

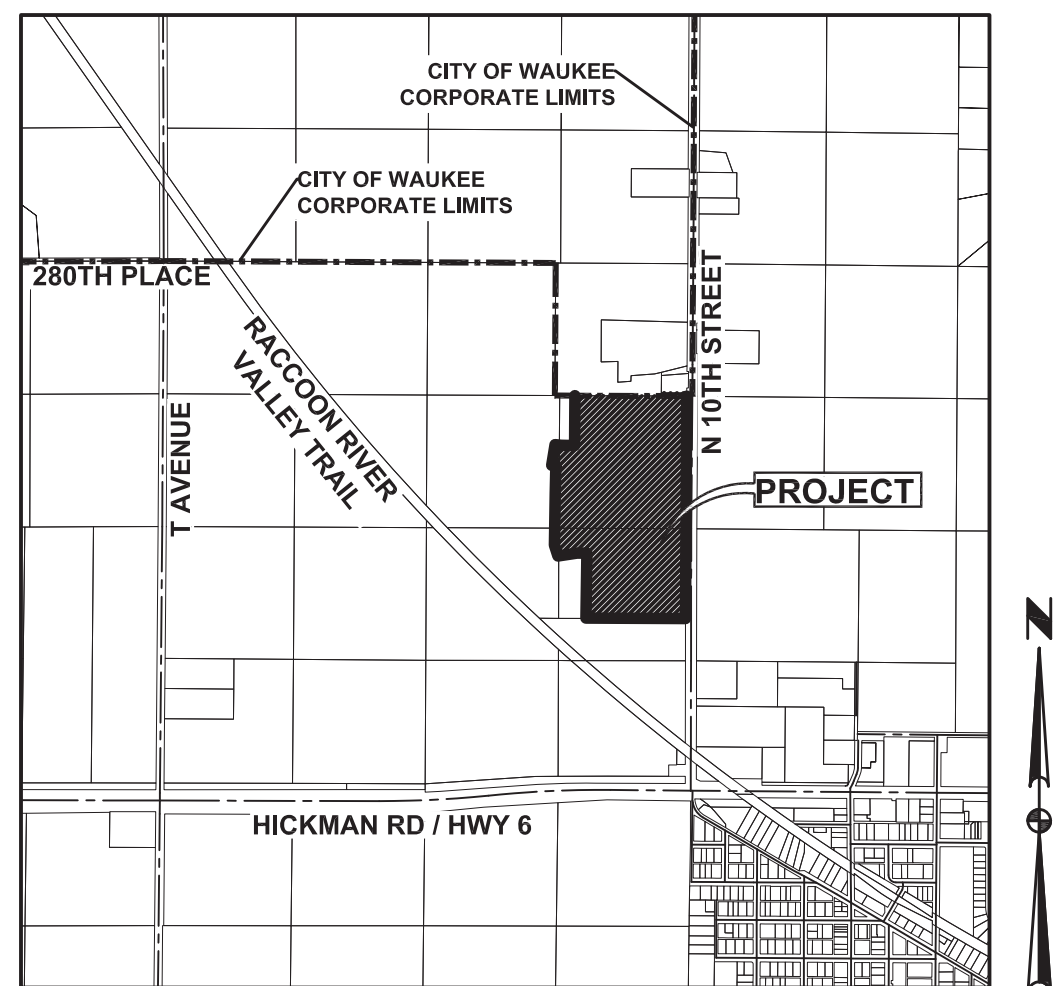
CONSTRUCTION PLANS FOR:

STRATFORD CROSSING PLAT 1

WAUKEE, IOWA

VICINITY MAP

NOT TO SCALE



WAUKEE, IOWA

PROJECT MANAGER

LANDMARK DEVELOPMENT SERVICES
CONTACT: NICK HALFILL
9550 HICKMAN ROAD, SUITE 100
CLIVE, IOWA 50325
PH. (515) 986-5994

OWNER / DEVELOPER

STRATFORD CROSSING, LLC
CONTACT: BILL SPENCER
9550 HICKMAN ROAD, SUITE 100
CLIVE, IOWA 50325
PH. (515) 986-5994

ENGINEER / SURVEYOR

CIVIL DESIGN ADVANTAGE, LLC
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PH: 515-369-4400
CONTACT: ERIN OLLENDIKE

ZONING

C-1 - COMMUNITY AND HIGHWAY SERVICE
COMMERCIAL DISTRICT

R-2 - ONE AND TWO FAMILY RESIDENTIAL
DISTRICT

R-3 - RENTAL MULTI-FAMILY RESIDENTIAL
DISTRICT

R-4 - ROW DWELLING AND TOWNHOME
DWELLING DISTRICT

SUBMITTALS

FIRST SUBMITTAL:	11/30/2017
SECOND SUBMITTAL:	01/02/2018
THIRD SUBMITTAL:	01/31/2018
FOURTH SUBMITTAL:	04/02/2018
FIFTH SUBMITTAL:	04/17/2018
FINAL SUBMITTAL:	04/20/2018
REVISED MAILBOX PADS:	03/13/2019
ASBUILT SUBMITTAL:	11/25/2019

DEVELOPMENT SUMMARY:

TOTAL AREA OF SITE = 59.13 ACRES (2,575,935 SQUARE FEET)

C-1 COMMERCIAL = 31.32 ACRES (1,364,268 SQUARE FEET)
LOTS 5-7

R-2 RESIDENTIAL = 7.46 ACRES (325,053 SQUARE FEET)
-LOTS 1-3 & 9-44

R-3 RESIDENTIAL = 9.09 ACRES (396,029 SQUARE FEET)
-LOT 4

R-4 RESIDENTIAL = 11.26 ACRES (490,584 SQUARE FEET)
-LOT 8

BULK REGULATIONS:

C-1

FRONT YARD: 30 FEET

SIDE YARD: NO MINIMUM SHALL APPLY, EXCEPT WHERE THE SIDE
YARD IS ADJACENT TO AN "R" DISTRICT, IN WHICH
CASE THE YARD SHALL BE AT LEAST 15 FEET.

REAR YARD: 30 FEET

R-2

FRONT YARD: 30 FEET

SIDE YARD: A TOTAL OF 15 FEET; ONE SIDE MAY BE REDUCED
TO NOT LESS THAN 7 FEET

REAR YARD: 30 FEET

R-3

FRONT YARD: 30 FEET

SIDE YARD: A TOTAL OF 15 FEET; ONE SIDE MAY BE REDUCED
TO NOT LESS THAN 7 FEET

REAR YARD: 30 FEET

R-4

FRONT YARD: 30 FEET

SIDE YARD: A TOTAL OF 15 FEET; ONE SIDE MAY BE REDUCED
TO NOT LESS THAN 7 FEET

REAR YARD: 30 FEET

LEGAL DESCRIPTION

BOOK 491, PAGE 79
EXCEPT BOOK 2007 PAGE 19461

THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 27,
TOWNSHIP 79 NORTH, RANGE 26 WEST OF THE FIFTH PRINCIPAL MERIDIAN IN THE
CITY OF WAUKEE, DALLAS COUNTY, IOWA.

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS AND DETAILS
3-5	DETAILS
6	QUANTITIES, GENERAL NOTES AND BID ITEM REFERENCE NOTES
7-9	HYDRANT COVERAGE PLAN
10-14	GRADING PLAN
15-16	EROSION AND SEDIMENT CONTROL PLAN
17-28	STORM & SANITARY SEWER PLAN AND PROFILE
29-39	WATER MAIN PLAN AND PROFILE
40-41	INTERSECTION DETAILS

AS-BUILT DRAWINGS

AS-BUILT PLANS ARE BASED ON SURVEYED INVERT ELEVATIONS AND
INFORMATION SUPPLIED BY THE CONTRACTOR. CIVIL DESIGN
ADVANTAGE TAKES NO RESPONSIBILITY FOR UNAUTHORIZED CHANGES
TO THE PLANS WITHOUT CITY/OWNER KNOWLEDGE. FIELD VERIFICATION
OF UTILITIES OR OTHER PLAN ELEMENTS IS ALWAYS RECOMMENDED.

BENCHMARKS

USGS MONUMENT ALUMINUM ROD WITH CAP STAMPED G121
AND NGS ACCESS COVER 3" DEEP, EAST SIDE OF R AVE.
(R16) 0.1 MILES SOUTH OF 300TH STREET.
ELEVATION=1022.24

UTILITY NOTE

ANY UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY AND RECORDS
OBTAINED BY THIS SURVEYOR. THE SURVEYOR MAKES NO GUARANTEE THAT THE
UTILITIES SHOWN COMPRISE ALL THE UTILITIES IN THE AREA, EITHER IN SERVICE
OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE
UTILITIES SHOWN ARE IN THE EXACT LOCATION SHOWN.

NOTES

1. ANY CHANGES PROPOSED TO THE CONSTRUCTION DRAWINGS DURING
CONSTRUCTION SHALL BE APPROVED IN WRITING BY THE DEVELOPMENT SERVICES
DEPARTMENT.

2. THE CONTRACTOR IS RESPONSIBLE FOR ANY CHANGES MADE DURING
CONSTRUCTION THAT HAVE NOT BEEN GRANTED APPROVAL IN WRITING BY THE
DEVELOPMENT SERVICES DEPARTMENT.

3. THE RESULTS OF THE GEOTECHNICAL REPORT ARE TO BE PROVIDED TO THE
CITY OF WAUKEE ENGINEERING DEPARTMENT. THE CONSTRUCTION DRAWINGS ARE
SUBJECT TO ANY CHANGES REQUIRED BY THE REPORT.

4. THE CONTRACTOR IS RESPONSIBLE FOR THE TRAFFIC CONTROL NEEDS FOR
PAYING NW SUNRISE DRIVE AND NW STRATFORD DRIVE CONNECTIONS TO N. 10TH
STREET. A MESSAGE BOARD WILL BE REQUIRED AT LEAST 1 WEEK IN ADVANCE
OF ANY LANE CLOSURES.



CIVIL DESIGN ADVANTAGE

3405 SE CROSSROADS DR. SUITE G GRIMES, IOWA 50111

PH: (515) 369-4400 Fax: (515) 369-4410

PROJECT NO. 1709.538

GENERAL LEGEND

PROPOSED

SECTION LINE	----
CENTER LINE	----
RIGHT OF WAY	---R/W---
PERMANENT EASEMENT	---P/E---
TEMPORARY EASEMENT	---T/E---
TYPE SW-501 STORM INTAKE	
TYPE SW-503 STORM INTAKE	
TYPE SW-505 STORM INTAKE	
TYPE SW-506 STORM INTAKE	
TYPE SW-513 STORM INTAKE	
TYPE SW-401 STORM MANHOLE	
TYPE SW-402 STORM MANHOLE	
TYPE SW-301 SANITARY MANHOLE	
STORM/SANITARY CLEANOUT	
WATER VALVE	
FIRE HYDRANT ASSEMBLY	
SIGN	
DETECTABLE WARNING PANEL	
WATER CURB STOP	
STORM SEWER STRUCTURE NO.	
STORM SEWER PIPE NO.	
SANITARY SEWER STRUCTURE NO.	
SANITARY SEWER PIPE NO.	
SANITARY SEWER WITH SIZE	
SANITARY SERVICE	
STORM SEWER	
STORM SERVICE	
WATERMAIN WITH SIZE	
WATER SERVICE	
SAWCUT (FULL DEPTH)	
SILT FENCE	
USE AS CONSTRUCTED	(UAC)
TOP OF PROPOSED GROUND	TG
MINIMUM OPENING ELEVATION	MOE

EXISTING

SANITARY MANHOLE	
WATER VALVE BOX	
FIRE HYDRANT	
WATER CURB STOP	
WELL	
STORM SEWER MANHOLE	
STORM SEWER SINGLE INTAKE	
STORM SEWER DOUBLE INTAKE	
FLARED END SECTION	
DECIDUOUS TREE	
CONIFEROUS TREE	
DECIDUOUS SHRUB	
CONIFEROUS SHRUB	
ELECTRIC POWER POLE	
GUY ANCHOR	
STREET LIGHT	
POWER POLE W/ TRANSFORMER	
UTILITY POLE W/ LIGHT	
ELECTRIC BOX	
ELECTRIC TRANSFORMER	
ELECTRIC MANHOLE OR VAULT	
TRAFFIC SIGN	
TELEPHONE JUNCTION BOX	
TELEPHONE MANHOLE/VAULT	
TELEPHONE POLE	
GAS VALVE BOX	
CABLE TV JUNCTION BOX	
CABLE TV MANHOLE/VAULT	
MAIL BOX	
BENCHMARK	
SOIL BORING	
UNDERGROUND TV CABLE	
GAS MAIN	
FIBER OPTIC	
UNDERGROUND TELEPHONE	
OVERHEAD ELECTRIC	
UNDERGROUND ELECTRIC	
FIELD TILE	
SANITARY SEWER W/ SIZE	
STORM SEWER W/ SIZE	
WATER MAIN W/ SIZE	

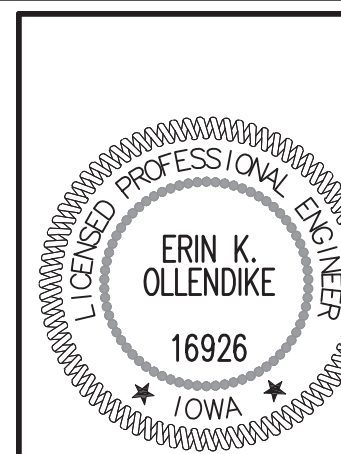
ALL CONSTRUCTION SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND THE SOILS REPORT
PREPARED BY THIELE GEOTECH, INC (PN 02.17120.0) DATED JANUARY 25, 2018.

THIS PROJECT REQUIRES AN IOWA NPDES PERMIT #2. CIVIL DESIGN ADVANTAGE WILL PROVIDE THE
PERMITS AND THE INITIAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE CONTRACTORS
USE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING THE SWPPP
THROUGHOUT CONSTRUCTION AND MEETING LOCAL, STATE AND FEDERAL REQUIREMENTS.

THIS DESIGN SPECIFICALLY PREPARED FOR USE AT THE LOCATION SHOWN. USE IN ANY OTHER MANNER
EXCEEDS THE INTENDED PURPOSE OF THESE DRAWINGS AND ANY ACCOMPANYING SPECIFICATIONS.

THE MOST RECENT EDITION OF THE CITY OF WAUKEE STANDARD SPECIFICATIONS FOR PUBLIC
IMPROVEMENTS AND THE 2018 EDITION OF SUDAS STANDARD SPECIFICATIONS SHALL APPLY TO ALL
WORK PERFORMED ON THIS PROJECT EXCEPT AS MODIFIED HEREIN.

1-800-292-8989
www.iowaonecall.com



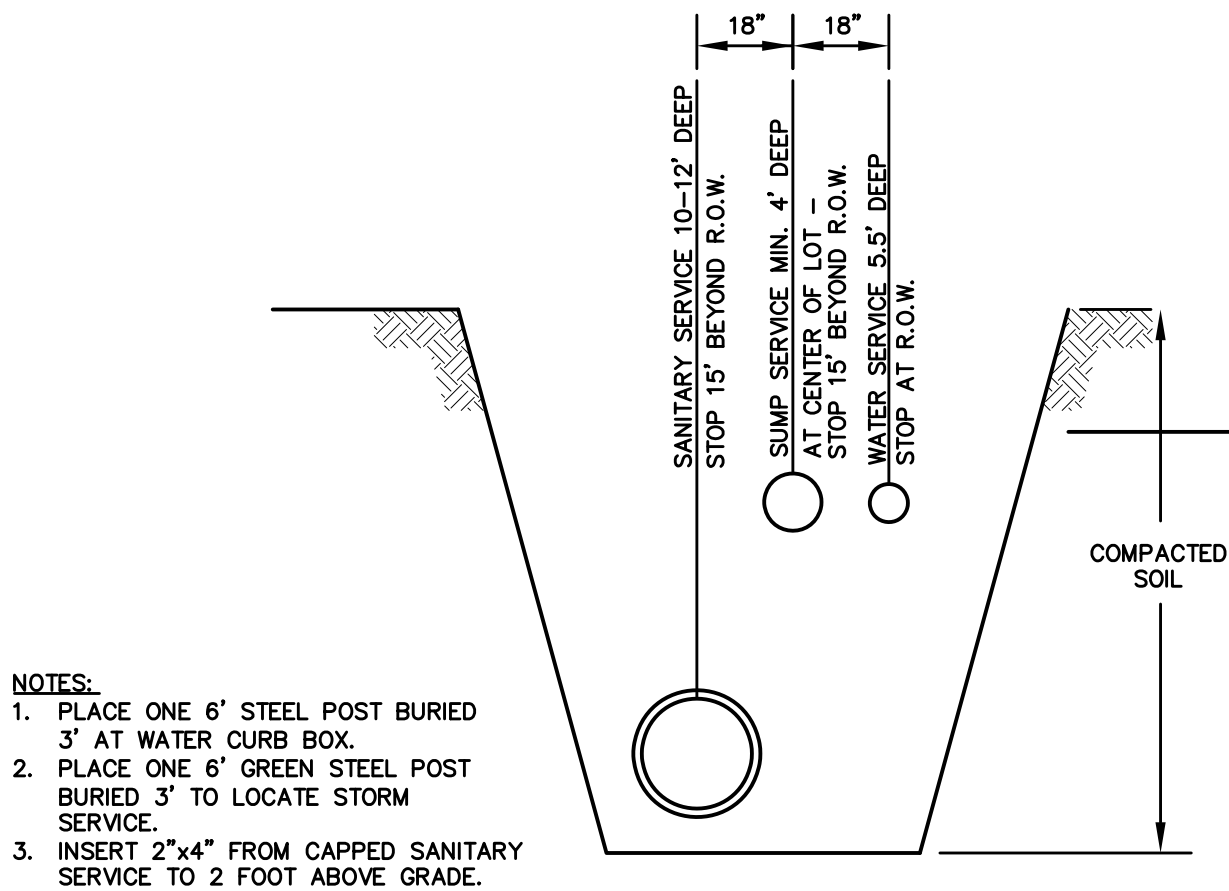
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS
PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF IOWA.

ERIN K. OLLENDIKE, P.E.

11-25-19
DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2019
PAGES OR SHEETS COVERED BY THIS SEAL:

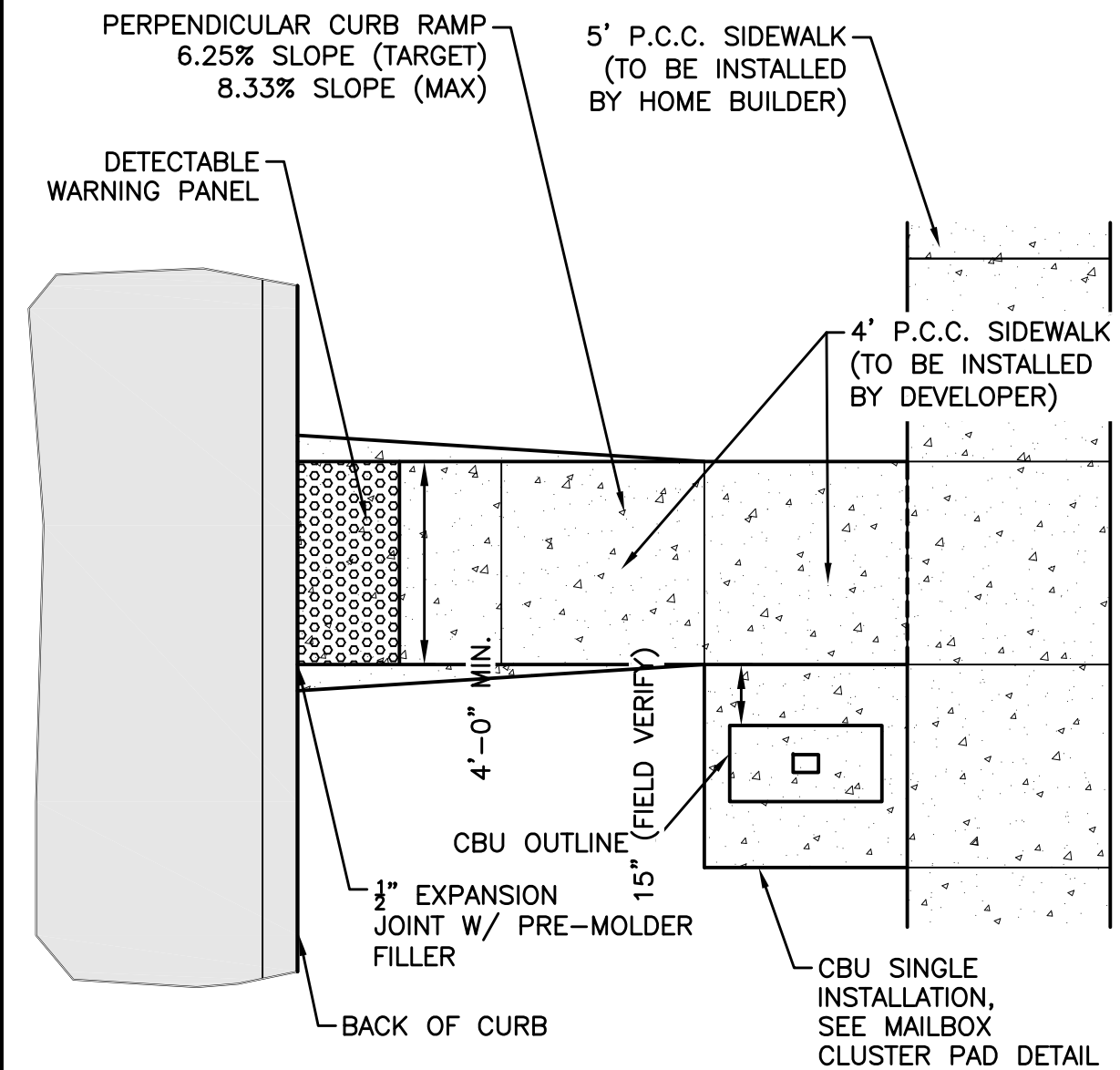
1-41



- NOTES:
1. PLACE ONE 6" STEEL POST BURIED 3' AT WATER CURB BOX.
 2. PLACE ONE 6" GREEN STEEL POST BURIED 3' TO LOCATE STORM SERVICE.
 3. INSERT 2"x4" FROM CAPPED SANITARY SERVICE TO 2 FOOT ABOVE GRADE.

SERVICE LOCATION DETAIL

NOT TO SCALE

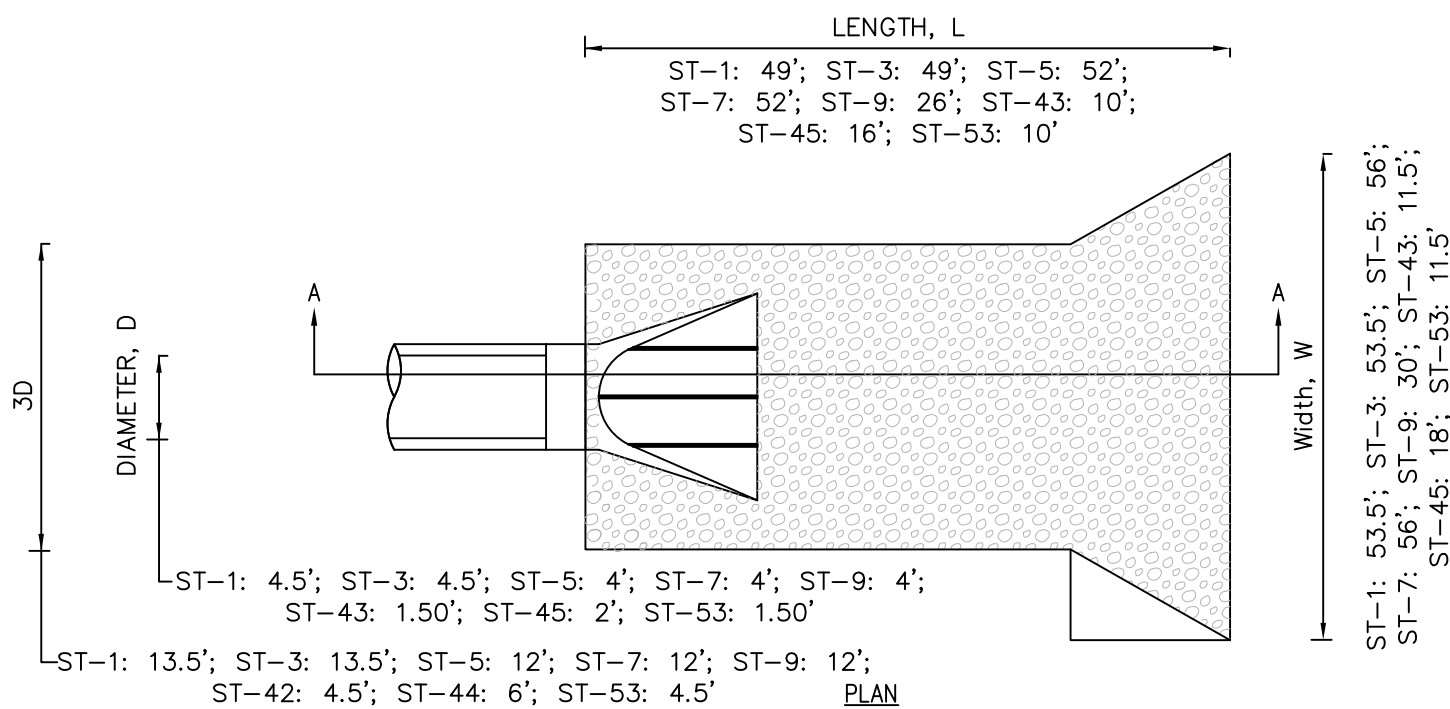


INSTALLATION NOTE:

1. MAILBOX PADS TO BE INSTALLED BY DEVELOPER.
2. CLUSTER MAILBOX TO BE LOCATED ON THE NO PARKING/STREET LIGHT SIDE OF STREET.
3. DO NOT LOCATE AT INTERSECTION.
4. LOCATE NEAR SHARED PROPERTY LINE PER APPROVED PLAN.
5. DETERMINE SIDEWALK SIDE OF MAILBOX PAD ELEVATION ASSUMING CONSTANT 4% SLOPE FROM BACK OF CURB TO SIDEWALK SIDE OF MAILBOX PAD. RESULTING SLOPE FROM BACK OF CURB TO STREET SIDE OF MAILBOX PAD WILL BE GREATER THAN 4%. FOR EXAMPLE, FOR A 29' WIDE PAVEMENT WITH A 60' WIDE R.O.W. AND A 2% MAILBOX PAD CROSS SLOPE, THE RESULTING SLOPE FROM THE BACK OF CURB TO THE STREET SIDE OF MAILBOX PAD IS 6.2%.

MAILBOX PAD DETAIL

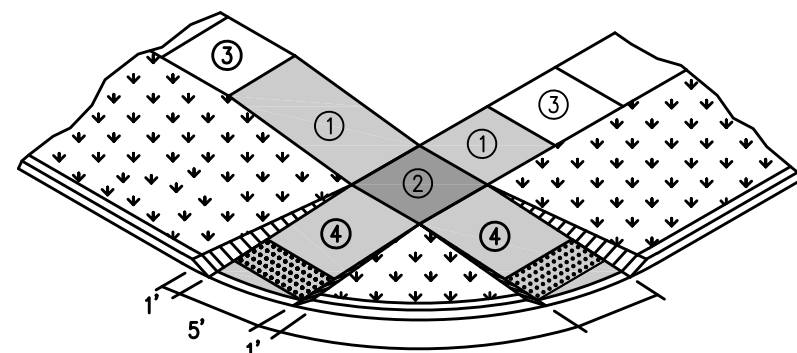
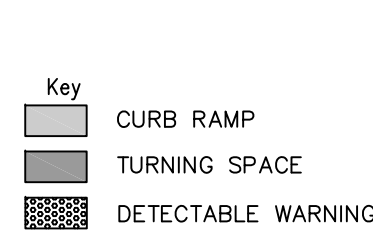
NOT TO SCALE



- NOTE:
1. THE LAST THREE SECTIONS AND THE APRON SHALL BE CONNECTED WITH PIPE CONNECTIONS PER SECTION 4030.302C OF SUDAS.
 2. INSTALL A 3" CLAY WATERSTOP AT ALL STORM SEWER OUTLETS.

ROCK APRON FOR PIPE OUTLET

NOT TO SCALE

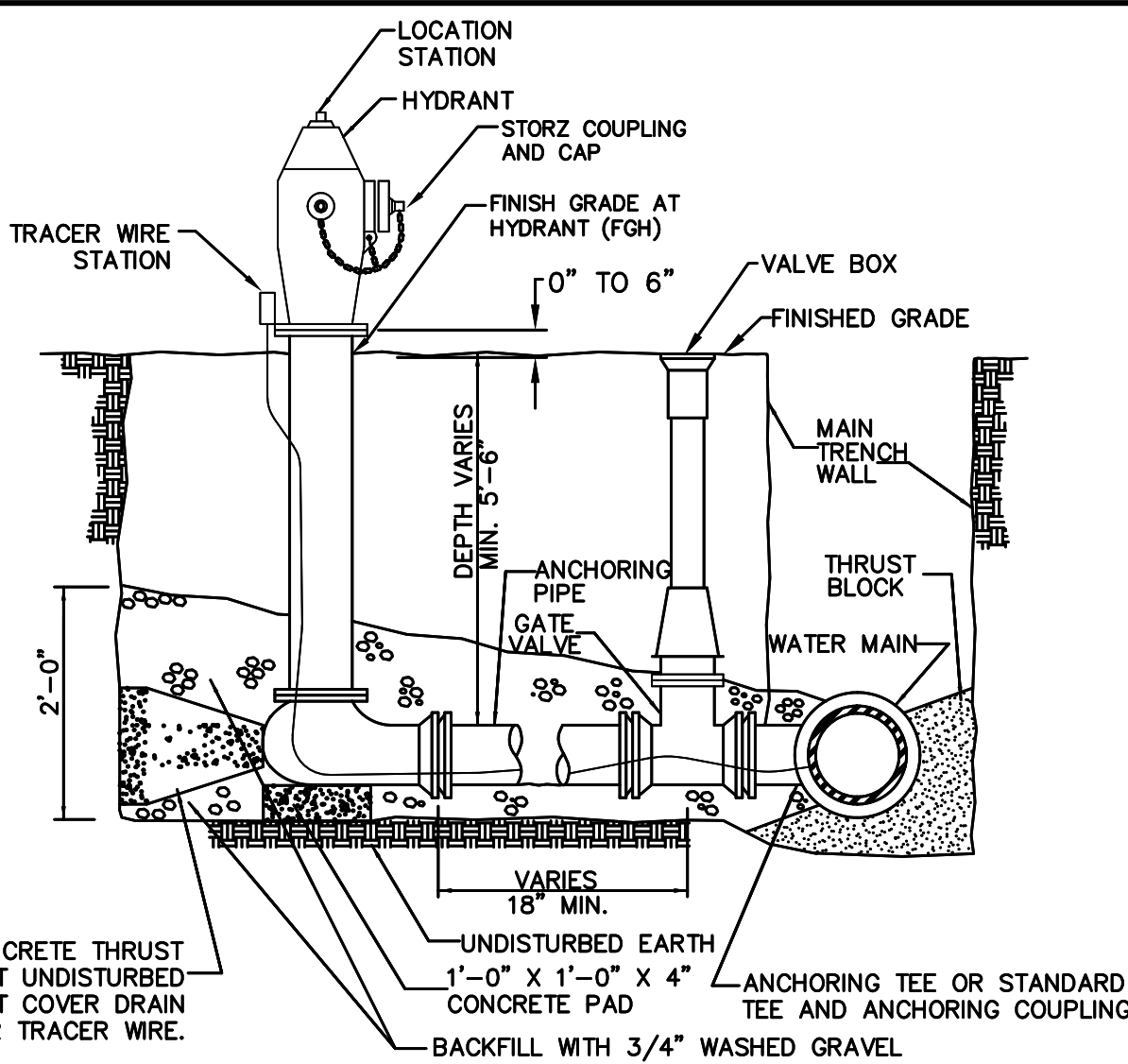


1. Parallel Curb Ramp: Target cross slope of 1.5% with a maximum cross slope of 2.0%. The length of the parallel ramp is not to exceed 15 feet, regardless of resulting slope. Do not exceed 8.3% slope for parallel ramps shorter than 15 feet.
2. Turning Space: Target slope of 1.5% with a maximum slope perpendicular to the travel directions of 2.0%. At mid-block crossings, cross slope of landing may exceed 2.0% to match the roadway grade. Minimum 5 feet by 5 feet.
3. Target cross-slope of 1.5% with a maximum cross-slope of 2.0%.
4. Perpendicular curb ramp: Target running slope of 6.25% with maximum running slope of 8.3%.

The minimum pavement depth for ramps and landings shall be 6-inches.

CURB RAMPS OUTSIDE OF INTERSECTION RADIUS

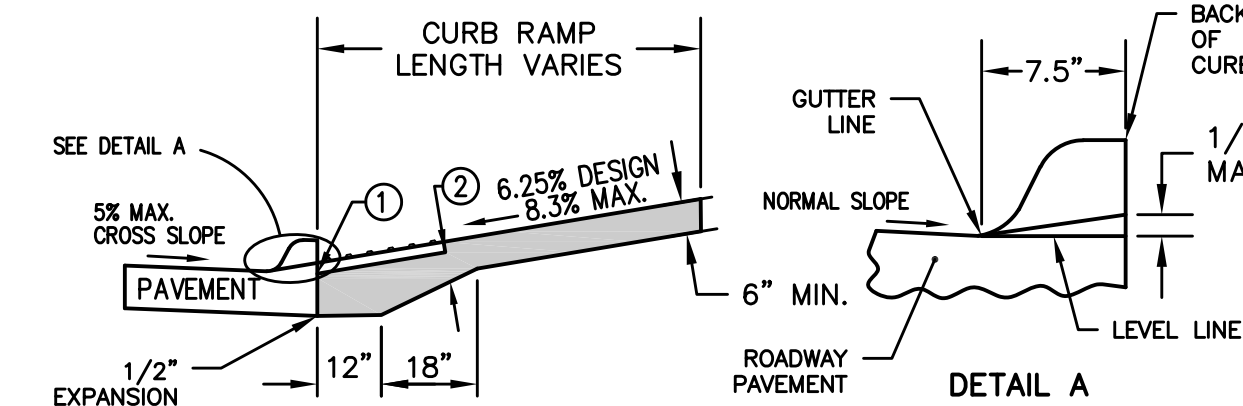
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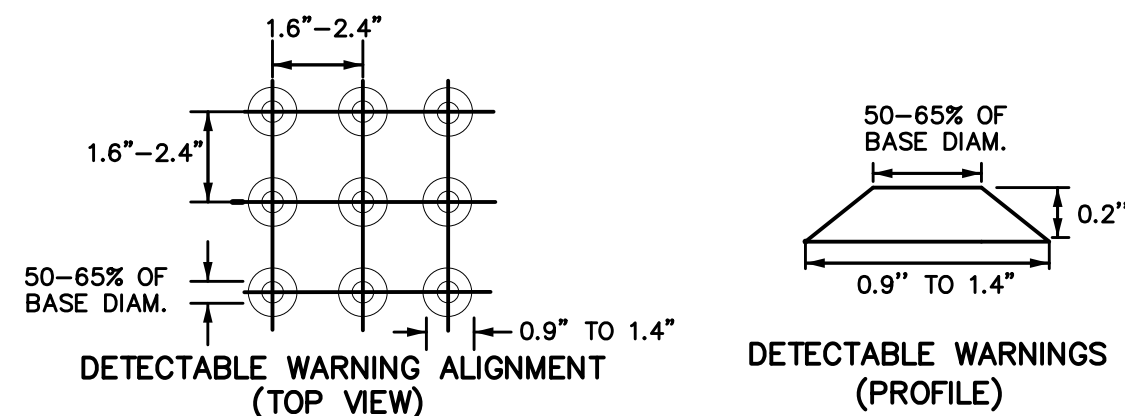
- NOTES
1. MINIMUM SIZE FOR PIPING, VALVES AND FITTINGS FROM WATER MAIN TO HYDRANT INLET: 6"
 2. PROVIDE TRACER WIRE AND TRACER WIRE STATION.
 3. WRAP HYDRANT, PIPE AND FITTINGS WITH POLYETHYLENE ENCASEMENT.

HYDRANT ASSEMBLY DETAIL

NOT TO SCALE

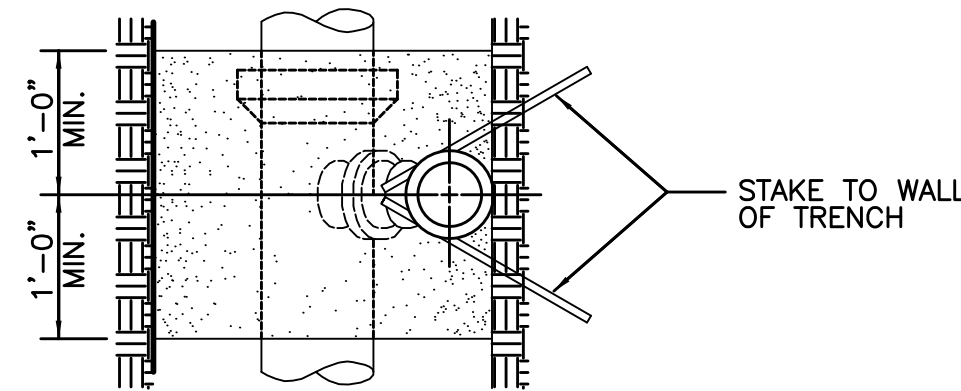


1. INSTALL A 24 INCH WIDE (MIN.) STRIP OF DETECTABLE WARNINGS AT THE BACK OF CURB. EXTEND THE DETECTABLE WARNINGS ACROSS THE FULL WIDTH OF THE RAMP.
2. PROVIDE A MINIMUM OF 6 INCHES OF CONCRETE BELOW THE DETECTABLE WARNING PANEL.

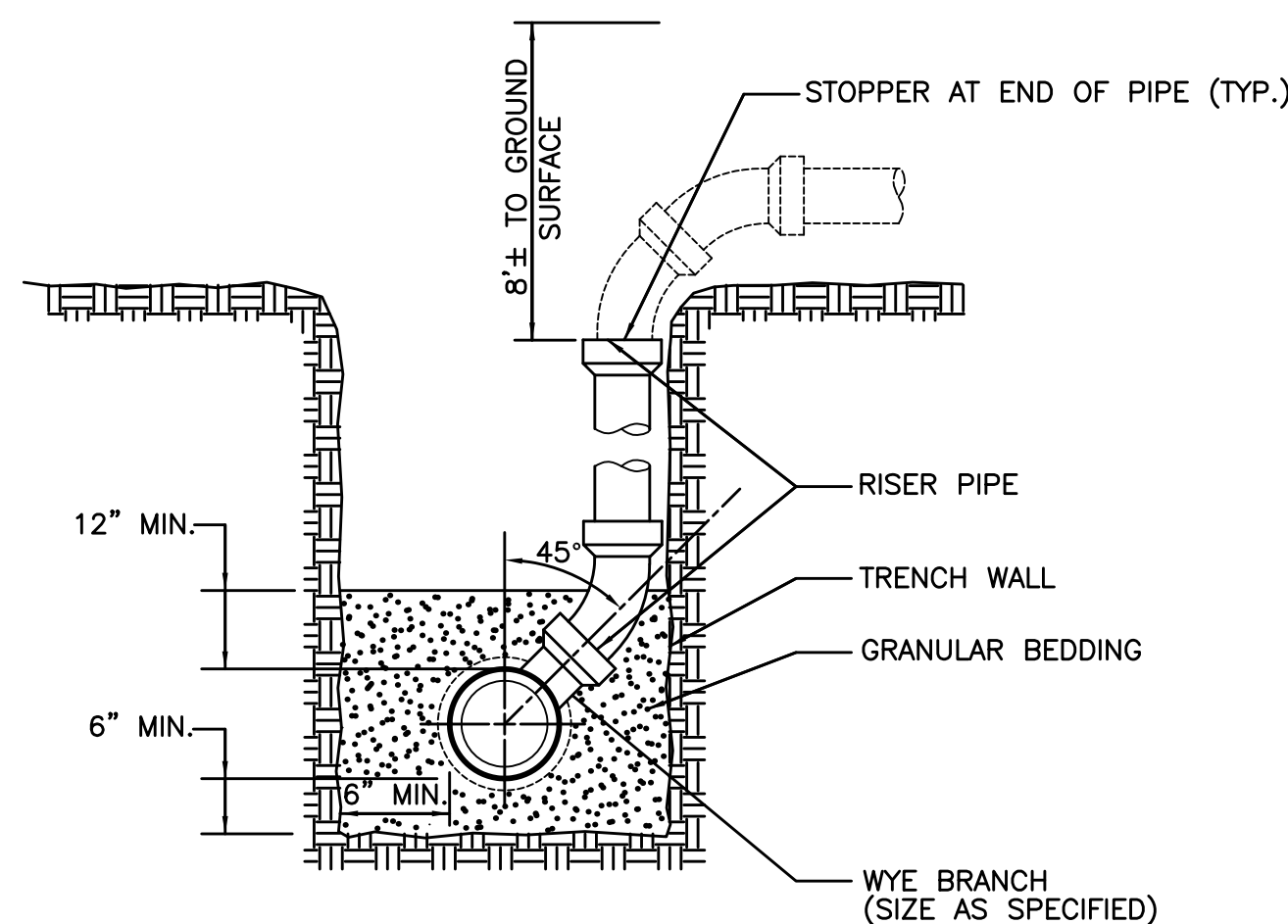


DETECTABLE WARNING DETAIL

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PLAN



SECTION

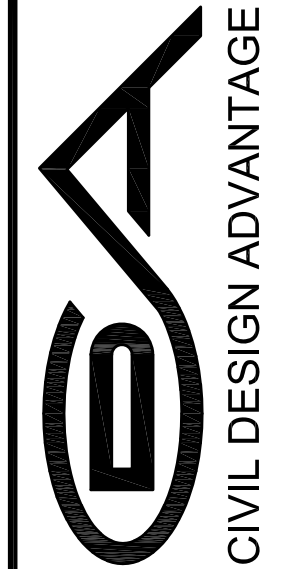
- NOTES
1. INSTALL RISER TO BEAR FIRMLY AGAINST UNDISTURBED WALL OF TRENCH. STAKE RISER PIPE IN PLACE PRIOR TO BACK-FILLING TO PREVENT MOVEMENT OF PIPE.
 2. NOTCH WALL OF TRENCH TO RECEIVE PIPE WHERE POSSIBLE.

SANITARY SEWER SERVICE RISER

NOT TO SCALE

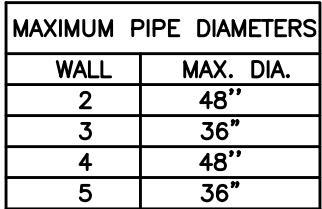
DATE	REVISIONS
11/25/19	AS-BUILT SUBMITTAL
03/13/19	REVISED MAILBOX PADS
04/20/18	FINAL SUBMITTAL
04/17/18	FIFTH SUBMITTAL
04/02/18	FOURTH SUBMITTAL
01/31/18	THIRD SUBMITTAL

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO EI: GH



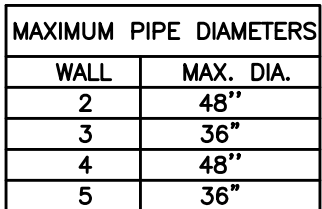
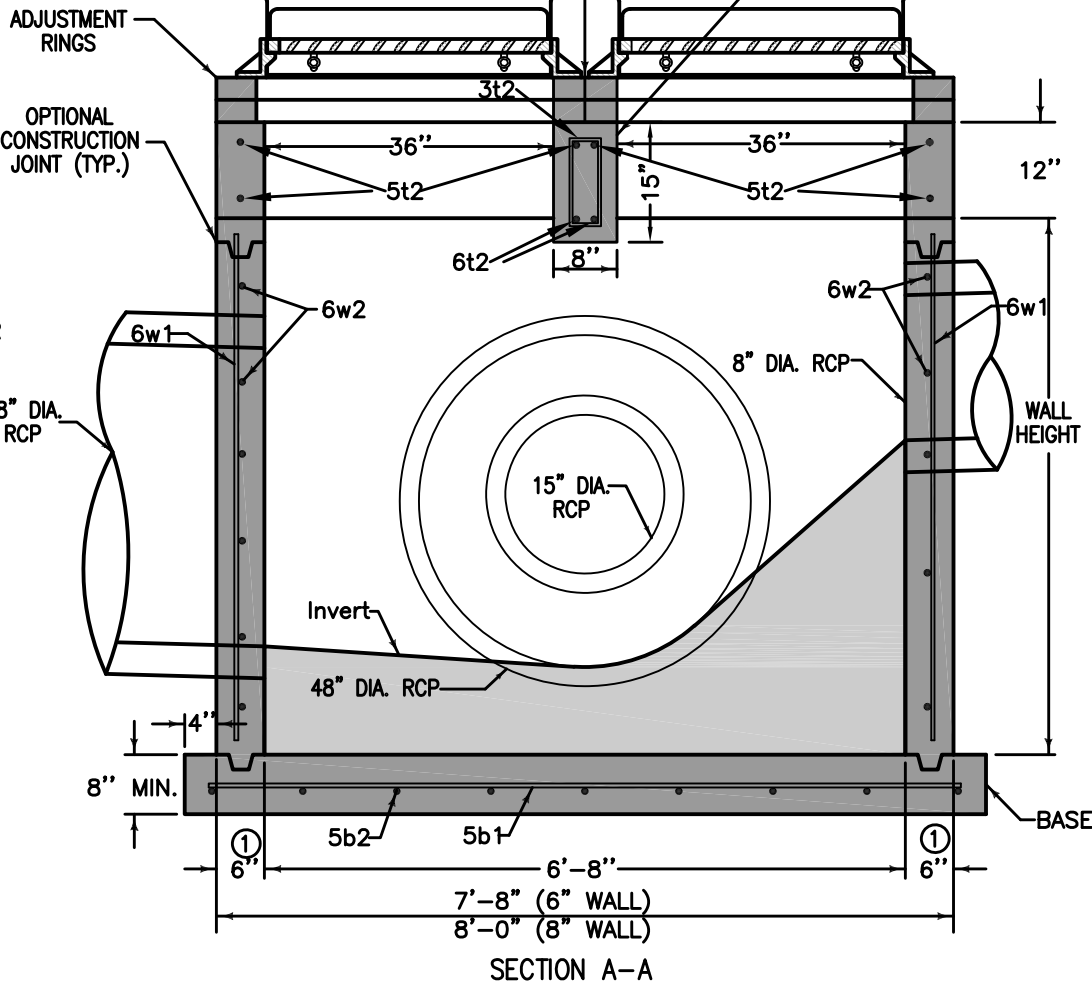
WAUKEE, IOWA

STRATFORD CROSSING PLAT 1 DETAILS



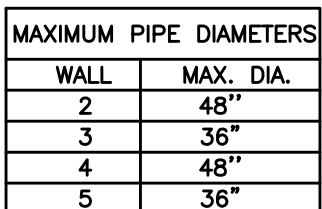
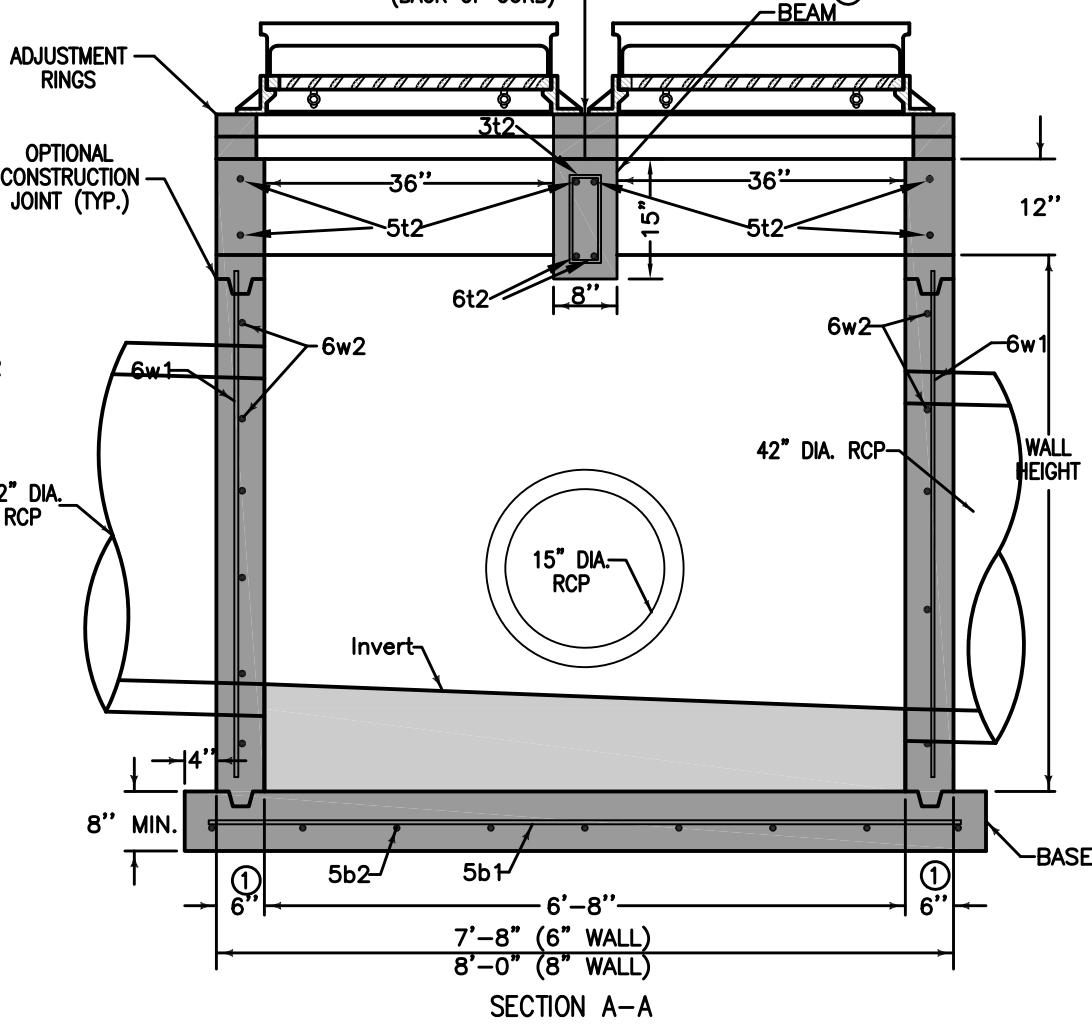
- ① USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- ② INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- ③ CAST-IN-PLACE BASE SHOWN. IF BASE IS PRECAST INTEGRAL WITH WALLS, THE FOOTPRINT OF BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- ④ 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.
- ⑤ CONSTRUCT 8"x15" AND 10 ½"x15" P.C. CONCRETE BEAMS INTEGRAL WITH 12" P.C. CONCRETE FLAT TOP.

NOT TO SCALE



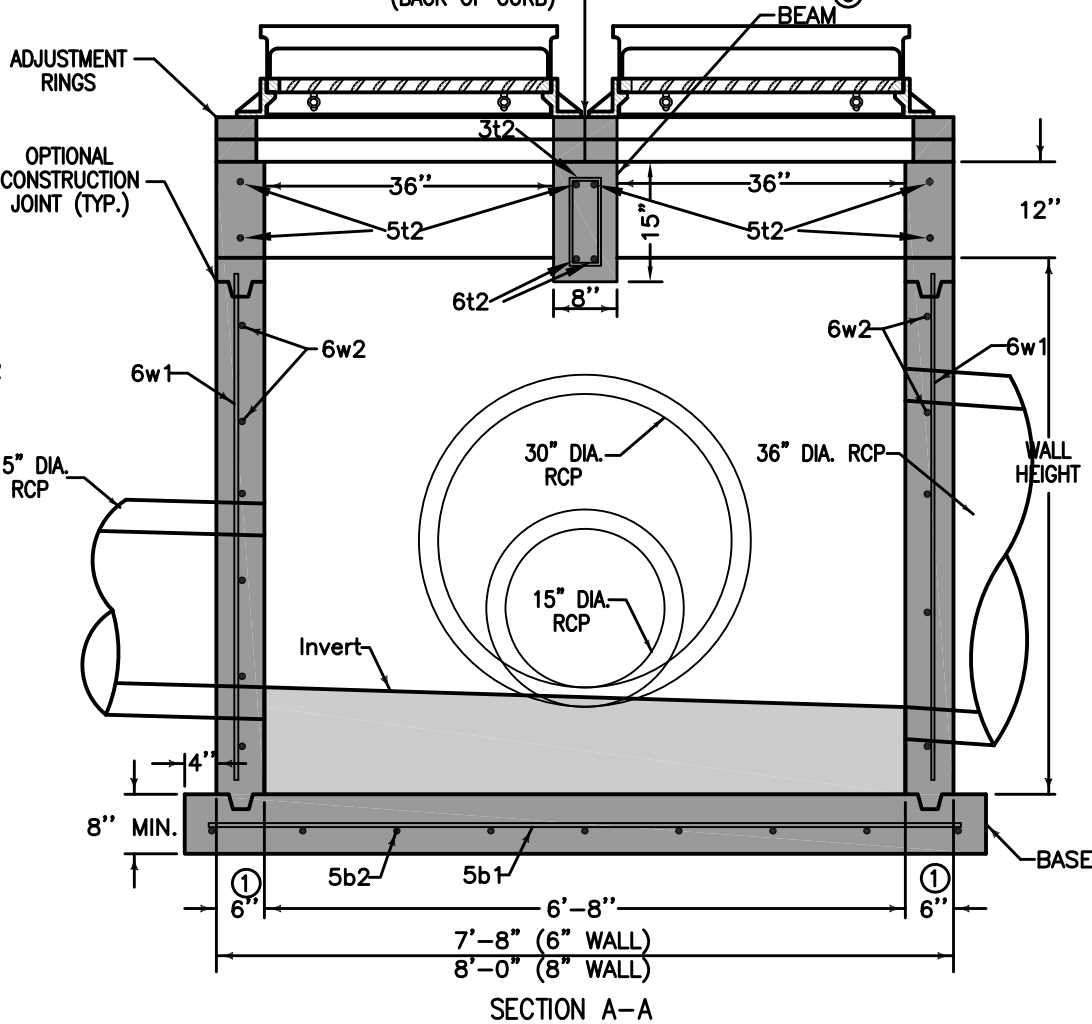
- ① USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- ② INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- ③ CAST-IN-PLACE BASE SHOWN, IF BASE IS PRECAST INTEGRAL WITH WALLS, THE FOOTPRINT OF BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- ④ 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.
- ⑤ CONSTRUCT 8"x15" AND 10 1/2"x15" P.C. CONCRETE BEAMS INTEGRAL WITH 12" P.C. CONCRETE FLAT SLAB.

NOT TO SCALE

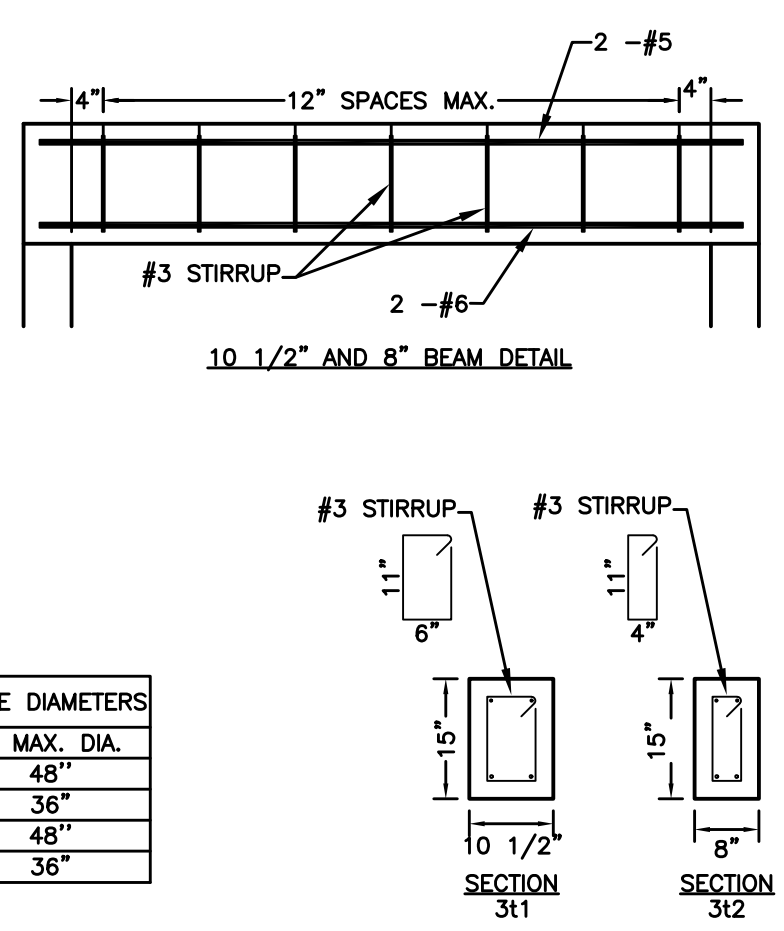
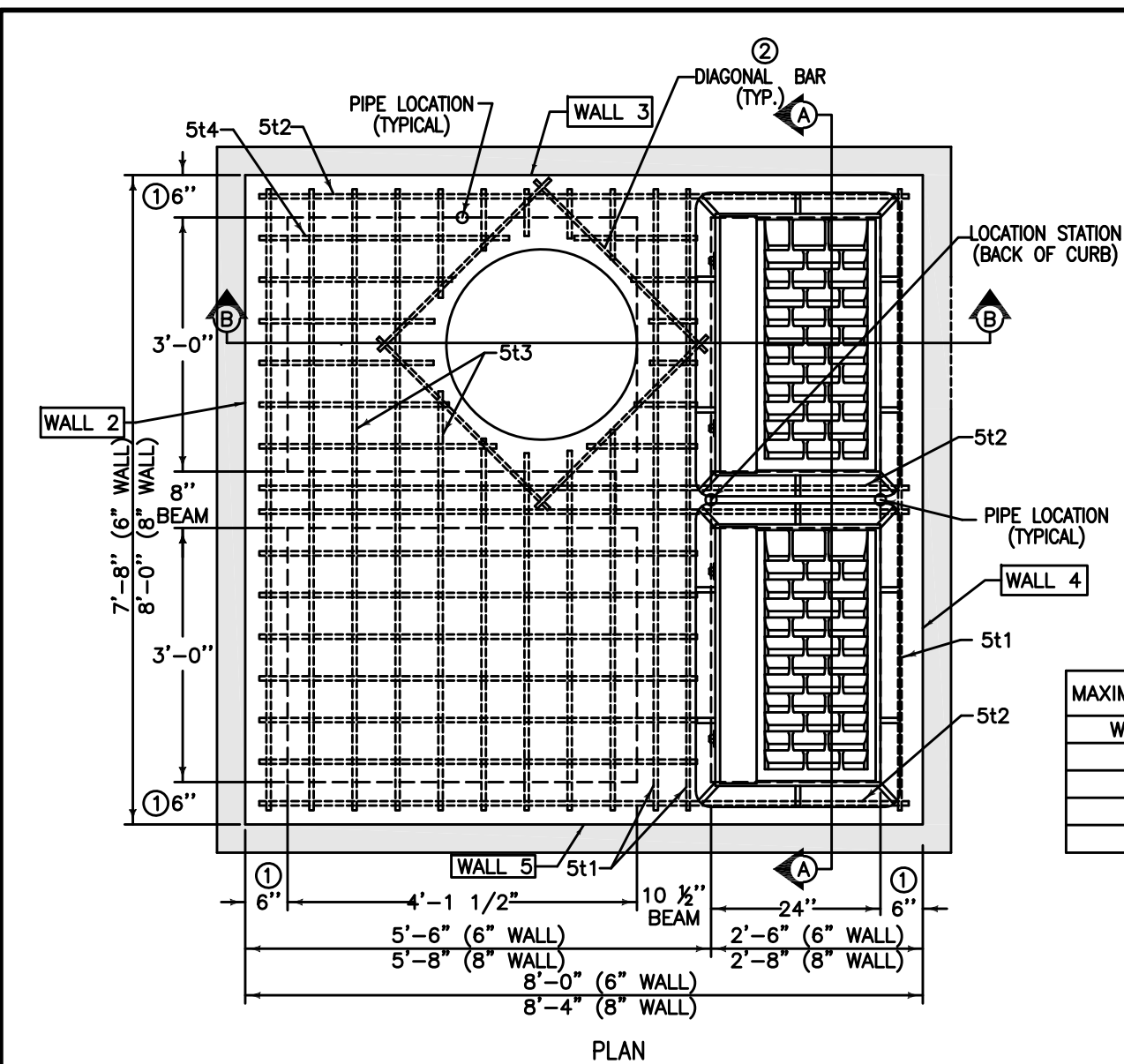


- ① USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- ② INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- ③ CAST-IN-PLACE BASE SHOWN. IF BASE IS PRIOR TO THE WALLS, THE FOOTPRINT OF BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- ④ 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.
- ⑤ CONSTRUCT 8"x15" AND 10 ½"x15" P.C. CONCRETE BEAMS INTEGRAL WITH 12" P.C. CONCRETE FLAT

NOT TO SCALE



FILE: H:\2017\170938\DWG\CONV-BET-TAB-AS-BUILD.DWG
COMMENT: CONCRETE BEAMS
DATE PLOTTED: 11/25/2019 12:34 PM
PLOTTER: ADVANTION MICROANAL



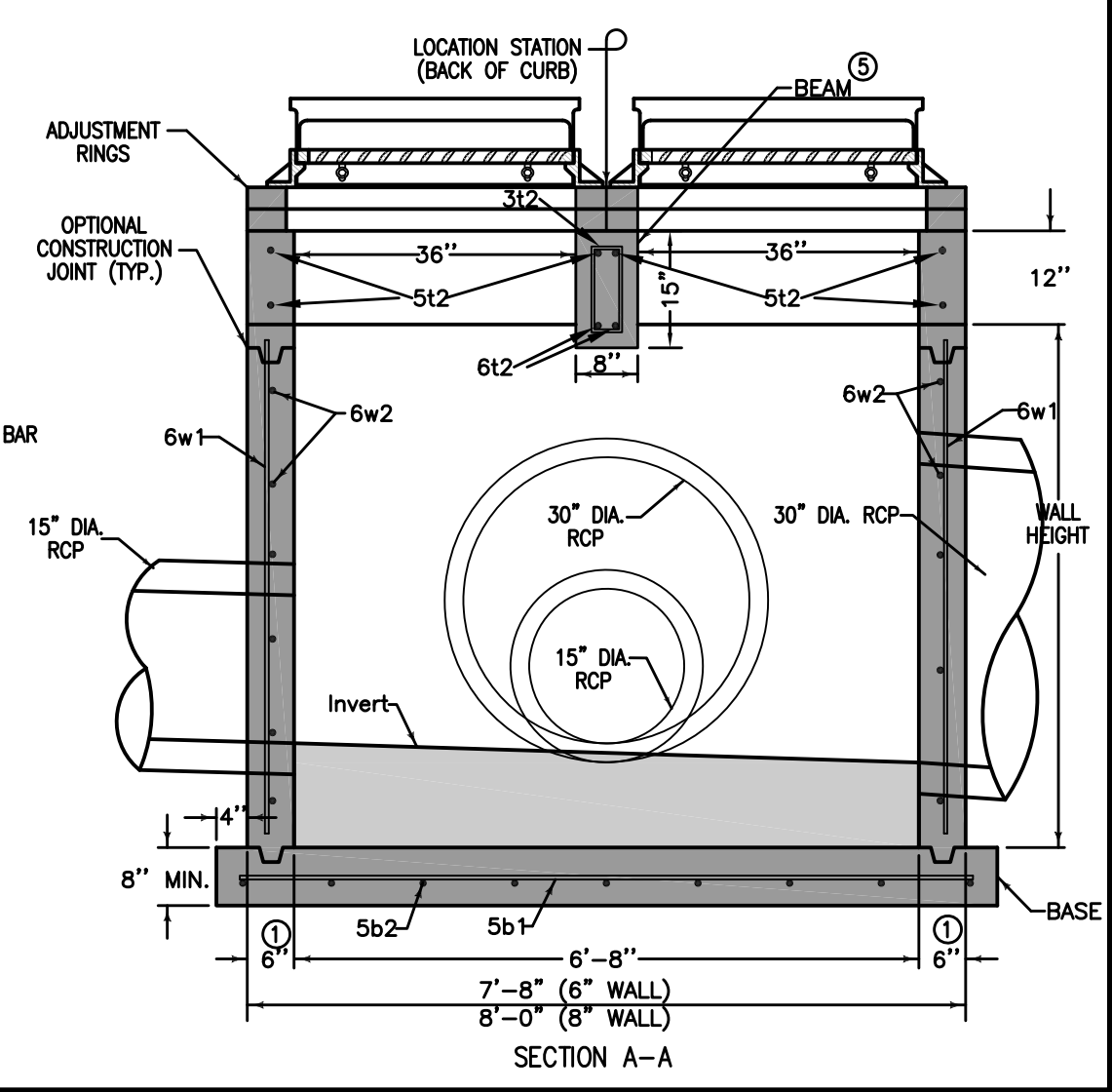
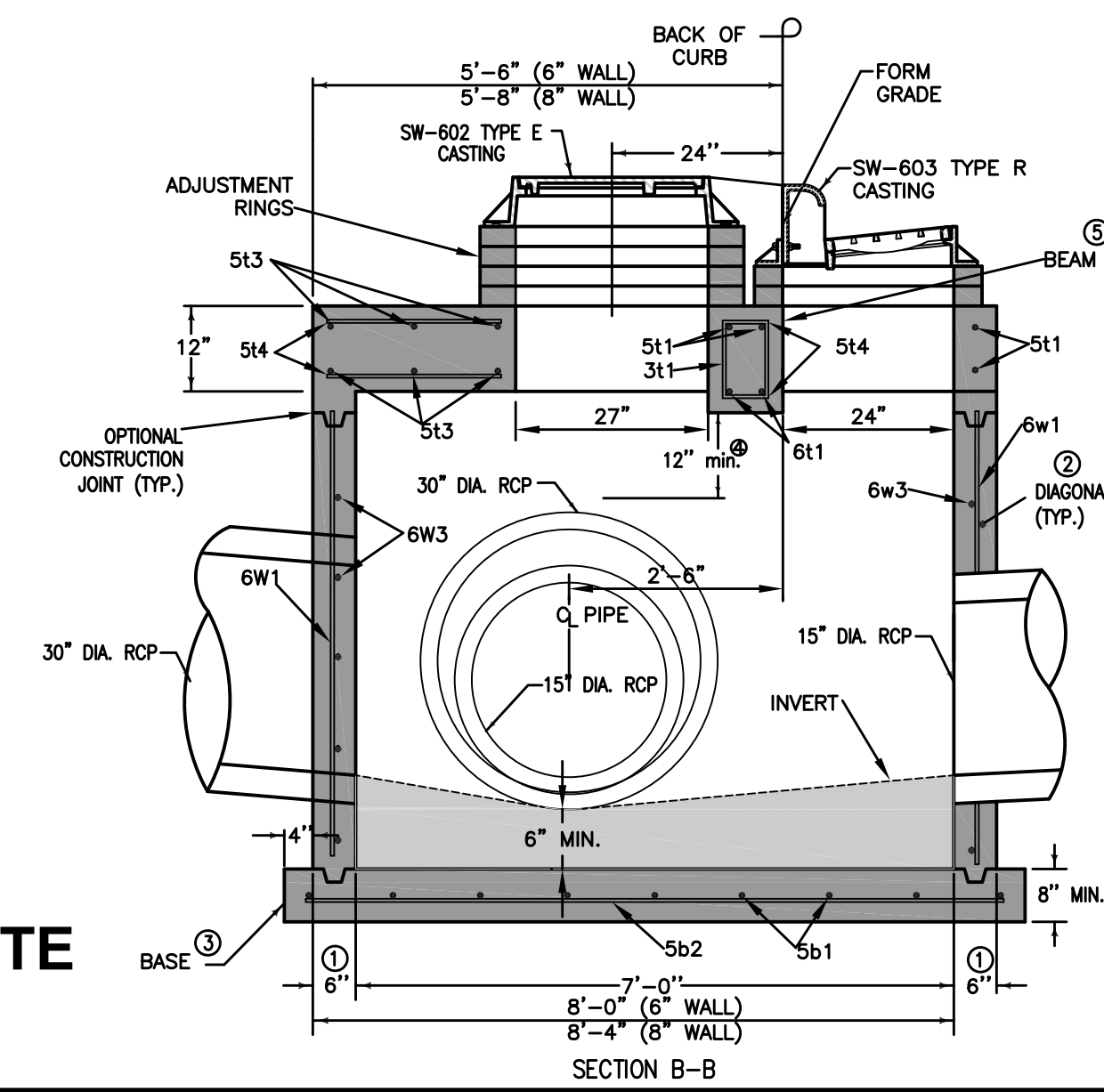
WALL	MAX. DIA.
2	48"
3	36"
4	48"
5	36"

REINFORCING BAR LIST						
MARK	SIZE	LOCATION	SHAPE	COUNT	LENGTH	SPACING
3t1	3	TOP		7	3'-2 1/2"	12"
3t2	3	TOP		8	2'-10"	10 3/4"
5b1	5	BASE		9	7'-10"	8'-2"
5b2	5	BASE		9	8'-2"	8'-6"
6w1	6	WALLS		30	30 WALL HEIGHT MINUS 4"	12"
6w2	6	WALLS		VARIES	7'-8"	8'-0"
6w3	6	WALLS		VARIES	7'-4"	7'-8"
5t1	5	TOP		4	7'-4"	SEE DETAIL
5t2	5	TOP		6	7'-8"	SEE DETAIL
5t3	5	TOP		18	18	7'-8"
5t4	5	TOP		24	5'-2"	5'-4"
6t1	6	TOP		2	7'-4"	7'-8"
6t2	6	TOP		2	7'-8"	8'-0"

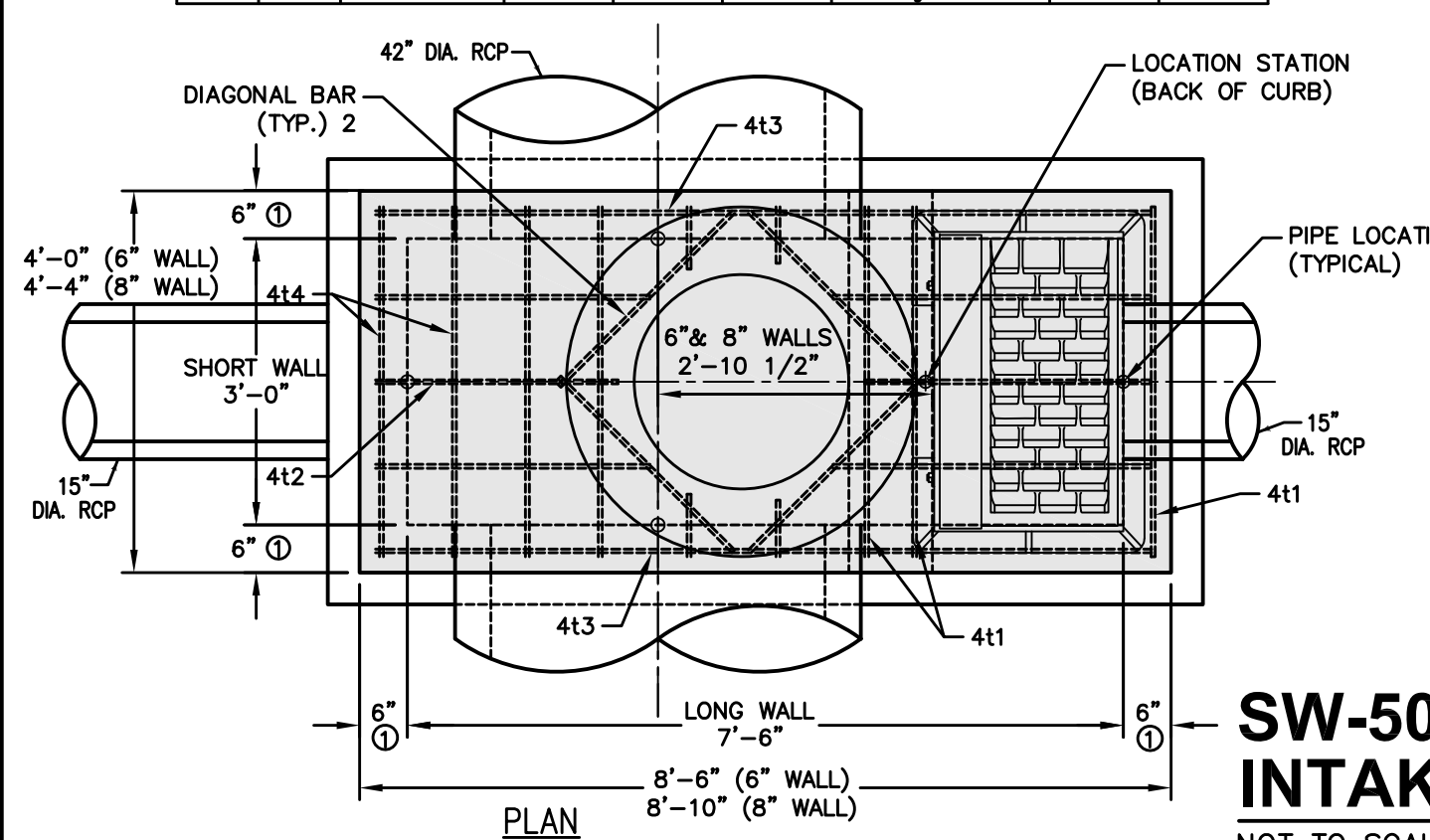
- USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- CAST-IN-PLACE BASE SHOWN. IF BASE IS PRECAST INTEGRAL WITH WALLS, THE FOOTPRINT OF BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.
- CONSTRUCT 8"x15" AND 10 1/2"x15" P.C. CONCRETE BEAMS INTEGRAL WITH 12" P.C. CONCRETE FLAT TOP.

SW-506 MODIFIED DOUBLE GRATE INTAKE WITH MANHOLE (ST-39)

NOT TO SCALE



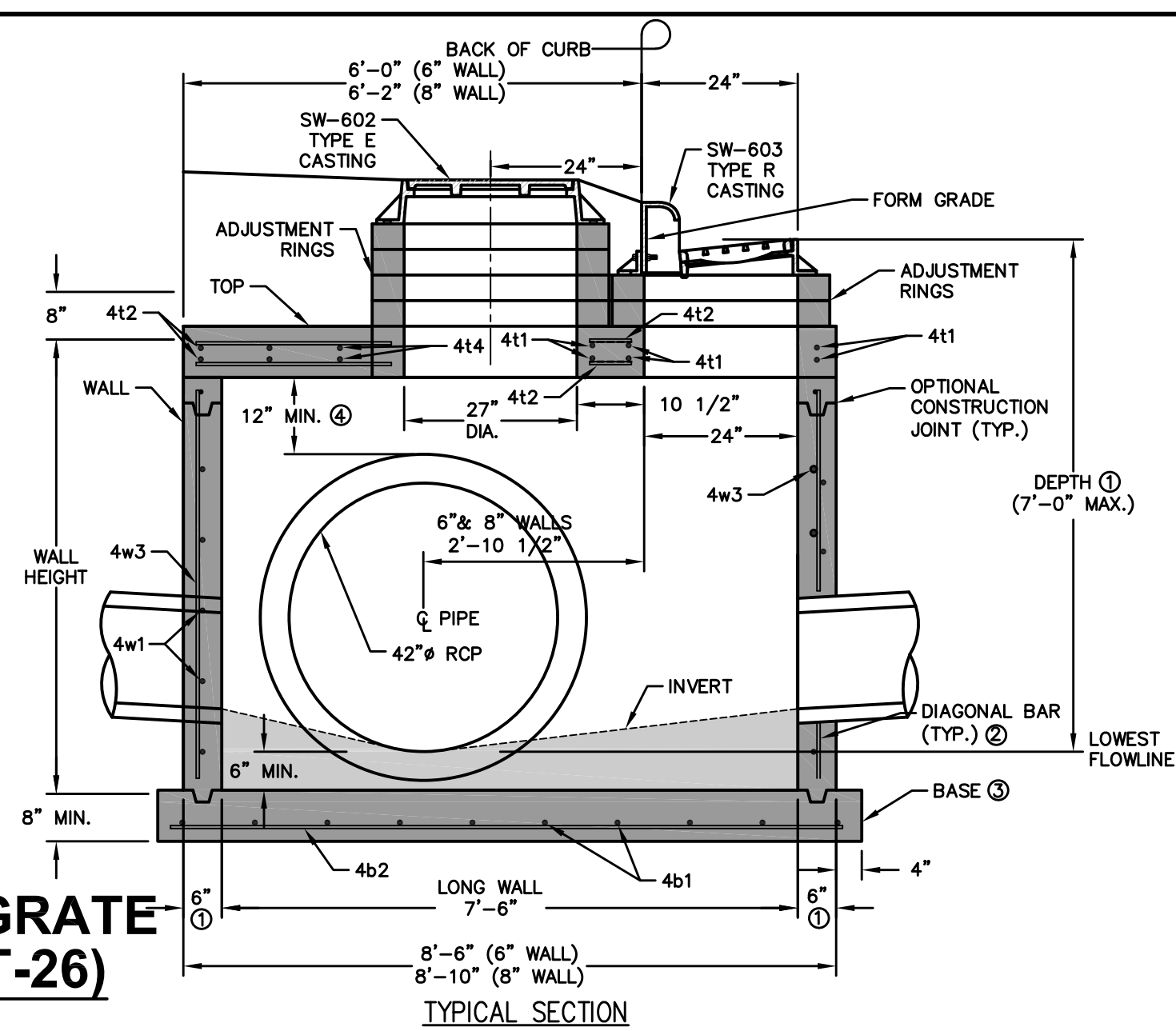
REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top		6	3'-8"	See Detail
4t2	4	Top		6	5'-8"	10 1/2"
4t3	4	Top		4	8'-2"	See Detail
4t4	4	Top		12	12	10 1/4"
4b1	4	Base		10	10	11 1/2"
4b2	4	Base		6	8'-8"	9'-0"
4w1	4	Short Walls		Varies	3'-8"	12"
4w2	4	Long Walls		Varies	8'-2"	8'-6"
4w3	4	Walls		24	Wall Height minus 4"	12"



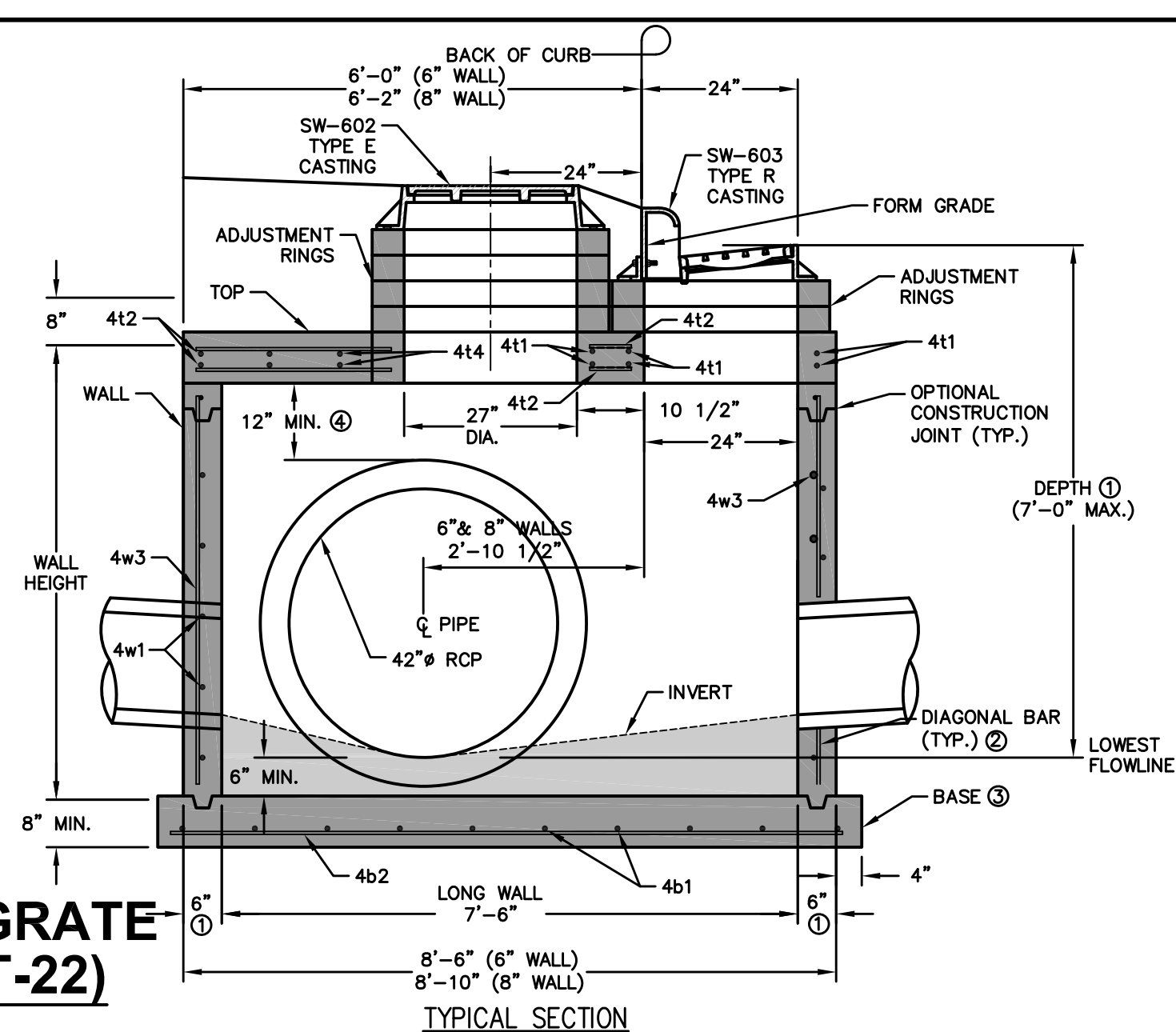
- USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- CAST-IN-PLACE BASE SHOWN. IF BASE IS PRECAST INTEGRAL WITH WALLS, THE FOOTPRINT OF THE BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.

SW-503 MODIFIED SINGLE GRATE INTAKE WITH MANHOLE (ST-26)

NOT TO SCALE



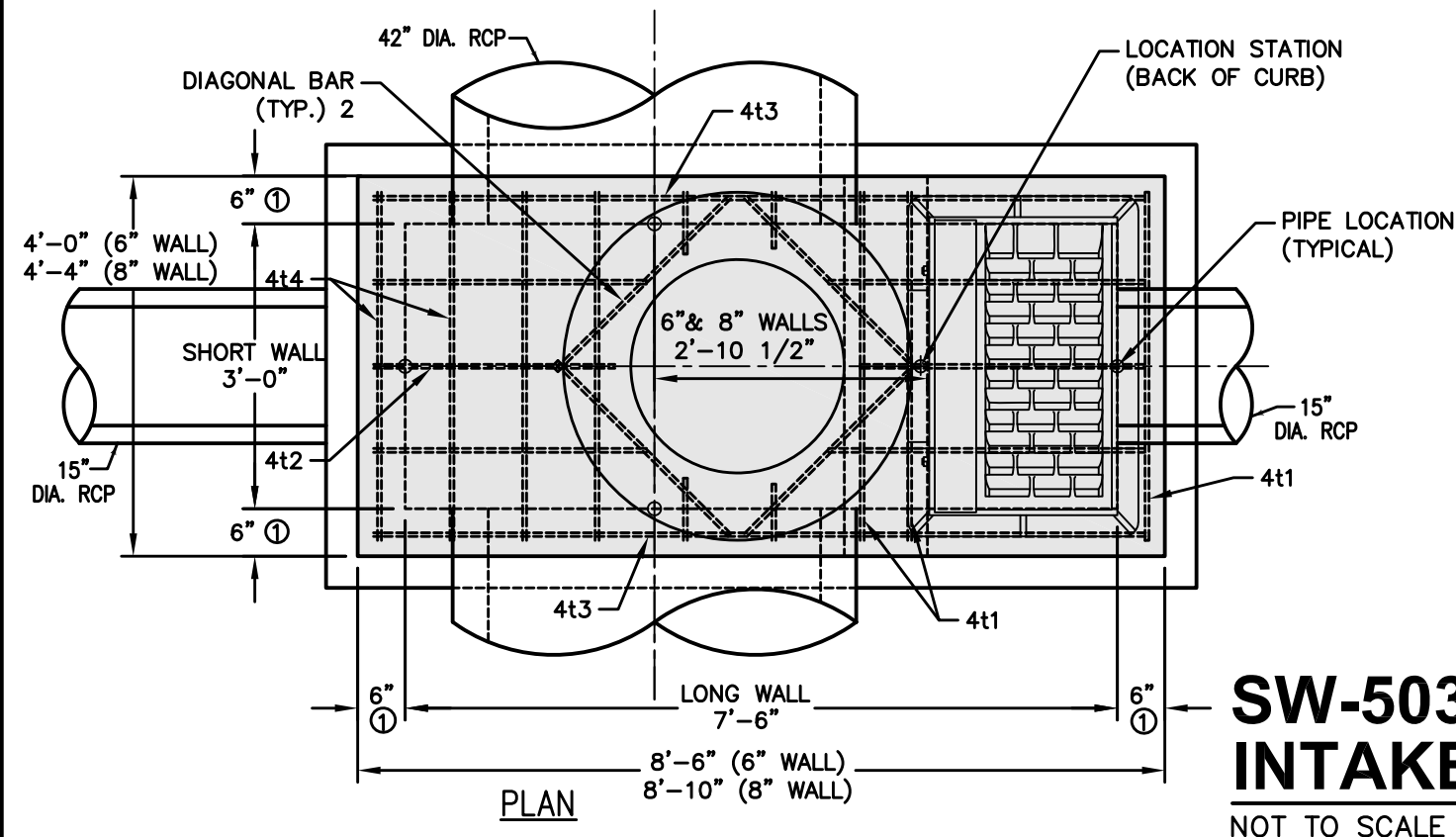
MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	15"	18"
Long Wall	42"	42"



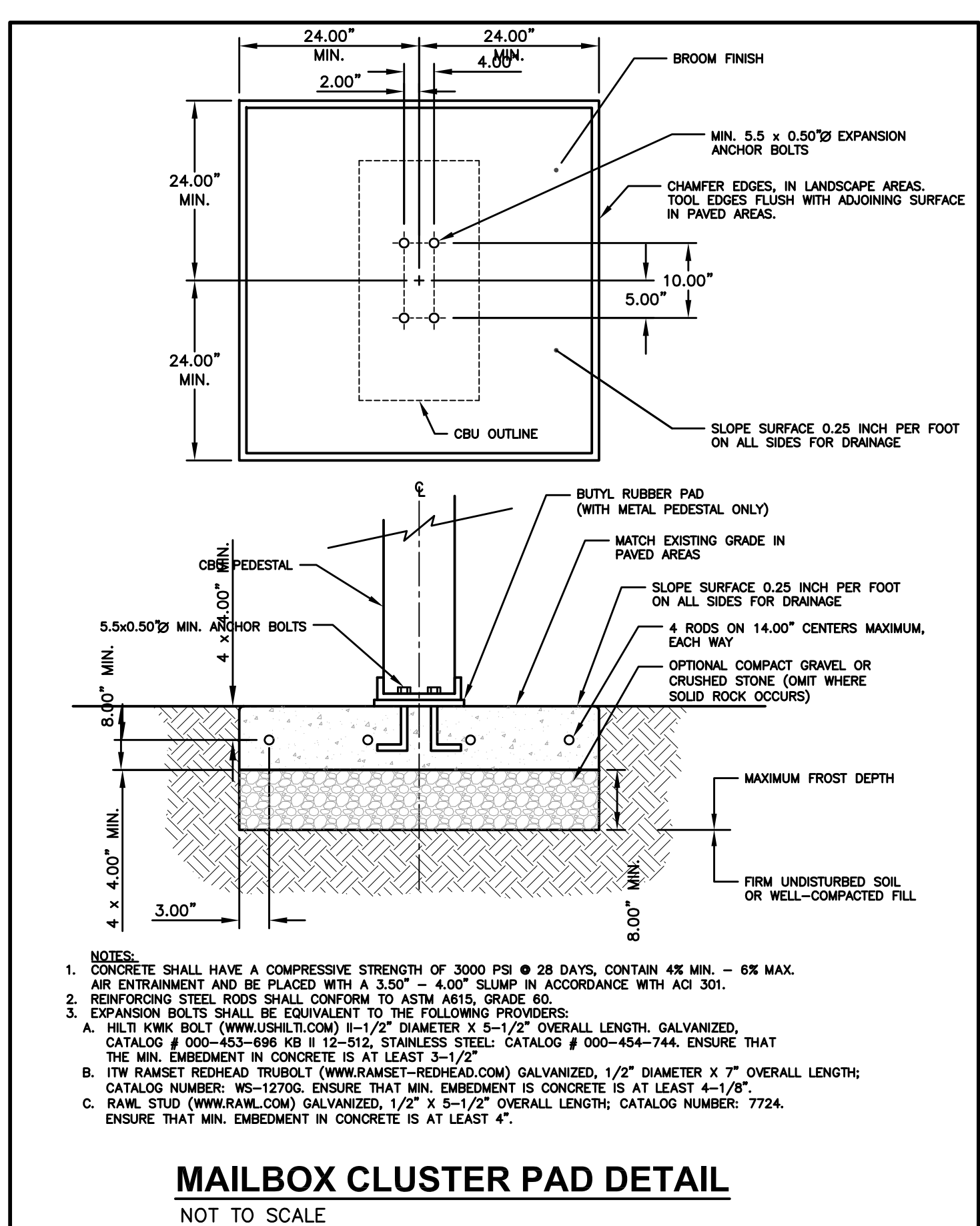
SW-503 MODIFIED SINGLE GRATE INTAKE WITH MANHOLE (ST-22)

NOT TO SCALE

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top		6	3'-8"	See Detail
4t2	4	Top		6	5'-8"	10 1/2"
4t3	4	Top		4	8'-2"	See Detail
4t4	4	Top		12	12	10 1/4"
4b1	4	Base		10	10	11 1/2"
4b2	4	Base		6	8'-8"	9'-0"
4w1	4	Short Walls		Varies	3'-8"	12"
4w2	4	Long Walls		Varies	8'-2"	8'-6"
4w3	4	Walls		24	Wall Height minus 4"	12"



- USE 8" WALL OPTION FOR INTAKE DEPTHS GREATER THAN 7'-0" AND LESS THAN 10'-0".
- INSTALL FOUR #4 DIAGONAL BARS AT MANHOLE OPENING AND AT ALL PIPE OPENINGS.
- CAST-IN-PLACE BASE SHOWN. IF BASE IS PRECAST INTEGRAL WITH WALLS, THE FOOTPRINT OF THE BASE IS NOT REQUIRED TO EXTEND BEYOND THE OUTER EDGE OF THE WALLS.
- 12 INCH MINIMUM WALL HEIGHT ABOVE ALL PIPES.



- NOTES:
- CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS, CONTAIN 4% MIN. - 6% MAX. AIR ENTRAINMENT AND BE PLACED WITH A 3.50" - 4.00" SLUMP IN ACCORDANCE WITH ACI 301.
 - REINFORCING STEEL, ROSS SHALL CONFORM TO ASTM A615, GRADE 60.
 - EXPANSION BOLTS SHALL BE EQUIVALENT TO THE FOLLOWING PROVIDERS:
A. HILTI KWIK BOLT (WWW.HILTI.COM) 1/2" DIAMETER X 5-1/2" OVERALL LENGTH, GALVANIZED, CATALOG # 000-453-696 KB 12-512, STAINLESS STEEL: CATALOG # 000-454-744. ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 3-1/2".
B. ITW RAMSET REDHEAD TRUBOLT (WWW.RAMSET-REDHEAD.COM) GALVANIZED, 1/2" DIAMETER X 7" OVERALL LENGTH, CATALOG NUMBER: WS-1270G. ENSURE THAT MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4-1/8".
C. RAWL STUD (WWW.RAWL.COM) GALVANIZED, 1/2" X 5-1/2" OVERALL LENGTH, CATALOG NUMBER: 7724. ENSURE THAT MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4".

MAILBOX CLUSTER PAD DETAIL

NOT TO SCALE

ESTIMATED PROJECT QUANTITIES			
ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY	
1	COMBINED CLEARING AND GRUBBING	AC	81.87
2	STRIPPING, SALVAGING AND SPREAD TOPSOIL	LS	1
3	CLASS 10 EXCAVATION	LS	1
4	SUBGRADE PREPARATION	SY	14,068
5	SANITARY SEWER GRAVITY MAIN, 8" DIA	LF	1,256
6	SANITARY SEWER GRAVITY MAIN, 12" DIA	LF	254
7	SANITARY SEWER GRAVITY MAIN, 15" DIA	LF	1,530
8	SANITARY SEWER SERVICE STUB, 4" DIA	EA	40
9	SANITARY SEWER SERVICE STUB, 8" DIA W/ CLEANOUT	EA	6
10	SUBDRAIN, 6" PERFORATED PVC	LF	3,749
11	STORM SEWER, TRENCHED, 8" PERFORATED PVC	LF	120
12	STORM SEWER, TRENCHED, 18" HDPE	LF	88
13	STORM SEWER, TRENCHED, 24" HDPE	LF	313
14	STORM SEWER, TRENCHED, 15" RCP	LF	1,302
15	STORM SEWER, TRENCHED, 18" RCP	LF	180
16	STORM SEWER, TRENCHED, 24" RCP	LF	479
17	STORM SEWER, TRENCHED, 30" RCP	LF	216
18	STORM SEWER, TRENCHED, 36" RCP	LF	511
19	STORM SEWER, TRENCHED, 42" RCP	LF	601
20	STORM SEWER, TRENCHED, 48" RCP	LF	426
21	STORM SEWER, TRENCHED, 54" RCP	LF	78
22	STORM SEWER SERVICE STUB, 4" DIA	EA	40
23	STORM SEWER, 15" CMP APRON W/ APRON GUARD	EA	2
24	STORM SEWER, 24" CMP APRON W/ APRON GUARD	EA	2
25	STORM SEWER, 15" RCP APRON W/ FOOTING & APRON GUARD	EA	5
26	STORM SEWER, 18" RCP APRON W/ FOOTING & APRON GUARD	EA	3
27	STORM SEWER, 24" RCP APRON W/ FOOTING & APRON GUARD	EA	2
28	STORM SEWER, 30" RCP APRON W/ FOOTING & APRON GUARD	EA	2
29	STORM SEWER, 48" RCP APRON W/ FOOTING & APRON GUARD	EA	5
30	STORM SEWER, 54" RCP APRON W/ FOOTING & APRON GUARD	EA	4
31	WATER MAIN, 4" DIA	LF	13
32	WATER MAIN, 6" DIA	LF	2
33	WATER MAIN, 8" DIA	LF	4,002
34	WATER MAIN, 12" DIA	LF	1,310
35	WATER SERVICE STUB, 1" DIA	EA	40
36	VALVE, 4" DIA	EA	1
37	VALVE, 8" DIA	EA	19
38	VALVE, 12" DIA	EA	5
39	FIRE HYDRANT ASSEMBLY	EA	18
40	TEMPORARY FIRE HYDRANT ASSEMBLY	EA	11
41	MANHOLE, SW-301, 48" (SANITARY SEWER)	EA	13
42	MANHOLE, SW-401, 48" (STORM SEWER)	EA	5
43	MANHOLE, SW-401, 84" (STORM SEWER)	EA	1
44	MANHOLE, SW-401, 96" (STORM SEWER)	EA	1
45	INTAKE, SW-501	EA	4
46	INTAKE, SW-503	EA	2
47	INTAKE, MODIFIED SW-503	EA	2
48	INTAKE, SW-505	EA	6
49	INTAKE, SW-506	EA	2
50	INTAKE, MODIFIED SW-506	EA	4
51	PAVEMENT, 6" P.C.C.	SY	1,596
52	PAVEMENT, 7" P.C.C.	SY	2,518
53	PAVEMENT, 8" P.C.C. WITH CD BASKETS	SY	8,303
54	PAVEMENT, 6" P.C.C. SIDEWALK RAMPS	SY	69
55	DETECTABLE WARNING PANELS	SF	80
56	SEEDING, FERTILIZING, AND MULCHING	AC	72.60
57	PERMANENT ROAD CLOSURE, URBAN, SI-182	EA	10
58	TRAFFIC CONTROL	LS	1
59	EROSION CONTROL	LS	1
60	ROCK OUTLET PROTECTION, CLASS 'E' RIP RAP	TONS	415
61	STORM SEWER CLEANOUT	EA	12
62	MAILBOX PAD	EA	1
63	8-INCH GRANULAR TURNAROUND	SY	565
64	TURF REINFORCEMENT MAT, LANDLOK 300	SY	750

GENERAL NOTES

1.

ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF WAUKEE STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS AND TO THE 2018 EDITION OF SUDAS STANDARD SPECIFICATIONS. THE WAUKEE STANDARD SPECIFICATIONS SHALL GOVERN IF ANY DISCREPANCIES.
2.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS. THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATIONS AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.
3.

THE CONTRACTOR IS REQUIRED TO UTILIZE THE UTILITY ONE-CALL SERVICE AT 800-292-8989 AT LEAST 48 HOURS PRIOR TO EXCAVATING ANYWHERE ON THE PROJECT.

ESTIMATE REFERENCE INFORMATION	
Data listed below is for informational purpose only and shall not constitute a basis for any extra work orders.	
ITEM NO.	DESCRIPTION
	THE MOST RECENT EDITION OF THE CITY OF WAUKEE STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS AND THE 2018 EDITION OF SUDAS STANDARD SPECIFICATIONS SHALL APPLY TO ALL WORK PERFORMED ON THIS PROJECT EXCEPT AS MODIFIED HEREIN.
	ALL REFERENCES TO SECTIONS AND FIGURES ARE TO THE SUDAS STANDARD SPECIFICATIONS. CITY OF WAUKEE STANDARD DETAILS SHALL GOVERN IF ANY DISCREPANCIES.
1	CLEAR AND GRUB ALL AREAS AFFECTED BY GRADING OPERATIONS. THE CONTRACTOR SHALL FIELD VERIFY CLEARING AND GRUBBING NEEDS PRIOR TO BIDDING. INCLUDES REMOVAL OF ANY EXISTING FIELD FENCE. ALL MATERIAL THAT IS REMOVED FROM THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR. INCLUDED REMOVAL OF EXISTING CROPS FOR CONSTRUCTION OF TEMPORARY ACCESS. DO NOT DISTURB CROPS OUTSIDE OF THE PROJECT LIMITS. AREA SHOWN FOR REFERENCE ONLY.
2	STRIP, SALVAGE AND RE-SPREAD TOPSOIL PER SECTION 2010 OF SUDAS STANDARD SPECIFICATIONS OR PROVIDE THE CITY WITH A TOPSOIL PRESERVATION PLAN. TOPSOIL TO BE RESPREAD SHALL BE FREE OF ROCK AND DEBRIS AND BE SUITABLE FOR THE GROWTH OF GRASS. COORDINATE LOCATION OF STOCKPILE WITH OWNER.
3	EXCAVATION INCLUDES ALL WORK NECESSARY TO ACHIEVE PROPER GRADES AS SHOWN IN THE PLANS. NO PAYMENT FOR OVERHAUL SHALL BE ALLOWED.
4	REFER TO SHEET 2 FOR TYPICAL LOCATIONS AND THICKNESS.
5	SANITARY SEWER FOR 8" SHALL BE PVC TRUSS PIPE. ANY CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE CONSIDERED INCIDENTAL. REFER TO FIG. 3010.101 AND 3010.103 FOR PIPE EMBEDMENT DETAILS. GRANULAR PIPE BEDDING SHALL BE CONSIDERED INCIDENTAL. EXISTING SANITARY SEWER WILL NEED TO BE RETESTED AFTER SADDLE WYE INSTALLATION.
5-22	REFER TO FIGURE 3010.102 FOR TRENCH BEDDING AND BACKFILL ZONE DETAILS. GRANULAR PIPE BEDDING SHALL BE CONSIDERED INCIDENTAL. CONNECTIONS TO EXISTING STORM SEWER PIPE AND STRUCTURES SHALL BE CONSIDERED INCIDENTAL. WRAP ALL PIPE JOINTS IN ENGINEERING FABRIC. CLEAN AND TELEWISE SANITARY AND STORM SEWER PRIOR TO PAVING AND PROVIDE TELEVISIONING REPORT TO CITY IN HARD COPY AND DISC FORMAT. TELEVISIONING SHALL BE CONSIDERED INCIDENTAL. ALL STORM SEWER PIPE THAT CROSSES OVER WATERMAIN SHALL HAVE O-RING GASKETS JOINT RATED AT 13 PSI OR GREATER. O-RING GASKET JOINTS SHALL BE INSTALLED ON EACH SIDE OF THE CROSSING UNTIL THE NORMAL DISTANCE FROM THE WATER TO THE SEWER IS AT LEAST 10 FEET.
8, 22, 35	REFER TO DETAILS ON SHEETS 2, 3 AND PLAN AND PROFILE SHEETS FOR LOCATION AND DEPTH. STORM SEWER SERVICES TYING INTO EXISTING RCP PIPE ARE TO BE CORE DRILLED.
23-30	THE LAST THREE SECTIONS AND APRON SHALL BE CONNECTED WITH PIPE CONNECTORS. REFER TO FIG. 4030.221 - RCP APRON SECTION FOOTING FOR FOOTING CONSTRUCTION DETAILS. APRON GUARD REQUIRED ON ALL APRONS. RCP APRON FOOTING, PIPE APRON GUARD AND PIPE CONNECTORS TO BE CONSIDERED INCIDENTAL. INSTALL CLAY WATERSTOPS AT ALL RCP APRONS, MIN. 3' LONG.
31-34	REFER TO FIG. 3010.101 AND FIG. 3010.104 FOR TRENCH BEDDING AND BACKFILL ZONE DETAILS. GRANULAR PIPE BEDDING SHALL BE CONSIDERED INCIDENTAL. REFER TO FIG. 5010.101 FOR THRUST BLOCK DETAILS. REFER TO FIG. 5010.102 FOR TRACER SYSTEM DETAILS. ALL FITTINGS, POLYETHYLENE WRAP, THRUST BLOCKS, AND TRACER WIRE SYSTEM SHALL BE CONSIDERED INCIDENTAL.
39	REFER TO FIG. 5020.201 - FIRE HYDRANT ASSEMBLY FOR FIRE HYDRANT CONSTRUCTION DETAILS. INCLUDES ANCHORING TEE, ANCHORING ELBOW, GATE VALVE, VALVE BOX, ANCHORING PIPE, ANCHORING COUPLING, ELBOWS, STORZ FITTINGS, POLYETHYLENE WRAP, THRUST BLOCK AND TRACER WIRE SYSTEM AND FIRE HYDRANT.
39-40	REFER TO SHEETS 29-39 FOR LOCATIONS OF HYDRANTS. ANY RELOCATED FIRE HYDRANTS ARE TO INCLUDE STORZ FITTINGS.

4.

THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY AREAS OF PAVEMENT OR SIDEWALK NOT TO BE REMOVED THAT IS DAMAGED DUE TO OPERATING HIS EQUIPMENT ON THE PAVEMENT OR SIDEWALK. PAVEMENT REPLACEMENT SHALL COMPLY WITH THE WAUKEE STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS.
5.

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK BETWEEN ALL SUPPLIERS AND SUBCONTRACTORS INVOLVED IN THE PROJECT. INCLUDING STAGING OF CONSTRUCTION DETAILS.
6.

THE CONTRACTOR SHALL CONFINE HIS GRADING OPERATIONS TO WITHIN THE PROPOSED AND EXISTING RIGHT OF WAY, CONSTRUCTION LIMITS AND EASEMENTS SHOWN ON THE PLANS. ANY DAMAGE TO PROPERTIES OUTSIDE THE SITE BOUNDARY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7.

PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY (48 HRS NOTICE) THE FOLLOWING:
A. CITY OF WAUKEE ENGINEERING DEPARTMENT
B. APPROPRIATE UTILITY COMPANIES
C. OWNER
D. CIVIL DESIGN ADVANTAGE
- *

48 HOUR NOTICE SHALL BE GIVEN TO THE CITY OF WAUKEE ENGINEERING DEPARTMENT PRIOR TO WEEKEND AND HOLIDAY WORK.
8.

PRIOR TO CONSTRUCTION, THE PROJECT MANAGER SHALL CONTACT THE WAUKEE ENGINEERING DEPARTMENT AND SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST ONE WEEK PRIOR TO THE ANTICIPATED START OF CONSTRUCTION.
9.

SPECIAL CARE SHALL BE TAKEN WHEN FORMING AT INTERSECTIONS SO THE PROFILES SHOWN ON THE PLANS AND THE ELEVATIONS SHOWN ON THE INTERSECTION DETAILS ARE OBTAINED. SHORT LENGTHS OF FORMS OR FLEXIBLE FORMS MAY BE NECESSARY AT THESE LOCATIONS.
10.

TO OBTAIN THE CORRECT FORM GRADES AT LOW POINTS WHERE INTAKES ARE LOCATED, THE CONTRACTOR MUST EXERCISE ADDITIONAL CARE WHEN PAVING FULL WIDTH PAVEMENTS. THIS MAY REQUIRE POURING ONE HALF OF THE PAVEMENT AT A TIME OR OTHER METHODS APPROVED BY THE ENGINEER.
11.

THE CONTRACTOR MAY BE REQUIRED AS DIRECTED BY THE ENGINEER OR THE CITY, TO PLACE TEMPORARY WARNING DEVICES AND SAFETY FENCE AT CERTAIN LOCATIONS WHERE REPLACEMENT FEATURES ARE NOT INSTALLED THE SAME DAY. THE IS BE INCIDENTAL TO THE BID ITEM TRAFFIC CONTROL. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ROAD BARRICADES AT END OF EXISTING PAVEMENTS UNTIL THE PROJECT IS ACCEPTED.
12.

PLAN AND PROFILE SHEETS INCLUDED IN THE PROJECT ARE FOR THE PURPOSE OF ALIGNMENT, LOCATION AND SPECIFIC DIRECTIONS FOR WORK TO BE PERFORMED UNDER THIS CONTRACT. IRRELEVANT DATA ON THESE SHEETS IS NOT TO BE CONSIDERED A PART OF THIS CONTRACT.
13.

THE CONTRACTOR SHALL APPLY NECESSARY MOISTURE TO THE CONSTRUCTION AREA AND HAUL ROADS TO PREVENT THE SPREAD OF DUST.
14.

THE CONTRACTOR IS REQUIRED TO BE FAMILIAR WITH AND COMPLY WITH OSHA STANDARDS. NOTHING WITHIN THESE PLANS SHALL RELIEVE THE CONTRACTOR OF THIS REQUIREMENT.
15.

ALL MATERIAL TESTING SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
16.

PRIOR TO ANY WORK AT THE SITE, CONTRACTOR SHALL EXAMINE ANY APPLICABLE DRAWINGS AVAILABLE FROM THE OWNER, ENGINEER, AND/OR ARCHITECT, AND CONSULT WITH OWNER'S PERSONNEL AND UTILITY COMPANY REPRESENTATIVES. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE FROM FAILURE TO COMPLY WITH THIS REQUIREMENT.
17.

ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. (MUTCD)
18.

ALL SLOPES IN PAVEMENT SHALL BE UNIFORM TO AVOID PONDING.
19.

SIDEWALKS, ACCESSIBLE CURB RAMPS AND SIDEWALK RAMPS INCLUDING RAISED TRUNCATED DOME AND DETECTABLE WARNINGS AND WARNING PANELS SHALL BE DESIGNED AND INSTALLED TO THE LATEST P.R.O.W.A.G. AND A.D.A. REQUIREMENTS.
20.

PLACE 3/4" EXPANSION JOINT BETWEEN ALL P.C.C. PAVEMENT/SIDEWALKS AND BUILDINGS. PLACE 1/2" EXPANSION JOINT BETWEEN SIDEWALKS AND P.C.C PAVEMENT. THE PCC RAMP JOINT LOCATED AT THE BACK OF CURB AND ALL EXPANSION JOINTS SHALL BE SEALED.

ESTIMATE REFERENCE INFORMATION	
Data listed below is for informational purpose only and shall not constitute a basis for any extra work orders.	
ITEM NO.	DESCRIPTION
41	REFER TO FIG.6010.301 - CIRCULAR SANITARY SEWER MANHOLE (SW-301) FOR CONSTRUCTION DETAILS. CASTINGS IN PAVEMENT SHALL BE TYPE B RING AND COVER. WHEN CASTINGS ARE NOT IN PAVEMENT, INSTALL MANHOLE CONE SECTION, MANHOLE STEPS, AND RING/COVER CASTING SUCH THAT SEPARATION IS MAINTAINED BETWEEN MANHOLE COVERS AND PAVED AREAS (BACK OF CURB, SIDEWALK PAVEMENT, SIDEWALK APPROACHES/RAMPS). ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED.
42-44	REFER TO FIG. 6010.401 - CIRCULAR STORM SEWER MANHOLE (SW-401) FOR CONSTRUCTION DETAILS. MANHOLE INSIDE DIAMETERS GREATER THAN 48" SHALL BE CONSIDERED INCIDENTAL.
45-50	REFER TO FIG. 6010.514 - BOXOUTS FOR GRATE INTAKES. REFER TO FIG. 6010.603 - CASTINGS FOR GRATE INTAKES FOR TYPE R GRATE DETAILS AND FIG. 6010.602 - CASTINGS FOR STORM SEWER MANHOLES FOR TYPE E CASTING DETAILS. THE MAXIMUM HEIGHT OF ADJUSTING RINGS ALLOWED FOR INTAKE CASTINGS IS 6". THE MAXIMUM HEIGHT OF ADJUSTING RINGS ALLOWED FOR MANHOLE CASTINGS IS 12".
45	REFER TO FIG. 6010.501 - SINGLE GRATE INTAKE (SW-501) FOR CONSTRUCTION DETAILS.
46	REFER TO FIG. 6010.503 - SINGLE GRATE INTAKE WITH MANHOLE (SW-503) FOR CONSTRUCTION DETAILS.
47	REFER TO SHEET 5 FOR CONSTRUCTION DETAILS.
48	REFER TO FIG. 6010.505 - DOUBLE GRATE INTAKE (SW-505) FOR CONSTRUCTION DETAILS.
49	REFER TO FIG. 6010.506 - DOUBLE GRATE INTAKE WITH MANHOLE (SW-506) FOR CONSTRUCTION DETAILS.
50	REFER TO SHEETS 4 AND 5 FOR CONSTRUCTION DETAILS.
51-53	REFER TO FIG. 7010.101 - JOINTS (PV-101) FOR JOINT DETAILS. MAXIMUM C AND CD JOINT SPACING IS 15 FEET.
54	REFER TO FIG. 7030.204 - GENERAL SIDEWALK AND ACCESSIBLE RAMP DETAILS AND FIG. 7030.208 - CURB RAMPS WITHIN INTERSECTION RADIUS FOR CLASS B OR C SIDEWALK FOR CONSTRUCTION DETAILS. DETECTABLE WARNING PANELS TO BE ARMOR TILE, ADA SOLUTIONS OR APPROVED EQUAL, BRICK RED IN COLOR. ACCESSIBLE CURB RAMPS INCLUDING TURNING SPACES SHALL BE 6" THICK P.C.C.
55	REFER TO SHEET 3 FOR CONSTRUCTION DETAILS.
56	THE SITE SEEDING SHALL CONFORM TO THE SPECIFICATION FOR TYPE (1) PERMANENT LAWN MIXTURE AND TYPE (4) URBAN TEMPORARY EROSION CONTROL SEED MIXTURE. <u>SEEDING QUANTITIES</u> -TYPE 1 PERMANENT LAWN MIXTURE = 3.76 AC -TYPE 4 URBAN TEMPORARY EROSION CONTROL MIXTURE = 68.84 AC
57	REFER TO PLAN AND PROFILE SHEETS FOR LOCATIONS. REFER TO IDOT STANDARD ROAD PLAN SI-182 FOR CONSTRUCTION DETAILS. EACH LOCATION CONSISTS OF FIVE SIGNS WITH POSTS PER SI-182.
58	ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON TRAFFIC CONTROL DEVICES. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ROAD BARRICADES AT END OF EXISTING PAVEMENTS UNTIL THE PROJECT IS ACCEPTED. THE CONTRACTOR IS RESPONSIBLE FOR THE TRAFFIC CONTROL NEEDS FOR PAVING NW SUNRISE DRIVE AND NW STRATFORD DRIVE CONNECTIONS TO N. 10TH STREET. THE MESSAGE BOARD WILL BE REQUIRED AT LEAST 1 WEEK IN ADVANCE OF ANY LANE CLOSURES.
59	REFER TO SHEETS 15-16 OF THE CONSTRUCTION DRAWINGS FOR EROSION AND SEDIMENT CONTROLS AND GRADING OF TEMPORARY SEDIMENT BASIN ON LOTS 4-8. REFER TO SEPARATE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR SPECIFIC DETAILS.
60	INSTALL ENGINEERING FABRIC UNDER ALL RIP RAP. ENGINEERING FABRIC SHALL BE CONSIDERED INCIDENTAL. REFER TO STORM AND SANITARY PLAN AND PROFILE SHEETS FOR LOCATION.
61	REFER TO FIG. 4040.232 - SUBDRAIN CLEANOUTS FOR CONSTRUCTION DETAILS.
62	REFER TO SHEET 3 AND 5 FOR CONSTRUCTION DETAILS. MAILBOX PADS ARE LOCATED BETWEEN LOTS 42 AND 43.
63	REFER TO SHEET 9 FOR LOCATION. TEMPORARY TURNAROUND TO BE 4-INCHES OF 3-INCH ROCK AND 4-INCHES OF GRANULAR SURFACING.
64	REFER TO SHEET 10 AND 13 FOR LOCATIONS.

21.

REMOVE DEBRIS SPILLED INTO R.O.W. AT THE END OF EACH WORK DAY AND BEFORE RAIN EVENTS.
22.

DO NOT STORE CONSTRUCTION MATERIALS AND EQUIPMENT IN THE R.O.W.
23.

ALL PROPERTY PINS SHALL BE PROTECTED FROM GRADING OR OTHER OPERATIONS. ANY PINS DISTURBED SHALL BE RESET AT THE CONTRACTOR'S EXPENSE.
24.

IN THE EVENT OF A DISCREPANCY BETWEEN DETAILED PLANS AND QUANTITIES, THE DETAILED PLANS SHALL GOVERN.
25.

ALL FIELD TILES ENCOUNTERED SHALL BE REPAIRED AND CONNECTED TO STORM SEWERS WHERE POSSIBLE. LOCATIONS SHALL BE PROVIDED TO THE ENGINEER FOR NOTATION ON AS-BUILTS.
26.

ALL CONSTRUCTION STAKING TO BE COMPLETED UNDER THE DIRECTION OF A LICENSED ENGINEER OR LAND SURVEYOR. ALL CURB DROPS AND SIDEWALK/SHARED USE PATH SHALL ALSO BE STAKED UNDER THE DIRECTION OF A LICENSED ENGINEER OR LAND SURVEYOR
27.

THE CONTRACTOR SHALL SUBMIT A LIST OF CONSTRUCTION MATERIALS TO THE CITY OF WAUKEE ENGINEERING DEPARTMENT PRIOR TO CONSTRUCTION.
28.

A GEOTECHNICAL ENGINEER SHALL BE ONSITE DURING CONSTRUCTION AND FOR PROOF ROLLING TO INSPECT SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE GEOTECHNICAL ENGINEER IS PRESENT. A COPY OF ALL REPORTS AND FINDING REQUIRING ALTERATION FROM THE APPROVED PLAN SET IS TO BE PROVIDED TO THE WAUKEE ENGINEERING DEPARTMENT FOR REVIEW AND DISCUSSION PRIOR TO COMMENCING WITH PAVING WITHIN THE PROJECT.
29.

THE CONTRACTOR SHALL COORDINATE ALL EXISTING PUBLIC UTILITY CONNECTIONS WITH THE CITY OF WAUKEE ENGINEERING DEPARTMENT.
30.

ALL TESTING SHALL BE COMPLETED ACCORDING TO THE CITY OF WAUKEE STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS AND THE WAUKEE ENGINEERING DEPARTMENT SHALL BE PRESENT TO WITNESS ALL TESTING.
31.

AS-BUILTS SHALL BE PROVIDED TO THE WAUKEE ENGINEERING DEPARTMENT INCLUDING ALL UTILITIES AND AS-BUILT GRADES FOR DRAINAGE SWALES, OVERFLOWS, ACCESSIBLE RAMPS AND DETENTION FACILITIES. THE CONTRACTOR SHALL PROVIDE INFORMATION TO THE DESIGN ENGINEER FOR INCLUSION ON THE RECORD AS-BUILT DRAWINGS.
32.

THE CONTRACTOR IS RESPONSIBLE FOR CLEANING AND TELEVISIONING ALL STORM AND SANITARY SEWERS. THE CITY OF WAUKEE ENGINEERING DEPARTMENT SHALL WITNESS AND APPROVE ALL CLEANING AND TELEVISIONING PRIOR TO PAVING. A COPY OF THE VIDEOS AND A HARD COPY OF THE INSPECTION REPORT SHALL BE PROVIDED TO THE CITY OF WAUKEE ENGINEERING DEPARTMENT. ALL SANITARY SEWER MANHOLES ARE TO BE VACUUM TESTED.
33.

ALL FIRE HYDRANTS INCLUDING ANY RELOCATED HYDRANTS SHALL HAVE 4-INCH STORZ FITTINGS.
34.

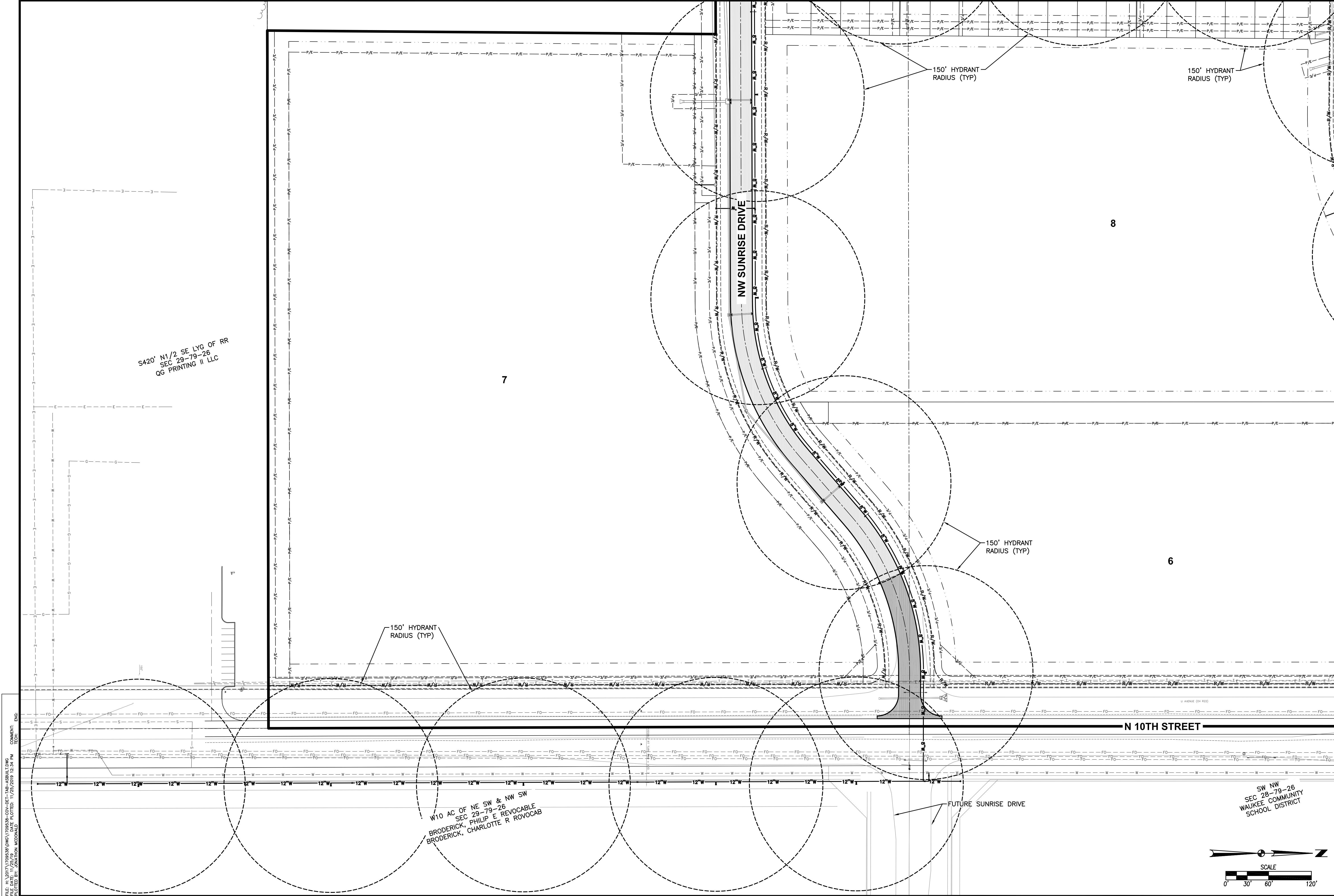
ALL PROPOSED PEDESTRIAN CROSSINGS SHALL BE INSTALLED AS PART OF THE PLAT IMPROVEMENTS.
35.

ALL CONNECTIONS TO EXISTING MANHOLES ARE TO BE CORE DRILLED AND USE A LINK SEAL.
36.

ANY FIELD FENCE LOCATED WITHIN THE PROPERTY IS TO BE REMOVED.
37.

ALL EXISTING AND PROPOSED MANHOLES SHALL HAVE A MINIMUM OF 1 - 4" ADJUSTING RING TO ALLOW FOR FUTURE ADJUSTMENT SHOULD THE STRUCTURE END UP IN A DRIVEWAY.
38.

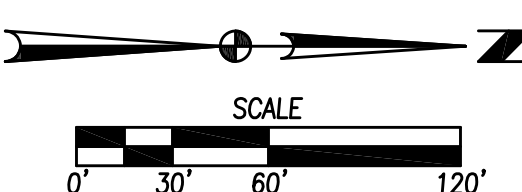
THE RESULTS OF THE GEOTECHNICAL EXPLORATION ARE TO BE PROVIDED TO THE CITY OF WAUKEE ENGINEERING DEPARTMENT AND THE PLAN IS SUBJECT TO ANY CHANGES REQUIRED BY THE REPORT.



FILE: H:\2017\1709538\DWG\1709538-00V-BET-1A8-ASBUIL.DWG
COMMENTS: 1709538-00V-BET-1A8-ASBUIL.DWG
PLOT DATE: 11/25/2019 12:34 PM
PLOTTER: HP DesignJet T1100PS
PLOTTER DRIVER: HPGL-ET
PLOTTER MODEL: HP DesignJet T1100PS

5420' N1/2 SE LYG OF RR
SEC 29-79-26
QG PRINTING II LLC

W10 AC OF NE SW & NW SW
SEC 29-79-26
BRODERICK, PHILIP E REVOCABLE
BRODERICK, CHARLOTTE R ROVOCAB



7/41

1709.538

STRATFORD CROSSING PLAT 1

HYDRANT COVERAGE PLAN

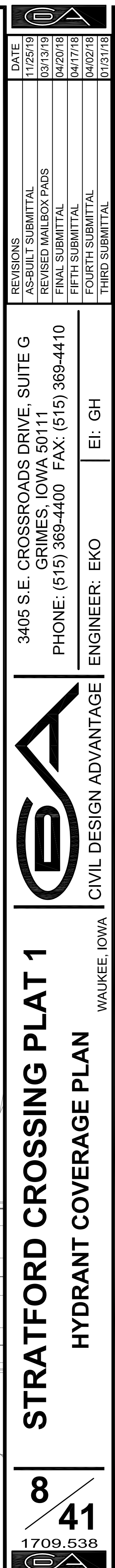
WAUKEE, IOWA

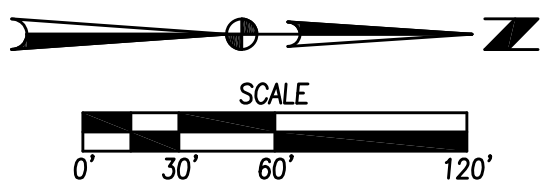
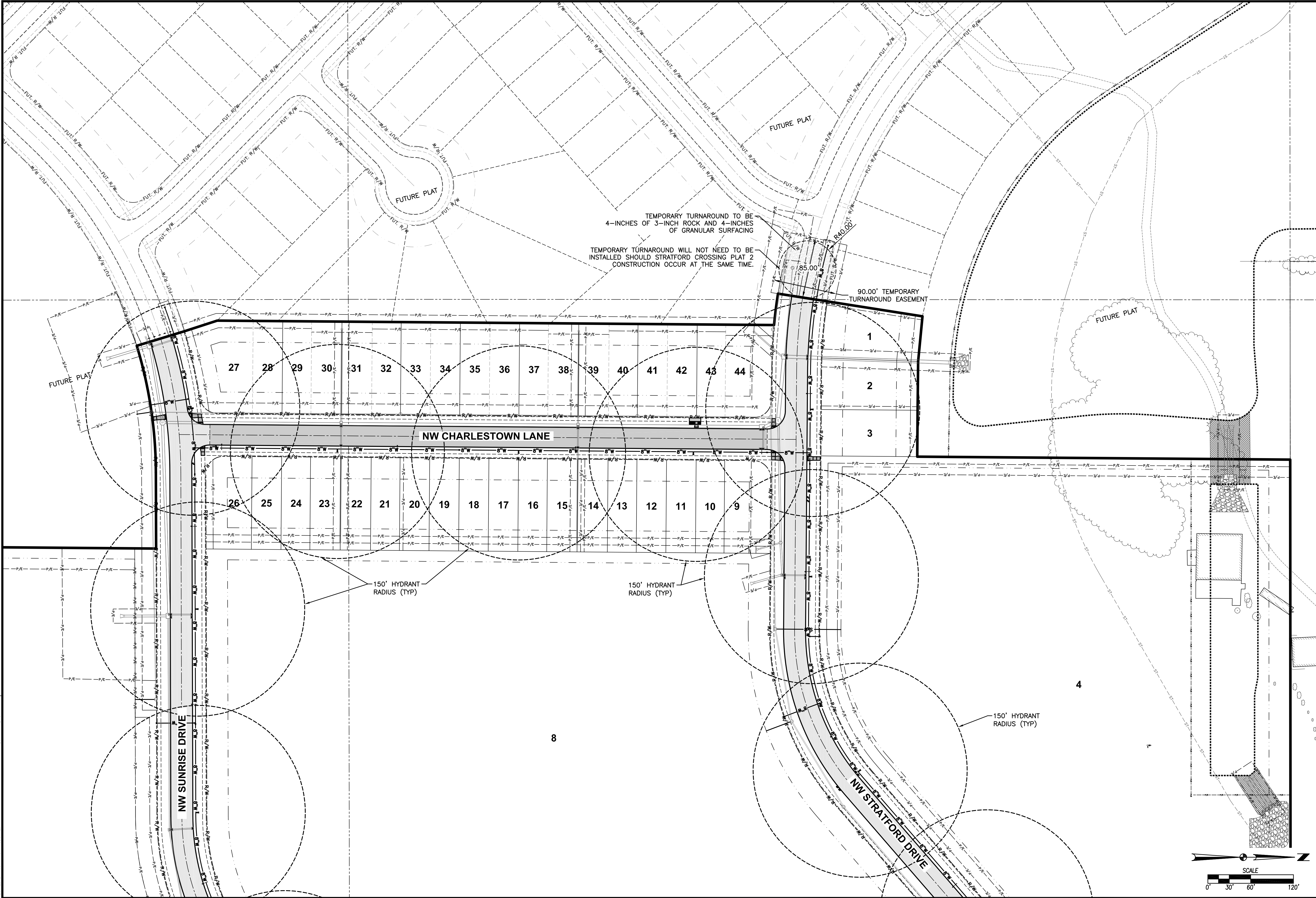
CIVIL DESIGN ADVANTAGE

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO EI: GH

REVISIONS

DATE	11/25/19
AS-BUILT SUBMITTAL	03/13/19
REVISED MAILBOX PADS	04/20/18
FINAL SUBMITTAL	04/17/18
FIFTH SUBMITTAL	04/02/18
FOURTH SUBMITTAL	03/13/18





STRATFORD CROSSING PLAT 1
HYDRANT COVERAGE PLAN



WAUKEE, IOWA

ENGINEER: EKO

EI: GH

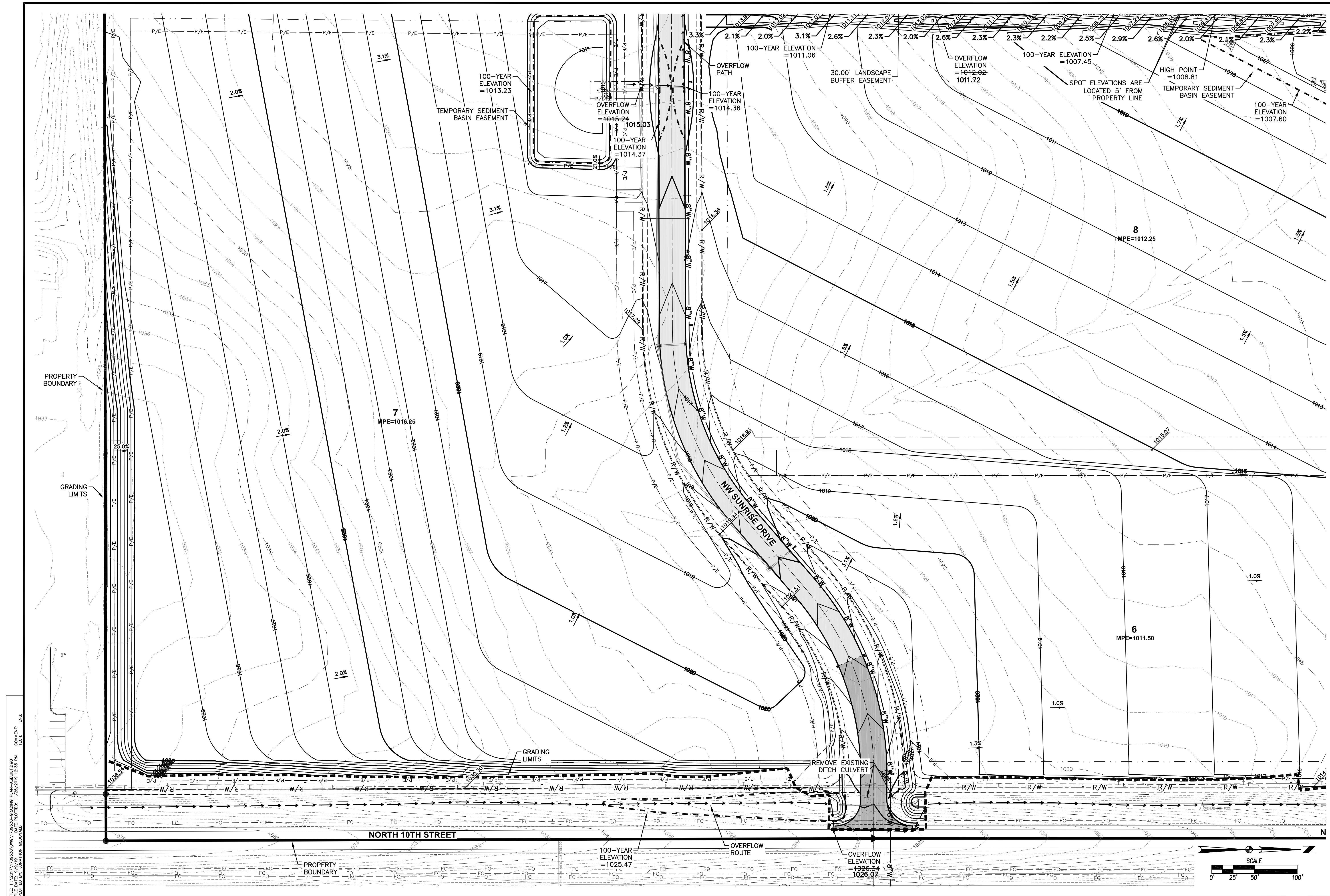
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

REVISIONS	DATE
AS-BUILT SUBMITTAL	11/25/19
REVISED MAILBOX PADS	03/13/19
FINAL SUBMITTAL	04/20/18
FIFTH SUBMITTAL	04/17/18
FOURTH SUBMITTAL	04/02/18
THIRD SUBMITTAL	01/31/18



AREA OF DISTURBANCE = 81.87 AC

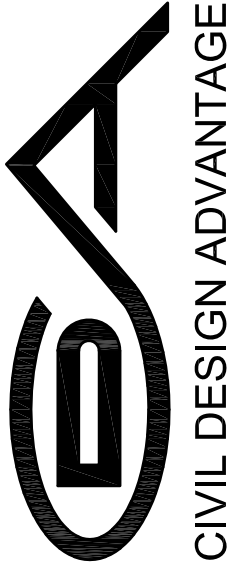
10/41
1709.538
GA



11	41	STRATFORD CROSSING PLAT 1 GRADING PLAN	
1709.538		WAUKEE, IOWA	
		 CIVIL DESIGN ADVANTAGE	ENGINEER: EKO EI: GH
		3405 S.E. CROSSROADS DRIVE, SUITE G GRIMES, IOWA 50111 PHONE: (515) 369-4400 FAX: (515) 369-4410	
REVISONS		DATE	
AS-BUILT SUBMITTAL		11/25/19	
REVISED MAILBOX PADS		03/13/19	
FINAL SUBMITTAL		04/20/18	
FIFTH SUBMITTAL		04/17/18	
FOURTH SUBMITTAL		04/02/18	
THIRD SUBMITTAL		01/31/18	

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

ENGINEER: EKO	EI: GH
---------------	--------

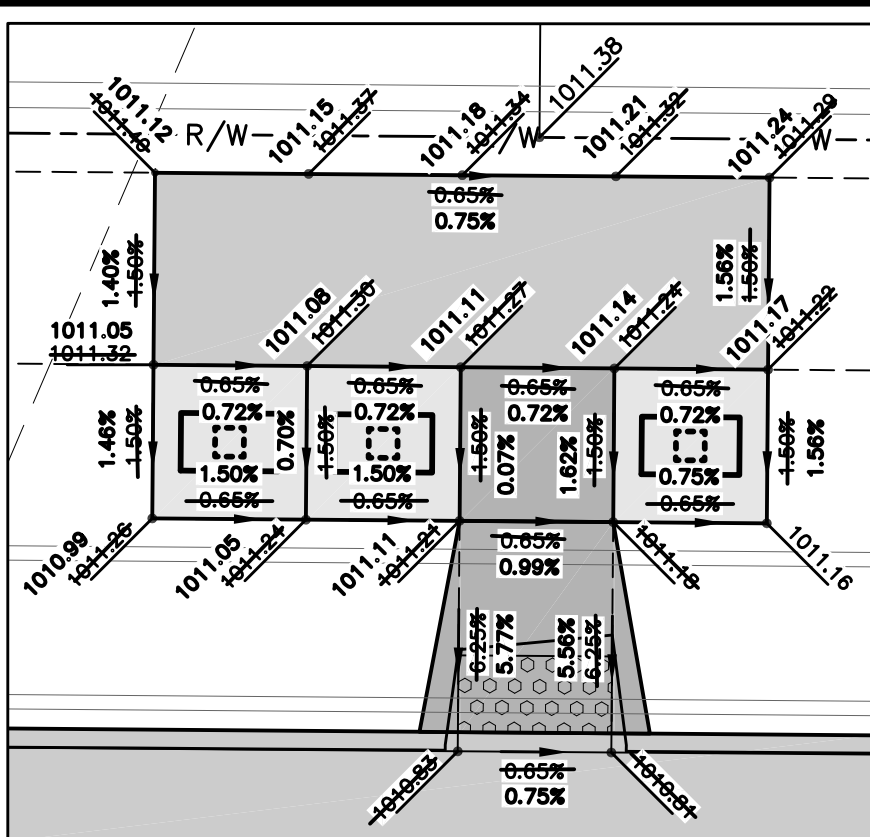
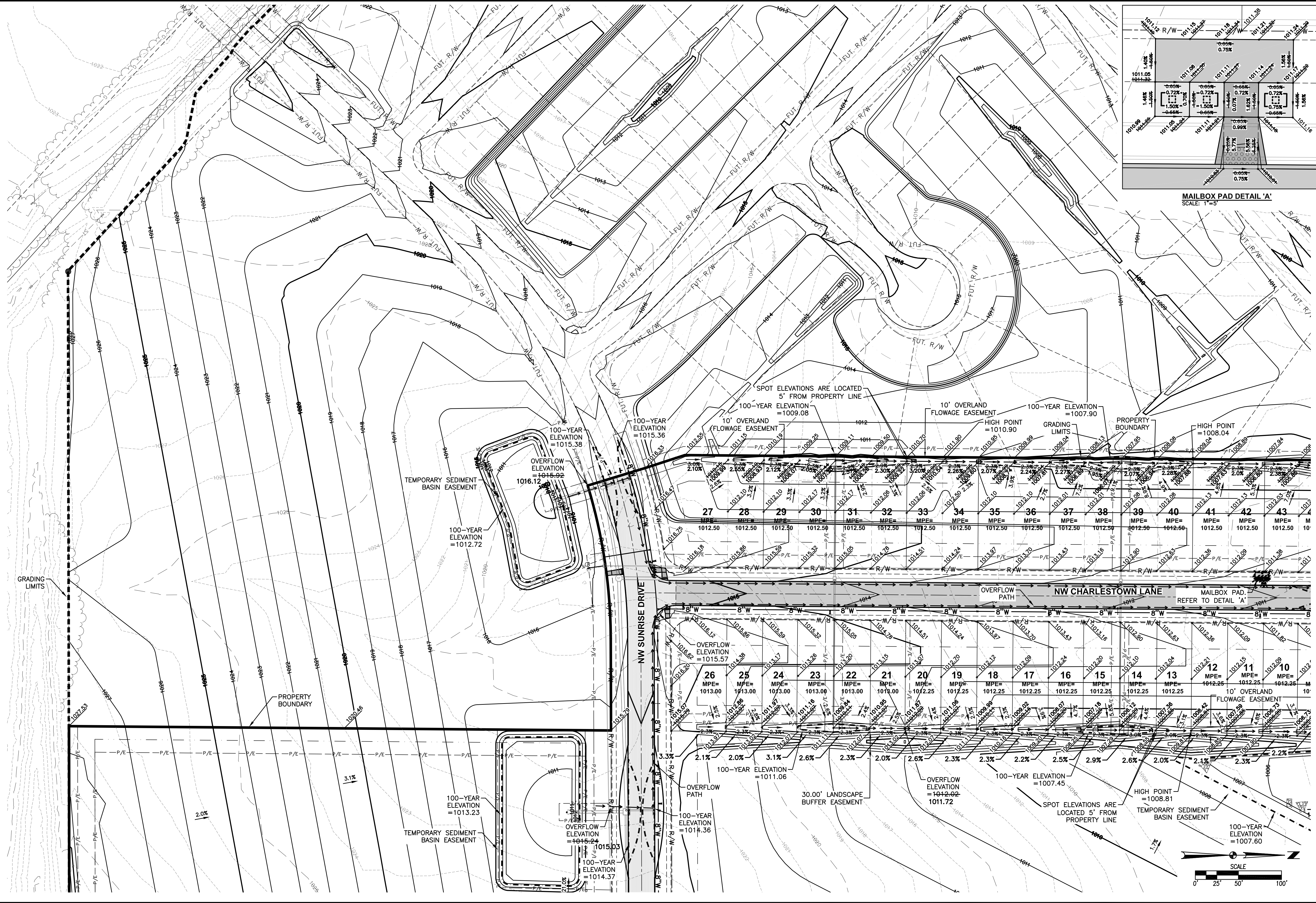


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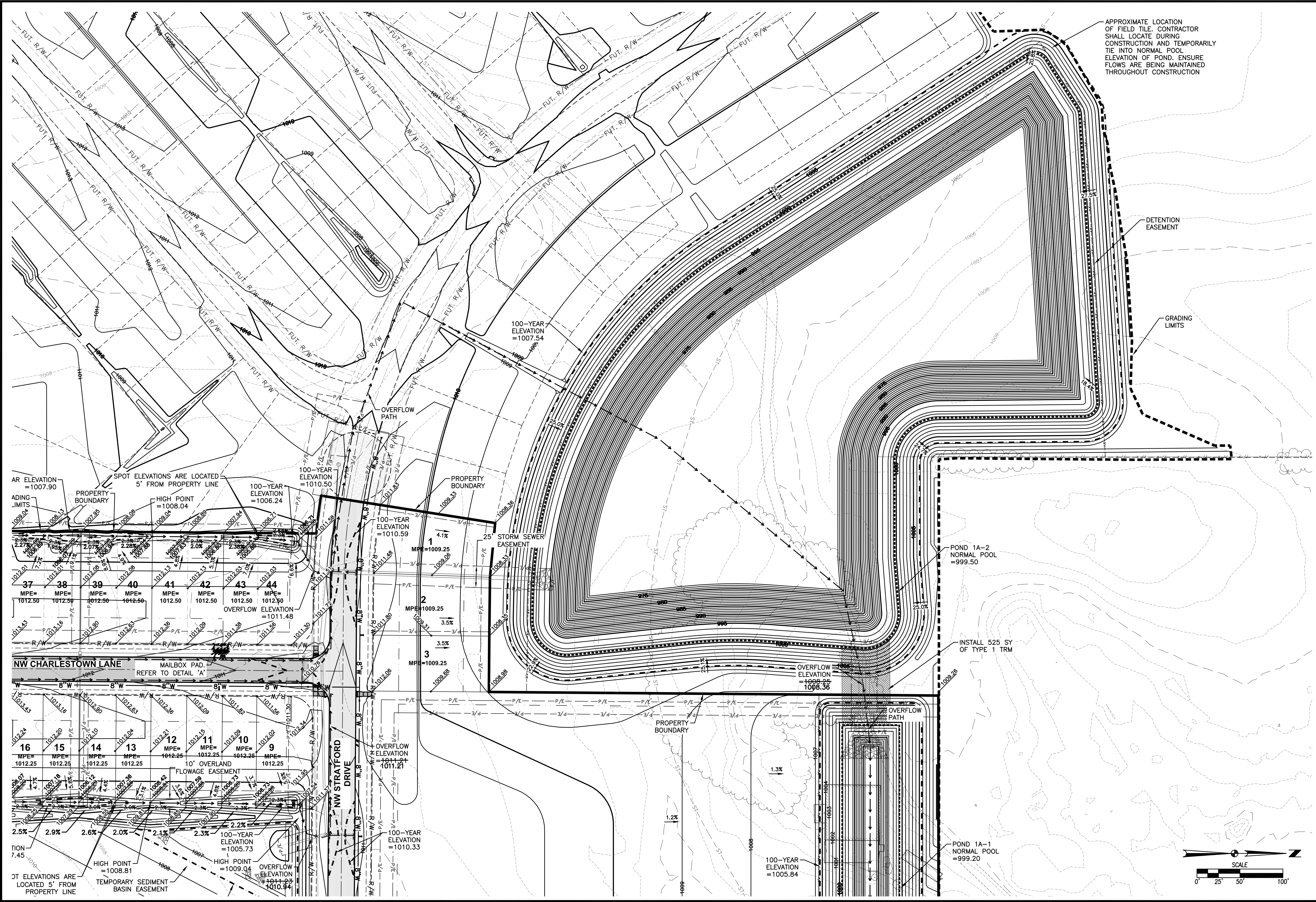
STRATFORD CROSSING PLAT 1

GRADING PLAN

11/41
1709.538
GA



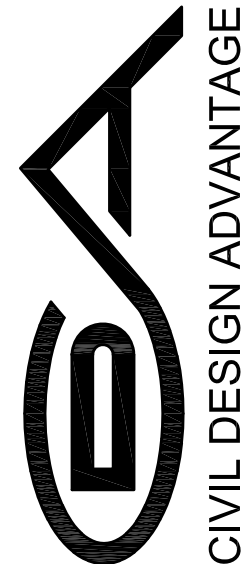
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STRATFORD CROSSING PLAT 1

GRADING PLAN

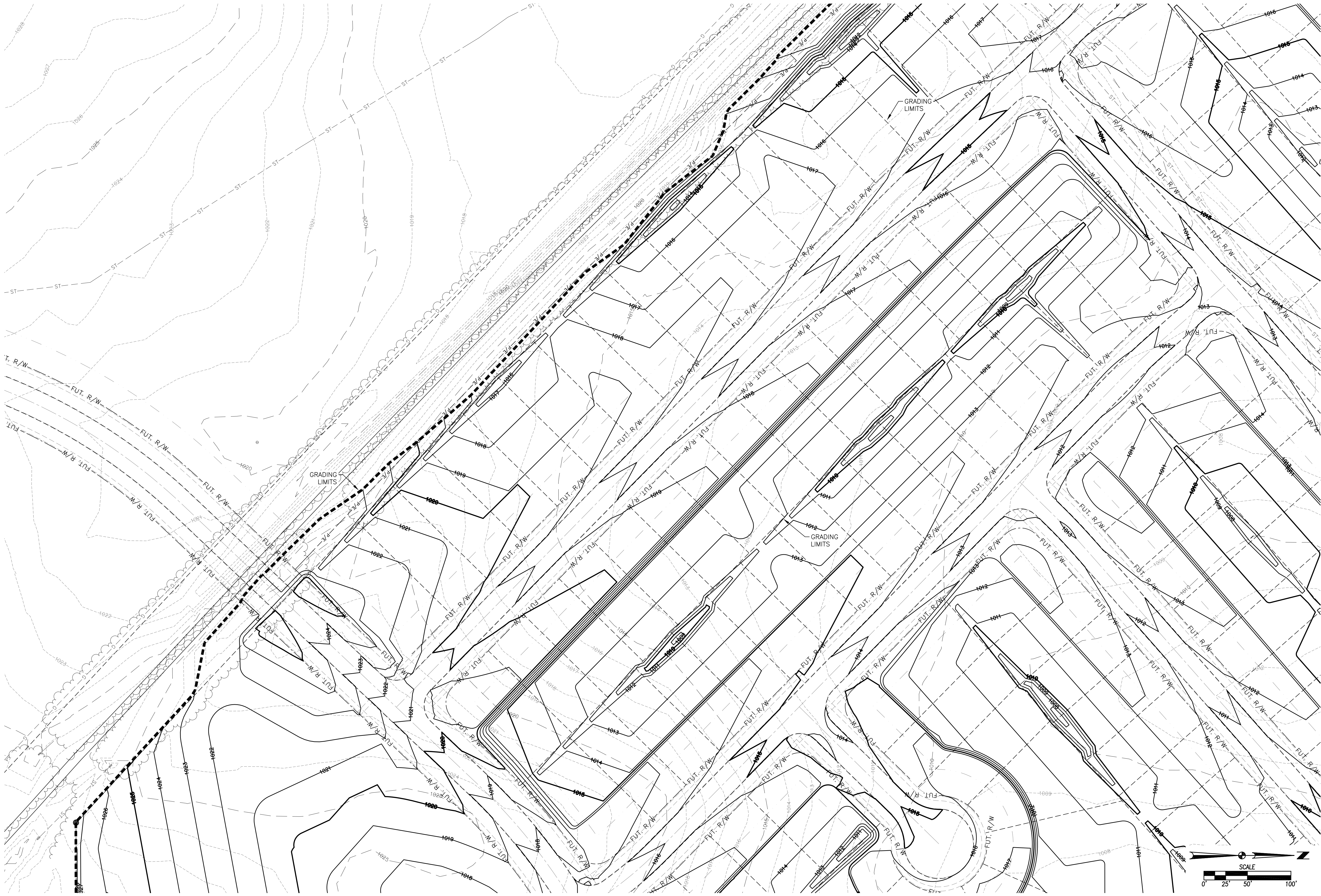
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO
EI: GH



WAUKEE, IOWA

REVISIONS	DATE
AS-BUILT SUBMITTAL	11/25/19
REVISED MAILBOX PADS	03/13/19
FINAL SUBMITTAL	04/20/18
FIFTH SUBMITTAL	04/17/18
FOURTH SUBMITTAL	04/02/18
THIRD SUBMITTAL	01/31/18

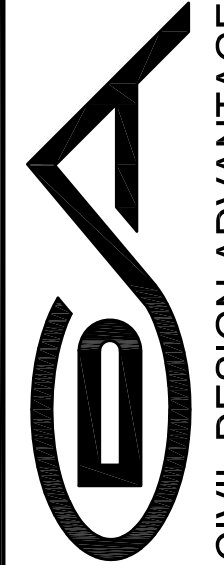
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STRATFORD CROSSING PLAT 1

GRADING PLAN

14
41
1709.538

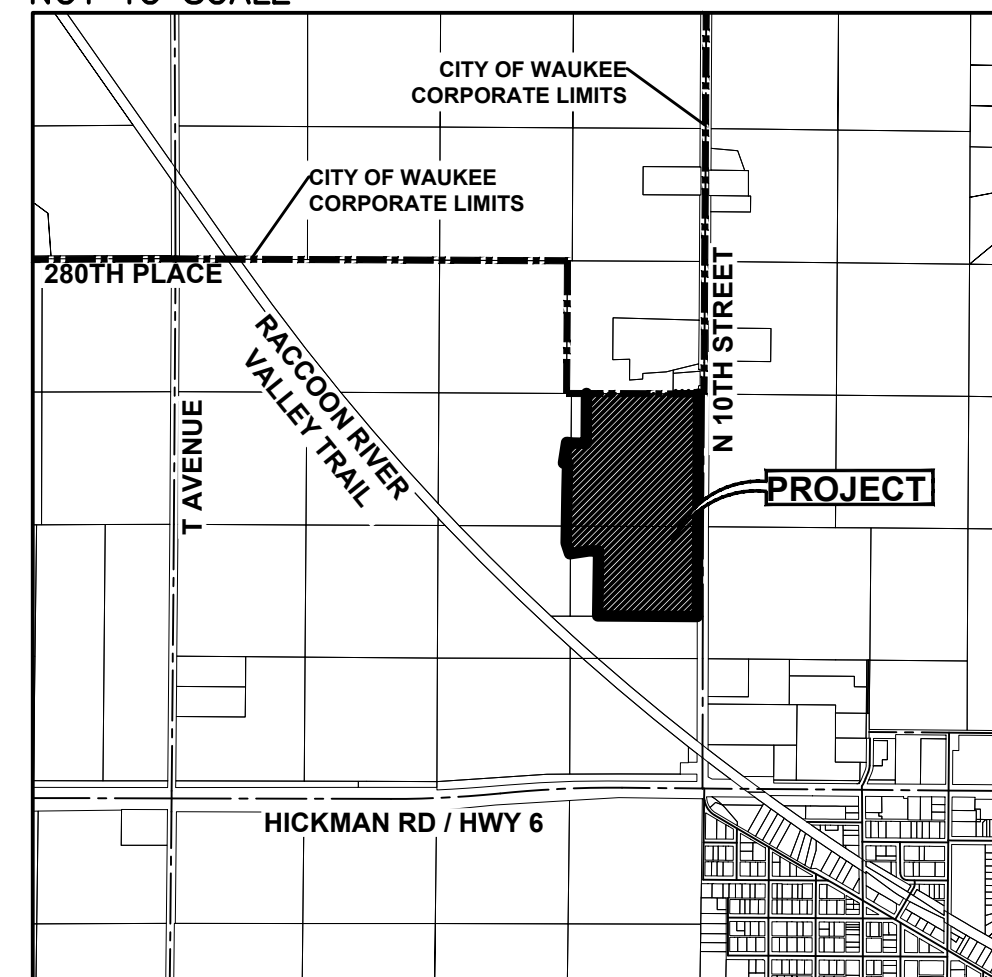


WAUKEE, IOWA

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO EI: GH

REVISIONS	DATE
AS-BUILT SUBMITTAL	11/25/19
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FINAL SUBMITTAL	04/20/18
FIFTH SUBMITTAL	04/17/18
FOURTH SUBMITTAL	04/02/18
THIRD SUBMITTAL	01/31/18

NOT TO SCALE



WAUKEE, IOWA

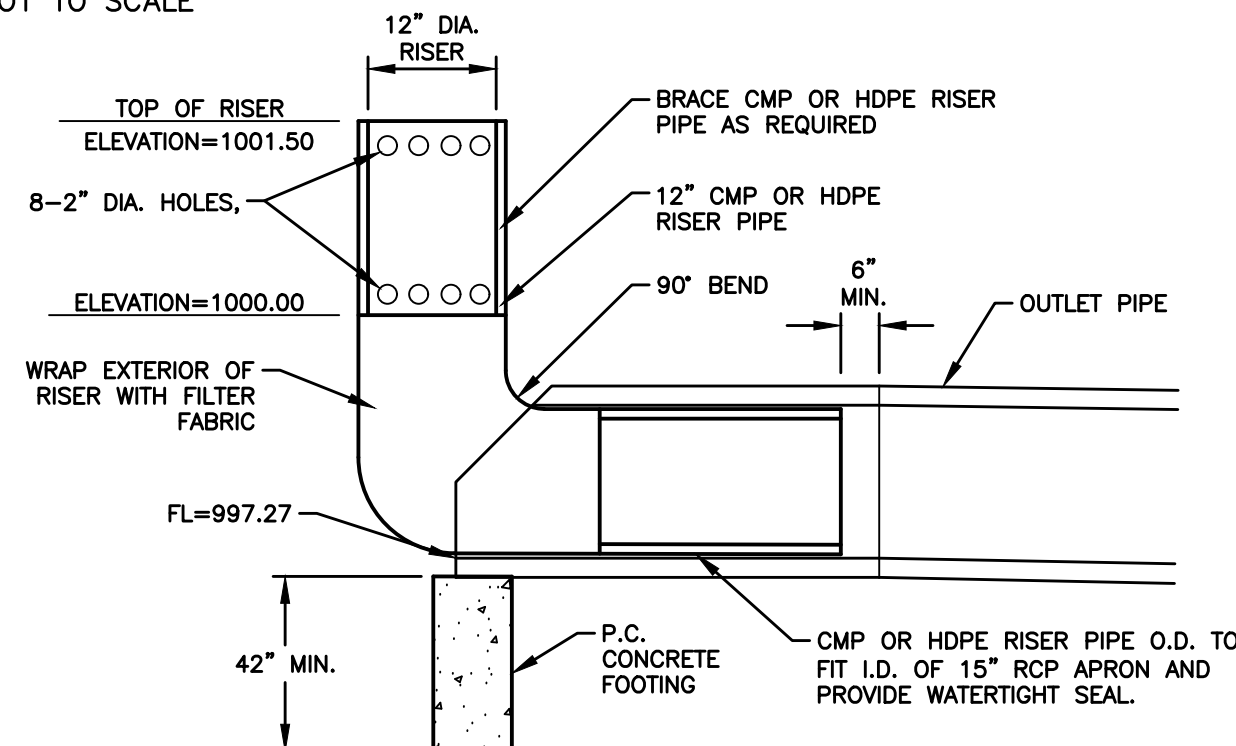
STRATFORD CROSSING PLAT 1

EROSION AND SEDIMENT CONTROL PLAN

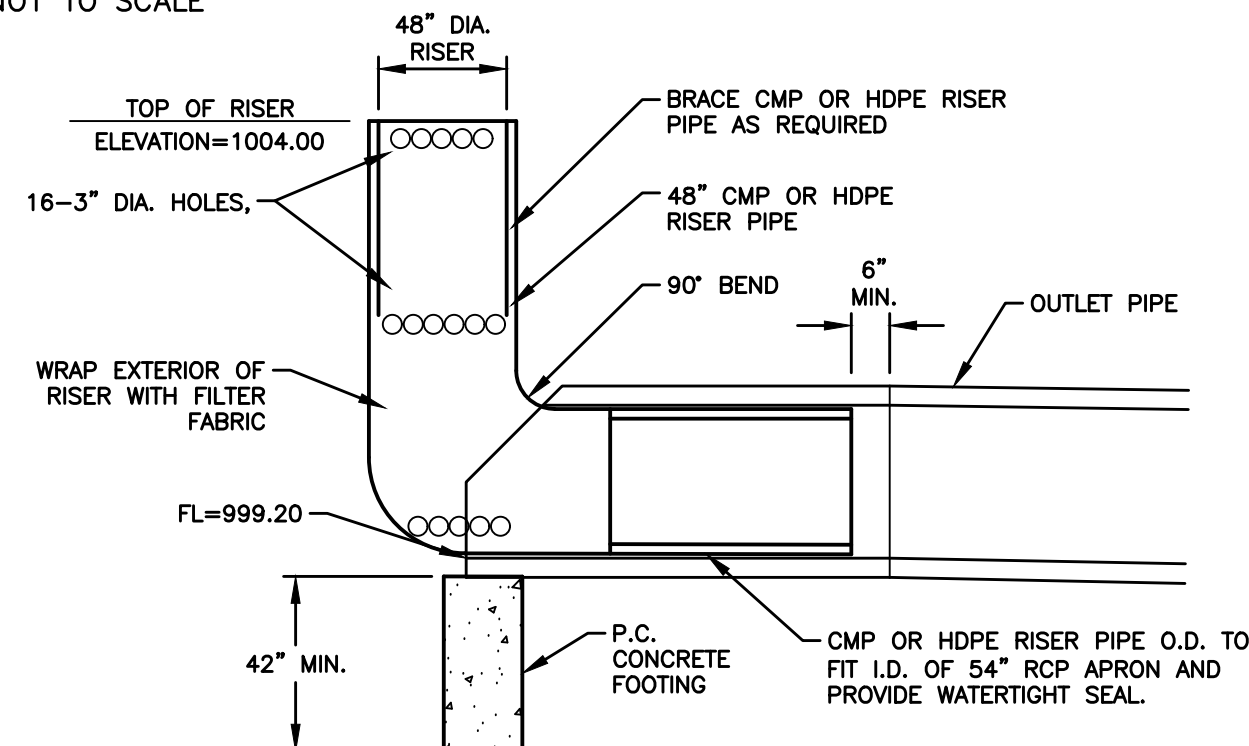
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1	SILT FENCE	LF	15,952
2	SEEDING, FERTILIZING, AND MULCHING	AC	110.06
3	INLET PROTECTION DEVICES	EA	20
4	CONCRETE WASHOUT PIT	EA	1
5	12" HDPE TEMPORARY STANDPIPE	EA	1
6	18" HDPE TEMPORARY STANDPIPE	EA	1
7	24" HDPE TEMPORARY STANDPIPE	EA	2
8	48" HDPE TEMPORARY STANDPIPE	EA	2

DISCHARGE POINT #1 TO AN UNNAMED TRIBUTARY OF LITTLE WALNUT CREEK #2600 FT	
TOTAL AREA DISTURBED TO DISCHARGE POINT	14.34 ACRES
STORAGE VOLUME REQUIRED (# OF ACRES*3600 CU FT)	51,624 CU FT
VOLUME PROVIDED IN TSB #1	16,933 CU FT
VOLUME PROVIDED IN SILT FENCE (3,479 LF @ 10 CU FT/LF OF FENCE)	34,790 CU FT
TOTAL VOLUME PROVIDED	51,723 CU FT
DISCHARGE POINT #2 TO AN UNNAMED TRIBUTARY OF LITTLE WALNUT CREEK #3200 FT	
TOTAL AREA DISTURBED TO DISCHARGE POINT	105.00 ACRES
STORAGE VOLUME REQUIRED (# OF ACRES*3600 CU FT)	378,000 CU FT
VOLUME PROVIDED IN TSB #2	230,066 CU FT
VOLUME PROVIDED IN TSB #3	24,662 CU FT
VOLUME PROVIDED IN TSB #4	40,973 CU FT
VOLUME PROVIDED IN TSB #5	33,572 CU FT
VOLUME PROVIDED IN SILT FENCE (12,473 LF @ 4.5 CU FT/LF OF FENCE)	56,129 CU FT
TOTAL VOLUME PROVIDED	385,402 CU FT

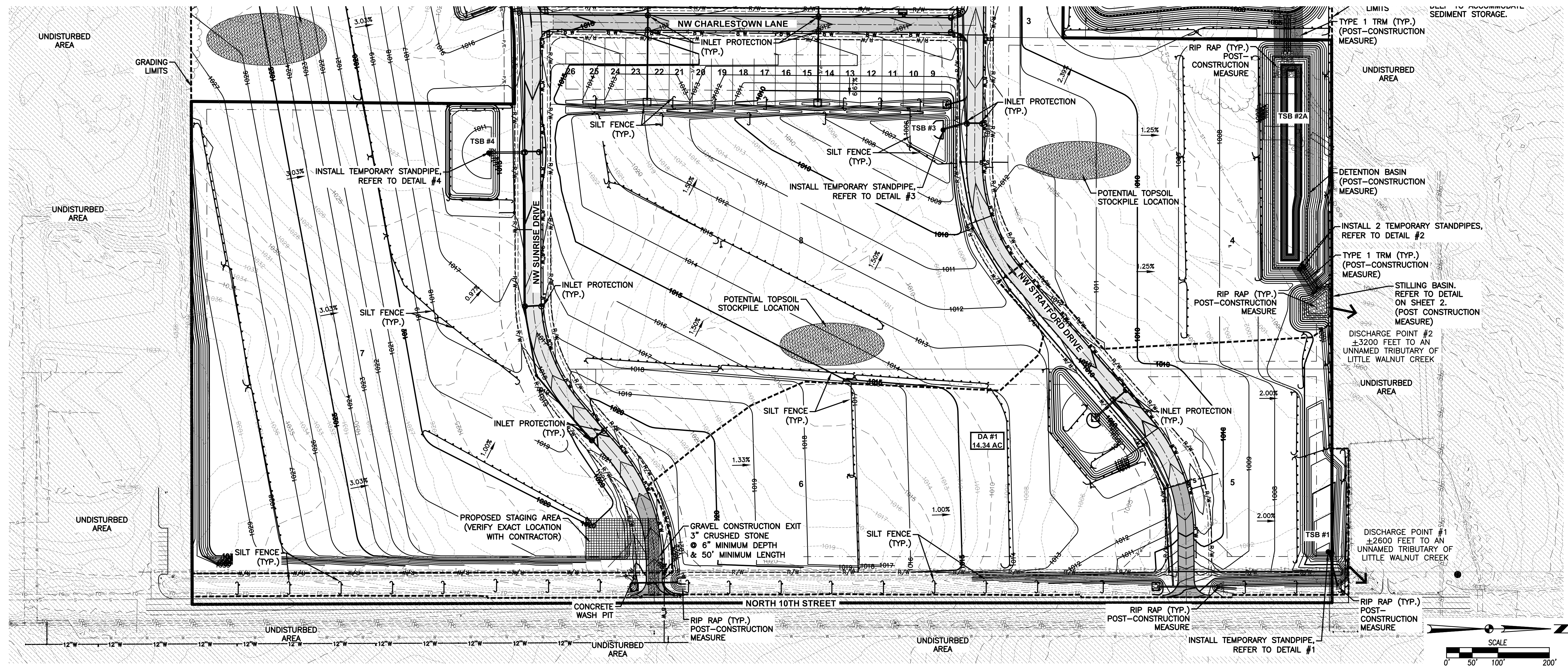
NOT TO SCALE



NOT TO SCALE



DRAINAGE ARROW	
GRADING LIMITS	
FILTER SOCK	
SILT FENCE	
INLET PROTECTION	
PORTABLE RESTROOM	
CONCRETE WASHOUT PIT	
TEMPORARY STANDPIPE	
UNDISTURBED AREA	
RIPRAP	
GRAVEL ENTRANCE	
STAGING AREA	



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COMMENT:
TECH:
ENG:

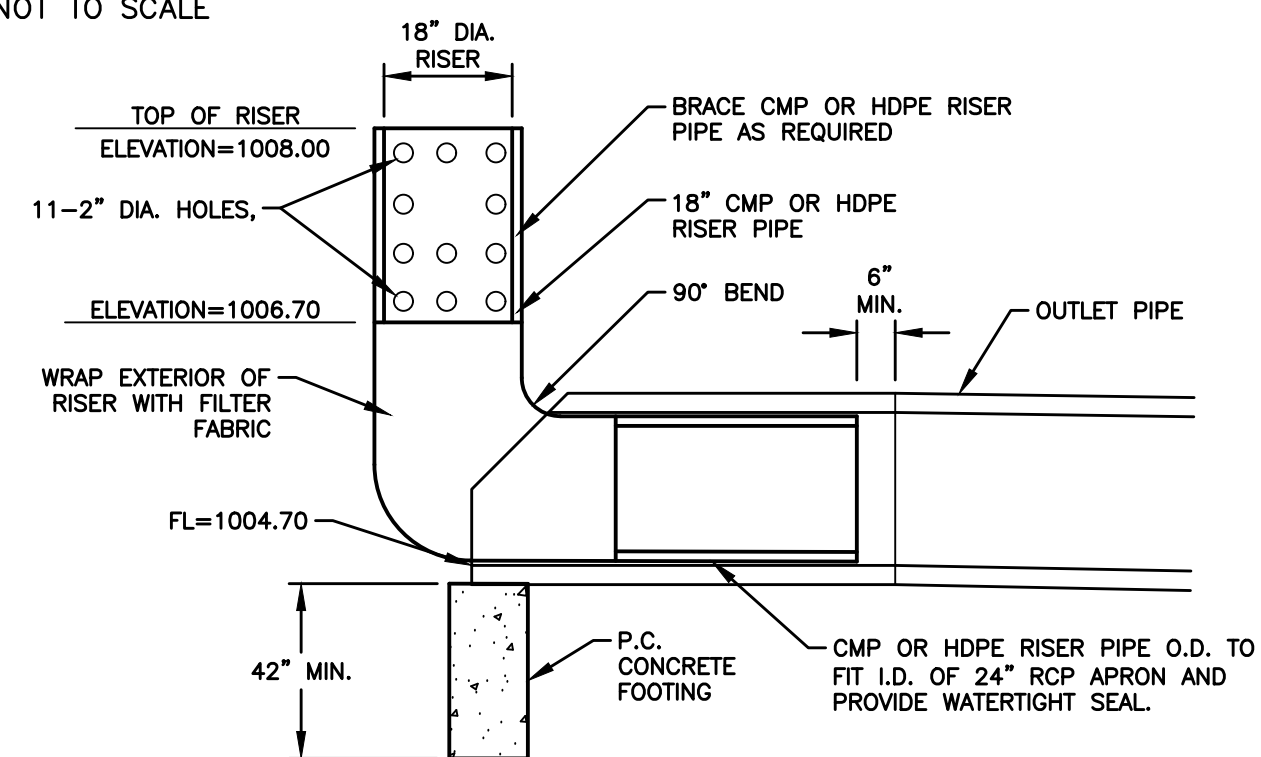
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

STRATFORD CROSSING PLAT 1

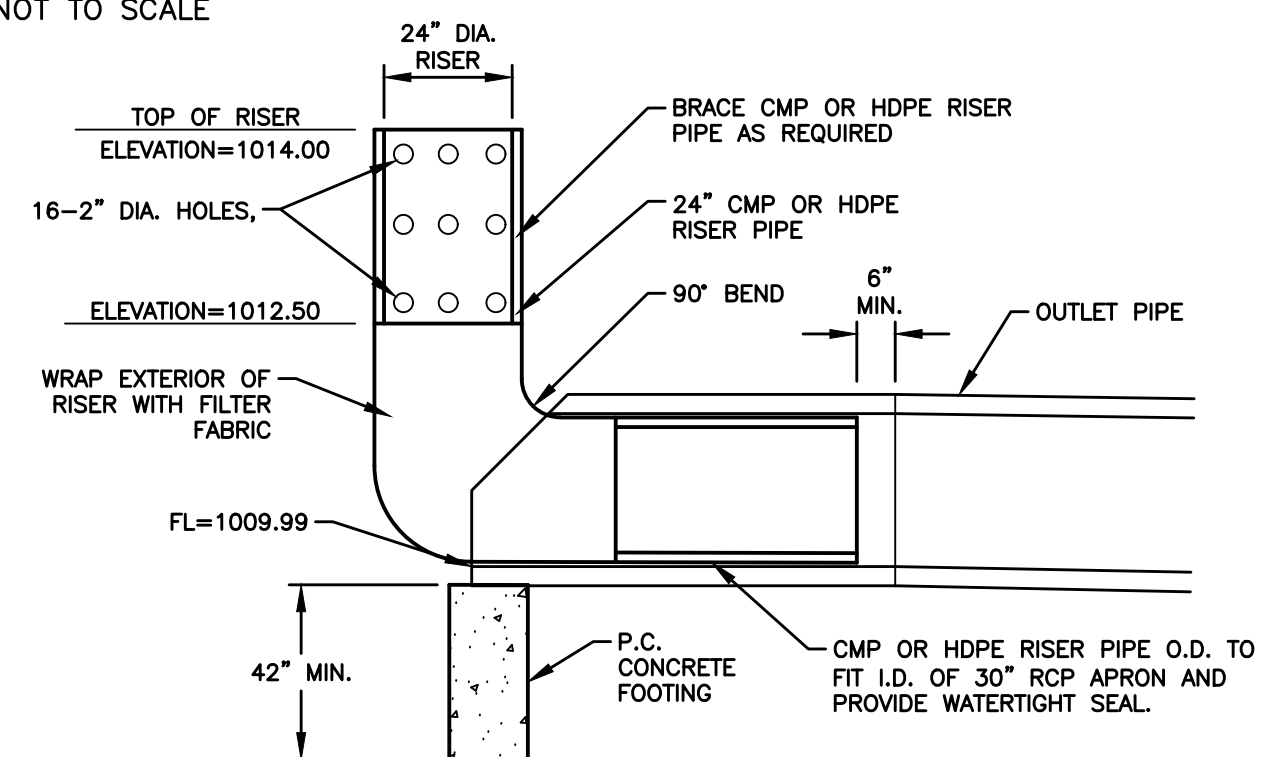
EROSION AND SEDIMENT CONTROL PLAN

15
41
1709.538

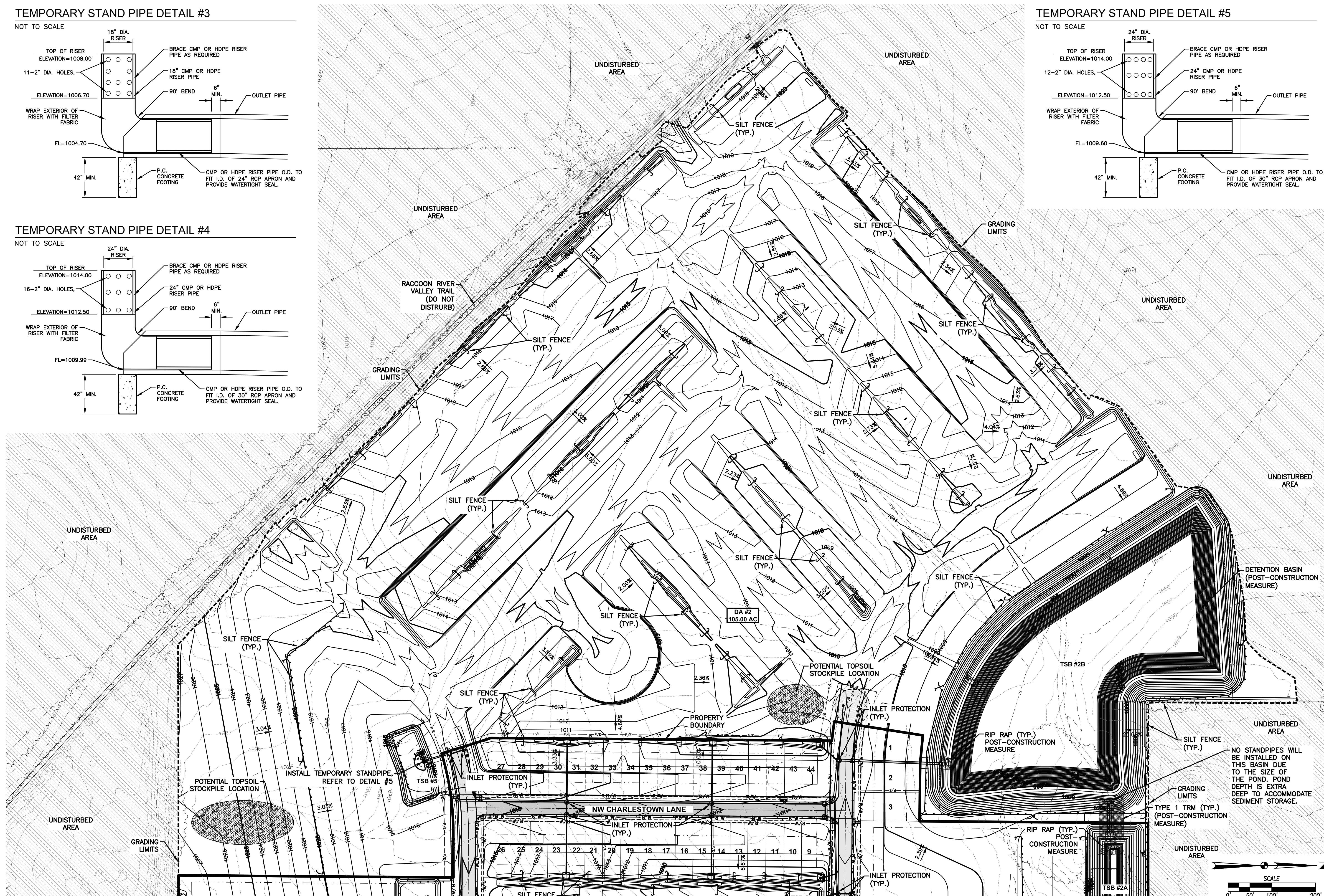
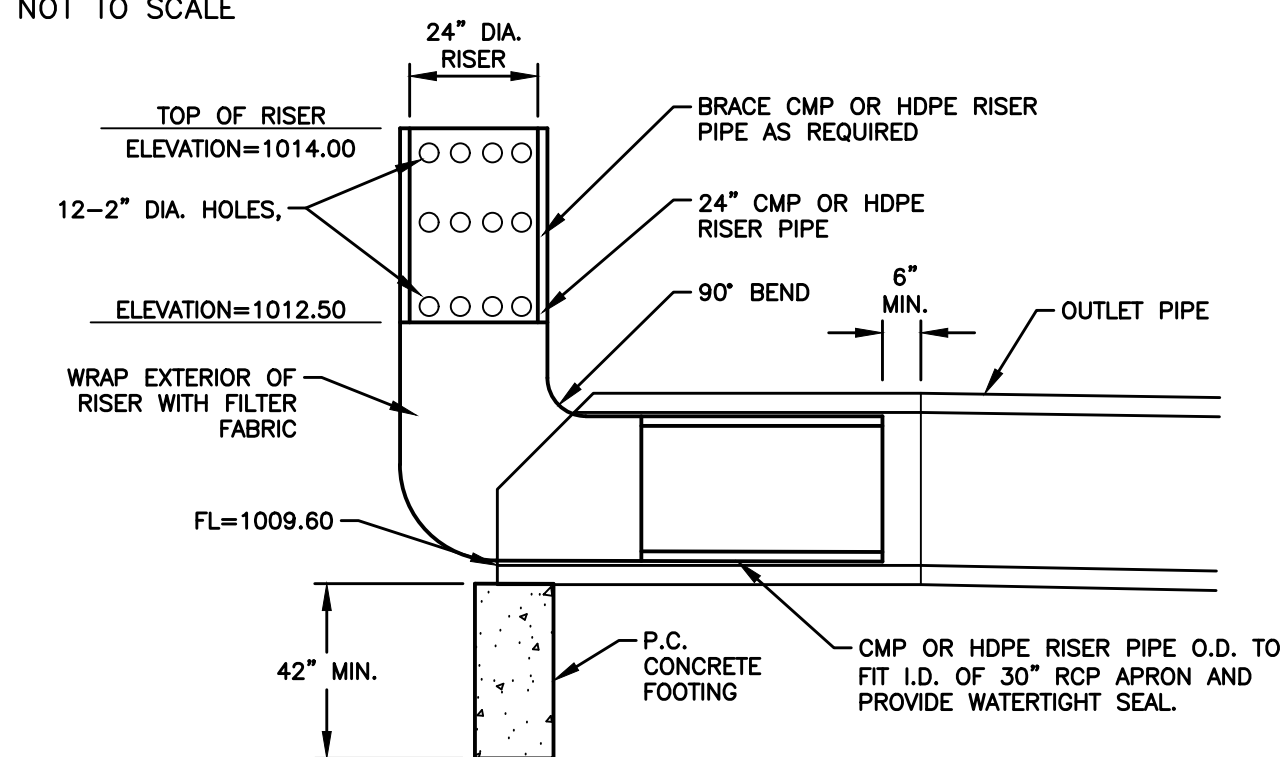
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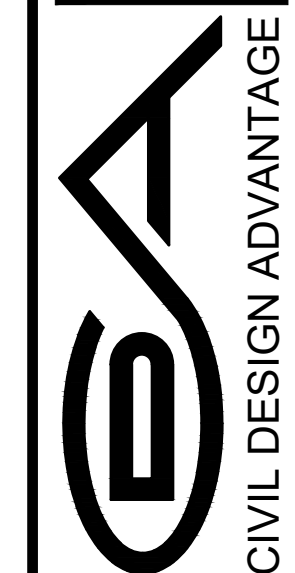
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REVISIONS	DATE
AS-BUILT SUBMITTAL	11/25/19
REVISED MAILBOX PADS	03/13/19
FINAL SUBMITTAL	04/20/18
FIFTH SUBMITTAL	04/17/18
FOURTH SUBMITTAL	04/02/18
THIRD SUBMITTAL	01/31/18

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

ENGINEER: EKO	EI: GH
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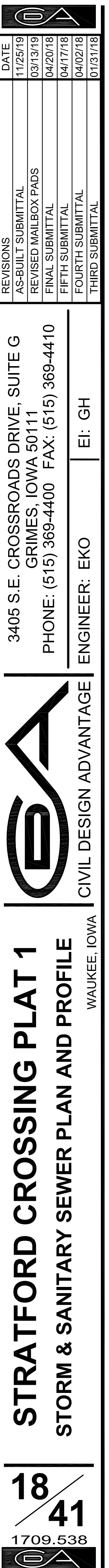
WISCONSIN
WAUKEE. IOWA

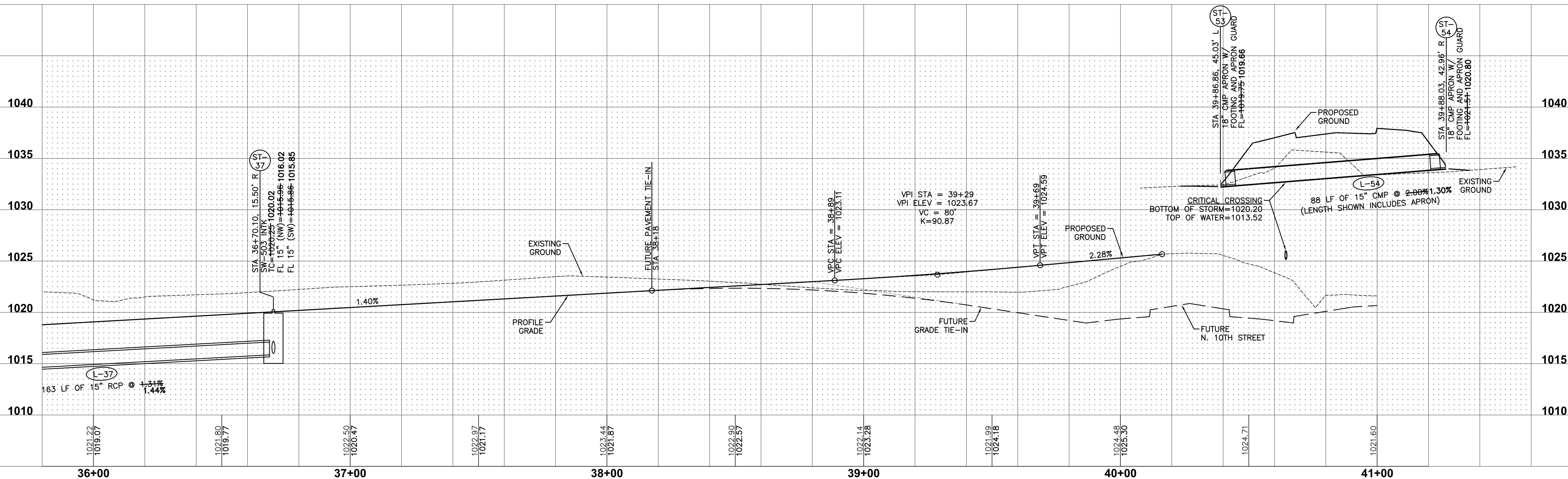
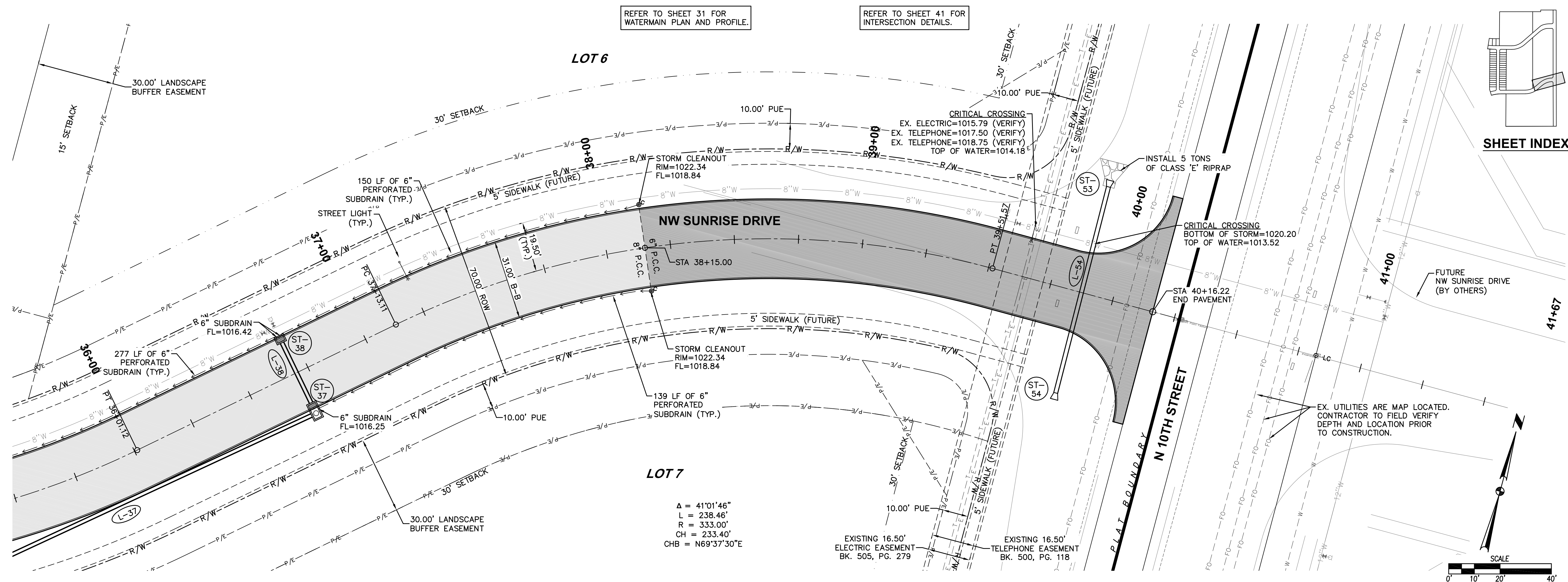
STRATFORD CROSSING PLAT 1

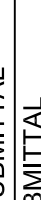
EROSION AND SEDIMENT CONTROL PLAN

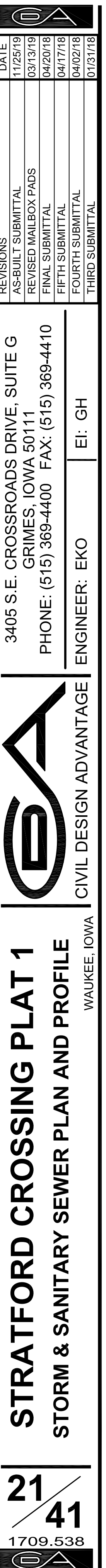
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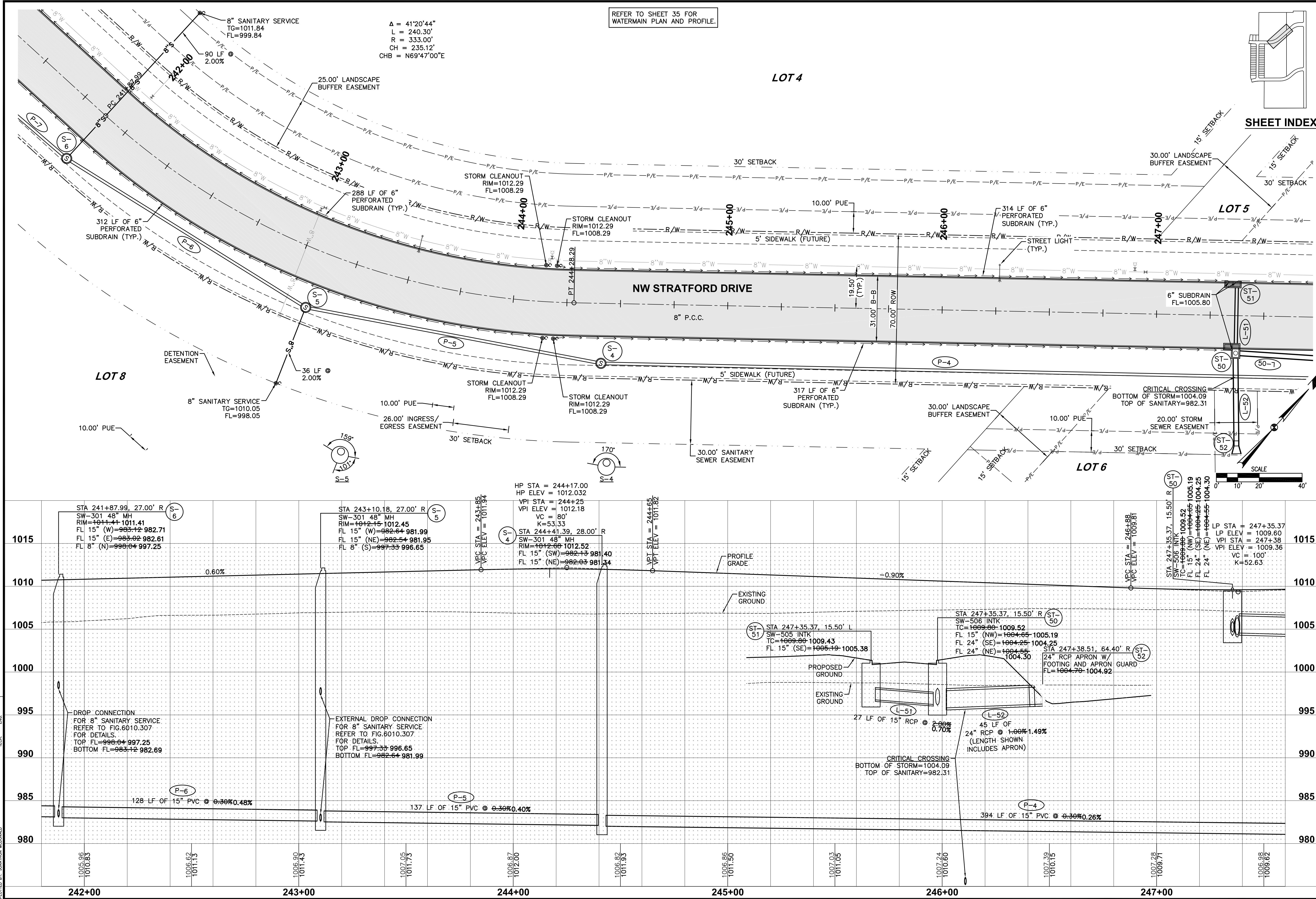




			
19 41		STRATFORD CROSSING PLAT 1 STORM & SANITARY SEWER PLAN AND PROFILE WAUKEE, IOWA	
		CIVIL DESIGN ADVANTAGE	
3405 S.E. CROSSROADS DRIVE, SUITE G GRIMES, IOWA 50111 PHONE: (515) 369-4400 FAX: (515) 369-4410		ENGINEER: EKO EI: GH	
REVISIONS		DATE	
AS-BUILT SUBMITTAL		11/25/19	
REVISED MAILBOX PADS		03/13/19	
FINAL SUBMITTAL		04/20/18	
FIFTH SUBMITTAL		04/17/18	
FOURTH SUBMITTAL		04/02/18	
THIRD SUBMITTAL		01/31/18	



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ENGR.



DATE
11/25/19
AS-BUILT SUBMITTAL
REVISED MAILBOX PADS
FINAL SUBMITTAL
FIFTH SUBMITTAL
FOURTH SUBMITTAL
THIRD SUBMITTAL

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

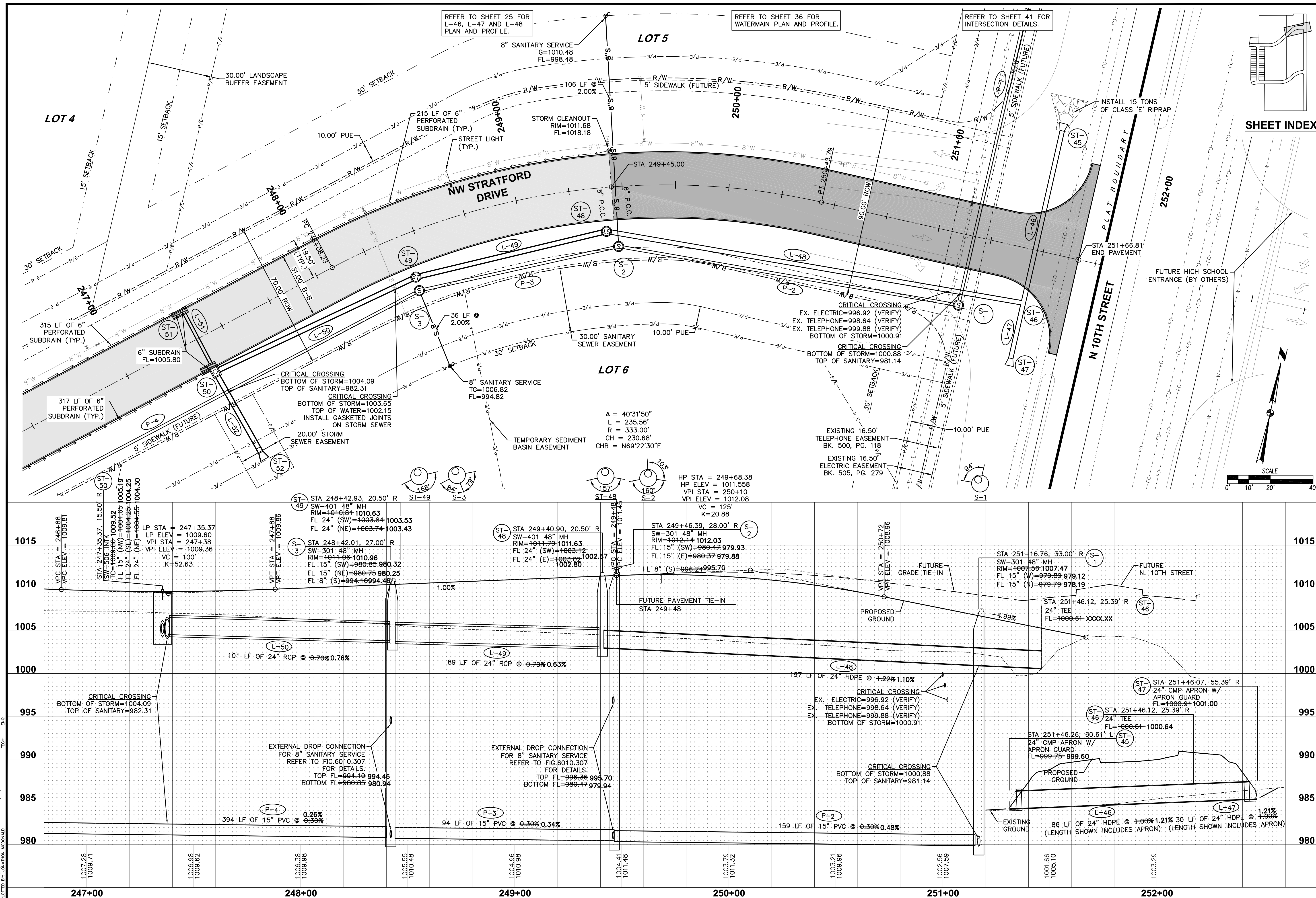
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EI: GH

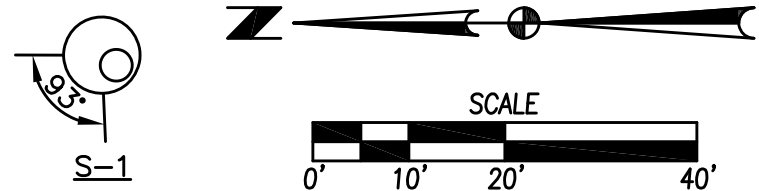
REVISIONS

11/25/19
AS-BUILT SUBMITTAL
REVISED MAILBOX PADS
FINAL SUBMITTAL
FIFTH SUBMITTAL
FOURTH SUBMITTAL
THIRD SUBMITTAL

23/41

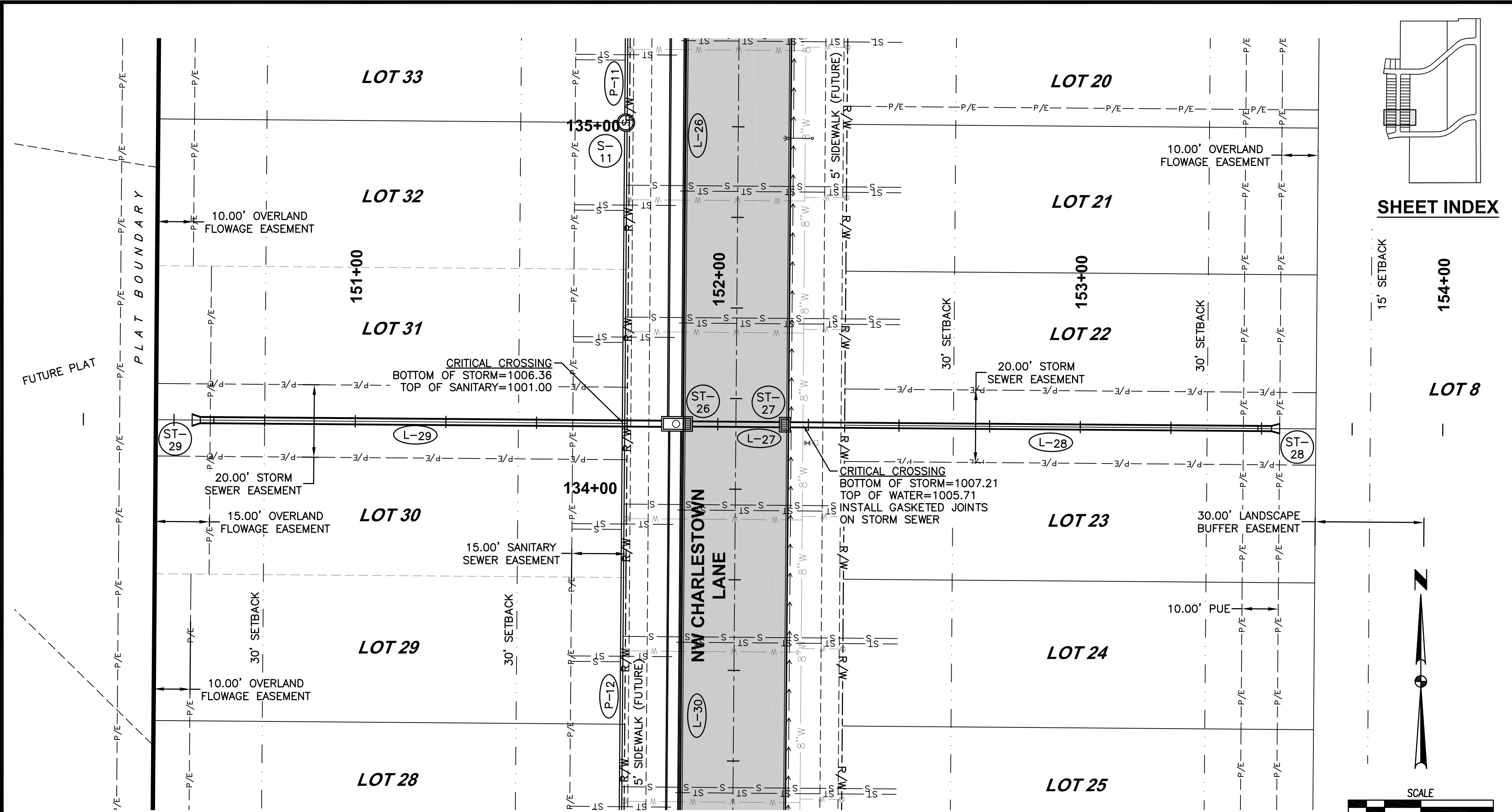
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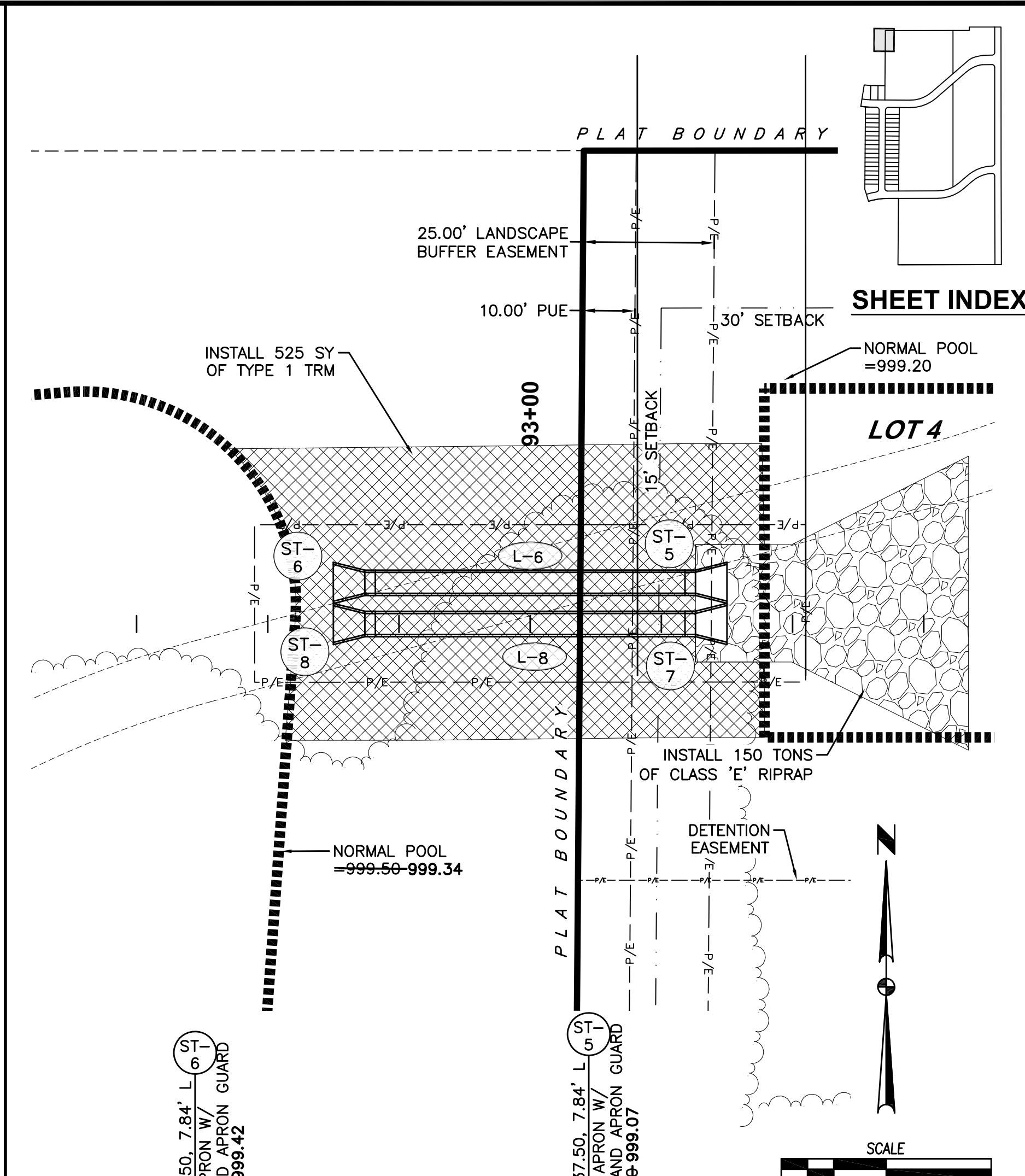


25/41
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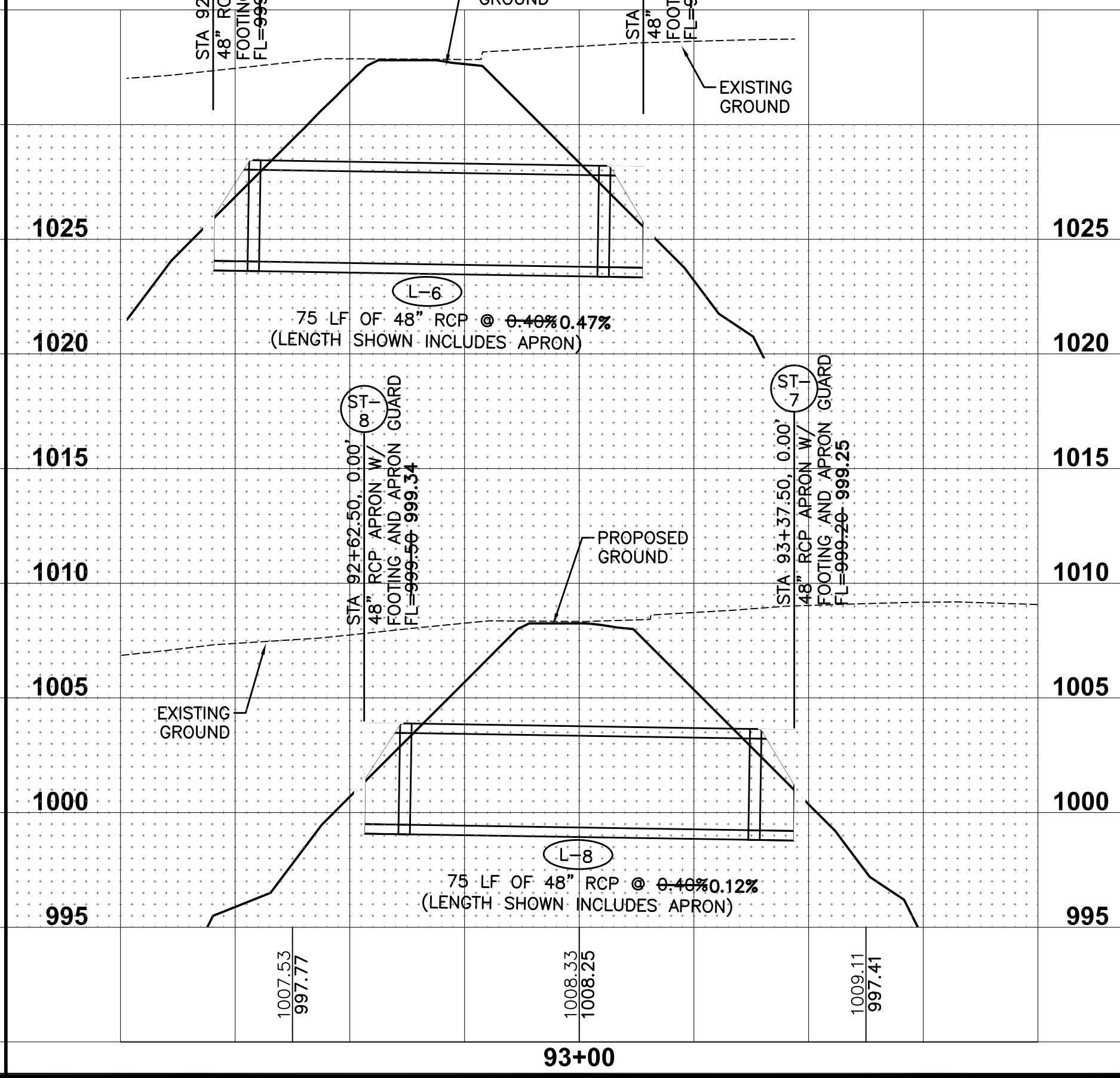
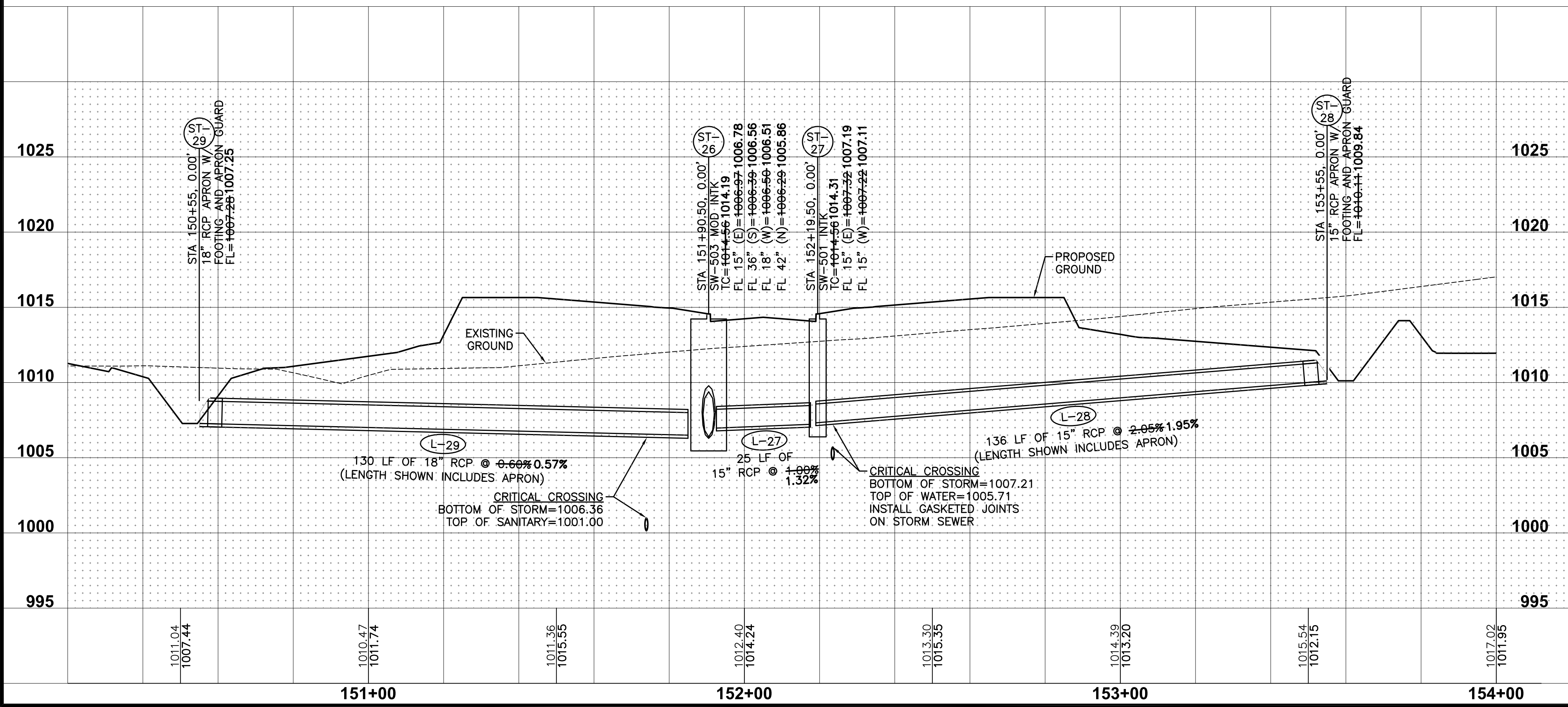
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ENGR: [Signature]



SHEET INDEX



SHEET INDEX



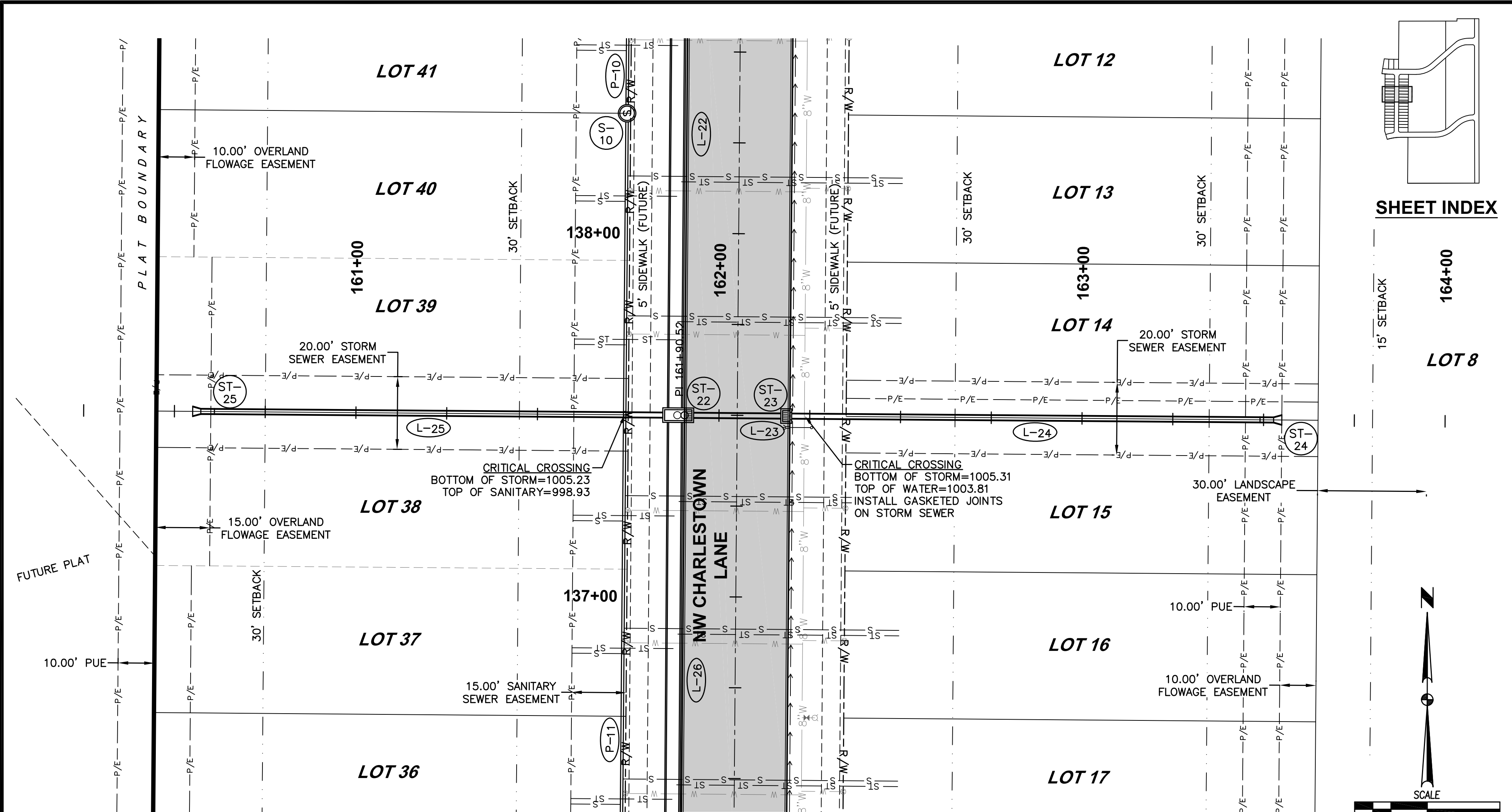
DATE
11/25/19
AS-BUILT SUBMITTAL
REVISED MAILBOX PADS
03/13/19
FINAL SUBMITTAL
04/20/18
FIFTH SUBMITTAL
04/17/18
FOURTH SUBMITTAL
04/02/18
THIRD SUBMITTAL
01/31/18

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO
Ei: GH

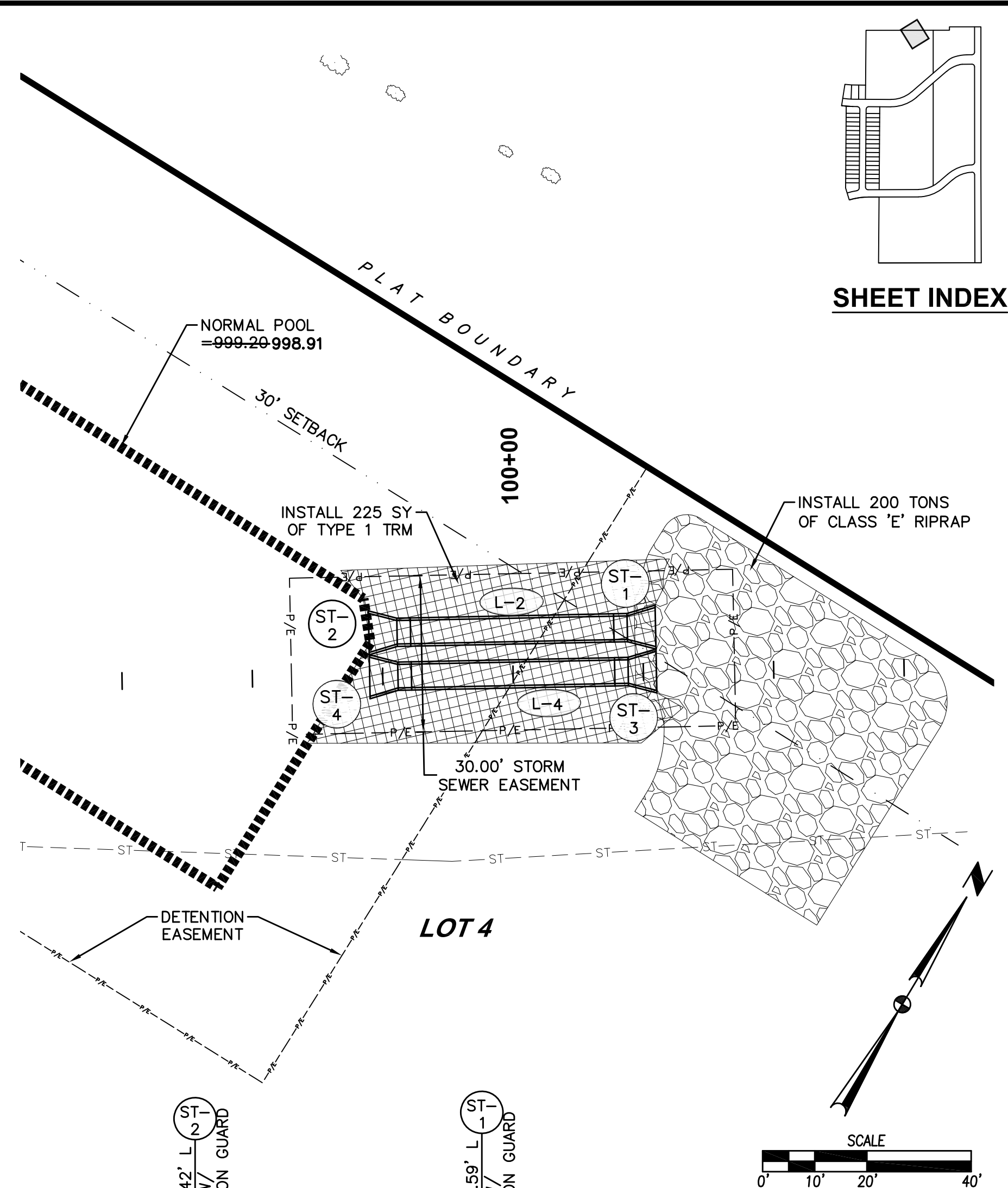
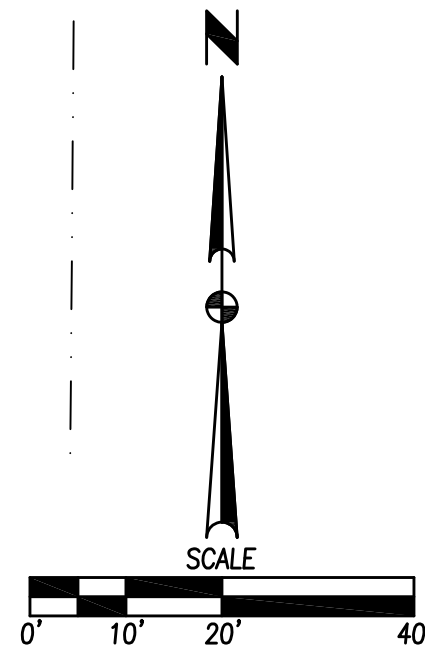
STRATFORD CROSSING PLAT 1
STORM SEWER PLAN AND PROFILE
WAUKEE, IOWA

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41
1709.538

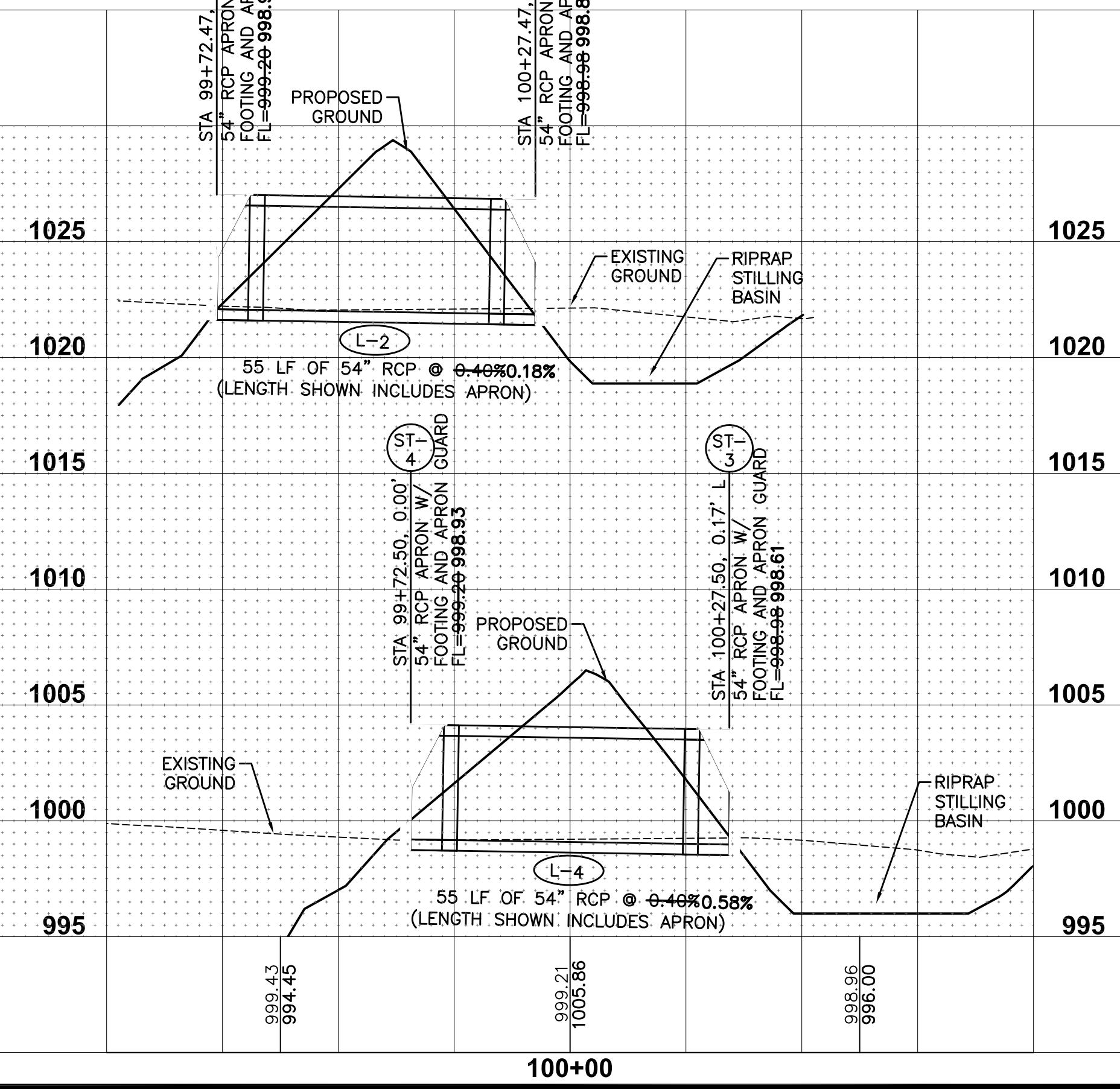
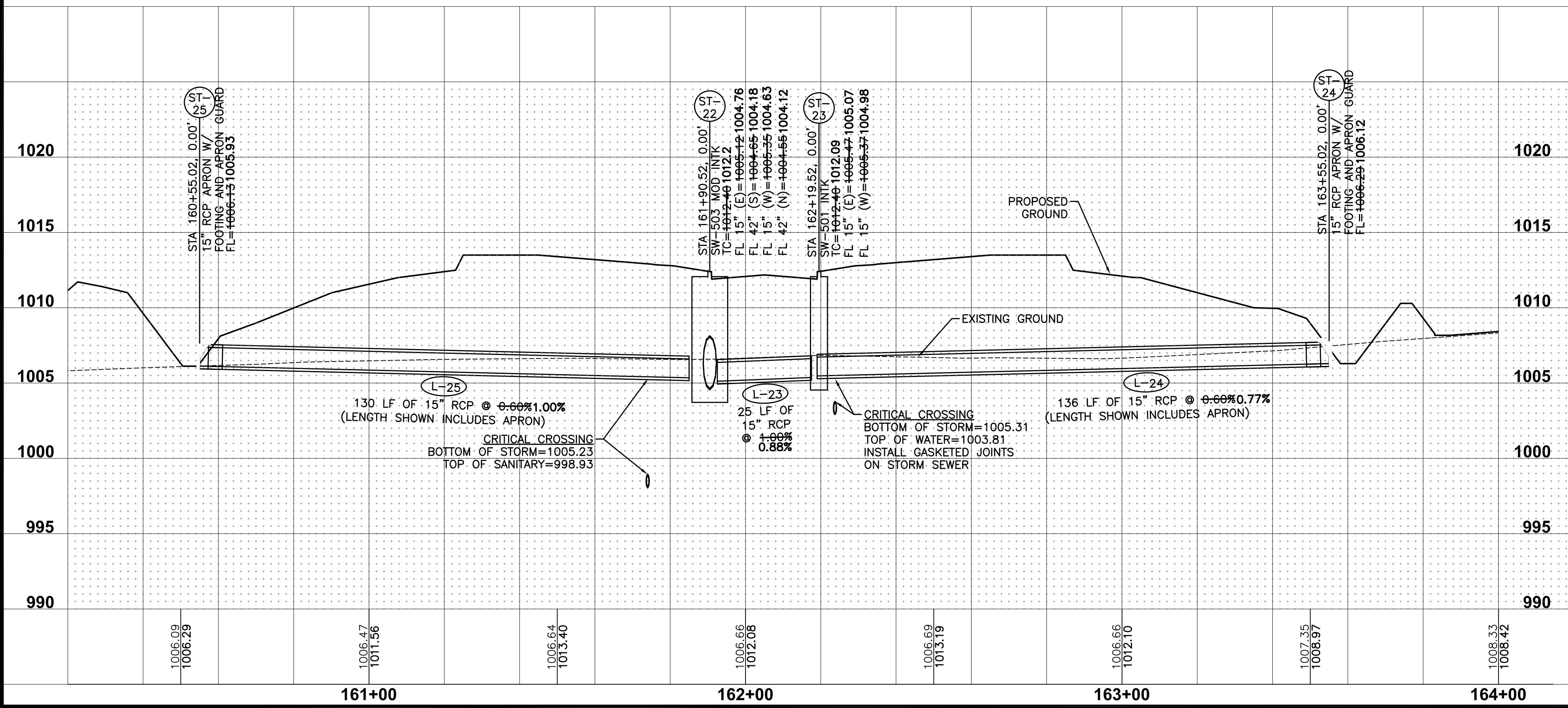
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SHEET INDEX



SHEET INDEX



1709.538

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STRATFORD CROSSING PLAT 1

STORM SEWER PLAN AND PROFILE

WAUKEE, IOWA

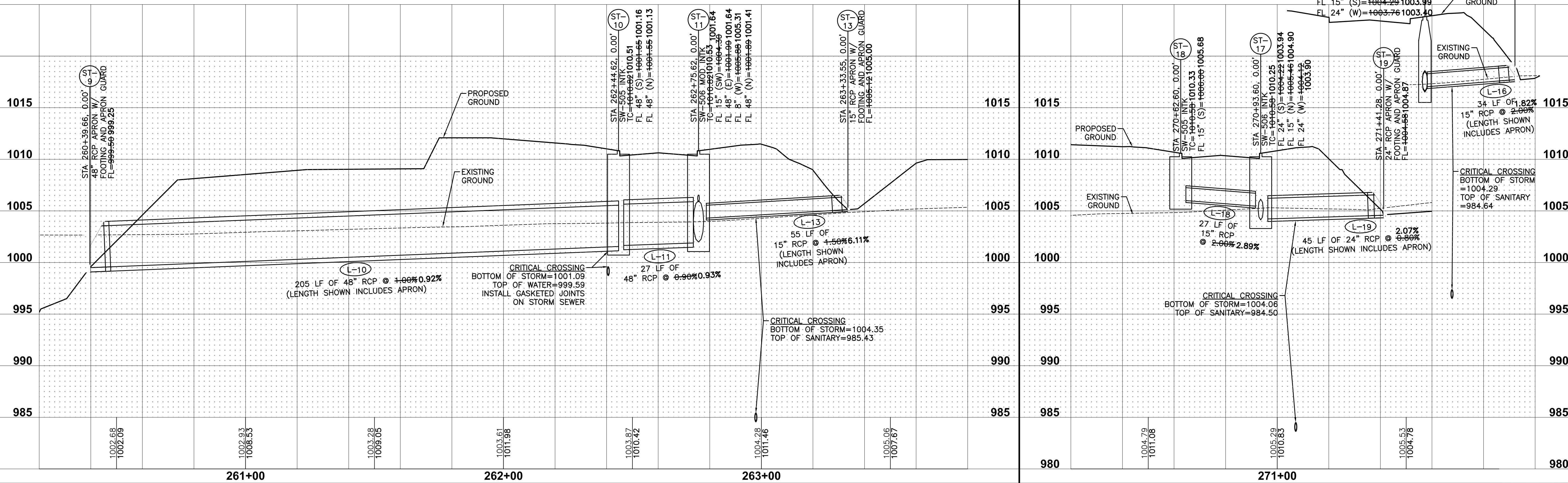
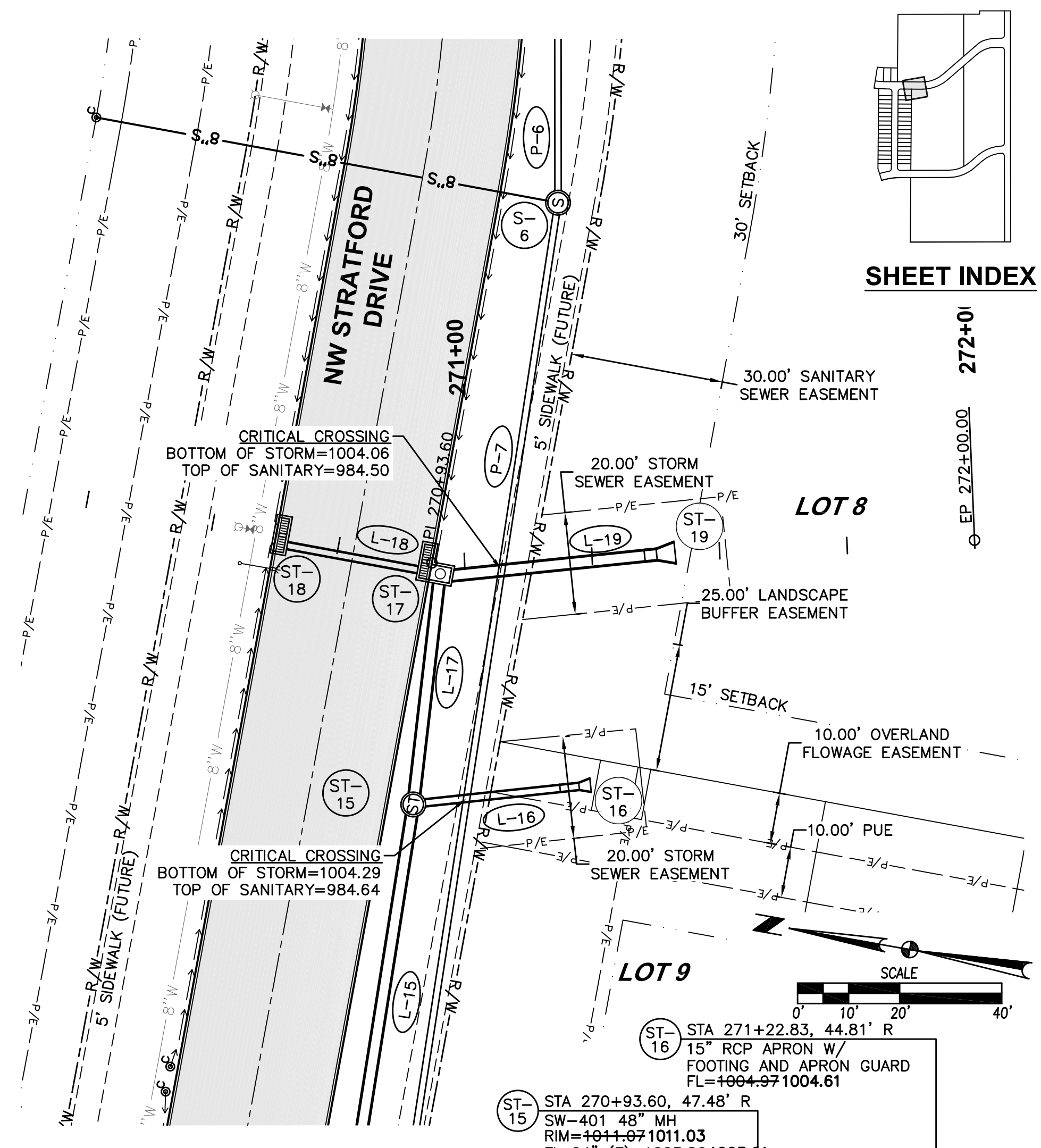
CIVIL DESIGN ADVANTAGE

ENGINEER: EKO

EI: GH

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

REVISIONS
DATE
11/25/19
AS-BUILT SUBMITTAL
03/13/19
REVISED MAILBOX PADS
04/20/18
FINAL SUBMITTAL
04/17/18
FIFTH SUBMITTAL
04/02/18
FOURTH SUBMITTAL
01/31/18
THIRD SUBMITTAL





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1709.538

STRATFORD CROSSING PLAT 1

STORM SEWER PLAN AND PROFILE

WAUKEE, IOWA



CIVIL DESIGN ADVANTAGE

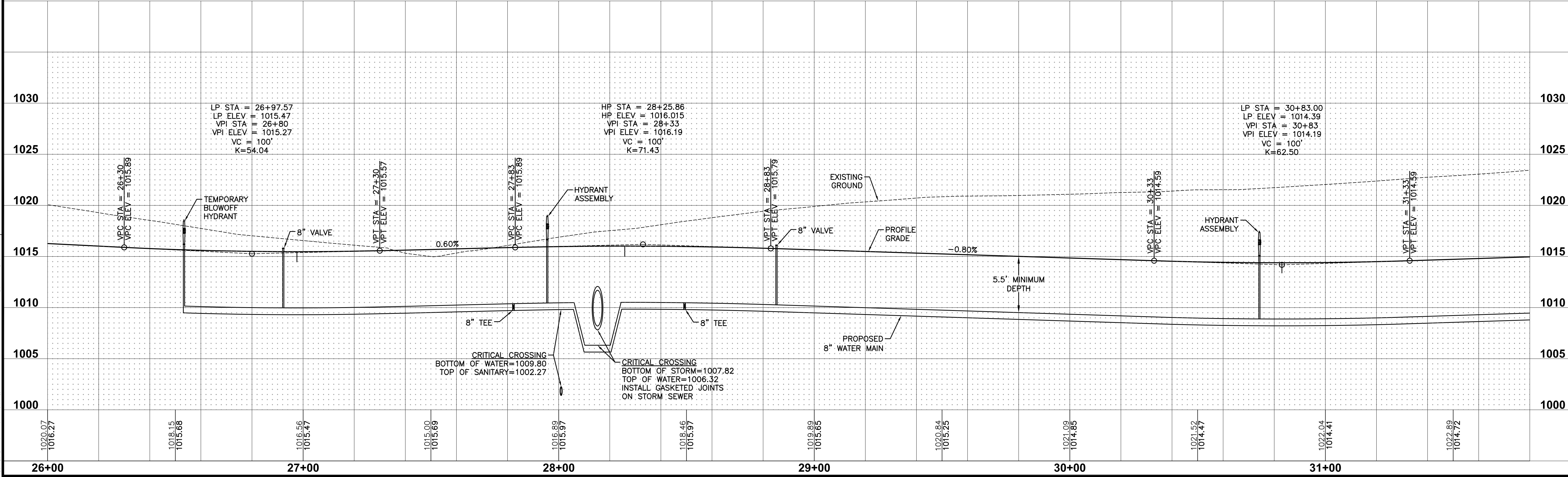
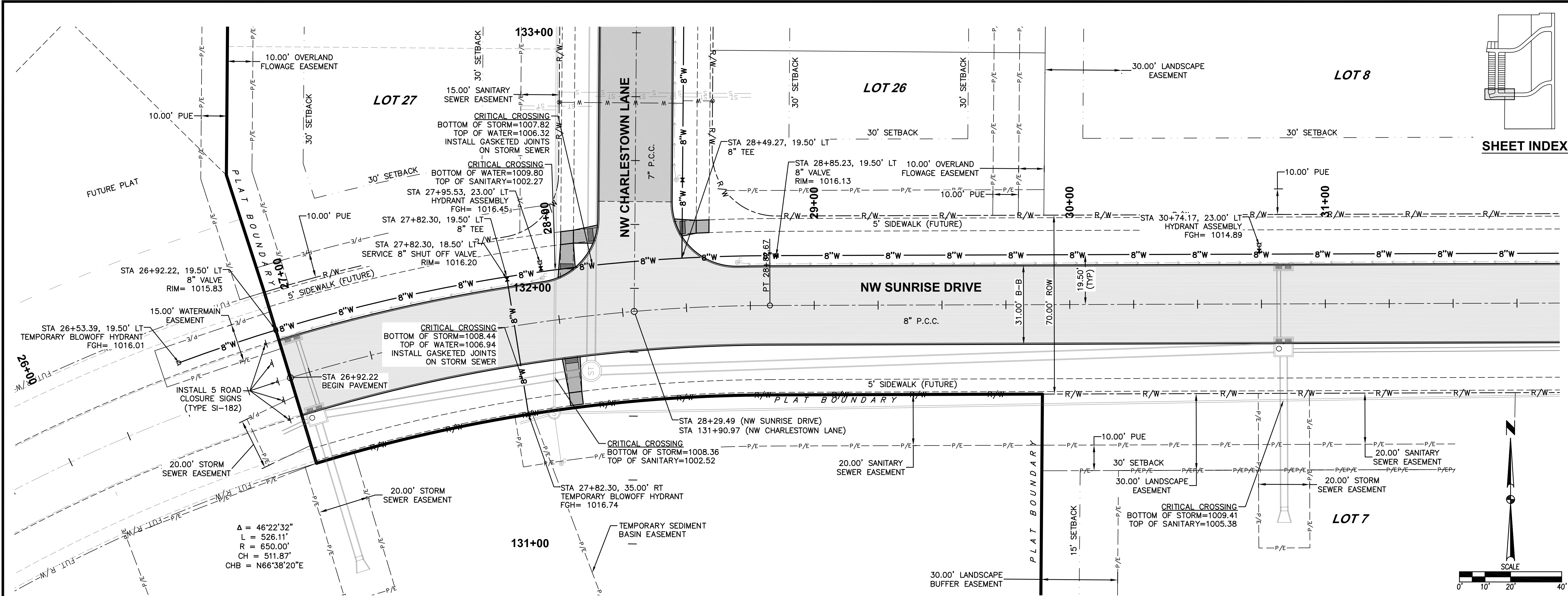
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

ENGINEER: EKO EI: GH

REVISIONS

	DATE
AS-BUILT SUBMITTAL	11/25/19
REVISED MAILBOX PADS	03/13/19
FINAL SUBMITTAL	04/20/18
FIFTH SUBMITTAL	04/17/18
FOURTH SUBMITTAL	04/02/18
THIRD SUBMITTAL	01/31/18

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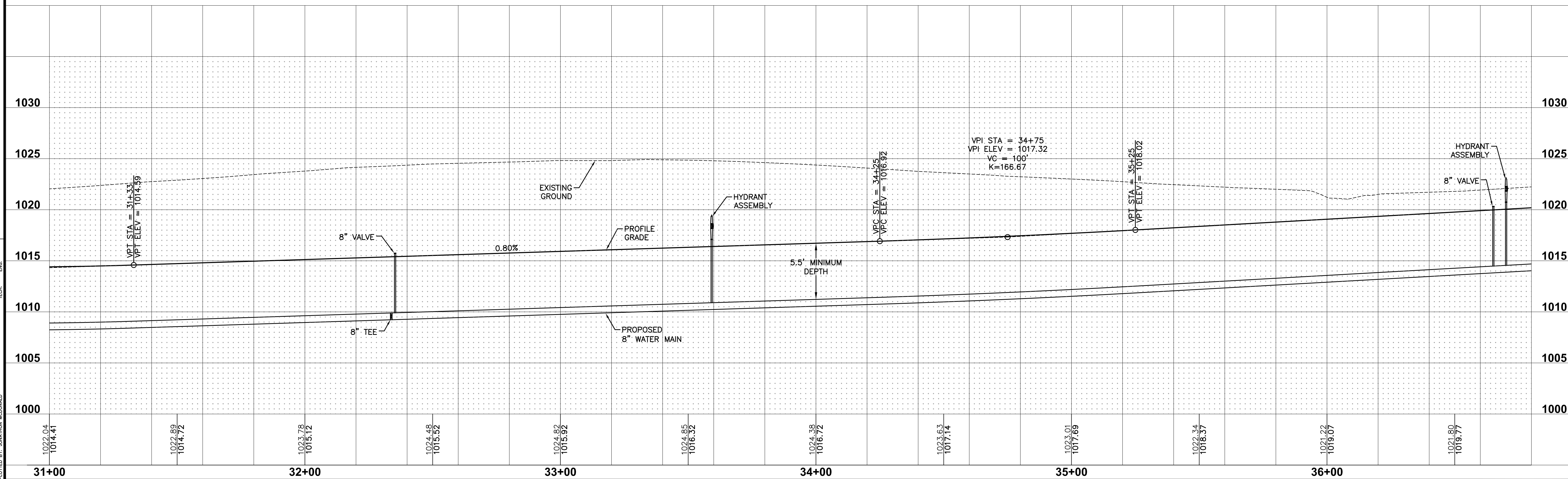
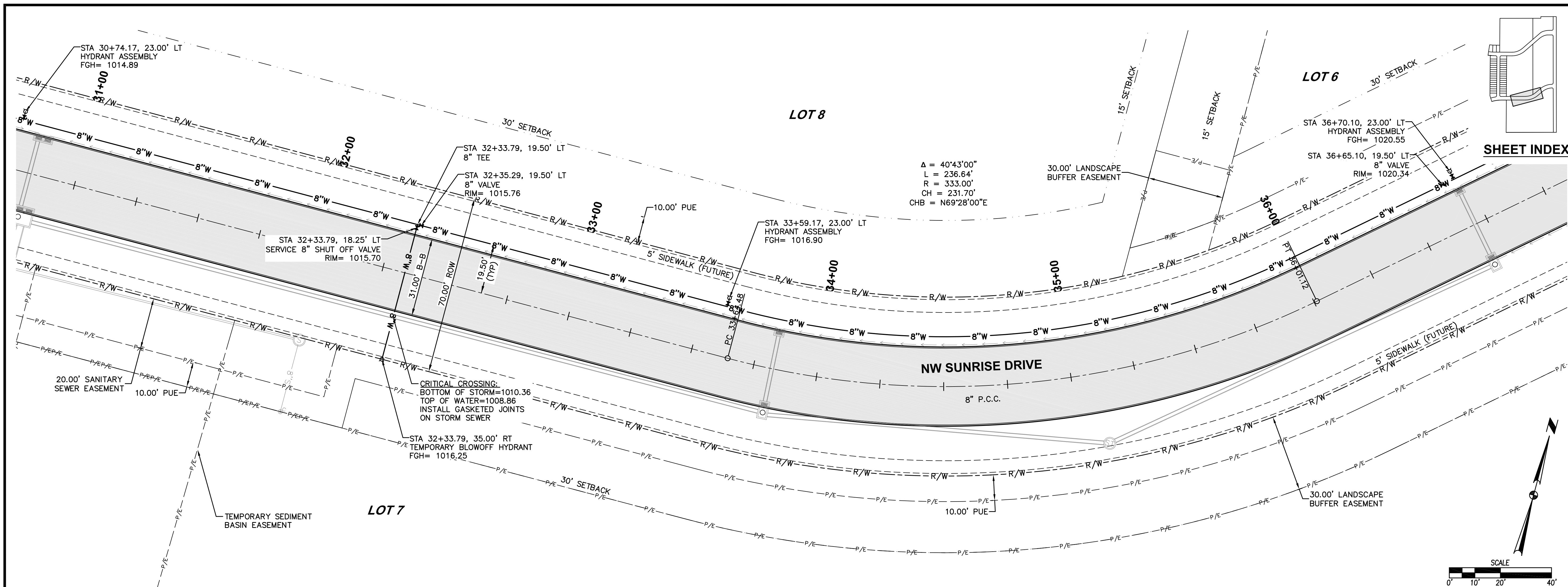


DATE: 11/25/19
AS-BUILT SUBMITTAL
REVISED MAILBOX PADS
FINAL SUBMITTAL
FIFTH SUBMITTAL
FOURTH SUBMITTAL
THIRD SUBMITTAL

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO
EII: GH

CIVIL DESIGN ADVANTAGE
WAUKEE, IOWA

STRATFORD CROSSING PLAT 1
WATERMAIN PLAN AND PROFILE
29/41
1709.538





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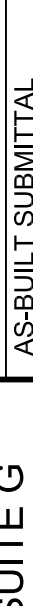
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1709.538

STRATFORD CROSSING PLAT 1

WATERMAIN PLAN AND PROFILE

WAUKEE, IOWA



CIVIL DESIGN ADVANTAGE

3405 S.E. CROSSROADS DRIVE, SUITE G

GRIMES, IOWA 50111

PHONE: (515) 369-4400 FAX: (515) 369-4410

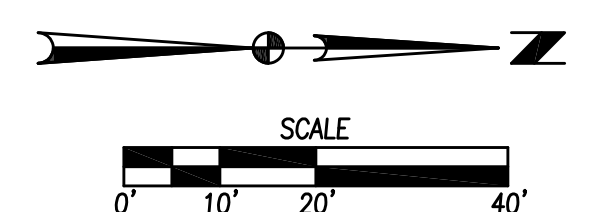
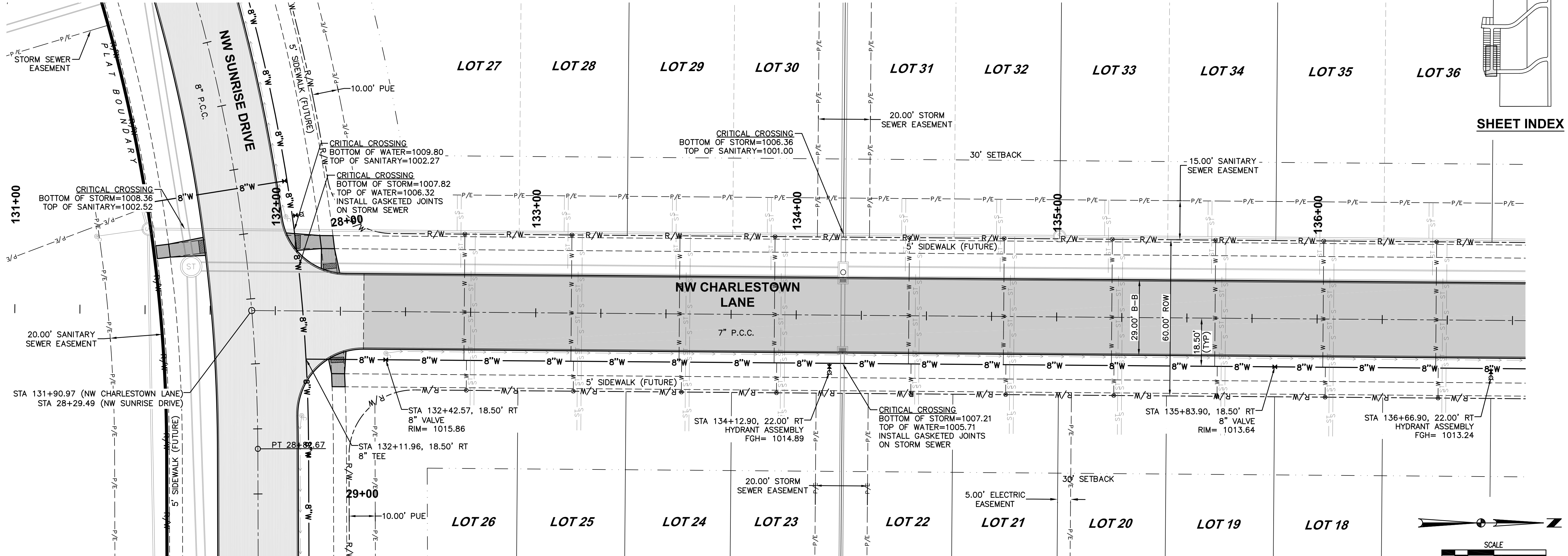
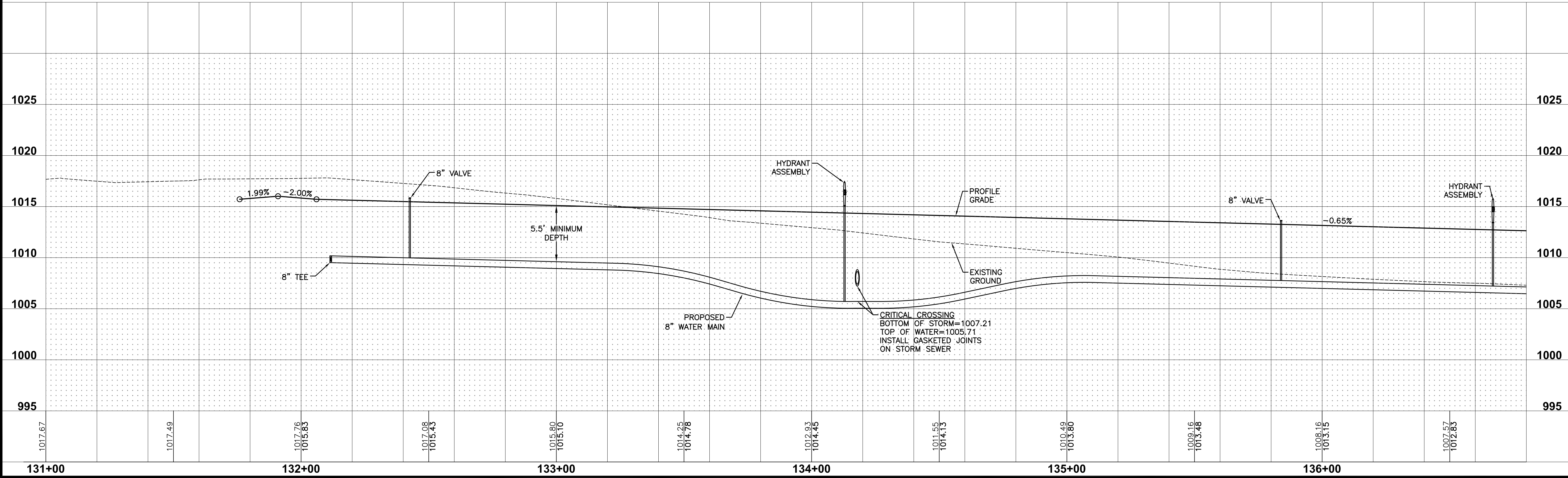
ENGINEER: EKO

EI: GH

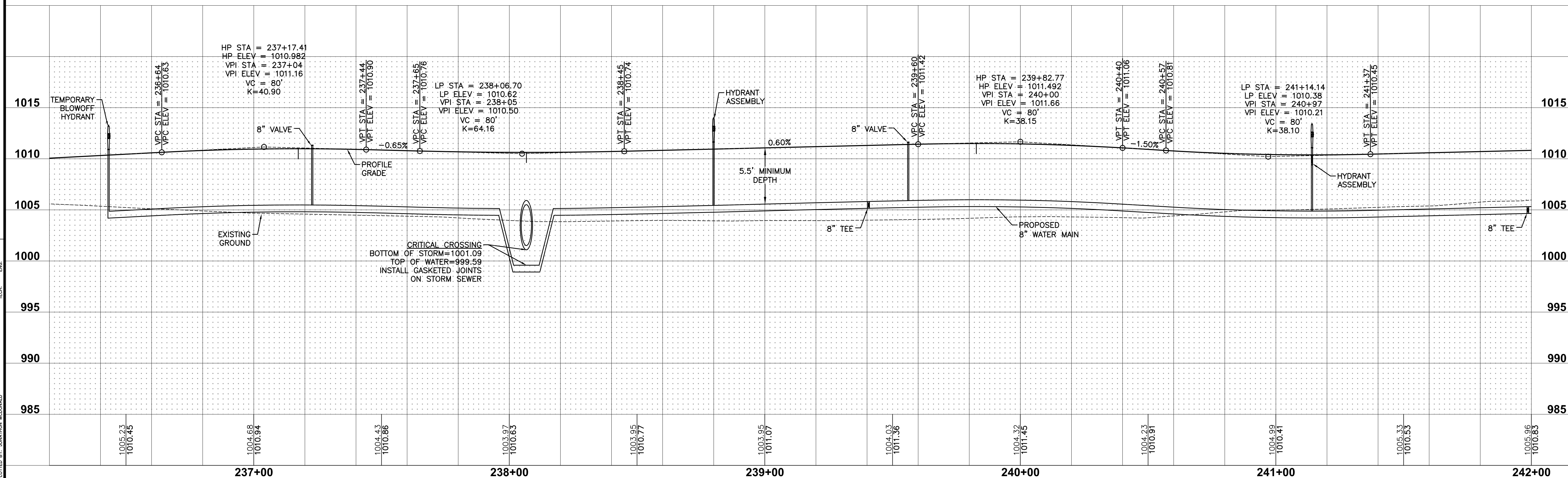
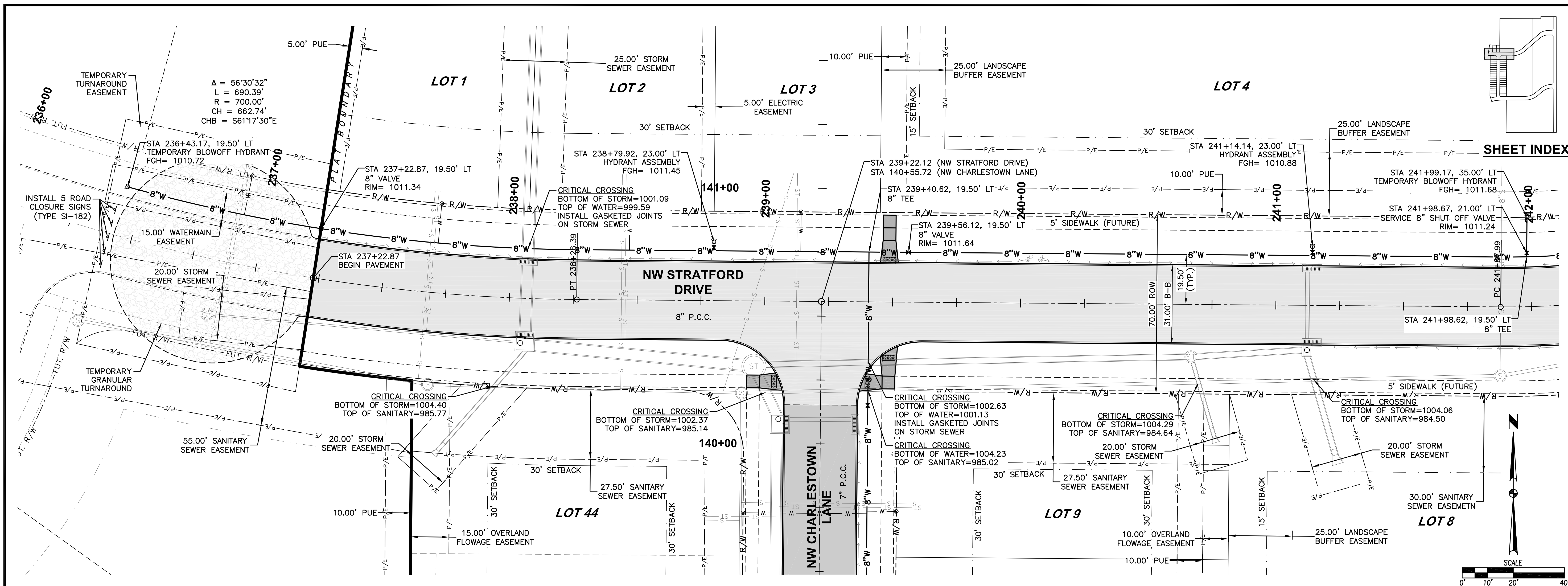
REVISIONS

AS-BUILT SUBMITTAL	DATE
REVISED MAILBOX PADS	01/25/19
FINAL SUBMITTAL	03/13/19
FIFTH SUBMITTAL	04/20/18
FOURTH SUBMITTAL	04/17/18
THIRD SUBMITTAL	04/02/18
	01/31/18

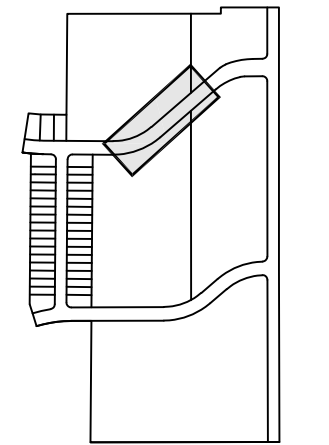
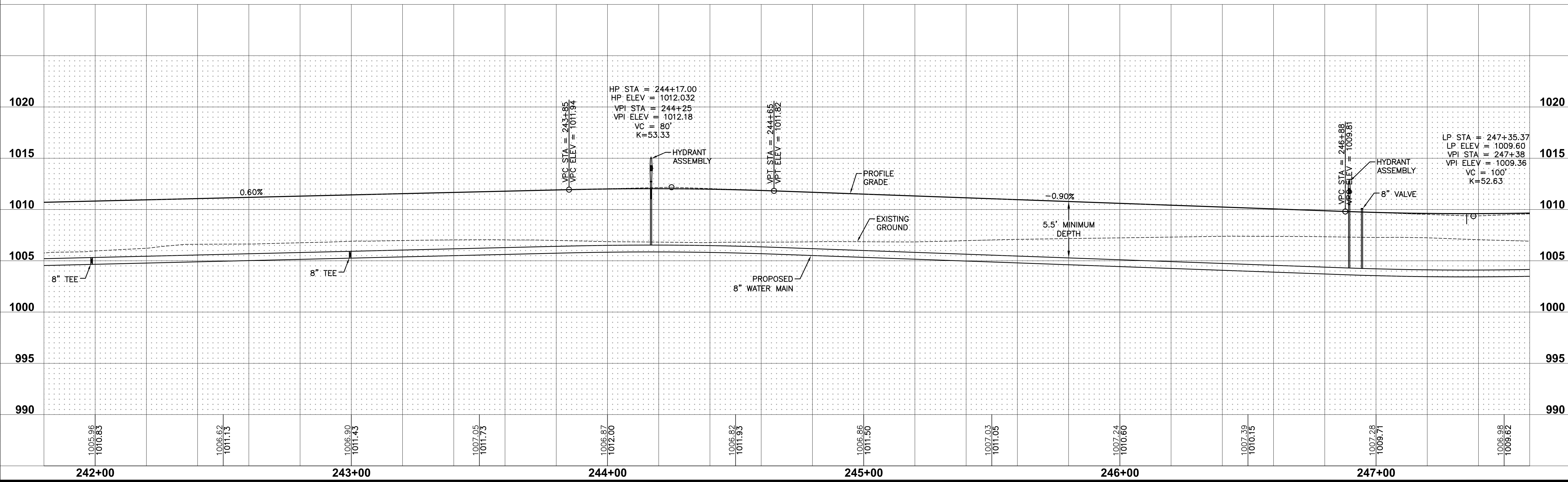
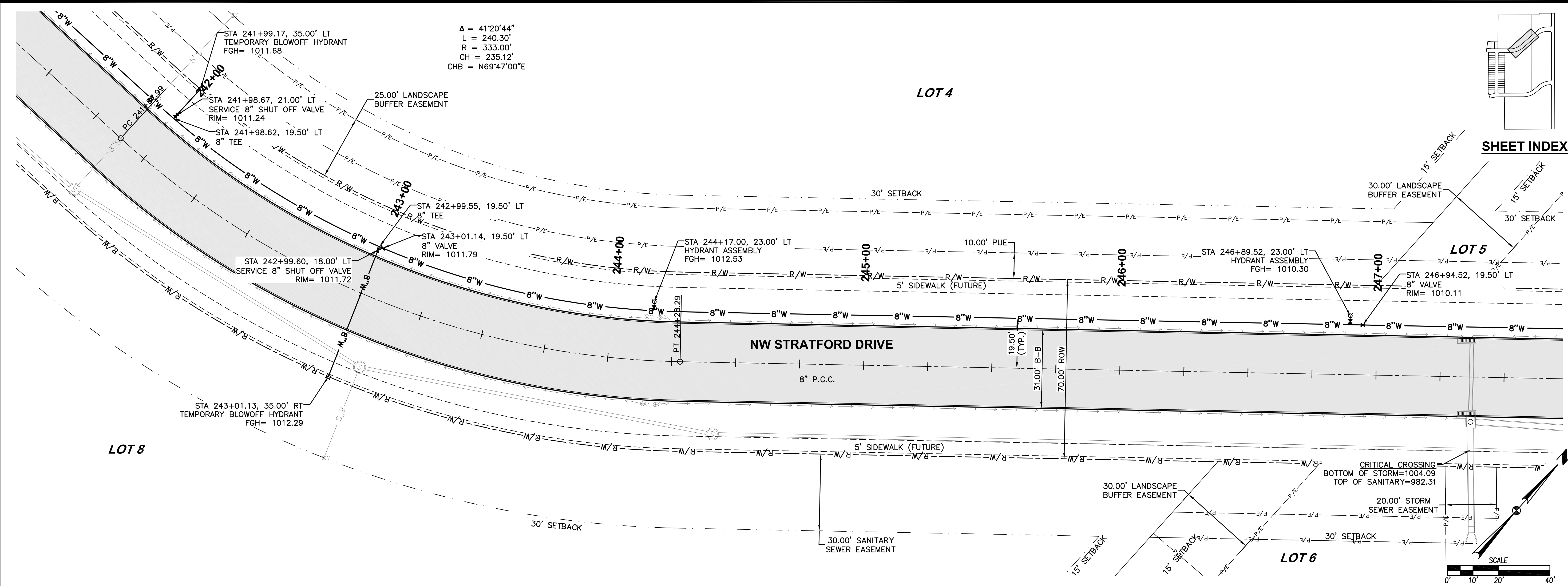
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PLOTTER: HP DesignJet 5000C



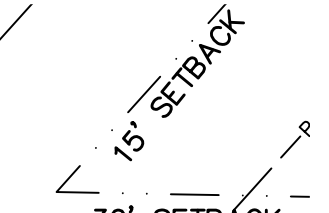
SHEET INDEX



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PLOTTER: HP DesignJet 5000C PLOTTED BY: JAWAHAN MISHRA



SHEET INDEX



DATE	
11/25/19	AS-BUILT SUBMITTAL
03/13/19	REVISED MAILBOX PADS
04/20/18	FINAL SUBMITTAL
04/17/18	FIFTH SUBMITTAL
04/02/18	FOURTH SUBMITTAL
01/31/18	THIRD SUBMITTAL

3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

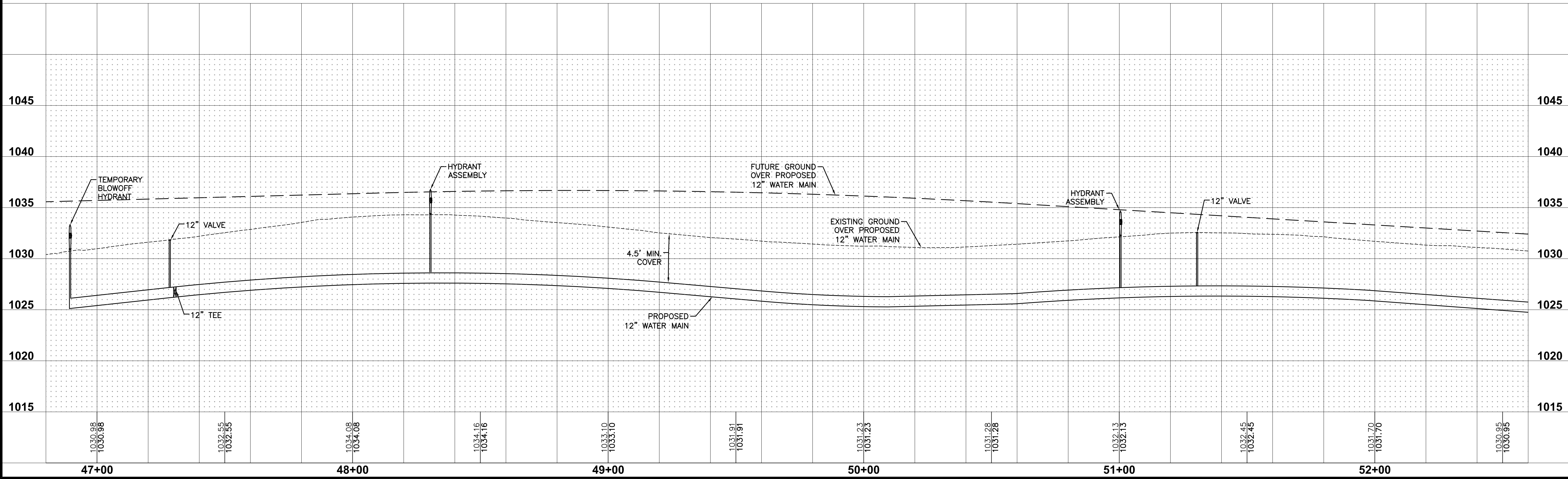
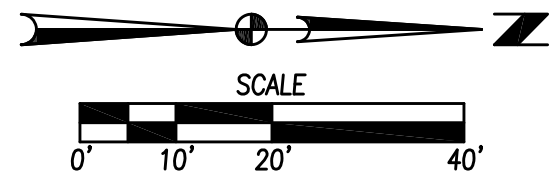
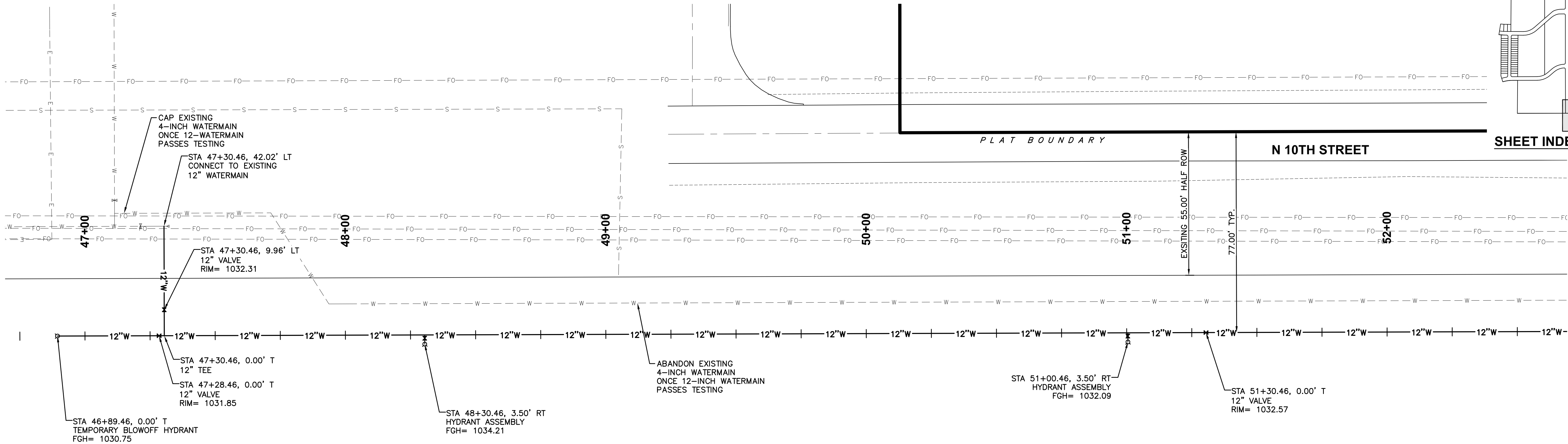
ENGINEER: EKO EII: GH

35/41
1709.538

STRATFORD CROSSING PLAT 1
WATERMAIN PLAN AND PROFILE

CIVIL DESIGN ADVANTAGE
WAUKEE, IOWA

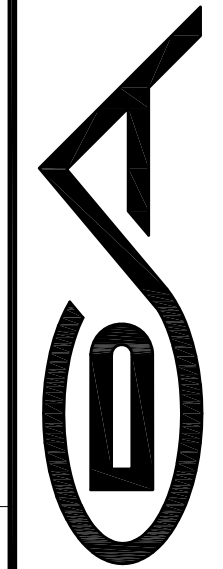
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STRATFORD CROSSING PLAT 1

WATERMAIN PLAN AND PROFILE

37/41
1709.538



WAUKEE, IOWA

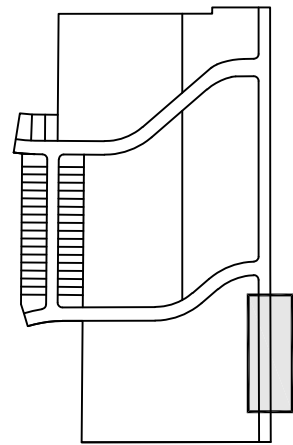
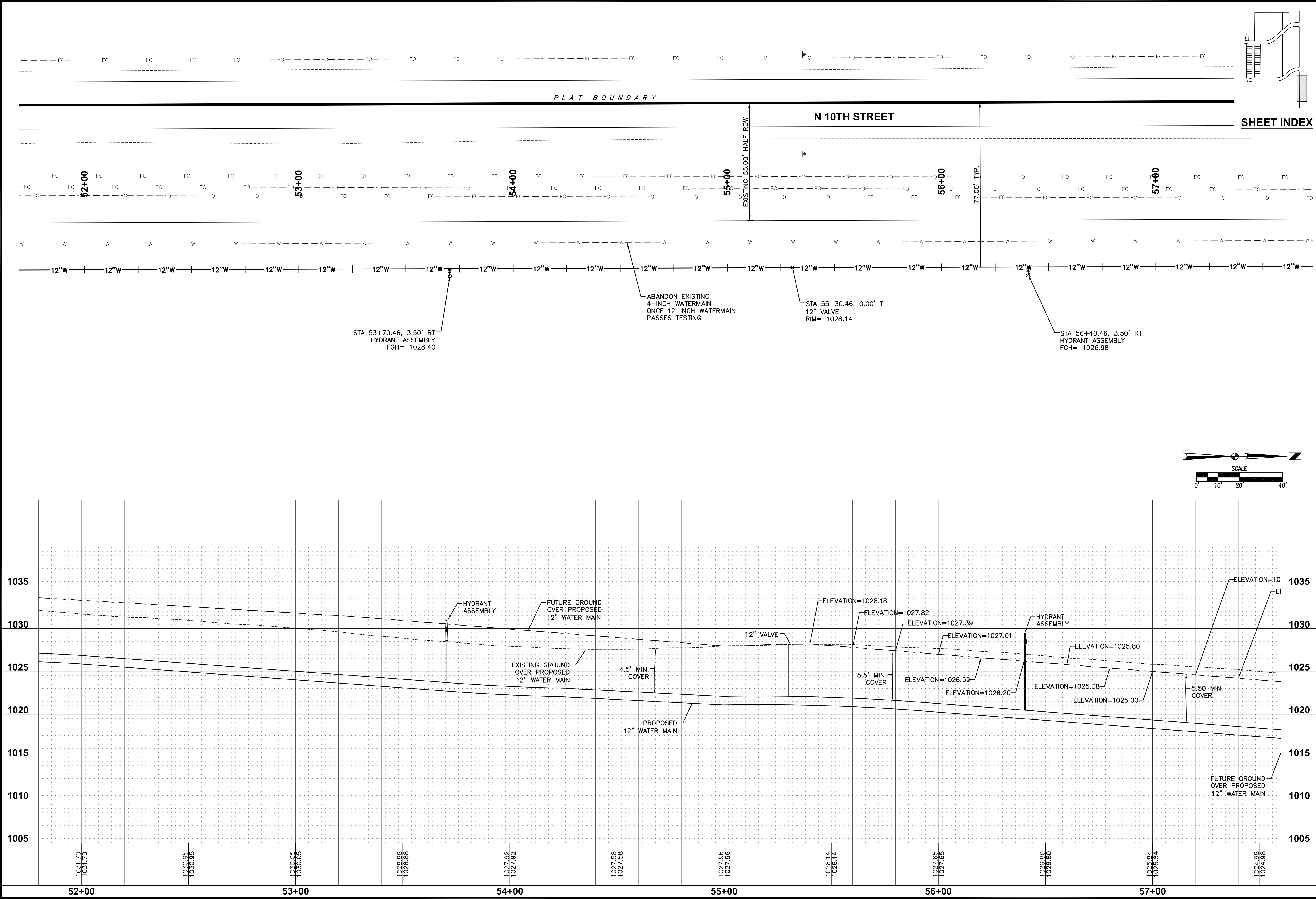
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410
ENGINEER: EKO
EI: GH

REVISIONS

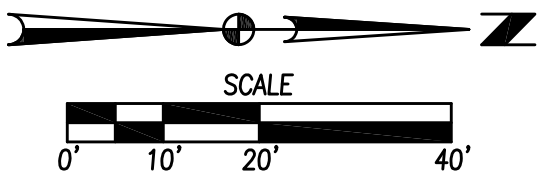
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11/25/19	AS-BUILT SUBMITTAL
03/13/19	REVISED MAILBOX PADS
04/20/18	FINAL SUBMITTAL
04/17/18	FIFTH SUBMITTAL
04/02/18	FOURTH SUBMITTAL
01/31/18	THIRD SUBMITTAL

SHEET INDEX

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PLOT DATE: 11/25/2019 12:42 PM PLOTTED BY: JAWANTON MCDONALD



SHEET INDEX



DATE	11/25/19
AS-BUILT SUBMITTAL	03/13/19
REVISED MAILBOX PADS	04/20/18
FINAL SUBMITTAL	04/17/18
FIFTH SUBMITTAL	04/02/18
FOURTH SUBMITTAL	03/13/18
THIRD SUBMITTAL	

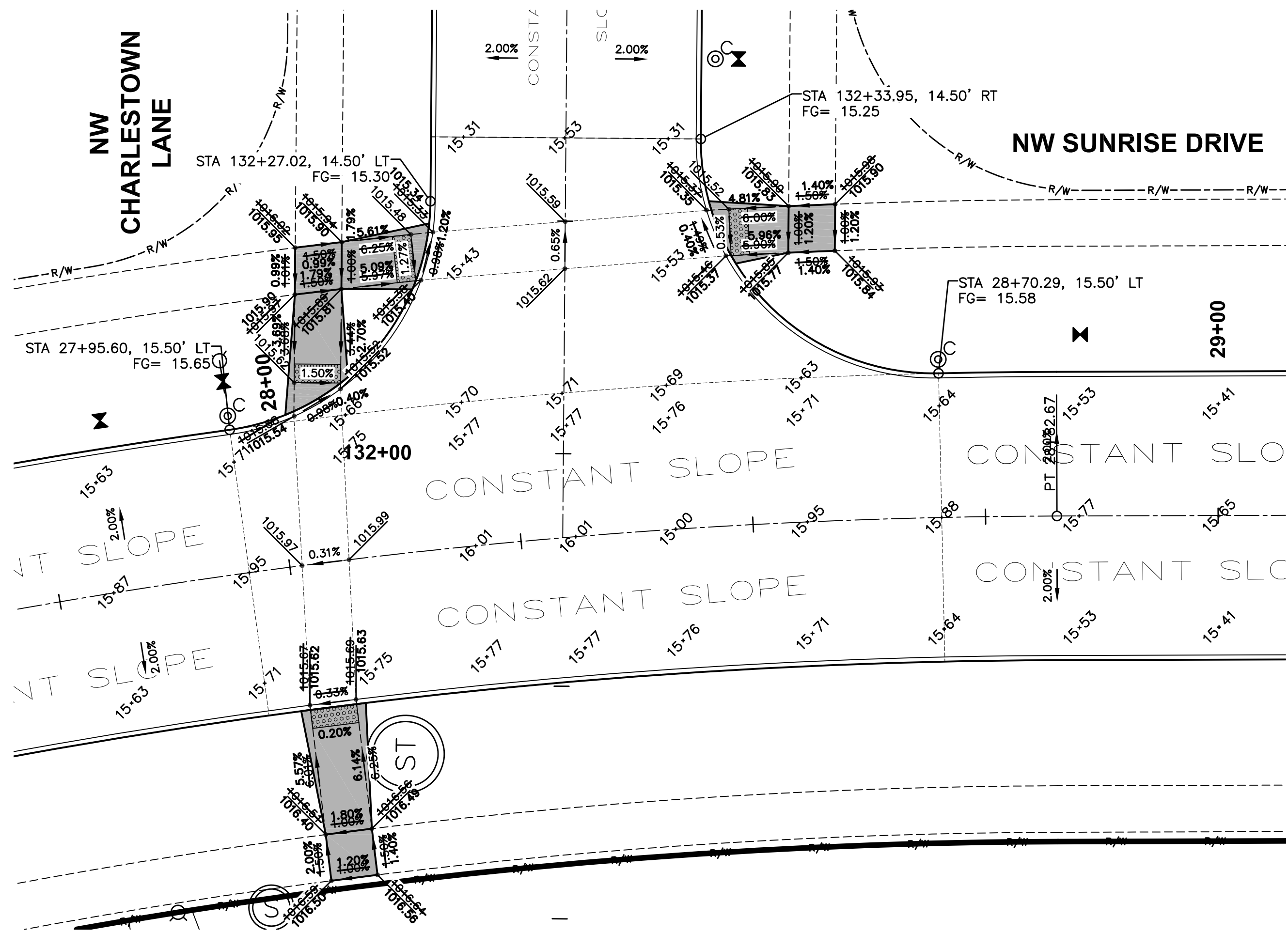
3405 S.E. CROSSROADS DRIVE, SUITE G
GRIMES, IOWA 50111
PHONE: (515) 369-4400 FAX: (515) 369-4410

ENGINEER: EKO
Ei: GH

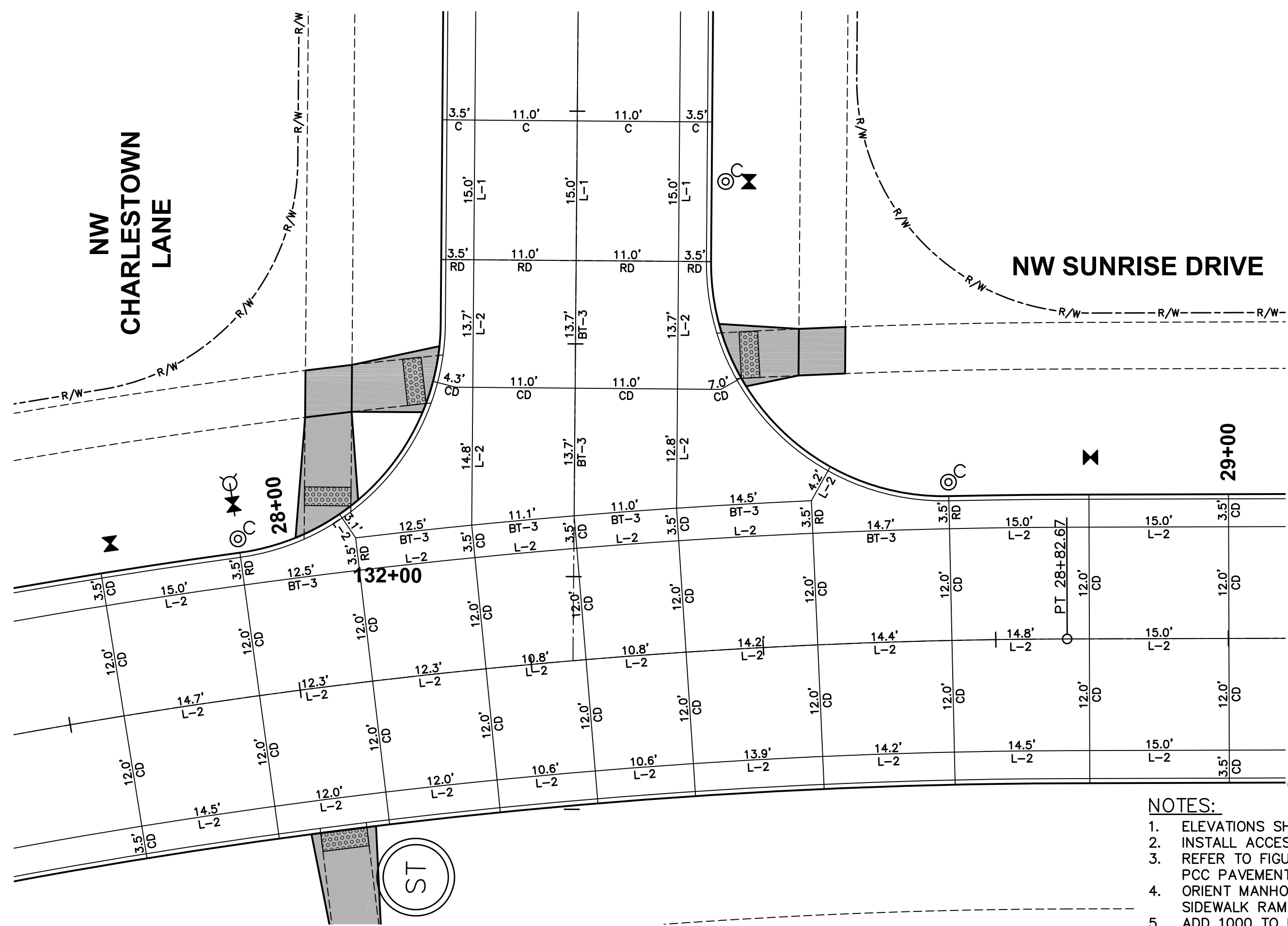
WAUKEE, IOWA

STRATFORD CROSSING PLAT 1
WATERMAIN PLAN AND PROFILE

38/41
1709.538



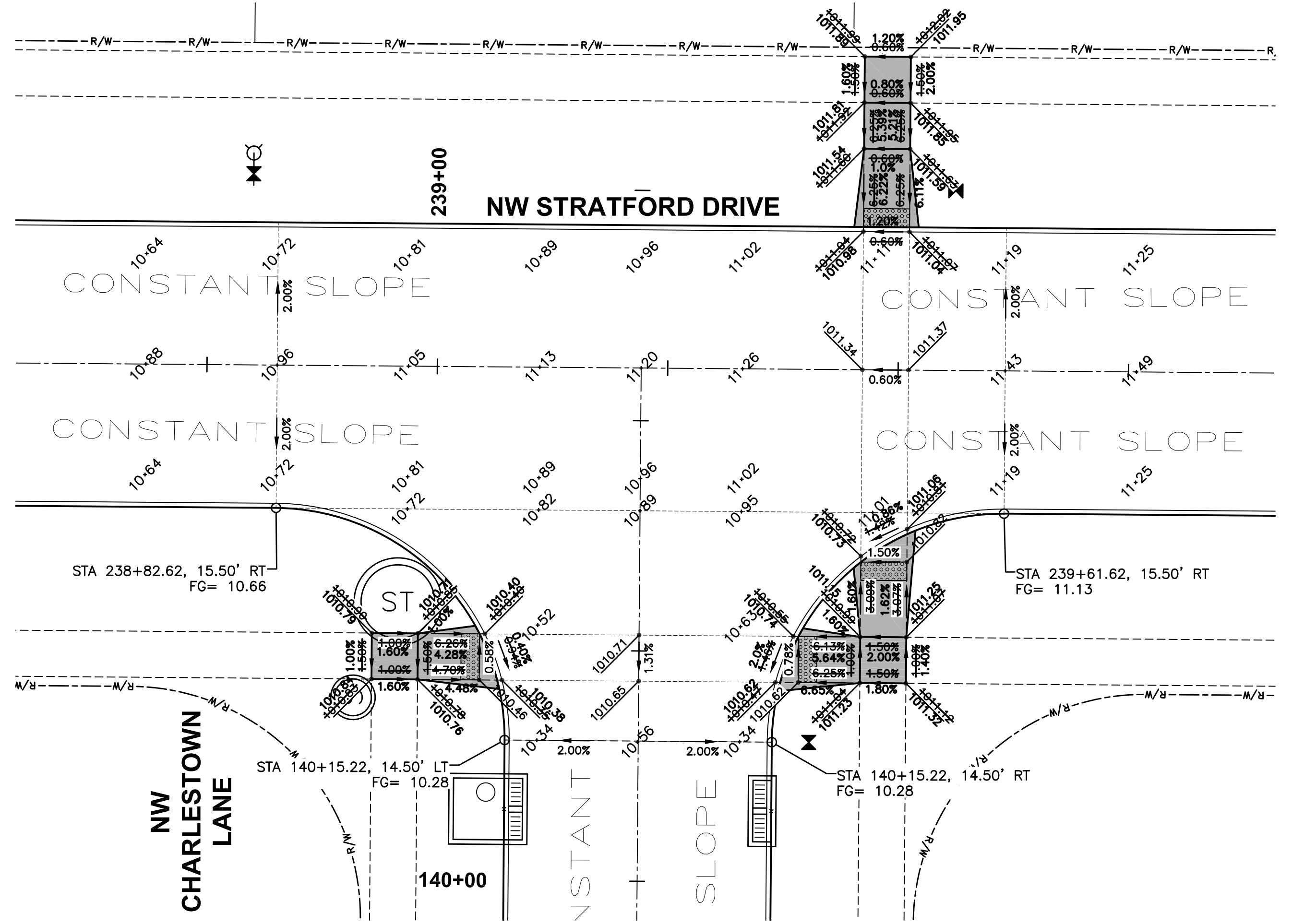
GEOMETRICS AND STAKING LAYOUT



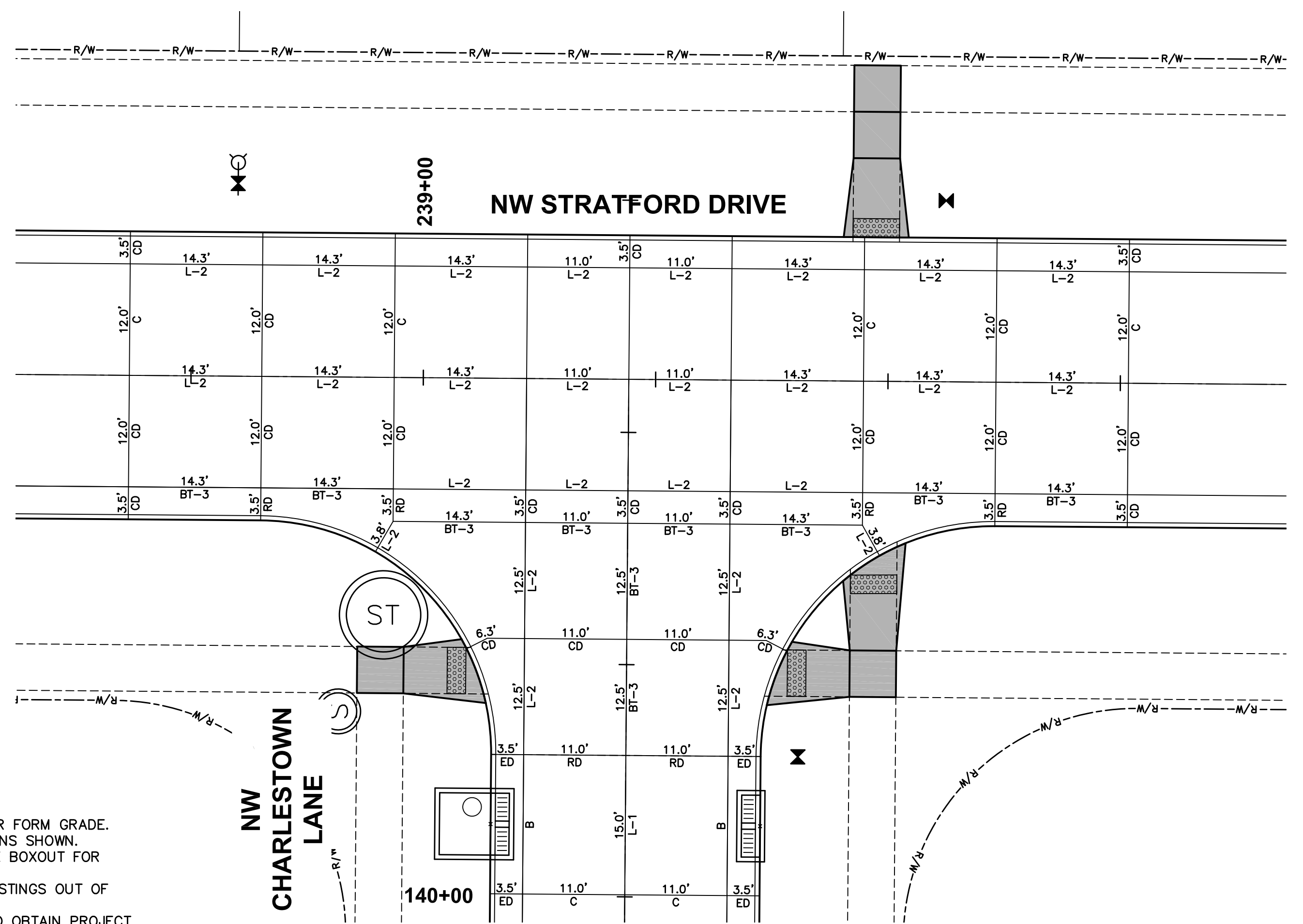
JOINTING LAYOUT

NOTES:

1. ELEVATIONS SHOWN ARE TOP OF SLAB AND/OR FORM GRADE.
2. INSTALL ACCESSIBLE CURB RAMPS AT LOCATIONS SHOWN.
3. REFER TO FIGURE 6010.514 FOR GRATE INTAKE BOXOUT FOR PCC PAVEMENT DETAILS.
4. ORIENT MANHOLE CONE SECTIONS TO KEEP CASTINGS OUT OF SIDEWALK RAMPS.
5. ADD 1000 TO FOUR DIGIT SPOT ELEVATIONS TO OBTAIN PROJECT DATUM.

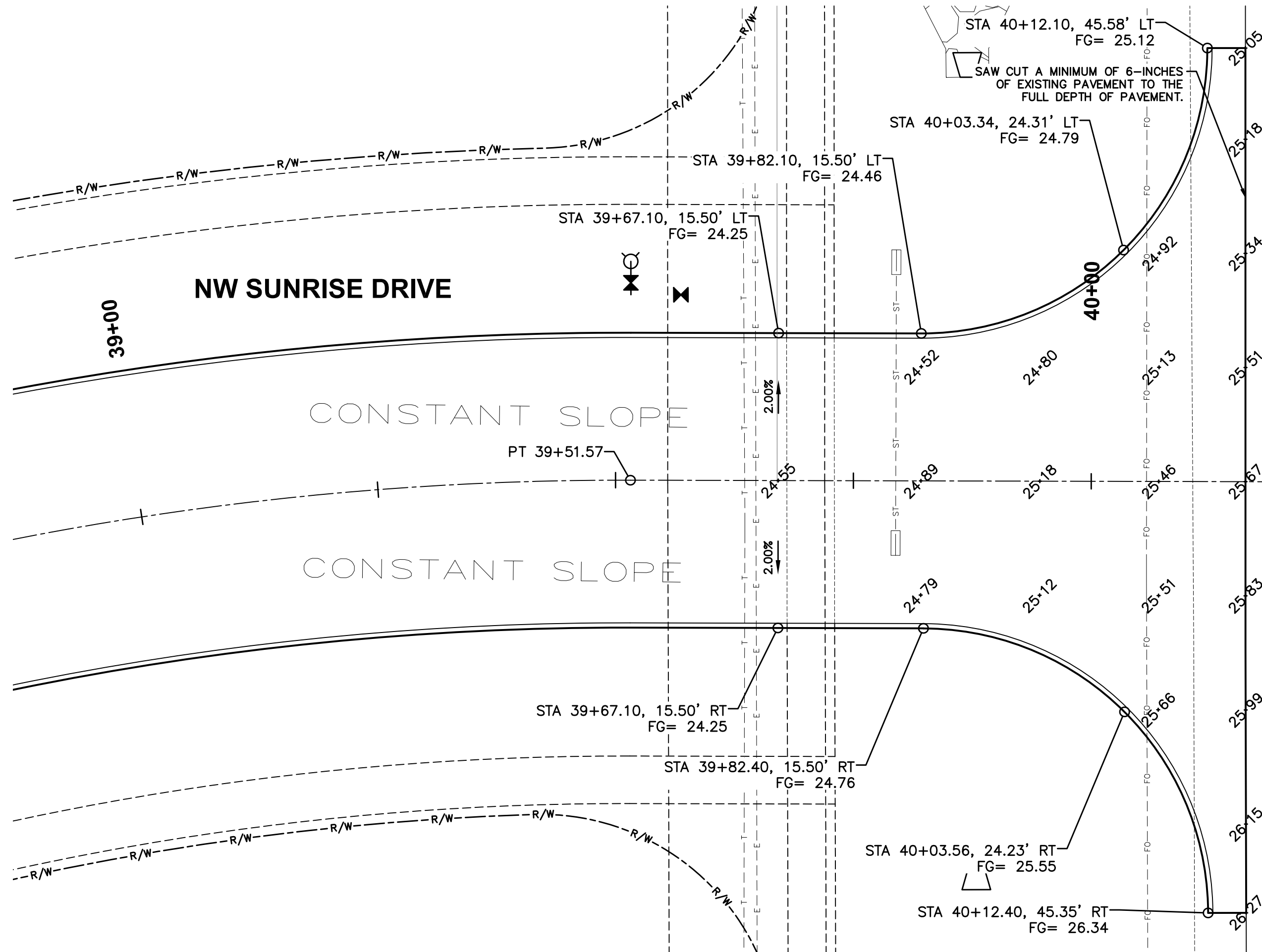


GEOMETRICS AND STAKING LAYOUT

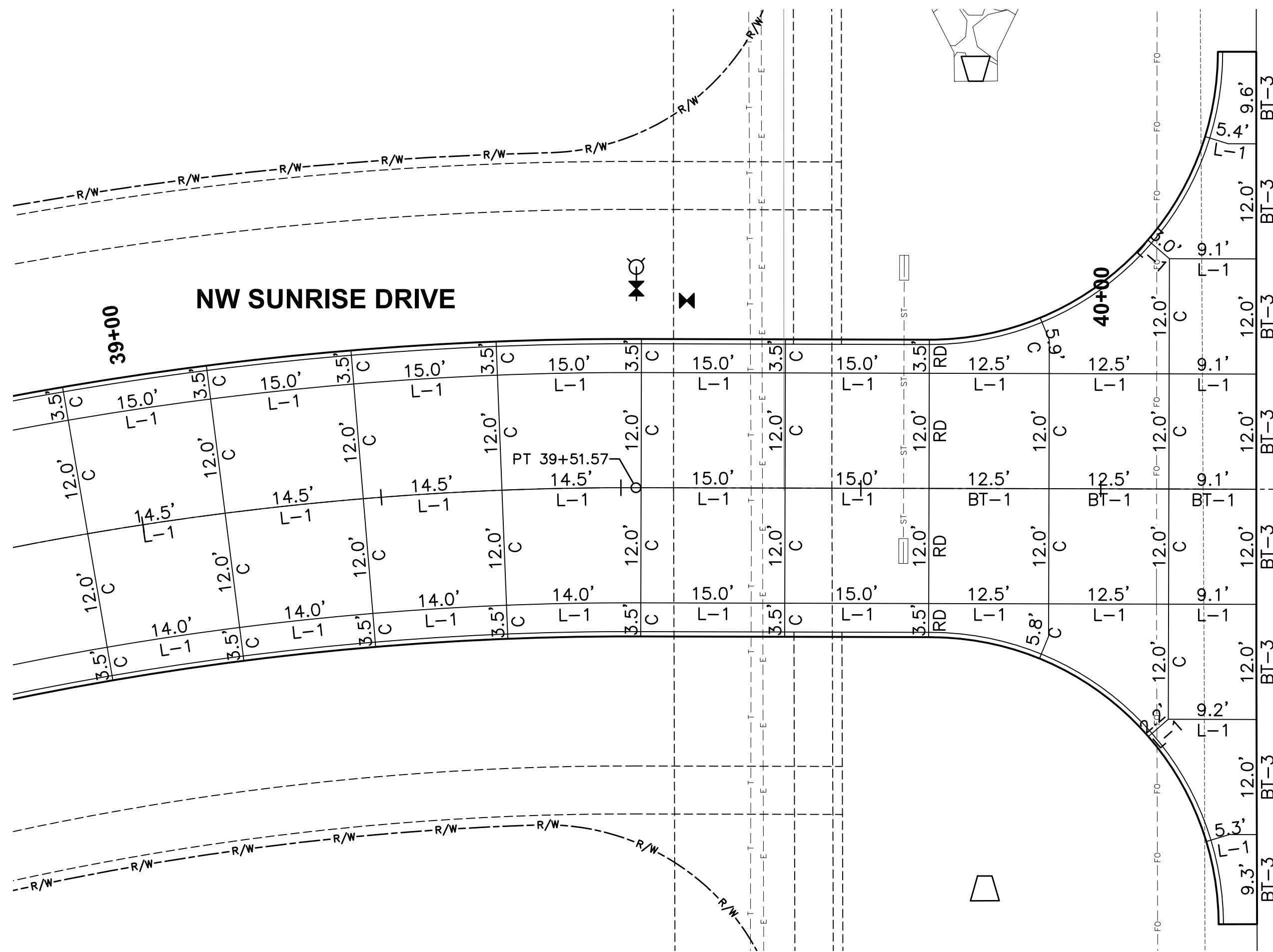


JOINTING LAYOUT

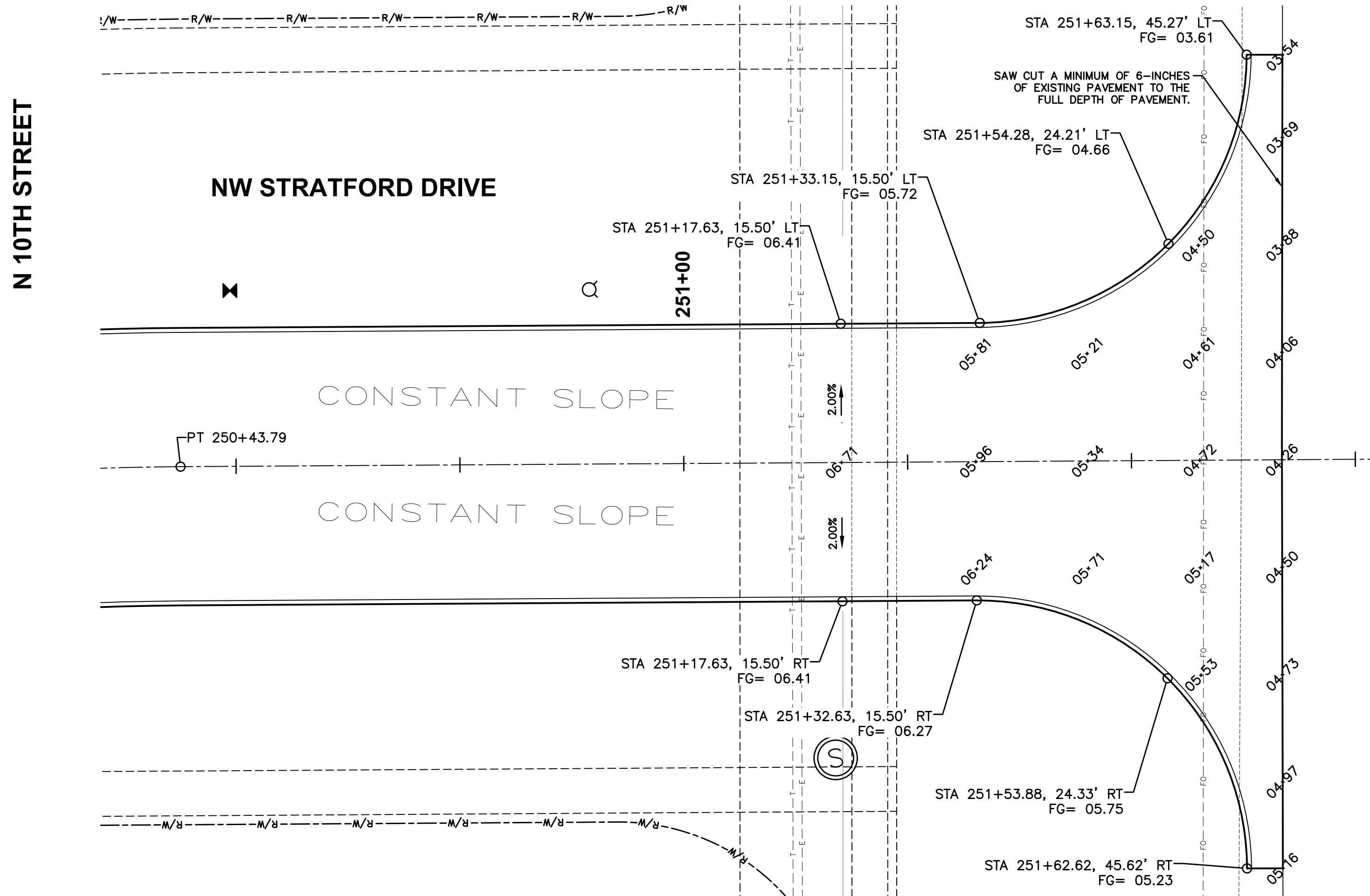
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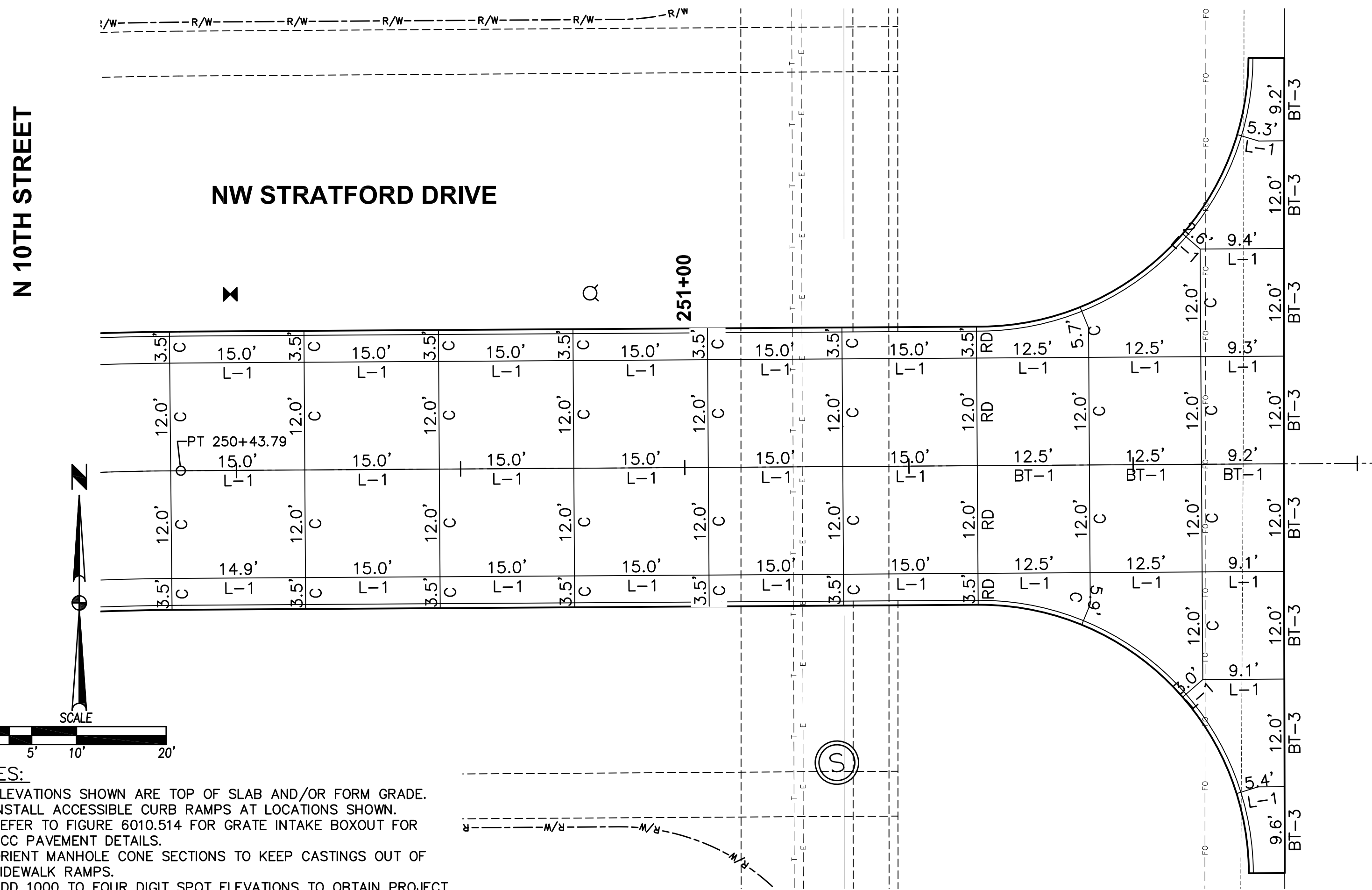
GEOMETRICS AND STAKING LAYOUT



JOINTING LAYOUT



GEOMETRICS AND STAKING LAYOUT



JOINTING LAYOUT

NOTES:

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