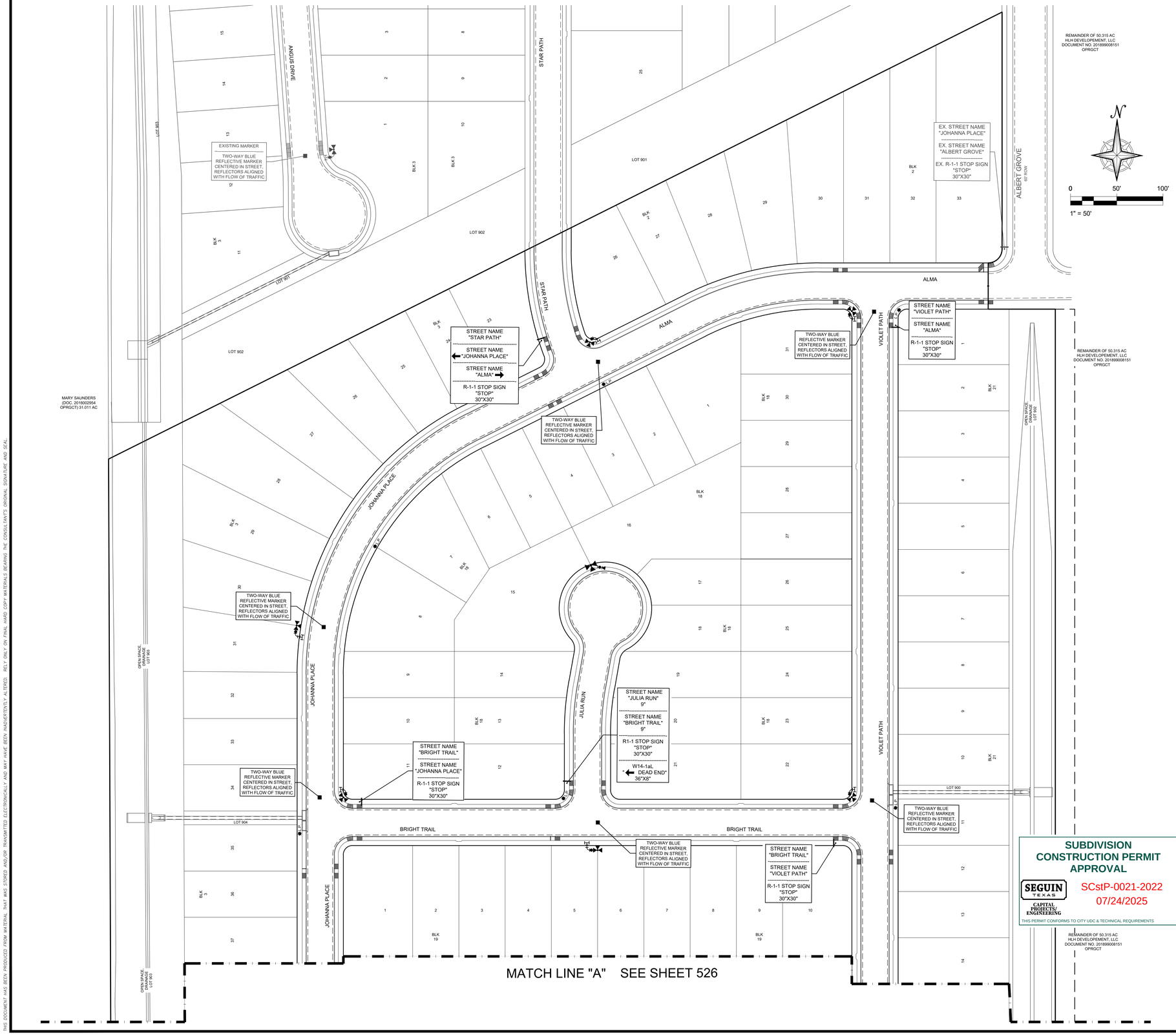
SWENSON HEIGHTS SUBDIVISION UNIT 4

STREET DETAILS

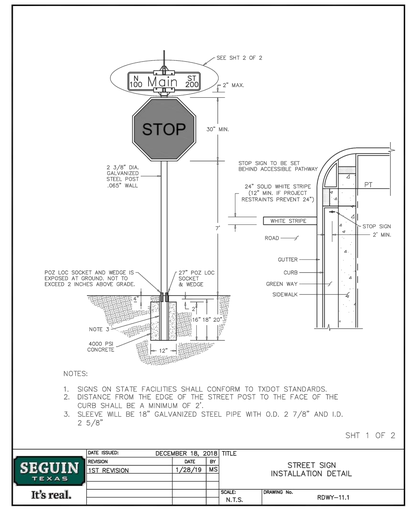
SHEET NO. 524

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. ONLY THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL ON FINAL HARD COPY MATERIAL BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL SHALL BE CONSIDERED TO BE AUTHENTIC.

Date: Jan 16, 2023, 7:13pm User ID: MaryStewart File: L:\Develop\Proj\2021\E0621202 Swenson Heights Unit 4\Cad\E0621202 S23-524 STREET DETAILS.dwg



THIS DOCUMENT HAS BEEN PROVIDED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REFER ONLY TO FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

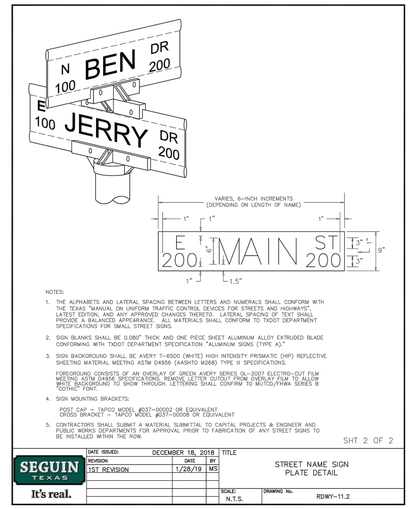


NOTES:

1. SIGNS ON STATE FACILITIES SHALL CONFORM TO TXDOT STANDARDS.
2. DISTANCE FROM THE EDGE OF THE STREET POST TO THE FACE OF THE CURB SHALL BE A MINIMUM OF 2'.
3. SLEEVE WILL BE 18" GALVANIZED STEEL PIPE WITH O.D. 2 7/8" AND I.D. 2 5/8"

SHT 1 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED:	DECEMBER 18, 2018		TITLE	STREET SIGN INSTALLATION DETAIL
	REVISION	DATE	BY		
	1ST REVISION	1/28/19	MS		
				SCALE: N.T.S.	DRAWING No. RDWY--11.1



NOTES:

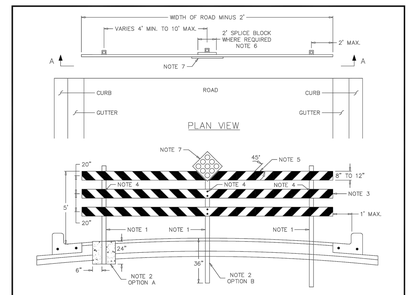
1. THE ALPHABETS AND LATERAL SPACING BETWEEN LETTERS AND NUMERALS SHALL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", LATEST EDITION, AND ANY APPROVED CHANGES THERETO. LATERAL SPACING OF TEXT SHALL PROVIDE A BALANCED APPEARANCE. ALL MATERIALS SHALL CONFORM TO TXDOT DEPARTMENT SPECIFICATIONS FOR SMALL STREET SIGNS.
2. SIGN BLANKS SHALL BE 0.080" THICK AND ONE PIECE SHEET ALUMINUM ALLOY EXTRUDED BLADE CONFORMING WITH TXDOT DEPARTMENT SPECIFICATION "ALUMINUM SIGNS (TYPE A)."
3. SIGN BACKGROUND SHALL BE AVERY T-6500 (WHITE) HIGH INTENSITY PRISMATIC (HIP) REFLECTIVE SHEETING MATERIAL MEETING ASTM D4956 (AASHTO M268) TYPE III SPECIFICATIONS.

   FOREGROUND CONSISTS OF AN OVERLAY OF GREEN AVERY SERIES DL-2027 ELECTRO-CUT FILM MEETING ASTM D4956 SPECIFICATIONS. REMOVE LETTER CUTOUT FROM OVERLAY FILM TO ALLOW WHITE BACKGROUND TO SHOW THROUGH. LETTERING SHALL CONFORM TO MUTCD/FHWA SERIES B "STDTNC" FONT.
4. SIGN MOUNTING BRACKETS:

   POST CAP – TAPCO MODEL #237-00002 OR EQUIVALENT
   CROSS BRACKET – TAPCO MODEL #237-00008 OR EQUIVALENT
5. CONTRACTORS SHALL SUBMIT A MATERIAL SUBMITTAL TO CAPITAL PROJECTS & ENGINEER AND PUBLIC WORKS DEPARTMENTS FOR APPROVAL PRIOR TO FABRICATION OF ANY STREET SIGNS TO BE INSTALLED WITHIN THE ROW.

SHT 2 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED:	DECEMBER 18, 2018		TITLE	STREET NAME SIGN PLATE DETAIL
	REVISION	DATE	BY		
	1ST REVISION	1/28/19	MS		
				SCALE: N.T.S.	DRAWING No. RDWY--11.2



NOTE:

SUPPORT POST
1. 1 1/2" PERFORATED SQUARE STEEL TUBE SET INTO 1 3/4" STEEL TUBE SLEEVE.
2. POST SHALL BE SET WITH OPTION A (24" DEEP WITH 12" DIA. CONCRETE) OR OPTION B (36" DEEP AIR DRIVEN INTO UNDISTURBED SOIL) AT CONTRACTORS OPTION.

RAILING
3. WIDTH OF RAIL SHALL BE 1" HOLLOW-PROFILE PLASTIC LUMBER WITH INTERNAL STIFFENERS
4. RAILS SHALL BE FASTENED TO EACH TUBE WITH 2" STEEL BOLTS WITH NUTS AND WASHERS ON EACH SIDE.
5. THE RAILS SHALL HAVE 6" WIDE RETLECTORIZED RED STRIPES OF TAPE PLACED ON 45 DEGREE SLOPES, DOWN AND TOWARD THE CENTER OF THE BARRICADE.
6. BARRICADES MAY BE CONSTRUCTED IN SECTIONS OR MAY BE CONTINUOUS ACROSS ROADWAY WIDTH. SPLICES ON CONTINUOUS RAIL BARRICADES SHALL BE AT POSTS AND SHALL HAVE A 2' SPLICE BLOCK ON BACK SIDE OF THE SAME MATERIAL AS RAIL.

SIGN
7. 18" DIAMOND REFLECTORIZED RED PANEL OR 18" DIAMOND RED OR BLACK PANEL WITH NINE-3" DIAMETER RED REFLECTORS SYMMETRICALLY PLACED AT CENTER POSTS, A MINIMUM OF 4' ABOVE GROUND SHALL BE USED FOR END OF ROAD MARKERS AS PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) SECTION 3C.04.

SEGUIN TEXAS	DATE ISSUED:	MARCH 11, 2019		TITLE	PERMANENT BARRICADE DETAIL
	REVISION	DATE	BY		
				SCALE: N.T.S.	DRAWING No. RDWY--13

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

REMAINDER OF 50.315 AC HLH DEVELOPEMENT, LLC DOCUMENT NO. 2018990081S1 OPRGCT

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9993
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

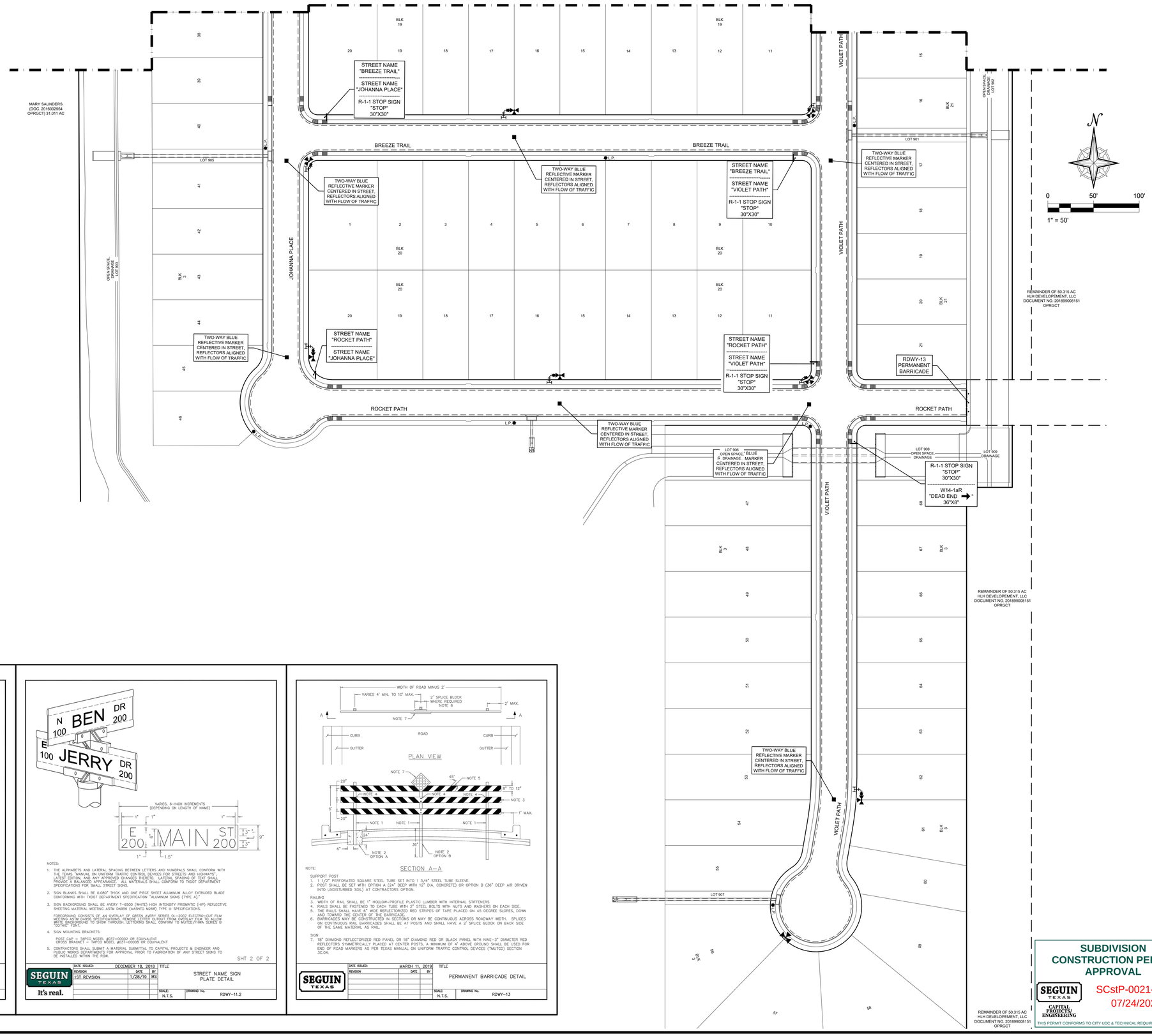
SWENSON HEIGHTS
SUBDIVISION UNIT 4

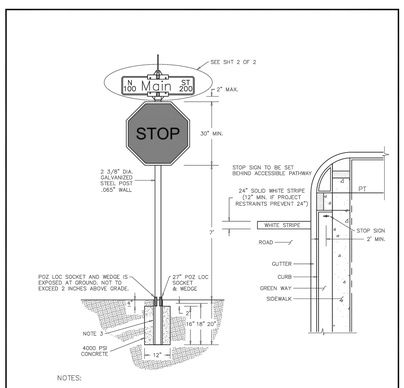
SIGN PLAN

SHEET NO.
525

Date: Jan 16, 2023, 7:14pm User ID: Mary Stewart File: L:\Develop Proj\2021\E0621202_Swenson Heights Unit 4\cad\E0621202 525-526 SIGN PLAN.dwg

MATCH LINE "A" SEE SHEET 525





NOTES:

1. SIGNS ON STATE FACILITIES SHALL CONFORM TO TXDOT STANDARDS.
2. DISTANCE FROM THE EDGE OF THE STREET POST TO THE FACE OF THE CURB SHALL BE A MINIMUM OF 2'.
3. SLEEVE WILL BE 18" GALVANIZED STEEL PIPE WITH O.D. 2 7/8" AND I.D. 2 5/8"

SHT 1 OF 2

DATE ISSUED:	DECEMBER 18, 2018		TITLE
REVISION	DATE	BY	STREET SIGN INSTALLATION DETAIL
1ST REVISION	1/28/19	MS	
SCALE: N.T.S.	DRAWING No. RDWY-11.1		

SEGUIN TEXAS It's real.

NOTES:

1. THE ALPHABETS AND LATERAL SPACING BETWEEN LETTERS AND NUMERALS SHALL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", LATEST EDITION, AND ANY APPROVED CHANGES THERETO. LATERAL SPACING OF TEXT SHALL BE ADJUSTED FOR AESTHETIC APPEARANCE. MATERIALS SHALL CONFORM TO TXDOT DEPARTMENT SPECIFICATIONS FOR SMALL STREET SIGNS.
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3. SIGN BACKGROUND SHALL BE AVERY T-6500 (WHITE) HIGH INTENSITY PRISMATIC (HIP) REFLECTIVE SHEETING MATERIAL MEETING ASTM D4956 (AASHTO M268) TYPE III SPECIFICATIONS.

   FOREGROUND CONSISTS OF AN OVERLAY OF GREEN AVERY SERIES GL-2007 ELECTRO-CUT FILM MEETING ASTM D4956 SPECIFICATIONS. REMOVE LETTER CUTOUT FROM OVERLAY FILM TO ALLOW WHITE BACKGROUND TO SHOW THROUGH. LETTERING SHALL CONFIRM TO MUTCD/FHWA SERIES B "GOTHIC FONT."
4. SIGN MOUNTING BRACKETS:

   POST CAP – TAPCO MODEL #037-00002 OR EQUIVALENT
   CROSS BRACKET – TAPCO MODEL #037-00008 OR EQUIVALENT
5. CONTRACTORS SHALL SUBMIT A MATERIAL SUBMITTAL TO CAPITAL PROJECTS & ENGINEER AND PUBLIC WORKS DEPARTMENTS FOR APPROVAL PRIOR TO FABRICATION OF ANY STREET SIGNS TO BE INSTALLED WITHIN THE ROW.

SHT 2 OF 2

DATE ISSUED:	DECEMBER 18, 2018		TITLE
REVISION	DATE	BY	STREET NAME SIGN PLATE DETAIL
1ST REVISION	1/28/19	MS	
SCALE: N.T.S.	DRAWING No. RDWY-11.2		

SEGUIN TEXAS It's real.

NOTE:

SECTION A–A

SUPPORT POST

1. 1 1/2" PERFORATED SQUARE STEEL TUBE SET INTO 1 3/4" STEEL TUBE SLEEVE.
2. POST SHALL BE SET WITH OPTION A (24" DEEP WITH 12" DIA. CONCRETE) OR OPTION B (36" DEEP AIR DRIVEN INTO UNDISTURBED SOIL) AT CONTRACTORS OPTION.

RAILING

3. WIDTH OF RAIL SHALL BE 1" HOLLOW-PROFILE PLASTIC LUMBER WITH INTERNAL STIFFENERS
4. RAILS SHALL BE FASTENED TO EACH TUBE WITH 2" STEEL BOLTS WITH NUTS AND WASHERS ON EACH SIDE.
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6. BARRICADES MAY BE CONSTRUCTED IN SECTIONS OR MAY BE CONTINUOUS ACROSS ROADWAY WIDTH. SPLICES ON CONTINUOUS RAIL BARRICADES SHALL BE AT POSTS AND SHALL HAVE A 2' SPLICE BLOCK ON BACK SIDE OF THE SAME MATERIAL AS RAIL.

SIGN

7. 18" DIAMOND REFLECTORIZED RED PANEL OR 18" DIAMOND RED OR BLACK PANEL WITH NINE–3" DIAMETER RED REFLECTORS SYMMETRICALLY PLACED AT CENTER POSTS, A MINIMUM OF 4' ABOVE GROUND SHALL BE USED FOR END OF ROAD MARKERS AS PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) SECTION 3C-04.

DATE ISSUED:	MARCH 11, 2019		TITLE
REVISION	DATE	BY	PERMANENT BARRICADE DETAIL
SCALE: N.T.S.	DRAWING No. RDWY-13		

SEGUIN TEXAS

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
d b a . D O N D U R D E N , I N C .
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV'	DATE	DESCRIPTION

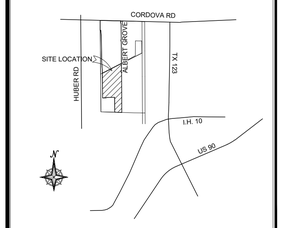
SWENSON HEIGHTS SUBDIVISION UNIT 4

SIGN PLAN

SHEET NO.
526

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

Date: Jun 16, 2023, 1:14pm User ID: Mary.Stewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\Dwgs\E0621202 SUB-526 SIGN PLAN.dwg



LOCATION MAP

NOT TO SCALE

SEDIMENTATION & EROSION CONTROL PLANS
for
SWENSON HEIGHTS
UNIT 4

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF SEGUIN DESIGN AND CONSTRUCTION MANUAL AND THE UNIFIED DEVELOPMENT CODE, HERE AFTER REFERRED TO THE UDC.

2. APPROVAL OF THESE CONSTRUCTION PLANS BY THE CITY OF SEGUIN DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.

3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF SEGUIN MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

4. DESIGN PROCEDURES ARE IN COMPLETE COMPLIANCE WITH THE CITY OF SEGUIN DESIGN AND CONSTRUCTION MANUAL. IT IS THE RESPONSIBILITY OF THE ENGINEER TO REQUEST A WAIVER FROM ANY ASPECT OF THESE PLANS THAT DO NOT COMPLY WITH THE UDC.

5. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF SEGUIN, CONSULTING ENGINEER, CONTRACTOR, AND ANY OTHER AFFECTED PARTIES. NOTIFY THE CITY OF SEGUIN AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

6. THE CONTRACTOR SHALL GIVE THE CITY A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

7. BARRICADES, BUILT TO CITY OF SEGUIN SPECIFICATIONS, SHALL BE CONSTRUCTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB SAFETY.

8. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.

9. THE LOCATION OF ANY WATER AND/OR WASTEWATER LINES SHOWN ON THE PLANS MUST BE VERIFIED BY THE PUBLIC WORKS DEPARTMENT.

10. USE ONE CALL UTILITY SYSTEM: DIAL 1-800-344-8377, 48 HOURS BEFORE YOU DIG.

11. ALL STORM SEWER PIPES TO BE CLASS III RCP UNLESS NOTED OTHERWISE.

12. THE SUBGRADE MATERIAL WAS TEST BY INTEGRATED TESTING AND ENGINEERING COMPANY OF SAN ANTONIO, L.P. IN JULY 2013 AND THE STREET SECTION DESIGNED ACCORDING TO CITY OF SEGUIN DESIGN AND CONSTRUCTION MANUAL.

13. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.

14. THESE PLANS ARE NOT INTENDED FOR THE PURPOSE OF GATE DESIGN OR BUILD. SEPARATE PERMIT AND PLAN REVIEW REQUIRED. PLAN REVIEW REQUIRED FOR DETAILED GATE DESIGN AND INSTALLATION.

CONSTRUCTION SEQUENCING

1.) CALL THE COMMUNITY DEVELOPMENT SERVICES DEPARTMENT 48 HOURS PRIOR TO BEGINNING ANY WORK AND SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY AND ALL AFFECTED UTILITY PROVIDERS, THE GENERAL CONTRACTOR, THE DEVELOPER AND THE DEVELOPER'S ENGINEER.

2.) OBTAIN A SITE DEVELOPMENT PERMIT FROM THE COMMUNITY DEVELOPMENT SERVICES DEPARTMENT.

3.) PROVIDE THE COMMUNITY DEVELOPMENT SERVICES DEPARTMENT WITH EVIDENCE ALL TCEQ LICENSES AND REQUIREMENTS ARE UP TO DATE.

4.) INSTALL TEMPORARY EROSION CONTROLS AND TREE PROTECTION FENCING PRIOR TO ANY CLEARING AND GRUBBING. NOTIFY THE CITY WHEN INSTALLED.

5.) ROUGH-CUT ALL REQUIRED OR NECESSARY PONDS. EITHER THE PERMANENT OUTLET STRUCTURE OR A TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO DEVELOPMENT OF ANY EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A LOW-LEVEL OUTLET AND AN EMERGENCY OVERFLOW MEETING THE REQUIREMENTS OF THE UDC. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL FINAL RESTORATION IS ACHIEVED.

6.) DELIVER APPROVED ROUGH CUT SHEETS TO THE CITY ENGINEER PRIOR TO CLEARING AND GRUBBING.

7.) ROUGH GRADE STREETS. NO DEVELOPMENT OF EMBANKMENT WILL BE PERMITTED AT THIS TIME.

8.) INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT OR WITHIN THE ROAD RIGHT-OF-WAY.

9.) DELIVER STORM SEWER CUT SHEETS TO THE CITY ENGINEER.

10.) BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.

11.) DELIVER FINAL FINAL GRADE CUT SHEETS TO THE CITY ENGINEER.

12.) RE-GRADE STREETS TO SUB-GRADE.

13.) ENSURE THAT UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY 1ST COURSE BASE MATERIAL ON STREETS.

14.) INSTALL CURB AND GUTTER.

15.) LAY FINAL BASE COURSE ON ALL STREETS.

16.) LAY ASPHALT.

17.) COMPLETE FINAL GRADING AND RESTORATION OF DETENTION, SEDIMENTATION/FILTRATION PONDS.

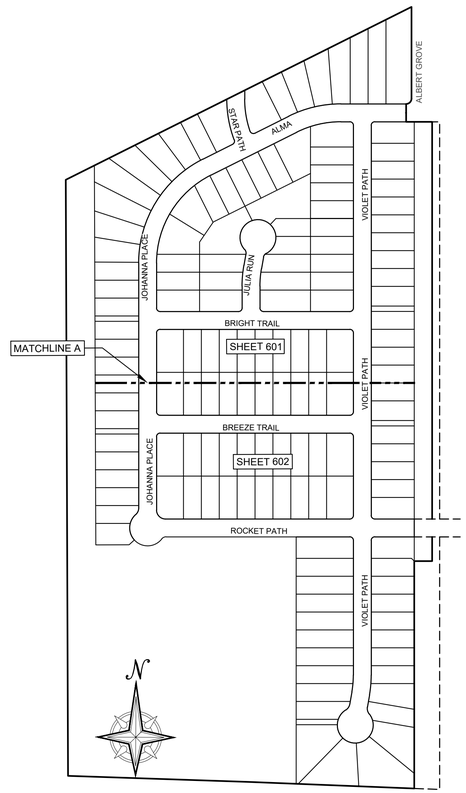
18.) COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.

19.) REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.

20.) COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

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 SITE(S) 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 THE 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.



INDEX MAP

SCALE: 1" = 200'

SHEET INDEX

SHEET	TITLE
600	SEDIMENTATION & EROSION CONTROL COVER
601	SEDIMENTATION & EROSION CONTROL PLAN
602	SEDIMENTATION & EROSION CONTROL PLAN
603	SEDIMENTATION & EROSION CONTROL NARRATIVE
604	SEDIMENTATION & EROSION CONTROL DETAILS

LEGEND

SCF	TEMPORARY SEDIMENT CONTROL FENCE
RFD	TEMPORARY ROCK FILTER DAM
	TYPE 1 CONSTRUCTION EXIT
	CONCRETE WASHOUT PIT
	GRAVEL FILTER BAGS
LOC	LIMITS OF CONSTRUCTION
	GRADING SLOPE ARROW

TOTAL QUANTITIES

SILT FENCE	1796	L.F.
TEMPORARY ROCK FILTER DAM "TYPE 2"	66	L.F.
TYPE I CONSTRUCTION EXIT	1	EA.
CONCRETE WASHOUT PIT	1	E.A.
GRAVEL FILTER BAGS	110	L.F.

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

OWNER/DEVELOPER:
BELLA VISTA C.M.I., LTD.
2714 N, LOOP 1604 E SUITE 105
SAN ANTONIO, TEXAS 78232
PHONE: (210) 402-0642

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
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SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

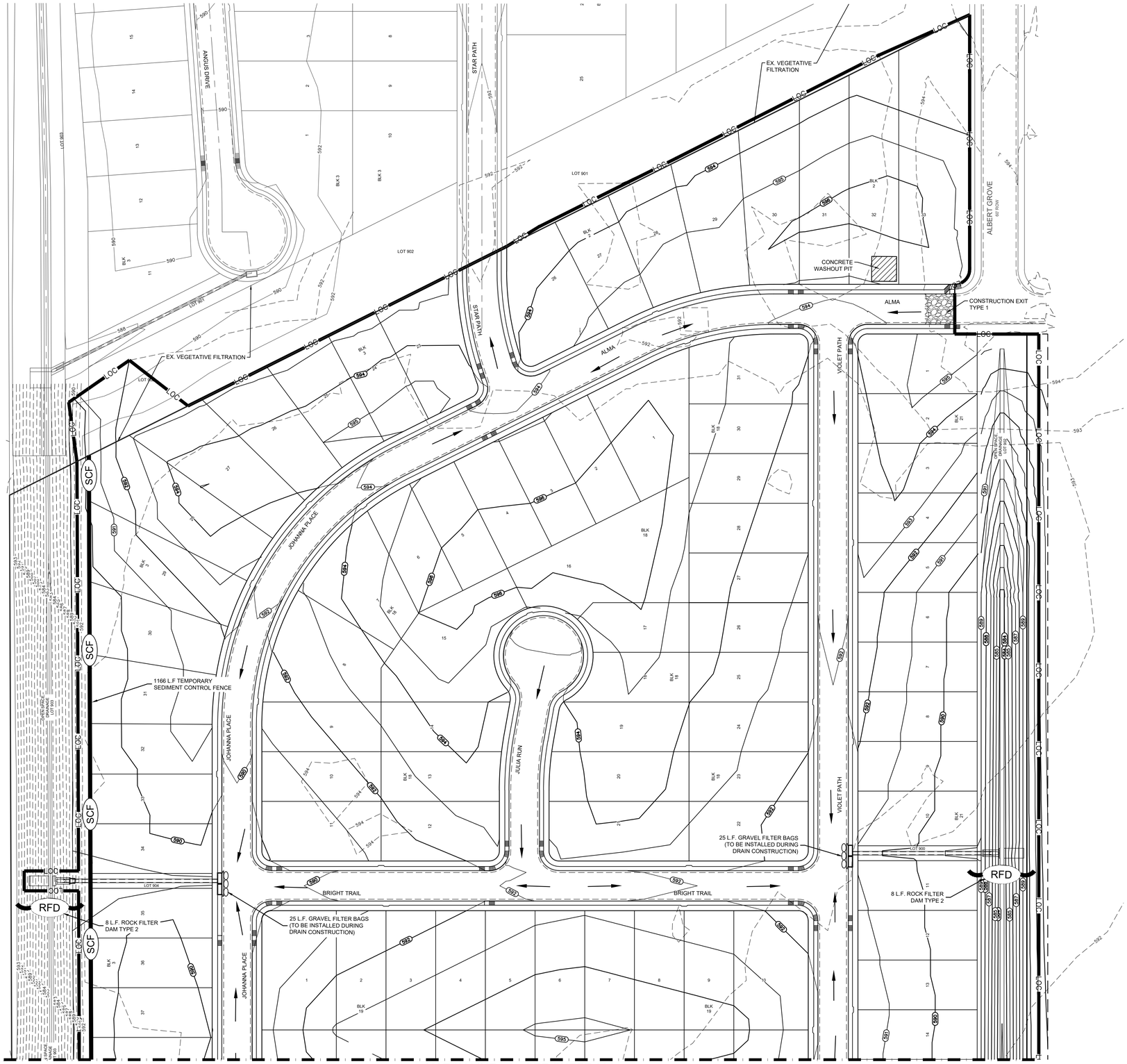
REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4
SEDIMENTATION & EROSION
CONTROL COVER

SHEET NO.
600

THIS DOCUMENT WAS PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN UNINTENTIONALLY ALTERED. REFER ONLY ON FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

Date: Jun 16, 2023, 11:14pm User ID: Mary.Stewart File: L:\Drawing\Proj_2021\E0621202_Swenson Heights Unit 4\Exist\E0621202 600 SED PLAN cover.dwg



MATCH LINE - A - SEE SHEET 601

LEGEND

TEMPORARY SEDIMENT CONTROL FENCE	SCF
TEMPORARY ROCK FILTER DAM "TYPE 2" (UNLESS NOTED OTHERWISE ON PLAN)	RFD
TYPE 1 CONSTRUCTION EXIT	
CONCRETE WASHOUT PIT	
GRAVEL FILTER BAGS	
PROPOSED FINISHED COUNTOUR	740
EXISTING COUNTOUR	740
LOT GRADING TYPE	A, B & C

A-LOT DRAINS TO FRONT
B-LOT DRAINS TO FRONT AND REAR
C-LOT DRAINS TO REAR

N

0 50' 100'

1" = 50'

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

NOTES:

1. DRIVEWAYS SHALL BE LOCATED ON THE HIGH SIDE OF EACH LOT.
2. FINISHED FLOOR ELEVATIONS SHALL BE A MINIMUM OF 8" ABOVE FINAL GRADE AFTER PLACEMENT OF TOP SOIL AND SOD.
3. FINAL LOT SWALES SHALL BE PLACED WITH HOME CONSTRUCTION.

S.W.P.P.P. GENERAL NOTES

1. THE CONTROL MEASURES CONTAINED HEREON (AND AS FURTHER DESCRIBED BY THE STANDARD SPECIFICATIONS) SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE CONSTRUCTION CONTRACT TO ASSURE EFFECTIVE AND CONTINUOUS WATER POLLUTION CONTROL DURING CONSTRUCTION AND POST CONSTRUCTION PERIODS.

2. A RAIN GAUGE SHALL BE PROVIDED BY THE CONTRACTOR AND LOCATED AT THE PROJECT SITE. WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5 INCHES OR MORE (AS MEASURED BY THE PROJECT SITE GAUGE) THE CONTRACTOR AND INSPECTOR WILL INSPECT THE ENTIRE PROJECT TO DETERMINE THE CONDITION OF THE CONTROL MEASURES. SEDIMENT WILL BE REMOVED AND DEVICES REPAIRED AS SOON AS PRACTICABLE BUT NO LATER THAN 7 DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE BEING CAUSED BY REPAIR OPERATIONS.

3. THE CONTRACTOR SHALL CLEAN PAVED SURFACES (ADJACENT TO THE CONSTRUCTION AREAS) AS NECESSARY TO REMOVE SEDIMENT WHICH HAS ACCUMULATED ON THE ROADWAY DUE TO STORMWATER FLOWS AND VEHICULAR TRAFFIC THROUGH AND ACROSS THE CONSTRUCTION SITE.

4. IN CASE OF FAILURE ON THE PART OF THE CONTRACTOR TO PREVENT AND CONTROL SOIL EROSION, SEDIMENTATION AND WATER POLLUTION WHICH MAY DEGRADE RECEIVING WATERS, THE DEVELOPER/OWNER RESERVES THE RIGHT TO EMPLOY OUTSIDE ASSISTANCE OR USE OTHER FORCES TO PROVIDE THE NECESSARY CORRECTIVE MEASURES. ALL COST (INCLUDING ENGINEERING) COST WILL BE DEDUCTED FROM ANY MONEYS DUE TO OR TO BECOME DUE TO THE CONTRACTOR.

5. UPON COMPLETION OF CONSTRUCTION AND THE INSTALLATION OF PERMANENT EROSION CONTROL METHODS, A FINAL EROSION CONTROL INSPECTION WILL BE PERFORMED AS PART OF ACCEPTANCE OF THE PROJECT BY THE DEVELOPER/OWNER. IN THE EVENT THAT THE PERMANENT EROSION CONTROL IS INADEQUATE DUE TO IMPROPER DESIGN OR INSTALLATION. THE PERMANENT EROSION CONTROL MEASURES MUST BE CORRECTED OR REDESIGNED TO FUNCTION PROPERLY.

6. THE NPDES NOTICE OF INTENT (N.O.I.) SHALL BE SIGNED AND SUBMITTED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO THE CONTRACTOR MOVING ONTO THE SITE.

7. THE CONTRACTOR SHALL SUBMIT A SIGNED NOTICE OF TERMINATION (N.O.T.)

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-9449
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NO.
601

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MATCH LINE - A - SEE SHEET 601

MATCH LINE - B - SEE THIS SHEET

MATCH LINE - B - SEE THIS SHEET

LEGEND

TEMPORARY SEDIMENT CONTROL FENCE	SCF
TEMPORARY ROCK FILTER DAM TYPE 2" (UNLESS NOTED OTHERWISE ON PLAN)	RFD
TYPE 1 CONSTRUCTION EXIT	
CONCRETE WASHOUT PIT	
GRAVEL FILTER BAGS	
PROPOSED FINISHED COUNTOUR	740
EXISTING COUNTOUR	740
LOT GRADING TYPE	A, B & C

A-LOT DRAINS TO FRONT
B-LOT DRAINS TO FRONT AND REAR
C-LOT DRAINS TO REAR

1166 L.F TEMPORARY SEDIMENT CONTROL FENCE

630 L.F TEMPORARY SEDIMENT CONTROL FENCE

15 L.F. GRAVEL FILTER BAGS (TO BE INSTALLED DURING DRAIN CONSTRUCTION)

8 L.F. ROCK FILTER DAM TYPE 2

5 L.F. ROCK FILTER DAM TYPE 2

BREEZE TRAIL

JOHANNA PLACE

ROCKET PATH

VIOLET PATH

OPEN SPACE, DRAINAGE LOT 903

LOT 907

LOT 908 OPEN SPACE DRAINAGE

LOT 909 DRAINAGE

0 50' 100'
1" = 50'

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

NOTES:

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DESIGNED BY:	L.T.E.
DRAWN BY:	L.T.E.
DATE:	09/2021
JOB NO.:	E0621202

CIVIL ENGINEERING CONSULTANTS
dba. DON DURDEN, INC.
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SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-8999
FAX: (210) 641-8940
REGISTRATION #F-2214 / #10041000

6/16/2023

STATE OF TEXAS
MARY P. STEWART
108905
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4
SEDIMENTATION & EROSION CONTROL PLAN

SHEET NO.
602

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN UNINTENTIONALLY ALTERED. REFER ONLY TO FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

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SITE DESCRIPTION

PROJECT LIMITS: 32.939 acre phase is located SouthWest of the intersection of ALBERT GROVE and CORDOVA RD.

LATITUDE 29°37'24.77"N LONGITUDE 97°58'46.11"W

PROJECT DESCRIPTION: Construction of subdivision improvements including: streets, water lines, sanitary sewer lines and drainage improvements.

MAJOR SOIL DISTURBING ACTIVITIES: Soil disturbing activities will include preparing right-of-way clearing, and grubbing, grading, excavation and embankment for the street, excavation for water, sanitary sewer, storm sewer, and structures. Erosion and sediment controls.

TOTAL PROJECT AREA: 32.939 Acres

TOTAL AREA TO BE DISTURBED: 32.939 Acres (100%)

WEIGHTED RUNOFF COEFFICIENT (PRE-CONSTRUCTION): 0.25

WEIGHTED RUNOFF COEFFICIENT (POST-CONSTRUCTION): 0.65

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: The existing soil is disturbed very stiff dark brown clay. Vegetative cover is minimal.

NAME OF RECEIVING WATERS: The storm water will flow into an offsite detention pond then towards Walnut Tributary 4 (Trib 4 of Walnut Branch) floodplain.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ___ TEMPORARY SEEDING
- √ PERMANENT PLANTING, SODDING, OR SEEDING
- ___ MULCHING
- ___ SOIL RETENTION BLANKET
- ___ BUFFER ZONES
- ___ PRESERVATION OF NATURAL RESOURCES

OTHER: Disturbed areas on which construction activity has ceased (temporarily or permanently) shall be stabilized within 14 days unless activities are scheduled to resume and do within 21 days.

STRUCTURAL PRACTICES:

- √ SILT FENCES
- ___ HAY BALES
- √ ROCK BERMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- √ DIVERSION DIKE AND SWALE COMBINATIONS
- √ PIPE SLOPE DRAINS
- √ PAVED FLUMES
- √ ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- √ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- √ CURBS AND GUTTERS
- √ STORM SEWERS
- √ VELOCITY CONTROL DEVICES

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

The order of activities will be as follows:

1. Install temporary control, establish limits of construction, install silt fence, construction entrance/exit, and concrete wash out area
2. Clear, grub, excavate, and embank for channels/drains/pond/utilities.
3. Construct sanitary sewer.
4. Construct storm drain.
5. Install berm controls/BMP's
6. Construct water lines.
7. Construct streets.
8. Follow up with developer on BMP removal sequence.
9. When all construction activity is complete and the site is stabilized and approved by the project engineer, remove all temporary structural controls and stabilize areas disturbed by their removal.
10. The contractor is responsible for implementing and maintaining the storm water pollution prevention plan.

STORM WATER MANAGEMENT: Storm water drainage will be conveyed by existing/ proposed drainage structures, storm sewer, and streets.

NON-STORM WATER DISCHARGE: Any water discharged on the site for approved non-storm water discharges, shall be per permit conditions. The source of the non-storm water water is from the Spring Hills Water Supply Corp. and should have no detrimental effect on the site or downstream from the site.

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: An inspection will be performed by a designated inspector every week as well as after every half inch or more of rain (as recorded on a non-freezing rain gauge to be located at the Project Site). An inspection and Maintenance Report will be made per each Inspection. Based on the inspection results, the controls shall be located at the Project Site). An inspection and Maintenance Report will be made per each revised per the inspection report.

WASTE MATERIALS: All waste materials will be collected and stored in a secured metal dumpster. The dumpster will meet all state and local city solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulations and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products in the following categories are considered to be hazardous: paints, acids for cleaning masonry surfaces, cleaning solvents, asphalt products, chemical additives for soil stabilization or concrete curing compounds and additives. In the event of a hazardous material spill, the spill coordinator shall be contacted immediately.

SANITARY WASTE: All sanitary waste will be collected from portable units as necessary, or as required by local regulations by a Licensed Sanitary Waste Management Contractor.

OFFSITE VEHICLE TRACKING:

- ___ HAUL ROADS DAMPENED FOR DUST CONTROL
- ___ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- √ EXCESS DIRT ON ROAD REMOVED DAILY
- √ STABILIZED CONSTRUCTION ENTRANCE

PERMITS:

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.

OWNERS CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____
SIGNATURE DATE

CONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general Texas Pollutant Discharge Elimination System (TPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification plan.

_____ _____
SIGNATURE (CONTRACTOR) DATE

SUBDIVISION CONSTRUCTION PERMIT APPROVAL

SEGUIN TEXAS
CAPITAL PROJECTS/ ENGINEERING

SCstP-0021-2022
07/24/2025

THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS

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6/16/2023

STATE OF TEXAS
MARY P. STEWART
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PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS SUBDIVISION UNIT 4
SEDIMENTATION & EROSION CONTROL NARRATIVE

SHEET NO.
603

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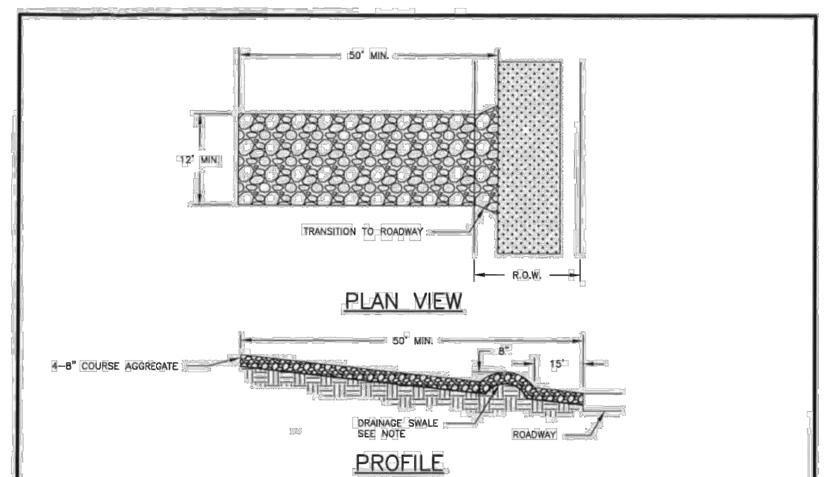
Date: Jun 16, 2023, 1:16pm User ID: MaryStewart File: L:\Develop\Proj_2021\E0621202_Swenson Heights Unit 4\cloud\E0621202 603 SCP PLAN.dwg



NOTES:

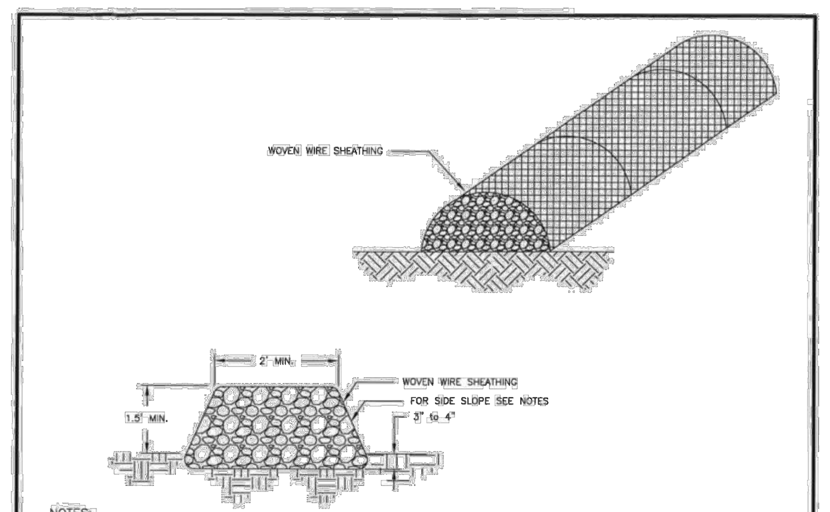
1. THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION WITH A MINIMUM THICKNESS OF 8 INCHES.
2. IF THE SLOPE TOWARDS THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE 8 INCHES HIGH WITH 3:1 (H:V) SIDESLOPES ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OX/YD², A MULLEN BURST RATING OF 140 LB/IN², AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. THE MINIMUM WIDTH OF THE ENTRANCE SHOULD BE 12 FT OR THE FULL WIDTH OF THE EXIT ROADWAY, WHICHEVER IS GREATER.
5. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.
6. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH 4 INCH MINIMUM CRUSHED STONE OR COMMERCIAL RACK WHICH DRAINS TO A SEDIMENT TRAP OR BASIN.

MAINTENANCE:

7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
8. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE

SEGUIN TEXAS It's real. | DATE ISSUED: JUNE 1, 2013 | TITLE: STABILIZED CONSTRUCTION ENTRANCE | SCALE: N.T.S. | DRAWING No. EC-1



NOTES:

1. USE ONLY CLEAN, OPEN GRADED ROCK 5-8 INCH DIAMETER FOR STREAM FLOW CONDITIONS; USE OPEN GRADED ROCK 3-5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENINGS AND MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED.
3. THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP.
4. FOR INSTALLATIONS IN ACTIVE STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
5. ROCK BERMS PLACED IN STATE RIGHT OF WAY WILL BE INSTALLED WITH A MAXIMUM SLOPE OF 6:1 OR FLATTER FOR ALL SLOPES PARALLEL TO THE FRONTAGE ROAD EDGE OF PAVEMENT.

MAINTENANCE AND REMOVAL:

6. REPAIR ANY LOOSE WIRE SHEATHING.
7. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION
8. THE STONE AND/OR FABRIC CORE – WOVEN WIRE SHEATHING, SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
9. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.
10. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK BERM

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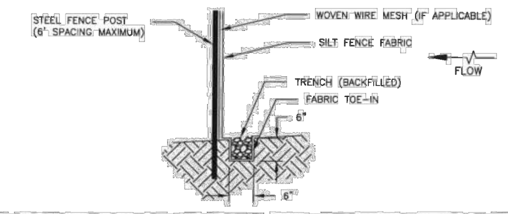


NOTES:

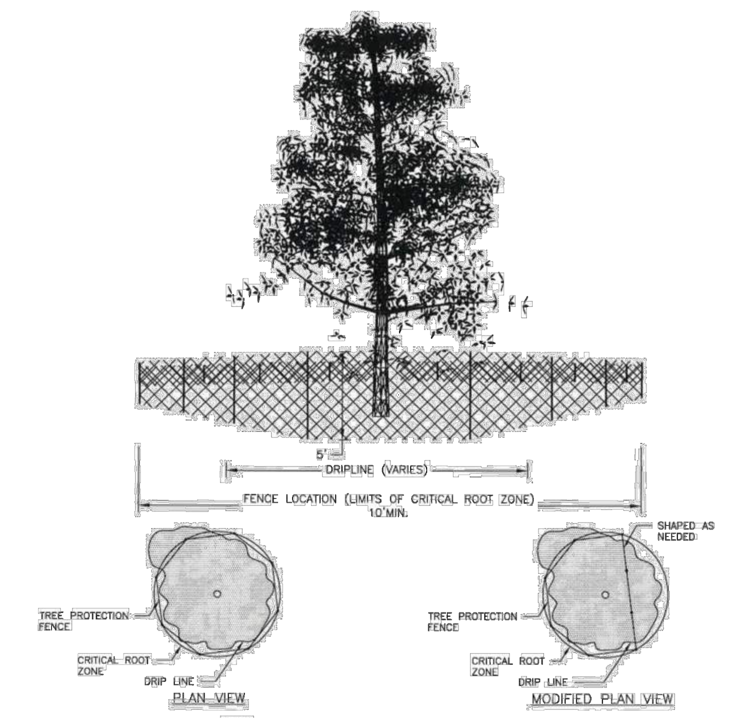
1. TRIANGULAR SEDIMENT FILTER DIKES MAY BE SUBSTITUTED FOR SILT FENCE IN AREAS WHERE INSTALLATION OF SILT FENCE IS NOT POSSIBLE OR WHERE VEHICLE ACCESS MUST BE MAINTAINED PROVIDED THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE ACRE.
2. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE 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 A MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
3. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT², AND BRINDELL HARDNESS EXCEEDING 140.
4. WOVEN WIRE BACKING IS REQUIRED IN THE EDWARDS AQUIFER RECHARGE AND CONTRIBUTING ZONE; OPTIONAL ELSEWHERE. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2"X4" WELDED WIRE, 12 GAUGE MINIMUM.
5. SILT FENCE SHOULD BE INSTALLED FOLLOWING THE CONTOURS AS CLOSE AS POSSIBLE. THE ENDS SHOULD BE CURVED UPSTREAM TO CREATE AN AREA OF WATER IMPOUNDMENT AND PREVENT FLOW FROM ESCAPING AROUND THE FENCE.
6. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT AND SPACED NOT MORE THAN 6 FEET ON CENTER.
7. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CAN NOT BE TREATED IN (E.G., PAVEMENT OR ROCK OUTCROP) WEIGHT FABRIC FLAP WITH 3" OF WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
8. 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.
9. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POSTS OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. WHERE ENDS MEET, OVERLAP FABRIC 3-FEET AND SECURELY FASTEN.

MAINTENANCE AND REMOVAL:

12. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES. THE SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
13. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE. 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

SEGUIN TEXAS It's real. | DATE ISSUED: JUNE 1, 2013 | TITLE: SILT FENCE | SCALE: N.T.S. | DRAWING No. EC-3



NOTES:

1. CRITICAL ROOT ZONE RADIUS = 1 FT. PER INCH OF TRUNK DIAMETER
2. IF LIMITS OF CONSTRUCTION ENCROACH ON CRITICAL ROOT ZONE, USE THE MODIFIED PLAN VIEW.
3. IF ANY PORTION OF FENCE RADIUS IS LESS THAN 5', ADD 8' HIGH BOARDS STRAPPED TO TRUNK.
4. FENCE SHOULD BE REPAIRED OR REPLACED AS NECESSARY.

TREE PROTECTION CONSTRUCTION FENCE

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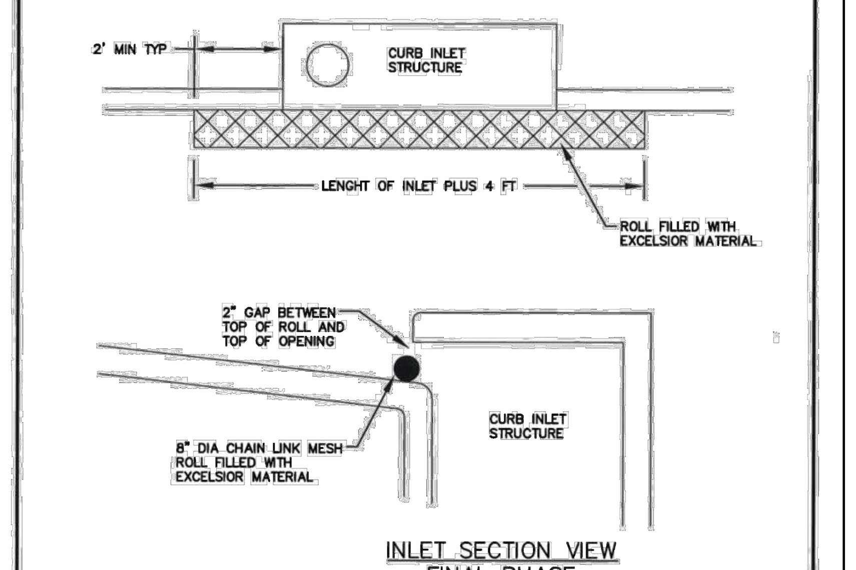

MATERIAL SPECIFICATION:

A. WIRE FABRIC – CHAIN LINK MESH
B. FILTER MATERIAL – EXCELSIOR MATERIAL

MAINTENANCE REQUIREMENTS:

WITHIN FORTY EIGHT (48) HOURS OF POURING THE BLOCKOUT AND TOP, PLACE MESH ROLL WITH 2" OPENING OVER ALL CURB AND GRATE OPENINGS SO THAT AT LEAST 2 FEET OF ROLL EXTENDS BEYOND EACH END OF THE GUTTER OPENING. IF THE SEDIMENT FILTER BECOMES CLOGGED WITH DEBRIS SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, REMOVE THE ROLL, CLEAN IT AND/OR REPLACE IT. MAKE WEEKLY INSPECTIONS OF THESE SEDIMENT FILTERS FOR CONFORMANCE TO THESE CONDITIONS. PARTICULARLY INSPECT ALL INLETS AFTER EACH RAIN. COMPLETELY REMOVE ALL SEDIMENT FILTERS UPON ESTABLISHMENT OF GRASS AND FINAL STABILIZATION OF CONSTRUCTION SITE. DO NOT USE A SEDIMENT FILTER TO CONTROL EROSION AROUND "Y" INLETS. UTILIZE SEDIMENT FENCES.

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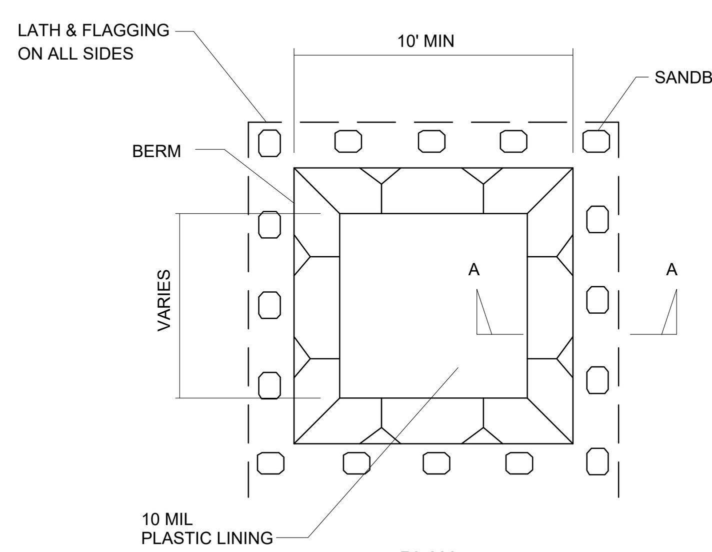
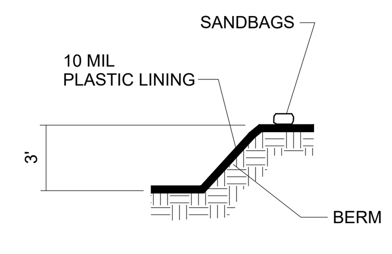


PLAN
NOT TO SCALE



SECTION A-A
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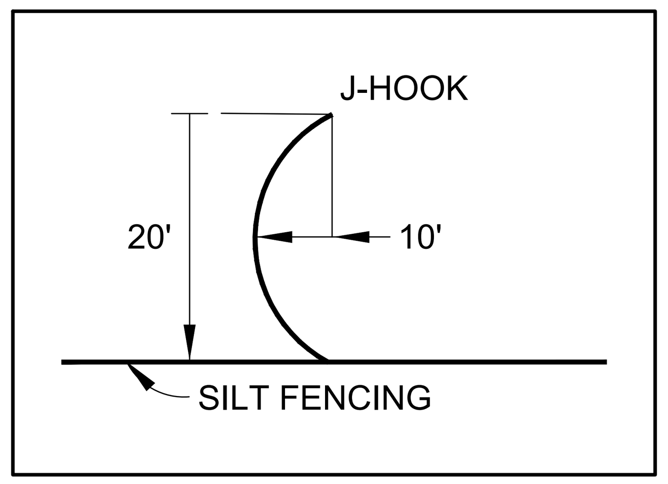
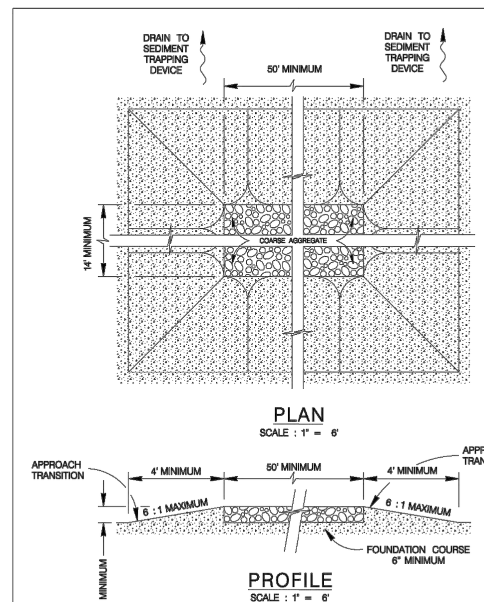
CONCRETE WASHOUT PIT



J-HOOK DETAIL
SCALE: NTS

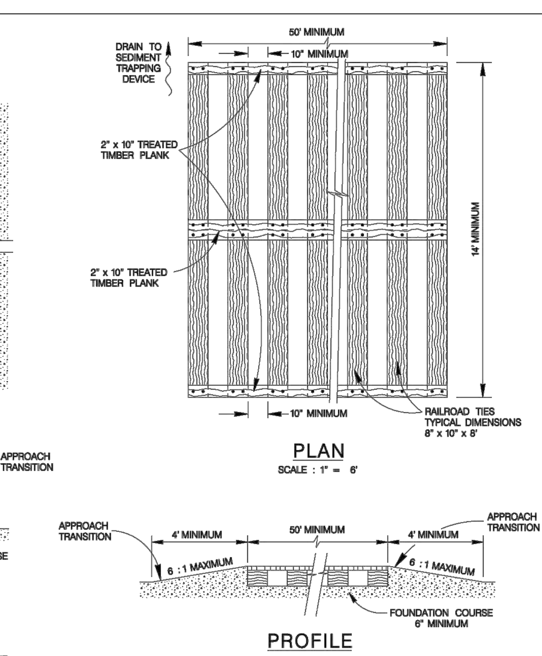
SUBDIVISION CONSTRUCTION PERMIT APPROVAL
SEGUIN TEXAS CAPITAL PROJECTS/ ENGINEERING
SCstP-0021-2022
07/24/2025
THIS PERMIT CONFORMS TO CITY UDC & TECHNICAL REQUIREMENTS



GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 :1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

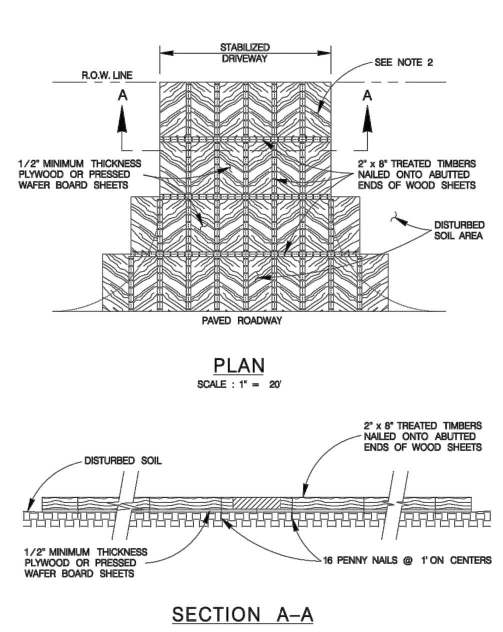
CONSTRUCTION EXIT – TYPE 1



GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 :1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

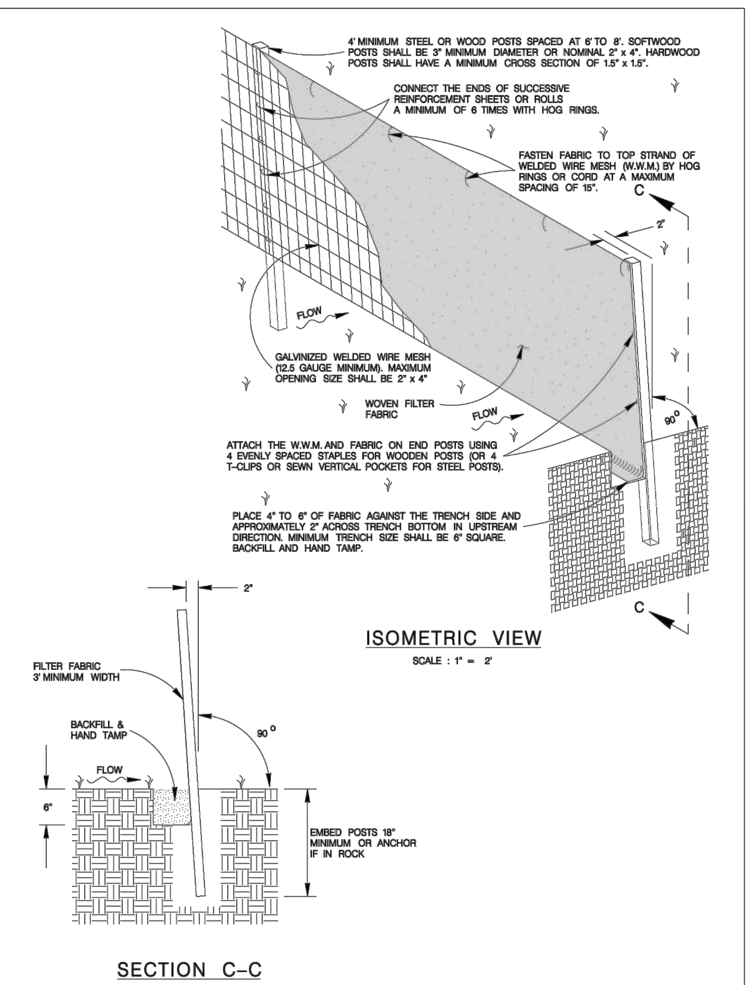
CONSTRUCTION EXIT – TYPE 2



GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 3



SEDIMENT CONTROL FENCE USAGE GUIDELINES

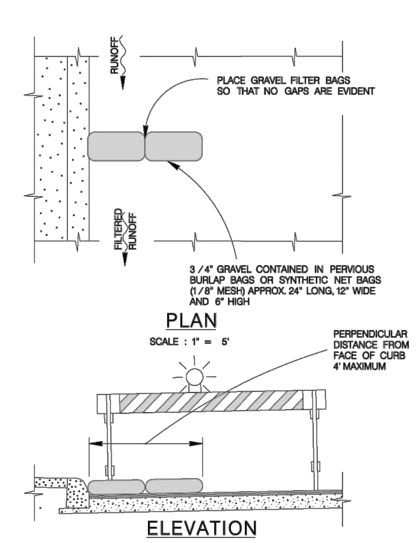
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

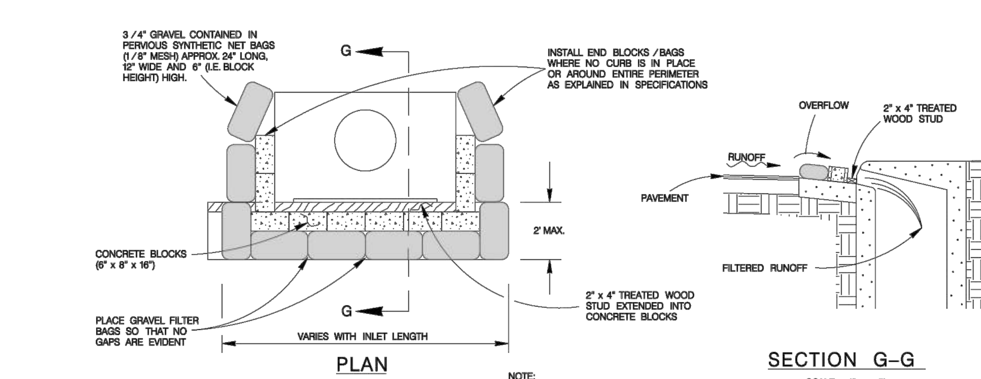
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE



NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



NOTE:
GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.

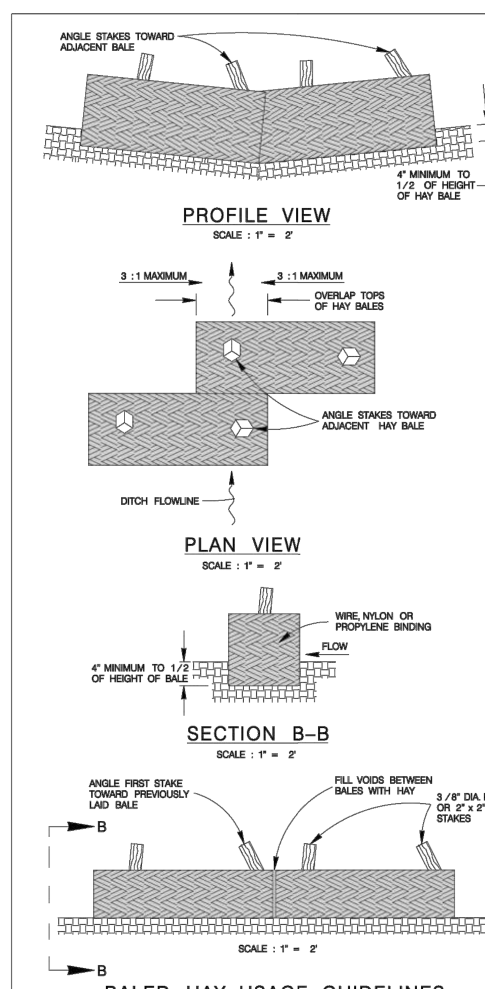
CURB INLET GRAVEL FILTER

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

____% SUBMITTAL | PROJECT NO.:____ | DATE:____
DRWN. BY: V. VASQUEZ | DSGN. BY:____ | CHKD. BY:____ | SHEET NO.:____OF____



BALED HAY USAGE GUIDELINES

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BAILED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY:

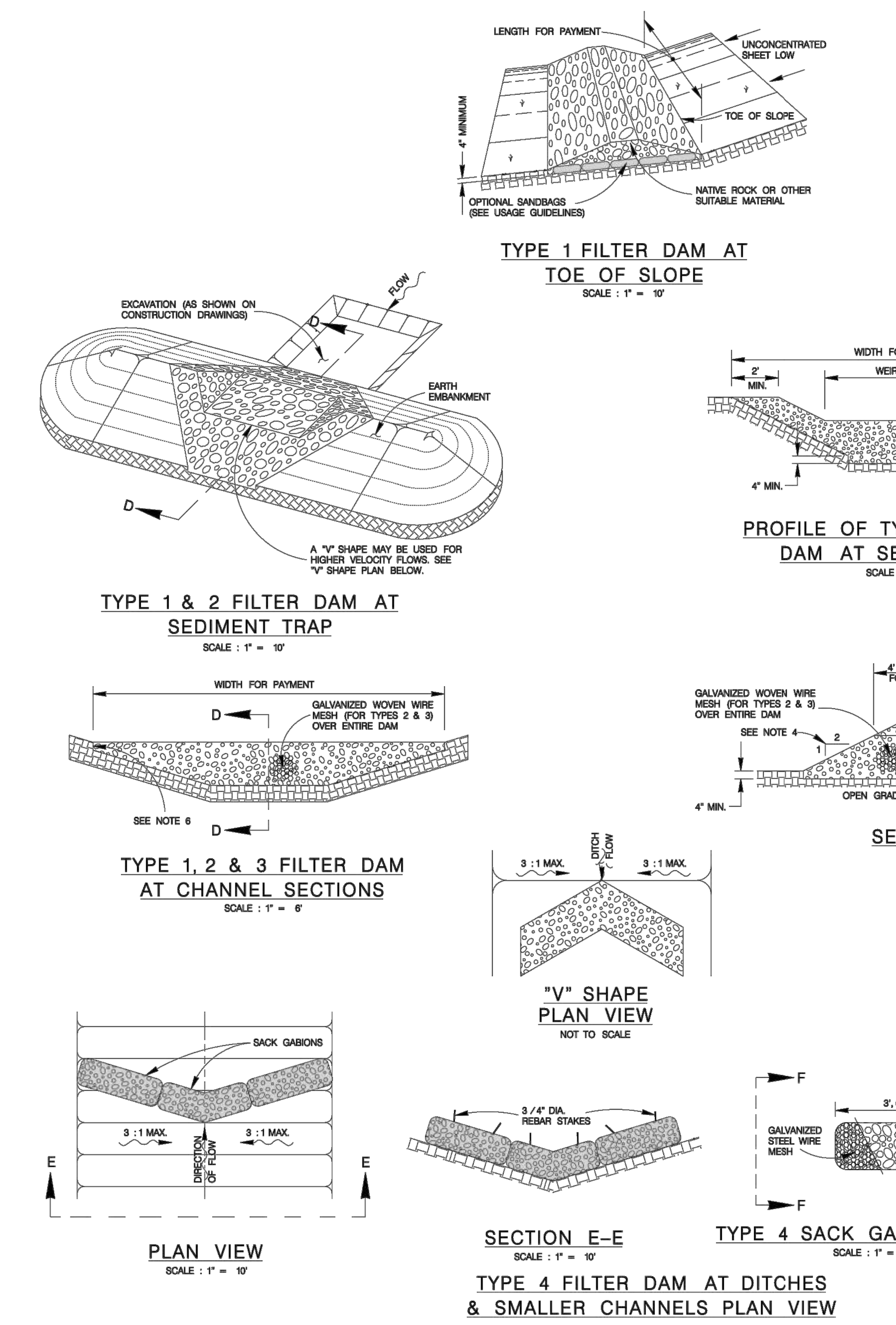
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BAILED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

GENERAL NOTES

1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MININMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3/8" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (18" HIGH WITH NO WIRE MESH) :

TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS, IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 (18" HIGH WITH WIRE MESH) :

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH WITH WIRE MESH) :

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS) :

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 :1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 :1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

ROCK FILTER DAMS

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

____% SUBMITTAL | PROJECT NO.:____ | DATE:____
DRWN. BY: V. VASQUEZ | DSGN. BY:____ | CHKD. BY:____ | SHEET NO.:____OF____

DESIGNED BY: L.T.E.
DRAWN BY: L.T.E.
DATE: 09/2021
JOB NO.: E0621202

CIVIL ENGINEERING CONSULTANTS
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6/16/2023
STATE OF TEXAS
MARY P. STEWART
108905
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

SWENSON HEIGHTS
SUBDIVISION UNIT 4
SEDIMENTATION & EROSION
CONTROL DETAILS

SHEET NO.
604

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Date: Jun 16, 2023, 1:15pm User ID: Mary.Stewart File: L:\develop\Proj_2021\E0621202_Swenson Heights Unit 4\cadd\E0621202 601 SED PLAN.dwg