CITY OF RAYMORE
100 Municipal Circle · Raymore, MO. 64083
Phone · 816-892-3045 · Fax · 816-892-3093

ADDENDUM NO. 2
Ward Road Project
Project #22-360-201

All plan holders are hereby notified and agree by signature below, that the proposal includes consideration of the following changes, amendments, and/or clarifications and costs associated with these changes and are included in the proposal.

Addendum No. 2 - Question and clarification.

1. Question: The existing R1-1 STOP signs are called for to be removed and replaced, but it doesn't mention anything about the street name blades. Are they to be reused or replaced?

Response: Street name signs are to be removed, set aside and reused.

2. Question: The plans don't show any sizes for the signs to be installed. I can assume the sizes (30"x30" R1-1, but 36"x36" is also common) Is there any way to get sizes for all of the signs?

Response: A table is attached detailing the specific sign sizes

3. Question: Is Raymore 1 ¾" Telespar? It doesn't list out what kind of posts are being requested for all of the new signs

Response: Yes, 1-¾" Telespar is to be used on this project.

4. Question: Will MoDOT pavement smoothness per Section 610 apply to this project?

Response: Section 610 will not apply to this project.

5. Question: Will any kind of Asphalt Cement indexing be allowed on the project?

Response: There is no Asphalt Cement Indexing on this project.

6. Question: Does the bid quantity for the 10" Asphalt base include the asphalt under the curb and gutter?

Response: Yes

7. Question: Does the bid quantity for the 9" Cement Stabilization include the area under the curb and gutter?

Response: Yes

8. Question: Is the 7" Asphalt base bid at the side streets? 7" asphalt base is not shown on any of the typical sections in the plans.

Response: The side roads are to be 7" base and 2" surface.

9. Question: The 4” Median Pavement that is called out, is this to be normal KCMMB4K Concrete, or is to be Colored & Stamped along with being KCMMB4K? Please clarify, and if Colored & Stamped, please provide specs/details as to what color and stamp pattern.

Response: Color is to be selected by the owner. Stamp pattern will be Running Bond.

10. Question: Will the 2" APWA Type 3-01 surface asphalt mix need to be virgin or can it be recycled, just as the spec for the base course allows for a recycled mix?

Response: All surface asphalt shall be Virgin Asphalt.

11. Question: Can a detail be provided for the crosspan called out at E. Gore Rd. on sheet 45?

Response: The crosspan should match the details shown on City of Raymore Standard Drawing ST-9.

12. Question: Should the crosspan on sheet 45 have its own bid item or will it be subsidiary to an existing bid item?

Response: Subsidiary to the “Curb & Gutter (Type CG-1)” pay item.

13. Question: Storm boxes B24 and H1 are called out as different sizes in the road plan and profile than what they are called out as in the storm plan and profile. Please clarify which sizing is correct. (B24 is 5'x5' on sheet 22 and 4'x4' on sheet 39 and H1 is 4'x4' on sheet 28 and 5'x4' on sheet 43)

Response: See revised plan sheets attached.

14. Question: Should driveways be stabilized or can a typical section for driveways be provided?

Response: Driveways will not be stabilized and should be constructed as shown on KC Metro APWA Standard Drawing D-1, except as shown elsewhere in the plans or special provisions. Do you think that will be sufficient or should we add a driveway detail to the plans?

15. Question: The summary of quantities/bid form lists 870 LF of waterline relocation and 1 service reconnection, but this does not line up at all with the waterline plans provided. Should we price the waterline per the Ward Road Waterline Relocation plan by Lamp Rynearson?

Response: The waterline is a separate project. Should the waterline project not move forward, we are requesting a bid to relocate the waterline. The “Water Service Relocation” pay item is necessary to relocate the water meter shown on Sheet 19 at approximately Sta. 167+75 Rt as it is in conflict with the relocated residential driveway.

16. Question: Is the entire existing waterline to be abandoned in place after the new waterline has been installed and tested?

Response: Please refer questions to Chad Harrington at Larkin (Chad.Harrington@lamprynearson.com)

17. Question: What type of material does the pavement markings need to be?

Response: Epoxy Paint

18. Question: Is the parking lot shown on Sheet 83 of 166 included in this project as well?

Response: Yes

19. Question: Is there a CAD file that can be made available for this project?

Response: CAD file will be made available to the successful bidder upon contract letting.

20. Updated Bid Proposal Form E - See Attached.

Additional Changes to Specifications

Section 7.A.ii - Clarification that this will include all residents in the Ward Park Place, Chateau Place, and Alexander Creek subdivisions.

Section 8.C - Remove the word "mobilization" from the table under Construction Staking and Survey Controls.

Section 8.N and O - One set of tests will need to be done each day that concrete is placed.

Section 8.T.1 - The seed shall be Mesic Prairie Mix or approved Equal.

Page 150 - Form E - Remove "not to exceed 5%" from Mobilization line item

Any other questions regarding this proposal shall be submitted to Kim Quade, CPPB by email at kquade@raymore.com or by phone at (816) 892-3045. There will be no questions allowed after January 14, 2022 at 5 p.m.

I hereby certify that the above have been considered and associated costs have been included in this bid.

Company Name: _____

By: _____

Title: _____

Address: _____

City, State, Zip: _____

Date: _____Phone: _____

Signature of Bidder: _____

ADDENDUM MUST BE SUBMITTED WITH BID

Ward Road Signing Table

Sign Legend	MUTCD Sign Designation	Size (inches)	Quantity (EA)
Stop	R1-1	30x30	7
Yield Here to Peds	R1-5	36x36	4
Speed Limit	R2-1	24x30	3
Keep Right	R4-7	24x30	4
No Trucks	R5-2	24x24	4
Push Button To Turn On Warning Lights	R10-25	9x12	4
Pedestrian	W11-2	30x30	4
Downward Diagonal Arrow (Plaque)	W16-7P	24x12	4
Type 1 Object Marker	OM1-1	18x18	4
Handicapped	D9-6	24x24	2
Van Accessible (plaque)	D9-6P	18x9	2
$50 TO $300 FINE	SP-1	18x9	2

REVISED BID PROPOSAL FORM E – Project No. 22-360-201

Ward Road Construction Project

Base Bid

Bid Items	Units	Estimated Quantities	$/Units	Total
Mobilization, Bonds and Insurance - not to exceed 5%	LS	1		$
Construction Staking	LS	1		$
Site Preparation	LS	1		$
Class 1 Excavation	CY	78		$
Unclassified Excavation	CY	14,825		$
Embankment	CY	23,053		$
Removal Of Bridges	LS	1		$
Bridge Approach Slab (Minor Road)	SY	206		$
Galvanized Structural Steel Piles (12")	LF	390		$
Pre-Bore For Piling	LF	310		$
Pile Point Reinforcement	EA	20		$
Dynamic Pile Testing	EA	2		$
Class B-1 Concrete (Substructure)	CY	64		$
Class B-2 Concrete (Superstructure Solid Slab)	CY	142		$
Type D Barrier	LF	205		$
Pedestrian Fence (72") (Structures)	LF	203		$
Reinforcing Steel (Epoxy Coated)	LB	40,015		$
Galvanized Fabricated Structural Carbon Steel (Misc.)	LB	1,660		$
Vertical Drain At End Bents	EA	2		$
Type 2 Curb Inlet (4'x4')	EA	63		$
Type 2 Curb Inlet (5'x4')	EA	7		$
Modified Type 2 Curb Inlet (4'x4')	EA	6		$
Modified Type 2 Curb Inlet (5'x4')	EA	1		$
Modified Type 2 Curb Inlet (5'x5')	EA	1		$
Junction Box (4'x4')	EA	3		$

Junction Box (7'x4')	EA	1		$
Storm Sewer (15") (HDPE)	LF	5,510		$
Storm Sewer (18") (HDPE)	LF	568		$
Storm Sewer (24") (HDPE)	LF	651		$
Storm Sewer (30") (HDPE)	LF	506		$
Storm Sewer (19" X 30") (EHDPE)	LF	121		$
Storm Sewer (24" X 38") (EHDPE)	LF	22		$
Storm Sewer (30") (RCP)	LF	78		$
Storm Sewer (42") (RCP)	LF	76		$
Flared End Section (15") (RCP)	EA	1		$
Flared End Section (18") (RCP)	EA	2		$
Flared End Section (24") (RCP)	EA	2		$
Flared End Section (30") (RCP)	EA	4		$
Flared End Section (36") (RCP)	EA	2		$
Flared End Section (24" X 38") (RCP)	EA	1		$
Riprap (Light Stone) (18 Inch)	SY	175		$
Riprap (Heavy Stone) (30 Inch)	SY	861		$
2" Asphalt Concrete Surface Course (Type 3)	SY	32,866		$
10" Asphalt Concrete Base Course (Type 1)	SY	27,674		$
7" Asphalt Concrete Base Course (Type 1)	SY	1,388		$
4" Asphalt Concrete Base Course (Type 1)	SY	9,116		$
12" PCCP Concrete Pavement	SY	26		$
4" PCCP (Median Paving) With Base Rock	SY	66		$
6" Cement Stabilization	SY	9,007		$
9" Cement Stabilization	SY	27,674		$
Curb & Gutter (Type CG-1)	LF	13,675		$
Curb & Gutter (Type CG-1) (Dry)	LF	280		$
Concrete Sidewalk (4")	SY	1,390		$
Concrete Sidewalk (6")	SY	95		$

Concrete Pavement, Driveways (6" Uniform)	SY	1,590		$
Crushed Stone (B) (4")	SY	1,312		$
Concrete Sidewalk Ramps (Including DWP)	SF	1,288		$
Bioswale Seeding	SY	426		
Permanent Seeding	AC	8		$
Permanent Signing	LS	1		$
Curb Stop	EA	19		$
Permanent Pavement Marking	LS	1		$
Temporary Erosion Control	LS	1		$
SWPPP And Land Disturbance Permit	LS	1		$
Water Line Relocation	LF	870		$
Water Service Relocation	EA	1		$
Adjust Manhole (Set Price)	EA	1		$
Work Zone Traffic Control	LS	1		$
Changeable Message Board	EA/WK	2		$
Pre-Construction Photos	LS	1		$
Public Relations	LS	1		$
TOTAL BASE BID				$

Company Name _____

Total Base Bid for Project Number: 22-360-201

$_____

In the blank above insert numbers for the sum of the bid.

($_____)

In the blank above write out the sum of the bid.

Alternate 1:

Bid Items	Units	Estimated Quantities	$/Units	Total
2” Asphalt Concrete Surface Course (Type 3)	SY	-7,991		$
4” Asphalt Concrete Base Course (Type 1)	SY	-7,991		$
6” Cement Stabilization	SY	-7,991		$
Concrete Sidewalk (6”) (Trail)	SY	7,991		$
TOTAL ALTERNATE 1				$

Total Alternate 1:

$_____

In the blank above insert numbers for the sum of the bid.

($_____)

In the blank above write out the sum of the bid.

PWSD#3 Anticipated Additional Work

Bid Items	Units	Estimated Quantities	$/Units	Total
8” Restrained Joint, PVC, C-900	LF	480		$
8” PVC C-900	LF	7231		$
Locator Wire	LF	7911		$
Alexander Creek Crossing	LF	200		$
Connection A20	LS	1		$
Connection B20	LS	1		$
Connection C20	LS	1		$
Connection D20	LS	1		$
Connection E20	LS	1		$
Connection F20	LS	1		$
Connection G20	LS	1		$
Fire Hydrant	LS	14		$
Service Reconnection	EA	25		$
E Gore Road Crossing	LS	1		$
E 166th St. Crossing	LS	1		$
Sierra Dr. Crossing	LS	1		$
Chateau Place Crossing	LS	1		$
Alexander Creek Drive Crossing	LS	1		$
8” Gate Valve w/box	EA	2		$
Cut and Cap Existing Waterline	LS	2		$
Abandon Existing Valve	EA	12		$
TOTAL ADDITIONAL WORK				$

Total Anticipated Additional Work:

$_____

In the blank above insert numbers for the sum of the bid.

($_____)

In the blank above write out the sum of the bid.

****REVISED** BID PROPOSAL FORM E – RFP 22-360-201**
CONTINUED

Company Name _____

By _____
Authorized Person's Signature

_____
Print or type name and title of signer

Company Address _____

_____

_____

Phone _____

Fax _____

Email _____

Date _____

ADDENDA
Bidder acknowledges receipt of the following addendum:

Addendum No. ____

Addendum No. ____

Addendum No. ____

Addendum No. ____

Addendum No. ____

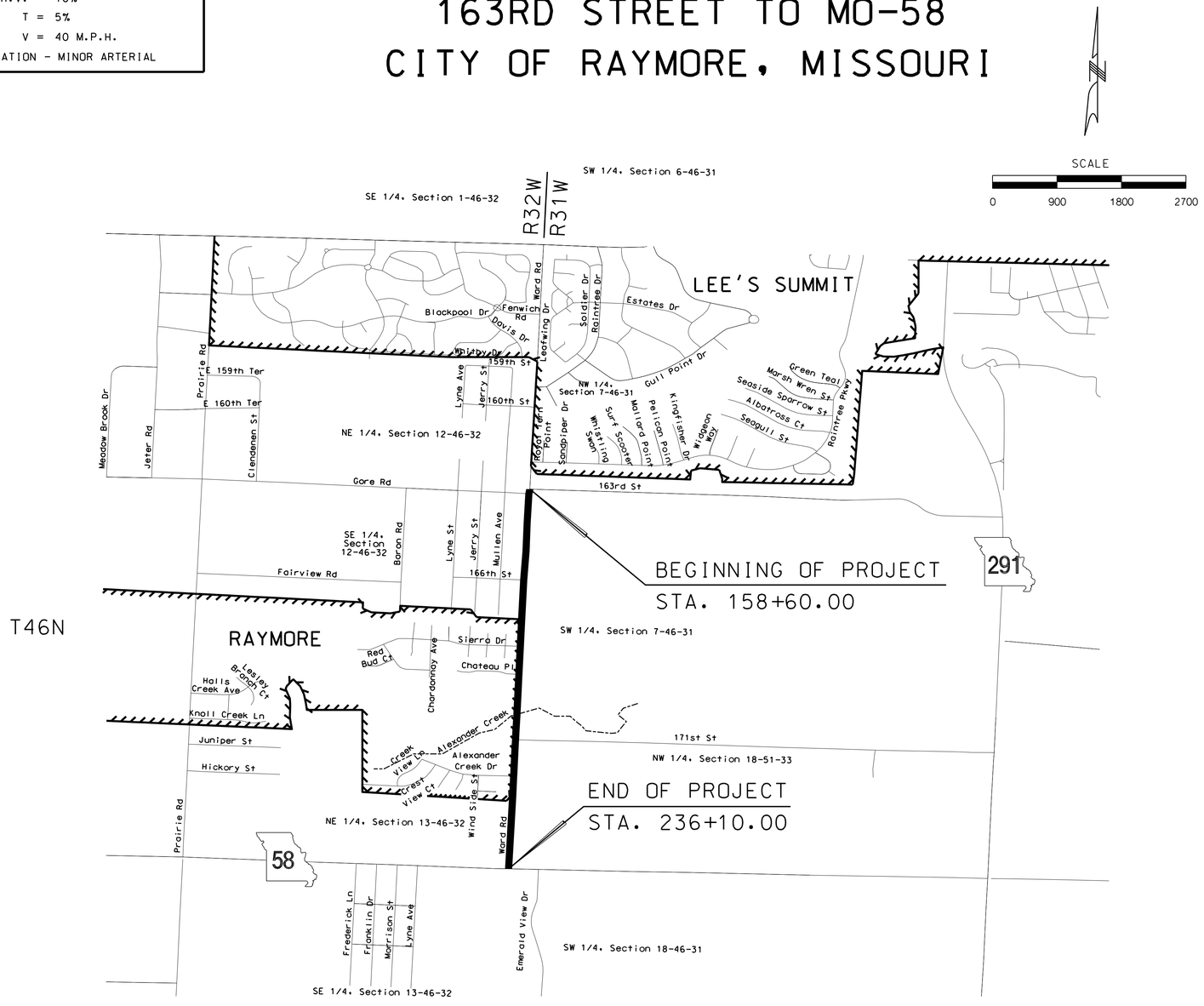
Addendum No. ____

LATE BIDS CANNOT BE ACCEPTED!

DESIGN DESIGNATION

A.A.D.T. - 2019 = 3,918
D.H.V. = 10%
T = 5%
V = 40 M.P.H.
FUNCTIONAL CLASSIFICATION - MINOR ARTERIAL

WARD ROAD IMPROVEMENTS
163RD STREET TO MO-58
CITY OF RAYMORE, MISSOURI



LOCATION MAP

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	158+60.00
END OF PROJECT	236+10.00
APPARENT LENGTH	7,750.00 FEET

EQUATIONS AND EXCEPTIONS:

NET LENGTH OF PROJECT	7,750.00 FEET
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	15.52 ACRES

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON & COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 753-6300, Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

TITLE SHEET

c:\wcipw\d0442392\2010007100Title.dgn 10:40:24 PM 1/12/2022

SUMMARY OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
1	MOBILIZATION	1	L.S.
2	CONSTRUCTION STAKING	1	L.S.
3	SITE PREPARATION	1	L.S.
4	CLASS 1 EXCAVATION	78	C.Y.
5	UNCLASSIFIED EXCAVATION	14,825	C.Y.
6	EMBANKMENT	23,053	C.Y.
7	REMOVAL OF BRIDGES	1	L.S.
8	BRIDGE APPROACH SLAB (MINOR ROAD)	206	S.Y.
9	GALVANIZED STRUCTURAL STEEL PILES (12")	390	L.F.
10	PRE-BORE FOR PILING	310	L.F.
11	PILE POINT REINFORCEMENT	20	EA
12	DYNAMIC TESTING	2	EA
13	CLASS B-1 CONCRETE (SUBSTRUCTURE)	64	C.Y.
14	CLASS B-2 CONCRETE (SUPERSTRUCTURE SOLID SLAB)	142	C.Y.
15	TYPE D BARRIER	205	L.F.
16	PEDESTRIAN FENCE (72") (STRUCTURES)	203	L.F.
17	REINFORCING STEEL (EPOXY COATED)	40,015	LB
18	GALVANIZED FABRICATED STRUCTURAL CARBON STEEL (MISC.)	1,660	LB
19	VERTICAL DRAIN AT END BENTS	2	EA
20	TYPE 2 CURB INLET (4'x4')	63 ⚠1	EA
21	TYPE 2 CURB INLET (5'x4')	7 ⚠1	EA
22	TYPE 2 CURB INLET (5'x5')	0 ⚠1	EA
23	MODIFIED TYPE 2 CURB INLET (4'x4')	6	EA
24	MODIFIED TYPE 2 CURB INLET (5'x4')	1	EA
25	MODIFIED TYPE 2 CURB INLET (5'x5')	1	EA
26	JUNCTION BOX (4'x4')	3 ⚠1	EA
27	JUNCTION BOX (5'x4') ⚠1	0 ⚠1	EA
28	JUNCTION BOX (7'x4')	1	EA
29	STORM SEWER (15") (HDPE)	5,510	L.F.
30	STORM SEWER (18") (HDPE)	568	L.F.
31	STORM SEWER (24") (HDPE)	651	L.F.
32	STORM SEWER (30") (HDPE)	506	L.F.
33	STORM SEWER (19" X 30") (EHDPE)	121	L.F.
34	STORM SEWER (24" X 38") (EHDPE)	22	L.F.
35	STORM SEWER (30") (RCP)	78	L.F.
36	STORM SEWER (42") (RCP)	76	L.F.
37	FLARED END SECTION (15") (RCP)	1	EA
38	FLARED END SECTION (18") (RCP)	2	EA
39	FLARED END SECTION (24") (RCP)	2	EA
40	FLARED END SECTION (30") (RCP)	4	EA
41	FLARED END SECTION (36") (RCP)	2	EA
42	FLARED END SECTION (24" X 38") (RCP)	1	EA
43	RIPRAP (LIGHT STONE) (18 INCH)	175	S.Y.
44	RIPRAP (HEAVY STONE) (30 INCH)	861	S.Y.
45	2" ASPHALT CONCRETE SURFACE COURSE (TYPE 3)	32,866	S.Y.
46	10" ASPHALT CONCRETE BASE COURSE (TYPE 1)	27,674	S.Y.
47	7" ASPHALT CONCRETE BASE COURSE (TYPE 1)	1,388	S.Y.
48	4" ASPHALT CONCRETE BASE COURSE (TYPE 1)	9,116	S.Y.
49	12" PCCP CONCRETE PAVEMENT	26	S.Y.
50	4" PCCP (MEDIAN PAVING) WITH BASE ROCK	66	S.Y.
51	6" CEMENT STABILIZATION	9,007	S.Y.
52	9" CEMENT STABILIZATION	27,674	S.Y.
53	CURB & GUTTER (TYPE CG-1)	13,675	L.F.
54	CURB & GUTTER (TYPE CG-1) (DRY)	280	LF
55	CONCRETE SIDEWALK (4")	1,390	S.Y.
56	CONCRETE SIDEWALK (6")	95	S.Y.
57	CONCRETE PAVEMENT, DRIVEWAYS (6" UNIFORM)	1,590	S.Y.
58	CRUSHED STONE (B) (4")	1,312	S.Y.
59	CONCRETE SIDEWALK RAMPS (INCLUDING DWP)	1,288	S.F.
60	PERMANENT SEEDING	8	AC
61	PERMANENT SIGNING	1	L.S.
62	CURB STOP	19	EA
63	PERMANENT PAVEMENT MARKING	1	L.S.
64	TEMPORARY EROSION CONTROL	1	L.S.
65	SWPPP AND LAND DISTURBANCE PERMIT	1	L.S.
66	WATER LINE RELOCATION	870	L.F.
67	WATER SERVICE RELOCATION	1	EA
68	ADJUST MANHOLE (SET PRICE)	1	EA
69	WORK ZONE TRAFFIC CONTROL	1	L.S.
70	CHANGEABLE MESSAGE BOARD	2	EA/WEEK
71	PRE-CONSTRUCTION PHOTOS	1	L.S.
72	PUBLIC RELATIONS	1	L.S.

BID ALTERNATE 1

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
1	2" ASPHALT CONCRETE SURFACE COURSE (TYPE 3)	-7,991	S.Y.
2	4" ASPHALT CONCRETE BASE COURSE (TYPE 1)	-7,991	S.Y.
3	6" CEMENT STABILIZATION	-7,991	S.Y.
4	CONCRETE SIDEWALK (6") (TRAIL)	7,991	S.Y.

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO. 20-360-301

DATE	DESCRIPTION
01/13/22	-INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE come home to more

WILSON & COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 701-5100, Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

SUMMARY OF QUANTITIES

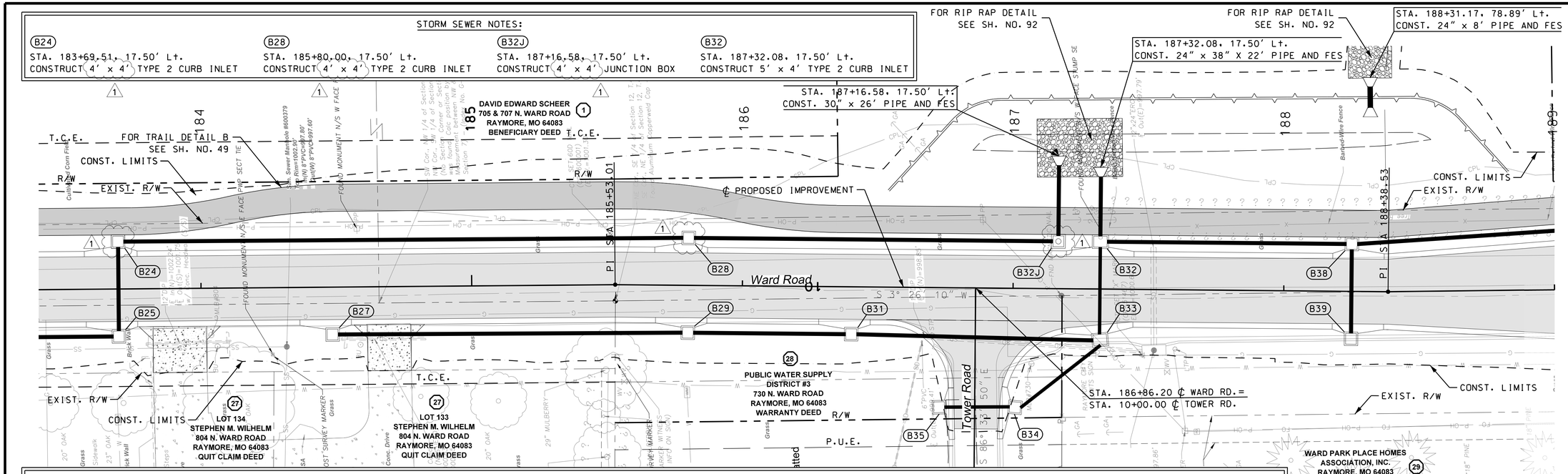
STORM SEWER NOTES:

(B24) STA. 183+69.51, 17.50' Lt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B28) STA. 185+80.00, 17.50' Lt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B32J) STA. 187+16.58, 17.50' Lt. CONSTRUCT 4' x 4' JUNCTION BOX

(B32) STA. 187+32.08, 17.50' Lt. CONSTRUCT 5' x 4' TYPE 2 CURB INLET



STORM SEWER NOTES:

(B25) STA. 183+69.51, 17.50' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B27) STA. 184+48.45, 17.50' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B29) STA. 185+80.00, 17.50' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B31) STA. 186+40.32, 17.50' Rt. CONSTRUCT 4' x 4' MODIFIED TYPE 2 CURB INLET

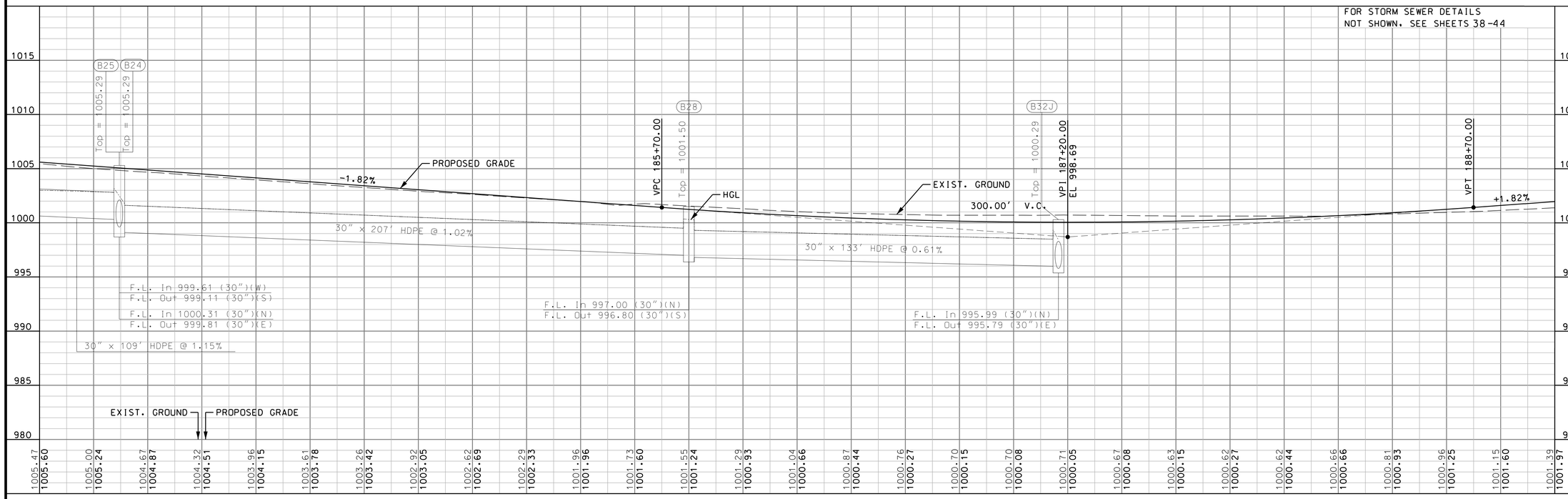
(B33) STA. 187+32.08, 17.50' Rt. CONSTRUCT 5' x 4' MODIFIED TYPE 2 CURB INLET

(B34) STA. 186+97.44, 44.92' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B35) STA. 186+73.59, 45.34' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B38) STA. 188+25.00, 17.50' Lt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET

(B39) STA. 188+25.00, 17.50' Rt. CONSTRUCT 4' x 4' TYPE 2 CURB INLET



STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131 942-3013
Phone (816) 333-4100 Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

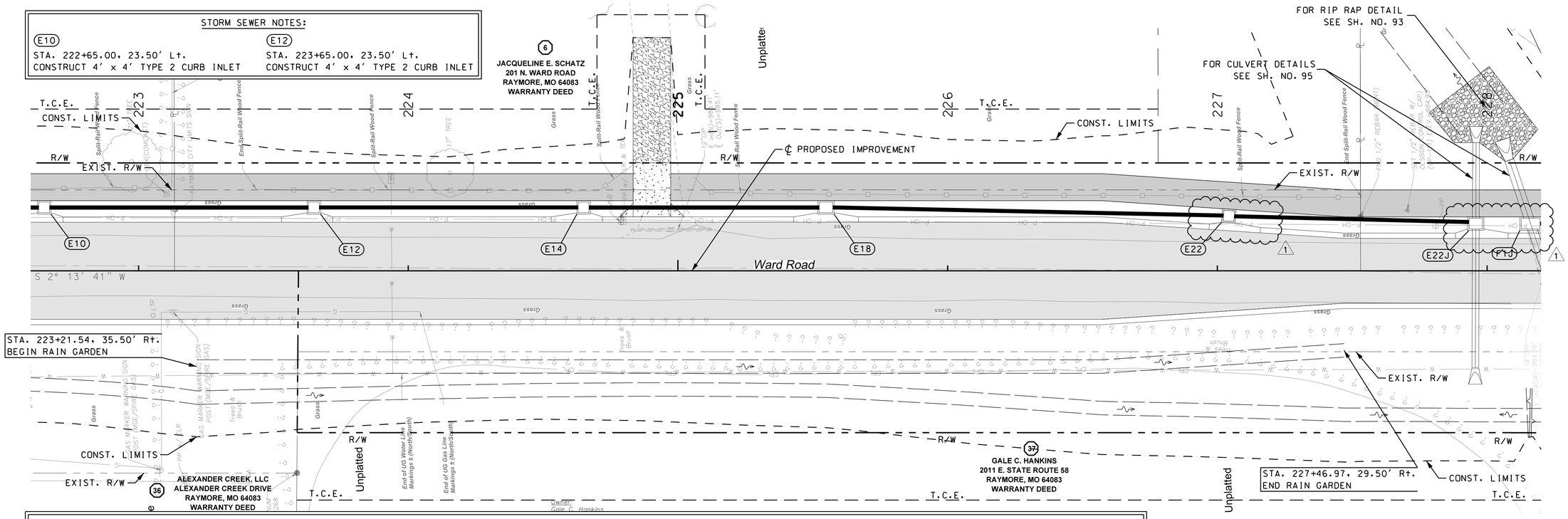
PLAN AND PROFILE
STA. 183+40 TO STA. 189+00

c:\wcipw\d0442392\2010007100PP-06.dgn 10:40:34 PM 1/12/2022

STORM SEWER NOTES:

E10
STA. 222+65.00, 23.50' Lt.
CONSTRUCT 4' x 4' TYPE 2 CURB INLET

E12
STA. 223+65.00, 23.50' Lt.
CONSTRUCT 4' x 4' TYPE 2 CURB INLET



STORM SEWER NOTES:

E14
STA. 224+65.00, 23.50' Lt.
CONSTRUCT 4' x 4' TYPE 2 CURB INLET

E18
STA. 225+54.88, 23.50' Lt.
CONSTRUCT 5' x 4' TYPE 2 CURB INLET

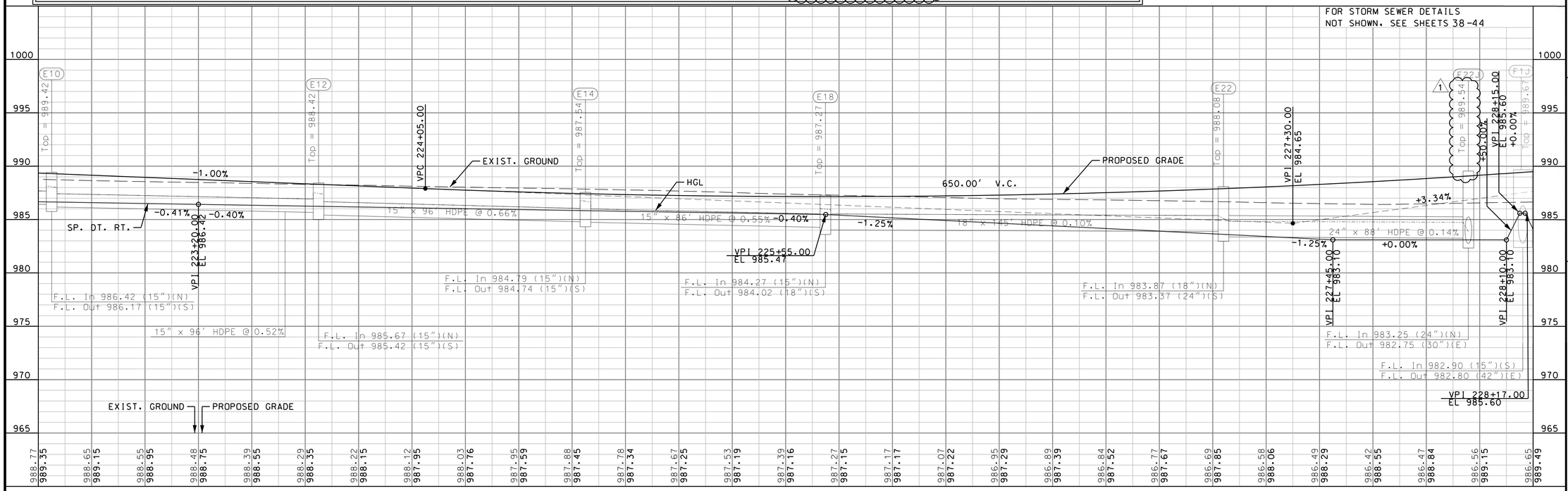
E22
STA. 227+04.26, 20.36' Lt.
CONSTRUCT 4' x 4' TYPE 2 CURB INLET

E22J
STA. 227+95.81, 17.50' Lt.
CONSTRUCT 5' x 4' TYPE 2 CURB INLET

F1J
STA. 228+14.83, 17.11' Lt.
CONSTRUCT 7' x 4' JUNCTION BOX

SCALE
0 20 40 60

FOR STORM SEWER DETAILS
NOT SHOWN, SEE SHEETS 38-44



STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

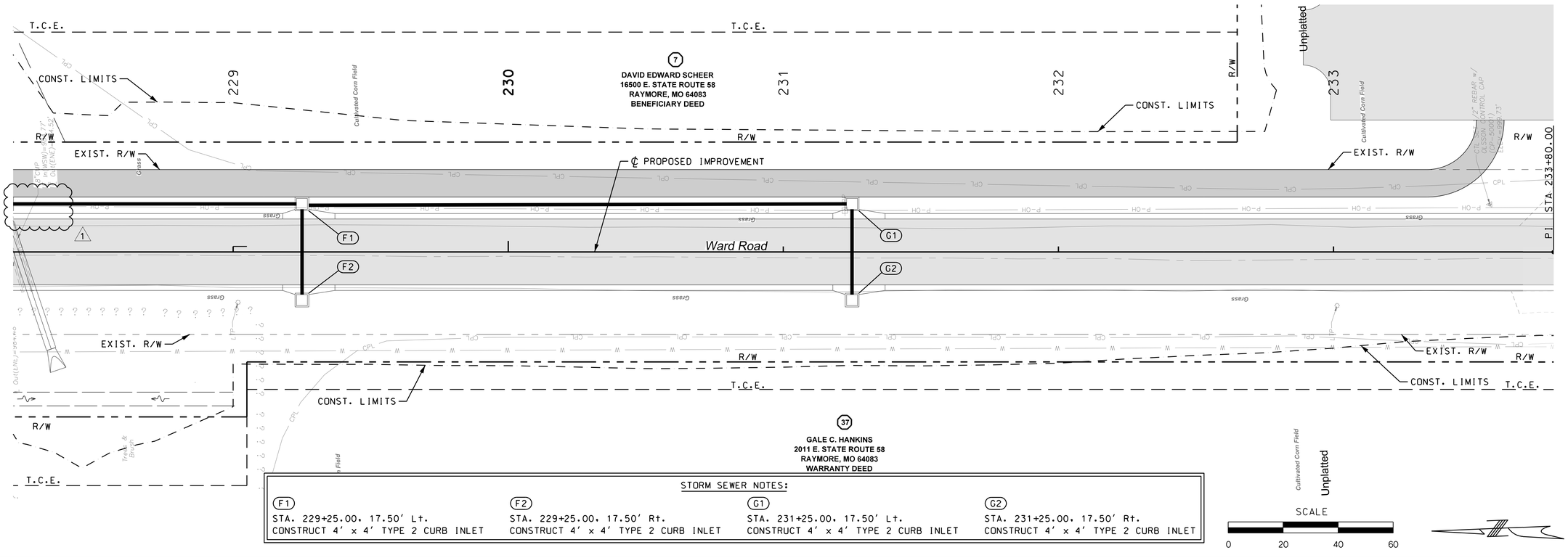
100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 942-3013
Missouri Cert. of Authority #2003007599

PLAN AND PROFILE
STA. 222+60 TO STA. 228+20

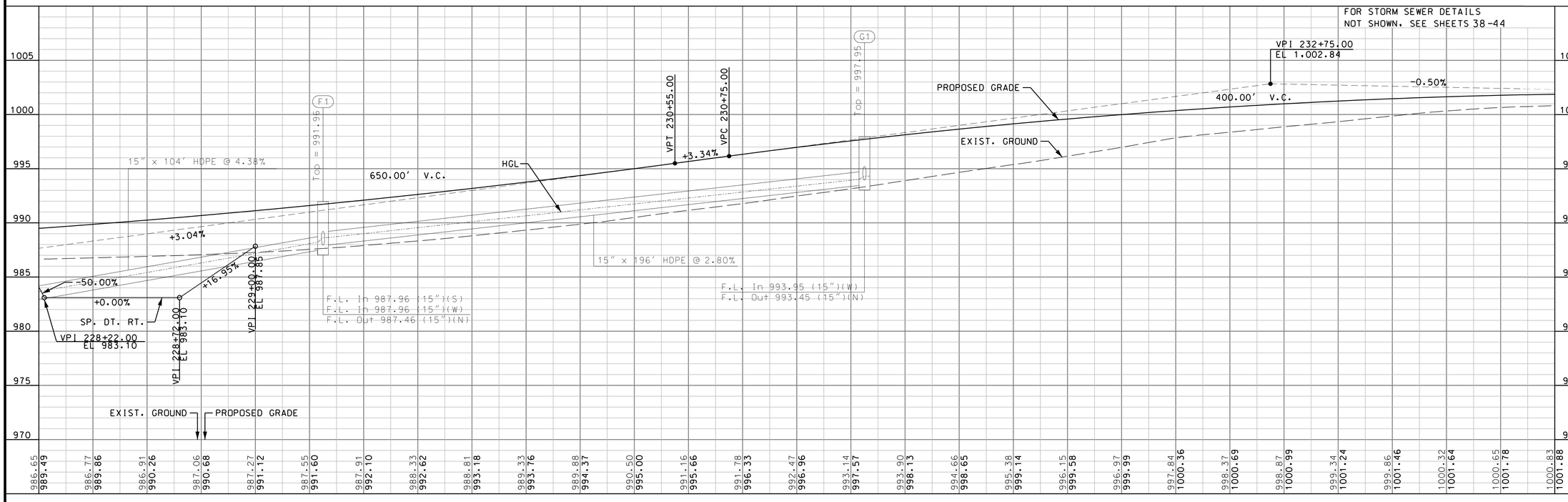
c:\wcipw\d0442392\2010007100PP-13.dgn 10:40:36 PM 1/12/2022



STORM SEWER NOTES:

F1	F2	G1	G2
STA. 229+25.00, 17.50′ Lt. CONSTRUCT 4′ x 4′ TYPE 2 CURB INLET	STA. 229+25.00, 17.50′ Rt. CONSTRUCT 4′ x 4′ TYPE 2 CURB INLET	STA. 231+25.00, 17.50′ Lt. CONSTRUCT 4′ x 4′ TYPE 2 CURB INLET	STA. 231+25.00, 17.50′ Rt. CONSTRUCT 4′ x 4′ TYPE 2 CURB INLET

FOR STORM SEWER DETAILS
NOT SHOWN, SEE SHEETS 38-44



STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

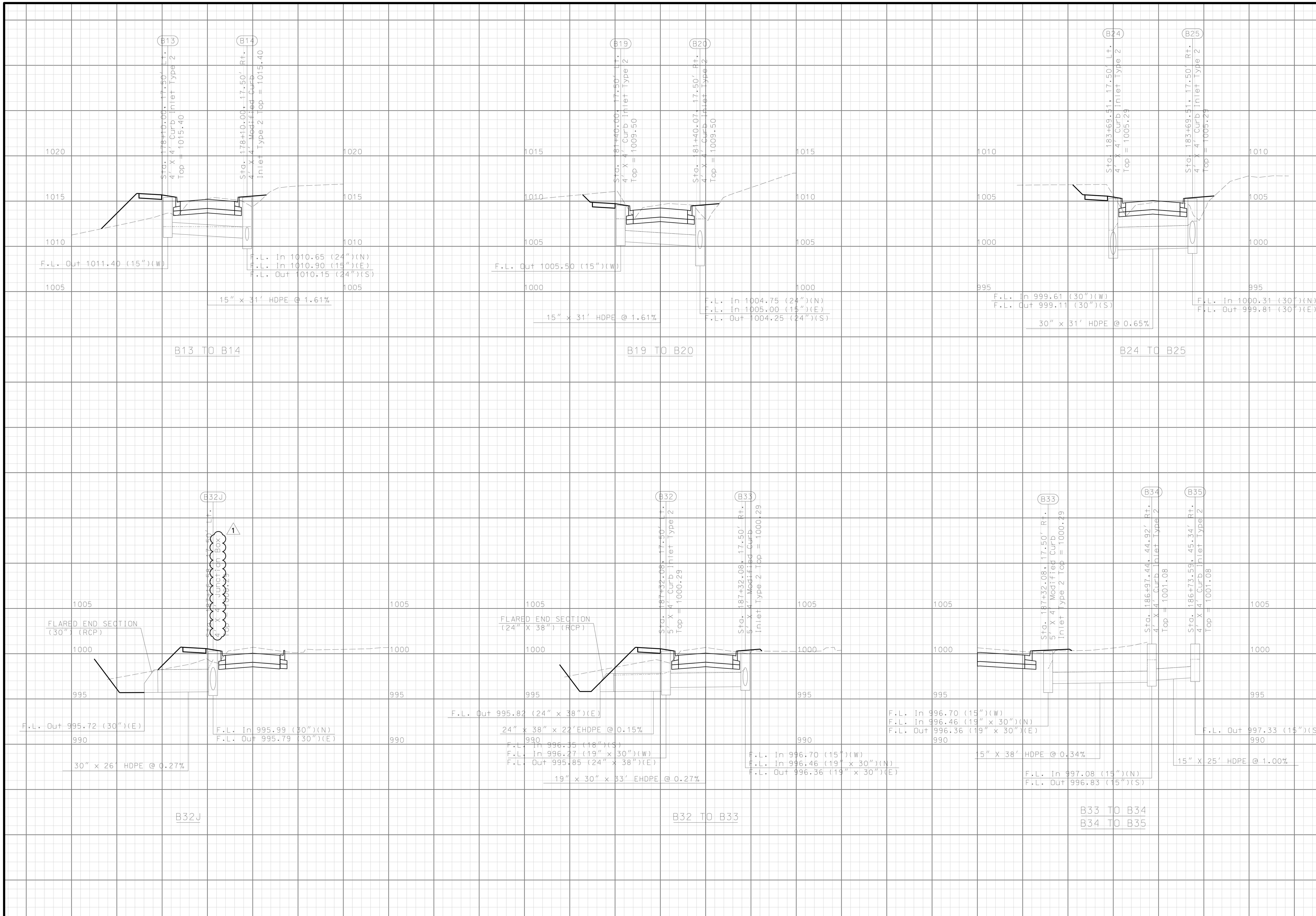
100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 942-3013
Missouri Cert. of Authority #2003007599

PLAN AND PROFILE
STA. 228+20 TO STA. 233+80

c:\wcipw\d0442392\2010007100PP-14.dgn 10:40:38 PM 1/12/2022



STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

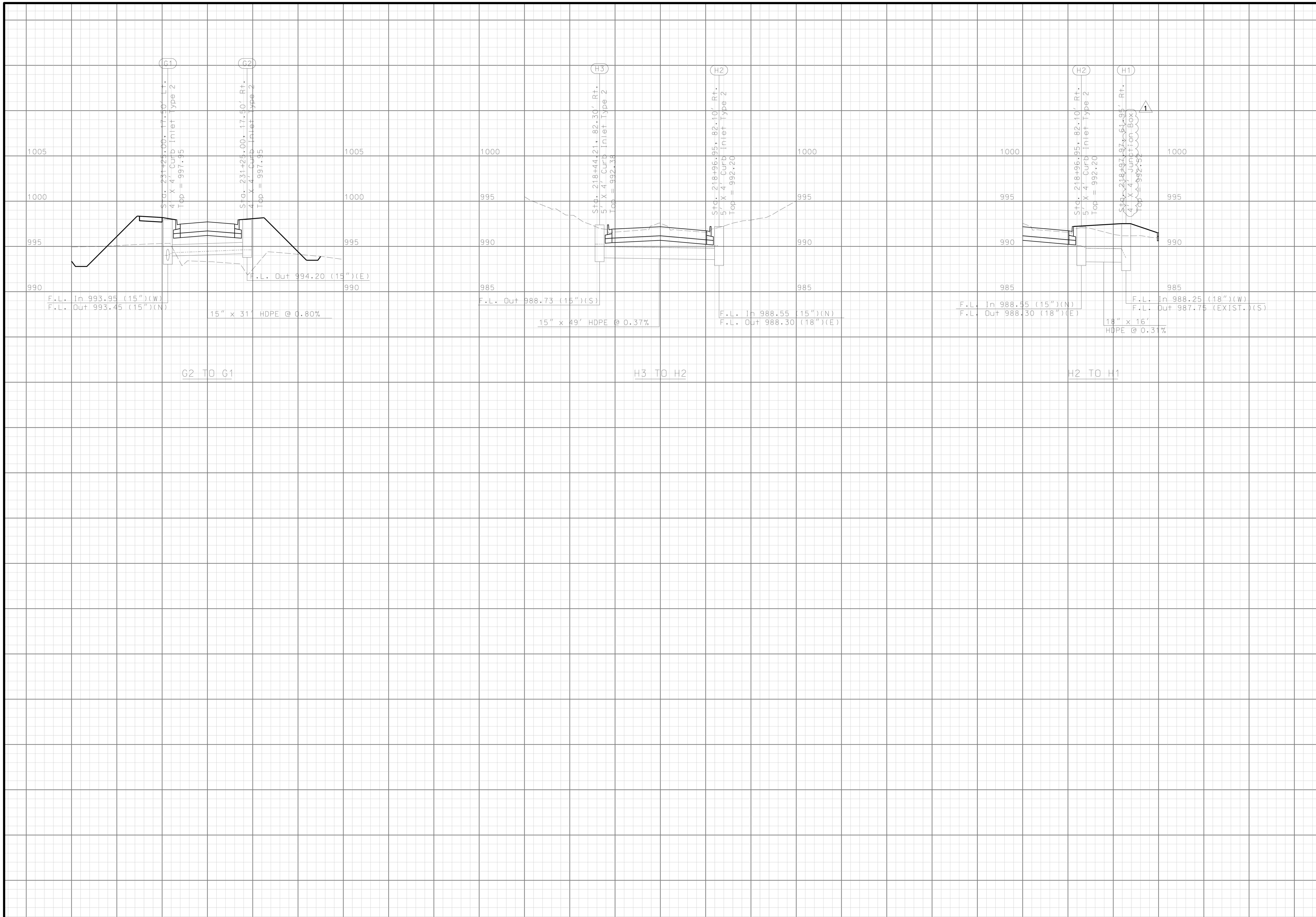
DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON & COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 701-3100 ; Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

STORM SEWER PROFILE



STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON & COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 701-3100 ; Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

STORM SEWER PROFILE

c:\wcipw\d0442392\2010007100SSP-06.dgn 10:40:42 PM 1/12/2022

PRE-CONSTRUCTION:
Sta. 221+62 to 224+78, Lt.
Install 318 L.F. Silt Fence @ 5' (min.)
off the bottom of the proposed fill slope
to contain sediment runoff.

GRADING PREPARATION:
Sta. 222+65, Lt.
Install Curb Inlet Protection

GRADING PREPARATION:
Sta. 223+65, Lt.
Install Curb Inlet Protection

GRADING PREPARATION:
Sta. 224+65, Lt.
Install Curb Inlet Protection

GRADING PREPARATION:
Sta. 225+55, Lt.
Install Curb Inlet Protection

PRE-CONSTRUCTION:
Sta. 225+02 to 227+27, Lt.
Install 228 L.F. Silt Fence @ 5' (min.)
off the bottom of the proposed fill slope
to contain sediment runoff.

GRADING PREPARATION:
Sta. 227+04, Lt.
Install Curb Inlet Protection

EROSION CONTROL DETAIL
SEE SHEET 62

GRADING PREPARATION:
Sta. 227+96, Lt.
Install Curb Inlet Protection

223 224 225 226 227 228

Ward Road

S 2° 13' 41" W

GRADING PREPARATION:
Sta. 228+16, Rt.
Install Area Inlet Protection

GRADING PREPARATION:
Sta. 223+18 & 224+52, Rt.
Install Rock Ditch Checks

GRADING OPERATION:
Sta. 222+60 TO 228+20, Rt.
Install 2,691 S.Y.
Erosion Control Blanket

GRADING PREPARATION:
Sta. 225+87 & 227+24, Rt.
Install Rock Ditch Checks

LEGEND

- FLOW DIRECTION
- CURB INLET PROTECTION
- AREA INLET OR JUNCTION BOX
- SILT FENCE SLOPE BARRIER
- ROCK DITCH CHECK
- APPROXIMATE CONSTRUCTION LIMITS
- EROSION CONTROL BLANKET
- ROCK BLANKET

PRE-CONSTRUCTION:
Sta. 228+35 to 234+17, Lt.
Install 646 L.F. Silt Fence @ 5' (min.)
off the bottom of the proposed fill slope
to contain sediment runoff.

229 230 231 232 233

GRADING PREPARATION:
Sta. 229+25, Lt./Rt.
Install Curb Inlet Protection

Ward Road

P.I. STA 233+80.00

GRADING PREPARATION:
Sta. 231+25, Lt./Rt.
Install Curb Inlet Protection

GRADING OPERATION:
Sta. 228+20 TO 229+00, Rt.
Install 490 S.Y.
Erosion Control Blanket

PRE-CONSTRUCTION:
Sta. 229+04 to 233+98, Rt.
Install 494 L.F. Silt Fence @ 5' (min.)
off the bottom of the proposed fill slope
to contain sediment runoff.

SCALE
0 20 40 60

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

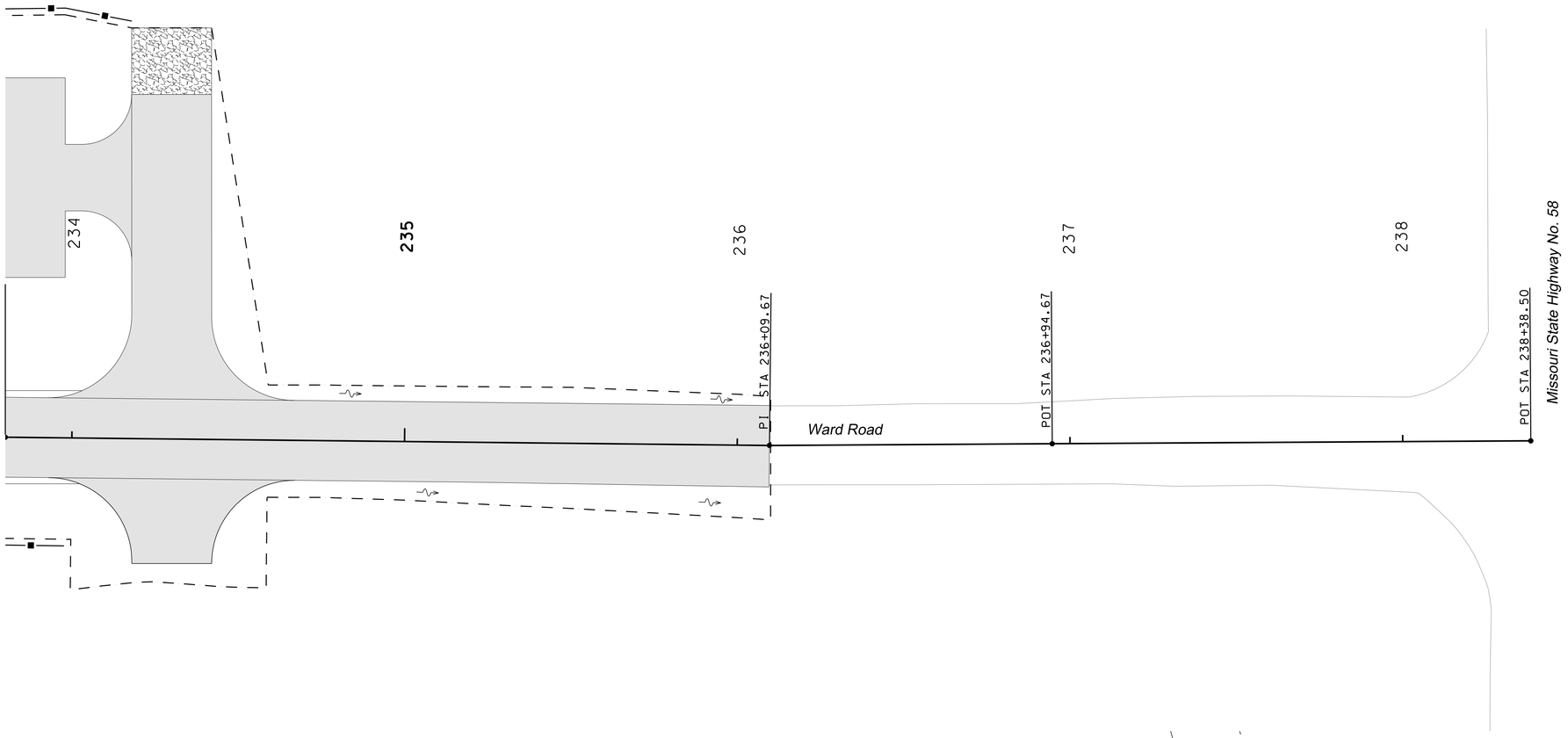
100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

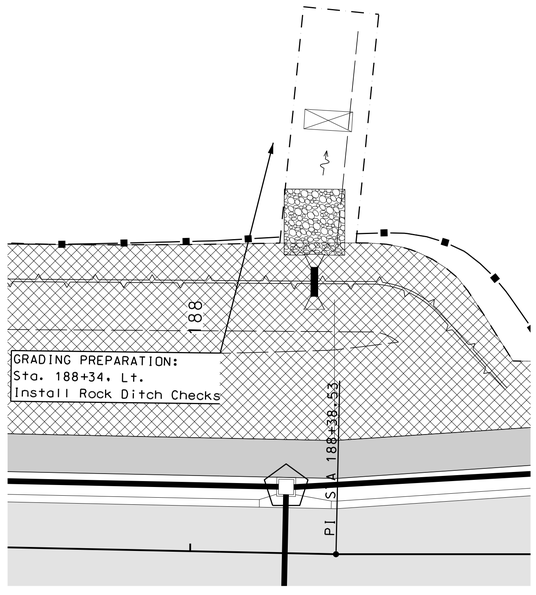
RAYMORE
come home to more

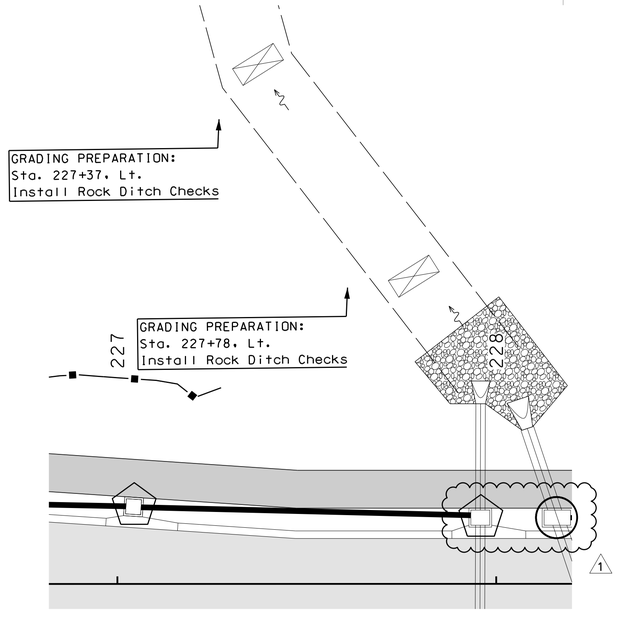
WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 942-3013
Missouri Cert. of Authority #2003007599

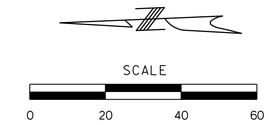
EROSION CONTROL
STA. 222+60 TO STA. 233+80

c:\wcipw\d0442392\2010007100EC-07.dgn 10:40:44 PM 1/12/2022









LEGEND

- FLOW DIRECTION
- CURB INLET PROTECTION
- AREA INLET OR JUNCTION BOX
- SILT FENCE SLOPE BARRIER
- ROCK DITCH CHECK
- APPROXIMATE CONSTRUCTION LIMITS
- EROSION CONTROL BLANKET
- ROCK BLANKET

GARRETT D. HUMMEL
NUMBER PE-2018005008
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	-INLET SIZES & QUANTITIES
.	.
.	.
.	.
.	.
.	.
.	.

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 753-4100, Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

EROSION CONTROL
STA. 233+80 TO STA. 236+10

c:\wcipw\d0442392\2010007100EC-08.dgn 10:40:46 PM 1/12/2022

NOTE:
1. LIGHTING SHOWN HERE IS FOR INFORMATION ONLY. ALL LIGHTING AND CONDUIT SHALL BE INSTALLED BY OWNER. CONTRACTORS SHALL COORDINATE CONSTRUCTION ACTIVITIES DIRECTLY WITH OWNER.

STREET LIGHT LEGEND

Luminaire

SCALE

0 20 40 60

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

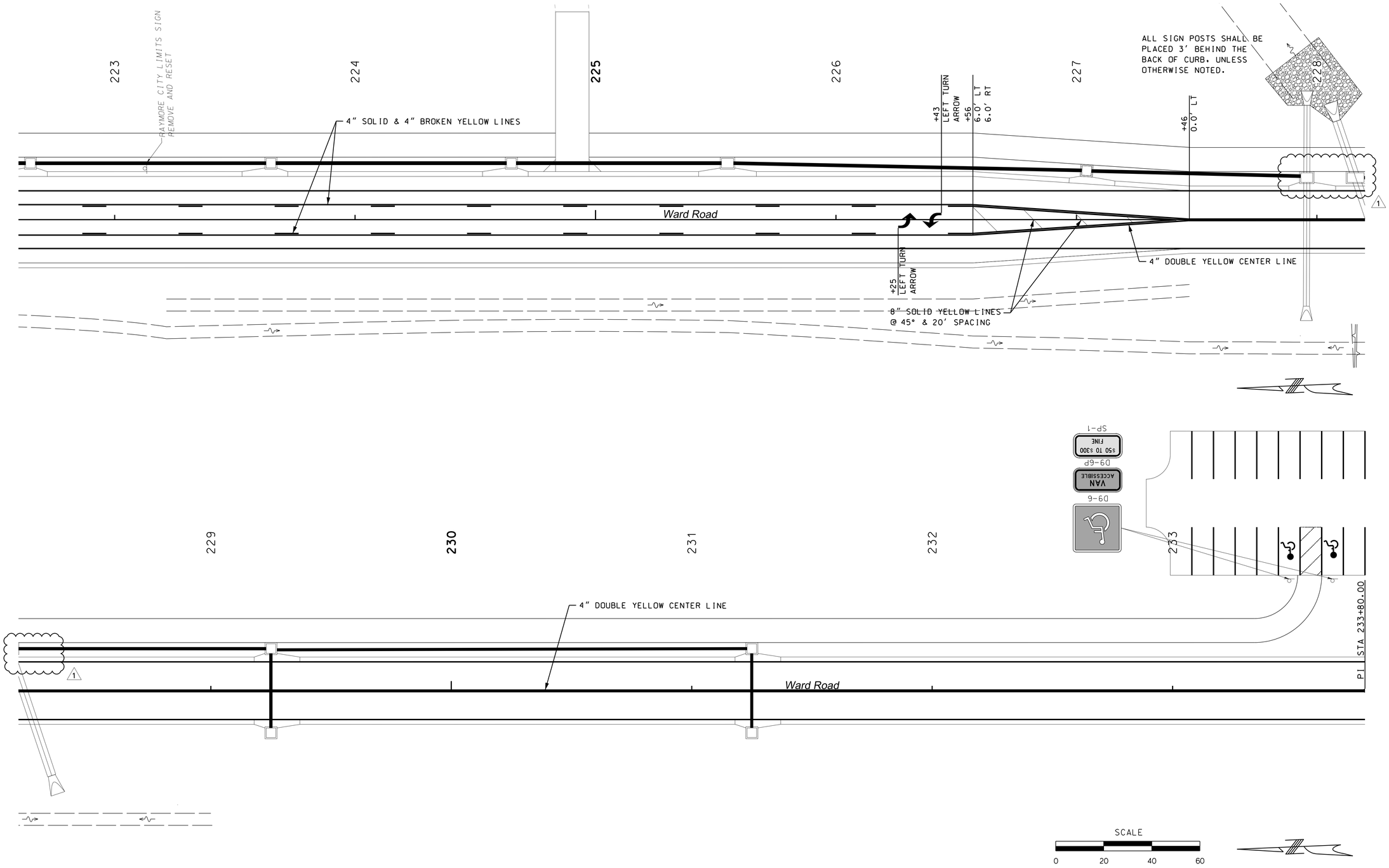
100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 942-3013
Missouri Cert. of Authority #2003007599

LIGHTING PLAN
STA. 222+60 TO STA. 233+80

c:\wcipw\d0442392\2010007100LT-07.dgn 10:40:48 PM 1/12/2022



FOR PARKING LOT DETAILS NOT SHOWN. SEE SHEET 60.

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 333-4477 Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

PAVEMENT MARKINGS
STA. 222+60 TO STA. 233+80

c:\wcipw\d0442392\2010007100PM-07.dgn 10:40:50 PM 1/12/2022

STRUCTURE									HYDROLOGY								PIPES											
Structure No.	Station	Offset	Drains into	Recieves from	Inlet RIM Elevation	Size (L x W)	Min. Inlet Depth	Type	Drainage Area No.	Inc. A (Acres)	Accum. Area (Acres)	Inc. C	Accum. C	Inc. Tc (Min.)	Accum. Tc (Min.)	10 Year I (in/hr)	10 Year Q (cfs)	Pipe I.D	Length (ft)	Size (in)	Type	Pipe Invert Elev. UP (ft)	Pipe Invert Elev. DS (ft)	Slope (%)	Capacity (cfs)	Velocity (ft/s)	Flow Time in Section (min)	HGL Elevation UP (ft)	HGL Elevation DS (ft)
A SERIES																													
A1J	*158+11.65*	38.86 LT	*Outfall*	A1	1002.70	4 X 4	4.46	Precast	A1J	0.00	2.00	0.00	1.47	14.1	0.00	0.00	9.91	A1J	27	18	HDPE	998.91	998.64	0.99	10.42	6.52	0.08	1000.12	999.84
A1	*158+62.98*	17.30 LT	*A1J*	A4	1006.41	4 X 4	7.65	Precast	A1	0.24	1.58	0.72	1.16	14.0	6.78	6.78	7.80	A1	52	15	HDPE	1001.91	999.16	5.29	16.09	6.78	0.14	1003.02 j	1001.23
A4	*162+00.00*	17.50 LT	*A1*	A8/A5	1016.15	4 X 4	14.14	Precast	A4	0.23	1.34	0.79	0.99	13.0	6.78	6.78	6.63	A4	333	15	HDPE	1011.65	1002.41	2.78	11.65	6.13	1.03	1012.68 j	1004.32
A8	*165+33.17*	17.50 LT	*A4*	A12/A9	1022.39	4 X 4	10.64	Precast	A8	0.19	0.83	0.79	0.59	11.3	6.78	6.78	3.97	A8	329	15	HDPE	1017.89	1012.15	1.74	9.24	4.81	1.69	1018.69 j	1013.68
A12	*168+15.00*	17.50 LT	*A8*	A13	1025.84	4 X 4	7.85	Precast	A12	0.23	0.46	0.74	0.32	8.7	7.06	7.06	2.16	A12	278	15	HDPE	1021.34	1018.39	1.06	7.21	3.81	2.63	1021.93 j	1019.22
A13	*168+15.00*	17.50 RT	*A12*	#N/A	1025.84	4 X 4	4.4	Precast	A13	0.23	0.23	0.64	0.15	8.0	6.53	6.53	0.96	A13	31	15	HDPE	1022.09	1021.84	0.81	6.29	2.92	0.66	1022.48	1022.22
A5	*162+00.00*	17.50 RT	*A4*	#N/A	1016.15	4 X 4	4.4	Precast	A5	0.28	0.28	0.75	0.21	7.0	6.78	6.78	1.42	A5	31	15	HDPE	1012.40	1012.15	0.81	6.28	1.16	0.45	1013.70	1013.68
A9	*165+33.17*	17.50 RT	*A8*	#N/A	1022.39	4 X 4	4.4	Precast	A9	0.18	0.18	0.70	0.13	9.0	6.29	6.29	0.79	A9	31	15	HDPE	1018.64	1018.39	0.81	6.28	1.43	0.80	1019.22	1019.22
EXISTING	*158+11.65*	17.50 LT	*A1J*	#N/A	1005.07	4 X 4	6.31	Precast		0.42	0.42	0.74	0.31	7.0	6.78	6.78	2.11	EX CURB	46	15	HDPE	1000.57	999.16	3.07	12.26	3.44	0.44	1001.20	1001.23
B1 SERIES																													
B32	*187+32.08*	17.50 LT	*B DETENTION*	B33/B38	1000.29	5 X 4	4.88	Precast	B32	0.17	7.78	0.71	4.81	15.8	7.35	7.35	27.04	B32	26	24 x 38	EHDPE	995.85	995.81	0.15	17.40	5.55	0.08	997.75	997.61
B33 (AB33)	*187+32.08*	17.50 RT	*SUMP/B32*	*B34/B31*	1000.29	5 X 4	4.42	Precast	B33 (AB33)	1.50	6.93	0.62	4.18	15.8	6.08	6.08	22.54	B33 (AB33)	33	19 x 30	EHDPE	996.36	996.27	0.30	13.05	7.25	0.07	998.33	998.04
B31 (AB31)	*186+40.32*	17.50 RT	*B33*	B29	1000.60	4 X 4	4.54	Precast	B31 (AB31)	1.22	4.62	0.61	2.8	15.2	5.18	5.18	14.58	B31 (AB31)	88	19 x 30	EHDPE	996.80	996.46	0.38	14.63	4.69	0.31	999.61	999.28
B29 (AB29)	*185+80.00*	17.50 RT	*B31*	B27	1001.50	4 X 4	4.9	Precast	B29 (AB29)	3.09	3.40	0.61	2.06	15.0	5.18	5.18	10.73	B29 (AB29)	57	18	HDPE	997.50	997.00	0.89	10.73	6.07	0.15	1000.22	999.71
B27	*184+48.45*	17.50 RT	*B29*	#N/A	1003.90	4 X 4	6.55	Precast	B27	0.31	0.31	0.55	0.17	12.0	5.68	5.68	0.97	B27	128	15	HDPE	1000.15	997.75	1.89	9.63	1.05	2.67	1001.03	1001.01
B34	*186+97.44*	44.92 RT	*B33*	B35	1001.08	4 X 4	4.78	Precast	B34	0.40	0.81	0.55	0.45	15.4	5.18	5.18	2.31	B34	38	15	HDPE	996.83	996.70	0.36	4.20	1.88	0.33	999.32	999.28
B38	*188+25.00*	17.50 LT	*B32*	B39/B40	1000.96	4 X 4	5.01	Precast	B38	0.08	0.68	0.80	0.51	8.3	7.35	7.35	3.62	B38	89	18	HDPE	996.71	996.35	0.41	7.26	2.09	0.72	998.12	998.04
B40	*189+15.69*	22.65 LT	*B38*	B41	1002.39	4 X 4	5.83	Precast	B40	0.19	0.46	0.81	0.36	7.6	7.06	7.06	2.50	B40	87	15	HDPE	997.89	996.96	1.08	7.25	4.01	0.71	998.52 j	998.16
B41	*189+15.69*	22.65 RT	*B40*	#N/A	1002.39	4 X 4	4.4	Precast	B41	0.27	0.27	0.77	0.21	7.0	6.78	6.78	1.41	B41	42	15	HDPE	998.64	998.39	0.61	5.45	3.29	0.60	999.12	998.86
B39	*188+25.00*	17.50 RT	*B38*	#N/A	1000.96	4 X 4	4.4	Precast	B39	0.14	0.14	0.63	0.09	5.0	7.35	7.35	0.65	B39	31	15	HDPE	997.21	996.96	0.81	6.29	0.62	0.98	998.21	998.21
B35	*186+73.59*	45.34 RT	*B34*	#N/A	1001.08	4 X 4	4.4	Precast	B35	0.41	0.41	0.55	0.23	15.0	5.18	5.18	1.17	B35	25	15	HDPE	997.33	997.08	1.02	7.06	0.95	0.42	999.39	999.38
B2 SERIES																													
B32J	*187+16.58*	17.50 LT	*B DETENTION*	B28	1000.29	4 X 4	4.97	Precast	B32J	0.00	10.24	0.00	6.33	16.5	0.00	0.00	37.05	B32J	26	30	HDPE	995.79	995.72	0.27	23.05	7.55	0.06	998.40	998.22
B28	*185+80.00*	17.50 LT	*B32J*	B24	1001.50	4 X 4	5.91	Precast	B28	0.14	10.24	0.62	6.33	16.2	6.78	6.78	37.05	B28	133	30	HDPE	996.80	995.99	0.61	34.67	7.55	0.29	1000.27	999.34
B24	*183+69.51*	17.50 LT	*B28*	B25	1005.29	4 X 4	8.69	Precast	B24	0.19	10.10	0.74	6.25	15.7	6.29	6.29	36.46	B24	207	30	HDPE	999.11	997.00	1.02	44.91	7.43	0.46	1001.75	1000.35
B25	*183+69.51*	17.50 RT	*B24*	B23	1005.29	4 X 4	6.08	Precast	B25	0.30	9.91	0.61	6.11	15.7	7.35	7.35	35.58	B25	31	30	HDPE	999.81	999.61	0.65	35.69	7.25	0.07	1002.79	1002.59
B23 (AB23)	*182+57.40*	17.50 RT	*B25*	B20	1007.30	4 X 4	7.39	Precast	B23 (AB23)	2.58	9.61	0.61	5.92	15.4	5.18	5.18	34.23	B23 (AB23)	109	30	HDPE	1001.55	1000.31	1.15	47.60	7.95	0.26	1003.60	1003.19
B20	*181+40.07*	17.50 RT	*B23*	B18/B19	1009.50	4 X 4	7.85	Precast	B20	0.39	7.03	0.61	4.35	15.2	5.87	5.87	26.08	B20	114	24	HDPE	1004.25	1002.05	1.94	34.14	8.30	0.23	1006.41	1005.13
B18 (AB18)	*180+50.00*	17.50 RT	*B20*	B17	1011.10	4 X 4	6.75	Precast	B18 (AB18)	1.38	6.41	0.61	3.93	15.0	5.18	5.18	23.40	B18 (AB18)	86	24	HDPE	1005.85	1004.75	1.28	27.69	7.45	0.19	1008.82	1008.04
B17 (AB17)	*179+50.01*	17.50 RT	*B18*	B15	1012.90	4 X 4	6.95	Precast	B17 (AB17)	0.79	5.03	0.61	3.09	14.0	5.34	5.34	19.04	B17 (AB17)	96	24	HDPE	1007.65	1006.35	1.36	28.52	6.06	0.26	1009.64	1009.09
B15	*178+71.19*	17.50 RT	*B17*	B14	1014.40	4 X 4	6.65	Precast	B15	0.21	4.24	0.61	2.61	13.2	6.78	6.78	16.47	B15	75	24	HDPE	1009.15	1008.15	1.34	28.32	6.82	0.24	1010.59 j	1010.13
B14 (AB14)	*178+10.00*	17.50 RT	*B15*	B12/B13	1015.40	4 X 4	6.15	Precast	B14 (AB14)	0.74	4.03	0.51	2.48	13.0	5.50	5.50	15.60	B14 (AB14)	58	24	HDPE	1010.15	1009.65	0.87	22.92	5.33	0.19	1011.91	1011.75
B12	*176+80.00*	17.50 RT	*B14*	B10	1017.30	4 X 4	7.05	Precast	B12	0.34	3.15	0.61	1.99	11.0	5.87	5.87	12.71	B12	126	24	HDPE	1012.05	1010.65	1.11	25.82	6.08	0.52	1013.31 j	1012.18
B10 (AB10)	*175+60.00*	17.50 RT	*B12*	B7/B8	1019.01	4 X 4	6.86	Precast	B10 (AB10)	0.80	2.81	0.61	1.78	10.2	6.08	6.08	11.50	B10 (AB10)	116	18	HDPE	1014.26	1012.55	1.48	13.82	7.09	0.30	1015.56 j	1014.18
B7 (AB7)	*175+05.01*	17.50 RT	*B10*	B6	1019.80	4 X 4	5.44	Precast	B7 (AB7)	0.64	1.82	0.61	1.14	10.0	6.08	6.08	7.43	B7 (AB7)	51	18	HDPE	1015.05	1014.76	0.57	8.56	4.20	0.20	1017.16	1016.94
B6	*174+30.00*	17.50 RT	*B7*	B4	1021.50	4 X 4	6.6	Precast	B6	0.37	1.18	0.61	0.75	9.6	6.53	6.53	5.06	B6	71	15	HDPE	1017.00	1015.30	2.40	10.83	5.35	0.29	1017.90 j	1017.44
B4	*173+25.00*	17.50 RT	*B6*	B3/B2	1024.50	4 X 4	7.4	Precast	B4	0.40	0.81	0.61	0.53	9.0	6.29	6.29	3.58	B4	101	15	HDPE	1020.00	1017.50	2.47	11.00	4.60	0.58	1020.76 j	1018.61
B2	*171+75.00*	17.50 RT	*B4*	N/A	1028.10	4 X 4	8	Precast	B2	0.22	0.22	0.61	0.13	5.0	7.35	7.35	0.99	B2	146	15	HDPE	1023.60	1020.50	2.12	10.20	2.94	3.03	1024.00 j	1021.24
B3	*173+25.00*	17.50 LT	*B4*	N/A	1024.50	4 X 4	4.4	Precast	B3	0.19	0.19	0.79	0.15	6.0	7.06	7.06	1.06	B3	31	15	HDPE	1020.75	1020.50	0.81	6.30	2.54	0.60	1021.22	1021.24
B8	*175+60.00*	17.50 LT	*B10*	N/A	1019.01	4 X 4	4.9	Precast	B8	0.19	0.19	0.79	0.15	5.0	7.35	7.35	1.10	B8	31	15	HDPE	1015.01	1014.51	1.61	8.87	0.90	0.57	1016.95	1016.94
B19	*181+40.00*	17.50 LT	*B20*	N/A	1009.50	4 X 4	4.9	Precast	B19	0.23	0.23	0.79	0.18	6.0	7.06	7.06	1.28	B19	31	15	HDPE	1005.50	1005.00	1.61	8.88	1.04	0.49	1008.05	1008.04
B13	*178+10.00*	17.50 LT	*B14*	N/A	1015.40	4 X 4	4.9	Precast	B13	0.14	0.14	0.79	0.11	5.0	7.35	7.35	0.81	B13	31	15	HDPE	1011.40	1010.90	1.61	8.88	1.02	0.78	1012.18	1012.18
C SERIES																													
C17	*203+93.93*	17.50 LT	*Outfall*	C13/C18	970.88	4 X 4	11.16	Precast	C17	0.23	2.19	0.68	1.54	11.8	6.53	6.53	11.20	C17	84	18	HDPE	966.13	960.12	7.15	30.43	6.96	0.22	967.41	961.40
C13	*200+90.00*	17.50 LT	*C17*	C11/C14	978.01	4 X 4	12.03	Precast	C13	0.24	1.78	0.75	1.24	10.1	7.35	7.35	9.19	C13	300	15	HDPE	973.51	966.38	2.38	10.79	7.72	1.67	974.67 j	968.73
C11	*197+95.06*	17.50 LT	*C13*	C9/C12	987.01	4 X 4	13.4	Precast	C11	0.13	1.34	0.74	0.91	8.5	7.35	7.35	6.73	C11	291	15	HDPE	982.51	974.01	2.92	11.96	6.18	1.62	983.55 j	976.50
C9	*196+38.00*	17.50 LT	*C11*	C3/C10	992.28	4 X 4	9.67	Precast	C9	0.21	1.09	0.63	0.72	7.7	7.35	7.35	5.24	C9	153	15	HDPE	987.78	983.01	3.12	12.35	5.43	0.85	988.70 j	984.57
C3	*193+75.00*	23.50 LT	*C9*	C4	1001.00	4 X 4	13.12	Precast	C3	0.19	0.49	0.85	0.35	6.2	7.35	7.35	2.54	C3	259	15	HDPE	996.50	988.28	3.17	12.46	4.04	1.44	997.14 j	989.43
C4	*193+75.00*	23.50 RT	*C3*	N/A	1001.00	4 X 4	4.4	Precast	C4	0.30	0.30	0.64	0.19	6.0	7.06	7.06	1.35	C4	43	15	HDPE	997.25	997.00	0.58	5.34	3.25	0.24	997.72	997.48
C18	*203+93.93*	17.50 RT	*C17*	N/A	970.88	4 X 4	4.9	Precast	C18	0.18	0.18	0.78	0.14	6.0	7.06	7.06	0.99	C18	31	15	HDPE	966.88	966.38	1.62	8.90	0.81	0.17	968.74	968.73
C14	*200+90.00*	17.50 RT	*C13*	N/A	978.01	4 X 4	4.4	Precast	C14	0.20	0.20	0.77	0.15	5.0	7.35	7.35	1.13	C14	31	15	HDPE	974.26	974.01	0.80	6.27	0.92	0.17	976.51	976.50
C12	*197+95.06*	17.50 RT	*C14*	N/A	987.01	4 X 4	4.5	Precast	C12	0.12	0.12	0.78	0.09	5.3	7.35	7.35	0.79	C12	31	15	HDPE	983.26	982.91	1.13	7.45	0.64	0.17	984.58	984.57
C EX	*197+46.09*	51.20 RT	*C12*	N/A	987.01	4 X 4	3.89	Precast	C EX	0.00	0.00	0.00	0	5.0	0.00	0.00	0.10	C EX	59	15	HDPE	983.76	983.52	0.41	4.49	0.12	0.32	984.58	984.58
C10	*196+38.00*	17.50 RT	*C9*	N/A	992.28	4 X 4	4.4	Precast	C10	0.39	0.39	0.60	0.23	5.0	7.35	7.35	1.72	C10	31	15	HDPE	988.53	988.28	0.80	6.27	1.81	0.17	989.43	989.43
D SERIES																													
D1	*205+94.00*	17.50 LT	*Outfall*	D2/D5	969.34	5 X 4	7.7	Precast	D1	0.22	2.23	0.8	1.5	12.6	7.35	7.35	9.54	D1	50	15	HDPE	963.73	962.04	3.38	12.86	7.97	0.11	964.9	963.21
D5	*207+29.05*	17.50 LT	*D1*	D6/D7	970.04	4 X 4	6.21	Precast	D5	0.14	1.83	0.62	1.18	12.2	7.06	7.06	7.24	D5	131	15	HDPE	965.54	964.23	1	7	5.9	0.37	968.29	966.89
D7	*209+29.05*	17.50 LT	*D5*	D8/D9	973.65	4 X 4	8.01	Precast	D7	0.22	1.58	0.65	1.02	11.6	7.06	7.06	6.13	D7	196	15	HDPE	969.15	966.04	1.59	8.81	5.88	0.65	970.14 j	968.61
D9	*211+53.61*	17.50 LT	*D7*	D10/D11/D13	981.37	4 X 4	12.62	Precast	D9	0.16	1.2	0.66	0.78	10.6	7.35	7.35	4.46	D9(2)	221	15	HDPE	974.61	969.15	2.47	11	5.05	1.01	975.46 j	971.04
D11	*214+50.00*	17.50 LT	*D9*	D12	992.62	4 X 4	17.91	Precast	D11	0.19	0.58	0.78	0.38	7.4	6.78	6.78	2.59	D11	293	15	HDPE	988.12	975.11	4.45	14.76	4.06	2.31	988.76 j	976.07
D12	*214+50.00*	17.50 RT	*D11*	N/A	992.62	4 X 4	4.4	Precast	D12	0.39	0.39	0.6	0.23	7	6.78	6.78	1.59	D12	31	15	HDPE	988.87	988.62	0.81	6.28	3.42	0.4	989.37	989.11
D10	*211+53.61*	17.50 RT	*D9*	N/A	981.37	4 X 4	6.65	Precast	D10	0.16	0.16	0.72	0.12	5	7.35	7.35	0.85	D10	31	15	HDPE	977.62	975.12	8.06	19.86	2.8	0.75	977.99 j	976.07
D8	*209+29.05*	17.50 RT	*D7*	N/A	973.65	4 X 4	4.4	Precast	D8	0.16	0.16	0.61	0.1	7	6.78	6.78	0.66	D8	31	15	HDPE	969.9	969.65	0.81	6.28	0.56	0.96	971.04	971.04
D6	*207+29.09*	17.50 RT	*D5*	N/A	970.04	4 X 4	4.4	Precast	D6	0.11	0.11	0.64	0.07	6	7.06	7.06	0.5	D6	31	15	HDPE	966.29	966.04	0.81	6.29	0.4	1.28	968.99	968.99
D2	*205+94.00*	17.50 RT	*D1*	N/A	969.34	5 X 4	5.51	Precast	D2	0.18	0.18	0.79	0.14	6	7.06	7.06	1	D2	31	15	HDPE	965.59	964.23	4.39	14.65	0.82	0.63	966.89	966.89
D13	*211+26.12*	45.00 LT	*D9*	D14	979.6	4 X 4	4.9	Precast	D13	0.25	0.3	0.59	0.18	7.6	0	0	0.25	D13	36	15	HDPE	975.35	975.1	0.69	5.83	0.34	2.99	976.06	976.07
D14	*210+91.97*	45.10 LT	*D13*	N/A	979.6	4 X 4	4.45	Precast	D14	0.05	0.05	0.67	0.03	5	7.35	7.35	0.25	D14	31	15	HDPE	975.85	975.55	0.97	6.88	1.7	2.57	976.07	976.07

1 Note: Storm Sewer pipe and structure details shown on this sheet are for information only. These features shall be constructed as shown elsewhere in the plans.

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 942-2600 Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

DRAINAGE DATA
WARD ROAD

STRUCTURE									HYDROLOGY									PIPES										
Structure No.	Station	Offset	Drains into	Recieves from	Inlet RIM Elevation	Size (L x W)	Min. Inlet Depth	Type	Drainage Area No.	Inc. A (Acres)	Accum. Area (Acres)	Inc. C	Accum. C	Inc. Tc (Min.)	Accum. Tc (Min.)	10 Year		Pipe I.D	Length (ft)	Size (in)	Type	Pipe Invert Elev.		Slope (%)	Capacity (cfs)	Velocity (ft/s)	Flow Time in Section (min)	HGL Elevation	
																I (in/hr)	Q (cfs)					UP (ft)	DS (ft)					UP (ft)	DS (ft)
A SERIES																													
A1J	*158+11.65*	38.86 LT	*Outfall*	A1	1002.70	4 X 4	4.46	Precast	A1J	0.00	2.00	0.00	1.47	14.1	0.00	0.00	9.91	A1J	27	18	HDPE	998.91	998.64	0.99	10.42	6.52	0.08	1000.12	999.84
A1	*158+62.98*	17.30 LT	*A1J*	A4	1006.41	4 X 4	7.65	Precast	A1	0.24	1.58	0.72	1.16	14.0	6.78	6.78	7.80	A1	52	15	HDPE	1001.91	999.16	5.29	16.09	6.78	0.14	1003.02 j	1001.23
A4	*162+00.00*	17.50 LT	*A1*	A8/A5	1016.15	4 X 4	14.14	Precast	A4	0.23	1.34	0.79	0.99	13.0	6.78	6.78	6.63	A4	333	15	HDPE	1011.65	1002.41	2.78	11.65	6.13	1.03	1012.68 j	1004.32
A8	*165+33.17*	17.50 LT	*A4*	A12/A9	1022.39	4 X 4	10.64	Precast	A8	0.19	0.83	0.79	0.59	11.3	6.78	6.78	3.97	A8	329	15	HDPE	1017.89	1012.15	1.74	9.24	4.81	1.69	1018.69 j	1013.68
A12	*168+15.00*	17.50 LT	*A8*	A13	1025.84	4 X 4	7.85	Precast	A12	0.23	0.46	0.74	0.32	8.7	7.06	7.06	2.16	A12	278	15	HDPE	1021.34	1018.39	1.06	7.21	3.81	2.63	1021.93 j	1019.22
A13	*168+15.00*	17.50 RT	*A12*	#N/A	1025.84	4 X 4	4.4	Precast	A13	0.23	0.23	0.64	0.15	8.0	6.53	6.53	0.96	A13	31	15	HDPE	1022.09	1021.84	0.81	6.29	2.92	0.66	1022.48	1022.22
A5	*162+00.00*	17.50 RT	*A4*	#N/A	1016.15	4 X 4	4.4	Precast	A5	0.28	0.28	0.75	0.21	7.0	6.78	6.78	1.42	A5	31	15	HDPE	1012.40	1012.15	0.81	6.28	1.16	0.45	1013.70	1013.68
A9	*165+33.17*	17.50 RT	*A8*	#N/A	1022.39	4 X 4	4.4	Precast	A9	0.18	0.18	0.70	0.13	9.0	6.29	6.29	0.79	A9	31	15	HDPE	1018.64	1018.39	0.81	6.28	1.43	0.80	1019.22	1019.22
EXISTING	*158+11.65*	17.50 LT	*A1J*	#N/A	1005.07	4 X 4	6.31	Precast		0.42	0.42	0.74	0.31	7.0	6.78	6.78	2.11	EX CURB	46	15	HDPE	1000.57	999.16	3.07	12.26	3.44	0.44	1001.20	1001.23
B1 SERIES																													
B32	*187+32.08*	17.50 LT	*B DETENTION*	B33/B38	1000.29	5 X 4	4.88	Precast	B32	0.17	7.78	0.71	4.81	15.8	7.35	7.35	27.04	B32	26	24 x 38	EHDPE	995.85	995.81	0.15	17.40	5.55	0.08	997.75	997.61
B33 (AB33)	*187+32.08*	17.50 RT	*SUMP/B32*	*B34/B31*	1000.29	5 X 4	4.42	Precast	B33 (AB33)	1.50	6.93	0.62	4.18	15.8	6.08	6.08	22.54	B33 (AB33)	33	19 x 30	EHDPE	996.36	996.27	0.30	13.05	7.25	0.07	998.33	998.04
B31 (AB31)	*186+40.32*	17.50 RT	*B33*	B29	1000.60	4 X 4	4.54	Precast	B31 (AB31)	1.22	4.62	0.61	2.8	15.2	5.18	5.18	14.58	B31 (AB31)	88	19 x 30	EHDPE	996.80	996.46	0.38	14.63	4.69	0.31	999.61	999.28
B29 (AB29)	*185+80.00*	17.50 RT	*B31*	B27	1001.50	4 X 4	4.9	Precast	B29 (AB29)	3.09	3.40	0.61	2.06	15.0	5.18	5.18	10.73	B29 (AB29)	57	18	HDPE	997.50	997.00	0.89	10.73	6.07	0.15	1000.22	999.71
B27	*184+48.45*	17.50 RT	*B29*	#N/A	1003.90	4 X 4	6.55	Precast	B27	0.31	0.31	0.55	0.17	12.0	5.68	5.68	0.97	B27	128	15	HDPE	1000.15	997.75	1.89	9.63	1.05	2.67	1001.03	1001.01
B34	*186+97.44*	44.92 RT	*B33*	B35	1001.08	4 X 4	4.78	Precast	B34	0.40	0.81	0.55	0.45	15.4	5.18	5.18	2.31	B34	38	15	HDPE	996.83	996.70	0.36	4.20	1.88	0.33	999.32	999.28
B38	*188+25.00*	17.50 LT	*B32*	B39/B40	1000.96	4 X 4	5.01	Precast	B38	0.08	0.68	0.80	0.51	8.3	7.35	7.35	3.62	B38	89	18	HDPE	996.71	996.35	0.41	7.26	2.09	0.72	998.12	998.04
B40	*189+15.69*	22.65 LT	*B38*	B41	1002.39	4 X 4	5.83	Precast	B40	0.19	0.46	0.81	0.36	7.6	7.06	7.06	2.50	B40	87	15	HDPE	997.89	996.96	1.08	7.25	4.01	0.71	998.52 j	998.16
B41	*189+15.69*	22.65 RT	*B40*	#N/A	1002.39	4 X 4	4.4	Precast	B41	0.27	0.27	0.77	0.21	7.0	6.78	6.78	1.41	B41	42	15	HDPE	998.64	998.39	0.61	5.45	3.29	0.60	999.12	998.86
B39	*188+25.00*	17.50 RT	*B38*	#N/A	1000.96	4 X 4	4.4	Precast	B39	0.14	0.14	0.63	0.09	5.0	7.35	7.35	0.65	B39	31	15	HDPE	997.21	996.96	0.81	6.29	0.62	0.98	998.21	998.21
B35	*186+73.59*	45.34 RT	*B34*	#N/A	1001.08	4 X 4	4.4	Precast	B35	0.41	0.41	0.55	0.23	15.0	5.18	5.18	1.17	B35	25	15	HDPE	997.33	997.08	1.02	7.06	0.95	0.42	999.39	999.38
B2 SERIES																													
B32J	*187+16.58*	17.50 LT	*B DETENTION*	B28	1000.29	4 X 4	4.97	Precast	B32J	0.00	10.24	0.00	6.33	16.5	0.00	0.00	37.05	B32J	26	30	HDPE	995.79	995.72	0.27	23.05	7.55	0.06	998.40	998.22
B28	*185+80.00*	17.50 LT	*B32J*	B24	1001.50	5 X 5	5.91	Precast	B28	0.14	10.24	0.62	6.33	16.2	6.78	6.78	37.05	B28	133	30	HDPE	996.80	995.99	0.61	34.67	7.55	0.29	1000.27	999.34
B24	*183+69.51*	17.50 LT	*B28*	B25	1005.29	5 X 5	8.69	Precast	B24	0.19	10.10	0.74	6.25	15.7	6.29	6.29	36.46	B24	207	30	HDPE	999.11	997.00	1.02	44.91	7.43	0.46	1001.75	1000.35
B25	*183+69.51*	17.50 RT	*B24*	B23	1005.29	4 X 4	6.08	Precast	B25	0.30	9.91	0.61	6.11	15.7	7.35	7.35	35.58	B25	31	30	HDPE	999.81	999.61	0.65	35.69	7.25	0.07	1002.79	1002.59
B23 (AB23)	*182+57.40*	17.50 RT	*B25*	B20	1007.30	5 X 5	7.39	Precast	B23 (AB23)	2.58	9.61	0.61	5.92	15.4	5.18	5.18	34.23	B23 (AB23)	109	30	HDPE	1001.55	1000.31	1.15	47.60	7.95	0.26	1003.60	1003.19
B20	*181+40.07*	17.50 RT	*B23*	B18/B19	1009.50	4 X 4	7.85	Precast	B20	0.39	7.03	0.61	4.35	15.2	5.87	5.87	26.08	B20	114	24	HDPE	1004.25	1002.05	1.94	34.14	8.30	0.23	1006.41	1005.13
B18 (AB18)	*180+50.00*	17.50 RT	*B20*	B17	1011.10	4 X 4	6.75	Precast	B18 (AB18)	1.38	6.41	0.61	3.93	15.0	5.18	5.18	23.40	B18 (AB18)	86	24	HDPE	1005.85	1004.75	1.28	27.69	7.45	0.19	1008.82	1008.04
B17 (AB17)	*179+50.01*	17.50 RT	*B18*	B15	1012.90	4 X 4	6.95	Precast	B17 (AB17)	0.79	5.03	0.61	3.09	14.0	5.34	5.34	19.04	B17 (AB17)	96	24	HDPE	1007.65	1006.35	1.36	28.52	6.06	0.26	1009.64	1009.09
B15	*178+71.19*	17.50 RT	*B17*	B14	1014.40	4 X 4	6.65	Precast	B15	0.21	4.24	0.61	2.61	13.2	6.78	6.78	16.47	B15	75	24	HDPE	1009.15	1008.15	1.34	28.32	6.82	0.24	1010.59 j	1010.13
B14 (AB14)	*178+10.00*	17.50 RT	*B15*	B12/B13	1015.40	4 X 4	6.15	Precast	B14 (AB14)	0.74	4.03	0.51	2.48	13.0	5.50	5.50	15.60	B14 (AB14)	58	24	HDPE	1010.15	1009.65	0.87	22.92	5.33	0.19	1011.91	1011.75
B12	*176+80.00*	17.50 RT	*B14*	B10	1017.30	4 X 4	7.05	Precast	B12	0.34	3.15	0.61	1.99	11.0	5.87	5.87	12.71	B12	126	24	HDPE	1012.05	1010.65	1.11	25.82	6.08	0.52	1013.31 j	1012.18
B10 (AB10)	*175+60.00*	17.50 RT	*B12*	B7/B8	1019.01	4 X 4	6.86	Precast	B10 (AB10)	0.80	2.81	0.61	1.78	10.2	6.08	6.08	11.50	B10 (AB10)	116	18	HDPE	1014.26	1012.55	1.48	13.82	7.09	0.30	1015.56 j	1014.18
B7 (AB7)	*175+05.01*	17.50 RT	*B10*	B6	1019.80	4 X 4	5.44	Precast	B7 (AB7)	0.64	1.82	0.61	1.14	10.0	6.08	6.08	7.43	B7 (AB7)	51	18	HDPE	1015.05	1014.76	0.57	8.56	4.20	0.20	1017.16	1016.94
B6	*174+30.00*	17.50 RT	*B7*	B4	1021.50	4 X 4	6.6	Precast	B6	0.37	1.18	0.61	0.75	9.6	6.53	6.53	5.06	B6	71	15	HDPE	1017.00	1015.30	2.40	10.83	5.35	0.29	1017.90 j	1017.44
B4				B2/B3		4 X 4	7.4	Precast	B4	0.40	0.81	0.61	0.63	9.0	6.29	6.29	3.58	B4	101	15	HDPE	1020.00	1017.50	2.47	11.00	4.69	0.58	1020.76 j	1018.61

1 Note: Storm Sewer pipe and structure details shown on this sheet are for information only. These features shall be constructed as shown elsewhere in the plans.

STATE OF MISSOURI
GARRETT D. HUMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	INLET SIZES & QUANTITIES

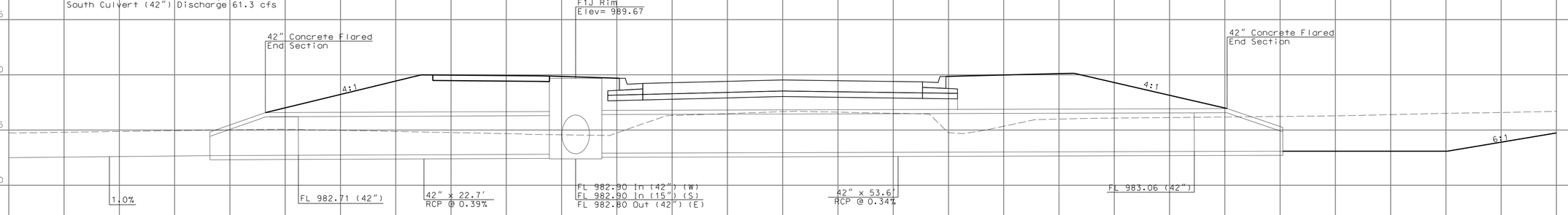
100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

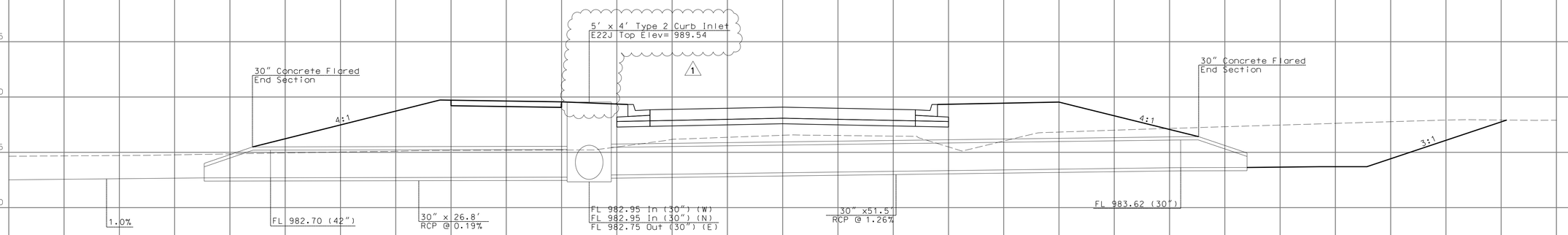
WILSON &COMPANY
800 E 101st Terr, Ste. 200
Kansas City, MO 64131
Phone (816) 701-1100 Fax (816) 942-3013
Missouri Cert. of Authority #2003001599

DRAINAGE DATA
WARD ROAD

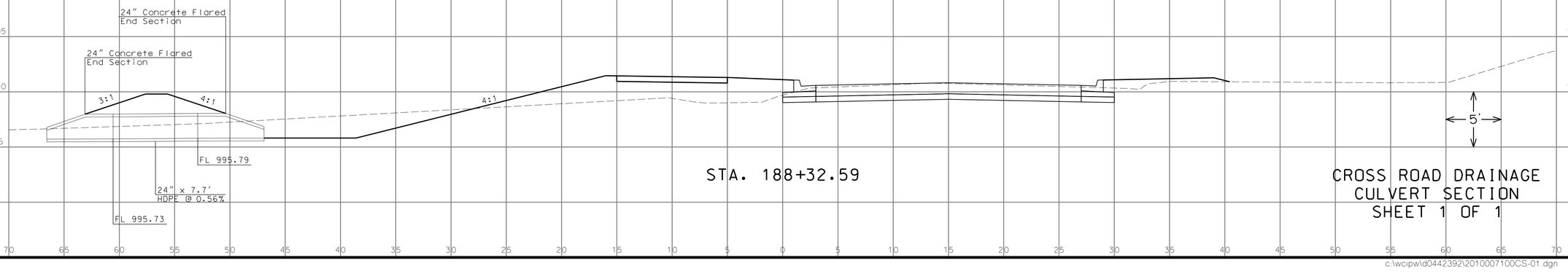
Q(100) 113.7 cfs
Q(5) 99.39 cfs
Total Design Discharge 99.4 cfs
North Culvert (30") Discharge 37.9 cfs
South Culvert (42") Discharge 61.3 cfs



STA. 228+22.00



STA. 227+95.76



STA. 188+32.59

CROSS ROAD DRAINAGE
CULVERT SECTION
SHEET 1 OF 1

STATE OF MISSOURI
GARRETT D. HJMMEL
NUMBER PE-2018005008
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PROJECT NO.
20-360-301

DATE	DESCRIPTION
01/13/22	-INLET SIZES & QUANTITIES

100 Municipal Circle
Raymore, MO 64083
Phone (816-331-1852)
Fax (816-331-8067)

RAYMORE
come home to more

WILSON &COMPANY
800 E 101st Terr., Ste. 200
Kansas City, MO 64131
Phone (816) 701-5100 Fax (816) 942-3013
Missouri Cert. of Authority #2003007599

CULVERT CROSS SECTIONS

c:\wcipw\d0442392\20100071100CS-01.dgn 10:41:12 PM 1/12/2022