CONSTRUCTION PLANS
FOR
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE FROM
EAST 81st ST. SOUTH TO EAST 91st ST. SOUTH

PROJECT NO. 144101
TMUA-W 14-82 AND MS-635

ACCOUNT NO. 6007-5453104-040522966130
AND
ACCOUNT NO. 6315-5453104-040522054057
AND
ACCOUNT NO. 144101.STREETS.543104.4053122-541106

CITY OF Tulsa
A New Kind of Energy.

ENGINEERING SERVICES DEPARTMENT

FOR INDEX OF SHEETS AND STANDARDS SEE SHEET 2.

SYMBOL LEGEND

- SS — EXISTING SANITARY SEWER LINE
- RCP — EXISTING STORM DRAIN LINE
- FO — EXISTING FIBER OPTIC LINE
- TVUG — EXISTING UNDERGROUND CATV LINE
- TUG — EXISTING UNDERGROUND COMMUNICATION LINE
- T — EXISTING TELEPHONE RISER
- EXISTING COMMUNICATIONS BOX
- TV — EXISTING CATV RISER
- E — EXISTING ELECTRICAL RISER
- EXISTING ELECTRICAL TRANSFORMER
- EXISTING OVERHEAD ELECTRICAL LINE
- PUG — EXISTING UNDERGROUND ELECTRICAL LINE
- G — EXISTING NATURAL GAS LINE
- W — EXISTING WATER LINE
- EXISTING PAVEMENT EDGE
- EXISTING CONCRETE JOINT
- PL — EXISTING PROPERTY LINE
- EXISTING R/W
- EXISTING PARCEL
- EXISTING EASEMENT
- X — EXISTING FENCE
- EXISTING FLOWLINE
- EXISTING SIGN
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING FIRE HYDRANT
- ICV — EXISTING WATERLINE MARKER
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM MANHOLE
- EXISTING GAS VALVE
- EXISTING GAS METER
- EXISTING LIGHT POLE
- EXISTING LIGHT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING TRAFFIC SIGNAL POLE
- EXISTING TRAFFIC SIGNAL PULL BOX
- EXISTING TREE
- BORE HOLE
- HORIZONTAL CONTROL POINT BENCH MARK SYMBOL
- VERTICAL CONTROL POINT
- 21 — PARCEL NUMBER
- PROPOSED CONSTRUCTION

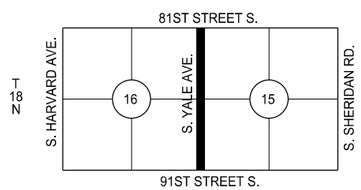
DESIGN DATA

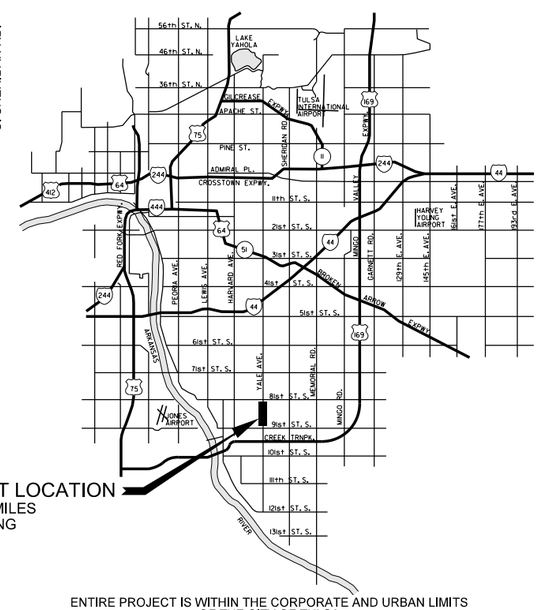
AADT (2014)	= 24,200
TRAFFIC GROWTH RATE	= 2%
TRUCK TRAFFIC	= 2%
TOTAL FLEXIBLE ESALS	= 3.0 x 10^6
TOTAL RIGID ESALS	= 5.2 x 10^6
LANE FACTOR	= 60%
DIRECTIONAL DISTRIBUTION	= 50%
DESIGN SPEED	= 35 MPH

UTILITY COORDINATION

UTILITY	CONTACT	PHONE NO.
CITY OF TULSA UTILITY COORDINATOR	CHRIS KOVAC	918-596-9649
AEP/PSO	ADAM FIELDS	918-250-6257
OKLAHOMA NATURAL GAS CO.	JONATHON MEADOWS	918-831-8215
COX COMMUNICATIONS	BRANDON WADE	918-286-4716
AT & T	AL NICHOLS	918-596-4237
MTTA	ERIC SMITH	918-830-0024

CURRENT CITY OF TULSA STANDARD SPECIFICATIONS AND STANDARD DETAILS GOVERN. ALL OTHER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION 2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.





PROJECT LOCATION
4.87 LANE MILES
OF WIDENING

ENTIRE PROJECT IS WITHIN THE CORPORATE AND URBAN LIMITS OF THE CITY OF TULSA

N

SCALE: 1"=3 MILES
3 0 3

SURVEY CONTROL DATA

1. HORIZONTAL CONTROL:
   A. HORIZONTAL CONTROL FOR THIS SURVEY IS THE OKLAHOMA STATE DEPARTMENT OF TRANSPORTATION PLANE COORDINATE SYSTEM, LAMBERT PROJECTION (NORTH ZONE). ALL COORDINATES SHOWN ARE OKLAHOMA DEPARTMENT OF TRANSPORTATION PLANE COORDINATES WHICH WERE DERIVED BY MULTIPLYING THE USC&GS OKLAHOMA PLANE COORDINATES BY THE COMBINED ADJUSTMENT FACTOR OF 1.00010. THE OKLAHOMA STATE DEPARTMENT OF TRANSPORTATION COORDINATE SYSTEM PLANE IS 2350 FEET ABOVE THE OKLAHOMA USC&GS PLANE.
   B. ACCURACY - 3RD ORDER
2. BEARING:
   A. THE BEARINGS SHOWN HEREIN OR HEREON ARE GRID BEARINGS DERIVED FROM THE USC&GS OKLAHOMA PLANE COORDINATE SYSTEM AND ARE NOT ASTRONOMICAL.
3. VERTICAL CONTROLS:
   A. LEVEL DATUM IS MEAN SEA LEVEL (USC&GS).
   B. PERMANENT BENCHMARK - ADS 34
   SEE SURVEY DATA (2), SHEET 41

THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS

1-800-522-OKIE

APPROVED BY:

CITY ENGINEER

ADVERTISEMENT DATE: 12-04-2020

DATE: 12.16.20

BENHAM a Haskell Company

Benham Design, LLC
One West 3rd Street, Suite 200
Tulsa, Oklahoma 74103
(918) 492-1600

PREPARED BY:

RHONDA J. DUDECK, P.E.
OK P.E. NO. 16476
PROJECT ENGINEER

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

DATE: October 31, 2018

CERTIFICATE OF AUTHORIZATION NO. 7569 P.E., L.S. RENEWAL DATE 6-30-20

CITY OF Tulsa A New Kind of Energy.
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE - 81ST STREET SOUTH TO 91ST STREET SOUTH
PROJECT NO. 144101 TMUA-W 14-82, MS-635
Benham Design, LLC
One West 3rd Street, Suite 200
Tulsa, Oklahoma 74103
(918) 492-1600
BENHAM a Haskell Company

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INDEX OF SHEETS

SHEET NO.	DRAWING TITLE
1	COVER SHEET
2	INDEX AND STANDARDS
3-7	PAY ITEMS & NOTES (1) TO (5)
8-9	WATERLINE PAY ITEMS & NOTES (1) TO (2)
10	SANITARY SEWER PAY ITEMS & NOTES
11-14	GENERAL CONSTRUCTION NOTES (1) TO (4)
15-19	SUMMARIES (1) TO (5)
20-23	TYPICAL SECTION (1) TO (4)
24-31	MISCELLANEOUS DETAILS (1) TO (8)
32-33	TURF MAT DETAILS (1) TO (2)
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40-41	SURVEY DATA (1) TO (2)
42-44	GEOMETRIC DATA (1) TO (3)
45-46	DRAINAGE AREA MAP (1) TO (2)
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50	PIPE DESIGN SUMMARY
51-54	SUMMARY OF DRAINAGE STRUCTURES (1) TO (4)
55-57	DRAINAGE DETAILS (1) TO (3)
58	STORMWATER MANAGEMENT PLAN
59-61	EROSION CONTROL (1) TO (3)
62-68	REMOVALS (1) TO (7)
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77	PLAN AND PROFILE (9) - E. 87th ST. S. & E. 84th ST. S.
78	PLAN AND PROFILE (10) - E. 85th ST. S.
79	PLAN AND PROFILE (11) - RESIDENTIAL DRIVE
80	PLAN AND PROFILE (12) - COMMERCIAL DRIVES
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103-107	INTERSECTION DETAIL (1) TO (5)
108	PARKING DETAIL
109	DRIVEWAY DETAIL
110	E. 85th ST. & S. WINSTON AVE. DETAIL
111-117	GRADING PLAN (1) TO (7)
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123	OVERALL LANDSCAPE SITE PLAN
124-126	LANDSCAPE SITE PLAN (1) TO (3)
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145	WATERLINE LOCATION MAP
146	WATERLINE CONSTRUCTION SEQUENCE NOTES
147-162	WATERLINE PLAN AND PROFILE (1) TO (16)
163	SANITARY SEWER PLAN AND PROFILE (1)
164	MANHOLE INVERT DETAILS
165-166	SIGNING & STRIPING (1) TO (2)
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171-172	WALL GENERAL NOTES (1) TO (2)
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177-191	GENERAL PLAN & ELEVATION (1) TO (15)
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194-195	WALL EXCAVATION DETAILS (1) TO (2)
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207-213	REINFORCEMENT DETAILS (1) TO (7)
214-221	GEOMETRY SCHEDULES (1) TO (8)
222-231	REINFORCING SCHEDULES (1) TO (10)
232	TRAFFIC CONTROL ADVANCE WARNING SIGNS
233	PROJECT SPECIFIC CONSTRUCTION NOTES
234-244	CONSTRUCTION SEQUENCE (1) TO (11)
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X65	E. 87TH PL. S.
X66-X67	E. 88TH PL. S.
X68	E. 87TH ST. S.
X69	E. 84TH ST. S.
X70-X74	E. 85TH ST. S.
X75-X76	RESIDENTIAL DRIVE
X77-X79	COMMERCIAL DRIVE (1)
X80-X81	COMMERCIAL DRIVE (2)

THE FOLLOWING CITY OF TULSA STANDARDS WILL BE REQUIRED

DESIGN NUMBER	STANDARD NAME
102	PROJECT SIGN
126	STANDARD SILT FENCE AND CONSTRUCTION ENTRANCE
301	DUAL 3/4" LONG SERVICE FROM 1" FEED
303	DUAL DOMESTIC/SPRINKLER FROM 2" LINE
304	BEDDING DETAIL - RIGID PIPE
306	TRENCH DETAIL CONSTRUCTION ADJACENT TO ROADWAY
307	BORE/OPEN CUT CONDUIT DETAIL
308	COMBINATION AIR VACUUM/AIR RELIEF, CHECK VALVES, AND VAULTS
309	FIRE HYDRANT
312	FRAME AND LID FOR WATER VAULTS
313	VALVE BOX
314	MANHOLE STEPS
315	THRUST BLOCKS AND TRENCH CONDITIONS
353	FRAME AND LID FOR 4' I.D. SANITARY MANHOLE
358	SANITARY SEWER PRE-CAST SANITARY SEWER MANHOLES
366	MANHOLE STEP LOCATION AND INVERT DETAILS
401	MANHOLE GRADE ADJUSTMENT
405	RUBBER SEAL AT MANHOLE
409	CONCRETE MANHOLE COLLAR
414	MANHOLE ADJUSTING RING
501	STANDARD METER SETTINGS FOR 5/8" X 3/4" AND 3/4" WATER SERVICE
502	STANDARD METER SETTINGS FOR 1" WATER SERVICE
503	STANDARD METER SETTINGS FOR 1-1/2" WATER SERVICE
505	METER CAN WITH RIM AND LID 5/8" X 3/4" AND 1" WATER METER CAN INSTALLATION
506	METER CAN WITH RIM AND LID 1-1/2" WATER METER INSTALLATION
608A	STREET NAME SIGNS
608B	TRAFFIC SIGNS
625	REMOVAL OF TRAFFIC ITEMS
702	RESIDENTIAL CONCRETE DRIVEWAY ASPHALT STREET
703	RESIDENTIAL ASPHALT DRIVEWAY CONCRETE STREET
704	RESIDENTIAL ASPHALT DRIVEWAY ASPHALT STREET
705	TEMPORARY RESIDENTIAL DRIVEWAY (NO CURB)
706	COMMERCIAL DRIVEWAY
707	COMMERCIAL DRIVEWAY
708	COMMERCIAL ASPHALT DRIVEWAY
710	TEMPORARY COMMERCIAL DRIVEWAY (NO CURB)
713	PAVEMENT REMOVAL AND REPLACEMENT
714	PAVEMENT CUTS
726	ASPHALT PAVEMENT STANDARD DETAILS FOR RESIDENTIAL AND COLLECTOR STREETS
727	CONCRETE PAVEMENT STANDARD DETAILS FOR RESIDENTIAL AND COLLECTOR STREETS (1 OF 2)
729	CONCRETE PAVEMENT STANDARD DETAILS FOR RESIDENTIAL AND COLLECTOR STREETS (2 OF 2)
733	STANDARD PAVEMENT REHABILITATION FOR UTILITY CONSTRUCTION
751	PIPE BEDDING DETAIL FOR STORM SEWER
752	FRAME AND LID FOR STORMWATER MANHOLES
753	FRAME AND LID FOR 4' & 5' I.D. STORMWATER MANHOLE
754	FRAME AND LID FOR 6' & 8' I.D. STORMWATER MANHOLE & JUNCTION BOXES
755	CONFIGURATIONS OF CAST IRON CURB INLETS
762	PRECAST STANDARD INLET & GRATES W/ACCESS MANHOLE BACK OF CURB
764	REINFORCED CONCRETE STORMWATER INLETS
765	STORMWATER FRAMES
766	STORMWATER GRATES
767	STANDARD CAST IRON CURB
768	STANDARD RECESSED CURB INLET
775	STANDARD PRECAST CONCRETE STORMWATER MANHOLE
776	STANDARD PIPE HEADWALLS 15" TO 42"
790	STANDARD SIDEWALK RAMP

THE FOLLOWING ODOT STANDARDS WILL BE REQUIRED

ROADWAY DESIGN	
SSS-1-1	SOLID SLAB SODDING
TSC2-3-2	TEMPORARY SEDIMENT CONTROLS
TSD-2-0	TEMPORARY SILT DIKE
ASCD-5-2	ASPHALT SURFACING CONSTRUCTION DETAILS
CSCD-5-3	CONCRETE SURFACING CONSTRUCTION DETAILS
LECS-4-1	JOINTS AND SEALERS - LONGITUDINAL, EXPANSION & CONTRACTION
LTU-4-0	LOAD TRANSFER UNITS FOR CONCRETE PAVEMENT JOINTS
PCPR-3-1	PORTLAND CEMENT CONCRETE PAVEMENT REPAIR
PED-3-2	PAVEMENT EDGE DRAIN
TWD-1-0	TACTILE WARNING DEVICES
PCES-4-1	PREFABRICATED CULVERT END SECTION
SMD-3-1	STANDARD MEDIAN DRAINS (18" TO 36" PIPES)
CI-1-2	CURB INLETS
MJB-3-1	MANHOLE & JUNCTION BOXES
FHTCP-3-1	FILL HEIGHT TABLES (CONCRETE PIPES)
SPI-4-1	STANDARD PIPE INSTALLATION
SBI-4-2	STANDARD BOX INSTALLATION
PUD-3-2	PIPE UNDERDRAIN INSTALLATION
DC-3-2	PAVED DITCHES AND FLUMES
PDT-1-3	PAVEMENT DROP-OFF TREATMENTS
SUEL1-3-2	SUPERELEVATION

BRIDGE DESIGN	
RCB-C1-3&4&5(2-20)-01E	RCB CULVERTS - BARREL DETAILS 5'-0" SPAN SINGLE CELL - 2 FT. TO 20 FT. FILL

TRAFFIC SIGNING	
PM1-1-02	PAVEMENT MARKING (CROSSWALKS AND LEFT TURN BAY)
PM6-1-00	PAVEMENT MARKING (ARROWS)
MOD1-1-00	STANDARD MEDIAN OPENING DETAILS (ALL WAY INTERSECTION)
MOD3-1-00	STANDARD MEDIAN OPENING DETAILS (NO INTERSECTION)
RSD1-1-00	REGULATORY SIGN DETAILS (R-SERIES)
RSD2-1-00	REGULATORY SIGN DETAILS (R-SERIES)
WSD1-1-00	WARNING SIGN DETAILS (W-SERIES)

TRAFFIC CONTROL	
TCS1-1-01	TRAFFIC CONTROL CONSTRUCTION NOTES
TCS2-1-00	TRAFFIC CONTROL TABLES & CHARTS
TCS3-1-01	TEMPORARY TRAFFIC CONTROL ELEMENTS
TCS4-1-01	TRAFFIC CONTROL DEVICES
TCS5-1-00	TYPICAL SIGN INSTALLATION
TCS6-1-02	CHANNELIZING DEVICES
TCS7-1-02	ADVANCE WARNING SIGNS
TCS8-1-00	CONSTRUCTION SIGNS
TCS9-1-01	CONSTRUCTION SIGNS
TCS10-1-00	CONSTRUCTION SIGNS
TCS11-1-01	CONSTRUCTION SIGNS
TCS14-1-00	CONSTRUCTION SIGNS
TCS19-1-01	CONSTRUCTION SIGN
TCS21-1-02	CONSTRUCTION ZONE PAVEMENT MARKINGS
TCS22-1-00	CONSTRUCTION ZONE PAVEMENT MARKINGS
TCS24-1-02	PORTABLE LONGITUDINAL BARRIER

ISAACS SURVEYING SERVICES, LLC
RESPONSIBLE FOR:
RIGHT OF WAY MAPS & SURVEY DATA
SHEETS 34 - 41

PDG, LLC RESPONSIBLE FOR:
LANDSCAPING SHEETS 123 - 132 ,
& 134 - 144

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDEK
16476
OKLAHOMA
October 31, 2018

INDEX AND STANDARDS

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18	
	FIELD MGR	BWM	7/20	
	LEAD ENGR		7/19	
VERTICAL: 1"= NA	RECOMMENDED HAJ		7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-G-Index.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 2 OF 334 SHEETS

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ROADWAY - BASE BID

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
1	201(A)	CLEARING AND GRUBBING	1, 48	AC	9.33
2	202(A)	UNCLASSIFIED EXCAVATION	10, 40, 60, 108, 111, 200	CY	93,785
3	202(D)	UNCLASSIFIED BORROW	19	CY	5,000
4	202(E)	SELECT BORROW	122	CY	1,203
5	205(A)	TYPE A-SALVAGED TOPSOIL	126	CY	2,970
6	220	SWPPP DOCUMENTATION AND MANAGEMENT	64	LSUM	1
7	221(C)	TEMPORARY SILT FENCE	12	LF	5,518
8	221(D)	TEMPORARY SEDIMENT FILTER	12, 61, 62	EA	52
9	221(F)	TEMPORARY SILT DIKE	12	LF	168
10	230(A)	SOLID SLAB SODDING	13, 14, 15	SY	17,680
11	303(A)	AGGREGATE BASE TYPE TYPE A	2, 4, 116	CY	16,908
12	310(B)	SUBGRADE METHOD B		SY	45,905
13	325	SEPARATOR FABRIC	5	SY	52,389
14	411(B)	SUPERPAVE, TYPE S3 (PG 64-22 OK)	16, 17, 18	TON	416
15	411(C)	SUPERPAVE, TYPE S4 (PG 64-22 OK) INSOLUBLE	16, 17, 18	TON	344
16	414(B)	DOWEL JOINTED P.C.C. PAVT. (PLACEMENT)	49	SY	34,979
17	414(G)	P.C. CONC. PAVEMENT	20, 23, 49	CY	8,748
18	509(A)	CLASS AA CONCRETE	20, 121	CY	109
19	509(C)	CLASS A CONCRETE, SMALL STRUCTURES	20	CY	10
20	509(D)	CLASS C CONCRETE	20	CY	138
21	511(A)	REINFORCING STEEL	125	LB	18,357
22	601(C)	TYPE 1-A FILTER BLANKET		TON	5
23	609(B)	2'-2' COMB. CURB & GUTTER (8" BARRIER)	20, 22, 23, 24, 49, 117, 120	LF	9,045
24	609(B)	2'-2' COMB. CURB & GUTTER (6" BARRIER)	20, 22, 23, 24, 49, 117	LF	6,254
25	610(A)	4" CONCRETE SIDEWALK	20, 23, 24, 25	SY	5,090
26	610(A)	4" STAMPED CONCRETE SIDEWALK	20, 23, 25, 102, 107	SY	214
27	610(B)	6" CONCRETE DRIVEWAY	20, 23, 24, 25	SY	2,089
28	610(C)	6" PATTERNED CONCRETE DIVIDING STRIP	20, 23, 102, 107	SY	1,190
29	610(I)	TACTILE WARNING DEVICES		SF	240
30	611(A)	MANHOLE (4' DIAMETER), COMPLETE IN PLACE	26, 28, 34, 44, 57	EA	8
31	611(A)	MANHOLE (5' DIAMETER), COMPLETE IN PLACE	26, 28, 34, 44, 57	EA	26
32	611(A)	MANHOLE (6' DIAMETER), COMPLETE IN PLACE	26, 28, 34, 44, 57	EA	1
33	611(B)	ADDITIONAL DEPTH IN 4' MANHOLE (STORM SEWER)	44	VF	6
34	611(B)	ADDITIONAL DEPTH IN 5' MANHOLE (STORM SEWER)	44	VF	82
35	611(B)	ADDITIONAL DEPTH IN 6' MANHOLE (STORM SEWER)	44	VF	3
36	611(G)	INLET CI DESIGN 2(B), COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	6
37	611(G)	INLET, TYPE RCI DES. 2 (B),COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	2
38	611(G)	INLET CI DESIGN 2(D), COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	1
39	611(G)	INLET CI DESIGN 4(STD), COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	8
40	611(G)	INLET, TYPE RCI DES. 4 (STD),COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	12
41	611(G)	INLET CI DESIGN 4(B), COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	1
42	611(G)	INLET, TYPE RCI DES. 4 (B),COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	1
43	611(G)	INLET CI DESIGN 4(D), COMPLETE IN PLACE	31, 32, 33, 34, 35, 56, 113	EA	1
44	611(G)	INLET W/ LRG. JCT. BOX, CI DES. 2(B), COMPLETE IN PLACE	26, 31, 32, 33, 34, 35, 56, 113	EA	5
45	611(G)	INLET W/ LRG. JCT. BOX, CI DES. 2(D), COMPLETE IN PLACE	26, 31, 32, 33, 34, 35, 56, 113	EA	1
46	611(G)	INLET W/ LRG. JCT. BOX, CI DES. 4(STD), COMPLETE IN PLACE	26, 31, 32, 33, 34, 35, 56, 113	EA	3
47	611(G)	INLET (SMD-TYPE 2), COMPLETE IN PLACE	31, 32, 33, 34, 35	EA	11
48	611(H)	ADD'L DEPTH IN INLET CI DES. 2	35	VF	53
49	611(H)	ADD'L DEPTH IN INLET CI DES. 4	35	VF	49
50	611(H)	ADD'L DEPTH IN INLET W/ LJB, CI DES. 2	35	VF	16
51	611(H)	ADD'L DEPTH IN INLET W/ LJB, CI DES. 4	35	VF	6
52	611(H)	ADD'L DEPTH IN INLET (SMD-TYPE 2)	35	VF	16
53	612(A)	MANHOLE ADJUST TO GRADE (PUBLIC)	20, 21, 26, 27, 28	EA	1
54	612(C)	INLET ADJUSTED TO GRADE	20, 21, 26, 27, 28, 31, 33	EA	2
55	613(J)	EDGE DRAIN CONDUIT - PERFORATED		LF	9,444
56	613(K)	EDGE DRAIN OUTLET LATERAL - NONPERFORATED		LF	237
57	613(L)	15" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE		EA	1
58	613(L)	18" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE		EA	3
59	613(S)	STANDARD BEDDING MATERIAL, CLASS B	54, 55	CY	643
60	613(V)	TRENCH EXCAVATION	55	CY	42
61	619(A)	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	10, 21, 51, 65	LSUM	1
62	619(B)	REMOVAL OF HEADWALL	10, 21, 63, 65	EA	11
63	619(B)	REMOVAL OF ASPHALT PAVEMENT	10, 21, 65	SY	24,417
64	619(B)	REMOVAL OF CONCRETE PAVEMENT	10, 21, 65	SY	893
65	619(B)	REMOVAL OF CURB & GUTTER	10, 21, 65	LF	2,409
66	619(B)	REMOVAL OF SIDEWALK	10, 21, 65	SY	381
67	619(B)	REMOVAL OF CONCRETE SLOPE PROTECTION	10, 21, 65	SY	888
68	619(B)	REMOVAL OF MANHOLES	10, 21, 63, 65	EA	3
69	619(B)	REMOVAL OF DRAINAGE INLETS	10, 21, 63, 65	EA	14
70	619(B)	REMOVAL OF RIPRAP	10, 21, 65, 104	SY	263
71	619(B)	REMOVAL OF CONCRETE DITCH LINER	10, 21, 65	LF	1,098
72	619(B)	REMOVAL OF EXISTING PIPE	10, 21, 63, 65	LF	1,993
73	619(B)	REMOVAL OF FENCE	10, 21, 65	LF	2,805
74	619(B)	REMOVAL OF WALL	10, 21, 65	LF	893
75	619(B)	REMOVAL OF GUARDRAIL	10, 21, 65	LF	1,779
76	619(B)/240(A)	REMOVAL OF TREE 6" TO 12" IN DIA.	10, 21, 65	EA	184
77	619(B)/240(A)	REMOVAL OF TREE 13" TO 18" IN DIA.	10, 21, 65	EA	65
78	619(B)/240(A)	REMOVAL OF TREE 19" TO 24" IN DIA.	10, 21, 65	EA	19
79	619(B)/240(A)	REMOVAL OF TREE 25" AND UP IN DIA.	10, 21, 65	EA	18
80	619(C)	SAWING PAVEMENT	53	LF	308
81	640(A)	FIELD OFFICE		EA	2
82	641	MOBILIZATION	58, 103, 110	EA	1
83	642	CONSTRUCTION STAKING	7, 47	EA	1
84	856(A)	TRAFFIC STRIPE (MULTI-POLY.) (4" WIDE)	36	LF	14,509
85	856(B)	TRAFFIC STRIPE (MULTI-POLY.) (ARROWS)	36	EA	23
86	COT 332	CONDUIT OPEN CUT 6 INCH	115	LF	557
87	COT 608	GROUND SIGN	118	SF	93
88	COT 608	1-1/2" SIGN POST	118	LF	20
89	COT 608	1-3/4" SIGN POST	118	LF	100
90	COT 608	2" SIGN POST	118	LF	30
91	COT 625	REMOVAL OF TRAFFIC ITEMS	10, 21, 65, 66	EA	55
92	SP-01	ANCHORED REINFORCED VEGETATION SYSTEM (ARVS) WITH B-1 ANCHORS	127	SY	6,161
93	SP-01	EROSION CONTROL BLANKET (ECB)	123, 124	SY	6,161
94	SPECIAL	DECORATIVE DOWEL JOINTED P.C.C. PAVT. (PLACEMENT)	102, 107	SY	415

ROADWAY - BASE BID

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
95	SPECIAL	FENCE - CLF (6 FT HIGH, CLASS A)	19, 106	LF	8
96	SPECIAL	FENCE - BRICK (6 FT HIGH)	19, 106	LF	16
97	SPECIAL	FENCE - WOOD (4 FT HIGH)	19, 106	LF	134
98	SPECIAL	FENCE - WOOD (6 FT HIGH)	19, 106	LF	332
99	SPECIAL	FENCE - IRON ROD (4 FT HIGH)	19, 106	LF	350
100	SPECIAL	FENCE - IRON WITH BRICK PILLARS (6 FT HIGH)	19, 106	LF	9
101	SPECIAL	STABILIZED CONSTRUCTION ENTRANCE	19	EA	4
102	SPECIAL	CURB RAMP		EA	30
103	SPECIAL	TEMPORARY FENCE	101, 106	LF	3,575
104	SPECIAL	URBAN RIGHT OF WAY RESTORATION	11, 14, 29, 41, 59, 114, 119	EA	1
105	SPECIAL	QUICK SET FLOWABLE FILL	19, 32	CY	123
106	SPECIAL	OWNER ALLOWANCE		ALLOW	1
107	SPECIAL	RELOCATION OF RIPRAP	104, 105	SY	15
108	SPECIAL	PSO RELOCATION ALLOWANCE	128, 129	ALLOW	1

STORMWATER PIPE OPTION 1

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
109	613(A)	15" REINFORCED CONCRETE PIPE (RCP), COMPLETE IN PLACE	30, 32, 45, 54, 108, 109	LF	4
110	613(A)	18" REINFORCED CONCRETE PIPE (RCP), COMPLETE IN PLACE	30, 32, 45, 54, 108, 109	LF	3,695
111	613(A)	24" REINFORCED CONCRETE PIPE (RCP), COMPLETE IN PLACE	30, 32, 45, 54, 108, 109	LF	751
112	613(A)	30" REINFORCED CONCRETE PIPE (RCP), COMPLETE IN PLACE	30, 32, 45, 54, 108, 109	LF	649
113	613(A)	36" REINFORCED CONCRETE PIPE (RCP), COMPLETE IN PLACE	30, 32, 45, 54, 108, 109	LF	646

STORMWATER PIPE OPTION 2

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
114	613(EE) / COT 215	15" CORRUGATED POLYPROPYLENE PIPE (CPP), COMPLETE IN PLACE	32, 45, 54, 67, 108, 109	LF	4
115	613(EE) / COT 215	18" CORRUGATED POLYPROPYLENE PIPE (CPP), COMPLETE IN PLACE	32, 45, 54, 67, 108, 109	LF	3,695
116	613(EE) / COT 215	24" CORRUGATED POLYPROPYLENE PIPE (CPP), COMPLETE IN PLACE	32, 45, 54, 67, 108, 109	LF	751
117	613(EE) / COT 215	30" CORRUGATED POLYPROPYLENE PIPE (CPP), COMPLETE IN PLACE	32, 45, 54, 67, 108, 109	LF	649
118	613(EE) / COT 215	36" CORRUGATED POLYPROPYLENE PIPE (CPP), COMPLETE IN PLACE	32, 45, 54, 67, 108, 109	LF	646

RETAINING WALLS

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
119	303(A)	AGGREGATE BASE TYPE A	2, 4, 203	CY	2,196
120	501(A)	STRUCTURAL EXCAVATION UNCLASSIFIED	200	CY	15,815
121	501(C)	SUBSTRUCTURE EXCAVATION ROCK	205	CY	1,217
122	501(F)	GRANULAR BACKFILL	206	CY	18,272
123	502	TEMPORARY EARTH RETAINAGE	214	LSUM	1
124	509	SPECIAL CONCRETE FINISH	207	SY	19,985
125	509(A)	CLASS AA CONCRETE	20, 208	CY	4,754
126	509(B)	CLASS A CONCRETE	20, 209	CY	5,711
127	511(A)	REINFORCING STEEL	204	LB	818,670
128	511(B)	EPOXY COATED REINFORCING STEEL	210	LB	961,630
129	516(A)	DRILLED SHAFTS 30" DIAMETER	211	LF	6,732
130	516(A)	DRILLED SHAFTS 36" DIAMETER	211	LF	5,492
131	516(A)	DRILLED SHAFTS 60" DIAMETER	211	LF	9,839
132	516(C)	(SP) CROSSHOLE SONIC LOGGING	212	EA	131
133	613(H)	6" PERFORATED PIPE UNDERDRAIN ROUND	201	LF	7,864
134	624	(PL) ORNAMENTAL FENCE	215, 216, 217	LF	87
135	SPECIAL	(PL) CLAY CAP	202	CY	2,203
136	SPECIAL	(SP) SHOTCRETE	204, 213	SY	4,358

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

PAY ITEMS & NOTES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER	HBJ	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Pay_Items_Notes-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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ROADWAY PAY ITEM NOTES

1 ALL COSTS FOR REMOVING TREES, SHRUBS, STUMPS, POSTS, AND ALL OTHER DEBRIS AND/OR OBSTRUCTIONS NOT COVERED BY A SEPARATE PAY ITEM ARE INCLUDED IN THE PRICE BID.

2 THIS QUANTITY INCLUDES AN ADDITIONAL 10% ABOVE PLAN QUANTITY FOR UNDERCUTTING OF UNSUITABLE SUBGRADE MATERIAL OR ADDITIONAL PATCHING AS DIRECTED BY THE ENGINEER.

3 NOT USED.

4 INCLUDES COMPACTION OF AGGREGATE TO 98% AASHTO T180 MODIFIED PROCTOR.

5 SEPARATOR FABRIC SHALL BE USED AT ALL PAVEMENT PATCHES AND RECONSTRUCTION SECTIONS. THE SEPARATOR FABRIC SHALL BE CUT AND OVERLAPPED A MINIMUM OF 2 FT AT ALL EDGES OF THE REPAIR.

6 NOT USED

7 CONSTRUCTION STAKING SHALL INCLUDE SURVEYING AND THE FURNISHING, PLACING, AND MAINTAINING OF THE CONSTRUCTION LAYOUT STAKES NECESSARY FOR THE PROPER COMPLETION AND INSPECTION OF THE ENTIRE PROJECT.

8 NOT USED

9 NOT USED

10 WASTE MATERIAL TO BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN A MANNER APPROVED BY THE ENGINEER.

11 CONTRACTOR SHALL REPAIR ANY IRRIGATION SYSTEMS DAMAGED OR REQUIRING RELOCATION DURING THE CONSTRUCTION OF THIS PROJECT TO THE SATISFACTION OF THE PROPERTY OWNER AND CITY ARBORIST. COST SHALL BE INCLUDED IN THE PRICE BID.

12 EROSION PROTECTION SHALL BE PLACED AROUND DRAINAGE INLETS AS REQUIRED TO PREVENT ENTRANCE OF EROSION MATERIAL. EROSION PROTECTION SHALL BE PLACED AS NECESSARY TO PREVENT EROSION WASH TO ADJACENT PROPERTY. ALL EROSION PROTECTION INSTALLED MUST BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE PROJECT. EROSION PROTECTION SHALL BE REMOVED AT THE END OF THE PROJECT AS DIRECTED BY THE ENGINEER, COST TO BE INCLUDED IN THE PRICE BID. THE PRICE INCLUDES THE COST OF SEDIMENT REMOVAL PER THE STORMWATER MANAGEMENT PLAN.

13 THE PAY ITEM FOR SOLID SLAB SODDING INCLUDES QUANTITIES FOR PLACEMENT AND COMPACTION OF SUITABLE BACKFILL AND SOD AT EXISTING GRASS AREAS WHICH MAY BE DAMAGED DURING CONSTRUCTION OF CURBS, SIDEWALKS, DRIVEWAYS, AND OTHER MISCELLANEOUS ITEMS. THE QUANTITIES ARE BASED ON UTILIZING A 3 FOOT WIDE STRIP IN THESE AREAS. THE SOD SHALL BE OF LIKE KIND TO THE EXISTING SOD. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF DAMAGE TO EXISTING GRASS THAT EXCEEDS THESE LIMITS.

14 PAY ITEM INCLUDES ALL MOWING WITHIN THE RIGHT-OF-WAY AS DIRECTED DURING CONSTRUCTION.

15 COST OF WATERING AND FERTILIZING SHALL BE INCLUDED. FERTILIZERS SHALL BE 10-20-10 AND SHALL BE APPLIED AT THE RATE OF 1.5 LBS PER 10 SQ YDS. FERTILIZER SHALL BE APPLIED PER SECTION 230.04H OF ODOT STANDARD SPECIFICATIONS. WATERING SHALL BE APPLIED AS NECESSARY UNTIL VEGETATION IS ESTABLISHED OR UNTIL THE WORK IS ACCEPTED AS COMPLETE.

16 THE COST OF TACK COAT, EDGE JOINT SEAL MATERIAL AND SCREENINGS FOR BLOTTING AND ALL LABOR ASSOCIATED WITH THESE ITEMS SHALL BE INCLUDED IN ASPHALT CONCRETE.

17 ESTIMATED AT 112 LBS PER SQ YD PER 1 INCH THICK.

18 ODOT PAY FACTOR FOR AVERAGE LOT DENSITY SHALL NOT BE USED FOR THIS PROJECT. FAILURE TO REACH AVERAGE LOT DENSITY OF 92%-97% WILL RESULT IN REJECTION OF WORK.

19 LOCATIONS TO BE DETERMINED IN THE FIELD AND WORK TO BE PREFORMED AT THE DIRECTION OF THE FIELD ENGINEER. QUANTITY IS ESTIMATED AND MAY BE OMITTED IN ITS ENTIRETY.

20 THE USE OF FLY-ASH IN CONCRETE IS PROHIBITED.

21 ALL SAW CUTTING AND REMOVAL SHALL BE INCLUDED IN THE COST OF THE ITEM TO BE ADJUSTED, REMOVED, REPAIRED, OR REPLACED.

22 THIS ITEM SHALL BE MEASURED AS THE ACTUAL AMOUNT OF CURB AND/OR GUTTER INSTALLED. NO PAYMENT WILL BE MADE FOR CURB AND/OR GUTTER THROUGH DRIVEWAYS AND INLETS.

23 INCLUDES ALL COST OF SAWED JOINTS AND SEALING OF ALL JOINTS INCLUDING LONGITUDINAL JOINTS.

24 CURB, GUTTER, AND/OR SIDEWALK ASSOCIATED WITH THE DRIVEWAY AND THROUGH THE DRIVEWAY IS INCLUDED IN THE COST OF THE DRIVEWAY.

25 ONE SIDEWALK PANEL ON EACH SIDE OF DRIVEWAYS SHALL BE A MINIMUM OF 6" THICK OR MATCH EXISTING DRIVEWAY THICKNESS, WHICHEVER IS GREATER. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE COST OF THE THICKENED SIDEWALK THROUGH THIS AREA.

26 THIS ITEM SHALL INCLUDE THE COST OF NEW MANHOLE FRAME AND COVER PER CITY OF TULSA STD NO. 752, STD NO. 753, STD NO. 754, STD NO. 761 AND STD NO. 762.

ROADWAY PAY ITEM NOTES (cont.)

27 ALL SANITARY AND STORM SEWER MANHOLE CASTINGS AND LIDS THAT ARE LOCATED IN THE STREET AND ARE DISTURBED BY THE CONTRACTOR SHALL BE REPLACED WITH NEW LIDS AND CASTINGS AND THE OLD ONES SHALL BE SALVAGED AND DELIVERED TO THE METAL RECYCLE BINS IN THE STOCKROOM AREA AT SEWER OPERATIONS AND MAINTENANCE, 9319 E. 42ND STREET NORTH, BETWEEN THE HOURS OF 7:30 AM AND 3:00 PM MONDAY THROUGH FRIDAY.

28 THE TOTAL COST FOR RUBBERIZED ASPHALT AND/OR SILICONE AT MANHOLES, VALVE BOXES, INLETS, AND INLET APRONS, SHALL BE INCLUDED.

29 ALL HOUSE NUMBERS SHALL BE REPLACED/REESTABLISHED THROUGHOUT PROJECT LIMITS. COST TO BE INCLUDED IN URBAN RIGHT OF WAY RESTORATION. CONTRACTOR SHALL REESTABLISH DRAINS, ROOF DRAINS AND OTHER DRAINAGE THROUGH THE CURBS IN ACCORDANCE WITH CITY OF TULSA STANDARD 758.

30 REINFORCED CONCRETE PIPE TO BE CLASS III. ALL REINFORCED CONCRETE PIPE AND MANHOLES TO BE SUPPLIED WITH AN OMNI-FLEX JOINT GASKET OR APPROVED EQUAL. MASTIC JOINT SEALANT SHALL NOT BE ALLOWED.

31 INCLUDES THE COST REQUIRED TO MAKE CONNECTION AND REMOVAL OF EXISTING INLETS. THE COST OF PC CONCRETE CURB AND GUTTER THROUGH THE INLET, 5' EACH SIDE OF THE INLET, AND THE PC CONCRETE INLET APRON SHALL BE INCLUDED. GRATE AND FLOWLINE ELEVATIONS SHALL MATCH EXISTING CONDITIONS UNLESS OTHERWISE NOTED IN THE PLANS.

32 QUICK SET FLOWABLE FILL TO BE USED TO BACKFILL AROUND STREET CURB INLETS AND PIPES AS DIRECTED BY THE ENGINEER.

33 ALL INLETS COMPLETE IN PLACE SHALL BE CAST IN PLACE CONCRETE OR PRECAST CONCRETE. NO BRICK INLETS SHALL BE ALLOWED. THIS PAY ITEM INCLUDES INLET FRAME, GRATE, HOOD, AND CONCRETE.

34 NO MASONRY STRUCTURES SHALL BE CONSTRUCTED WITHIN THE RIGHT OF WAY.

35 ADDITIONAL DEPTH IN INLET SHALL BE MEASURED AND PAID FOR ALL INLETS EXCEEDING 3.71 VERTICAL FT, CALCULATED FROM THE CENTER ELEVATION OF THE LOWEST CAST IRON CURB TO THE FLOWLINE OF THE OUTLET PIPE.

36 ALL PLASTIC PAVEMENT MARKINGS SHALL BE EITHER:

EXTRUDED-APPLIED THERMOPLASTIC (USE ON ASPHALT PAVEMENT). THERMOPLASTIC PAVEMENT MARKINGS SHALL ONLY BE APPLIED WHEN THE SURFACE TEMPERATURE EXCEEDS 55°F FOR ALL OF THE SIX HOURS PRIOR TO INSTALLATION AND MAXIMUM WIND GUSTS ARE BELOW 15 MPH AT THE TIME OF APPLICATION. PRICE BID TO INCLUDE FLEX TABS OR LIKE KIND FOR POST CONSTRUCTION LANE MARKING/SEPARATION. MECHANICALLY APPLIED PERFORMED PLASTIC TAPE ("COLD TAPE") WILL NOT BE ACCEPTED.

OR

MULTI-POLYMER PAINT (USE ON CONCRETE PAVEMENT). MULTI-POLYMER PAVEMENT MARKINGS SHALL ONLY BE APPLIED 30 DAYS AFTER PAVING WHEN PAVEMENT SURFACE EXCEED 40°F FOR ALL OF THE SIX HOURS PRIOR TO INSTALLATION WITH MINIMUM WIND CHILL TEMPERATURE OF 35°F. PRICE BID TO INCLUDE FLEX TABS OR LIKE KIND FOR POST CONSTRUCTION LANE MARKING/SEPARATION.

37 REFLECTORIZED SHEETING ON SIGNS AND BARRICADES SHALL OF A CUBIC PRISMATIC TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE IX RETROREFLECTIVE SHEETING. REFLECTORIZED SHEETING ON DRUMS AND TUBE CHANNELIZERS SHALL BE OF A HIGH-INTENSITY TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE III RETROREFLECTIVE SHEETING.

38 IF WARNING LIGHTS ARE TO BE USED ON TRAFFIC CONTROL DEVICES, TYPE "A" LIGHTS SHALL ONLY BE USED ON DEVICES WARNING OF UNEXPECTED HAZARDS, AND SHALL NOT BE USED FOR DELINEATION OF THE TRAVELED WAY. ONLY TYPE "C" WARNING LIGHTS SHALL BE USED FOR DELINEATION OF THE TRAVELED WAY, AND TYPE "C" LIGHTS SHALL NOT BE USED FOR ANY OTHER PURPOSE.

39 THE PAY ITEM FOR FLAGGER SHALL BE PAID FOR ON A FLAG DAY (F.D.) BASIS. ONE F.D. IS ONE COMPLETE WORKDAY PERFORMED BY THE CONTRACTOR SET FORTH IN THE CONTRACT DOCUMENTS AND SPECIFICATIONS.

40 THE CONTRACTOR WILL BE PAID FOR UNCLASSIFIED EXCAVATION ON THE BASIS OF PLAN QUANTITY. ANY ADDITIONAL EXCAVATION REQUIRED OR OVERRUN OF PLAN QUANTITY WILL BE PAID FOR ON THE BASIS OF UNIT PRICE BID FOR THE ITEM. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SURVEY TO VERIFY ANY ADDITIONAL QUANTITIES.

41 A CERTIFIED ARBORIST SHALL OVERSEE ALL PLANTINGS. AND OR REMOVAL OF TREES. CONTACT CITY ARBORIST TO ACCEPT FINAL PLANTINGS. CONTACT #: 918-596-2548

42 NOT USED.

43 NOT USED.

44 ADDITIONAL DEPTH IN A MANHOLE SHALL BE MEASURED FROM 6FT AS MEASURED FROM THE TOP OF RIM TO THE LOWEST FLOWLINE.

45 THIS ITEM SHALL BE COMPLETE IN PLACE AND SHALL INCLUDE ALL PIPE. STANDARD BEDDING MATERIAL AND TRENCH EXCAVATION, JOINT GASKETS AND ALL OTHER INCIDENTALS. NO ADDITIONAL COST WILL BE MADE.

46 PRICE BID FOR THIS ITEM SHALL BE PAYMENT IN FULL FOR THE INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF ALL NECESSARY CONSTRUCTION TRAFFIC CONTROL REQUIRED FOR COMPLETION OF THE PROJECT.

47 THE COST TO REPLACE REMOVED OR DAMAGED SECTION CORNERS AND ALL OTHER PERMANENT RIGHT OF WAY MARKERS SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM. NO ADDITIONAL PAYMENT WILL BE MADE.

ROADWAY PAY ITEM NOTES (cont.)

48 ALL EXISTING DRAINAGE STRUCTURES SHALL BE CLEANED AND CLEARED OF ALL SEDIMENTATION AND DEBRIS TO THE RIGHT OF WAY. COST OF CLEARING SHALL BE INCLUDED IN THE PRICE BID.

49 IF THE CONCRETE PAVEMENT TYPICAL SECTION SHOWS CURB & GUTTER THE CONTRACTOR MAY REQUEST TO USE INTEGRAL CURB AS AN ALTERNATIVE WITHOUT ANY ADJUSTMENT IN PAY ITEMS OR QUANTITIES. ALSO, IF THE CONCRETE PAVEMENT TYPICAL SECTION SHOWS AN INTEGRAL CURB THE CONTRACTOR MAY REQUEST TO USE CURB & GUTTER AS AN ALTERNATIVE WITHOUT ANY ADJUSTMENT TO PAY ITEMS OR QUANTITIES. EITHER REQUEST MUST BE APPROVED BY THE ENGINEER.

50 NOT USED.

51 PAY ITEM INCLUDES REMOVAL OF ALL STRUCTURES AND OBSTRUCTIONS WITHIN PROJECT LIMITS NOT SPECIFIED BY OTHER ITEMS OF WORK.

52 NOT USED.

53 INCLUDES SAWING NOT INCLUDED IN OTHER ITEMS OF WORK.

54 STANDARD BEDDING MATERIAL TO BE TYPE A AGGREGATE BASE COMPACTED TO 95% STANDARD PROCTOR DENSITY. AGGREGATE BASE IN THE ROADWAY SHALL BE 98% MODIFIED PROCTOR.

55 QUANTITY SHALL BE MEASURED AND PAID FOR ANY CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BOX (RCB) LARGER THAN 4' BY 4', USE NEAT LINES THAT ARE 4" BELOW THE BOTTOM OF THE RCB AND 4'-0" BEYOND THE OUTSIDE WALL.

56 FOR INLET DESIGN NUMBERS AND CONFIGURATIONS REFER TO CITY OF TULSA STANDARD NO. 755. INLET DETAIL/ LIST WILL BE PROVIDED IN THE PLANS FOR CONFIGURATIONS NOT SHOWN IN CITY OF TULSA STANDARDS.

57 ALL MANOLES SHALL BE COMPLETE IN PLACE. THIS PAY ITEM INCLUDES FRAME, COVER, CONCRETE AND ALL OTHER INCIDENTALS REQUIRED FOR PLACEMENT.

58 MOBILIZATION FOR THE PROJECT *(EXCLUDING WATER MOBILIZATION)* IS TO BE INCLUDED IN THIS PAY ITEM. THE MAXIMUM ALLOWABLE AMOUNT WILL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION TABLE 641:1.

59 CONTRACTOR SHALL COORDINATE WITH HOMEOWNERS TO RESET ALL PAVERS, LANDSCAPE STONE, PRIVATE SIDEWALKS AND FENCES THAT ARE DISTURBED DURING CONSTRUCTION OPERATIONS. ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED FOR RESETING OF SUCH ITEMS IS TO BE INCLUDED IN PRICE BID FOR URBAN RIGHT OF WAY AND RESTORATION.

60 UNCLASSIFIED EXCAVATION INCLUDES REMOVAL OF AGGREGATE BASE AND MODIFIED SUBGRADE UNDER EXISTING PAVEMENT TO BE REPAIRED.

61 PRICE BID SHALL INCLUDE MAINTENANCE, SEDIMENT REMOVAL, DISPOSAL, AND REMOVAL OF FILTERS AT PROJECT COMPLETION.

62 INCLUDES 52 TYPE 1-B FILTERS.

63 SHALL INCLUDE ALL COSTS ASSOCIATED WITH PLUGGING/ PATCHING HOLES IN EXISTING STRUCTURES TO REMAIN.

64 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL AND MAINTENANCE OF THE STORM WATER DRAINAGE FROM THE CONSTRUCTION SITE. STORM WATER PONDING ON THE CONSTRUCTION SITE THAT IS THE RESULT OF CONSTRUCTION WILL NOT BE ALLOWED. ALL COST ASSOCIATED WITH STORM WATER MANAGEMENT SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.

65 ITEMS TO BE REMOVED MAY OR MAY NOT BE PRESENT IN ANY SPECIFIC CONDITION.

66 ALL TRAFFIC MATERIALS REMOVED SHALL BE HANDLED PER COT SPECIFICATION 625 REMOVAL OF TRAFFIC ITEMS.

67 WHERE CORRUGATED POLYPROPYLENE PIPE CONNECTS TO REINFORCED CONCRETE STRUCTURES, CONTRACTOR SHALL ENSURE CONNECTIONS ARE WATER-TIGHT AND FULLY SEALED AGAINST SOIL INFILTRATION.

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018

PAY ITEMS & NOTES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR.	BDC	12/18
	FIELD MGR.	ZCM	7/20
VERTICAL: 1"= NA	LEAD ENGR.		11/18
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Pay_Items_Notes-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 4 OF 334 SHEETS

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ROADWAY PAY ITEM NOTES

101 THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY RIGHT-OF-WAY FENCE AS REQUIRED. ESTIMATED QUANTITIES ARE SUMMARIZED ON THE SUMMARY OF TEMPORARY FENCING, SUMMARIES (2), SHEET 15.

THE TEMPORARY FENCE SHALL BE SUFFICIENT TO CONTAIN ALL CHILDREN, ANIMALS, ETC. IN MANNER AS THE EXISTING FENCE. WHEN THE PORTION OF THE PROJECT THAT REQUIRED THIS TEMPORARY FENCE IS COMPLETED, THE TEMPORARY FENCE SHALL BE REMOVED AT NO ADDITIONAL COST.

THE TEMPORARY FENCE SHALL BE CHAIN LINK FENCE, 6 FEET HIGH, CLASS A.

102 ALL MATERIAL, LABOR, EQUIPMENT AND ASSOCIATED COSTS FOR THE SURFACE TREATMENT OF THIS ITEM SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE BID FOR THIS ITEM.

103 CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A STAGING AREA.

104 REMOVED RIPRAP SHALL BE RELOCATED TO DESIGNED LOCATIONS. ALL REMOVED MATERIAL NOT REQUIRED BY PLANS FOR RELOCATION SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

105 15 SY OF RIPRAP TO BE RELOCATED, SEE REMOVALS (1) AND PLAN & PROFILES (4) & (11) FOR LOCATIONS. REMOVAL OF RIPRAP PAID FOR UNDER OTHER BID ITEMS.

106 INCLUDES 2% FOR GROUND MEASUREMENT.

107 REFER TO MISCELLANEOUS DETAILS (1), SHEET 22 FOR CONCRETE SPECIAL SURFACE FINISH NOTES.

108 COST FOR REMOVAL OF ABANDONED UTILITY PIPE LINES THAT INTERFERE WITH CONSTRUCTION SHALL BE INCLUDED IN PRICE BID FOR UNCLASSIFIED EXCAVATION.

109 THE CONTRACTOR SHALL KEEP THE OPEN TRENCH DRAINED. COST TO BE INCLUDED IN PRICE BID FOR LINEAR FOOT OF PIPE.

110 SHALL INCLUDE ALL LABOR, EQUIPMENT, AND ASSOCIATED COSTS TO COMPLETE THE REQUIRED BID ITEM TO THE FULL EXTENT REQUIRED TO COMPLETE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS.

111 EXCAVATAIONS ARE ANTICIPATED TO EXTEND THROUGH/INTO SAND, CLAY, SOFT ROCK AND HARD ROCK. EXCAVATIONS IN HARD ROCK WILL REQUIRE PNEUMATIC RAM HOES.

113 REFER TO THE SUMMARY OF DRAINAGE STRUCTURES, SHEETS 47 AND 49, FOR CLARIFICATION REGARDING THE NUMBER OF GRATES AND HOODS FOR EACH INLET.

114 CONTRACTOR SHALL ENSURE ALL POLES WHICH ARE AFFECTED BY TRENCHING CONDITIONS ARE BRACED BY UTILITY OWNERS. PAYMENT SHALL BE INCLUDED IN URBAN RIGHT OF WAY RESTORATION. NO ADDITIONAL PAYMENT SHALL BE MADE.

115 CONDUIT SHALL BE PVC, COMPLETE IN PLACE, AND INSTALLED BELOW THE ROADWAY AGGREGATE BASE FOR FUTURE IRRIGATION.

116 QUANTITY SHALL INCLUDE 16,489 CY AS SHOWN ON THE SURFACING SUMMARY AND 419 CY AS SHOWN ON THE DRIVEWAY SUMMARY.

117 COST OF SELECT BACKFILL AND COMPACTION, BEHIND THE CURB, SHALL BE INCLUDED IN PRICE BID FOR CURB AND GUTTER AS SHOWN ON THE TYPICAL SECTIONS.

118 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ALL EXISTING TRAFFIC SIGNS AND MARKINGS REMOVED OR DAMAGED AS PART OF THIS PROJECT. ALL SIGNS AND POLES PROVIDED SHALL BE NEW AND UNDAMAGED AND SHALL MEET THE REQUIREMENTS OF COT SPECIFICATION 608 TRAFFIC SIGNS.

119 ALL HYDRANTS, VALVES AND OTHER FITTINGS FROM ABANDONED WATER MAINS SHALL BE SALVAGED AND DELIVERED TO SOUTH YARD, 2317 S JACKSON. PAYMENT TO BE MADE UNDER URBAN RIGHT OF WAY RESTORATION. NO ADDITIONAL PAYMENT SHALL BE MADE.

120 QUANTITY SHALL INCLUDE 8,407 LF AS SHOWN ON THE SURFACING SUMMARY AND 638 LF AS AS SHOWN ON THE DRIVEWAY SUMMARY.

121 QUANTITY SHALL INCLUDE 106.5 CY AS SHOWN ON THE DRAINAGE STRUCTURE SUMMARY AND 2.8 CY FOR THE BROOKWOOD SIGN SHOWN ON MISCELLANEOUS DETAILS (8), SHEET 31.

122 SELECT BORROW SHALL BE IMPORTED SANDY LOAM TOPSOIL. SAMPLE TOPSOIL TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLACEMENT.

123 EROSION CONTROL BLANKET SHALL BE PLACED ON TOP OF THE ANCHORED REINFORCED VEGETATION SYSTEM AND SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION SP-01, ANCHORED REINFORCED VEGETATION SYSTEM SPECIFICATION.

124 THE AREA COVERED BY THE EROSION CONTROL BLANKET (ECB) INSTALLED IN PLACE SHALL BE MEASURED, EXCLUDING OVERLAPS.

ECB SHALL BE MEASURED BY THE SQUARE YARD. SUCH PAYMENT SHALL BE FULL COMPENSATION FOR MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS REQUIRED TO PERFORM ALL OPERATIONS IN CONNECTION WITH INSTALLATION OF ECB IN REASONABLE ACCORDANCE WITH THE LINES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS, INCLUDING, BUT NOT LIMITED TO PREPARATIONOF BASE FOR ECB, ANCHORING THE ECB WITH SPECIFIED 6-INCH SOD STAPLES AND COORDINATION WITH THE MANUFACTURER/SUPPLIER. SPECIAL PROVISION SP-01, ANCHORED REINFORCED VEGETATION SYSTEM SPECIFICATION.

125 QUANTITY SHALL INCLUDE 17,887 LBS AS SHOWN ON THE DRAINAGE STRUCTURE SUMMARY AND 470 LBS FOR THE BROOKWOOD SIGN SHOWN ON MISCELLANEOUS DETAILS (8), SHEET 31.

ROADWAY PAY ITEM NOTES (cont.)

126 QUANTITY INCLUDES 898 CY AS SHOWN ON THE SUMMARY OF ANCHORED REINFORCED VEGETATION SYSTEM (ARVS) AND AN ESTIMATED QUANTITY OF 2,456 CY TOPSOIL TO BE RESERVED FOR REPLACEMENT OF APPROXIMATELY 5" TOPSOIL ON COMPLETED FORESLOPES, DITCHES, AND BACKSLOPES. THIS QUANTITY IS INCLUDED IN THE EARTHWORK BALANCE. ANY ADDITIONAL EXCAVATION REQUIRED IN CUT SECTIONS TO ALLOW FOR PLACEMENT OF TOPSOIL TO FINAL GRADE, SHALL BE INCLUDED IN THE PRICE BID.

SUITABLE TOPSOIL INCLUDES SELECTIVELY EXCAVATED MATERIAL THAT IS REPRESENTATIVE OF SOILS IN THE VICINITY THAT PRODUCE HEAVY GROWTHS OF CROPS, GRASS, OR OTHER VEGETATION AND IS REASONABLY FREE FROM UNDERLYING SUBSOIL, CLAY LUMPS, OBJECTIONABLE WEEDS, LITTER, BRUSH, MATTED ROOTS, TOXIC SUBSTANCES OR ANY MATERIAL THAT MIGHT BE HARMFUL TO PLANT GROWTH OR BE A HINDRANCE TO GRADING, PLANTING OR MAINTENANCE OPERATIONS. TOPSOIL SHALL NOT CONTAIN MORE THAN FIVE (5) PERCENT BY VOLUME OF STONES, STUMPS, OR OTHER OBJECTS, LARGER THAN ONE INCH IN DIAMETER.

TOPSOIL STOCKPILES AND DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR AT LEAST 21 DAYS ARE TO BE STABILIZED WITH TEMPORARY SEEDING AND MULCH NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY IN THE AREA. PRIOR TO SEEDING, (10-20-10) FERTILIZER SHALL BE APPLIED TO ALL AREAS TO BE STABILIZED.

127 REFER TO SPECIAL PROVISION SP-01, ANCHOR REINFORCED VEGETATION SYSTEM SPECIFICATION AND TURF MAT DETAILS, SHEETS 27 AND 28.

THE AREA COVERED BY THE ARVS, EXCLUDING UNEXPOSED AREAS SUCH AS THE ANCHOR TRENCHES AND OVERLAPS BETWEEN ADJACENT PIECES OF MAT, INSTALLED IN PLACE SHALL BE MEASURED.

ANCHOR REINFORCED VEGETATION SYSTEM (ARVS) SHALL BE MEASURED BY THE SQUARE YARD. SUCH PAYMENT SHALL BE FULL COMPENSATION FOR MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS REQUIRED TO PERFORM ALL OPERATIONS IN CONNECTION WITH INSTALLATION OF ARVS IN REASONABLE ACCORDANCE WITH THE LINES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS AND AS SPECIFIED HEREIN, INCLUDING, BUT NO LIMITED TO PREPARATION OF SOIL BASE FOR MAT, ANCHORING THE MAT WITH SPECIFIED EARTH PERCUSSION ANCHORS, CONSTRUCTING ANCHOR TRENCHES, ATTENDING PRE-CONSTRUCTION CONFERENCES AND COORDINATION WITHTHE MANUFACTURER/SUPPLIER.

PRICE BID SHALL INCLUDE A CONTINGENCY OF UP TO 25 PERCENT OF REQUIRED ANCHORS TO REPLACE ANCHORS WHICH ENCOUNTER UNANTICIPATED OBSTRUCTION DURING DRILLING AND REQUIRE RELOCATION, AS APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT SHALL BE MADE FOR DRIVING NEW ANCHORS ABANDONED DUE TO UNANTICIPATED OBSTRUCTIONS.

128 PAY ITEM INCLUDES ALL MATERIAL, LABOR, AND EQUIPMENT REQUIRED TO INSTALL ITEMS NEEDED BY PSO THAT WILL BE CONSTRUCTED WITH THIS PROJECT UNDER THE DIRECTION OF PSO REPRESENTATIVE.

129 CONTRACTOR SHALL CONTACT PSO REPRESENTATIVE PRIOR TO INSTALLATION. PSO REPRESENTATIVE TO BE ON SITE FOR INITIAL INSTALLATIONS.

JONATHAN CAUDLE
SENIOR ENGINEER
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jcaudle@aep.com

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

1-800-522-OKIE

PAY ITEMS & NOTES (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDD	12/20
	FIELD MGR	RWW	12/20
VERTICAL: 1"= NA	LEAD ENGR	QD	11/20
	RECOMMENDED DESIGN MANAGER	HAS	12-20

APPROVED: CITY ENGINEER

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DATE: OCTOBER 2018
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RETAINING WALL PAY ITEM NOTES

200 STRUCTURAL EXCAVATION UNCLASSIFIED IS CALCULATED FOR REMOVAL OF EARTH TO THE BOTTOM OF AGGREGATE BASE FOR CONVENTIONAL CANTILEVER WALL TYPE 1 AND FOR THE SOIL STABILIZATION WALL TYPE 4. THIS INCLUDES EXCAVATION FOR THE GRANULAR BACKFILL TO THE EXISTING GRADE LINE AS SHOWN ON THE PLANS.

UNCLASSIFIED EXCAVATION IS ALSO CALCULATED FOR DRILLED SHAFT RETAINING WALL TYPE 3 FOR THE STAGED EXCAVATION IN FRONT OF THE DRILLED SHAFT WALL, AND FOR EXCAVATION FOR THE SUBGRADE, DITCH, AND CLAY CAP.

THE CONTRACTOR SHALL DETERMINE THE NEED AND EXTENT OF TEMPORARY SHORING REQUIRED FOR THE CONSTRUCTION OF THE RETAINING WALLS. INCLUDE ALL COSTS OF SHORING AS NECESSARY FOR CONSTRUCTION AND/OR SEQUENCING OPERATONS IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION.

201 PIPE UNDERDRAIN SHALL INCLUDE ALL MATERIALS AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE PIPE UNDERDRAIN ASSEMBLY, INCLUDING FILTER SAND PIPE UNDERDRAIN COVER MATERIAL, COARSE PIPE UNDERDRAIN COVER MATERIAL, PERFORATED PIPE, AND GEOTEXTILE FABRIC. INCLUDE ALL COSTS IN THE UNIT PRICE BID FOR 6" PERFORATED PIPE UNDERDRAIN ROUND.

202 A CLAY CAP IS TO BE USED AT RETAINING WALLS TYPE 1 AND TYPE 4 AS SHOWN ON THE DRAWINGS. THE CLAY CAP SHALL MEET THE MATERIAL PARAMETERS AS SPECIFIED IN ODOT STANDARD SPECIFICATION SECTION 208. EXCAVATED MATERIALS MAY BE USED IF THEY MEET THE CRITERIA PROVIDED IN THE PLANS AND WALL GENERAL NOTES. INCLUDE ALL COSTS OF MATERIAL AND COMPACTION IN THE UNIT PRICE BID FOR (PL) CLAY CAP.

203 AGGREGATE BASE TYPE A SHALL BE PLACED UNDER THE FOOTINGS FOR CONVENTIONAL CONCRETE CANTILEVER WALLS, TYPE 1. REMOVE UNSTABLE MATERIALS BELOW THE LEVEL OF THE AGGREGATE BASE AND REPLACE WITH SUITABLE MATERIAL. REMOVE DISTURBED MATERIAL AT THE BOTTOM OF FOOTING AND REPLACE WITH AGGREGATE BASE AT NO ADDITIONAL COST TO THE CITY. INCLUDE COMPACTION OF AGGREGATE TO 98% AASHTO T180 MODIFIED PROCTOR. INCLUDE ALL COSTS IN THE UNIT PRICE BID FOR AGGREGATE BASE TYPE A.

204 ANCHOR BARS FOR DRILLED SHAFT TO SHOTCRETE AND DRILLED SHAFT TO CONCRETE FAÇADE IN TYPE 3 WALLS ARE INCLUDED IN THE UNIT PRICE BID FOR (SP) SHOTCRETE.

205 SUBSTRUCTURE EXCAVATION ROCK IS USED FOR THE GRADE BEAM FOR WALL F - TYPE 4. MEASUREMENT SHALL BE FROM TOP OF FOOTING TO BOTTOM OF FOOTING. THE AREA ABOVE THE TOP OF FOOTING SHALL BE INCLUDED IN UNCLASSIFIED EXCAVATION. INCLUDE ALL COSTS FOR SUBSTRUCTURE EXCAVATION ROCK IN THE UNIT PRICE BID. SUBSTRUCTURE EXCAVATION ROCK SHALL NOT BE USED FOR OTHER LOCATIONS ASSOCIATED WITH THE RETAINING WALL WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

206 GRANULAR BACKFILL SHALL BE USED AS BACKFILL FOR ALL RETAINING WALLS TO THE LIMITS AS SHOWN ON THE PLANS.

207 SPECIAL CONCRETE FINISH IS USED TO PAY FOR THE COST OF APPLYING PAINT AND ANTI-GRAFFITI TO THE SURFACES OF THE SCREEN WALL AND RETAINING WALLS AS SHOWN IN THE PLANS. INCLUDE ALL COSTS OF THE PAINT AND ANTI-GRAFFITI TREATMENT, TREATMENT, INCLUDING PREPARATION OF THE SURFACES IN THE UNIT PRICE BID FOR SPECIAL CONCRETE FINISH. SEE WALL GENERAL NOTES FOR DETAILS.

208 CLASS AA CONCRETE SHALL INCLUDE ALL COSTS OF THE CONCRETE SURFACE TREATMENT, INCLUDING FORMLINERS, RELEASE AGENTS, FINISHING, SAMPLE PANELS, MOCK-UP PANELS, LABOR, MATERIALS, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED. INCLUDE ALL COSTS IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

SCREEN WALLS SHALL BE CAST-IN-PLACE AND PAID FOR AS CLASS AA CONCRETE AND EPOXY-COATED REINFORCING STEEL. INCLUDE ALL COSTS OF INCIDENTALS IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

THE COST FOR ALL SUBMITTALS, THE INSTALLATION PLAN, THE QA/QC PLAN AND THE ON-SITE REPRESENTATIVE FOR THE TYPE 3 DRILLED SHAFT RETAINING WALLS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

ALL COSTS FOR SEALING COPING SEGMENTS AT TYPE 2 AND TYPE 3 RETAINING WALLS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

ALL COSTS ASSOCIATED WITH EXPANSION JOINT MATERIAL, BACKER ROD, SEALERS, WATERSTOP, WATERLINE WALL PENETRATION SEALS, AND OTHER INCIDENTALS AT SCREEN WALLS, CAST IN PLACE FAÇADE, AND COPING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

ALL COSTS ASSOCIATED WITH THE WALL DRAIN PLACED BETWEEN DRILLED SHAFTS FOR TYPE 3 WALLS, INCLUDING PERFORATED AND NON-PERFORATED PIPE, GEOCOMPOSITE DRAIN STRIP, DRAIN GRATE, LABOR, AND ALL MATERIALS AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS AA CONCRETE.

RETAINING WALL PAY ITEM NOTES (cont.)

209 ALL COSTS ASSOCIATED WITH EXPANSION JOINT MATERIAL, BACKER ROD, SEALERS, WATERSTOP, WATERLINE WALL PENETRATION SEALS, AND OTHER INCIDENTALS AT RETAINING WALLS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS A CONCRETE.

210 EPOXY-COATED REINFORCING QUANTITIES INCLUDE SCREEN WALL CONNECTION BARS.

211 ALL DRILLED SHAFTS SHALL INCLUDE CROSS-HOLE SONIC LOGGING TUBES IN ACCORDANCE WITH THE SPECIAL PROVISIONS. INCLUDE ALL COSTS OF THE ACCESS TUBES IN THE UNIT PRICE BID FOR DRILLED SHAFTS.

ALL GRADE 60 REINFORCING STEEL IN THE DRILLED SHAFTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR DRILLED SHAFTS.

TEMPORARY CASING IS ANTICIPATED, BUT NOT LIMITED TO USE AT WALLS WHERE SAND AND CLAYEY SAND WERE ENCOUNTERED IN THE BORINGS. SEE TERRACON REPORT 04155121, DATED 9/25/2015. TEMPORARY CASING, IF USED FOR THE CONSTRUCTION OF DRILLED SHAFTS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR DRILLED SHAFTS.

212 CROSSHOLE SONIC LOGGING SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIAL PROVISION. THE QUANTITIES INCLUDE THE TESTING OF A MINIMUM OF 1 DRILLED SHAFT FOR EACH SIZE DRILLED SHAFT PER WALL. THE FIRST PRODUCTION SHAFT OF EACH SIZE SHALL BE TESTED BEFORE THE OTHER SHAFTS OF THAT SIZE CAN BE DRILLED. AS A MINIMUM, ONE OUT OF EVERY SIX DRILLED SHAFTS SHALL BE TESTED PER WALL. ADDITIONAL TESTING SHALL BE PERFORMED AT THE DISCRETION OF THE ENGINEER BASED ON PREVIOUS TEST RESULTS, AT NO ADDITIONAL COST TO THE CITY.

213 ALL COSTS OF SHOTCRETE, INCLUDING SHOTCRETE, REINFORCING, DRILLED SHAFT TO SHOTCRETE ANCHOR BARS AND DRILLED SHAFT TO CONCRETE FAÇADE ANCHOR BARS, DRILL AND EPOXY GROUT OF ANCHOR BARS, GEOCOMPOSITE DRAIN STRIP, PERFORATED PIPE, NON-PERFORATED PIPE, DRAINAGE BOARD, TEST PANELS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR (SP) SHOTCRETE.

214 LOCATED AT WALL "K".

215 AMERISTAR FENCE COMMERCIAL GRADE "MONTAGE PLUS CLASSIC" OR APPROVED EQUAL. THE CONTRACTOR SHALL SUBMIT FENCE TYPE, POST SPACING LAYOUT, AND PROPOSED MOUNTING HARDWARE TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OR FABRICATING PANELS. SAMPLE DETAILS OF APPLICABLE AMERISTAR FENCE PANELS AND MOUNTING HARDWARE ARE PROVIDED ON MISCELLANEOUS DETAILS (6).

216 THE BID ITEM SHALL INCLUDE ALL COSTS FOR ENGINEERING DESIGN, MATERIALS FOR FENCE, MOUNTING HARDWARE, AND ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE AND INSTALL THE FENCE.

217 THE FENCE HEIGHT SHALL BE 6 FEET, BLACK IN COLOR, OR APPROVED EQUAL.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PAY ITEMS & NOTES (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	BJM	12/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	HAS	12/20

APPROVED:
CITY ENGINEER

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TRAFFIC CONTROL

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
137	857(C)	REMOVABLE PAVEMENT MARKING TAPE (4" WIDE)		LF	16,212
138	857(F)	PAVEMENT MARKING REMOVAL (TRAFFIC STRIPE)		LF	5,747
139	871(B)	(SP) CONST. ZONE IMPACT ATTENUATOR	46, 301	SD	450
140	877(B)	DELIVER PORTABLE LONGITUDINAL BARRIER		LF	1,438
141	877(C)	RELOCATION OF PORT. LONGITUDINAL BARRIER		LF	1,325
142	880(A)	ARROW DISPLAY	46, 301	SD	1,830
143	880(B)	SIGNS 0.00 TO 6.25 SF	37, 38, 46, 301	SD	11,190
144	880(B)	SIGNS 6.26 TO 15.99 SF	37, 38, 46, 301	SD	1,964
145	880(B)	SIGNS 16.00 AND UP	37, 38, 46, 301	SD	13,754
146	880(C)	BARRICADES (TYPE III)	37, 38, 46, 301	SD	26,988
147	880(E)	TYPE "A" WARNING LIGHT	38, 301	SD	67,730
148	880(E)	TYPE "C" WARNING LIGHT	38, 301	SD	102,150
149	880(F)	DRUMS	37, 38, 46, 301	SD	119,350
150	880(G)	TUBE CHANNELIZERS	37, 46, 301	SD	51,210
151	880(I)	FLAGGER	39	FD	100
152	882(B)	REMOTE CONTROLLED CHANGEABLE MESSAGE SIGN	46, 301	SD	4,020
153	COT STD 102	PROJECT SIGN (CITY OF TULSA)	46	EA	2
154	COT STD 326	SAFETY FENCE	302	LF	8,000

LANDSCAPING

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
155	02950	3" CAL. TRIDENT MAPLE	400, 401	EA	28
156	02950	3" CAL. MAIN STREET SHANTUNG MAPLE	400, 401	EA	35
157	02950	1 GAL. KARL FOERSTER'S FEATHERREED GRASS	400, 401	EA	318
158	02950	2" CAL. EASTERN WHITEBUD	400, 401	EA	6
159	02950	2" CAL. OKLAHOMA REDBUD	400, 401	EA	27
159A	02950	1 GAL. BLUE ZINGER SEDGE	400, 401	EA	482
159B	02950	1 GAL. BIG BANG MERCURY RISING COREOPIS	400, 401	EA	181
159C	02950	1 GAL. POWWOW WILD BERRY CONEFLOWER	400, 401	EA	181
160	02950	3 GAL. BRAKELIGHTS RED YUCCA	400, 401	EA	352
161	02950	1 GAL. ROYAL PURPLE LIRIOPE	400, 401	EA	1,548
162	02950	1 GAL. COASTAL MUHLY GRASS	400, 401	EA	352
163	02950	1 GAL. WALKER'S LOW CATMINT	400, 401	EA	282
164	02950	3" CAL. GREEN GABLE BLACK GUM	400, 401	EA	26
165	02950	1 GAL. LITTLE SPIRE RUSSIAN SAGE	400, 401	EA	100
166	02950	3" CAL. CHINESE PISTACHE	400, 401	EA	33
167	02950	45 GAL. LOBLOLLY PINE	400, 401	EA	83
168	02950	1 GAL. LITTLE SUZY BLACK EYED SUSAN	400, 401	EA	182
169	02950	3 GAL. ANTHONY WATERER SPIREA	400, 401	EA	261
170	02950	1 GAL. PRAIRIE DROPSEED	400, 401	EA	209
171	02950	3.5" CAL. SHAWNEE BRAVE BALD CYPRESS	400, 401	EA	13
172	02950	LANDSCAPE BOULDERS		TON	50
173	02950	3 CF BAG CEDAR MULCH	403	EA	1,308
174	02950	3 CF BAG BACK TO NATURE COMPOST	402	EA	1,219
175	02950	3/16" BY 4" PRO-STEEL STEEL BED EDGING		LF	2,420
176	02950	3" DEPTH DECOMPOSED GRANITE-CIP		SF	9,755
177	32-8400	IRRIGATION-CIP		LS	1

TRAFFIC CONTROL PAY ITEM NOTES

301 670 CONSTRUCTION CALENDAR DAYS WERE USED TO COMPUTE THE SIGN DAY AND FLAG DAY PAY ITEMS. THE AMOUNT OF CALENDAR DAYS USED TO COMPUTE THE SIGN DAY AND FLAG DAY PAY ITEMS IS AN ESTIMATED QUANTITY ONLY, BASED ON THE CURRENT COT STANDARDS AND SUGGESTED CONSTRUCTION SEQUENCE FOR THIS PROJECT. THESE ESTIMATED SIGN DAY AND FLAG DAY QUANTITIES MAY CHANGE AS THE PROJECT'S CONSTRUCTION TRAFFIC CONTROL IS MODIFIED DURING CONSTRUCTION.

302 CONTRACTOR SHALL INSTALL AND MAINTAIN SAFETY FENCE ALONG THE EDGE OF OPEN CUTS WITHIN THE CONSTRUCTION ZONE. SAFETY FENCE SHALL BE AN OPEN MESH TYPE, HIGH-DENSITY PLASTIC MATERIAL, 48-INCHES IN HEIGHT, AND COLORED INTERNATIONAL SAFETY ORANGE. FENCE SHALL BE SUPPORTED BY FENCE POSTS SPACED AT NO MORE THAN 10 FEET. PAYMENT FOR SAFETY FENCE SHALL BE AT THE UNIT PRICE BID PER LINEAR FOOT BASED ON THE TOTAL FOOTAGE USED FOR THE DURATION OF THE PROJECT. NO ADDITIONAL PAYMENT WILL BE MADE FOR MOVING THE FENCE AS THE JOB SITE CHANGES.

LANDSCAPING PAY ITEM NOTES

400 THIS ITEM SHALL INCLUDE, BUT NOT LIMITED TO, THE FURNISHING OF ALL LABOR, MATERIALS, FERTILIZER, HERBICIDE, WATERING, AND EQUIPMENT NECESSARY TO INSTALL AND MAINTAIN PAY ITEM THROUGH ACCEPTANCE OF THE PROJECT. REFER TO SPECIAL PROVISION SECTION 02950, LANDSCAPING AND TREE PROTECTION.

401 LANDSCAPE INSTALLATION TO INCLUDE THREE YEAR WARRANTY PERIOD. REFER TO SPECIAL PROVISION SECTION 02950, LANDSCAPING AND TREE PROTECTION.

402 COMPOST MATERIAL TO BE "BACK TO NATURE – COMPOSTED COTTON BURRS" OR APPROVED EQUAL.

403 FOR USE AROUND PROPOSED TREES ESTIMATED AT A 3 CF BAG PER TREE.

REGISTERED PROFESSIONAL ENGINEER
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OKLAHOMA
October 31, 2018

PAY ITEMS & NOTES (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	PJP	12/20
FIELD MGR		12/20
LEAD ENGR		12/20
RECOMMENDED DESIGN MANAGER	HAS	12-20

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WATERLINE

ITEM	SPEC. NO.	ITEM DESCRIPTION - BASE BID	PAY ITEM NOTES	UNIT	QUANTITY	PLAN SHEET 1	PLAN SHEET 2	PLAN SHEET 3	PLAN SHEET 4	PLAN SHEET 5	PLAN SHEET 6	PLAN SHEET 7	PLAN SHEET 8	PLAN SHEET 9	PLAN SHEET 10	PLAN SHEET 11	PLAN SHEET 12	PLAN SHEET 13	PLAN SHEET 14	PLAN SHEET 15	PLAN SHEET 16
178	COT 302	EXCAVATION AND BACKFILL, UNCLASSIFIED	(W - 14)	CY	18,412	966	1912	2373	3470	2335	3677	332	149	609	919	350	130	334	398	366	92
179	COT 303	MOBILIZATION		EA	1																
180	COT 304	CONSTRUCTION STAKING		EA	1																
181	COT 307	6 INCH DIP, CL51 POLYETHYLENE WRAPPED (RJ)	(W - 1, 2, 3, 8, 9, 11, 27)	LF	307													307			
182	COT 307	8 INCH DIP, CL51 POLYETHYLENE WRAPPED	(W - 1, 2, 3, 9, 11, 27)	LF	837									277	560						
183	COT 307	8 INCH DIP, CL51 POLYETHYLENE WRAPPED (RJ)	(W - 1, 2, 3, 8, 9, 11, 27)	LF	1,144								122	158	26	211	62		206	191	168
184	COT 307	12 INCH DIP, CL50 POLYETHYLENE WRAPPED	(W - 1, 2, 3, 9, 11, 27)	LF	1,258	151	397	580	130												
185	COT 307	12 INCH DIP, CL50 POLYETHYLENE WRAPPED (RJ)	(W - 1, 2, 3, 8, 9, 11, 27)	LF	783	339	303	120	21												
186	COT 307	16 INCH DIP, CL50 POLYETHYLENE WRAPPED	(W - 1, 2, 3, 9, 11, 27)	LF	1,277				320	511	360	86									
187	COT 307	16 INCH DIP, CL50 POLYETHYLENE WRAPPED (RJ)	(W - 1, 2, 3, 8, 9, 11, 27)	LF	904				229	189	340	146									
188	COT 312	8 INCH DUCTILE IRON 11-1/4 DEGREE BEND (RJ)	(W - 2, 8)	EA	8											2			3	1	2
189	COT 312	12 INCH DUCTILE IRON 11-1/4 DEGREE BEND (RJ)	(W - 2, 8)	EA	3		2	1													
190	COT 312	16 INCH DUCTILE IRON 11-1/4 DEGREE BEND (RJ)	(W - 2, 8)	EA	4							4									
191	COT 312	8 INCH DUCTILE IRON 22-1/2 DEGREE BEND (RJ)	(W - 2, 8)	EA	6											2	2		1		1
192	COT 312	12 INCH DUCTILE IRON 22-1/2 DEGREE BEND (RJ)	(W - 2, 8)	EA	2			2													
193	COT 312	16 INCH DUCTILE IRON 22-1/2 DEGREE BEND (RJ)	(W - 2, 8)	EA	2						2										
194	COT 312	6 INCH DUCTILE IRON 45 DEGREE BEND (RJ)	(W - 2, 8)	EA	3									1				2			
195	COT 312	8 INCH DUCTILE IRON 45 DEGREE BEND (RJ)	(W - 2, 8)	EA	18											7	2		4	4	1
196	COT 312	12 INCH DUCTILE IRON 45 DEGREE BEND (RJ)	(W - 2, 8)	EA	4	4															
197	COT 312	16 INCH DUCTILE IRON 45 DEGREE BEND (RJ)	(W - 2, 8)	EA	4					4											
198	COT 312	8 INCH DUCTILE IRON 90 DEGREE BEND (RJ)	(W - 2, 8)	EA	3								1	1	1						
199	COT 312	6 INCH X 6 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	3													3			
200	COT 312	8 INCH X 8 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	1											1					
201	COT 312	8 INCH X 6 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	2								1	1							
202	COT 312	12 INCH X 8 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	2	1		1													
203	COT 312	12 INCH X 6 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	4	1	1	1	1												
204	COT 312	16 INCH X 8 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	3					1	2										
205	COT 312	16 INCH X 6 INCH DUCTILE IRON TEE (RJ)	(W - 2, 8)	EA	2					1	1										
206	COT 312	12 INCH X 8 INCH DUCTILE IRON CROSS (RJ)	(W - 2, 8)	EA	1		1														
207	COT 312	6 INCH DUCTILE IRON SLEEVE (RJ)	(W - 2, 8, 12)	EA	5									1				4			
208	COT 312	8 INCH DUCTILE IRON SLEEVE (RJ)	(W - 2, 8, 12)	EA	8	1							1			2	1		2		1
209	COT 312	12 INCH DUCTILE IRON SLEEVE (RJ)	(W - 2, 8, 12)	EA	1	1															
210	COT 312	16 INCH DUCTILE IRON SLEEVE (RJ)	(W - 2, 8, 12)	EA	1							1									
211	COT 312	16 INCH X 12 INCH DUCTILE IRON REDUCER (RJ)	(W - 2, 8)	EA	1				1												
212	COT 315	3/4 INCH WATER SERVICE CONNECTION (LONG)	(W - 15,16)	EA	1	1															
213	COT 315	3/4 INCH WATER METER CAN, LID & RIM		EA	1	1															
214	COT 315	1 INCH WATER SERVICE CONNECTION (SHORT)	(W - 15,16)	EA	4											2	1		1		
215	COT 315	1 INCH WATER SERVICE CONNECTION (LONG)	(W - 15,16)	EA	1	1															
216	COT 315	1 INCH WATER METER CAN, LID & RIM		EA	5	1										2	1		1		
217	COT 315	1-1/2 INCH WATER SERVICE CONNECTION (LONG)	(W - 15,16)	EA	2	1		1													
218	COT 315	1-1/2 INCH WATER METER CAN, LID & RIM		EA	2	1		1													
219	COT 315	2 INCH WATER SERVICE CONNECTION (LONG)	(W - 15,16)	EA	2														2		
220	COT 315	2 INCH WATER METER CAN, LID & RIM		EA	2														2		
221	COT 317	6 INCH GATE VALVE (RJ)	(W - 8)	EA	11	1	1	1		1	1		1	1				4			
222	COT 317	8 INCH GATE VALVE (RJ)	(W - 8)	EA	13	1							2	2		3	1		2	2	
223	COT 317	12 INCH GATE VALVE (RJ)	(W - 8)	EA	5	2	2	1													
224	COT 317	16 INCH GATE VALVE (RJ)	(W - 8)	EA	4				1	1	2										
225	COT 317	12 INCH CHECK VALVE (RJ)	(W - 2, 8)	EA	1		1														
226	COT 317	8 INCH TAPPING SLEEVE (RJ)	(W - 2, 8)	EA	1															1	
227	COT 317	2 INCH COMB. AIR/VACUUM RELIEF VALVE & VAULT (COMPLETE IN PLACE)	(W - 8)	EA	1				1												
228	COT 317	6 INCH FIRE HYDRANT EXTENSION		EA	8	1	1	1		1	1		1					2			
229	COT 317	3-WAY FIRE HYDRANT, INPLACE		EA	8	1	1	1		1	1		1					2			
230	COT 318	VALVE BOX	(W - 21)	EA	33	4	3	2	1	2	3		3	3		3	1	4	2	2	
231	COT 318	VALVE BOX EXTENSION	(W - 21)	VF	124	20	9	9	3	10	11		6	10		9	6	12	12	7	
232	COT 322	18 INCH STEEL CONDUIT BORED		LF	272													75		85	112
233	COT 328	6-INCH BORE		LF	75													75			
234	COT 328	8-INCH BORE		LF	197															85	112
235	COT 329	PAVEMENT, REMOVAL AND REPLACEMENT		SY	109											109					
236	COT 329	SAW CUT		LF	342											342					
237	SPECIAL	CONSTRUCTION AS-BUILT	(W - 24, 25, 27)	EA	1																
238	SPECIAL	OWNER ALLOWANCE	(W - 18)	ALLOW	1																

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

WATERLINE PAY ITEMS & NOTES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR		
FIELD MGR		7/20
LEAD ENGR	LEW	6/20
RECOMMENDED DESIGN MANAGER	HAJ	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Pay_Items_Notes_Water-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 8 OF 334 SHEETS

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WATERLINE PAY ITEM NOTES

W-1 TESTING AND CHLORINATION OF WATER MAINS SHALL BE PERFORMED BY THE CITY OF TULSA. TESTING, CHLORINATION, AND FLUSHING SHALL BE DONE IN ACCORDANCE WITH SECTION 109.3 OF THE GENERAL SPECIFICATIONS.

A. CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY PLUGS WITH ADEQUATE BLOCKING OR RESTRAINTS, PLUS CORPORATION STOPS, AS DIRECTED BY CITY TESTING PERSONNEL, THEN, ONCE TESTING, CHLORINATION AND FLUSHING BY CITY PERSONNEL IS COMPLETED, REMOVE TEMPORARY BLOCKING AND TIE INTO EXISTING SYSTEM, USING FITTINGS SWABBED INTERNALLY WITH 2% BLEACH SOLUTION.

B. TESTING, CHLORINATION, AND FLUSHING OF NEW WATER MAIN SHALL BE PERFORMED BY CITY PERSONNEL ON MAINS WHICH ARE PHYSICALLY DISCONNECTED FROM THE EXISTING WATER SYSTEM. TESTING, CHLORINATION, AND FLUSHING OF NEW WATER MAINS SHALL NOT BE PERFORMED AGAINST VALVES WHICH ARE PHYSICALLY CONNECTED TO EXISTING SYSTEM.

C. ALL COSTS FOR TEMPORARY PLUGS, BLOCKING, RESTRAINING, CORPORATION STOPS, TUBING, THREADED CONNECTIONS, BLEACH AND OTHER INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PIPE.

W-2 BURIED BOLTS, HARNESS LUGS, AND COUPLINGS SHALL BE GIVEN TWO COATS OF KOPPER'S BITUMASTIC 300-M (DRY MIL THICKNESS OF 16 MILS) OR EQUAL. COST TO BE INCLUDED IN UNIT PRICE BID FOR PIPE AND FITTINGS.

W-3 CONTRACTOR TO EXCAVATE ALL UTILITY CROSSINGS AHEAD OF PIPE LAYING SO THAT THE GRADES CAN BE ADJUSTED ON THE PROPOSED WATER MAIN TO AVOID UTILITY CONFLICTS. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO CLAIM EXTRA COMPENSATION FOR ADJUSTMENTS TO THE PROPOSED WATER MAIN. COST FOR EXCAVATING UTILITY CROSSINGS SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE.

W-4 NOT USED

W-5 NOT USED

W-6 NOT USED

W-7 NOT USED

W-8 ALL COSTS FOR COMPONENTS NECESSARY TO RESTRAIN JOINTS FOR PIPE AND FITTINGS DESIGNATED RESTRAINED JOINT ("RJ") SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE OR FITTINGS.

A. DUCTILE IRON PIPE RESTRAINTED JOINT SYSTEMS: US PIPE TRFLEX, GRIFFIN SNAPLOK, MCWANE THRUSTLOCK, AMERICAN FLEXRING, EBAA MEGALUG, SMITH-BLAIR CAMLOCK, CLOW TUFGRIP OR EQUAL SHALL BE USED ON THIS PROJECT. SHOULD RJ PIPE BE SPECIFIED THRU UNCASED BORES, ONLY US PIPE TRFLEX, GRIFFIN SNAPLOK, MCWANE THRUSTLOCK, OR AMERICAN FLEXRING IS TO BE USED. LOCKING GASKETS NOT PERMITTED;

B. POLYVINYL CHLORIDE (PVC) RESTRAINED JOINT SYSTEMS: EBAA MEGALUG, STAR STARGRIP OR EQUAL SHALL BE USED ON THIS PROJECT. LOCKING GASKETS NOT PERMITTED; SHOULD RJ PIPE BE SPECIFIED ON BORE CASING IS REQUIRED.

C. HIGH DENSITY POLYETHYLENE (HDPE) RESTRAINED JOINT SYSTEMS: EBAA MEGALUG, STAR STARGRIP OR EQUAL SHALL BE USED ON THIS PROJECT.

NO ADDITIONAL PAYMENT SHALL BE MADE.

W-9 ALL CUT ENDS AND WHERE SALVAGED FITTINGS HAVE BEEN REMOVED FROM ABANDONED WATER LINES LEFT IN PLACE, SHALL BE PLUGGED WITH 24-IN CF CONCRETE INSIDE THE PIPE. COST OF CONCRETE PLUGGING TO BE INCLUDED IN UNIT PRICE BID FOR PIPE. NO ADDITIONAL PAYMENT SHALL BE MADE.

W-10 NOT USED.

W-11 DETECTABLE MYLAR MARKING TAPE SHALL BE INSTALLED OVER DUCTILE IRON PIPE AS PER CONST SPEC 307.3 AND 307.4. COST WILL BE INCLUDED IN COST OF DUCTILE IRON PIPE.

W-12 ALL LABOR, MATERIALS, AND EQUIPMENT TO CONNECT PROPOSED WATER MAINS TO EXISTING WATER MAINS ARE INCLUDED IN COST OF SLEEVES/ADAPTORS. CONTRACTOR TO EXCAVATE ALL EXISTING WATER MAINS AHEAD OF PIPE LAYING SO THAT THE GRADES CAN BE ADJUSTED ACCORDINGLY. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO CLAIM EXTRA COMPENSATION FOR ADJUSTMENTS TO THE PROPOSED WATER MAIN. COST FOR EXCAVATING EXISTING WATER MAINS SHALL BE INCLUDED IN UNIT PRICE BID FOR SLEEVES. NO ADDITIONAL PAYMENT SHALL BE MADE.

W-13 NOT USED.

WATERLINE PAY ITEM NOTES (cont.)

W-14 CONTRACTOR IS REMINDED TO BACKFILL ALL TRENCHES EXCAVATED ACROSS ANY EXISTING OR PROPOSED DRIVING OR PARKING SURFACE WITH 1-1/2" TYPE A AGGREGATE BASE, PLACED IN 8-INCH MAXIMUM LIFTS AND COMPACTED TO 98% MODIFIED PROCTOR DENSITY. COST TO BE INCLUDED IN COST OF EXCAVATION AND BACKFILL. NO ADDITIONAL PAYMENT SHALL BE MADE.

W-15 WATER SERVICE CONNECTIONS SHALL INCLUDE COST OF MATERIAL, LABOR AND EQUIPMENT TO REMOVE AND INSTALL SADDLES, CORPORATION STOPS, BENDS, 3-PART UNIONS, COUPLINGS, SETTERS AND ANY OTHER INCIDENTALS REQUIRED FOR A COMPLETE WATER SERVICE CONNECTION WITH EXCEPTION OF METER CANS, RIMS AND LIDS. NO ADDITIONAL PAYMENT SHALL BE MADE. METER CANS, LIDS AND RIMS SHALL BE PAID AS SEPARATE BID ITEM.

A. SHORT SERVICE SHALL BE ANY SERVICE LINE THAT IS 25 FEET OR LESS IN LENGTH. SHORT SERVICE DO NOT INCLUDE PAVEMENT REPLACEMENT. I.E. 3/4-INCH WATER SERVICE CONNECTIONS (SHORT SERVICE)

B. LONG SERVICE SHALL BE ANY SERVICE LINE THAT IS GREATER THAN 25 FEET UP TO 80 FEET IN LENGTH. LONG SERVICES INCLUDE PAVEMENT REPLACEMENT AND/ OR COST TO BORE. EXAMPLE: 3/4-INCH WATER SERVICE CONNECTIONS (LONG SERVICE)

C. SHORT AND LONG SERVICE LINES EXCEEDING THE ABOVE PARAMETERS WILL BE COMPENSATED FOR LINEAR FOOTAGE ABOVE AND BEYOND. COMPENSATION SHALL BE PAID AS "SERVICE LINES, EXTENSION", PER LF.

W-16 SERVICE LINES ON NON-ARTERIALS SHALL BE EITHER COPPER TUBING (TYPE K SOFT ANNEALED CONFORMING TO ASTM B 88) OR PEX TUBING (UPONOR AQUA PEX 5206 BLUE CONFORMING TO ASTM F876/F877/F2023). PEX TUBING IS NOT PERMITTED WITHIN ARTERIAL RIGHT OF WAY. WHEN CONTRACTOR ELECTS TO USE PEX TUBING:

A. 3/4-INCH WATER SERVICE CONNECTION SHALL USE 1-INCH PEX TUBING MINIMUM.

B. 1-INCH WATER SERVICE CONNECTION SHALL USE 1 1/4-INCH PEX TUBING MINIMUM.

W-17 NOT USED.

W-18 THE "OWNER ALLOWANCE" CAN BE USED FOR VARIOUS WORK AND MISCELLANEOUS ITEMS NOT IDENTIFIED IN THE CONTRACT DOCUMENTS WITH THE FOLLOWING PROVISIONS: THE ALLOWANCE SHALL BE USED FOR COST OF MATERIALS, LABOR, INSTALLATION AND OVERHEAD AND PROFIT FOR ADDITIONAL WORK AND MISCELLANEOUS ITEMS THAT ARE NOT IDENTIFIED IN THE CONSTRUCTION DOCUMENTS AND PLANS, AND NOT INCLUDED IN THE BID ITEMS OF THE CONTRACT.

A. THE ALLOWANCE SHALL BE USED ONLY AT THE DISCRETION OF THE CITY. ANY ALLOWANCE BALANCE REMAINING AT THE COMPLETION OF THE PROJECT WILL BE CREDITED BACK TO THE CITY ON THE FINAL APPLICATION FOR PAYMENT SUBMITTED BY THE CONTRACTOR.

B. THE CONTRACTOR SHALL PROVIDE, TO THE CITY, A WRITTEN REQUEST FOR THE USE OF ANY ALLOWANCE, WITH A SCHEDULE OF VALUES, AND ALL ASSOCIATED BACKUP INFORMATION, INCLUDING ANY TIME EXTENSIONS REQUIRED TO PERFORM THE WORK.

C. THE CONTRACTOR SHALL PROCEED WITH THE WORK INCLUDED IN THE ALLOWANCE ONLY AFTER RECEIVING A WRITTEN ORDER, FROM THE ENGINEER AND CITY AUTHORIZING SUCH WORK. PROCEEDING WITH WORK IN THE ALLOWANCE WITHOUT A WRITTEN ORDER FROM THE CITY WILL BE AT THE CONTRACTOR'S EXPENSE.

W-19 NOT USED.

W-20 NOT USED.

W-21 TOP OF VALVE BOX SHALL BE FLUSH WITH FINISHED GRADE.

W-22 NOT USED.

W-23 NOT USED.

W-24 SPOT ELEVATIONS ON THE MAIN WATER LINE RELATIVE TO FINISHED GRADE SHALL BE PROVIDED AT EACH 100-FT INTERVAL, COMPLETE WITH STATION AND OFFSET. IN ADDITION, ALL VALVES, FITTINGS, FIRE HYDRANTS (TOP OF NUT) AND OTHER MAJOR APPURTENANT ITEMS SHALL BE SHOWN WITH THE PROPER DESCRIPTION, STATION, OFFSET AND ELEVATION.

W-25 SPOT ELEVATIONS ON WATER METER CANS, VAULTS, SHALL BE SHOWN WITH THE PROPER DESCRIPTION (METER TYPE, METER SIZE, METER NUMBER, SERVICE MATERIAL, SERVICE SIZE), STATION, OFFSET AND ELEVATION PER PLAN SURVEY CONTROL DATUM.

W-26 NOT USED.

W-27 PRESSURE TESTING AND CHLORINATION OF WATER MAINS SHALL NOT BE PERFORMED UNTIL THE CITY INSPECTOR HAS RECEIVED REQUIRED CONSTRUCTION AS-BUILT RECORDS.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

WATERLINE PAY ITEMS & NOTES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR	CEW	6/20
	RECOMMENDED DESIGN MANAGER		7.20

APPROVED: CITY ENGINEER

FILE: 313925-C-Pay_Items_Notes_Water-02.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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SANITARY SEWER

ITEM	SPEC. NO.	DESCRIPTION	PAY ITEM NOTE	UNIT	TOTAL
243	COT 302	UNCLASSIFIED EXCAVATION AND BACKFILL	(SS- 1, 4, 8, 10, 11)	CY	150
244	COT 307	8" DIP PIPE, CLASS - 51	(SS- 1, 5, 7, 8, 13, 14, 15, 16)	LF	95
245	COT 314	4' ID MANHOLE	(SS-1, 3, 5, 6, 12)	EA	3
246	COT 314	ADD'L DEPTH IN 4' MANHOLE (SANITARY SEWER)	(SS-1, 3, 12)	VF	25

SANITARY SEWER PAY ITEM NOTES

SS-1 PAYMENT SHALL BE MADE AT THE UNIT PRICE BID AS SPECIFIED IN THE PAYMENT CLAUSE PERTAINING TO EACH ITEM SHOWN IN DIVISION III OF THE CITY OF TULSA CONSTRUCTION SPECIFICATIONS AND AS HEREINAFTER DETAILED.

SS-2 NOT USED

SS-3 COST INCLUDES 50 MIL INTERIOR COATING, FOR MANHOLES, OF RAVEN 405 OR EQUAL.

SS-4 COST OF REMOVAL AND DISPOSAL OF ASPHALT AND CONCRETE PAVEMENT, GUTTER, SIDEWALK, DRIVEWAYS, AND MISCELLANEOUS STRUCTURES, SUCH AS PIPE CULVERTS AND OTHER MISCELLANEOUS WORK WHERE NO QUANTITY IS SHOWN ON THE PLANS, INCLUDING DEWATERING OF THE TRENCHES, SHALL BE INCLUDED IN PAY ITEM UNCLASSIFIED EXCAVATION AND BACKFILL . NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-5 BID ITEM INCLUDES COST OF INSTALLATION OF ALL PIPE, FITTINGS, CONCRETE, AND RELATED COORDINATION FOR THE SANITARY SEWER LINE TIE-IN CONNECTIONS.

SS-6 THE CONTRACTOR SHALL DELIVER SALVAGED MANHOLE CASTINGS, LIDS, GRATES, AND OTHER CAST IRON TO NORTH 93RD EAST AVENUE, TO THE BASE STOCK ROOM, BETWEEN THE HOURS OF 7:30 AM TO 3:00 PM MONDAY THROUGH FRIDAY. THE CONTRACTOR SHALL PUT ALL MATERIAL INTO THE METAL DUMPSTER AT THIS LOCATION. COST SHALL BE INCLUDED IN UNIT PRICE BID FOR MANHOLE. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-7 CONTRACTOR TO EXCAVATE ALL UTILITY CROSSINGS AHEAD OF PIPE LAYING SO THAT THE GRADES CAN BE ADJUSTED ON THE PROPOSED SANITARY SEWER TO AVOID UTILITY CONFLICTS. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO CLAIM EXTRA COMPENSATION FOR ADJUSTMENTS TO THE PROPOSED SANITARY SEWER MAIN. COST FOR EXCAVATING UTILITY CROSSINGS SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE.

SS-8 CONTRACTOR SHALL ENSURE ALL UTILITY POLES WHICH ARE AFFECTED BY TRENCHING CONDITIONS ARE BRACED BY OWNERS. COST SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-9 NOT USED

SS-10 ALL TRENCHES EXCAVATED ACROSS ANY ROADWAY OR PROPOSED ROADWAY SHOWN ON THE PLANS, SIDEWALK, DRIVEWAY, PARKING LOT, OR OTHER PAVED AREA, SHALL BE BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF TULSA STANDARD DETAIL 713. BACKFILL IN STREET RIGHT-OF-WAY AND IN FRONT YARDS SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY. PRICE OF AGGREGATE BASE IS CONSIDERED INCIDENTAL AND INCLUDED IN UNIT PRICE BID FOR EXCAVATION AND BACKFILL. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-11 DEWATERING OF SURFACE AND GROUNDWATER FROM THE TRENCHES SHALL BE IN ACCORDANCE WITH THE CITY OF TULSA WATER AND SEWER SPECIFICATIONS. THE COST SHALL BE INCLUDED IN THE PRICE BID FOR UNCLASSIFIED EXCAVATION AND BACKFILL. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-12 THE COST OF MANHOLE TESTING, IN ACCORDANCE WITH SECTION 422 OF THE CITY OF TULSA WATER AND SEWER SPECIFICATIONS, SHALL BE INCLUDED IN THE PRICE BID OF MANHOLES. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-13 THE CONTRACTOR WILL BE REQUIRED TO PROVIDE BYPASS PUMPING IF NECESSARY. THE PUMP AND BYPASS LINES SHALL BE OF ADEQUATE CAPACITY AND SIZE TO HANDLE THE ANTICIPATED WET WEATHER FLOW. THE COST OF THE BYPASS INCLUDING THE PUMPS, LINES, LABOR, AND OTHER MISC ITEMS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR DUCTILE IRON PIPE. NO ADDITIONAL PAYMENT WILL BE MADE.

SS-14 BID ITEM INCLUDES REMOVAL OF EXISTING SANITARY SEWER PIPE.

SS-15 ALL LABOR, MATERIAL, AND EQUIPMENT TO CONNECT PROPOSED SANITARY SEWER PIPE TO EXISTING SANITARY SEWER PIPE IS INCLUDED IN THE COST OF THE FITTING. NO ADDITIONAL PAYMENT SHALL BE MADE.

SS-16 ALL SERVICE LINES IN RIGHT OF WAY SHALL BE DIP.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MS-635

SANITARY SEWER PAY ITEMS & NOTES

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 10 OF 334 SHEETS

GENERAL CONSTRUCTION NOTES

1 ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2009 OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE CURRENT CITY OF TULSA ENGINEERING SERVICES DEPARTMENT'S STANDARD SPECIFICATIONS AND STANDARD DETAILS AND STANDARD DRAWINGS AND CITY OF TULSA SPECIAL PROVISIONS.

2 THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS GOVERNING SAFETY, HEALTH, AND SANITATION. THE CONTRACTOR SHALL PROVIDE ALL SAFEGUARDS, SAFETY DEVICES AND PROTECTIVE EQUIPMENT, AND TAKE ANY OTHER NEEDED ACTION ON AS HIS OWN RESPONSIBILITY OR AS THE ENGINEER MAY DETERMINE REASONABLY NECESSARY TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT.

3 PAY ITEMS SHALL BE AS SPECIFIED ON THE CITY OF TULSA OR ON THE ODOT STANDARD DRAWINGS EXCEPT AS MODIFIED BY THE CONTRACT.

4 THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK IN EACH AREA. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.

5 THE LOCATIONS OF THE UTILITIES ARE SHOWN ACCORDING TO ALL AVAILABLE INFORMATION. THE CONTRACTOR SHALL NOTIFY EACH UTILITY OWNER PRIOR TO COMMENCEMENT OF WORK, TO VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS. THE FOLLOWING IS A LIST OF UTILITY OWNERS:

AT&T
COX COMMUNICATIONS
OKLAHOMA NATURAL GAS (CNG)
PUBLIC SERVICE COMPANY OF OKLAHOMA (AEP)
CITY OF TULSA UTILITY COORDINATOR

SEE TITLE SHEET FOR CONTACT INFORMATION.

6 THE CONTRACTOR SHALL GIVE THE NOTIFICATION CENTER OF OKLAHOMA ONE-CALL SYSTEM, INC. NOTICE OF ANY EXCAVATION NO SOONER THAN TEN DAYS NOR LATER THAN 48 HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL HOLIDAYS, PRIOR TO THE COMMENCEMENT OF WORK. PHONE 1-800-522-6543.

7 THE CONTRACTOR SHALL TAKE REASONABLE PRECAUTIONS TO PREVENT EXCESS MOISTURE FROM INCLEMENT WEATHER OR OTHER SOURCES FROM ENTERING ANY STREET EXCAVATION. IF EXCESS MOISTURE DOES ENTER THE EXCAVATION THROUGH THE NEGLIGENCE OF THE CONTRACTOR AND THE ADJOINING PAVEMENT IS ADVERSELY EFFECTED BY THE EXCESS MOISTURE, THE CONTRACTOR SHALL REPLACE THE ADJOINING PAVEMENT AND SUBBASE AT HIS SOLE EXPENSE.

8 THE CONTRACTOR SHALL PRESERVE THE INTEGRITY OF THE SANITARY SEWER STRUCTURES AND ALL OTHER UTILITY STRUCTURES WITHIN THE PROJECT EXTENTS.

9 THE CONTRACTOR SHALL WORK IN COOPERATION WITH THE CITY OF TULSA TO ESTABLISH, INSTALL, MAINTAIN AND OPERATE COMPLETE, ADEQUATE, AND SAFE TRAFFIC CONTROLS DURING THE ENTIRE CONSTRUCTION PERIOD. ALL FLAGMEN, BARRICADES AND TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY THE FIELD ENGINEERING REPRESENTATIVE.

10 CONSTRUCTION SIGNAGE WILL BE INSTALLED IN A MANNER APPROVED BY THE ENGINEER, IN ACCORDANCE WITH CHAPTER VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, AND APPLICABLE ODOT STANDARD DRAWINGS. THE CONTRACTOR SHALL PROVIDE A PROPOSED TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK.

11 THE CONTRACTOR SHALL NOTIFY THE CITY OF TULSA FIELD ENGINEERING, 918-596-9404, A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK OR PRIOR TO REMOVING TRAFFIC SIGNS.

12 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ALL EXISTING TRAFFIC SIGNS AND MARKINGS REMOVED OR DAMAGED AS LISTED IN THE SIGNAGE SCHEDULE FOR THE PROJECT. ALL SIGNS AND POLES PROVIDED SHALL BE NEW AND UNDAMAGED AND SHALL MEET THE REQUIREMENTS OF COT SPECIFICATION 608 TRAFFIC SIGNS. ALL TRAFFIC MATERIAL REMOVED SHALL BE HANDLED PER COT SPECIFICATION 625 REMOVAL OF TRAFFIC ITEMS.

13 THE CONTRACTOR WILL BE RESPONSIBLE FOR PREPARATION AND DISTRIBUTION OF A WRITTEN NOTICE TO RESIDENTS 48 HOURS PRIOR TO BEGINNING PAVEMENT REMOVAL AND MILLING AND OVERLAY OPERATIONS.

14 LOCAL AND THROUGH TRAFFIC SHALL BE MAINTAINED THROUGH THE PROJECT AT ALL TIMES.

15 ALL PUBLIC AND PRIVATE STREETS AND DRIVES SHALL BE ACCESSIBLE AT ALL TIMES.

16 ALL BROKEN CONCRETE, WASTE MATERIAL, AND OTHER DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE LIMITS OF THE PROJECT AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE DISPOSAL OF THIS MATERIAL.

17 ALL EXCAVATED MATERIAL NOT REQUIRED IN THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE ENGINEER WITHOUT COST TO THE CITY. THE CONTRACTOR WILL BE REQUIRED TO OBTAIN AN EARTH CHANGE PERMIT IF ANY MATERIAL IS STORED ON THE PROJECT SITE AND/OR DISPOSED OF WITHIN THE CITY LIMITS.

GENERAL CONSTRUCTION NOTES (cont.)

18 ALL TREES, BRUSH AND OTHER DEBRIS THAT MIGHT INTERFERE WITH THE FLOW OF WATER IS TO BE CLEANED OUT TO THE RIGHT-OF-WAY LINE IN A MANNER APPROVED BY THE ENGINEER. ALL COST TO BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK. TREES OUTSIDE THE FILL SLOPES AND THE TOP OF CUT SLOPES SHALL NOT BE DISTURBED EXCEPT WITH THE WRITTEN APPROVAL OF THE ENGINEER.

19 WHERE MATERIALS ARE TRANSPORTED IN THE PROSECUTION OF WORK, VEHICLES SHALL NOT BE LOADED BEYOND THE CAPACITY RECOMMENDED BY THE VEHICLE MANUFACTURER OR AS PRESCRIBED BY ANY FEDERAL, STATE OR LOCAL LAW OR REGULATION.

20 ANY DAMAGE TO THE ROADWAY PAVEMENT, CURB, DRIVEWAYS OR SIDEWALK CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED TO THE ENGINEER'S SATISFACTION AND SHALL BE ACCOMPLISHED AT THE CONTRACTOR'S SOLE EXPENSE. ALL DISTURBED ITEMS SHALL BE REPAIRED TO MATCH EXISTING MATERIALS AND PATTERNING.

21 IF CONTRACTOR ENCOUNTERS VOIDS WHEN PATCHING STREETS, THE CONTRACTOR SHALL CALL FIELD ENGINEERING AT 918-596-7814 FOR AN INSPECTION BEFORE PROCEEDING WITH WORK.

22 THE PROJECT SHALL BE CONSTRUCTED WITH CONTINUOUS FLOW OF MATERIAL SUPPLIED TO THE PROJECT SUCH THAT THE LAYDOWN MACHINE WILL REMAIN IN MOTION. ANY DELAY IN FORWARD PROGRESSION OF THE LAYDOWN MACHINE MAY REQUIRE A TRANSVERSE JOINT AS DIRECTED BY THE ENGINEER.

23 NO FLY ASH IS ALLOWED TO BE USED ON THIS PROJECT.

24 PHYSICAL TESTING FOR QUALITY ASSURANCE SHALL BE FURNISHED BY THE CITY.

25 CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY QUALITY CONTROL TESTING TO ENSURE THAT PROJECT REQUIREMENTS ARE MET.

26 MASONRY STRUCTURES SHALL NOT BE CONSTRUCTED WITHIN THE STREET RIGHT-OF-WAY.

27 ALL CONCRETE CURB AND GUTTERS SHALL BE MONOLITHIC POURS. DOWELED-ON CURBS WILL NOT BE ALLOWED.

28 NO LIFTING HOLES WILL BE ALLOWED ON ANY REINFORCED CONCRETE PIPES OR REINFORCED CONCRETE BOXES.

29 CURB RAMP CONSTRUCTION SHALL COMPLY WITH THE CURRENT AMERICANS WITH DISABILITIES ACT STANDARDS.

30 REFLECTORIZED SHEETING ON SIGNS AND BARRICADES SHALL BE OF A CUBIC PRISMATIC TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE IX RETROREFLECTIVE SHEETING. REFLECTORIZED SHEETING ON DRUMS AND TUBE CHANNELIZERS SHALL BE OF A HIGH-INTENSITY TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR THE ASTM D 4956-01 TYPE III RETROREFLECTIVE SHEETING.

31 ALL SANITARY AND STORM SEWER MANHOLE CASTINGS AND LIDS THAT ARE LOCATED IN THE STREET AND ARE DISTURBED BY THE CONTRACTOR SHALL BE REPLACED WITH NEW LIDS AND CASTINGS AND THE OLD ONES SHALL BE SALVAGED AND DELIVERED TO THE METAL RECYCLE BINS IN THE STOCKROOM AREA AT SEWER OPERATIONS AND MAINTENANCE, 9319 E. 42ND STREET NORTH, BETWEEN THE HOURS OF 7:30 AM AND 3:00 PM MONDAY THROUGH FRIDAY.

32 THE SIGN PLACEMENT STATIONING AND LOCATIONS SHOWN ON THE PLAN SHEETS AND SUMMARY SHEETS ARE APPROXIMATE. EXACT STATIONING AND LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR SO THAT THE SIGN IS INSTALLED IN ACCORDANCE WITH CITY OF TULSA STANDARDS, CURRENT AMERICANS WITH DISABILITIES ACT STANDARDS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES IN ORDER TO PROVIDE OPTIMUM VISIBILITY TO THE ONCOMING/APPROACHING MOTORIST. IF A PROPOSED LOCATION CONFLICTS WITH OTHER SIGNS, UTILITIES, OR OTHER ROADWAY FEATURES, THE ENGINEER SHALL BE NOTIFIED.

33 POST LENGTHS SHOWN ON SIGN SUMMARY ARE APPROXIMATE. EXACT LENGTHS SHALL BE DETERMINED BY A FIELD SURVEY CONDUCTED BY THE CONTRACTOR.

34 ALL ASPHALT STREETS THAT ARE TO BE RECONSTRUCTED SHALL BE LEFT WITH A DRIVABLE SURFACE AT ALL TIMES. THE CONTRACTOR SHALL NOT BE ALLOWED TO MILL OFF ALL THE ASPHALT BEFORE EXCAVATION BEGINS.

35 THE CONTRACTOR SHALL REPLACE ANY SECTION CORNERS OR OTHER PERMANENT RIGHT OF WAY MARKERS REMOVED OR DISTURBED AS A RESULT OF THE CONSTRUCTION OF THIS PROJECT. REPLACEMENT OF SECTION CORNERS OR ANY OTHER MONUMENTS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR AUTHORIZED TO PERFORM WORK IN THE STATE OF OKLAHOMA.

36 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL AND MAINTENANCE OF THE STORMWATER DRAINAGE. STORMWATER PONDING ON THE CONSTRUCTION SITE THAT IS THE RESULT OF CONSTRUCTION WILL NOT BE ALLOWED.

37 STRAW OR HAY BALES AS STORMWATER BEST MANAGEMENT PRACTICES ARE NO LONGER ALLOWED ON CONSTRUCTION PROJECTS.

38 THE CONTRACTOR MUST CALL 1-800-458-4251 IMMEDIATELY IF A NATURAL GAS PIPELINE IS CUT, DAMAGED, OR OTHERWISE DISTURBED.

39 PRIOR TO FINAL ACCEPTANCE, ALL EXPOSED CURB SURFACES SHALL BE CLEANED OF ALL DISCOLORATION SUCH AS ASPHALT STAIN, TIRE MARKS, OR OTHER DISFIGUREMENT.

GENERAL CONSTRUCTION NOTES (cont.)

40 ALL FEATURES OF THIS PROJECT INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURB RAMPS, AND CROSSWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES, AND THE PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY, PUBLISHED ON JULY 26, 2011 BY THE U.S. ACCESS BOARD. WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THIS ACT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURES. THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK, WHICH IS NOT IN FULL COMPLIANCE WITH THE ADA WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADA, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACOR'S EXPENSE.

41 ALL TRENCH WIDTHS & BEDDING MATERIAL SHALL BE AS SHOWN ON COT STANDARD PIPE BEDDING DETAIL, STANDARD NO. 751. SPECIFIED TRENCH WIDTHS SHALL BE MAINTAINED FULL DEPTH FROM THE FLOWLINE TO THE GRADING TEMPLATE. THE CONTRACTOR SHALL KEEP THE OPEN TRENCH DRAINED.

42 THE CONTRACTOR SHALL NOTIFY THE METROPOLITAN TULSA TRANSIT AUTHORITY (MTTA), ERIC SMITH 918-830-0024, A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK, LANE CLOSURES OR PRIOR TO DETOURING TRAFFIC.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

GENERAL CONSTRUCTION NOTES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BOC	12/18
	FIELD MGR	ZEM	7/10
VERTICAL: 1"= NA	LEAD ENGR		11/18
	RECOMMENDED DESIGN MANAGER	HAJ	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-GC_Notes-01.dgn
DATE: OCTOBER 2018
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GENERAL CONSTRUCTION NOTES (cont.)

ALL WORK AND/OR MATERIALS NOT CLASSIFIED AS A "CONTRACT PAY ITEM" SHALL BE CONSIDERED INCIDENTAL AND THE COST THEREOF SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS WHICH ARE CLASSIFIED FOR PAYMENT.

WHERE IT IS NECESSARY TO CROSS CURBING, PROTECTION AGAINST DAMAGE SHALL BE PROVIDED BY THE CONTRACTOR AND ANY DAMAGE TO THE ROADWAY PAVEMENT, CURBS, OR DRIVEWAYS CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPLACED AT THE CONTRACTOR'S SOLE EXPENSE.

BLASTING SHALL NOT BE ALLOWED.

ALL EXISTING MANHOLES, INLETS, VALVES, FIRE HYDRANTS AND METERS, WHICH ARE NOT BEING RELOCATED OR REMOVED, SHALL BE RESET TO PROPOSED CONDITIONS. ALL ITEMS THAT ARE TO BE RESET SHALL BE HANDLED WITH CARE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RESULTING DAMAGE DURING THESE OPERATIONS.

CONTRACTOR SHALL TAKE PRECAUTION NOT TO DAMAGE EXISTING INLETS THAT ARE WITHIN THE PROJECT LIMITS THAT ARE NOT SHOWN AS PART OF THE CONSTRUCTION IN THIS PROJECT. ALL DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER.

PROJECT SIGNS SHALL BE PROVIDED AT ENTRANCES TO THE PROJECT AREA. THE PROJECT SIGNS SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.

CONTRACTOR SHALL DOCUMENT PRE-CONSTRUCTION SITE CONDITIONS BY MEANS OF PHOTOGRAPHS AND VIDEO TAPE WITH CITY REPRESENTATIVE BEFORE THE START OF CONSTRUCTION. COST SHALL BE CONSIDERED AS INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.

THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING:

1) ANY PERMITS OR LICENSES REQUIRED FOR CONSTRUCTION WITH THE EXCEPTION OF THE WATERSHED DEVELOPMENT PERMIT, WHICH SHALL BE OBTAINED BY THE CITY.

2) PROPER NOTIFICATION OF ALL NECESSARY AGENCIES PRIOR TO CONSTRUCTION AND FOR REQUIRED INSPECTIONS.

3) DETERMINING THE EXACT LOCATION OF ANY UTILITIES. EXISTING UTILITIES TO REMAIN IN SERVICE AT ALL TIMES. SERVICE DISRUPTION TO BE AT CONTRACTOR'S RISK AND EXPENSE.

THE GEOTECHNICAL REPORTS WERE PREPARED BY TERRACON FOR THIS PROJECT.

TERRACON PROJECT NO.	DATE	DESCRIPTION
04015182	July 16, 2002	Proposed South Yale Avenue Widening East 81st and 91st Street
04155215	January 2, 2012	Yale Avenue Slope Study
04155215	April 16, 2013	Geotechnical Design Report Yale Avenue Widening
04155121	September 25, 2015	Realignment of S. Yale Ave between 81st and 91st Streets
04155121.001	December 22, 2015	Addendum 1 - Lateral Design Analysis
04155121.002	December 18, 2015	Addendum 2 - Foundation Design
04155121.003	January 28, 2016	Addendum 3 - Additional LPILE Design
04155121.004	March 25, 2016	Addendum 4 - Additional Recommendations
04155121.005	June 14, 2016	Addendum 5 - Wall K Cantilever Design Recommendations

LOCATIONS OF SOIL BORINGS ARE SHOWN ON THE PLANS. THE GEOTECHNICAL REPORTS ARE AVAILABLE FOR REVIEW AT THE OFFICE OF BENHAM DESIGN, ONE WEST 3RD ST., SUITE 200, TULSA, OK 74103. ANY INFORMATION CONTAINED IN THE GEOTECHNICAL REPORTS SHOULD NOT BE CONSTRUED AS REPRESENTATIVE OF ALL FIELD CONDITIONS.

CONTRACTOR SHALL BRACE UTILITY POLES AND/OR LINES AS NECESSARY.

GENERAL CONSTRUCTION NOTES - ROADWAY

MAILBOXES TO BE REMOVED AND RESET SHALL BE RESTORED TO SUBSTANTIALLY THE SAME CONDITION AS EXISTS AT THE BEGINNING OF CONSTRUCTION.

THE CONTRACTOR SHALL PROTECT MAILBOXES AS NECESSARY. MAILBOXES ARE TO BE MAINTAINED IN AN UPRIGHT POSITION AND ACCESSIBLE TO MAIL CARRIER'S CAR DURING CONSTRUCTION.

FOR WIDENING AND RESURFACING PROJECTS, THE CONTRACTOR SHALL SCHEDULE OPERATIONS TO MINIMIZE POTENTIAL DROP-OFF HAZARDS AND SHALL SUBMIT A SEQUENCE OF CONSTRUCTION OPERATIONS TO THE ENGINEER FOR APPROVAL, BEFORE OPERATIONS BEGIN.

EXCAVATION FOR PAVEMENT WIDENING, EXTENSION OF ROADWAY STRUCTURES, AND ASPHALT LAYING OPERATIONS THAT PRESENT AN EDGE DROP-OFF OF GREATER THAN 2 (TWO) INCHES SHALL BE LIMITED TO ONE SIDE AT A TIME. ONLY THAT AMOUNT OF OPEN TRENCH WILL BE ALLOWED THAT CAN BE SURFACED IN 2 (TWO) DAYS TIME, WITHOUT APPROVAL OF THE ENGINEER. LIGHTS, SIGNS, AND BARRICADES SHALL BE MOVED AS WORK PROGRESSES.

ASPHALT REPAIRS IN PLACE SHALL BE REMOVED WHEN DESIGNATED AND IN A MANNER APPROVED BY THE ENGINEER.

GENERAL CONSTRUCTION NOTES - TRAFFIC SIGNING

NO SPLICES SHALL BE PERMITTED IN ANY PIPE OR WIDE FLANGE SIGN POSTS.

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A RECORD OF ALL SIGNS AND MARKINGS TO INSURE PROPER REINSTALLATION BY THE CONTRACTOR AS APPROVED BY THE CITY OF TULSA.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ALL EXISTING TRAFFIC SIGNS AND MARKINGS REMOVED OR DAMAGED AS PART OF THIS PROJECT. ALL SIGNS AND POLES PROVIDED SHALL BE NEW AND UNDAMAGED AND SHALL MEET THE REQUIREMENTS OF COT SPECIFICATION 608 TRAFFIC SIGNS. ALL TRAFFIC MATERIALS REMOVED SHALL BE HANDLED PER COT SPECIFICATION 625 REMOVAL OF TRAFFIC ITEMS.

FOR EXISTING GROUND MOUNTED SIGNS, MAXIMUM STUB POST PROJECTION ABOVE FOOTING/GROUND LINE SHALL BE 1-3/4" + 1/4". MAXIMUM FOOTING PROJECTION ABOVE GROUND LINE SHALL BE NO MORE THAN 2". SHOULD ADDITIONAL SOIL BE REQUIRED, THE ENGINEER SHALL DESIGNATE AN AREA TO OBTAIN ADDITIONAL SOIL.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

GENERAL CONSTRUCTION NOTES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	ZLM	12/20
	LEAD ENGR		11/20
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HAS	12-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-GC_Notes-02.dgn
DATE: OCTOBER 2018
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WATERLINE CONSTRUCTION NOTES

1 THE CITY OF TULSA FIELD ENGINEERING DEPARTMENT SHALL INSPECT ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL AND COMPACTION.

2 ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT STANDARD SPECIFICATIONS AND STANDARD DETAILS, CITY OF TULSA ENGINEERING SERVICES DEPARTMENT.

3 EXISTING SERVICE CONNECTIONS ARE TO BE KEPT IN SERVICE UNTIL CONNECTIONS TO NEW MAIN ARE MADE. ALL SERVICE LINE RECONNECTIONS SHALL BE MADE BY THE CONTRACTOR. SERVICE RECONNECTIONS SHALL BE INSTALLED AS PER CITY OF TULSA STANDARD SPECIFICATIONS AND STANDARD DETAILS.

4 MINIMUM COVER OVER WATERLINES SHALL BE AS NOTED ON PLANS.

5 CONTRACTOR SHALL REPLACE EXISTING GRASS WITH SEED/SOD OF SAME TYPE AND VARIETY OR AS NOTED ON PLANS.

6 CONTRACTOR SHALL BORE EXISTING TREE UNDER DRIP LINE, UNLESS DIRECTED OTHERWISE BY ENGINEER.

7 CONTRACTOR SHALL BORE EXISTING DRIVEWAYS, UNLESS DIRECTED OTHERWISE BY PLANS AND/OR ENGINEER.

8 WATER OPERATIONS SHALL OPERATE ALL VALVES ON TRANSMISSION MAINS (16" AND LARGER). CONTRACTOR SHALL OPERATE ALL VALVES ON DISTRIBUTION MAINS (SMALLER THAN 16") WITH THE COORDINATION OF FIELD ENGINEERING AND WATER OPERATIONS AND IN THE PRESENCE OF A FIELD ENGINEERING INSPECTOR.

A. ATTEMPTS WILL BE MADE WITH ASSISTANCE FROM THE CONTRACTOR TO NOTIFY ALL AFFECTED CUSTOMERS 48-HOURS IN ADVANCE, PARTICULARLY IF COMMERCIAL OR INDUSTRIAL CUSTOMERS ARE INVOLVED. PRIOR TO SHUTDOWN, FIELD ENGINEERING WILL NOTIFY WATER OPERATIONS, AT 918-596-9488, GIVING AN ESTIMATED DOWNTIME. WATER OPERATIONS WILL NOTIFY THE FIRE DEPARTMENT OF ALL FIRE HYDRANTS OUT OF SERVICE AND WHEN THEY ARE BACK IN SERVICE, BY STREET ADDRESS OR INTERSECTION.

B. WHERE COMMERCIAL, INDUSTRIAL, OR CRITICAL CUSTOMERS ARE AFFECTED, AND FOR ALL LINES 16-INCH AND LARGER IN SIZE, FIELD ENGINEERING WILL REQUEST WATER OPERATIONS TO SHUT DOWN THE MAIN. THERE WILL BE A MINIMUM OF 48-HOUR NOTICE TO WATER OPERATIONS. CITY CREWS ONLY ARE TO OPERATE ALL VALVES. CONTRACTOR SHALL NOTIFY CITY THRU INSPECTOR.

9 CONTRACTOR SHALL PROVIDE AT LEAST 48 HOUR NOTICE TO ALL RESIDENTS OR BUSINESSES AFFECTED BEFORE TURNING OFF ANY WATER. CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING DOOR HANGERS ON AFFECTED HOMES AND BUSINESSES.

10 CONTRACTOR SHALL GIVE THE NOTIFICATION CENTER OF THE OKLAHOMA ONE-CALL SYSTEM, INC. NOTICE OF ANY EXCAVATION NO SOONER THAN 48 HOURS OR LATER THAN 10 DAYS, EXCLUDING SATURDAYS, SUNDAYS, LEGAL HOLIDAYS PRIOR TO COMMENCEMENT OF WORK, PHONE 1-800-522-6543.

11 LOCAL AND THROUGH TRAFFIC SHALL BE MAINTAINED THROUGH PROJECT AT ALL TIMES. OPEN CUT STREET CROSSINGS REQUIRE AN APPROVED TRAFFIC CONTROL PLAN WITH TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH CURRENT MUTCD REQUIREMENTS.

12 ANY DAMAGE CAUSED BY CONTRACTOR TO ADJACENT TRAFFIC SIGNAL INFRASTRUCTURE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEER.

13 PRIOR TO PAVEMENT SAWING AND EXCAVATION NEAR SIGNALIZED INTERSECTION, CONTRACTOR SHALL CONTACT ENGINEERING SERVICES , TRAFFIC OPERATIONS, 918-596-9766, FOR SITE SPECIFIC, UNDERGROUND TRAFFIC UTILITY LOCATES.

14 CONSTRUCTION FOR ALL ENGINEERING SERVICES FACILITIES SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF TITLE 252, DEPARTMENT OF ENVIRONMENTAL QUALITY, CHAPTER 626, PUBLIC WATER SUPPLY CONSTRUCTION STANDARDS, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ).

15 ALL EXCAVATED MATERIAL NOT REQUIRED IN OTHER AREAS OF THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE ENGINEER WITHOUT COST TO THE CITY. THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN AN EARTH CHANGE PERMIT IF ANY EXCESS MATERIAL IS TO BE DISPOSED OF WITHIN THE CITY LIMITS OF TULSA.

16 ANY CHANGES FROM APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF TULSA FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.

100 THE RADIUS FOR THE NEW DRIVEWAY CURB RETURNS SHALL MATCH THE RADIUS OF THE EXISTING DRIVEWAY CURB RETURNS.

101 BLASTING WILL NOT BE ALLOWED.

102 ALL PIPE SIZES ARE INSIDE DIAMETER.

SANITARY SEWER CONSTRUCTION NOTES

1 USE CONTRACT SPECIFICATIONS AND THE OCTOBER 2013 CITY OF TULSA ENGINEERING SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND STANDARD DETAILS. FOR CONSTRUCTION, MATERIALS AND INSTALLATION.

2 ALL WORK SHALL BE DONE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. ALL CONSTRUCTION SURVEY, LAYOUT, AND MEASUREMENT WORK SHALL BE PERFORMED BY THE CONTRACTOR AS A PART OF THE WORK UNDER THIS CONTRACT.

3 ALL OPEN TRENCHES AND OTHER EXCAVATIONS SHALL BE PROTECTED WITH SUITABLE BARRIERS, SIGNS, AND LIGHTS. OBSTRUCTIONS, SUCH AS MATERIAL PILES AND EQUIPMENT, SHALL BE PROTECTED WITH SIMILAR WARNING SIGNS AND LIGHTS. ALL BARRICADES, SIGNS, LIGHTS, AND OTHER PROTECTIVE DEVICES SHALL BE INSTALLED AND MAINTAINED IN A MANNER ACCEPTABLE TO THE ENGINEER.

4 SEDIMENTATION AND EROSION CONTROL WORK AS DESCRIBED IN THE CITY OF TULSA STANDARD DIKES AND SWALES SHALL BE COMPLIED WITH.

5 ALL DUCTILE IRON PIPE SHALL BE WRAPPED WITH A LOOSE FITTING, SLIP ON POLYETHYLENE WRAP IN ACCORDANCE WITH CITY OF TULSA MATERIAL SPECIFICATION PARAGRAPH 203.3.

6 NOT USED

7 FOR MANHOLES GREATER THAN 12 FEET IN DEPTH, EXTENDED PRECAST CONCRETE BASES MAY BE ALLOWED UPON APPROVAL BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH SHOP DRAWINGS FOR REVIEW BY THE ENGINEER.

8 IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP, FURNISH, AND MAINTAIN A TRAFFIC CONTROL PLAN INCLUDING ALL SIGNS, EQUIPMENT AND INCIDENTALS TO PROVIDE CONVENIENCE, SAFETY, AND MAINTENANCE OF VEHICULAR AND PEDESTRIAN TRAFFIC FOR PUBLIC AND PRIVATE PROPERTIES WITHIN THE LIMITS OF THE PROJECT AND FOR THE DURATION OF THE CONTRACT. ALL WORK SHALL BE IN CONFORMANCE WITH THE CITY OF TULSA REGULATIONS AND SPECIFICATIONS. THE NECESSARY FLAGS, FLAGMAN SIGNS AND JACKETS, POSTS, TRAFFIC CONES, TRAFFIC FENCING AND OTHER INCIDENTAL ITEMS SHALL BE INCLUDED IN A DETOUR OR OTHER TRAFFIC CONTROL SYSTEM OR INSTALLATION, AS REQUIRED BY THE CITY.

9 BLASTING WILL NOT BE ALLOWED.

10 DEWATERING OF STORM AND GROUNDWATER FROM TRENCH SHALL BE IN ACCORDANCE WITH CITY OF TULSA WATER AND SEWER SPECIFICATIONS DIVISION III.

11 ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE OCTOBER 2013 CITY OF TULSA ENGINEERING SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND STANDARD DETAILS. BACKFILL IN STREET RIGHT-OF-WAY AND FRONT YARDS SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.

12 CONTRACTOR SHALL VACUUM TEST ALL MANHOLES ACCORDING TO CITY OF TULSA PUBLIC WORKS DEPARTMENT STANDARDS AND SPECIFICATIONS.

13 ALL UNDERGROUND UTILITIES (SUCH AS: STORM SEWER, GAS, TELEPHONE, POWER, AND WATERLINES) LOCATIONS AND ELEVATIONS SHOWN IN THE PLAN AND PROFILE SHEETS ARE APPROXIMATE. THE CONTRACTOR IS TO VERIFY THE EXACT LOCATIONS AND ELEVATIONS OF SUCH UTILITIES. ANY DISTURBED UTILITY LINE IS TO BE RESTORED TO ITS ORIGINAL CONDITION. NO ADDITIONAL PAYMENT SHALL BE MADE TO LOCATE ANY UTILITIES. CALL OKLAHOMA ONE-CALL SYSTEM AT 1-800-522-6543 BEFORE ANY EXCAVATION.

14 NOT USED

15 ALL CASTINGS AND LIDS ON ABANDONED MANHOLES MUST BE SALVAGED IN REUSABLE MANNER AND SHALL BE DELIVERED TO THE SEWER BASE AT 9319 E. 42ND ST. N. (METAL RECYCLE BINS IN THE STOCKROOM AREA), BETWEEN THE HOURS OF 7:30 AM AND 3:00 PM, MONDAY THROUGH FRIDAY.

16 CONTRACTOR SHALL PROVIDE HIS START-UP AND TESTING SEQUENCE PLAN TO CITY FOR APPROVAL A MINIMUM OF 1 WEEK PRIOR TO BEGINNING OF STATION TESTING. THE START-UP PLAN SHALL DETAIL THE ORDER AND TIMING OF ALL TIE-INS AND CONVERSIONS OF FLOW FROM EXISTING GRAVITY SYSTEM TO PROPOSED SYSTEM.

17 NOT USED

18 SEE SPECIFICATION SECTION 315 "CONNECTION" FOR THE CONNECTION TIE-IN NOTES.

19 THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING PUBLIC AND PRIVATE PROPERTY AFFECTED BY HIS CONSTRUCTION OPERATIONS. RESTORATION OF ALL DAMAGED PROPERTY, BOTH PUBLIC AND PRIVATE, TO ITS ORIGINAL CONDITION SHALL BE PERFORMED BY AND AT THE EXPENSE OF THE CONTRACTOR.

20 SPOIL OF EXCESS MATERIAL FROM UNCLASSIFIED EXCAVATION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS. EMBANKMENT AND BACKFILLING SHALL NOT BE MEASURED SEPARATELY FOR PAYMENT.

21 ADJUST ALL MANHOLES TO GRADE.

22 SEWER OPERATIONS AND MAINTENANCE REQUIRES NEW LIDS AND RINGS WHENEVER A STREET PROJECT INVOLVES DISTURBING AN EXISTING MANHOLE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

GENERAL CONSTRUCTION NOTES (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR	RDW	7/20
VERTICAL: 1"= NA	LEAD ENGR	CEW	7/20
	RECOMMENDED DESIGN MANAGER	HAJ	7.20

APPROVED: CITY ENGINEER

FILE: 313925-C-GC_Notes-03.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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GENERAL CONSTRUCTION NOTES - PROJECT SPECIFIC

CONTRACTOR SHALL SUBMIT A CONSTRUCTION SAFETY PLAN TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK. THE SAFETY PLAN SHALL ADDRESS BUT NOT BE LIMITED TO ISSUES AS TRAFFIC CONTROL, WORK SITE SAFETY, MANHOLE VENTILATION, WORKER EQUIPMENT, FIRST AID, HYGIENE, AND OTHER RELATED TOPICS. THE CONTRACTOR SHALL BE EXPECTED TO PERFORM THE WORK IN A MANNER THAT BEST PROTECTS SAFETY OF WORKERS, INSPECTORS, BYSTANDERS, AND OTHERS WHO MAY BE IN THE VICINITY OF THE PROJECT. THE SAFETY PLAN SHALL ALSO ADDRESS THE CONTRACTOR'S PROPOSED SEQUENCE OF CONSTRUCTION AND APPROACH TO CONSTRUCTION OF THE PROJECT AND THE PROVISIONS TO PROTECT THE INTEGRITY OF THE RESIDENTIAL PROPERTIES. FAILURE TO PERFORM THE WORK AND MAINTAIN THE SITE IN A SAFE MANNER, IN THE OPINION OF THE ENGINEER, SHALL BE SUFFICIENT CAUSE TO STOP ALL WORK AND REQUIRE THE CONTRACTOR TO RESTORE THE SITE TO A SAFE CONDITION AT NO ADDITIONAL COST TO THE CITY.

CONTRACTOR SHALL GIVE SPECIAL ATTENTION TO MAINTAINING ACCESS TO RESIDENCES AND PROVIDE ADVANCE NOTICE TO HOMEOWNERS WITHIN VICINITY OF ROADWAY.

CONTRACTOR SHALL COORDINATE WITH CITY OF TULSA TRAFFIC OPERATIONS PRIOR TO START OF CONSTRUCTION.

YALE AVENUE CLOSURE SHALL BE LIMITED TO NO MORE THEN A MAXIMUM OF 7 CONSECUTIVE CALENDAR DAYS TO CONSTRUCT TEMPORARY YALE AVENUE WIDENING.

GEOTECHNICAL DESIGN REPORT, YALE AVENUE WIDENING, DATED APRIL 16, 2013 WAS PREPARED BY TERRACON CONSULTANTS, INC. THIS REPORT SUMMARIZES THE FOUNDATION DESIGN ANALYSES AND RECOMMENDATIONS REGARDING THE PROPOSED WALL"F".

GEOTECHNICAL ENGINEERING REPORT, YALE AVENUE SLOPE STUDY, DATED JANUARY 6, 2012 WAS PREPARED BY TERRACON CONSULTANTS, INC. THE PROPOSED WALL ALIGNMENT AND DESIGN RECOMMENDATIONS PRESENTED IN THE YALE AVENUE SLOPE STABILITY STUDY, DATED JANUARY 6, 2012 WERE PRELIMINARY IN NATURE AND ARE NOT APPLICABLE TO THIS PROJECT. HOWEVER, THE BORINGS, LABORATORY DATA AND SUBSURFACE STRATIGRAPHY CONTAINED IN THE YALE AVENUE SLOPE STUDY, DATED JANUARY 6, 2012 WERE USED FOR THIS PROJECT.

ANY INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT SHOULD NOT BE CONSTRUED AS REPRESENTATIVE OF ALL FIELD CONDITIONS.

THE EXISTING YALE AVENUE EMBANKMENT SHOWS SIGNS OF DISTRESS AND SLOPE INSTABILITY WEST OF YALE AVENUE BETWEEN 82ND AND 84TH STREETS, SPECIFICALLY BETWEEN STATION 59+00 AND STATION 62+00. THE JANUARY 6, 2012 TERRACON REPORT PRESENTS GEOTECHNICAL SITE CHARACTERIZATION, SLOPE STABILITY ANALYSES, AND RECOMMENDATIONS FOR REMEDIATION OF THE SLOPE PROBLEMS. FROM TERRACON'S ANALYSIS, IT APPEARS THAT THE UPPER PART OF THE EXISTING EMBANKMENT IS ONLY MARGINALLY STABLE. DUE TO STEEPNESS OF THE UPPER SLOPE, ANY CHANGE IN THE GEOMETRY OR WATER INFILTRATION WILL LIKELY RESULT IN CONTINUING CREEP OF THE SLOPE. ALTHOUGH AT THE TIME OF THE REPORT THERE WAS NO DISTINCT TOE BULGE ON THE SLOPE, THE STRAINS DUE TO THE STEEPNESS OF THE SLOPE AND POSSIBLY CHANGE IN PORE WATER PRESSURES DUE TO WATER INFILTRATION, HAVE RESULTED IN MOVEMENT OF THE UPPER SLOPES AND DEFORMATIONS OF THE PAVEMENT SURFACE. CONTRACTOR SHALL FOLLOW CONSTRUCTION SEQUENCE SPECIFIED IN THE "CONSTRUCTION SEQUENCE" AND TAKE PRECAUTIONS AS REQUIRED TO PREVENT A SLOPE FAILURE OF LARGER MAGNITUDE DURING CONSTRUCTION.

THE CONTRACTOR SHALL VISUALLY MONITOR THE PERFORMANCE OF THE EXISTING SLOPES ON A DAILY BASIS, LOOKING FOR SIGNS OF MOVEMENT (CRACKING, SLOUGHING, BULGING, ETC.) AND NOTIFY THE ENGINEER IMMEDIATELY IF SIGNS OF INSTABILITY ARE NOTED. THE CONTRACTOR SHALL ALSO BE REQUIRED TO INSTALL SURVEY POINTS AT 100 FOOT INTERVALS ALONG THE TOP OF THE SLOPE (SHOULDER OF ROADWAY) AND SURVEY THESE POINTS ON A WEEKLY BASIS TO MONITOR FOR POTENTIAL SLOPE MOVEMENTS DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY SIGNS OF SLOPE MOVEMENT ARE NOTED. MONITORING APPLIES TO, BUT IS NOT LIMITED TO STA. 59+00 TO 62+00.

CONTRACTOR SHALL DOCUMENT PRE-CONSTRUCTION SITE CONDITIONS BY MEANS OF PHOTOGRAPHS AND VIDEO TAPE WITH CITY REPRESENTATIVE BEFORE THE START OF CONSTRUCTION. DOCUMENTATION SHALL BE SUBMITTED TO THE CITY PRIOR TO CONSTRUCTION. COST SHALL BE CONSIDERED AS INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.

CONTRACTOR SHALL DOCUMENT PRE-CONSTRUCTION CONDITIONS OF THE FOLLOWING HOMES THROUGH HOUSE INSPECTIONS PRIOR TO THE START OF CONSTRUCTION. COST SHALL BE CONSIDERED AS INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.

- 8315 S. VANDALIA AVE. E
- 8405 S. WINSTON AVE. E.
- 4825 E. 84TH ST. S.
- 4905 E. 84TH ST. S.
- 5004 E. 84TH ST. S.
- 8303 S. ALLEGHENY AVE. E.
- 8304 S. ALLEGHENY AVE. E.
- 8306 S. ALLEGHENY AVE. E.
- 8307 S. ALLEGHENY AVE. E.
- 8311 S. ALLEGHENY AVE. E.
- 8315 S. ALLEGHENY AVE. E.
- 8321 S. ALLEGHENY AVE. E.
- 8322 S. ALLEGHENY AVE. E.
- 8327 S. ALLEGHENY AVE. E.
- 8328 S. ALLEGHENY AVE. E.
- 8331 S. ALLEGHENY AVE. E.
- 8402 S. ALLEGHENY AVE. E.
- 8403 S. ALLEGHENY AVE. E.
- 8408 S. ALLEGHENY AVE. E.

GENERAL CONSTRUCTION NOTES - PROJECT SPECIFIC

PARCEL 4:

- CONTRACTOR SHALL MAINTAIN ACCESS TO THE FACILITY AT 8801 S. YALE AVE. THROUGH OUT THE DURATION OF THE CONSTRUCTION.
- CONSTRUCTION FOR THE TWO PROPERTY DRIVEWAYS (D-100) & (D-103) SHALL NOT OCCUR AT THE SAME TIME.
- DURING CONSTRUCTION OF THE SOUTHERN DRIVEWAY (D-100), THE NORTHERN DRIVEWAY (D-103) SHALL BE FULLY ACCESSABLE AND D-100 SHALL MAINTAIN ONE LANE OPEN FOR INGRESS AT ALL TIMES.
- DURING CONSTRUCTION OF THE NORTHERN DRIVEWAY (D-103), THE SOUTHERN DRIVEWAY (D-100) SHALL BE FULLY ACCESSABLE AND D-103 SHALL REMAIN OPEN FOR ACCESS ON WEEKDAYS BETWEEN 8 PM AND 7 AM AND ON WEEKENDS FROM FRIDAY, 8 PM THROUGH MONDAY, 7 AM.
- DRIVE CONSTRUCTION SHALL BE COMPLETE WITHIN TEN (10) DAYS MAXIMUM FOR D-100 AND D-103.

WATERLINE CONSTRUCTION SEQUENCE NOTES

PHASE 1

1) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 8+62.12 TO STA. 9+53.00. BORE WATERLINE UNDER EXISTING YALE AVE.

2) INSTALL PROPOSED 8" WATERLINE "D".

3) INSTALL TEMPORARY 8" WATERLINE "M".

4) CONNECT PROPOSED 8" WATERLINE "K" TO EXISTING 16" WATERLINE AT STA. 9+53.00 EAST OF YALE AVE. CONNECTION SHALL BE LOCATED ON THE NORTH SIDE OF THE EXISTING 16" VALVE. THE CONNECTION TO THE EXISTING 16" WATERLINE SHALL BE A LIVE TAP.

5) CONNECT PROPOSED 8" WATERLINE "D" TO EXISTING 6" WATERLINE AT STA. 56+16.41 EXISTING 6" WATERLINE EAST OF CONNECTION IS TO BE ABANDONED IN PLACE.

6) CONNECT TEMPORARY 8" WATERLINE "M" TO EXISTING 8" WATERLINE AT STA. 7+67.83 EAST OF YALE AVE. ON E. 84TH ST. S.

PHASE 2

7) INSTALL PROPOSED 8" WATERLINE "F".

8) INSTALL PROPOSED 8" WATERLINE "B".

9) CONNECT PROPOSED 8" WATERLINE "F" TO EXISTING 8" WATERLINES AT STA. 9+03.00 AND STA. 11+14.00

10) CONNECT PROPOSED 8" WATERLINE "B" TO EXISTING 8" WATERLINE AT STA. 31+51.16.

PHASE 3

11) INSTALL PROPOSED 12" WATERLINE "A" FROM STA. 27+09.89 TO STA. 41+44.00.
INSTALL TEMPORARY BLIND FLANGE AT STA. 41+44.00.
CONNECT PROPOSED 8" WATERLINE "F" TO PROPOSED 12" WATERLINE "A" AT STA. 34+70.55
INSTALL PROPOSED 16" WATERLINE "A" FROM STA. 55+00.00 TO STA. 69+31.34.
INSTALL TEMPORARY BLIND FLANGE AT STA. 55+00.00.

12) INSTALL PROPOSED 8" WATERLINE "G".

13) INSTALL PROPOSED 8" WATERLINE "J".

14) INSTALL PROPOSED 8" WATERLINE "L".

15) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 9+53.00 TO STA. 10+51.27.
REMOVE TEMPORARY CONNECTION TO EXISTING 16" WATERLINE INSTALLED IN PHASE 2.
CONNECT PROPOSED 8" WATERLINE "K" TO PROPOSED 16" WATERLINE "A" AT STA. 10+51.27.

16) CONNECT PROPOSED 12" WATERLINE "A" TO EXISTING 12" WATERLINE AT STA. 27+09.89.
CONNECT PROPOSED 16" WATERLINE "A" TO EXISTING 16" WATERLINE AT STA. 69+31.34.

17) CONNECT PROPOSED 8" WATERLINE "J" TO EXISTING 8" WATERLINE AT STA. 11+43.00.
CONNECT PROPOSED 8" WATERLINE "L" TO EXISTING 8" WATERLINE AT STA. 11+84.79.

18) INSTALL PROPOSED 12" AND 16" WATERLINE "A" FROM STA. 41+44.00 TO STA. 55+00.00.

19) ABANDON TEMPORARY 8" WATERLINE "M".

20) INSTALL PROPOSED 6" WATERLINE "H". BORE WATERLINE UNDER EXISTING YALE AVE.
CONNECT PROPOSED 6" WATERLINE "H" TO EXISTING 6" WATERLINE AT STA. 6+91.41.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

GENERAL CONSTRUCTION NOTES (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PBP	12/20
	FIELD MGR	[illegible]	11/20
VERTICAL: 1"= NA	LEAD ENGR	[illegible]	11/20
	RECOMMENDED HAS DESIGN MANAGER		12·20

APPROVED: CITY ENGINEER

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SUMMARY OF SURFACING

PLAN NO.	ALIGNMENT	STATION TO STATION	SELECT BORROW	SOLID SLAB SODDING	AGGREGATE BASE TYPE A	SUBGRADE METHOD B	SEPARATOR FABRIC	SUPERPAVE, TYPE S3 (PG 64-22)	SUPERPAVE, TYPE S4 (PG 64-22) INSOLUBLE	DOWEL JOINTED P.C.C. PAVT. (PLACEMENT)	P.C. CONC. PAVEMENT	2'-2" COMB. CURB & GUTTER (8" BARRIER)	2'-2" COMB. CURB & GUTTER (6" BARRIER)	4" CONCRETE SIDEWALK	4" STAMPED CONCRETE SIDEWALK	6" PATTERNED CONCRETE DIVIDING STRIP	DECORATIVE DOWEL JOINTED P.C.C. PAVT. (PLACEMENT)
			202(E)	230(A)	303(A)	310(B)	325	411(B)	411(C)	414(B)	414(G)	609(B)	609(B)	610(A)	610(A)	610(C)	SPECIAL
			CY	SY	CY	SY	SY	TON	TON	SY	CY	LF	LF	SY	SY	SY	SY
RECONSTRUCTION																	
1	S. YALE AVE.	27+08.57 - 32+00.00	0	1,439	1,729	5,185	5,841	0	0	4,862	1,216	671	0	472	104	0	0
2	S. YALE AVE.	32+00.00 - 39+00.00	94	1,631	2,341	7,021	8,237	0	0	6,047	1,512	1,216	753	811	24	167	0
3	S. YALE AVE.	39+00.00 - 46+00.00	196	3,211	2,192	6,576	8,070	0	0	5,386	1,347	1,259	1,260	845	0	276	0
4	S. YALE AVE.	46+00.00 - 53+00.00	285	1,925	2,122	6,365	7,940	0	0	5,172	1,293	1,333	1,211	892	0	207	0
5	S. YALE AVE.	53+00.00 - 60+00.00	241	2,588	2,193	6,578	8,144	0	0	5,353	1,339	1,336	1,238	872	0	265	0
6	S. YALE AVE.	60+00.00 - 67+00.00	387	3,910	2,075	6,223	7,999	0	0	4,984	1,246	1,235	1,317	901	22	214	0
7	S. YALE AVE.	67+00.00 - 69+92.17	0	682	1,116	3,348	3,734	0	0	2,918	730	404	475	297	64	61	0
8	E. 87TH PL. S.	9+10.50 - 9+25.40	0	24	17	50	70	0	0	36	9	30	0	0	0	0	0
8	E. 88TH PL. S.	10+72.47 - 11+28.10	0	118	61	183	258	32	16	0	0	87	0	0	0	0	0
9	E. 87TH ST. S.	10+76.49 - 11+66.60	0	142	186	557	761	0	0	0	0	295	0	0	0	0	415
9	E. 84TH ST. S.	10+87.88 - 11+37.83	0	215	98	292	394	0	0	221	56	141	0	0	0	0	0
10	E. 85TH ST. S.	7+43.45 - 9+29.00	0	1,795	228	683	941	112	56	0	0	400	0	0	0	0	0
	TEMPORARY	42+00.00 - 63+55.02	0	0	632	2,844	0	272	272	0	0	0	0	0	0	0	0
		SUBTOTALS	1,203	17,680	14,990	45,905	52,389	416	344	34,979	8,748	8,407	6,254	5,090	214	1,190	415
	* TO BE USED AS DEEMED NECESSARY BY ENGINEER				1,499												
		TOTALS	**1,203**	**17,680**	**16,489**	**45,905**	**52,389**	**416**	**344**	**34,979**	**8,748**	**8,407**	**6,254**	**5,090**	**214**	**1,190**	**415**

*ADDITIONAL 10% QUANTITY TO BE USED AS DEEMED NECESSARY BY ENGINEER

SUMMARY OF REMOVALS

REMOVAL PLAN NO.	ALIGNMENT	STATION TO STATION	HEADWALL	ASPHALT PAVEMENT	CONCRETE PAVEMENT	CURB & GUTTER	SIDEWALK	CONCRETE SLOPE PROTECTION	MANHOLE	DRAINAGE INLETS	RIPRAP	CONCRETE DITCH LINER	EXISTING PIPE	TRAFFIC ITEMS	FENCE	WALL	GUARDRAIL	TREE 6 TO 12" IN DIA.	TREE 13 TO 18" IN DIA.	TREE 19 TO 24" IN DIA.	TREE 25" AND UP IN DIA.	SAWING PAVEMENT
			619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	COT 625	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(B)	619(C)
			EA	SY	SY	LF	SY	SY	EA	EA	SY	LF	LF	EA	LF	LF	LF	EA	EA	EA	EA	LF
1	S. YALE AVENUE	27+08.57 - 32+00.00	3	4,022	0	115	282	0	0	5	263	203	247	4	0	0	0	5	0	0	2	90
2	S. YALE AVENUE	32+00.00 - 39+00.00	2	2,775	0	233	62	0	0	3	0	0	198	6	639	0	0	31	6	4	3	45
3	S. YALE AVENUE	39+00.00 - 46+00.00	0	2,562	339	344	0	0	0	4	0	0	270	12	1,183	130	630	39	20	3	3	11
4	S. YALE AVENUE	46+00.00 - 53+00.00	0	2,731	360	394	0	0	0	0	0	0	0	10	753	163	0	69	25	2	0	64
5	S. YALE AVENUE	53+00.00 - 60+00.00	2	2,575	0	179	0	0	2	0	0	0	182	7	230	352	423	20	3	0	0	51
6	S. YALE AVENUE	60+00.00 - 67+00.00	2	4,358	0	894	37	888	0	1	0	637	171	9	0	228	726	6	1	0	0	24
7	S. YALE AVENUE	67+00.00 - 70+07.20	2	2,972	194	250	0	0	0	1	0	258	109	7	0	20	0	4	0	0	0	23
	TEMPORARY		0	2,422	0	0	0	0	1	0	0	0	816	0	0	0	0	0	0	0	0	0
	TO BE USED AS DEEMED NECESSARY BY ENGINEER																	10	10	10	10	
		TOTALS	**11**	**24,417**	**893**	**2,409**	**381**	**888**	**3**	**14**	**263**	**1,098**	**1,993**	**55**	**2,805**	**893**	**1,779**	**184**	**65**	**19**	**18**	**308**

DRIVEWAY SUMMARY

Driveway No.	Roadway P&P Sheet	Station	Side	Radius Dwn Sta.	Radius Up Sta.	Width (FT)	Length (FT)	Existing Slope %	Prop. Slope %	AGGREGATE BASE TYPE A 303(A) CY	2'-2" COMB. CURB & GUTTER (8" BARRIER) 609(B) LF	6" CONCRETE DRIVEWAY 610(B) SY	Existing Description	Address
S. Yale Ave.														
100	1	27+59.75	RT	15	15	25	23	0.32%	0.23%	15	22	71	Asphalt	8801 S. Yale Ave.
101	1	28+50.51	LT	15	15	25	24	3.56%	5.75%	16	31	72	Concrete	8822 S. Yale Ave.
102	1	29+78.66	LT	15	15	22	25	1.97%	5.27%	15	27	67	Concrete	8822 S. Yale Ave.
103	1	30+93.00	RT	15	15	44	16	1.06%	5.40%	18	14	91	Asphalt	8810 S. Yale Ave.
104	1	30+94.25	LT	15	15	23	15	2.11%	4.26%	11	14	47	Asphalt	8801 S. Yale Ave.
105	2	32+35.00	LT	15	15	24	48	0.20%	4.03%	26	14	138	Asphalt	---
106	3	40+89.50	LT	20	20	16	246	---	6.00%	86	23	479	Asphalt	8600 S Yale Ave.
107	6	66+36.22	RT	35	25	28	120	8.23%	10.00%	116	275	553	Concrete	5202 E. 81st St.
108	7	68+64.34	LT	25	25	27	91	2.53%	2.63%	69	170	322	Asphalt	---
111	7	68+79.07	RT	15	15	31	27	---	2.00%	21	34	105	---	---
E. 88th PL. S.														
109	8	10+73.50	LT	---	---	15	48	17.22%	9.24%	16	---	88	Concrete	4901 E. 88th Pl.
110	8	10+87.50	RT	5	5	16	28	3.94%	7.05%	10	14	56	Concrete	4902 E. 88th Pl.
									TOTALS	**419**	**638**	**2,089**		

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

SUMMARIES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR	RWA	7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

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SUMMARY OF EDGE DRAIN/UNDERDRAIN

ALIGNMENT	STATION	TO	STATION	SIDE		CONNECT TO STRUCTURE	4" EDGE DRAIN CONDUIT - PERFORATED 613(J) LF	4" EDGE DRAIN OUTLET LATERAL - NONPERFORATED 613(K) LF
S. YALE AVE.								
S. YALE AVE.	27+08.57	TO	27+91.10	46.00	LT	S-54	83	5.00
S. YALE AVE.	27+08.57	TO	27+91.10	46.00	RT	S-55	83	5.00
S. YALE AVE.	29+00.00	TO	27+91.10	46.00	LT	S-54	109	5.00
S. YALE AVE.	29+00.00	TO	27+91.10	46.00	RT	S-55	109	5.00
S. YALE AVE.	31+36.69	TO	29+00.00	46.00	RT	S-1	237	5.00
S. YALE AVE.	31+40.00	TO	29+00.00	46.00	LT	S-2	240	5.00
S. YALE AVE.	32+90.00	TO	31+36.69	46.00	RT	S-4	154	5.00
S. YALE AVE.	32+90.00	TO	31+40.00	46.00	LT	S-7	150	5.00
S. YALE AVE.	35+16.75	TO	32+90.00	42.67	LT	S-9	227	5.00
S. YALE AVE.	35+22.67	TO	32+90.00	42.67	RT	S-5	233	5.00
S. YALE AVE.	37+50.00	TO	35+16.75	42.67	LT	S-14	234	5.00
S. YALE AVE.	37+50.00	TO	35+22.67	42.67	RT	S-15	228	5.00
S. YALE AVE.	40+20.03	TO	37+50.00	42.67	LT	S-16	271	5.00
S. YALE AVE.	40+21.86	TO	37+50.00	42.67	RT	S-17	272	5.00
S. YALE AVE.	42+39.43	TO	40+20.03	42.67	LT	S-22	220	5.00
S. YALE AVE.	42+69.88	TO	40+21.86	42.67	RT	S-24	249	5.00
S. YALE AVE.	42+39.43	TO	43+60.12	8.00	LT	S-28	121	5.00
S. YALE AVE.	45+27.00	TO	42+69.88	42.67	RT	S-26	258	5.00
S. YALE AVE.	45+35.85	TO	43+60.12	8.00	LT	S-28	176	5.00
S. YALE AVE.	48+75.00	TO	45+27.00	42.67	RT	S-31	348	5.00
S. YALE AVE.	47+09.93	TO	45+35.85	8.00	LT	S-32	175	5.00
S. YALE AVE.	47+09.93	TO	48+89.78	42.67	LT	S-36	180	5.00
S. YALE AVE.	51+00.00	TO	48+89.78	42.67	LT	S-36	211	5.00
S. YALE AVE.	51+00.00	TO	56+30.61	42.67	LT	N-6	531	5.00
S. YALE AVE.	52+49.69	TO	48+75.00	42.67	RT	S-35	375	5.00
S. YALE AVE.	52+49.69	TO	56+17.37	8.00	RT	N-4	368	5.00
S. YALE AVE.	56+17.37	TO	57+88.00	8.00	RT	N-9	171	5.00
S. YALE AVE.	56+30.61	TO	57+88.00	42.67	LT	N-11	158	5.00
S. YALE AVE.	58+07.57	TO	57+88.00	8.00	RT	N-9	20	5.00
S. YALE AVE.	60+03.01	TO	57+88.00	42.67	LT	N-11	216	5.00
S. YALE AVE.	58+07.57	TO	61+08.01	42.67	RT	N-16	301	5.00
S. YALE AVE.	60+03.01	TO	61+08.00	8.00	LT	N-17	105	5.00
S. YALE AVE.	61+08.00	TO	62+25.00	8.00	LT	N-19	117	5.00
S. YALE AVE.	61+08.01	TO	62+25.00	42.67	RT	N-21	117	5.00
S. YALE AVE.	62+25.00	TO	64+06.00	8.00	LT	N-24	181	5.00
S. YALE AVE.	62+25.00	TO	64+95.00	42.67	RT	N-26	270	5.00
S. YALE AVE.	65+11.42	TO	64+06.00	8.00	LT	N-24	106	5.00
S. YALE AVE.	64+95.00	TO	67+25.00	42.67	RT	N-30	230	5.00
S. YALE AVE.	65+11.42	TO	67+25.00	46.00	LT	N-31	214	5.00
S. YALE AVE.	67+25.00	TO	69+48.07	46.00	LT	N-34	224	5.00
S. YALE AVE.	67+25.00	TO	69+51.44	46.00	RT	N-33	227	5.00
S. YALE AVE.	69+92.17	TO	69+48.07	46.00	LT	N-34	45	5.00
S. YALE AVE.	69+92.17	TO	69+51.44	46.00	RT	N-33	41	5.00
						SUBTOTAL	8585.00	215.00
						* TO BE USED AS DIRECTED BY ENGINEER	858.50	21.50
						TOTALS	**9,444**	**237**

*ADDITIONAL 10% QUANTITY TO BE USED AS DEEMED NECESSARY BY ENGINEER

SUMMARY OF EROSION CONTROL

PLAN NO.	ALIGNMENT	STATION	TO	STATION	TEMPORARY SILT FENCE 221(C) L.F.	TEMPORARY SEDIMENT FILTER 221(D) E.A.	TEMPORARY SILT DIKE 221(F) L.F.
RECONSTRUCTION							
1	S. YALE AVE.	27+08.57	-	44+00.00	2064	23	84
2	S. YALE AVE.	44+00.00	-	67+00.00	3065	22	56
3	S. YALE AVE.	67+00.00	-	69+92.17	389	7	28
				TOTALS	**5,518**	**52**	**168**

SUMMARY OF FENCING*

LOCATION	STATION	TO	STATION	SIDE	FENCE - CLF (6 FT HIGH, CLASS A) SPECIAL LF	FENCE - BRICK (6 FT HIGH) SPECIAL LF	FENCE - WOOD (4 FT HIGH) SPECIAL LF	FENCE - WOOD (6 FT HIGH) SPECIAL LF	FENCE - IRON ROD (4 FT HIGH) SPECIAL LF	FENCE - IRON WITH BRICK PILLARS (6 FT HIGH) SPECIAL LF
S. YALE AVE.	33+20.32	-	33+20.88	LT		15				
S. YALE AVE.	33+19.10	-	33+19.28	RT	7					
S. YALE AVE.	33+81.13	-	33+81.21	RT						8
S. YALE AVE.	36+48.63	-	36+48.65	RT				8		
S. YALE AVE.	38+20.18	-	38+20.18	RT				8		
S. YALE AVE.	40+45.74	-	40+75.90	LT					121	
S. YALE AVE.	40+61.44	-	40+62.02	RT				5		
RESIDENTIAL DRIVE	7+05.21	-	8+00.01	RT					75	
S. YALE AVE.	41+98.34	-	42+94.52	RT				99		
S. YALE AVE.	42+74.43	-	42+96.61	LT			90			
S. YALE AVE.	43+60.05	-	43+69.92	LT					64	
S. YALE AVE.	46+14.91	-	46+37.05	LT					83	
S. YALE AVE.	48+41.40	-	48+69.22	LT				166		
S. YALE AVE.	49+24.36	-	49+27.34	LT				19		
S. YALE AVE.	49+78.29	-	49+83.71	LT				20		
S. YALE AVE.	52+37.62	-	52+41.67	LT			19			
S. YALE AVE.	53+83.18	-	53+94.77	LT			22			
				SUBTOTALS	7	15	131	325	343	8
				2% FOR GROUND MEASUREMENT	1	1	3	7	7	1
				TOTALS	**8**	**16**	**134**	**332**	**350**	**9**

* PROPOSED FENCE AND GATE SHALL MATCH EXISTING FENCE IN KIND

SUMMARY OF TEMPORARY FENCING*

PLAN NO.	PARCEL	ADDRESS	TEMPORARY FENCE SPECIAL LF
2	5	4902 E. 88TH PL.	125
2	8	4901 E. 88TH PL.	124
2	9	8714 S. ALLEGHENY AVE.	6
2	10	8710 S. ALLEGHENY AVE.	168
2	11	8702 S. ALLEGHENY AVE.	52
2	65	4822 E. 87TH PL.	119
2,3	75	CANYON CREEK ESTATES RESERVE A	504
3	14	8636 S. ALLEGHENY AVE.	49
3	15	8632 S. ALLEGHENY AVE.	240
3,4	58	8600 S. YALE AVE.	843
4,5	50	8411 S. WINSTON AVE.	186
4	52	4802 E. 85TH ST.	118
4	53	8511 S. WINSTON AVE.	187
4	54	8517 S. WINSTON AVE.	103
4	55	8523 S. WINSTON AVE.	157
5	33	4905 E. 84TH ST.	158
5	46	8315 S. VANDALIA AVE.	201
5	47	8315 S. VANDALIA AVE.	89
5	49	8405 S. WINSTON AVE.	200
		SUBTOTAL	3504
		2% FOR GROUND MEASUREMENT	71
		TOTAL	**3,575**

* PROPOSED FENCE SHALL BE A 6' CHAIN LINK FENCE

SUMMARY OF EARTHWORK TOTALS

LOCATION	STATION	TO	STATION	Roadway Construction: UNCLASSIFIED EXCAVATION 202(A) CY	Roadway Construction: FILL* (+20%) CY	Wall Construction: WALL EXCAVATION+ CY	Wall Construction: FILL* (+20%) CY	MASS VOLUME* CY
Phase 1	56+00.00	TO	62+50.00	493	694	3,124	0	2,923
Phase 2	27+08.78	TO	63+00.00	3,999	10,816	5,738	990	854
Phase 3	27+08.78	TO	69+92.17	65,814	3,617	7,218	0	70,268
Phase 4	42+00.00	TO	69+92.17	23,479	3,057	8,415	750	98,354
			TOTALS	**93,785**	18,185	24,495	1,741	98,354

* FOR INFORMATION ONLY
+ REFER TO WALL SUMMARY FOR STRUCTURAL EXCAVATION AND SUBSTRUCTURE EXCAVATION.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

SUMMARIES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR	ZWM	7/20
LEAD ENGR		11/18
RECOMMENDED DESIGN MANAGER	HAJ	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Summaries-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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WALL SUMMARY

WALL	BEGIN STATION	END STATION	AGGREGATE BASE TYPE A	STRUCTURAL EXCAVATION	SUBSTRUCTURE EXCAVATION ROCK	GRANULAR BACKFILL	SPECIAL CONCRETE FINISH	CLASS AA CONCRETE			CLASS A CONCRETE	REINFORCING STEEL		DRILLED SHAFT			(SP) CROSSHOLE SONIC LOGGING	6" PERFORATED PIPE UNDERDRAIN ROUND	(PL) ORNAMENTAL FENCE	(PL) CLAY CAP	(SP) SHOTCRETE
												PLAIN	EPOXY COATED*	30" DIA.	36" DIA.	60" DIA.					
			303(A)	501(A)	501(C)	501(F)	509	509(A)			509(B)	511(A)	511(B)	516(A)	516(A)	516(A)	516(C)	613(H)	624	SPECIAL	SPECIAL
			C.Y.	C.Y.	C.Y.	C.Y.	S.Y.	C.Y.			C.Y.	LB.	LB.	L.F.	L.F.	L.F.	EA	L.F.	L.F.	C.Y.	S.Y.
								COPING	CAST-IN-PLACE FAÇADE	CAST-IN-PLACE SCREEN WALL	CAST-IN-PLACE CANTILEVER / GRADE BEAM										
A	33+20.24	34+12.83					215	10		42			10,630	408			4	93			
B	35+48.38	40+57.58	499	2,317		1,499	1,410			209	478	84,610	57,370					509		365	
C	41+20.00	47+57.43	1,067	8,416		8,122	2,447			259	2,186	327,760	71,500					637		553	
D	48+13.00	52+73.35					1,447	77	162	190			80,780	572	1,820		16	664			470
E	52+73.34	55+40.15	285	1,912		2,183	893			108	382	59,140	29,800					267		395	
F	55+82.00	63+16.67		1,400	1,217	4,917	3,120			320	2,109	243,180	92,330			2,370	14	735		710	
G	33+00.00	34+57.17					349	24	32	47			19,820	967			6	240			106
H	34+36.92	39+27.62					419	76	79	29			39,390	2,863			17	707			269
J	41+74.77	56+02.60					5,010	296	720	615			289,480	613	2,731	3,596	40	2,019			1,845
K	55+95.67	66+21.05	170	960		561	3,707	205	647	409	338	69,660	221,690	216	941	3,873	23	1,456	86	100	1,606
L	66+68.00	67+85.00					62	18	18				10,600	325			5	184			62
M	8+00.00	9+62.60	175	810		990	525			66	217	34,320	18,230					163		80	
N	40+16.43	42+06.65					382	21		74			20,010	768			6	190			
		TOTALS	2,196	15,815	1,217	18,272	19,985	728	1,659	2,367	5,711	818,670	961,630	6,732	5,492	9,839	131	7,864	87	2,203	4,358

SUMMARY OF CURB RAMPS

INTERSECTION	STANDARD RAMP TYPE B EA
E. 87th PL. S.	
NW	1
SW	1
E. 88th PL. S.	
NE	1
SE	1
E. 87th ST. S.	
NE	1
SE	1
E. 85th S.	
NW	1
SW	1
E. 84th S.	
NE	1
SE	1
PARKING COMMERCIAL DRIVE (1)	
NE	1
SE	1
PARKING COMMERCIAL DRIVE (2)	
NW	1
SW	1
DRIVE D-100	
NE	1
SE	1
DRIVE D-101	
NW	1
SW	1
DRIVE D-102	
NW	1
SW	1
DRIVE D-103	
NE	1
SE	1
DRIVE D-104	
NW	1
SW	1
DRIVE D-105	
NW	1
SW	1
DRIVE D-106	
NW	1
SW	1
DRIVE D-111	
NE	1
SE	1
TOTAL	30

SUMMARY OF DITCH TREATMENT

LOCATION: ALIGNMENT	STATION TO STATION				DESCRIPTION	LENGTH	TYPE OF DITCH LINER: BOTTOM WIDTH	NO. OF CURTAIN WALLS	CLASS C CONCRETE	RIPRAP: TYPE I-A FILTER BLANKET	RELOCATION OF RIPRAP
									509(D)	601(C)	SPECIAL
						FT	FT	EA	CY	TON	SY
YALE AVENUE	27+87.09	-	30+10.00	RT	4' ARVS SPECIAL DITCH*	228	4				
YALE AVENUE	30+05.52	-	30+68.00	LT	2' ARVS SPECIAL DITCH*	64	2				
YALE AVENUE	35+02.44	-	39+06.03	RT	1' CONCRETE SPECIAL DITCH	477	1	6	15		
YALE AVENUE	39+98.20	-	41+70.00	RT	4' ARVS SPECIAL DITCH*	176	4				
YALE AVENUE	41+70.00	-	56+00.88	RT	2.5' CONCRETE SPECIAL DITCH	1428	2.5	16	69		
YALE AVENUE	56+00.88	-	56+13.85	RT	2.5' ARVS SPECIAL DITCH*	17	2.5				
YALE AVENUE	57+31.42	-	65+68.71	RT	2.5' CONCRETE SPECIAL DITCH	873	2.5	10	43		
YALE AVENUE	63+36.00	-	67+06.00	LT	4' ARVS SPECIAL DITCH*	383	4				
YALE AVENUE	66+70.10	-	67+81.88	RT	1' CONCRETE SPECIAL DITCH	116	1	3	4		
YALE AVENUE	67+81.88	-	68+32.00	RT	4' ARVS SPECIAL DITCH*	49	4				
YALE AVENUE	68+99.81	-	69+52.00	RT	4' ARVS SPECIAL DITCH*	57	4				
E. 85th STREET S.	8+10.00	-	9+14.00	LT	2' ARVS SPECIAL DITCH*	99	2				
E. 85th STREET S.	8+95.53	-	9+01.89	RT	RIPRAP					3	9
RESIDENTIAL DRIVE	7+05.53	-	7+07.47	RT	RIPRAP					2	6
RESIDENTIAL DRIVE	7+15.00	-	8+80.76	LT	2' ARVS SPECIAL DITCH*	185	2				
RESIDENTIAL DRIVE	7+07.47	-	9+33.90	RT	1' CONCRETE SPECIAL DITCH	234	1	4	7		
					TOTALS				138	5	15

*REFER TO ANCHORED REINFORCED VEGETATION SYSTEM SUMMARY FOR QUANTITIES

SUMMARY OF ANCHORED REINFORCED VEGETATION SYSTEM (ARVS)

PLAN NO.	ALIGNMENT	STATION	TO	STATION	SIDE	TYPE A SALVAGED TOPSOIL 205(A) CY	ARVS WITH B-1 ANCHORS SP-01 SY	EROSION CONTROL BLANKET (ECB) SP-01 SY
1	YALE AVENUE	27+87.09	-	30+10.00	RT	136	1,468	1,468
1	YALE AVENUE	30+05.52	-	30+68.00	LT	7	86	86
3	YALE AVENUE	39+89.20	-	41+70.00	RT	34	426	426
5	YALE AVENUE	56+00.88	-	56+13.85	RT	6	75	75
6,7	YALE AVENUE	63+36.00	-	67+06.00	LT	150	1,880	1,880
7	YALE AVENUE	67+81.88	-	68+32.00	RT	3	30	30
7	YALE AVENUE	68+99.81	-	69+52.00	RT	4	41	41
10	E. 85th STREET S.	8+10.00	-	9+14.00	LT	32	403	403
11	RESIDENTIAL DRIVE	7+15.00	-	8+80.76	LT	108	1,355	1,355
* SEE NOTE BELOW						34	397	397
					TOTALS	514	6,161	6,161

* INCLUDES AN ADDITIONAL 10% FOR USE AS DIRECTED BY THE ENGINEER.

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

SUMMARIES (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE: HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	DJR	12/20
FIELD MGR	RZW	12/20
LEAD ENGR	(D)	12/20
RECOMMENDED DESIGN MANAGER	HAS	12-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Summaries-03.dgn
DATE: OCTOBER 2018
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WATER METERS TO BE RECONNECTED

NO	Address:	Meter Size	Serial Number	City Location	Waterline P&P Sheet	Station/Offset (CRL YALE AVE)		Description	Short Service	Long Service	Total Services
	South Yale Avenue - Line A - (E 81st Street S to E 89th Street S)										
8100 - 8800 Block											
1	8704 S YALE AVE	1.5"	NP 60462813	47 N DR 7 W ST	3	41+36.39	1.32'LT	Reconnect	0	1	1
	South Yale Avenue - Line B - (E 87th Place S to E 89th Street S)										
8700 - 8800 Block											
2	8728 S YALE AVE	1"	NP 52885049	5 S 87 PL 5 W FIRE HYDRANT	11	34+49.03	65.46'LT	Reconnect	1	0	1
3	8810 S YALE AVE	5/8"	NP 52619467	24S NBL 8810 YALE	1	31+62.46	225.47'LT	Reconnect	0	1	1
4	8822 S YALE AVE	1"	NP 49991000	9' N NDR NM 30'W ST	1	30+02.49	63.28'LT	Reconnect	0	1	1
5	8822 S YALE AVE	1.5"	NP 60415644	6' N NDR SM 30'W ST	1	29+98.76	63.89'LT	Reconnect	0	1	1
	South Yale Avenue - Line F - (E 88th Place S east of S Yale Avenue)										
8800 Block											
6	8821 S YALE AVE	1"	NP 52626310	46 E YALE 5 S 88PL	11	34+58.05	65.76'RT	Reconnect	1	0	1
	East 87th Street South - Line G - (E 87th Street S east of S Yale Avenue)										
4900 Block											
7	4902 E 87TH ST	1"	NP 51121760	63 E YALE 2 S DR	12	39+13.93	79.33'RT	Reconnect	1	0	1
	South Yale Avenue - Line J - (E 84th Street S east of S Yale Avenue)										
8400 Block											
8	8401 S YALE AVE	1"	NP 52884934	60' E SEC YALE	14	56+17.87	68.40'RT	Reconnect	1	0	1
	South Yale Avenue - Line L - (Commercial Drive (1) east of S Yale Avenue)										
8200 Block											
9	8217 S YALE AVE	2"	NP 70080322	35 E WBL E PIT 4 NC bldg 3	14	66+43.02	97.66'RT	Reconnect	0	1	1
10	8217 S YALE AVE	2"	NP 70160731	35 E WBL 5 N CURB bldg3	14	66+41.43	101.10'RT	Reconnect	0	1	1
								SUBTOTALS	**4**	**6**	
								TOTAL METERS TO BE RECONNECTED			**10**

BL = BUILDING LINE
HL = HOUSE LINE
C = Cernter
N = North
S = South
E = East
W = West
CR = Curb
DR = Driveway

# = Distance in Feet
NA = Non Applicable
ARV = Combination Air and Vacuum Relief Valve

NOTE: REPLACE ALL 5/8" WATER METERS WITH 3/4" WATER METERS.

SIGN SUMMARY

SIGN NO.	SIGN LOCATION: ALIGNMENT	STATION	OFFSET		SIGN TYPES	NUMBER OF INDIVIDUAL SIGNS *	GROUND SIGN	1-1/2" SIGN POST	1-3/4" SIGN POST	2" SIGN POST	COMMENTS
							COT 608	COT 608	COT 608	COT 608	
						EA	SF	LF	LF	LF	
1	S. YALE AVE.	25+69.00	58.00	RT	R2-1(35)	1	4.00	2.00	10.00	3.00	Speed Limit 35
10	S. YALE AVE.	34+46.58	58.00	LT	R1-1	1	5.18	2.00	10.00	3.00	Stop Sign
					COT608A	2	4.00				S Yale Ave
					COT608A	2	4.00				E 87th Pl
11	S. YALE AVE.	34+89.79	58.00	LT	W14-2	1	9.00	2.00	10.00	3.00	No Outlet
12	S. YALE AVE.	34+93.90	58.00	RT	R1-1	1	5.18	2.00	10.00	3.00	Stop Sign
					COT608A	2	4.00				S Yale Ave
					COT608A	2	4.00				E 88th Pl
17	S. YALE AVE.	39+76.48	58.00	RT	R1-1	1	5.18	2.00	10.00	3.00	Stop Sign
					COT608A	2	4.00				S Yale Ave
					COT608A	2	4.00				E 87th St
18	S. YALE AVE.	40+87.01	6.00	RT	R6-1(RT)	1	3.00	2.00	10.00	3.00	One Way
20	S. YALE AVE.	47+48.55	58.00	LT	R1-1	1	5.18	2.00	10.00	3.00	Stop Sign
					COT608A	2	4.00				S Yale Ave
					COT608A	2	4.00				E 85th St
24	S. YALE AVE.	56+84.76	58.00	RT	R1-1	1	5.18	2.00	10.00	3.00	Stop Sign
					COT608A	2	4.00				S Yale Ave
					COT608A	2	4.00				E 84th St
27	S. YALE AVE.	66+64.55	6.00	RT	R6-1(RT)	1	3.00	2.00	10.00	3.00	One Way
					R3-2	1	4.00				No Left Turns
28	S. YALE AVE.	67+75.37	56.00	LT	R2-1(35)	1	4.00	2.00	10.00	3.00	Speed Limit 35
				TOTALS		31	**93**	**20**	**100**	**30**	

* FOR INFORMATION ONLY

CONCRETE REMOVAL AND REPLACEMENT - WATERLINE

Item No	Waterline P&P Sheet	Waterline Station	Conc. Pavement Length (FT)	Conc. Pavement Width (FT)	Conc. Pavement Area (SY)	Conc. Sidewalk Length (FT)	Conc. Sidewalk Width (FT)	Conc. Sidewalk Area (SY)	Description	Address
South Yale Avenue - Line B - (E 87th Place S to E 89th Street S)										
	8	26+24.54 - 27+11.68	84	24	**97**					
	8	26+73.70 - 27+11.68				41	9	**32**		
		TOTAL			**97**			**32**		

STRIPING SUMMARY

STRIPING PLAN NO.	ALIGNMENT	STATION	TO	STATION	TRAFFIC STRIPE (MULTI-POLY.) (4" WIDE) 856(A) LF WHITE	TRAFFIC STRIPE (MULTI-POLY.) (4" WIDE) 856(A) LF YELLOW	TRAFFIC STRIPE (MULTI-POLY.) (ARROWS) 856(B) EA
YALE AVENUE							
1	S. YALE AVE	20+75.00	-	45+00.00	2,712	3,832	14
2	S. YALE AVE	45+00.00	-	70+07.00	3,366	4,599	9
				TOTALS	**6,078**	**8,431**	**23**

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

SUMMARIES (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDD	12/18
	FIELD MGR	RTM	7/20
VERTICAL: 1"= NA	LEAD ENGR	DD	1/19
	RECOMMENDED DESIGN MANAGER	HHJ	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Summaries-04.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 18 OF 334 SHEETS

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WATERLINE "A" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
1	29+48.78	51.00	RT	383144.71	2582875.64	12" GATE VALVE
1	29+52.86	58.68	RT	383148.96	2582883.24	FIRE HYDRANT
1	29+52.88	54.72	RT	383148.89	2582879.27	6" GATE VALVE
1	31+74.00	51.00	RT	383369.88	2582870.83	12" GATE VALVE
1	31+78.28	54.72	RT	383374.24	2582874.45	8" GATE VALVE
2	33+16.15	51.00	RT	383512.00	2582867.79	12" GATE VALVE
2	34+72.22	49.00	RT	383667.99	2582862.45	12" GATE VALVE
2	35+21.55	55.96	RT	383717.45	2582868.35	FIRE HYDRANT
2	35+21.56	52.00	RT	383717.39	2582864.39	6" GATE VALVE
3	39+27.13	52.66	RT	384127.87	2582852.61	12" GATE VALVE
3	39+81.35	55.30	RT	384185.93	2582845.99	6" GATE VALVE
3	39+81.76	59.23	RT	384187.14	2582849.76	FIRE HYDRANT
4	47+66.00	49.00	RT	384925.57	2582783.59	16" GATE VALVE
5	56+26.11	49.00	RT	385787.86	2582934.53	16" GATE VALVE
5	57+02.22	55.91	RT	385868.89	2582913.49	FIRE HYDRANT
5	57+02.24	51.94	RT	385867.34	2582909.84	6" GATE VALVE
6	65+54.70	49.00	RT	386644.18	2582726.00	16" GATE VALVE
6	65+84.06	55.96	RT	386671.88	2582737.97	FIRE HYDRANT
6	65+84.08	52.00	RT	386672.59	2582734.07	6" GATE VALVE
6	66+17.98	49.00	RT	386706.49	2582737.02	16" GATE VALVE

WATERLINE "B" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
8	33+27.86	54.52	LT	383521.45	2582762.04	8" GATE VALVE
8	34+39.73	56.87	LT	383633.24	2582757.30	6" GATE VALVE
8	34+39.88	60.83	LT	383633.31	2582753.34	FIRE HYDRANT
8	34+46.23	51.00	LT	383639.87	2582763.03	8" GATE VALVE

WATERLINE "D" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
9	56+54.00	67.14	LT	385780.72	2582815.45	8" GATE VALVE
9	56+63.53	73.82	LT	385786.43	2582806.46	6" GATE VALVE
9	56+63.81	67.23	LT	385788.83	2582812.60	8" GATE VALVE

WATERLINE "F" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
11	34+52.55	77.65	LT	383645.62	2582736.25	8" GATE VALVE
11	34+68.22	45.00	RT	383663.90	2582858.53	8" GATE VALVE
11	34+68.22	53.00	RT	383664.07	2582866.53	8" GATE VALVE

WATERLINE "G" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
12	39+23.15	56.26	RT	384124.03	2582856.69	8" GATE VALVE

WATERLINE "H" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
13	47+44.06	66.86	LT	384934.93	2582666.04	FIRE HYDRANT
13	47+48.02	66.94	LT	384938.77	2582667.00	6" GATE VALVE
13	47+51.08	44.08	RT	384912.48	2582774.91	6" GATE VALVE
13	47+79.94	250.44	LT	385017.90	2582498.40	6" GATE VALVE

WATERLINE "J" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
14	56+29.75	53.35	RT	385792.86	2582937.66	8" GATE VALVE

WATERLINE "L" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
14	66+14.03	53.03	RT	386701.91	2582740.30	8" GATE VALVE

WATERLINE "K" VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
15	65+58.69	46.02	RT	386648.63	2582723.76	8" GATE VALVE
15	65+59.17	49.98	LT	386665.81	2582629.31	8" GATE VALVE

E. 85th ST. & S. WINSTON AVE. VALVE AND FIRE HYDRANT SUMMARY

WATERLINE PLAN & PROFILE SHEET	CRL S. YALE AVE. STATION	OFFSET		NORTHING	EASTING	ASSOCIATED FITTING
---	50+33.60	200.50	LT	385249.45	2582613.40	FIRE HYDRANT
---	50+34.24	204.41	LT	385251.09	2582609.79	6" GATE VALVE

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

SUMMARIES (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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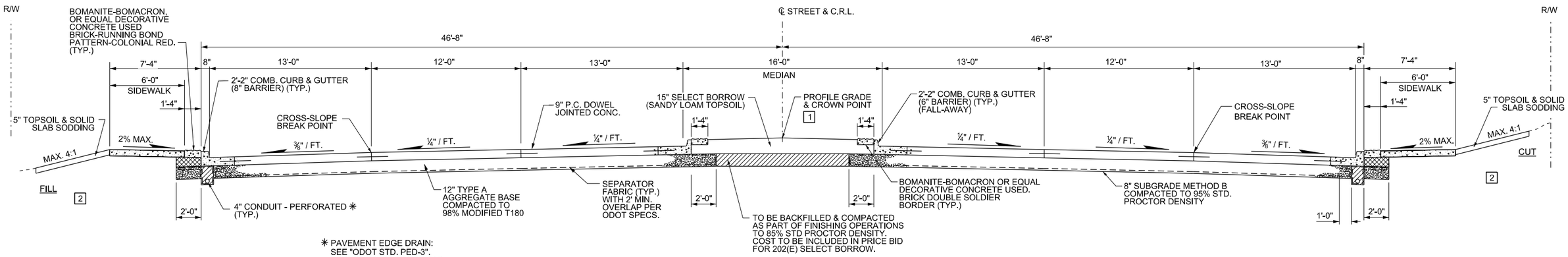
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR	ZCW	7/10
VERTICAL: 1"= NA	LEAD ENGR	CEW	7/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Summaries-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 19 OF 334 SHEETS

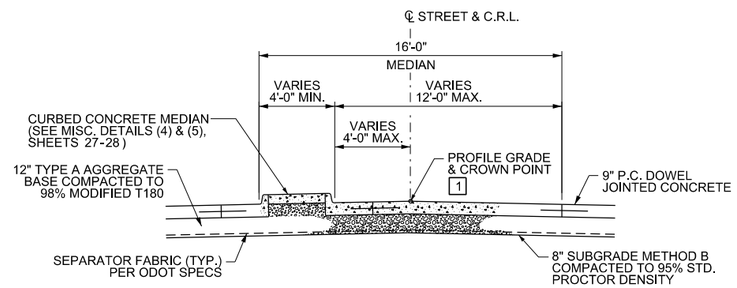


✳ PAVEMENT EDGE DRAIN:
SEE "ODOT STD. PED-3".
TRENCH 18" DEEP INSTEAD OF 12" AS SHOWN ON PED-3.
EDGE DRAINS SHALL BE PLACED AT ALL LOW LOCATIONS IN THE TYPICAL PAVING SECTION.
LATERAL FOR EDGE DRAINS WILL BE CONNECTED TO PROPOSED INLETS.

1 P.C. TYPICAL SECTION - YALE AVE.

NTS

WITH MEDIAN PLANTER
STA. 27+08.57 TO STA. 33+05.70
STA. 65+79.80 TO STA. 69+92.17

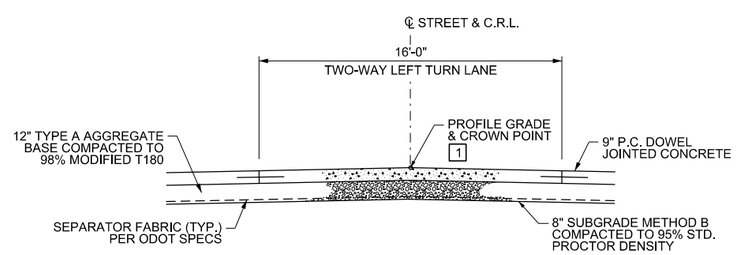


MEDIAN CONDITION 1-2

NTS

WITH MEDIAN TURN LANE

REFER TO MISCELLANEOUS DETAILS (3), SHEET 27 FOR MEDIAN GEOMETRY.



MEDIAN CONDITION 1-3

NTS

WITH TWO-WAY LEFT TURN LANE

NOTES:

1. CROSS SLOPE ROTATION :
REVOLVE THE CROSS SLOPE ABOUT THE PROFILE GRADE POINT. CROSS SLOPE ROTATION IS SPECIFIED ON THE YALE AVE. PROFILES. REFER TO "ODOT STD. DRAWING SUEL1-3" AND AASHTO 2004 FOR ADDITIONAL INFORMATION.

2. REFER TO RETAINING WALL TYPICAL SECTIONS, SHEETS 173 - 176 FOR END CONDITIONS IN VICINITY OF WALLS.

TYPICAL SECTION GENERAL NOTES :

JOINT TYPES SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD DRAWINGS NO. 727 AND 729.

CONSTRUCTION OF JOINTS SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD DRAWING NO. 729 EXCEPT AS NOTED.

ALL LONGITUDINAL AND TRANSVERSE BARS SHALL BE SMOOTH BARS. SIZE, LENGTH AND SPACING SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD DRAWING NO. 729.

CONSTRUCTION OF CURB SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD DRAWING NO. 727.

CONSTRUCTION OF DRIVEWAY SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARDS 701, 702, AND 708.

▨ TO BE BACKFILLED & COMPACTED AS PART OF FINISHING OPERATIONS TO 95% STD. PROCTOR DENSITY.
COST TO BE INCLUDED IN PRICE BID FOR 609(B), 2'-2" COMB. CURB & GUTTER (8" BARRIER), AND 609(B) 2'-2" COMB. CURB & GUTTER (6" BARRIER).

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TYPICAL SECTIONS (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
VERTICAL: 1" = NA	LEAD ENGR		11/18
	RECOMMENDED DESIGN MANAGER	HAB	7.20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Typ_Sections-1.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 20 OF 334 SHEETS

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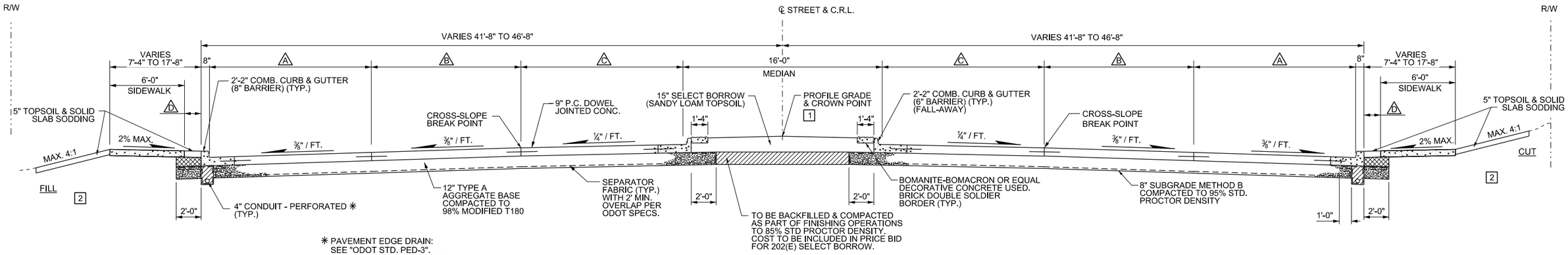

✳ PAVEMENT EDGE DRAIN:
SEE "ODOT STD. PED-3".
TRENCH 18" DEEP INSTEAD
OF 12" AS SHOWN ON PED-3.
EDGE DRAINS SHALL BE PLACED AT ALL
LOW LOCATIONS IN THE TYPICAL PAVING SECTION.
LATERAL FOR EDGE DRAINS WILL BE CONNECTED
TO PROPOSED INLETS.

2 P.C. TYPICAL SECTION - YALE AVE.

NTS

WITH MEDIAN PLANTER
STA. 33+05.70 TO STA. 65+79.80

VARIABLE WIDTHS			
TYPICAL	SEGMENT	STATION LIMITS	WIDTHS
2	A	STA. 33+05.70 TO STA. 34+25.70 STA. 64+59.80 TO STA. 65+79.80	13'-0" TO 11'-0" 11'-0" TO 13'-0"
	B	STA. 33+05.70 TO STA. 34+25.70 STA. 64+59.80 TO STA. 65+79.80	12'-0" TO 11'-0" 11'-0" TO 12'-0"
	C	STA. 33+05.70 TO STA. 34+25.70 STA. 64+59.80 TO STA. 65+79.80	13'-0" TO 11'-0" 11'-0" TO 13'-0"
	D	STA. 33+05.70 TO STA. 34+25.70 STA. 53+18.87 TO STA. 55+04.73 STA. 60+22.35 TO STA. 61+74.42 STA. 64+59.80 TO STA. 65+79.80	1'-4" TO 6'-4" 6'-4" TO 11'-8" 11'-8" TO 6'-4" 6'-4" TO 1'-4"

NOTES:

1. CROSS SLOPE ROTATION :
REVOLVE THE CROSS SLOPE ABOUT THE PROFILE GRADE POINT.
CROSS SLOPE ROTATION IS SPECIFIED ON THE YALE AVE. PROFILES.
REFER TO "ODOT STD. DRAWING SUEL1-3" AND AASHTO
2004 FOR ADDITIONAL INFORMATION.

2. REFER TO RETAINING WALL TYPICAL SECTIONS, SHEETS 173 - 176
FOR END CONDITIONS IN VICINITY OF WALLS.

REFER TO TYPICAL SECTION (1) FOR
TYPICAL SECTION GENERAL NOTES
& MEDIAN CONDITIONS.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TYPICAL SECTIONS (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR	BOL	12/18	
	FIELD MGR		1/19	
VERTICAL: 1" = NA	LEAD ENGR		7/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER
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ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 21 OF 334 SHEETS

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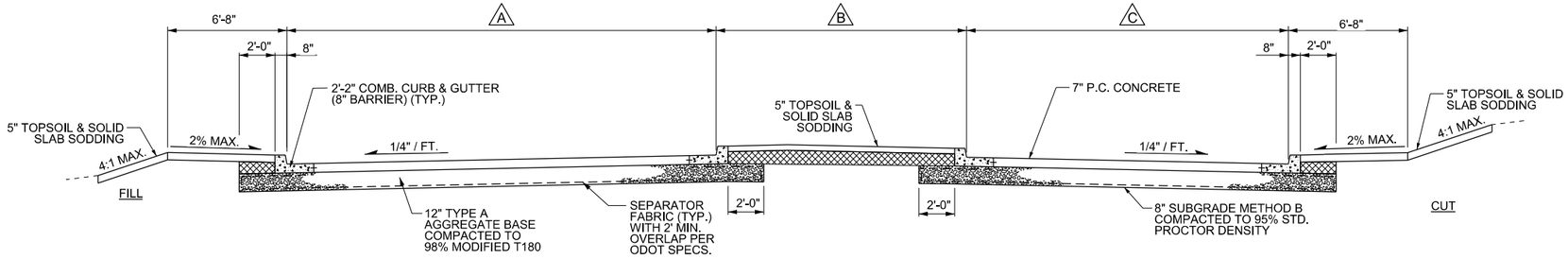
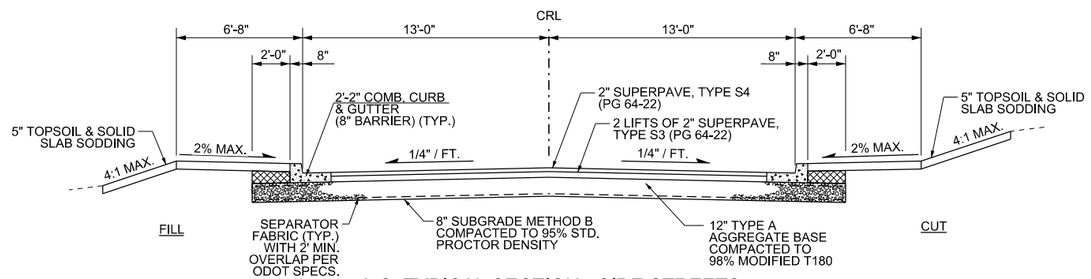


3 P.C. TYPICAL SECTION - SIDE STREETS

E. 84th STREET S.

NTS

STA. 10+90.33 TO STA. 11+37.83



4 A.C. TYPICAL SECTION - SIDE STREETS

E. 88th PLACE S.

NTS

STA. 10+72.47 TO STA. 11+28.10

E. 85th STREET S.

STA. 7+43.45 TO STA. 9+29.00

VARIABLE WIDTHS			
TYPICAL	SEGMENT	STATION LIMITS	WIDTH
2	A	STA. 11+03.36 TO STA. 11+10.86	20'-1" TO 27'-7"
	B	STA. 11+03.36 TO STA. 11+10.86	15'-0" TO 0'-0"
	C	STA. 11+03.36 TO STA. 11+10.86	15'-10" TO 23'-4"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

TYPICAL SECTIONS (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR	BMA	7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER		7.20

APPROVED: CITY ENGINEER

FILE: 313925-C-Typ_Sections-2.dgn

DATE: OCTOBER 2018

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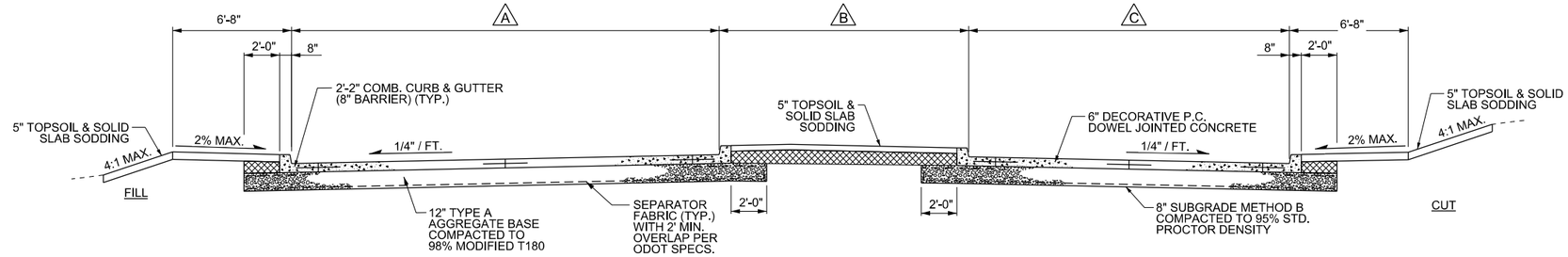
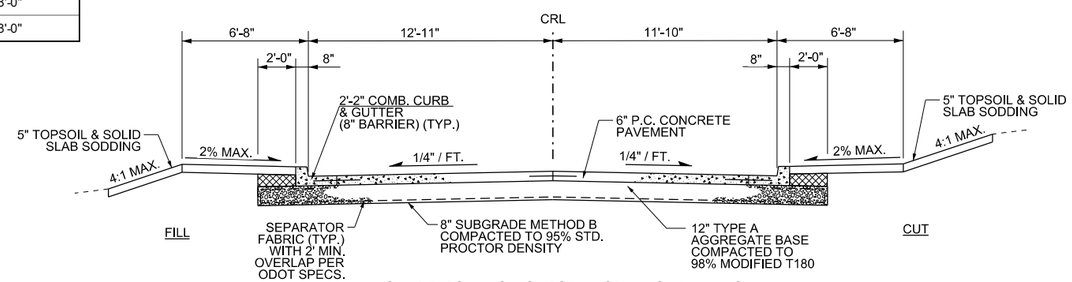
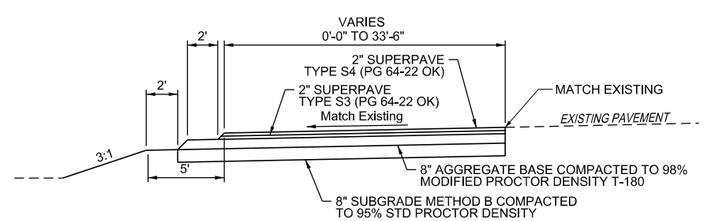


5 P.C. TYPICAL SECTION - SIDE STREETS
E. 87th STREET S.
STA. 10+76.49 TO STA. 11+66.70
NTS

VARIABLE WIDTHS			
TYPICAL	SEGMENT	STATION LIMITS	WIDTH
4	A	STA. 11+03.00 TO STA. 11+10.00	24'-0" TO 28'-0"
		STA. 11+44.44 TO STA. 11+54.55	28'-0" TO 18'-0"
	B	STA. 11+03.00 TO STA. 11+10.00	14'-0" TO 0'-0"
		STA. 11+44.44 TO STA. 11+54.55	0'-0" TO 20'-0"
	C	STA. 11+03.00 TO STA. 11+10.00	18'-0" TO 28'-0"
		STA. 11+44.44 TO STA. 11+54.55	28'-0" TO 18'-0"



6 P.C. TYPICAL SECTION - SIDE STREETS
E. 87th PLACE S.
STA. 9+10.50 TO STA. 9+25.40
NTS



7 A.C. TYPICAL SECTION - TEMPORARY
S. YALE AVE.
STA. 42+00.00 TO STA. 43+52.47
STA. 44+14.10 TO STA. 53+50.00
STA. 61+70.00 TO STA. 63+42.42
NTS

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TYPICAL SECTIONS (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER		7-20	CITY ENGINEER
FILE: 313925-C-Typ_Sections-3.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 23 OF 334 SHEETS

1/5/2021
1:49:09 PM
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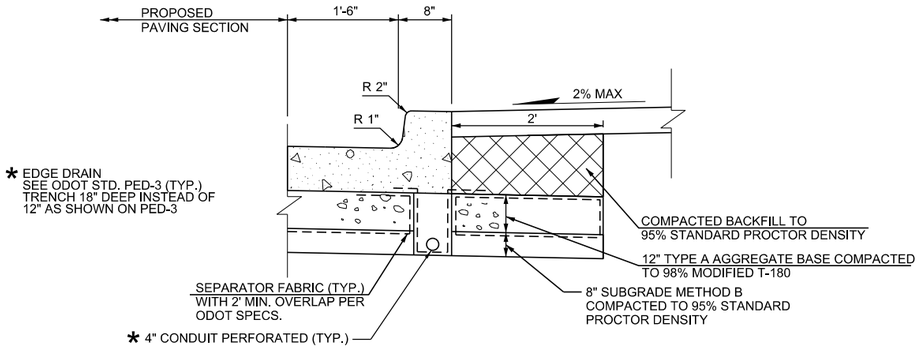
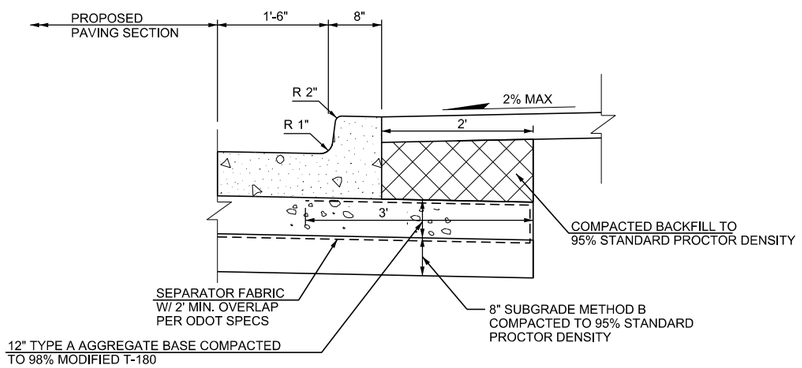


2'-2" COMBINED CURB AND GUTTER WITH EDGE DRAIN DETAIL

YALE AVENUE CONSTRUCTION

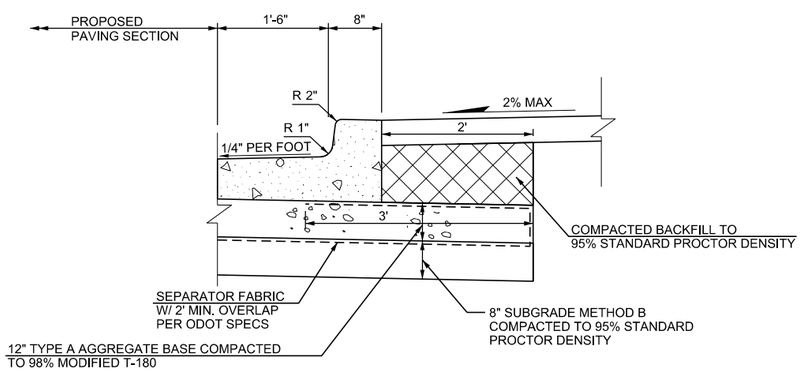
N.T.S.



2'-2" COMBINED CURB AND GUTTER DETAIL

SIDE STREET CONSTRUCTION

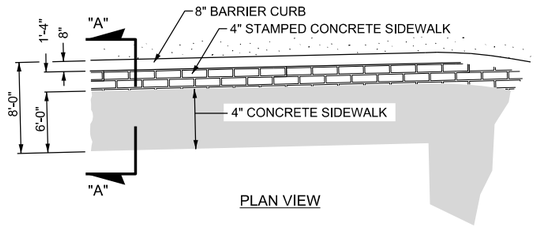
N.T.S.



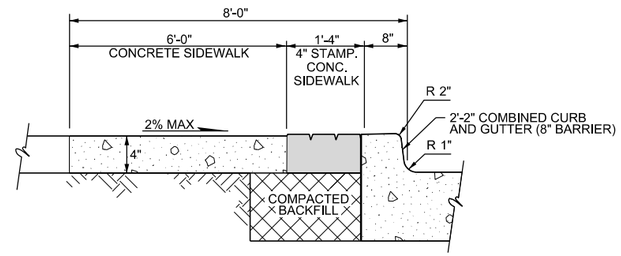
2'-2" COMBINED FALL-AWAY CURB AND GUTTER DETAIL

N.T.S.

REFER TO INTERSECTION DETAILS, SHEETS 103 - 107
PARKING DETAIL COMMERCIAL DRIVE (1), SHEET 108,
AND JOINT LAYOUTS, SHEETS 118 - 122 ,
FOR LOCATIONS



PLAN VIEW



SECTION "A-A" VIEW

SIDEWALK DETAIL

NTS

SIDEWALK NOTES:

1. DECORATIVE CONCRETE SIDEWALK SHALL BE COLORED (INTEGRAL) AND HAVE STAMP PATTERN (TEXTURED) AS SPECIFIED IN SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS CONCRETE (CONCRETE FOR SPECIAL SURFACE FINISH) AND AS SHOWN IN THE PLANS.

2. CONSTRUCTION OF DECORATIVE SIDEWALK SHALL BE MEASURED BY THE SQUARE YARD AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR: 610(A) 4" STAMPED CONCRETE SIDEWALK.

   PRICE BID FOR 4" STAMPED SIDEWALK SHALL INCLUDE COST OF COLORING AND TEXTURING THE CONCRETE. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SURFACE TREATMENT.

3. REFER TO CONCRETE SPECIAL SURFACE FINISH NOTES AND THE SPECIAL PROVISION FOR ADDITIONAL INFORMATION REGARDING THE SURFACE TREATMENT FOR SIDEWALKS.

4. JOINTS IN THE DECORATIVE CONCRETE SIDEWALK SHALL MATCH JOINTS IN THE CONCRETE SIDEWALK.

CONCRETE SPECIAL SURFACE FINISH NOTES:

CONCRETE STAMP PATTERN (TEXTURE)

SPECIFIED MANUFACTURER IS SCOLFIED SYSTEMS, 6533 BANDINI BLVD., LOS ANGELES, CA (323)720-3000 (OR APPROVED EQUAL). CONCRETE IS TO BE STAMPED AS SHOWN ON THE PLANS UTILIZING THE FOLLOWING PATTERNS.

SIDEWALKS: NEW BRICK RUNNING BOND (#2010)

MEDIANS: NEW BRICK HERRING BONE (#2050)
WITH NEW BRICK DOUBLE SOLDIER BORDER (#2170)

E. 87th ST. S.: ROMAN COBBLE BASE COLOR CAPPUCHINO (#700)

E. 87th ST. S. BORDER: DOUBLE STACKED SOLDIER COURSE
COBBLE-CREAM BEIGE (#310)

CONCRETE INTEGRAL COLOR

SPECIFIED MANUFACTURER IS BRICKFORM / RAFCO PRODUCTS, 11061 JERSEY BLVD., RANCHO CUCAMONGA, CA (800) 483-9628 (OR APPROVED EQUAL). SPECIFIED PRODUCTS ARE:

COLORED AND TEXTURED CONCRETE

SIDEWALKS
- INTEGRAL COLOR: BRICKFORM TILE RED (#500)
- ANTIQUE RELEASE AGENT: BRICKFORM MEDIUM GRAY (#200)

MEDIANS
- INTEGRAL COLOR: CAPPUCCINO (#700)
- ANTIQUE RELEASE AGENT: DESERT TAN (#350)

E. 87tH ST. S. & E. 87th ST. S. BORDER
- INTEGRAL COLOR: CREAM BEIGE (#310)
- INTEGRAL COLOR (BORDER): CAPPUCHINO (#700)
- RELEASE AGENT: DESERT TAN (#350)

STAMPED / PATTERNED CONCRETE
- SEALER: BRICKFORM GEMSEAL (CLEAR) OR APPROVED EQUAL

COLOR AND RELEASE AGENT ARE TO BE APPLIED TO ALL SURFACES USING INTEGRAL COLORING, THE SHAKE-ON METHOD OR STAINING WILL NOT BE PERMITTED. SEALER IS TO BE APPLIED TO ALL COLORED SURFACES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

SPECIAL PROVISION

REFER TO THE SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS FOR CONCRETE (CONCRETE SPECIAL SURFACE FINISH) FOR ADDITIONAL INFORMATION REGARDING CONCRETE SPECIAL SURFACE FINISH.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

MISCELLANEOUS DETAILS (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER	HBS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Misc-Details-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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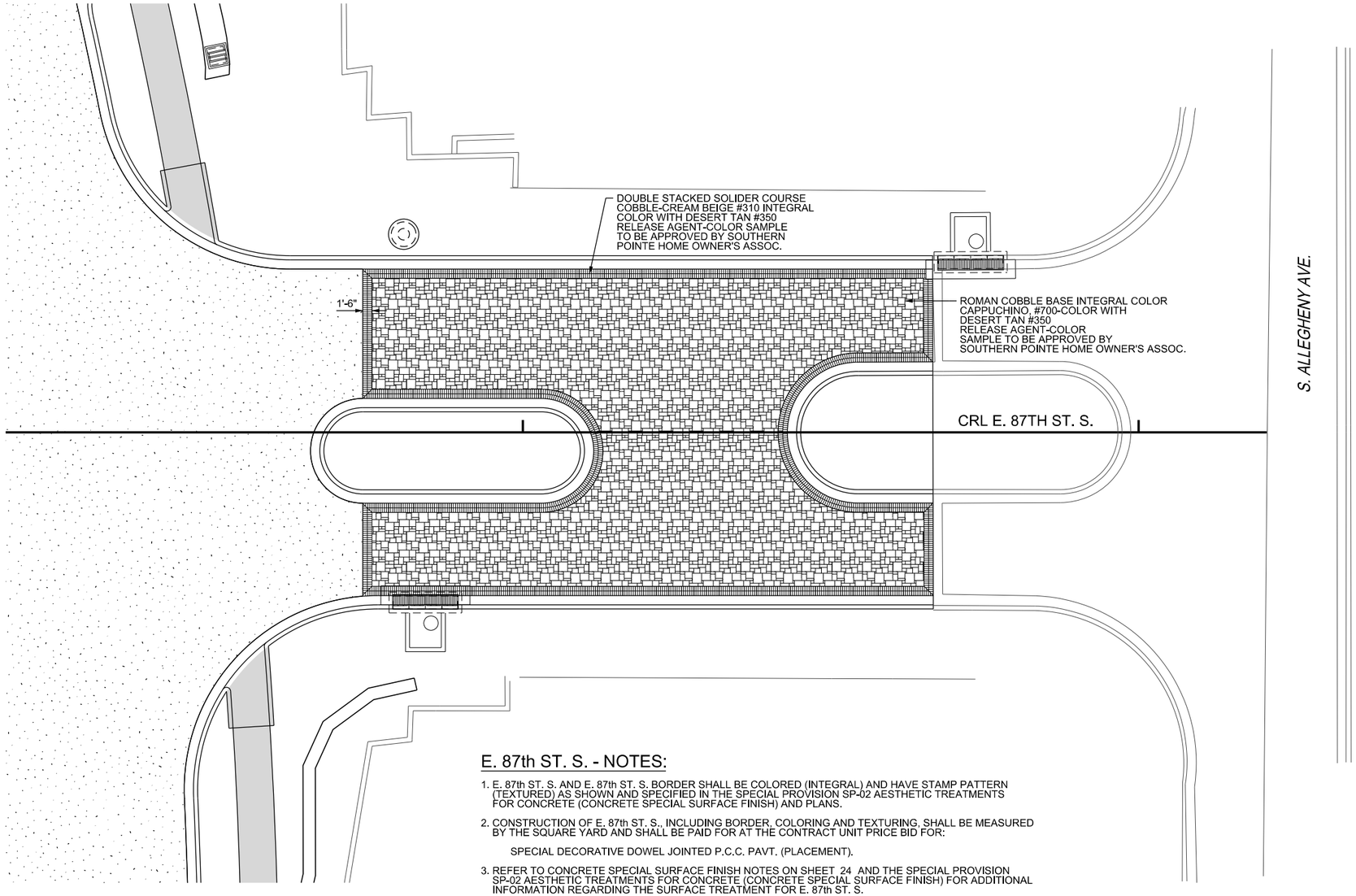

E. 87th ST. S. - NOTES:

1. E. 87th ST. S. AND E. 87th ST. S. BORDER SHALL BE COLORED (INTEGRAL) AND HAVE STAMP PATTERN (TEXTURED) AS SHOWN AND SPECIFIED IN THE SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS FOR CONCRETE (CONCRETE SPECIAL SURFACE FINISH) AND PLANS.
2. CONSTRUCTION OF E. 87th ST. S., INCLUDING BORDER, COLORING AND TEXTURING, SHALL BE MEASURED BY THE SQUARE YARD AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR:

   SPECIAL DECORATIVE DOWEL JOINTED P.C.C. PAVT. (PLACEMENT).
3. REFER TO CONCRETE SPECIAL SURFACE FINISH NOTES ON SHEET 24 AND THE SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS FOR CONCRETE (CONCRETE SPECIAL SURFACE FINISH) FOR ADDITIONAL INFORMATION REGARDING THE SURFACE TREATMENT FOR E. 87th ST. S.

N

10' 5' 0 20'

SCALE: 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

MISCELLANEOUS DETAILS (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR	RDC	12/18
	FIELD MGR	RCW	7/20
VERTICAL: 1" = NA	LEAD ENGR		9/19
	RECOMMENDED: DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Misc-Details-05.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 25 OF 334 SHEETS

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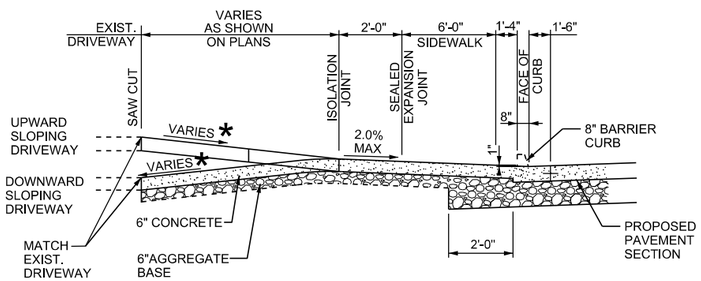


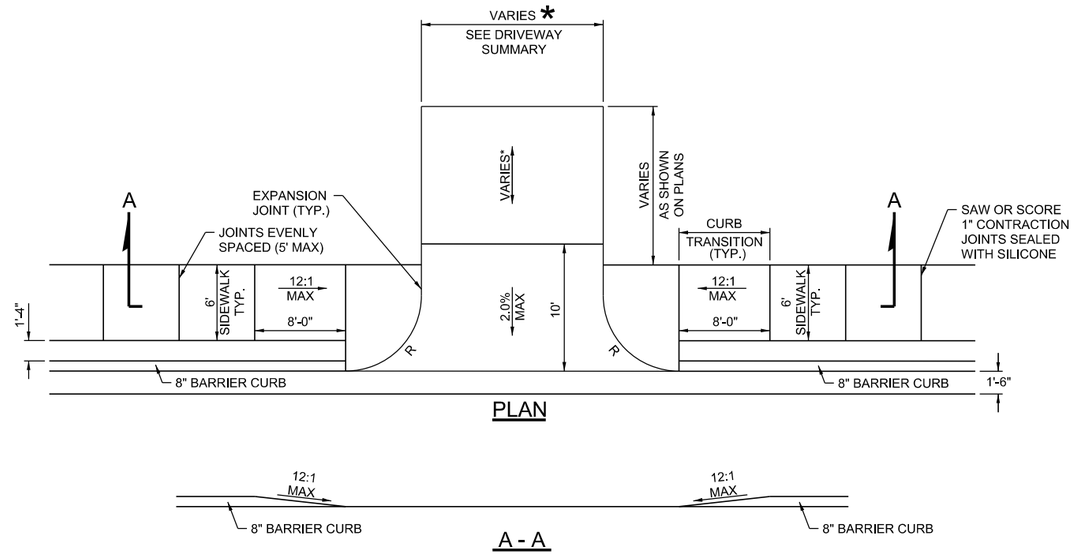
PROFILE

* REFER TO DRIVEWAY SUMMARY SHEET 15.

DRIVEWAY DETAIL WITH ADJACENT SIDEWALK

N.T.S.

NOTE: DRIVEWAYS SHALL RISE TO A MINIMUM HEIGHT TO MATCH ADJUSTMENT TOP OF CURB.

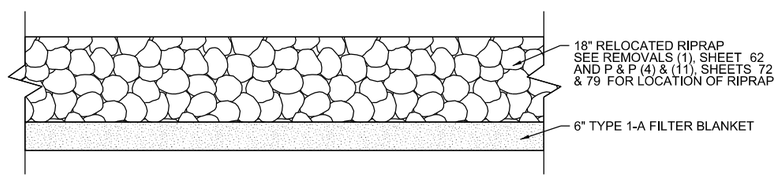


DRIVEWAY DETAIL WITH ADJACENT SIDEWALK

N.T.S.

DRIVE NOTES:

1. THERE WILL BE NO DEDUCTION OF PAYMENT FOR CONCRETE CURB AND/OR INTEGRAL CURB FOR THE LENGTH OF THE CURB BLOCKOUT.
2. EXPANSION JOINT MATERIAL, SEALERS AND OTHER RELATED MISCELLANEOUS ITEMS WILL NOT BE PAID FOR SEPARATELY BUT THE COST THEREOF SHALL BE INCLUDED IN THE COST OF DRIVEWAY SURFACING.
3. JOINT SEALERS SHALL MEET THE REQUIREMENTS OF SECIONS 701.08B AND 701.08E.
4. CONSTRUCTION OF JOINTS SHALL BE IN ACCORDANCE WITH CITY OF TULSA STANDARD DRAWING NO. 729 EXCEPT AS NOTED.
5. DRIVE SHALL BE REPLACED TO EXISTING JOINT OR AS NOTED.
6. SIDEWALKS SHALL MATCH THE ELEVATION OF THE DRIVEWAY WITHOUT ANY DROP OR STEP WITH A MAX CROSS SLOPE OF 2% MAX.
7. SIDEWALKS ADJACENT TO DRIVEWAYS SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE TOWARDS THE DRIVEWAY.
8. DRIVEWAYS SHALL RISE TO A MINIMUM OF 8" ABOVE THE GUTTERLINE PRIOR TO A BREAKOVER AWAY FROM THE ROADWAY.
9. ONE SIDEWALK PANEL ON EACH SIDE OF DRIVEWAYS SHALL BE 6" THICK. SIDEWALK SHALL BE JOINTED PER CITY OF TULSA STANDARD 727.

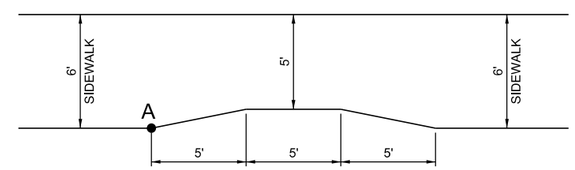


RIPRAP OUTFALL PROTECTION DETAIL

N.T.S.

RESIDENTIAL DRIVE
STA. 7+05.53 TO STA. 7+07.47 RT

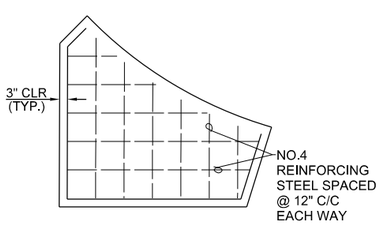
E. 85th ST. S.
STA. 8+95.53 TO STA. 9+01.29 RT



SIDEWALK BUMP IN DETAIL

N.T.S.

'A' LOCATIONS:
STA. 54+88.09, 53.28' LT (ROADWAY SIDE)
STA. 56+04.57, 53.33' LT (ROADWAY SIDE)
STA. 57+98.98, 53.33' LT (ROADWAY SIDE)
STA. 59+87.51, 53.33' LT (ROADWAY SIDE)
STA. 61+74.44, 54.00' LT (PRIVATE SIDE)



REINFORCED PANEL DETAIL

N.T.S.

PANEL NOTES:

1. COST FOR REINFORCING STEEL TO BE INCLUDED IN BID PRICE FOR "P.C. CONCRETE FOR PAVEMENT".
2. CHAIR ASSEMBLIES SHALL BE OF A TYPE APPROVED BY THE ENGINEER AND AT LEAST ONE CHAIR WILL BE REQUIRED FOR EACH 16 SQUARE FT. OF PAVEMENT, OR IN SUCH NUMBER AS TO FULLY SUPPORT THE REINFORCED STEEL. COST OF CHAIR ASSEMBLIES INCLUDED IN THE COST OF CONCRETE.
3. VIBRATORY EQUIPMENT SHALL BE REQUIRED TO ENSURE COMPLETE AND UNIFORM CONSOLIDATION OF CONCRETE AROUND THE REINFORCING.
4. THE RECOMMENDED PLACEMENT OF THE LONGITUDINAL STEEL IS TO BE SUPPORTED ON TRANSVERSE STEEL AND CHAIR ASSEMBLIES. CHAIR ASSEMBLIES MUST BE USED. LONGITUDINAL STEEL SHALL BE CONSIDERED AS LAYING GENERALLY PARALLEL WITH THE CENTERLINE OF THE STREET.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MISCELLANEOUS DETAILS (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER		7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Misc-Details-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 26 OF 334 SHEETS

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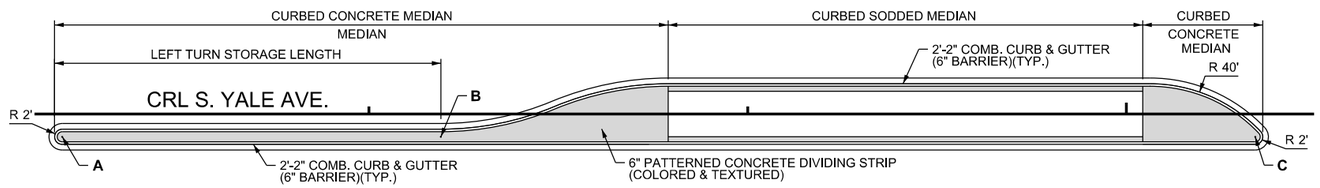
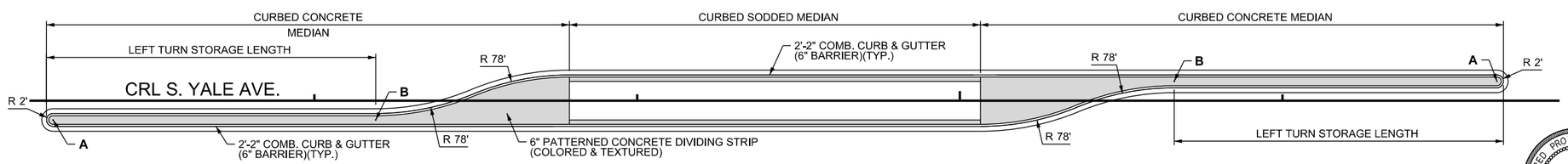
MEDIAN DETAIL (1)

NOT USED



MEDIAN DETAIL (2)

MEDIAN 3 NTS



MEDIAN DETAIL (3)

MEDIAN 4 NTS

MEDIAN GEOMETRY					
MEDIAN DETAIL	POINT TYPE	STATION	OFFSET	N	E
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2	B	36+78.01	6.00 'RT	383872.8121	2582815.0546
2	C	39+14.00	6.00 'RT	384109.1177	2582807.7493
3	A	39+83.00	6.00 'RT	384177.8945	2582797.3186
3	B	41+33.56	6.00 'RT	384323.7141	2582758.1926
3	B	45+64.97	6.00 'LT	384744.8561	2582680.2739
3	A	47+15.00	6.00 'LT	384890.8615	2582717.0955

6" PATTERNED CONCRETE DIVIDING STRIP - NOTES:

1) 6" PATTERNED CONCRETE DIVIDING STRIP SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ODOT STANDARD CSCD-5 (LATEST REVISION).

2) 6" PATTERNED CONCRETE DIVIDING STRIP SHALL BE COLORED (INTEGRAL) AND HAVE STAMP PATTERN (TEXTURED) AS SHOWN AND SPECIFIED IN THE SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS FOR CONCRETE (CONCRETE SPECIAL SURFACE FINISH) AND PLANS.

3) CONSTRUCTION OF 6" PATTERNED CONCRETE DIVIDING STRIP, INCLUDING COLORING AND TEXTURING, SHALL BE MEASURED BY THE SQUARE YARD AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR: 610(C) 6" PATTERNED CONCRETE DIVIDING STRIP.

4) REFER TO CONCRETE SPECIAL SURFACE FINISH NOTES ON SHEET 24 AND THE SPECIAL PROVISION SP-02 AESTHETIC TREATMENTS FOR CONCRETE (CONCRETE SPECIAL SURFACE FINISH) FOR ADDITIONAL INFORMATION REGARDING THE SURFACE TREATMENT FOR DIVIDING STRIP.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MISCELLANEOUS DETAILS (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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ENGINEERING SERVICES DEPARTMENT

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Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR	ZLM	7/20
LEAD ENGR	DD	1/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Misc-Details-03.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
SHEET 27 OF 334 SHEETS

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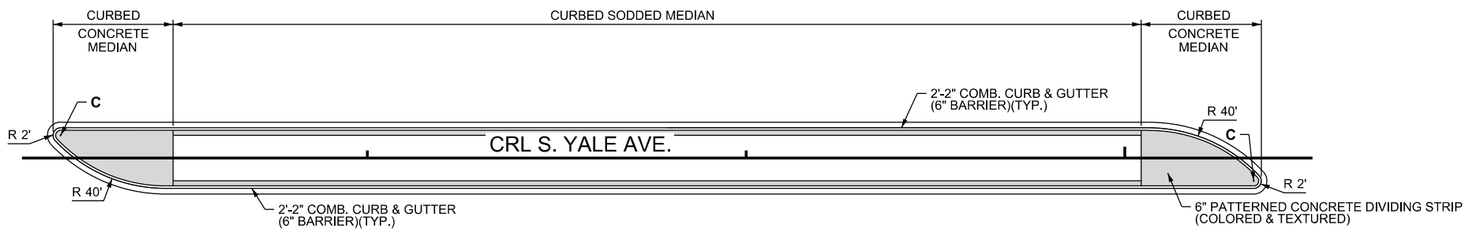
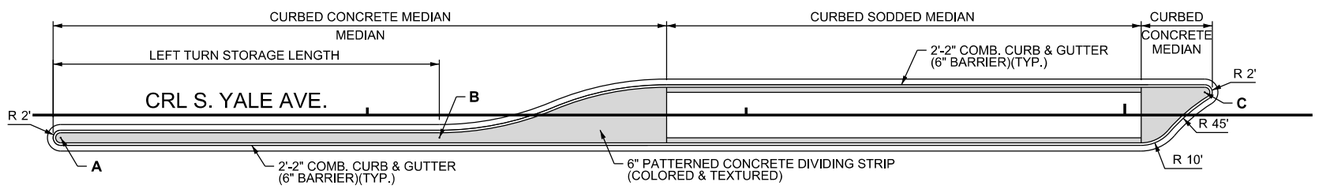
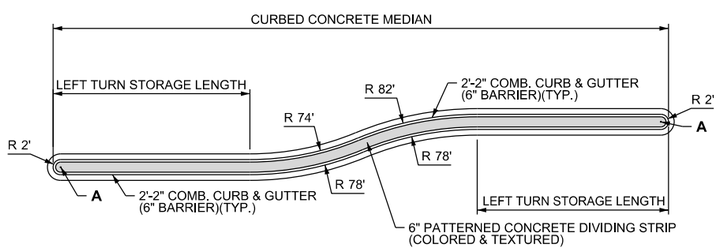


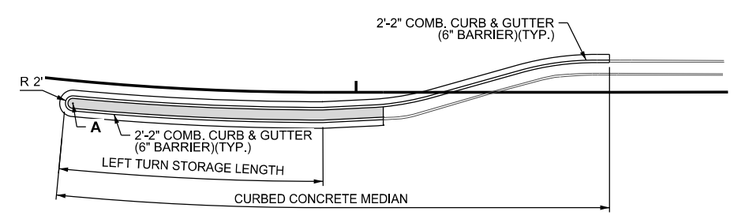
MEDIAN DETAIL (4)
MEDIAN 5 NTS



MEDIAN DETAIL (5)
MEDIAN 6 NTS



MEDIAN DETAIL (6)
MEDIAN 7 NTS



MEDIAN DETAIL (7)
MEDIAN 8 NTS

MEDIAN GEOMETRY					
MEDIAN DETAIL	POINT TYPE	STATION	OFFSET	N	E
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4	C	56+24.00	6.00 'RT	385774.4963	2582893.5937
5	A	56+97.00	6.00 'RT	385844.2811	2582869.7217
5	B	58+46.27	6.00 'RT	385979.8960	2582806.7988
5	C	66+31.36	6.00 'LT	386729.2489	2582685.1877
6	A	66+58.49	6.00 'RT	386753.8759	2582701.7274
6	A	68+17.00	6.00 'LT	386912.0514	2582717.5044
7	A	69+25.67	6.00 'RT	387018.1055	2582744.6600

SEE MISCELLANEOUS DETAILS (4), SHEET 27 FOR 6" PATTERNED CONCRETE DIVIDING STRIP NOTES.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MISCELLANEOUS DETAILS (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BOC	12/18
FIELD MGR	RCM	7/20
LEAD ENGR		11/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Misc-Details-04.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 28 OF 334 SHEETS

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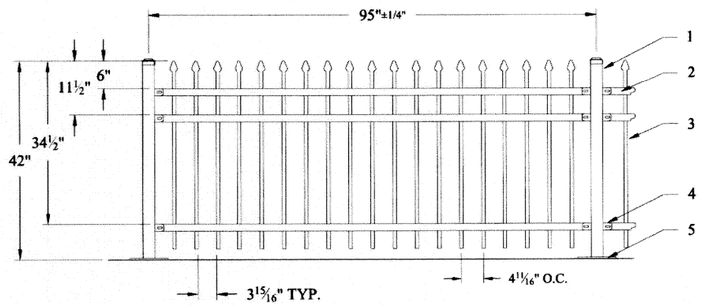


#	QTY.	DESCRIPTION
1	2	2½" Sq. POST
2	3	1½" x 1 7/16" RIBBED CHANNEL RAIL
3	19	¾" Sq. PICKET
4	6	BRACKETS
5	2	BASE PLATE

SPECIAL INSTALL POST & HARDWARE

PROPRIETARY INFORMATION
This drawing is the proprietary property of AMERISTAR, Tulsa, OK and must not be duplicated or used in whole or in part for the making of drawings, prints or parts to the detriment of, or harm to, the owner. In accepting this drawing, the recipient agrees to keep the information contained confidential.

REV	BY	CK'D	DATE	DESCRIPTION

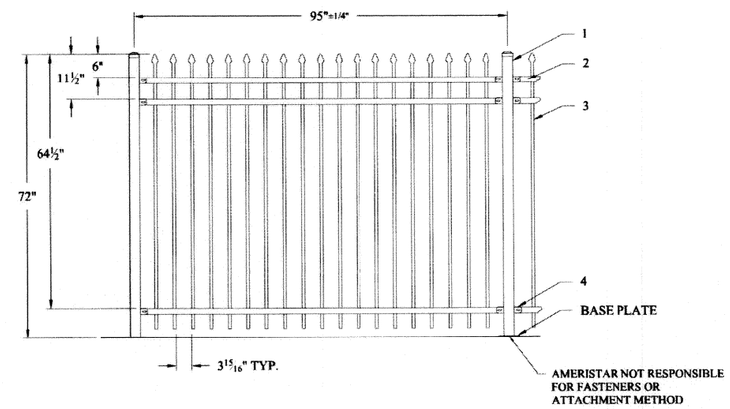
AMERISTAR® 1555 N. Mingo Tulsa, OK 74116 1-888-333-3422 www.ameristarfence.com

TITLE: MONTAGE PLUS CLASSIC 3R EXT 3.5'T 8' PANEL

DATE: 06-07-12	SCALE: DNS	SHEET: 1/1
DRN BY: JF	CHK BY: NF	REV: a

DRAWING NO: 1RCX340

SAMPLE DETAIL



#	QTY.	DESCRIPTION
1	2	2½" Sq. POST
2	3	1½" x 1 7/16" RIBBED CHANNEL RAIL
3	19	¾" Sq. PICKET
4	6	BRACKETS

SPECIAL INSTALL POSTS

PROPRIETARY INFORMATION
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REV	BY	CK'D	DATE	DESCRIPTION
b	JAX	CJ	12-16-10	OC Spacing was 95½" + ¼"

AMERISTAR® 1555 N. Mingo Tulsa, OK 74116 1-888-333-3422 www.ameristarfence.com

TITLE: MONTAGE PLUS CLASSIC 3R EXT 6'T 8' PANEL

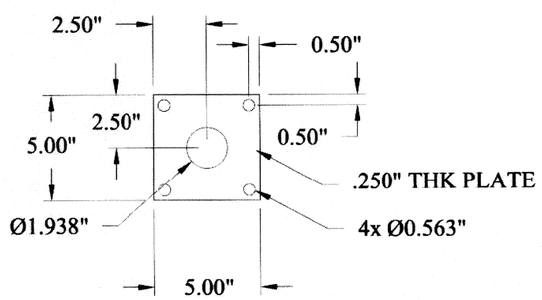
DATE: 09/18/09	SCALE: DNS	SHEET: 1/1
DRN BY: NJB	CHK BY: NM	REV: a

DRAWING NO: 1RCX370

NOTES:

1. FOR WALL CALLING FOR ORNAMENTAL FENCE, USE AMERISTAR FENCE COMMERCIAL GRADE "MONTAGE PLUS CLASSIC" OR APPROVED EQUAL. THE CONTRACTOR SHALL SUBMIT FENCE TYPE, POST SPACING LAYOUT, AND PROPOSED MOUNTING HARDWARE TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OR FABRICATING PANELS. SAMPLE DETAILS OF APPLICABLE AMERISTAR FENCE PANELS AND MOUNTING HARDWARE ARE PROVIDED ON THIS SHEET FOR INFORMATION ONLY.
2. THE BID ITEM PRICE PER LINEAR FOOT FOR "(PL) ORNAMENTAL FENCE" SHALL INCLUDE ALL COSTS FOR ENGINEERING DESIGN, MATERIALS FOR FENCE, MOUNTING HARDWARE, AND ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, AND INSTALL THE FENCE.
3. THE FENCE HEIGHT FOR ALL WALLS SHALL BE 6.0 FEET, BLACK IN COLOR, OR APPROVED EQUAL.
4. MOUNT FENCE PANELS TO TOP OF WALL USING CONCRETE ANCHORS AND STEEL BASE PLATES. INSTALLATION SHALL BE COMPLETED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN TO AVOID REINFORCING STEEL DURING INSTALLATION OF CONCRETE ANCHORS.
5. AT WALL EXPANSION JOINT, FENCE PANELS SHALL ACCOMMODATE EXPANSION OR SHALL BE DISCONTINUED ACROSS JOINT. SPACING OF FENCE POSTS SHALL APPEAR UNIFORM THROUGHOUT THE LENGTH OF THE FENCE. SEE WALL PROFILE FOR LOCATION OF EXPANSION JOINT.
6. FENCE PANELS SHALL BE ADJUSTABLE OR FABRICATED TO ORIENT POSTS AND PICKETS VERTICAL AND ORIENT RAILS PARALLEL TO TOP OF WALL.
7. FENCE PANELS SHALL BE PLACED ALONG HORIZONTAL ALIGNMENT OF WALL AS A SERIES OF CHORDS. AT NO POINT SHALL THE FENCE PANEL CHORD EXCEED 1 INCH FROM CENTERLINE OF WALL.
8. FOR ADDITIONAL INFORMATION SEE RETAINING WALL PAY ITEM NOTES.

SAMPLE DETAIL



Drawing Number: 8833
Title: 5" x 5" x ¼" W/ 9/16" DIA HOLES, STEEL PLATE
Catalog Number: 8833

DR: RTM	SH. 1of 1	SCALE: DNS
CK: DG	Date 3/29/06	

PROPRIETARY INFORMATION
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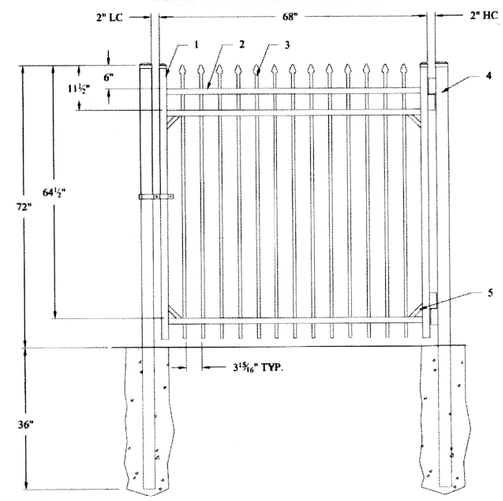
AMERISTAR® 1555 N. Mingo Tulsa, OK 74116 1-888-333-3422 www.ameristarfence.com

Rev	By	Decription	CHK	Date
a	RTM	Original drawing		
b	RTM	WAS 9/16 HOLE	KM	3/29/07

Uniess noted Otherwise
.x Decimal ±.030
.xx Decimal ±.015
.xxx Decimal ±.005
.xxxx Decimal ±.0005
Angular ±0.5°
DO NOT SCALE OFF DRAWING

SAMPLE DETAIL



#	DESCRIPTION
1	1¾" SQ GATE END
2	1 7/16" x 1½" RIBBED CHANNEL RAIL
3	¾" SQ X 18ga PICKET D1
4	3" SQ POST
5	GS5 GUSSET
	SQX5X3

PROPRIETARY INFORMATION
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REV	BY	CK'D	DATE	DESCRIPTION
b	NJB	CI	6-22-09	New tide block
c	NJB	CI	12-8-09	gusseto added
D	DLM	J.LLOD	5-03-13	added a 18ga

AMERISTAR® 1555 N. Mingo Tulsa, OK 74116 1-888-333-3422 www.ameristarfence.com

TITLE: MONTAGE PLUS CLS 3R EXT 6'H 68"OTO SGL GATE

DATE: 07/03/13	SCALE: DNS	SHEET: 1/1
DRN BY: DLM	CHK BY:	REV: D

DRAWING NO: 1WCX370-72

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018

MISCELLANEOUS DETAILS (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

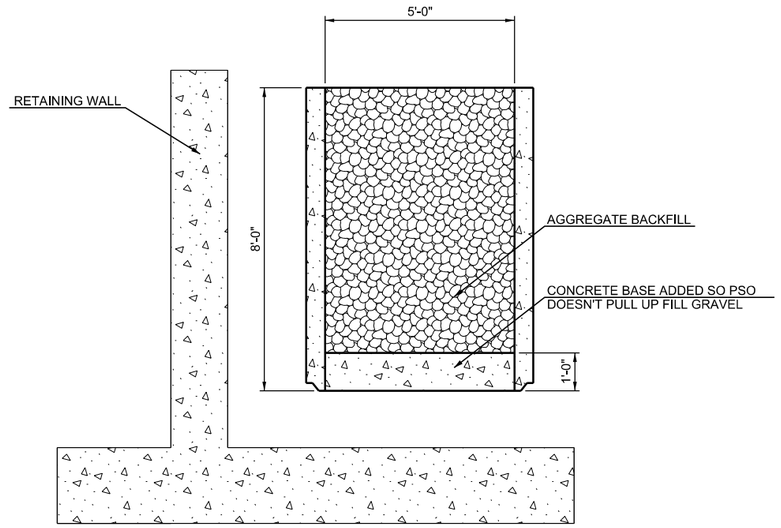
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDL	12/18	
	FIELD MGR	TRM	7/20	
VERTICAL: 1"= NA	LEAD ENGR		11/19	
	RECOMMENDED DESIGN MANAGER		7-20	CITY ENGINEER

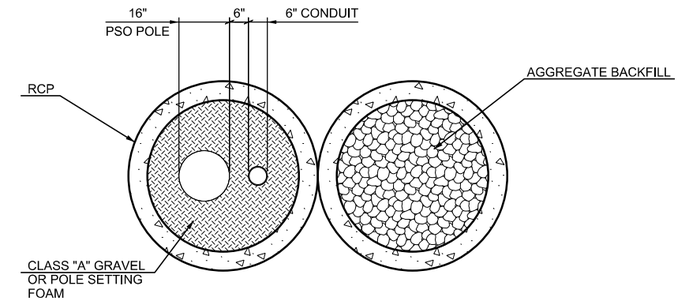
FILE: 313925-C-Misc-Details-06.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 29 OF 334 SHEETS



PSO POLE FOUNDATION DETAIL

N.T.S.

NOTE:
INSTALLATION OF POLE FOUNDATION IS TO BE INCLUDED
IN COST OF "PSO RELOCATION ALLOWANCE"



POLE FOUNDATION SECTION DETAIL

N.T.S.

REGISTERED PROFESSIONAL ENGINEER
KAREN SWATEK
DUDESK
26576
OKLAHOMA
October 31, 2018

MISCELLANEOUS DETAILS (7)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	ZZW	12/20
	LEAD ENGR	[illegible]	11/20
VERTICAL: 1"= NA	RECOMMENDED	HAJ	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Misc-Details-07.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 30 OF 334 SHEETS

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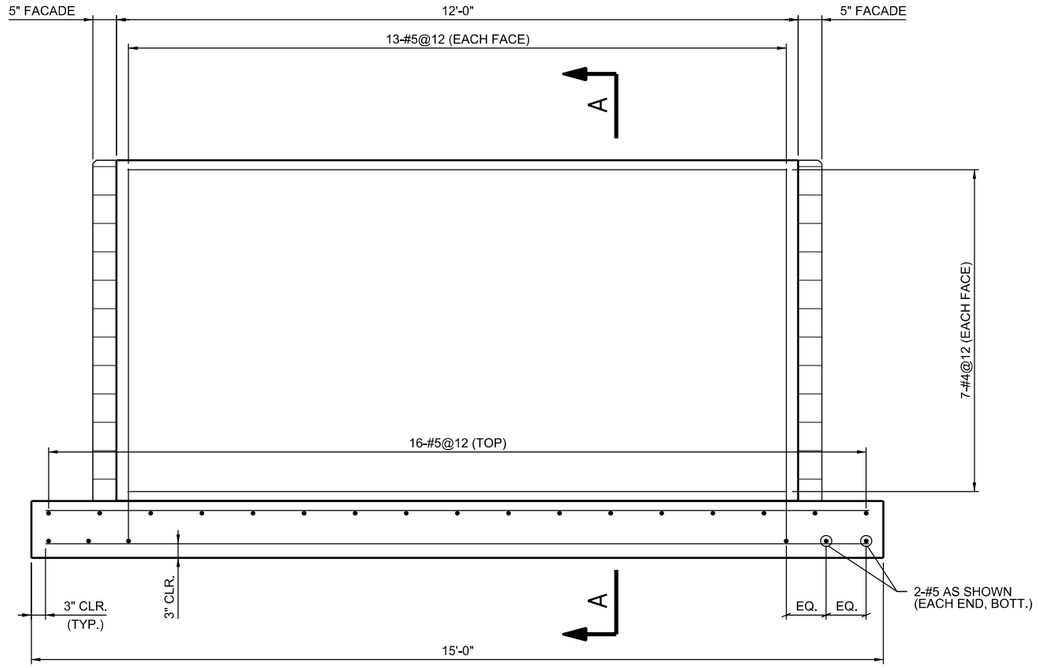
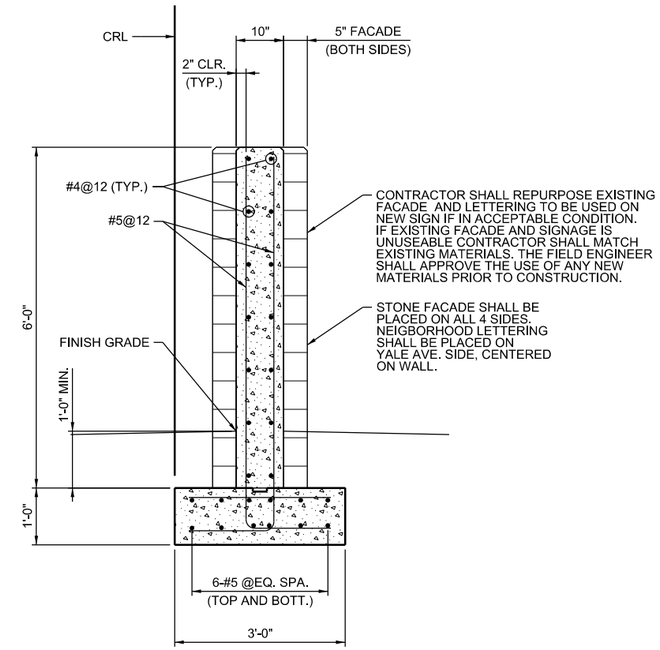


ELEVATION

BROOKWOOD SIGN N.T.S.

STA. 47+93.00, 64.51' LT. YALE AVENUE
(SEE PLAN AND PROFILE (10), SHEET **78** FOR LOCATION)



SECTION A-A

BROOKWOOD SIGN N.T.S.

BROOKWOOD SIGN QUANTITES

ITEM	UNIT	TOTAL
CLASS AA CONCRETE	CY	2.8
REINFORCING STEEL	LB	570

LICENSED PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-31-2018

MISCELLANEOUS DETAILS (8)
BROOKWOOD SIGN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR	KZM	7/20
LEAD ENGR	DD	1/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Misc-Details-08.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 31 OF 334 SHEETS

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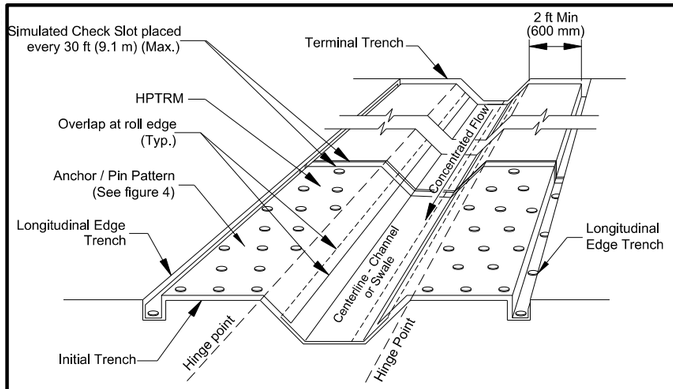

PERSPECTIVE

NOTE: For clarity, perspective view does not show all pins and anchors.

FIGURE 1: OVERVIEW OF SYSTEM IN CHANNEL
NTS

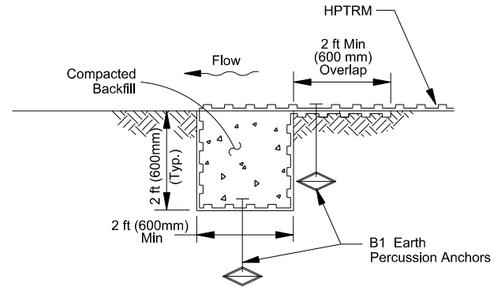

FIGURE 2: INITIAL TRENCH (DOWNSTREAM) DETAIL
NTS

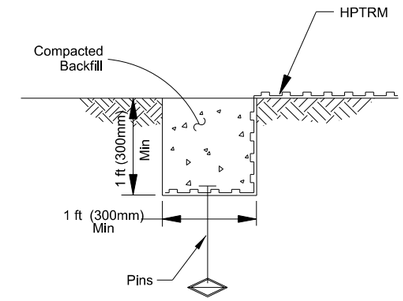

FIGURE 3: LONGITUDINAL EDGE TRENCH DETAIL
NTS

ANCHORED REINFORCED VEGETATION SYSTEM (ARVS)
REFER TO SPECIAL PROVISION SP-01, ANCHORED REINFORCED VEGETATION SYSTEM SPECIFICATION AND PAY ITEM NOTE 126 ON PAY ITEMS & NOTES (3), SHEET 5 .

B1 EARTH PERCUSSION ANCHORS WITH MINIMUM DRIVE DEPTH OF 3.0 FEET SHALL BE USED.

PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

EROSION CONTROL BLANKET (ECB)
REFER TO SPECIAL PROVISION SP-01, ANCHORED REINFORCED VEGETATION SYSTEM SPECIFICATION AND PAY ITEM NOTE 124 ON PAY ITEMS & NOTES (3), SHEET 5 .

COMPACTED BACKFILL NOTE :
TO BE BACKFILLED AND COMPACTED AS A PART OF THE FINISHING OPERATIONS TO 95% STD. PROCTOR DENSITY.
COST TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.

ROUNDING NOTE:
INTERSECTIONS OF CUT AND FILL SLOPES WITH THE GROUND LINE ARE TO BE ROUNDED AS A PART OF THE FINISHING OPERATIONS. ROUNDING SHALL BE 5' MINIMUM FOR SMALLER CUTS AND FILLS, TO 15' MAXIMUM FOR LARGER CUTS AND FILLS, OR AS DESIGNATED BY THE ENGINEER. COST OF ROUNDING TO BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.

TOPSOILING NOTE :
THE CONTRACTOR SHALL STRIP ALL OF THE AVAILABLE TOPSOIL, STOCKPILE IT AND PLACE IT BACK ON THE SECTION IN ACCORDANCE WITH SECTION 205 OF THE STANDARD SPECIFICATIONS. ALL ADDITIONAL COSTS ASSOCIATED WITH OPERATION SHALL BE INCLUDED IN THE PAY ITEMS FOR SALVAGED TOPSOIL, CUBIC YARD.

COMPACTION NOTE :
GRADE AND COMPACT AREA AS DIRECTED AND APPROVED BY THE ENGINEER. SUBGRADE SHALL BE UNIFORM AND SMOOTH. REMOVE ALL ROCKS, CLODS, VEGETATION OR OTHER OBJECTS SO THE INSTALL MAT WILL HAVE DIRECT CONTACT WITH SOIL SURFACE.

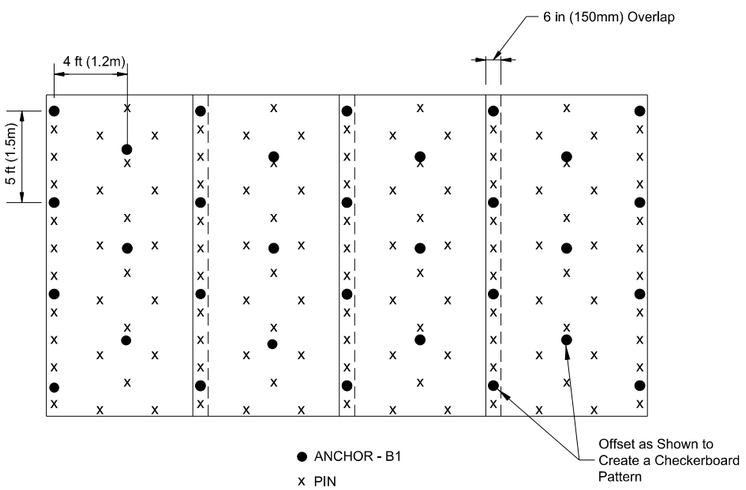

FIGURE 4: ANCHOR / PIN PATTERN DETAIL CHANNEL BOTTOM
NTS

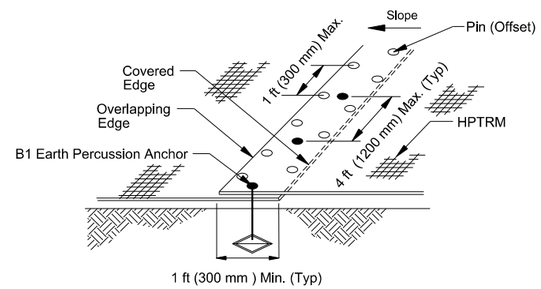

FIGURE 5: OVERLAP AT ROLL END DETAIL
NTS

Note: HPTRM Edge Shingle/Overlap placement depends on down slope direction (i.e Shingle in the direction of the down slope)
Pins shall be used for channel slope overlaps.
B1 anchors shall be used for channel bottom overlaps.

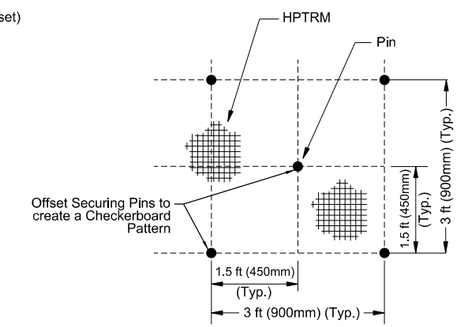

FIGURE 6: PIN PATTERN DETAIL
NTS

REFER TO TYPICAL SECTION:
See TURF MAT DETAILS (2), Sheet 33 for location.

REFER TO SPECIAL PROVISIONS:
SP-01 Anchored Reinforced Vegitation System Specifications.

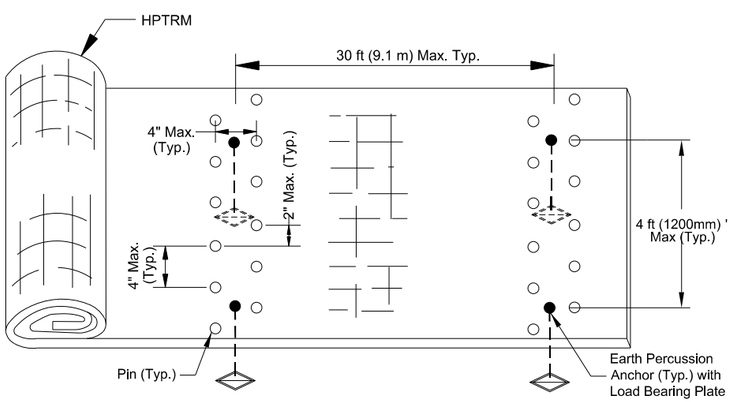

FIGURE 7: SIMULATED CHECK SLOT DETAIL
NTS

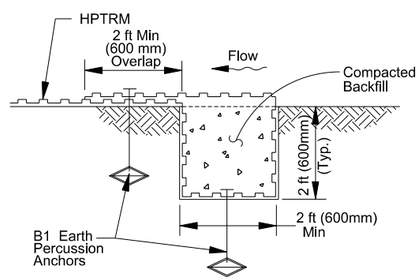

FIGURE 8: TERMINAL TRENCH (UPSTREAM) DETAIL
NTS

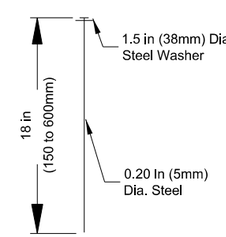

FIGURE 9: PIN DETAIL
NTS

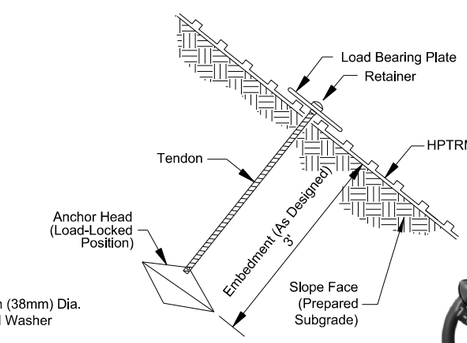

FIGURE 10: B1 EARTH PERCUSSION ANCHOR DETAIL
NTS

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TURF MAT DETAILS (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RAG	6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Turf_Mat-1.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 32 OF 334 SHEETS

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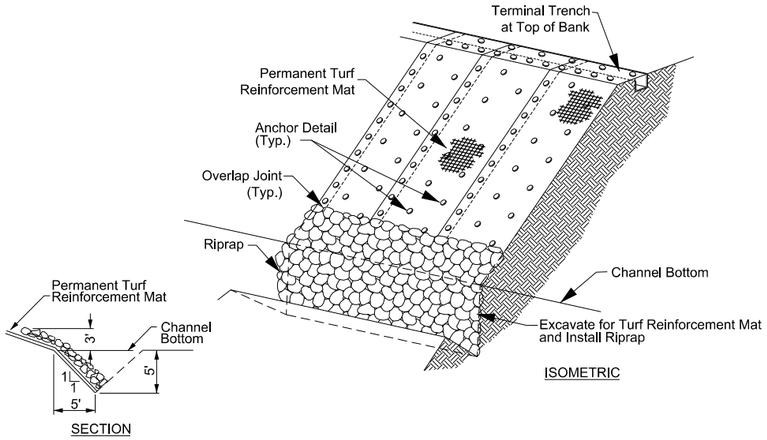


FIGURE 11:
PERMANENT TURF REINFORCEMENT MAT
WITH RIPRAP FOR CHANNEL BANK PROTECTION

*Note: For Clarity, Isometric View does not show all pins NTS

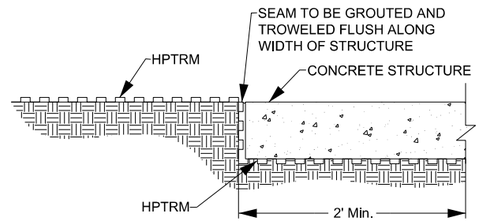
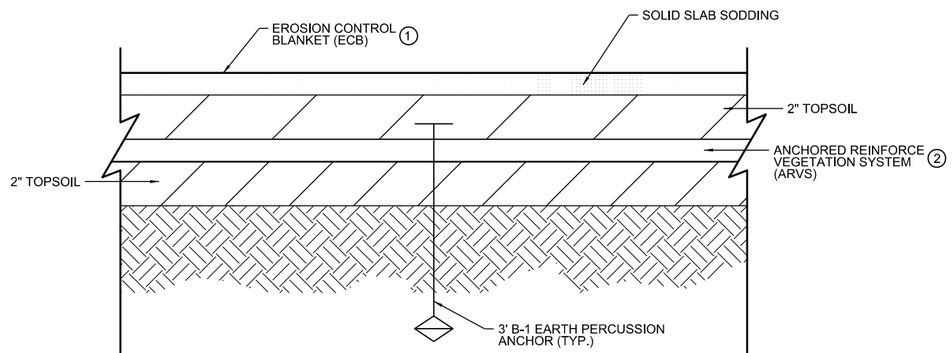


FIGURE 12:
HPTRM CONNECTION TO
CONCRETE STRUCTURES
(TYPE 3)
NTS



TYPICAL SECTION
ANCHORED REINFORCED VEGETATION SYSTEM (ARVS)
NTS

YALE AVE.
STA. 27+87.09 TO STA. 30+10.00 RT
STA. 30+05.52 TO STA. 30+68.00 LT
STA. 39+89.20 TO STA. 41+70.00 RT
STA. 56+00.88 TO STA. 56+13.85 RT
STA. 63+36.00 TO STA. 67+06.00 LT
STA. 67+81.88 TO STA. 69+60.00 RT

RESIDENTIAL DRIVE
STA. 7+15.00 TO STA. 8+80.76 LT
STA. 7+07.47 TO STA. 9+33.90 RT

E. 85th ST. S.
STA. 8+10.00 TO STA. 9+14.00 LT

1. INSTALL THE EROSION CONTROL BLANKET (ECB) IN ACCORDANCE WITH SPECIAL PROVISION SP-01, ARVS. ECB SHALL BE LANDLOK® S2 OR APPROVED EQUAL.

2. INSTALL THE ANCHORED REINFORCE VEGETATION SYSTEM IN ACCORDANCE WITH SPECIAL PROVISION SP-01, ARVS, AND THE TURF MAT DETAILS, SHEETS 32 & 33 .

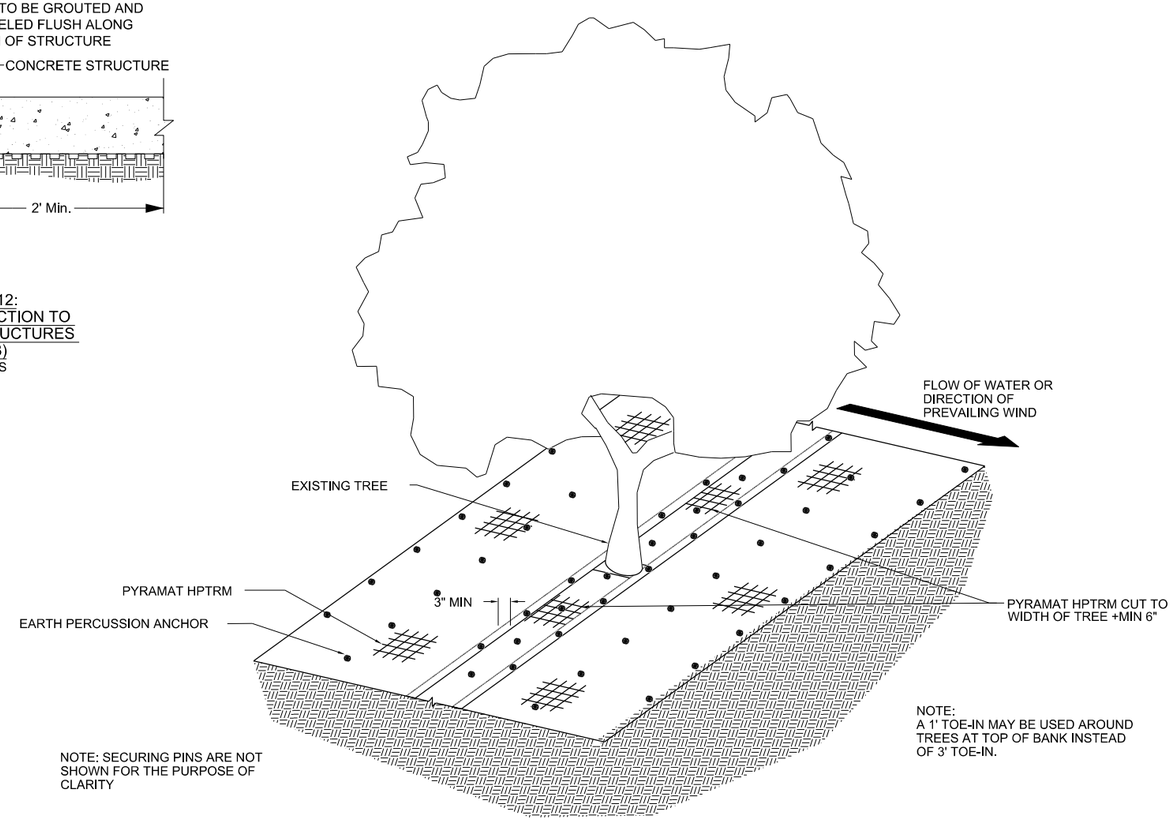


FIGURE 13: HIGH PERFORMANCE TURF REINFORCEMENT MAT (HPTRM)
AROUND TREES
NTS

INSTALLATION

1. INSTALL PYRAMAT AS CLOSE TO BOTH SIDES OF EXISTING TREE AS POSSIBLE.

2. CUT TWO STRIPS OF PYRAMAT THE TREE WIDTH PLUS A MINIMUM OF 6".

3. PLACE THE FIRST STRIP ON THE SLOPE BENEATH THE EXISTING TREE. SHINGLE IN THE DIRECTION OF FLOW.

4. PIN AND ANCHOR THE STRIP OF PYRAMAT IN ACCORDANCE WITH STANDARD INSTALLATION PROCEDURES. IF ANCHORS CANNOT BE DRIVEN CLOSE TO THE TREE, USE PINS OR SOD STAPLES TO ENSURE THE HPTRM WILL REMAIN IN CONTACT WITH THE SOIL.

5. PLACE THE SECOND STRIP ON THE SLOPE ABOVE THE EXISTING TREE. SHINGLE IN THE DIRECTION OF FLOW AND PLACE PINS AND ANCHORS IN ACCORDANCE WITH STANDARD INSTALLATION PROCEDURES.

6. PIN AT 12" CENTERS AROUND TREE TRUNK.

7. CONTACT YOUR PROPEX REPRESENTATIVE FOR TROUBLESHOOTING PROCEDURES.

FENCE IN HPTRM

THE FENCE POSTS MAY BE DRIVEN THROUGH THE HPTRM. THE REPAIR DETAIL IS THE SAME AS THE HPTRM AROUND TREES DETAIL.

CONTRACTOR SHALL CUT THE HPTRM BEFORE AUGURING HOLES OR DRIVING POSTS.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TURF MAT DETAILS (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR	ZCM	7/20
	LEAD ENGR	BDC	6/20
VERTICAL: 1"= NA	RECOMMENDED	HBS	7-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Turf_Mat-2.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 33 OF 334 SHEETS

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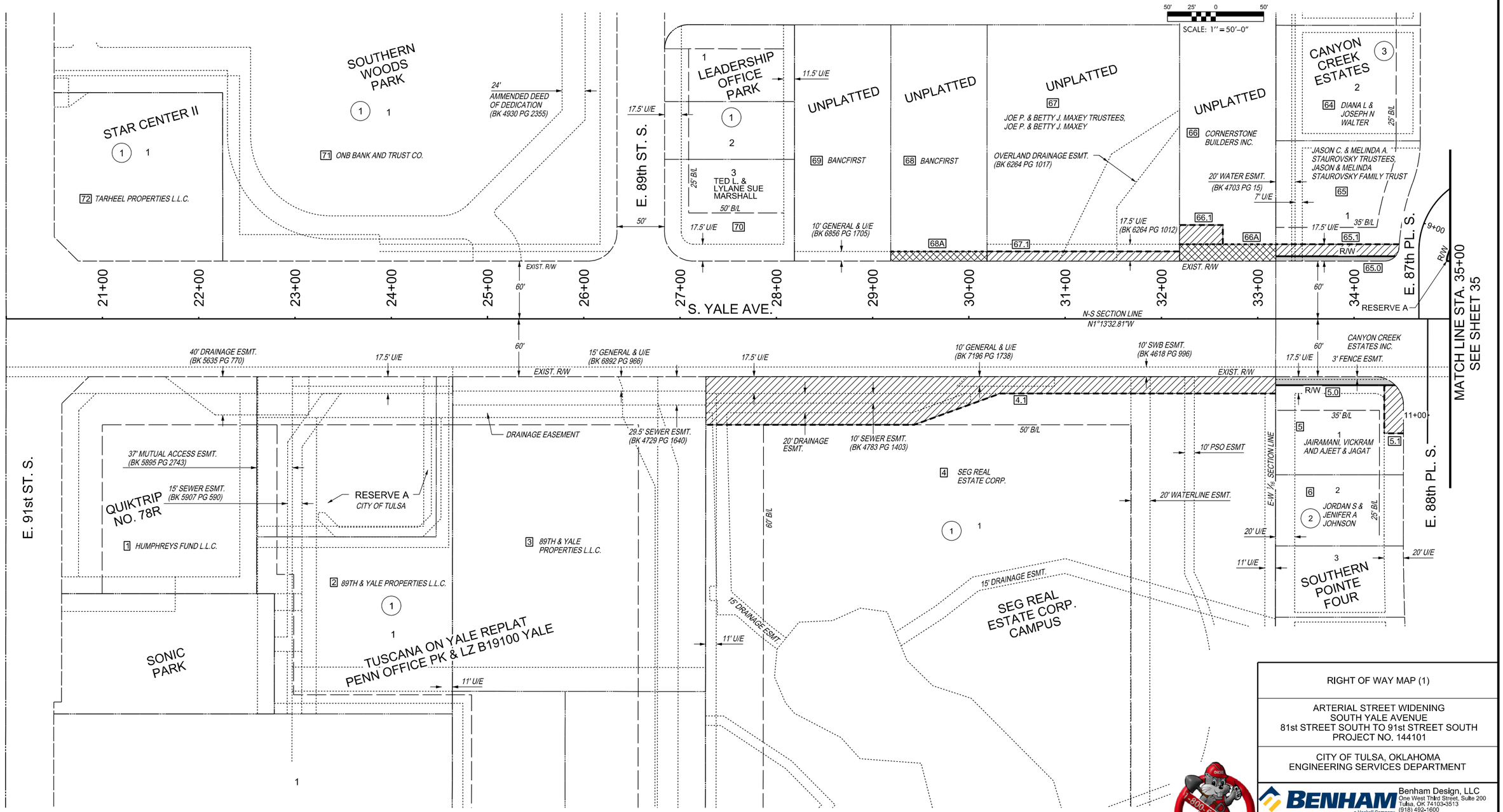
SECTION 16 T18N R13E



LEGEND

- PERMANENT RIGHT-OF-WAY [X.0]
- GENERAL & UTILITY EASEMENT [XA]
- TEMPORARY EASEMENT [X.1]

SECTION 15 T18N R13E

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR RUSSELL D. LAMBILLOTTE 1555 OKLAHOMA

RIGHT OF WAY MAP (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 43rd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-4486
FAX: (918) 245-4721
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BOC	12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER		7-20

APPROVED:

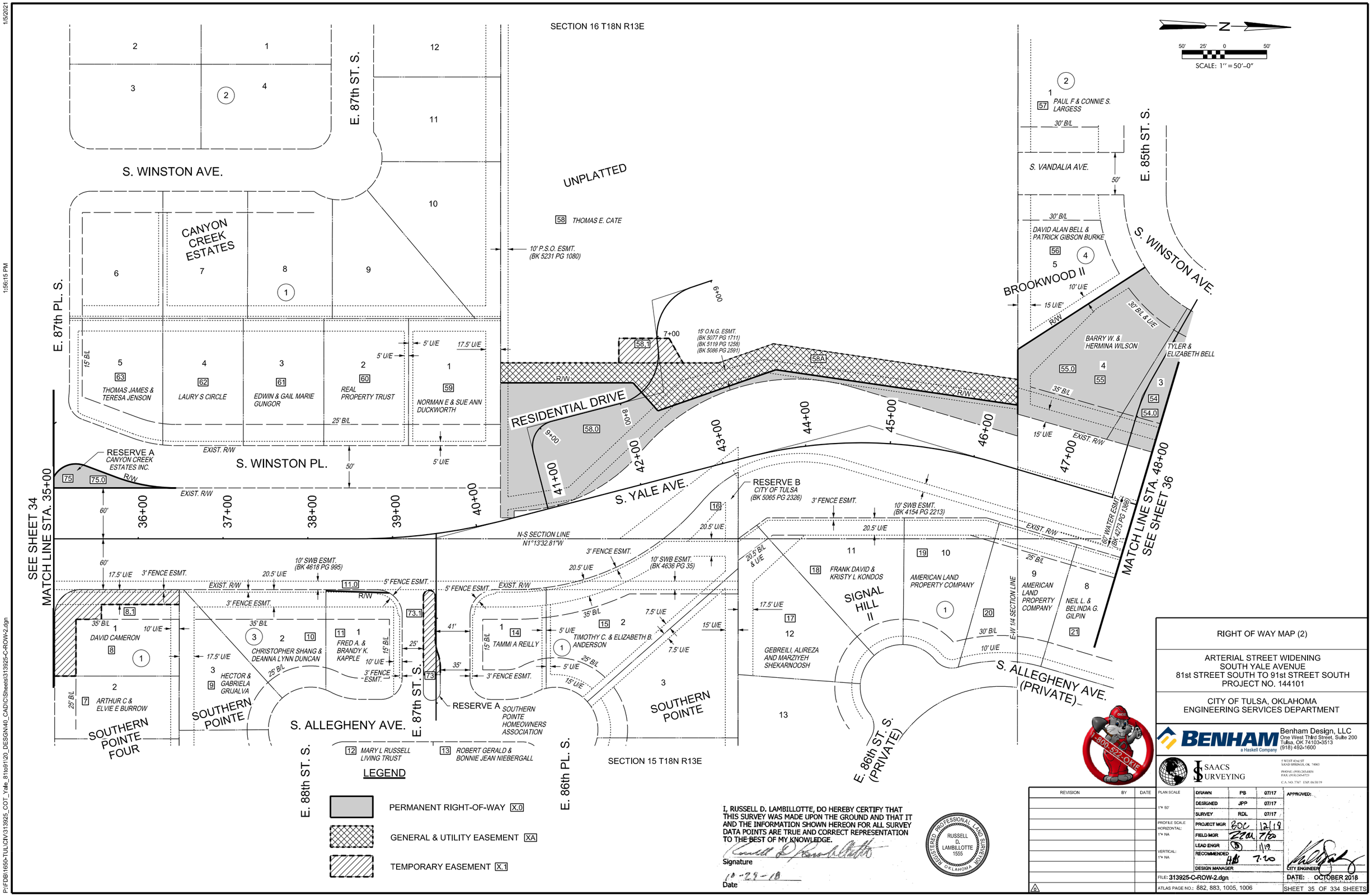
CITY ENGINEER

FILE: 313925-C-ROW-1.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 34 OF 334 SHEETS



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Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR RUSSELL D. LAMBILLOTTE 1555 OKLAHOMA

RIGHT OF WAY MAP (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-0456
FAX: (918) 245-4723
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR	ZZM	7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HB	7-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-ROW-2.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 35 OF 334 SHEETS

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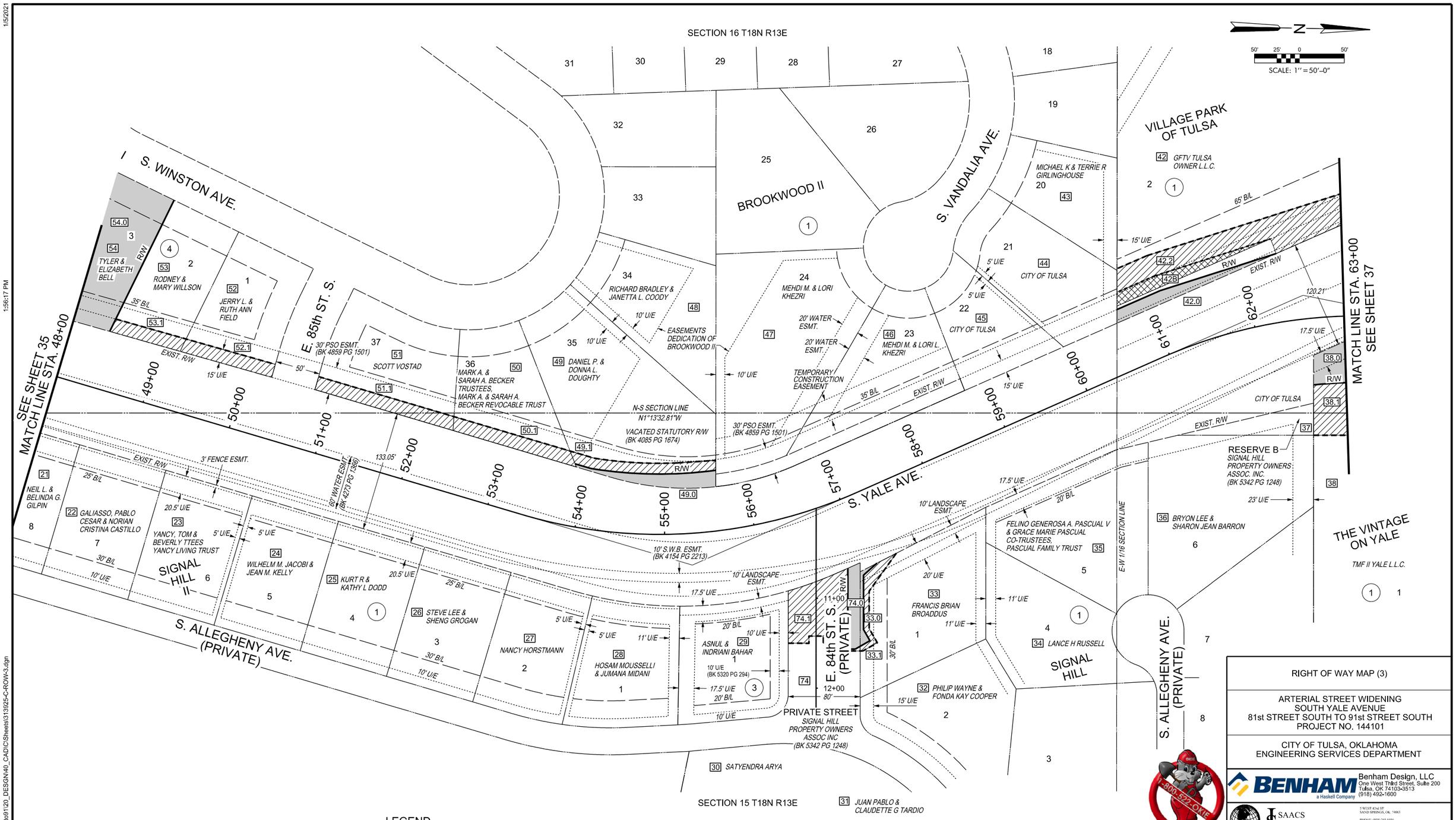

LEGEND

- PERMANENT RIGHT-OF-WAY X.0
- GENERAL & UTILITY EASEMENT XA
- TEMPORARY EASEMENT X.1

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR RUSSELL D. LAMBILLOTTE 1555 OKLAHOMA

RIGHT OF WAY MAP (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-0456
FAX: (918) 245-8723
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS	7-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-ROW-3.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 36 OF 334 SHEETS

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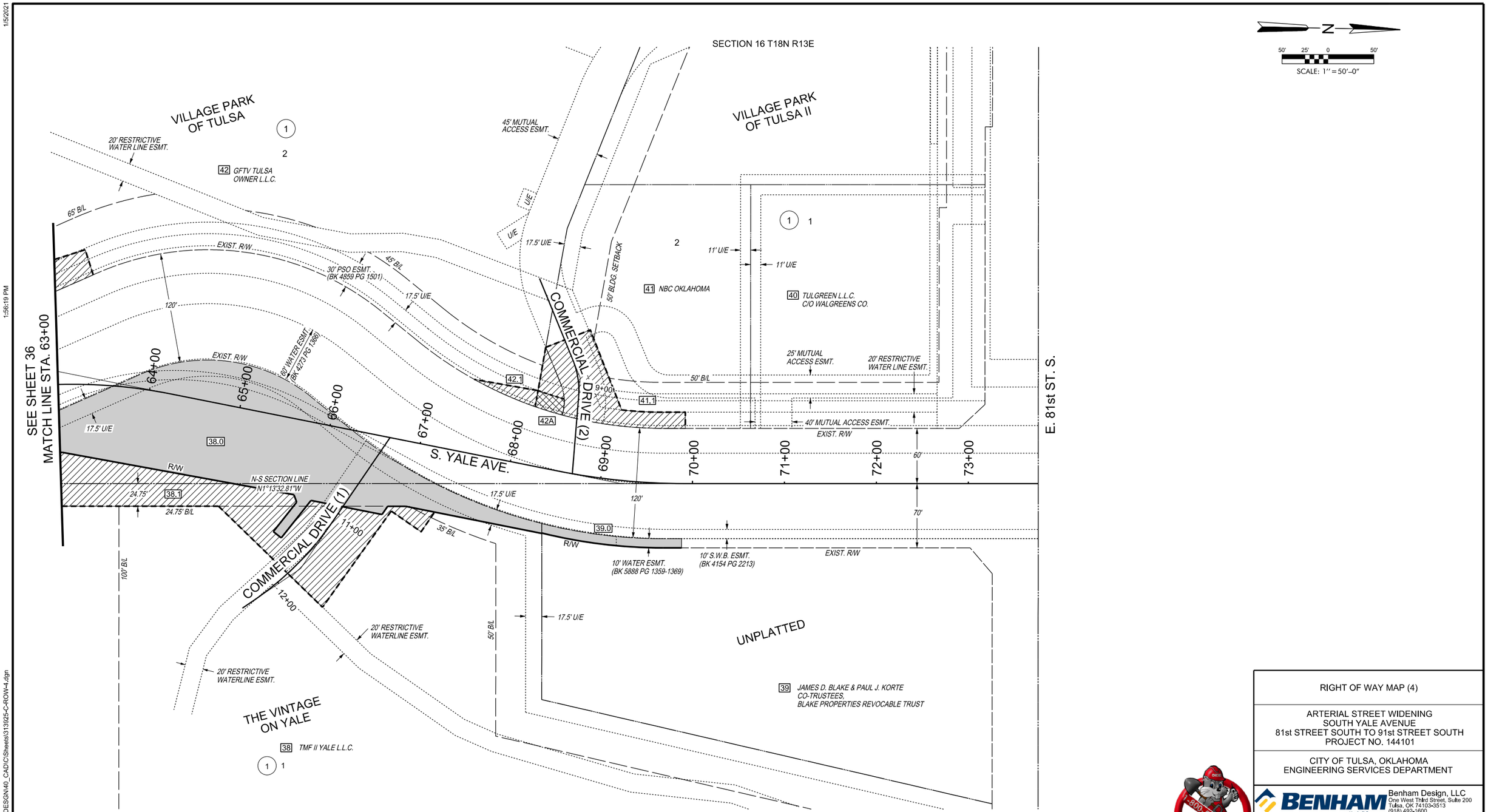

LEGEND

- PERMANENT RIGHT-OF-WAY X.0
- GENERAL & UTILITY EASEMENT XA
- TEMPORARY EASEMENT X.1

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR — RUSSELL D. LAMBILLOTTE 1555 — OKLAHOMA

RIGHT OF WAY MAP (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-4486
FAX: (918) 245-4723
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BJC	12/18
	FIELD MGR	ZRW	7/20
VERTICAL: 1"= NA	LEAD ENGR	DD	11/19
	RECOMMENDED DESIGN MANAGER	HAB	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-ROW-4.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 37 OF 334 SHEETS

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Parcel No.	ROW Plan	County Assessor Account No.	Owner Name	Plat	Legal Description	Property Address	Fee Simple (X.0)(sf)	General & Utility Easement (XA)(sf)	Temporary Construction Easement (X.1)(sf)	Special Considerations
1	1	76644831525640	Carlton Landing LLC c/o Quiktrip Tax Dept	Quiktrip No. 78R	Lot 1 Block 1	9037 S Yale Av E				
2	1	77545831563350	89Th & Yale Properties LLC	Tuscana On Yale Replat Penn Office Pk & Lz B19100 Yale	Lot 1 Block 1					
3	1	77545831563360	89Th & Yale Properties LLC	Tuscana On Yale Replat Penn Office Pk & Lz B19100 Yale	Lot 2 Block 1					
4	1	75785831527100	Society Of Exploration Geophysicists	Seg Real Estate Corp. Campus	Lot 1 Block 1	8801 S Yale Av E			18845.04	CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL. CAR WASH TICKETS SHALL BE ISSUED AS DIRECTED BY THE ENGINEER. COST INCLUDED IN OTHER ITEMS OF WORK.
5	1	77077831524750	Jairamani, Vickram and Ajeet & Jagat	Southern Pointe Four	Lot 1 Block 2	4902 E 88 Pl S	1058.11		943.63	
6	1	77077831524760	Howard, Richard L Jr & Jacquelyn A; Ttees, Richard L Jr & Jacquelyn Ann Howard Trust	Southern Pointe Four	Lot 2 Block 2	4906 E 88 Pl S				
7	2	77077831524630	Burrow, Arthur C and Elvie E	Southern Pointe Four	Lot 2 Block 1	4905 E 88 Pl S				
8	2	77077831524620	Cameron, David	Southern Pointe Four	Lot 1 Block 1	4901 E 88 Pl S			4890.78	
9	2	77073831552120	Grijalva, Hector and Gabriela	Southern Pointe	Lot 3 Block 3	8714 S Allegheny Av E				
10	2	77073831552110	Duncan, Christopher Shane & Deanna Lynn TTEES Duncan Rev Trust	Southern Pointe	Lot 2 Block 3	8710 S Allegheny Av E				
11	2	77073831552100	Kapple, Fred A and Brandy K	Southern Pointe	Lot 1 Block 3	8702 S Allegheny Av E	183.38			
12	2	77073831552090	Russell, Mary L Trustee Mary L Russell Trust	Southern Pointe	Lot 9 Block 2	5003 E 88 St S				
13	2	77073831552010	Niebergall, Robert Gerald and Bonnie Jean	Southern Pointe	Lot 1 Block 2	5004 E 86 Pl S				
14	2	77073831551830	Reilly, Tammi A	Southern Pointe	Lot 1 Block 1	8636 S Allegheny Av E				
15	2	77073831551840	Anderson, Timothy C and Elizabeth B	Southern Pointe	Lot 2 Block 1	8632 S Allegheny Av E				
16	2	77073831655020	City of Tulsa	Southern Pointe	Reserve B					
17	2	76971831521530	Gebreili, Allreza and Marziyeh Shekarnoosh	Signal Hill II	Lot 12 Block 1	5002 E 86 St S				
18	2	76971831521520	Kondos, Frank David & Kristy L	Signal Hill II	Lot 11 Block 1					
19	2	76971831521510	American Land Property Co	Signal Hill II	Lot 10 Block 1					
20	2	76971831521500	American Land Property Co	Signal Hill II	Lot 9 Block 1					
21	2&3	76971831521490	Gilpin, Neil L and Belinda G	Signal Hill II	Lot 8 Block 1	8450 S Allegheny Av E				
22	3	76971831521480	Galiasso, Pablo Cesar & Norian Cristina Castillo	Signal Hill II	Lot 7 Block 1					
23	3	76971831521470	Yancy, Tom & Beverly Ttees Yancy Living Trust	Signal Hill II	Lot 6 Block 1	8438 S Allegheny Av E				
24	3	76971831521460	Jacobi, Wilhelm M and Jean M Kelley	Signal Hill II	Lot 5 Block 1	8432 S Allegheny Av E				
25	3	76971831521450	Ellis, Wendell R Sr & Paula D Bryant	Signal Hill II	Lot 4 Block 1	8426 S Allegheny Av E				
26	3	76971831521440	Grogan, Steve Lee and Sheng	Signal Hill II	Lot 3 Block 1	8420 S Allegheny Av E				
27	3	76971831521430	Horstmann, Nancy	Signal Hill II	Lot 2 Block 1	8414 S Allegheny Av E				
28	3	76971831521420	Moussellí, Hosam & Jumana Midani	Signal Hill II	Lot 1 Block 1	8408 S Allegheny Av E				
29	3	76970831519680	Bahar, Asnul and Indriani	Signal Hill	Lot 1 Block 3	8402 S Allegheny Av E				
30	3	76970831519580		Signal Hill	Lot 1 Block 2					
31	3	76970831519590		Signal Hill	Lot 2 Block 2					
32	3	76970831519320	Cooper, Philip Wayne and Fonda Kay	Signal Hill	Lot 2 Block 1	8328 S Allegheny Av E				
33	3	76970831519310	Broaddus, Francis Brian	Signal Hill	Lot 1 Block 1	4905 E 84 St S	408.23		977.58	
34	3	76970831519340	Graham, Suzanne E Trustee Suzanne E Graham Rev	Signal Hill	Lot 4 Block 1	8308 S Allegheny Av E				
35	3	76970831519350	Felino Generoso A Pascual V & Grace Marie Co-trustees of the Pascual Family Trust	Signal Hill	Lot 5 Block 1	8304 S Allegheny Av E				
36	3	76970831519360	Barron, Bryon Lee and Sharon Jean	Signal Hill	Lot 6 Block 1	8303 S Allegheny Av E				
37	3	76970831519700	Signal Hill Property Owners Assoc Inc	Signal Hill	Reserve "B"					
38	3&4	73834831600200	Vintage On Yale Ltd	The Vintage On Yale	Part Lot 1 Beginning 64.19E MOST WLY SWC Lot 1 then W64.19 NW135.77 Curve Right 196.49 NE51.20 Curve Left113.28 S TO POB Block		42826.78		21831.43	
39	4	98315831521010	Blake, James D & Paul J Korte Co Trustees Blake Properties Trust	Unplatted	N1100.01 W/2 W/2 NW less THAT PART PLATTED BLAKE HILLS ADDN & less Beginning NWC NW then E360 SW51.32 W250.39 SW36.92		1533.26			
40	4	73821831638900	Tulgreen LLC c/o Walgreens Co	Village Park Of Tulsa II	Lot 1 Block 1	8102 S Yale Av				
41	4	73821831638920	First Fidelity Bank NA	Village Park Of Tulsa II	Part Lot 2 Beginning 65.59NW SECR Lot 2 then NW131.25 NW51.37 N180.55 E265 S93.83 Curve Right 112.06 NW4.57 Curve Left 29.90	4706 E 81 St S			6387.54	DO NOT DISTURB EXISTING LIGHT POLES AND SIGN.
42	3&4	73820831638880	Tvillage Tulsa LP c/o Brazos Tax Group	Village Park Of Tulsa	Lot 2 Block 1 & Part Lot 2 Block 1 VILLAGE PARK OF TULSA II Beginning SE Corner Lot 2 then NW65.59 NE43.11 Curve Right 29.90 SE4.57 SWLY	8222 S Yale Av E	1718.99	2164.14	10090.46	

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR
RUSSELL D. LAMBILLOTTE
1555
OKLAHOMA

RIGHT OF WAY MAP (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-4486
FAX: (918) 245-4721
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	07/17	
	DESIGNED	JPP	07/17	
	SURVEY	RDL	07/17	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDO	10/18	
	FIELD MGR	ZCM	7/20	
	LEAD ENGR		11/19	
VERTICAL: 1"= NA	RECOMMENDED	HAB	7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-ROW-5.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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Parcel No.	ROW Plan	County Assessor Account No.	Owner Name	Plat	Legal Description	Property Address	Fee Simple (X.0)(sf)	General & Utility Easement (XA)(sf)	Temporary Construction Easement (X.1)(sf)	Special Considerations
43	3	70160831645620	Girlinghouse, Michael K & Terrie R	Brookwood II	Lot 20 Block 1	8328 S Vandalia Av E				
44	3	70160831645630	City of Tulsa	Brookwood II	Lot 21 Block 1	8324 S Vandalia Av E				
45	3	70160831645640	City of Tulsa	Brookwood II	Lot 22 Block 1	8320 S Vandalia Av E				
46	3	70160831645650	Khezri, Mehdi M and Lori L	Brookwood II	Lot 23 Block 1					
47	3	70160831645660	Khezri, Mehdi M and Lori L	Brookwood II	Lot 24 Block 1	8315 S Vandalia Av E				
48	3	70160831645760	Coody, Richard Bradley and Janetta L Trust	Brookwood II	Lot 34 Block 1	4825 E 84 St S				
49	3	70160831645770	Doughty, Daniel P and Donna L	Brookwood II	Lot 35 Block 1	8405 S Winston Av E	1781.65		1908.38	
50	3	70160831645780	Becker, Mark A and Sarah A Trustee Mark A &	Brookwood II	Lot 36 Block 1	8411 S Winston Av E			2082.24	
51	3	70160831645790	Ware, Lawrence Andrew and Sharon Douglass	Brookwood II	Lot 37 Block 1	8417 S Winston Av E			2376.38	
52	3	70160831646330	Field, Jerry L and Ruth Ann	Brookwood II	Lot 1 Block 4	4802 E 85 St S			1568.32	CONTRACTOR TO NOTIFY CINDY FERRENDELLI, CITY OF TULSA ADDRESS COORDINATOR, (918) 596-9616, CFERRENDELLI@CITYOFTULSA.ORG, ONE (1) MONTH PRIOR TO REMOVING E. 85th ST. S. TO SEND AN OFFICIAL CHANGE OF ADDRESS LETTER.
53	3	70160831646340	Werling, Warren A and E Carroll	Brookwood II	Lot 2 Block 4	8511 S Winston Av E			1219.73	
54	2&3	70160831646350	Bell, Tyler & Elizabeth	Brookwood II	Lot 3 Block 4	8517 S Winston Av E	14939.99			
55	2	70160831646360	Wilson, Barry W and Hermina L	Brookwood II	Lot 4 Block 4	8523 S Winston Av E	23026.00			
56	2	70160831646370	Bell, David A & Patrick Gibson Burke Cotrustees Burke/Bell Rev Trust	Brookwood II	Lot 5 Block 4	8527 S Winston Av E				
57	2	70160831645800	Largess, Paul F and Connie S	Brookwood II	Lot 1 Block 2	4614 E 85 St S				
58	2	98316831623710	Cate, Thomas E Trustee Thomas E Cate Trust	Unplatted	N611.5 NE SE Lying West of the East Boundry Line of YALE AVE Section 16-18-13 17.644 acres	8600 S Yale Av E	29210.06	1957.35	18822.53	
59	2	70185831624300	Duckworth, Norman E and Sue Ann	Canyon Creek Estates	Lot 1 Block 1	8630 S Winston Pl E				
60	2	70185831624310	8702 S Winston Place Real Property Trust	Canyon Creek Estates	Lot 2 Block 1	8702 S Winston Pl E				
61	2	70185831624320	Gungor, Edwin and Gail Marie	Canyon Creek Estates	Lot 3 Block 1	8708 S Winston Pl E				
62	2	70185831624330	Circle, Laury S	Canyon Creek Estates	Lot 4 Block 1	8714 S Winston Pl E				
63	2	70185831624340	Jenson, Thomas James and Teresa	Canyon Creek Estates	Lot 5 Block 1	8720 S Winston Pl E				
64	1	70185831624480	Sprik, Crystal	Canyon Creek Estates	Lot 2 Block 3	4814 E 87 Pl				
65	1	70185831624470	Staurovsky, Jason C & Melinda A Ttees Jason & Melinda Staurovsky Family Trust	Canyon Creek Estates	Lot 1 Block 3	4822 E 87 Pl S	603.84		1588.53	
66	1	98316831636660	Cornerstone Builders Inc and Steven R & Leslie C Elliott	Unplatted	N100 E/2 E/2 SE SE less E60 of Section 16-18-13 .62 acres			1750.00	900.00	
67	1	98316831637040	Maxey, Joe P and Betty J Trustees Joe P & Betty J Maxey	Unplatted	S200 N300 E/2 E/2 SE SE less E60 & W25 of FOR RD Section 16-18-13 1.124 acres	8810 S Yale Av E			2000.00	
68	1	98316831637560	BancFirst	Unplatted	S100 N400 E/2 E/2 SE SE less W25 & E60 of FOR RD Section 16-18-13 .562 acres			1000.00		
69	1	98316831637360	BancFirst	Unplatted	S100 N500 E/2 E/2 SE SE less W25 & E60 of FOR RD Section 16-18-13 .562 acres	8822 S Yale Av E				
70	1	71239831636590	Marshall, Ted Lee & Lylan Sue Jarrett Co-Ttees Marshall Family Trust	Leadership Office Park	Lot 3 Block 1	8830 S Yale Av E				
71	1	73248831637700	ONB Bank and Trust Co c/o Sharon Griffith	Southern Woods Park	Lot 1 Block 1	8908 S Yale Av E				
72	1	73403831637470	Tarheel Properties LLC	Star Center II	Lot 1 less Beginning NEC of then W10 S155.02 NE14.15 N145.02 POB Block 1	9014 S Yale Av E				
73	2	77073831552860	Southern Pointe	Southern Pointe	Reserve A				717.51	
74	3	76970831519710	Signal Hill Property Owners Assoc Inc	Signal Hill	Private Street		1273.16		4593.03	
75	2	70185831624650	Canyon Creek Estates HOA Inc	Canyon Creek Estates	Reserve A		1969.95			

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR
RUSSELL D. LAMBILLOTTE
1555
OKLAHOMA

RIGHT OF WAY MAP (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

ISAACS SURVEYING
2 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-4486
FAX: (918) 245-4723
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	07/17	
	DESIGNED	JPP	07/17	
	SURVEY	RDL	07/17	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18	
	FIELD MGR	ZWM	7/20	
VERTICAL: 1"= NA	LEAD ENGR		11/19	
	RECOMMENDED	HAS	7.20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-ROW-6.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 39 OF 334 SHEETS

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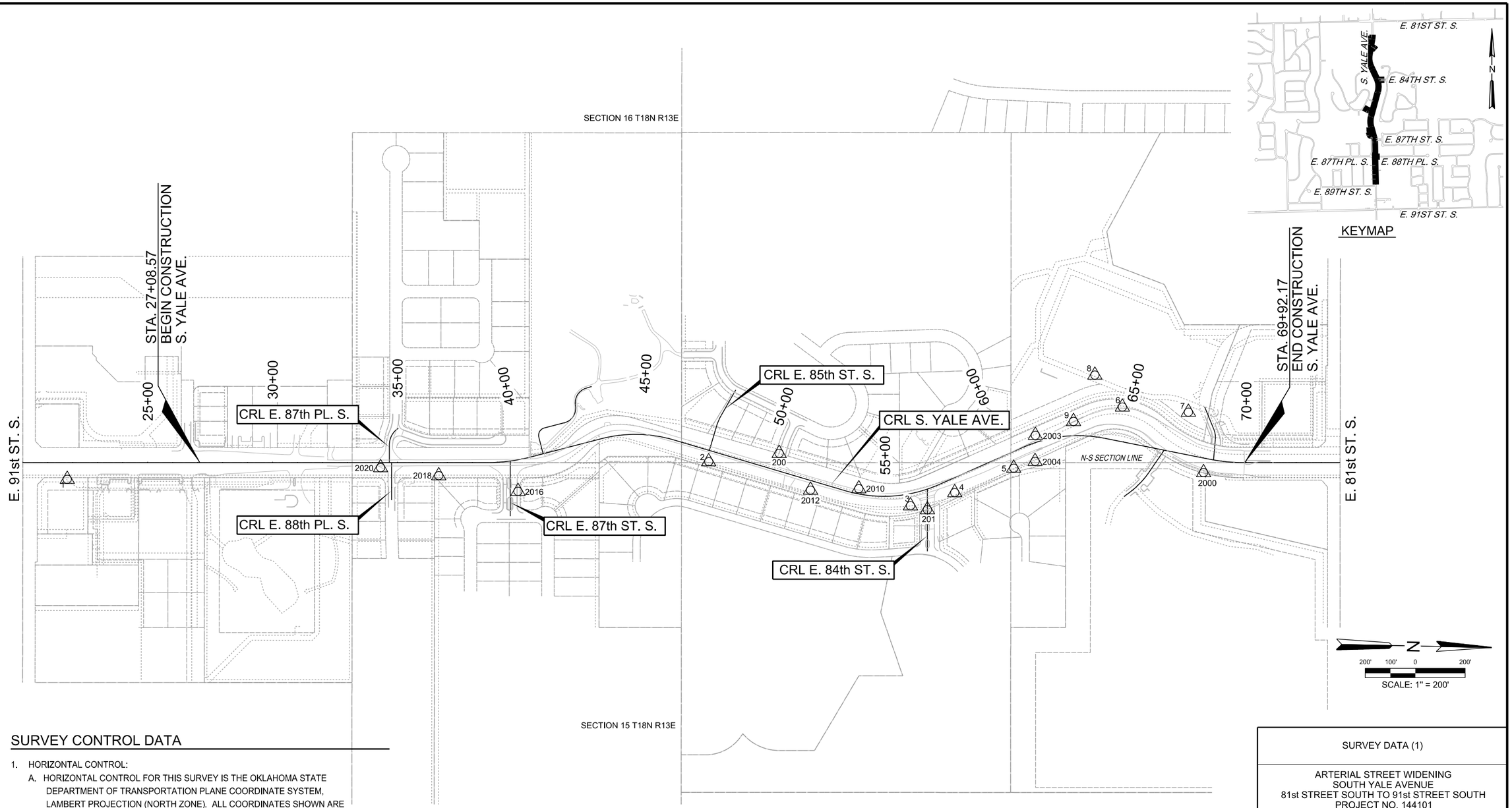

SURVEY CONTROL DATA

1. HORIZONTAL CONTROL:
   A. HORIZONTAL CONTROL FOR THIS SURVEY IS THE OKLAHOMA STATE DEPARTMENT OF TRANSPORTATION PLANE COORDINATE SYSTEM, LAMBERT PROJECTION (NORTH ZONE). ALL COORDINATES SHOWN ARE OKLAHOMA DEPARTMENT OF TRANSPORTATION PLANE COORDINATES WHICH WERE DERIVED BY MULTIPLYING THE USC&GS OKLAHOMA PLANE COORDINATES BY THE COMBINED ADJUSTMENT FACTOR OF 1.00010. THE OKLAHOMA STATE DEPARTMENT OF TRANSPORTATION COORDINATE SYSTEM PLANE IS 2350 FEET ABOVE THE OKLAHOMA USC&GS PLANE.
   B. ACCURACY - 3RD ORDER

2. BEARING:
   A. THE BEARINGS SHOWN HEREIN OR HEREON ARE GRID BEARINGS DERIVED FROM THE USC&GS OKLAHOMA PLANE COORDINATE SYSTEM AND ARE NOT ASTRONOMICAL.

3. VERTICAL CONTROLS:
   A. LEVEL DATUM IS MEAN SEA LEVEL (USC&GS).
   B. PERMANENT BENCHMARK - ADS 34
      SEE SURVEY DATA (2), SHEET 41

LEGEND

△ HORIZONTAL & VERTICAL CONTROL POINT
BENCH MARK SYMBOL

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18
Date

REGISTERED PROFESSIONAL LAND SURVEYOR
RUSSELL D. LAMBILLOTTE
1555
OKLAHOMA

SURVEY DATA (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

SAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-4826
FAX: (918) 245-4723
C.A. NO. 7767 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1" = 200'	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR	BOC	12/18
	FIELD MGR	ZCM	7/20
VERTICAL: 1" = NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER	HAB	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-SD-1.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 40 OF 334 SHEETS

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Horizontal & Vertical Control						
	Northing	Easting	Station	Offset	Elevation	Description
1	382373.98	2582907.96	21+77.53	66.82' RT	733.818'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
2	384940.80	2582782.49	48+03.61	46.30' RT	863.528'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
3	385752.33	2582941.66	56+16.95	44.56' RT	841.769'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
4	385928.26	2582885.29	57+94.39	46.57' RT	839.563'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
5	386162.45	2582782.36	60+46.51	47.29' RT	822.714'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
6	386592.01	2582528.10	65+33.70	30.83' LT	770.597'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
7	386856.74	2582543.06	67+49.78	133.10' LT	741.653'	3/8" Iron Pin w/ cap stamped ISAACS CONTROL
8	386479.30	2582402.42	64+62.36	167.20' LT	737.772'	60D NAIL SET
9	386398.13	2582587.39	63+43.23	26.93' LT	785.744'	60D NAIL SET
200	385221.64	2582742.57	50+63.82	66.65' LT	868.402'	CUT BOX FOUND ON CURB
201	385820.41	2582955.76	56+73.00	75.12' RT	840.143'	CUT BOX FOUND ON GUTTER
2000	386922.72	2582783.71	69+25.06	51.30' RT	741.487'	3/8IN IPC S&H TP FOUND
2003	386246.19	2582649.02	61+79.58	36.88' LT	792.249'	60D NAIL FOUND
2004	386247.22	2582753.17	61+35.58	57.53' RT	818.431'	60D NAIL FOUND
2010	385543.87	2582877.71	54+11.82	20.52' LT	847.775'	60D NAIL FOUND
2012	385350.65	2582887.89	52+26.74	39.27' RT	866.713'	60D NAIL FOUND
2016	384179.44	2582917.49	39+82.37	114.97' RT	792.970'	60D NAIL FOUND
2018	383860.99	2582861.74	36+65.19	52.42' RT	781.055'	60D NAIL FOUND
2020	383627.54	2582834.23	34+32.39	19.92' RT	767.362'	3/8IN IPC S&H TP FOUND

Vertical Control (Offsite)						
	Northing	Easting	Station	Offset	Elevation	Description
10	387183.27	2574892.31			695.658'	MAG NAIL (OFF SITE)
34	382252.61	2584702.48			741.044'	ADS 34 (OFF SITE)

I, RUSSELL D. LAMBILLOTTE, DO HEREBY CERTIFY THAT THIS SURVEY WAS MADE UPON THE GROUND AND THAT IT AND THE INFORMATION SHOWN HEREON FOR ALL SURVEY DATA POINTS ARE TRUE AND CORRECT REPRESENTATION TO THE BEST OF MY KNOWLEDGE.

Signature

10-29-18

Date

REGISTERED PROFESSIONAL LAND SURVEYOR
RUSSELL D. LAMBILLOTTE
1555
OKLAHOMA

SURVEY DATA (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

ISAACS SURVEYING
5 WEST 42nd ST
SAND SPRINGS, OK 74063
PHONE: (918) 245-0416
FAX: (918) 245-0723
C.A. NO. 7367 EXP. 06/30/19

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	07/17
	DESIGNED	JPP	07/17
	SURVEY	RDL	07/17
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/18
	RECOMMENDED DESIGN MANAGER		7-20

APPROVED:

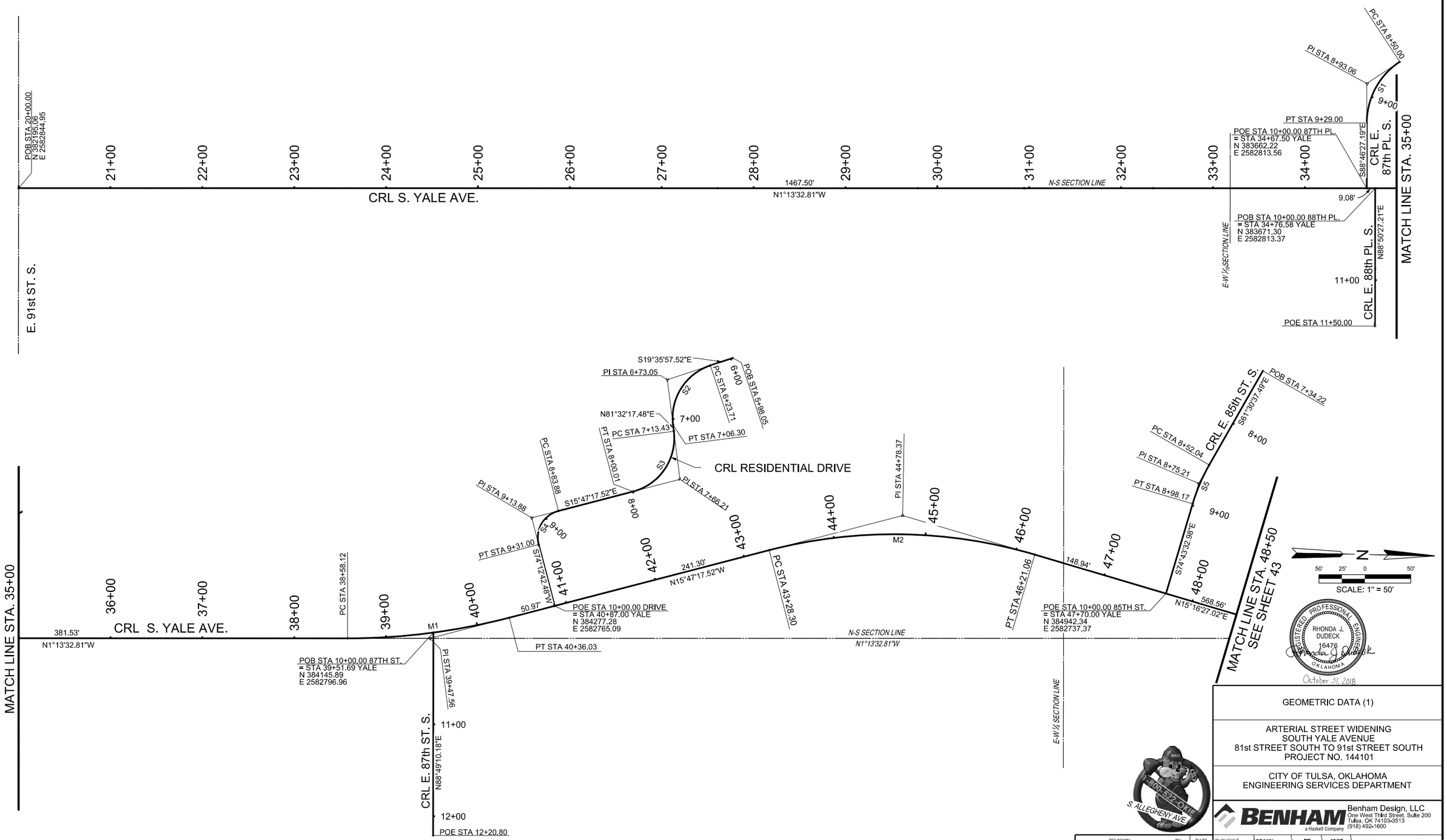
CITY ENGINEER

FILE: 313925-C-SD-2.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 41 OF 334 SHEETS



NOTES:

MEDIAN GEOMETRY SHOWN ON SHEET 27

WALL GEOMETRY SHOWN ON SHEETS 168 - 170

CURVE DATA AND COORDINATES SHOWN ON SHEET 44

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

GEOMETRIC DATA (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR		10/18
	FIELD MGR		7/20
VERTICAL: 1" = NA	LEAD ENGR		11/19
	RECOMMENDED: DESIGN MANAGER		7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Geo_Data-1.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 42 OF 334 SHEETS

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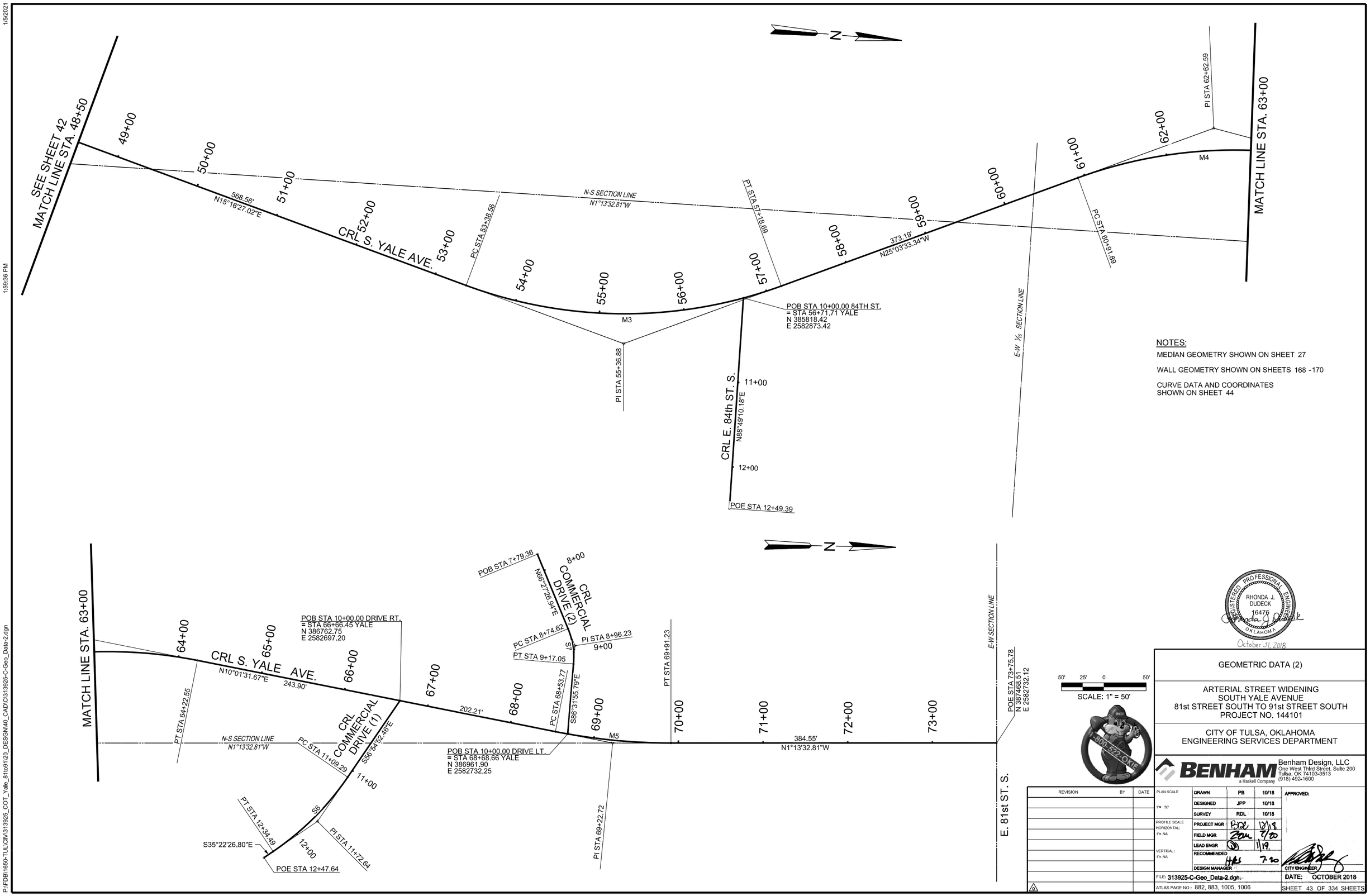
SEE SHEET 42
MATCH LINE STA. 48+50
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00
61+00
62+00
MATCH LINE STA. 63+00
CRL S. YALE AVE.
568.56'
N15°16'27.02"E
N-S SECTION LINE
N1°13'32.81"W
PC STA 53+38.56
PT STA 57+18.69
373.19'
N25°03'33.34"W
PC STA 60+91.89
PI STA 62+62.59
M3
M4
POB STA 10+00.00 84TH ST.
= STA 56+71.71 YALE
N 385818.42
E 2582673.42
PI STA 55+36.88
E-W 1/16 SECTION LINE
CRL E. 84th ST. S.
N88°49'10.18"E
11+00
12+00
POE STA 12+49.39
NOTES:
MEDIAN GEOMETRY SHOWN ON SHEET 27
WALL GEOMETRY SHOWN ON SHEETS 168 -170
CURVE DATA AND COORDINATES
SHOWN ON SHEET 44
MATCH LINE STA. 63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00
71+00
72+00
73+00
CRL S. YALE AVE.
N10°01'31.67"E
243.90'
POB STA 10+00.00 DRIVE RT.
= STA 66+66.45 YALE
N 386762.75
E 2582697.20
PT STA 64+22.55
N-S SECTION LINE
N1°1332.81"W
PC STA 11+09.29
CRL COMMERCIAL DRIVE (1)
S56°54'52.46"E
11+00
202.21'
POB STA 10+00.00 DRIVE LT.
= STA 68+68.66 YALE
N 386961.90
E 2582732.25
PC STA 68+53.77
S86°31'55.79"E
M5
PI STA 69+22.72
PT STA 69+91.23
384.55'
N1°13'32.81"W
POE STA 73+75.78
N 387468.51
E 2582732.12
E-W SECTION LINE
E. 81st ST. S.
PT STA 12+34.49
S35°22'26.80"E
12+00
POE STA 12+47.64
PI STA 11+72.64
POB STA 7+79.36
8+00
CRL COMMERCIAL DRIVE (2)
N66°27'28.94"E
PC STA 8+74.62
PI STA 8+96.23
9+00
PT STA 9+17.05
N
50' 25' 0 50'
SCALE: 1" = 50'
1-800-522-OKIE
REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018
GEOMETRIC DATA (2)
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600
REVISION
BY
DATE
PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA
DRAWN PB 10/18
DESIGNED JPP 10/18
SURVEY RDL 10/18
PROJECT MGR
FIELD MGR
LEAD ENGR
RECOMMENDED
DESIGN MANAGER
APPROVED:
CITY ENGINEER
FILE: 313925-C-Geo_Data-2.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 43 OF 334 SHEETS
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CRL S. YALE AVE.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 20+00.00	2582844.9525	382195.0564						
	PC 38+58.12	2582805.2031	384052.7478						
M1	PI 39+47.56	2582803.2899	384142.1661	14°33'44.72" LT	8°11'06.40"	700.000	89.439	177.914	5.645
	PT 40+36.03	2582778.9552	384228.2307						
	PC 43+28.30	2582699.4330	384509.4770						
M2	PI 44+78.37	2582658.6012	384653.8872	31°03'44.54" RT	10°36'37.19"	540.000	150.072	292.756	20.465
	PT 46+21.06	2582698.1358	384798.6580						
	PC 53+38.56	2582887.1530	385490.8139						
M3	PI 55+36.88	2582939.3994	385682.1336	40°20'00.36" LT	10°36'37.19"	540.000	198.325	380.134	35.268
	PT 57+18.69	2582855.3977	385861.7905						
	PC 60+91.89	2582697.3295	386199.8554						
M4	PI 62+62.59	2582625.0285	386354.4878	35°05'05.01" RT	10°36'37.19"	540.000	170.700	330.666	26.338
	PT 64+22.55	2582654.7450	386522.5817						
	PC 68+53.77	2582729.8135	386947.2129						
M5	PI 69+22.72	2582741.8170	387015.1116	11°15'04.47" LT	11°15'04.47"	700.000	68.952	137.460	3.388
	PT 69+91.23	2582740.3420	387084.0475						
	POE 73+75.78	2582732.1155	387468.5131						

CRL E. 87th PL. S.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	PC 8+50.00	2582675.0500	383695.1975						
S1	PI 8+93.06	2582699.5301	383659.7788	56°34'39.19" LT	71°37'11.01"	80.000	43.055	78.997	10.850
	PT 9+29.00	2582742.5756	383660.7017						
	POE 10+00.00	2582813.5593	383662.2205						

CRL E. 88th PL. S.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 10+00.00	2582813.3650	383671.3005						
	POE 11+50.00	2582963.3343	383674.3348						

CRL E. 87th ST. S.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 10+00.00	2582796.9641	384145.8863						
	POE 12+20.80	2583017.7172	384150.4352						

CRL RESIDENTIAL DRIVE

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 5+98.05	2582491.2609	384465.2829						
	PC 6+23.71	2582499.8685	384441.1090						
S2	PI 6+73.05	2582516.4189	384394.6283	78°51'45.00" LT	95°29'34.68"	60.000	49.339	82.585	17.681
	PT 7+06.30	2582565.2212	384401.8886						
	PC 7+13.43	2582572.2745	384402.9379						
S3	PI 7+66.21	2582624.4796	384410.7045	82°40'25.00" RT	95°29'34.68"	60.000	52.780	86.576	19.910
	PT 8+00.01	2582638.8400	384359.9160						
	PC 8+83.88	2582661.6596	384279.2097						
S4	PI 9+13.88	2582669.8221	384250.3415	90°00'00.00" LT	190°59'09.35"	30.000	30.000	47.124	12.426
	PT 9+31.00	2582698.6903	384258.5039						
	POE 10+00.00	2582765.0872	384277.2776						

CRL E. 85th ST. S.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 7+34.22	2582492.8726	385042.5193						
	PC 8+52.04	2582596.4256	384986.3190						
S5	PI 8+75.21	2582616.7881	384975.2678	12°12'55.49" LT	28°38'52.40"	200.000	23.168	46.130	1.337
	PT 8+98.17	2582639.1378	384969.1645						
	POE 10+00.00	2582737.3727	384942.3381						

CRL E. 84th ST. S.

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 10+00.00	2582873.4216	385818.4200						
	POE 12+49.39	2583122.7551	385823.5580						

CRL COMMERCIAL DRIVE (1)

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 10+00.00	2582697.2038	386762.7536						
	PC 11+09.29	2582788.7775	386703.0907						
S6	PI 11+72.64	2582841.8506	386668.5120	21°32'25.66" RT	17°12'21.38"	333.000	63.344	125.192	5.866
	PT 12+34.49	2582878.5212	386616.8621						
	POE 12+47.64	2582886.1344	386606.1390						

CRL COMMERCIAL DRIVE (2)

CURVE NO	STATION	X (EASTING) (feet)	Y (NORTHING) (feet)	DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB 7+79.36	2582520.7285	386921.5484						
	PC 8+74.62	2582608.0548	386959.5960						
S7	PI 8+96.23	2582627.8712	386968.2299	27°00'37.27" RT	63°39'43.12"	90.000	21.616	42.428	2.559
	PT 9+17.05	2582649.4474	386966.9225						
	POE 10+00.00	2582732.2499	386961.9047						

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

GEOMETRIC DATA (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Geo_Data-3.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 44 OF 334 SHEETS

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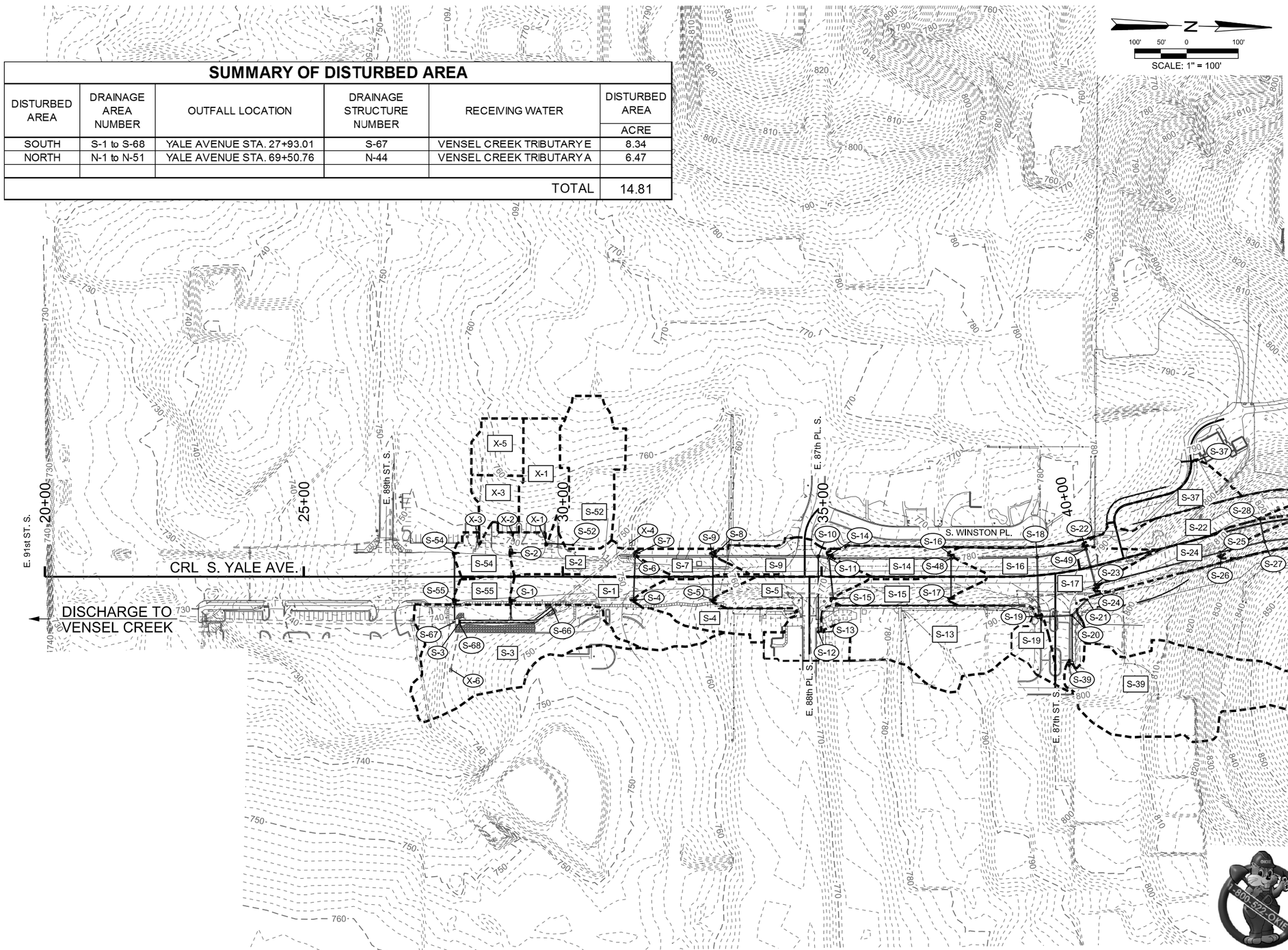
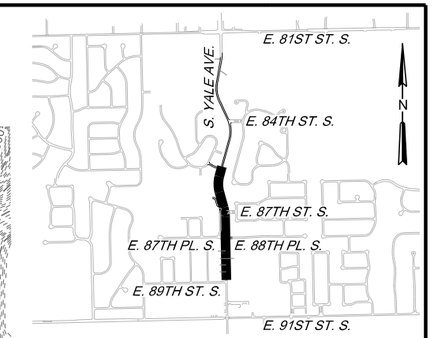
SUMMARY OF DISTURBED AREA

DISTURBED AREA	DRAINAGE AREA NUMBER	OUTFALL LOCATION	DRAINAGE STRUCTURE NUMBER	RECEIVING WATER	DISTURBED AREA ACRE
SOUTH	S-1 to S-68	YALE AVENUE STA. 27+93.01	S-67	VENSEL CREEK TRIBUTARY E	8.34
NORTH	N-1 to N-51	YALE AVENUE STA. 69+50.76	N-44	VENSEL CREEK TRIBUTARY A	6.47
				TOTAL	14.81





KEYMAP

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

LEGEND

- DRAINAGE BOUNDARY
- S-3 DRAINAGE AREA NUMBER
- (S-3) DRAINAGE STRUCTURE NUMBER
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR

DRAINAGE AREA MAP (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 100'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR	ZZM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BOC	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7/20

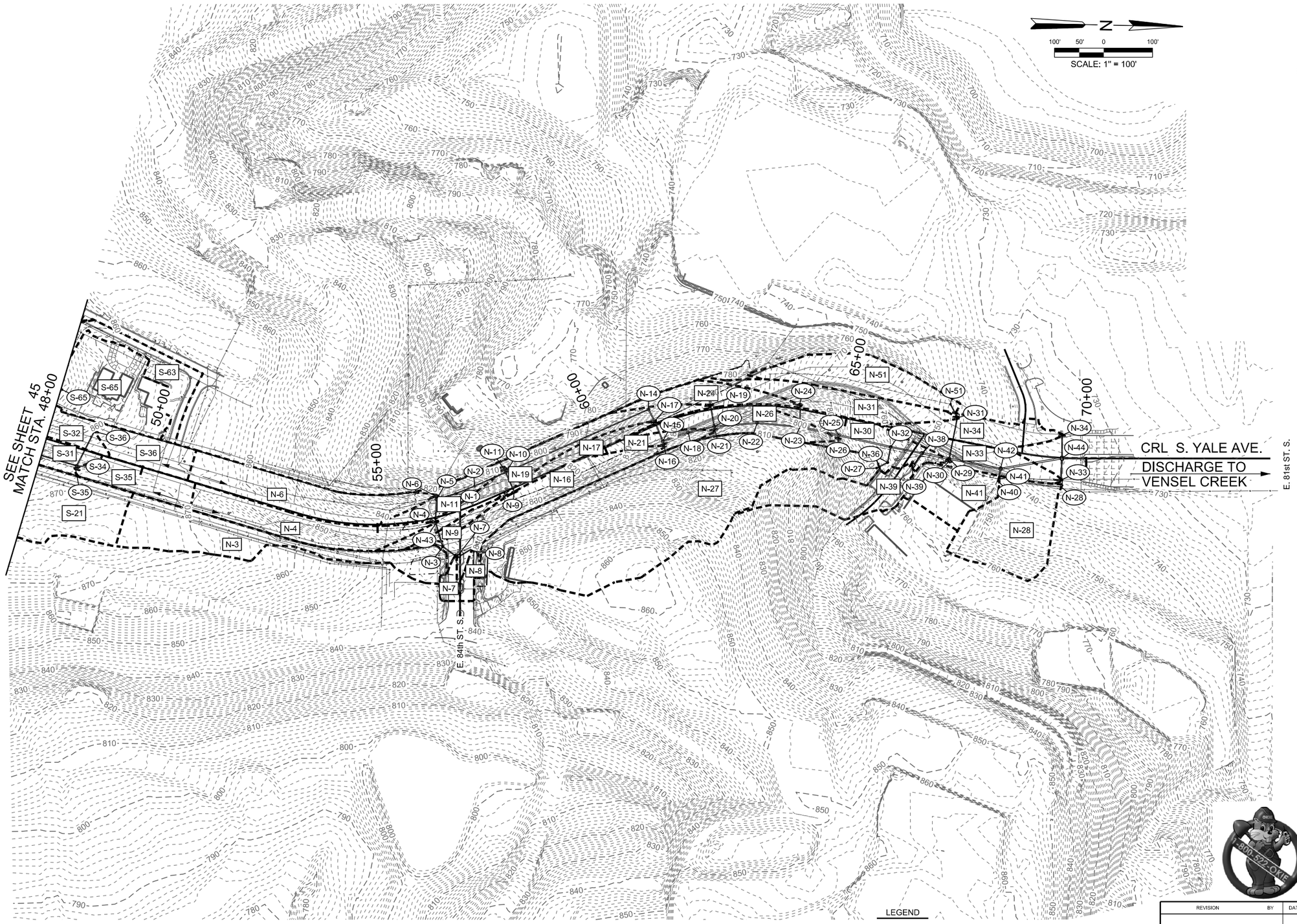
APPROVED: CITY ENGINEER

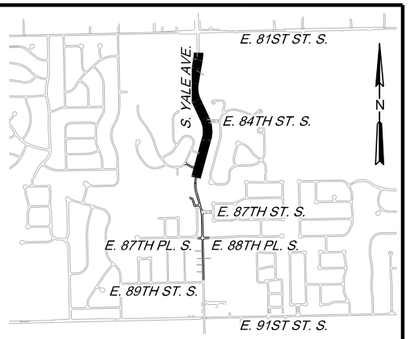
FILE: 313925-C-Drainage_Areas-1.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 45 OF 334 SHEETS





KEYMAP

LEGEND

- - - - - -	DRAINAGE BOUNDARY
S-3	DRAINAGE AREA NUMBER
(S-3)	DRAINAGE STRUCTURE NUMBER
- - - - - -	EX. MAJOR CONTOUR
- - - - - -	EX. MINOR CONTOUR

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

DRAINAGE AREA MAP (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 100'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	LAG	6/20
FIELD MGR	ZCW	7/20
LEAD ENGR	BDC	6/20
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Areas-2.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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DRAINAGE AREA SUMMARY

DRAINAGE AREA	DRAINS TO STRUCTURE	ACRES	COMPOSITE RUNOFF COEFFICIENT	OVERLAND FLOW			GUTTER FLOW			TIME OF CONCENTRATION			RAINFALL INTENSITY (INCHES/HOUR)	FLOW (Q) (CFS)	COMMENTS
				LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	OVERLAND FLOW (MIN)	GUTTER FLOW (MIN)	TOTAL (MIN)	100 YEAR	100 YEAR	
S-1	S-1	0.62	0.76	286.64	5.39	3.46	175.85	1.35	2.24	2.42	1.31	3.73	11.51	5.41	
S-2	S-2	0.40	0.87	88.18	4.71	4.38	238.52	1.74	2.54	0.34	1.57	1.90	12.50	4.32	
S-3	S-3	1.26	0.50	140.28	3.74	1.44	254.34	2.20	2.18	1.62	1.94	3.56	10.96	6.91	
S-4	S-4	0.47	0.67	172.86	7.19	1.98	133.95	4.22	4.13	1.46	0.54	2.00	12.44	3.92	
S-5	S-5	0.61	0.77	0.00	0.00	0.00	425.80	4.59	4.32	0.00	1.64	1.64	12.65	5.90	
S-7	S-7	0.18	0.90	86.68	5.05	4.56	148.07	4.10	4.06	0.32	0.61	0.92	13.06	2.12	
S-9	S-9	0.31	0.90	100.21	4.99	4.53	220.50	4.46	4.25	0.37	0.86	1.23	12.91	3.64	
S-13	S-13	1.00	0.50	381.82	1.44	0.83	90.27	6.65	3.96	7.67	0.38	8.05	9.75	4.88	
S-14	S-14	0.31	0.90	91.59	6.93	5.38	235.15	4.44	4.25	0.28	0.92	1.21	12.93	3.64	
S-15	S-15	0.27	0.90	91.87	6.91	5.37	227.82	4.45	4.25	0.28	0.89	1.18	12.94	3.15	
S-16	S-16	0.36	0.90	195.45	8.39	5.90	255.99	5.44	4.74	0.55	0.90	1.45	12.77	4.17	
S-17	S-17	0.59	0.90	0.00	0.00	0.00	428.16	5.85	4.93	0.00	1.45	1.45	12.77	6.84	
S-19	S-19	0.16	0.75	56.37	2.04	1.01	77.04	7.14	5.46	0.93	0.24	1.16	12.95	1.55	
S-21	S-21	3.65	0.51	123.57	3.32	1.35	942.00	8.44	5.92	1.53	2.65	4.18	11.29	21.11	
S-22	S-22	0.47	0.90	163.78	8.15	5.82	451.43	5.84	4.93	0.47	1.53	2.00	12.44	5.27	
S-24	S-24	0.36	0.90	196.96	8.69	6.00	245.06	7.35	5.54	0.55	0.74	1.28	12.88	4.20	
S-26	S-26	0.33	0.90	162.15	7.36	5.54	217.16	8.28	5.86	0.49	0.62	1.10	12.99	3.90	
S-28	S-28	0.19	0.90	151.39	6.71	5.30	139.26	9.47	6.23	0.48	0.37	0.85	13.06	2.23	
S-31	S-31	0.41	0.90	68.46	4.47	4.26	338.47	5.36	4.71	0.27	1.20	1.47	12.76	4.76	
S-32	S-32	0.43	0.90	66.94	3.35	3.62	364.71	4.60	4.33	0.31	1.40	1.71	12.61	4.93	
S-35	S-35	0.29	0.90	45.24	3.82	3.90	225.90	1.49	2.35	0.19	1.60	1.79	12.56	3.23	
S-36	S-36	0.28	0.90	46.00	3.83	3.91	248.00	1.10	2.05	0.20	2.01	2.21	12.32	3.10	
S-37	S-37	0.28	0.50	27.27	0.92	0.65	192.21	14.69	2.68	0.69	1.21	1.90	12.50	1.77	
S-39	S-39	1.43	0.50	171.72	16.01	2.55	515.23	14.87	4.14	1.12	2.64	3.76	11.50	8.22	
S-52	S-52	0.67	0.70	143.72	6.09	5.04	226.66	5.21	2.18	0.48	2.07	2.54	12.13	5.69	
S-54	S-54	0.21	0.90	47.00	2.38	3.00	179.91	0.87	1.87	0.26	1.61	1.38	12.82	2.42	
S-55	S-55	0.22	0.90	46.79	2.44	3.03	179.76	0.86	1.85	0.26	1.62	1.87	12.51	2.48	
S-63	S-63	0.37	0.70	13.02	2.07	2.78	514.68	3.58	3.76	0.08	2.28	2.36	12.23	3.20	
S-64	S-64	0.06	0.90	46.03	3.91	3.95	145.27	5.14	4.60	0.19	0.53	1.00	13.06	0.71	
S-65	S-65	0.76	0.50	242.83	6.85	5.35	24.86	21.00	9.34	0.76	0.04	1.00	13.06	4.94	
S-68	S-68	0.04	0.35	35.00	1.00	0.70	---	---	---	0.83	---	0.83	12.25	0.17	IDP 6969, SEG REAL ESTATE CORP CAMPUS, STR. C
N-3	N-3	0.76	0.50	242.48	4.02	1.50	417.30	5.99	4.99	2.69	1.39	4.08	11.34	4.31	
N-4	N-4	0.55	0.90	46.00	2.98	3.39	514.85	3.40	3.66	0.23	2.35	2.57	12.11	6.00	
N-6	N-6	0.68	0.90	46.00	2.37	2.99	511.34	3.64	3.80	0.26	2.24	2.50	12.15	7.44	
N-7	N-7	0.06	0.90	33.04	0.42	1.49	60.25	5.26	4.66	0.37	0.22	0.58	13.06	0.71	
N-8	N-8	0.07	0.90	41.00	18.71	8.52	61.00	5.18	4.62	0.08	0.22	0.30	13.06	0.82	
N-9	N-9	0.07	0.90	161.22	7.06	5.43	90.43	7.87	5.73	0.49	0.26	0.76	13.06	0.82	
N-11	N-11	0.21	0.90	141.35	0.47	1.53	145.71	14.39	7.42	1.54	0.33	1.86	12.52	2.37	
N-16	N-16	0.54	0.90	81.12	5.99	4.99	447.56	8.43	5.91	0.27	1.26	1.53	12.72	6.18	
N-17	N-17	0.14	0.90	226.91	5.45	4.75	141.14	11.59	6.78	0.80	0.35	1.14	12.97	1.63	
N-19	N-19	0.53	0.90	240.39	10.51	6.51	527.56	5.88	4.95	0.62	1.78	2.39	12.21	5.83	
N-21	N-21	0.14	0.90	167.00	8.42	5.91	103.93	8.25	5.85	0.47	0.30	0.77	13.06	1.65	
N-24	N-24	0.25	0.90	190.20	8.13	5.81	174.12	7.95	5.76	0.55	0.50	1.05	13.03	2.93	
N-26	N-26	0.38	0.90	176.32	9.29	6.18	245.58	8.07	5.79	0.48	0.71	1.18	12.94	4.43	
N-27	N-27	2.79	0.50	190.45	10.22	2.21	784.31	9.33	6.19	1.43	2.11	3.55	11.60	16.19	
N-28	N-28	0.71	0.70	189.90	10.04	2.20	126.74	5.00	4.53	1.44	0.47	1.90	11.71	5.82	
N-30	N-30	0.35	0.90	169.31	8.87	6.05	217.64	7.65	5.65	0.47	0.64	1.11	12.99	4.09	
N-31	N-31	0.42	0.90	319.18	4.79	4.43	191.25	13.85	7.30	1.20	0.44	1.64	12.66	4.78	
N-33	N-33	0.32	0.90	169.95	8.03	5.78	225.12	6.16	5.07	0.49	0.74	1.23	12.91	3.72	
N-34	N-34	0.30	0.90	168.10	8.38	5.90	214.99	6.00	5.00	0.48	0.72	1.19	12.93	3.49	
N-39	N-39	0.51	0.54	236.09	25.21	4.30	194.33	15.09	7.57	2.13	0.43	2.56	12.12	3.29	
N-41	N-41	0.37	0.70	172.27	8.73	2.12	70.56	8.49	5.93	1.36	0.20	1.55	12.71	3.33	
N-51	N-51	0.54	0.50	44.53	11.39	2.27	381.73	8.64	5.98	0.33	1.06	1.39	12.81	3.43	
X-1	*X-1*	*0.40*	*0.75*	*34.56*	*2.34*	*1.00*	*226.99*	*5.49*	*4.50*	*0.58*	*0.84*	*1.42*	*12.79*	*3.85*	
X-3	*X-3*	*0.21*	*0.87*	---	---	---	*171.07*	*7.48*	*5.30*	*0.00*	*0.54*	*0.54*	*13.37*	*2.43*	
X-4	*X-4*	*29.65*	*0.69*	---	---	---	---	---	---	---	---	*10.00*	*8.95*	*183.10*	DWG 12573, YALE AVE. & 91ST ST. INTERSECTION
X-5	*X-5*	*0.24*	*0.79*	---	---	---	*133.19*	*6.40*	*5.00*	*0.00*	*0.44*	*0.44*	*13.43*	*2.53*	
X-6	*X-6*	0.04	0.35	35.00	1.00	0.70	---	---	---	0.83	---	0.83	12.25	0.17	IDP 6969, SEG REAL ESTATE CORP CAMPUS, STR. C

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

DRAINAGE AREA SUMMARY

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18	APPROVED:
DESIGNED	JPP	10/18	
SURVEY	RDL	10/18	
PROJECT MGR	CAG	6/20	
FIELD MGR	RZW	7/20	
LEAD ENGR	BOC	8/20	
RECOMMENDED HAS 7-20 DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Drainage_Area_Summaries.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 47 OF 334 SHEETS

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INLET DESIGN SUMMARY

STR NO.	D.A.	CLOGGING FACTOR	100 YR FLOW @ INLET	UPSTREAM BYPASS	UPSTREAM BYPASS INLET NUMBER	LOCAL FLOW + UPSTREAM BYPASS @ INLET	ON GRADE OR IN SUMP	AVG. PVM'T SLOPE	CROSS SLOPE AT INLET	INTERCEPTED FLOW BY INLET	PERCENT CAPTURED	DEPTH @ INLET	WIDTH OF FLOW	BYPASSED FLOW	BYPASSED TO INLET NUMBER	INLET DESIGN	GRATE ELEV	FLOW LINE OUT ELEV	STR. DEPTH	REMARKS
			CFS	CFS				FT/FT	%	CFS	%	FT	FT	CFS			FT	FT	FT	
S-1	S-1	1.00	5.41	1.37	S-4	6.78	ON GRADE	0.01	3.12%	5.44	80.19%	0.35	11.16	1.34	S-55	INLET W/ LRG. JCT. BOX, CI DES. 2 (B)	747.75	740.99	7.43	STR. DEPTH IS MEASURED FROM JCT. BOX
S-2	S-2	1.00	4.32	2.15	X-1, S-7	6.47	ON GRADE	0.01	3.12%	5.23	80.78%	0.34	10.94	1.24	S-54	INLET W/ LRG. JCT. BOX, CI DES. 2 (B)	747.75	742.46	5.96	STR. DEPTH IS MEASURED FROM JCT. BOX
S-3	S-3	0.70	6.91	---	N/A	6.91	SUMP	---	3.58%	6.91	100.00%	0.04	1.10	---	N/A	INLET (SMD-TYPE 2)	744.65	737.10	7.55	
S-4	S-4	1.00	3.92	1.99	S-5	5.91	ON GRADE	0.04	3.12%	4.55	76.86%	0.25	8.15	1.37	S-1	INLET, CI DES. 4 (STD)	751.91	747.25	4.66	
S-5	S-5	1.00	5.90	1.62	S-15	7.52	ON GRADE	0.04	3.12%	5.52	73.44%	0.27	8.78	1.99	S-4	INLET, CI DES. 4 (STD)	758.26	753.60	4.66	
S-7	S-7	1.00	2.12	1.01	S-9	3.12	ON GRADE	0.04	3.00%	2.35	75.31%	0.18	6.03	0.77	S-2	INLET, CI DES. 2 (B)	752.02	745.67	6.35	
S-9	S-9	1.00	3.64	1.11	S-14	4.76	ON GRADE	0.04	3.12%	3.75	78.82%	0.23	7.40	1.01	S-7	INLET, CI DES. 4 (STD)	758.26	753.02	5.24	
S-13	S-13	0.70	4.88	---	N/A	4.88	SUMP	---	25.00%	4.88	100.00%	0.02	0.08	---	N/A	INLET (SMD-TYPE 2)	773.36	763.99	9.37	
S-14	S-14	1.00	3.64	1.44	S-16	5.08	ON GRADE	0.04	3.12%	3.97	78.06%	0.24	7.58	1.11	S-9	INLET, TYPE RCI DES. 4 (STD)	768.34	764.96	3.38	
S-15	S-15	1.00	3.15	3.38	S-17	6.53	ON GRADE	0.04	3.12%	4.91	75.16%	0.26	8.33	1.62	S-5	INLET, TYPE RCI DES. 4 (STD)	768.61	762.55	6.06	
S-16	S-16	1.00	4.17	1.86	S-22	6.03	ON GRADE	0.04	3.12%	4.59	76.10%	0.25	8.08	1.44	S-14	INLET, TYPE RCI DES. 4 (STD)	778.80	775.58	3.22	
S-17	S-17	1.00	6.84	4.03	S-19, S-24, S-39	10.87	ON GRADE	0.04	3.12%	7.49	68.88%	0.31	10.08	3.38	S-15	INLET, TYPE RCI DES. 4 (STD)	778.80	772.67	6.13	SPREAD IS LESS THAN ALLOWABLE OUTSIDE LANE. PROPOSE NOT TO UPSIZE INLET TO CAPTURE 70%.
S-19	S-19	1.00	1.55	---	N/A	1.55	ON GRADE	0.05	2.75%	1.36	87.49%	0.13	4.72	0.19	S-17	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD)	788.93	781.01	8.59	STR. DEPTH IS MEASURED FROM JCT. BOX
S-21	S-21	0.70	21.11	---	N/A	21.11	SUMP	---	25.00%	21.11	100.00%	0.37	5.25	---	N/A	INLET (SMD-TYPE 2)	791.70	788.26	3.44	
S-22	S-22	1.00	5.27	1.37	S-28	6.64	ON GRADE	0.07	3.12%	4.78	71.95%	0.24	7.71	1.86	S-16	INLET, TYPE RCI DES. 4 (STD)	793.03	785.48	7.55	
S-24	S-24	1.00	4.20	1.37	S-26	5.57	ON GRADE	0.07	3.12%	4.14	74.23%	0.23	7.22	1.44	S-17	INLET, TYPE RCI DES. 4 (STD)	793.16	787.74	5.42	
S-26	S-26	1.00	3.90	1.39	S-31	5.30	ON GRADE	0.08	3.12%	3.93	74.13%	0.22	6.91	1.37	S-24	INLET, TYPE RCI DES. 4 (STD)	811.59	805.74	5.85	
S-28	S-28	1.00	2.23	2.14	S-32	4.38	ON GRADE	0.08	3.12%	3.01	68.73%	0.19	6.05	1.37	S-22	INLET, CI DES. 2 (B)	820.13	813.14	6.99	SPREAD IS LESS THAN ALLOWABLE OUTSIDE LANE. PROPOSE NOT TO UPSIZE INLET TO CAPTURE 70%.
S-31	S-31	1.00	4.76	0.83	S-35	5.59	ON GRADE	0.06	3.12%	4.20	75.09%	0.23	7.44	1.39	S-26	INLET, TYPE RCI DES. 4 (STD)	831.86	825.64	6.22	
S-32	S-32	1.00	4.93	1.39	S-36, S-63, S-64	6.32	ON GRADE	0.06	2.08%	4.17	66.08%	0.21	10.03	2.14	S-28	INLET, CI DES. 4 (STD)	833.83	826.38	7.45	SPREAD IS LESS THAN ALLOWABLE OUTSIDE LANE. PROPOSE NOT TO UPSIZE INLET TO CAPTURE 70%.
S-35	S-35	1.00	3.23	---	N/A	3.23	ON GRADE	0.06	3.12%	2.40	74.35%	0.18	5.61	0.83	S-31	INLET, TYPE RCI DES. 2 (B)	850.12	844.86	5.26	
S-36	S-36	1.00	3.10	---	N/A	3.10	ON GRADE	0.06	3.12%	2.33	74.99%	0.17	5.52	0.78	S-32	INLET, TYPE RCI DES. 2 (B)	850.55	845.23	5.32	
S-37	S-37	1.00	1.77	---	N/A	1.77	ON GRADE	0.03	25.00%	1.77	100.00%	0.35	1.39	---	N/A	INLET (SMD-TYPE 2)	789.60	786.89	2.71	
S-39	S-39	1.00	8.22	---	N/A	8.22	ON GRADE	0.07	3.00%	5.82	70.81%	0.26	8.62	2.40	S-17	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD)	795.76	791.76	4.67	STR. DEPTH IS MEASURED FROM JCT. BOX
S-52	S-52	0.70	5.69	---	N/A	5.69	SUMP	---	25.00%	5.69	100.00%	0.03	0.11	---	N/A	INLET (SMD-TYPE 2)	748.60	744.45	4.15	
S-54	S-54	1.00	2.42	2.29	S-2, X-3	4.71	ON GRADE	0.08	3.12%	3.82	81.04%	0.28	8.91	0.89	OFFSITE	INLET, CI DES. 2 (B)	747.14	737.41	9.73	
S-55	S-55	1.00	2.48	1.34	S-1	3.82	ON GRADE	0.08	3.12%	2.87	75.00%	0.25	8.06	0.50	OFFSITE	INLET W/ LRG. JCT. BOX, CI DES. 2 (B)	747.14	735.49	12.32	STR. DEPTH IS MEASURED FROM JCT. BOX
S-63	S-63	1.00	3.20	---	N/A	3.20	ON GRADE	0.06	3.12%	2.63	82.16%	0.19	6.12	0.58	S-32	INLET, CI DES. 4 (STD)	848.98	843.35	5.63	
S-64	S-64	1.00	0.71	---	N/A	0.71	ON GRADE	0.06	3.12%	0.67	94.62%	0.09	2.96	0.04	S-32	INLET, CI DES. 2 (B)	848.96	836.76	12.20	
S-65	S-65	0.70	4.94	---	N/A	4.94	SUMP	---	25.00%	4.94	100.00%	0.02	0.08	---	N/A	INLET (SMD-TYPE 2)	846.52	843.96	2.56	

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 92 AND 102

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

INLET DESIGN SUMMARY (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR	ZTM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BOL	6/20
	RECOMMENDED	HAS	7-20
	DESIGN MANAGER		

APPROVED: C.I.P.
CITY ENGINEER

FILE: 313925-C-Drainage_Inlet_Summaries-1.dgn DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006

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INLET DESIGN SUMMARY

STR NO.	D.A.	CLOGGING FACTOR	100 YR FLOW @ INLET	UPSTREAM BYPASS	UPSTREAM BYPASS INLET NUMBER	LOCAL FLOW + UPSTREAM BYPASS @ INLET	ON GRADE OR IN SUMP	AVG. PVM'T SLOPE	CROSS SLOPE AT INLET	INTERCEPTED FLOW BY INLET	PERCENT CAPTURED	DEPTH @ INLET	WIDTH OF FLOW	BYPASSED FLOW	BYPASSED TO INLET NUMBER	INLET DESIGN	GRATE ELEV	FLOW LINE OUT ELEV	STR. DEPTH	REMARKS
			CFS	CFS				FT/FT	%	CFS	%	FT	FT	CFS			FT	FT	FT	
N-3	N-3	0.70	4.31	---	N/A	4.31	SUMP	---	50.00%	4.31	100.00%	0.02	0.08	---	N/A	INLET (SMD-TYPE 2)	838.15	834.56	3.59	
N-4	N-4	1.00	6.00	---	N/A	6.00	ON GRADE	0.08	2.08%	3.87	64.59%	0.19	9.32	2.12	N-11	INLET, CI DES. 4 (STD)	837.06	829.08	7.98	SPREAD IS LESS THAN ALLOWABLE OUTSIDE LANE. PROPOSE NOT TO UPSIZE INLET TO CAPTURE 70%.
N-6	N-6	1.00	7.44	---	N/A	7.44	ON GRADE	0.08	3.12%	5.59	75.21%	0.23	7.45	1.84	N-11	INLET, TYPE RCI DES. 4 (B)	834.83	829.32	5.51	
N-7	N-7	1.00	0.71	---	N/A	0.71	ON GRADE	0.05	3.00%	0.66	94.18%	0.09	3.09	0.04	N-16	INLET W/ LRG. JCT. BOX, CI DES. 2 (B)	837.83	829.87	8.63	STR. DEPTH IS MEASURED FROM JCT. BOX
N-8	N-8	1.00	0.82	---	N/A	0.82	ON GRADE	0.05	3.00%	0.76	92.68%	0.10	3.31	0.06	N-16	INLET, CI DES. 2 (B)	835.67	830.18	5.49	
N-9	N-9	1.00	0.82	---	N/A	0.82	ON GRADE	0.08	0.50%	0.61	74.15%	0.05	9.86	0.21	N-16	INLET, CI DES. 4 (D)	824.15	818.30	5.85	
N-11	N-11	1.00	2.37	3.97	N-4, N-6	6.34	ON GRADE	0.08	3.12%	4.90	77.39%	0.22	6.98	1.43	N-19	INLET, TYPE RCI DES. 4 (STD)	822.96	817.56	5.40	
N-16	N-16	1.00	6.18	0.31	N-7, N-8, N-9	6.50	ON GRADE	0.08	3.12%	4.64	71.45%	0.23	7.46	1.86	N-21	INLET, TYPE RCI DES. 4 (STD)	797.36	788.74	8.62	
N-17	N-17	1.00	1.63	---	N/A	1.63	ON GRADE	0.08	3.12%	1.38	84.29%	0.13	4.04	0.26	N-19	INLET, CI DES. 2 (B)	798.68	789.98	8.70	
N-19	N-19	1.00	5.83	1.69	N-11, N-17	7.52	ON GRADE	0.08	3.12%	5.64	75.07%	0.23	7.48	1.87	N-24	INLET, CI DES. 4 (B)	789.33	784.01	5.32	
N-21	N-21	1.00	1.65	1.86	N-16	3.50	ON GRADE	0.08	3.12%	2.78	79.32%	0.18	5.91	0.72	N-26	INLET, TYPE RCI DES. 4 (STD)	788.01	783.10	4.91	
N-24	N-24	1.00	2.93	1.87	N-19	4.81	ON GRADE	0.08	3.12%	3.59	74.78%	0.18	5.86	1.21	N-31	INLET, CI DES. 2 (D)	774.85	768.36	6.49	
N-26	N-26	1.00	4.43	0.72	N-21	5.15	ON GRADE	0.08	3.12%	3.84	74.49%	0.21	6.83	1.31	N-30	INLET, TYPE RCI DES. 4 (STD)	766.41	760.88	5.53	
N-27	N-27	0.70	16.19	---	N/A	16.19	SUMP	---	50.00%	16.19	100.00%	0.22	0.43	---	N/A	INLET (SMD-TYPE 2)	766.22	754.25	11.97	
N-28	N-28	0.70	5.82	---	N/A	5.82	SUMP	---	25.00%	5.83	100.00%	0.03	0.11	---	N/A	INLET (SMD-TYPE 2)	733.60	729.55	4.05	
N-30	N-30	1.00	4.09	1.92	N-26, N-39	6.01	ON GRADE	0.08	3.12%	4.69	78.02%	0.21	6.84	1.32	N-33	INLET, CI DES. 4 (STD)	748.07	741.83	6.24	
N-31	N-31	1.00	4.78	1.21	N-24	6.00	ON GRADE	0.08	3.12%	3.81	63.56%	0.21	6.86	2.18	N-34	INLET W/ LRG. JCT. BOX, CI DES. 2 (B)	748.07	742.62	6.12	SPREAD IS LESS THAN ALLOWABLE OUTSIDE LANE. PROPOSE NOT TO UPSIZE INLET TO CAPTURE 70%.
N-33	N-33	1.00	3.72	1.32	N-30	5.04	ON GRADE	0.04	3.12%	3.90	77.41%	0.21	6.59	1.14	OFFSITE	INLET W/ LRG. JCT. BOX, CI DES. 2 (D)	733.73	725.71	8.69	STR. DEPTH IS MEASURED FROM JCT. BOX
N-34	N-34	1.00	3.49	2.18	N-31	5.68	ON GRADE	0.04	3.12%	4.40	77.51%	0.25	8.06	1.28	OFFSITE	INLET, CI DES. 4 (STD)	734.54	725.72	8.82	
N-39	N-39	1.00	3.29	---	N/A	3.29	ON GRADE	0.08	3.12%	2.68	81.44%	0.18	5.78	0.60	N-30	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD)	754.62	743.61	11.68	
N-41	N-41	1.00	3.33	18.00	N-40	21.33	ON GRADE	0.01	25.00%	21.33	100.00%	1.18	4.73	---	N-28	INLET (SMD-TYPE 2)	739.95	735.06	4.89	RECORD DRAWINGS UNAVAILABLE. CAPACITY OF EX. 15" RCP (STR N-40) IS 18 CFS AND WAS ACCOUNTED FOR AS BYPASS FLOW TO INLET.
N-51	N-51	0.70	3.43	---	N/A	3.43	SUMP	---	25.00%	3.44	100.00%	0.01	0.04	---	N/A	INLET (SMD-TYPE 2)	747.00	743.22	3.78	
X-1	*X-1*	*1.00*	*3.85*	---	*N/A*	*3.85*	*ON GRADE*	*0.05*	*2.26%*	*2.47*	*64.13%*	*0.17*	*7.61*	*1.38*	*S-2*	*EX. INLET, CI DES. 2 (STD)*	*748.80*	*744.00*	*4.80*	*EXISTING INLET TO REMAIN*
X-3	*X-3*	*1.00*	*2.43*	---	*N/A*	*2.43*	*ON GRADE*	*0.06*	*1.82%*	*1.39*	*57.21%*	*0.14*	*7.72*	*1.04*	*S-54*	*EX. INLET W/ LRG. JCT. BOX, CI DES. 2 (STD)*	*748.21*	*743.71*	*4.50*	*EXISTING INLET TO REMAIN*
X-4	*X-4*	*0.70*	*183.10*	---	*N/A*	*183.10*	*SUMP*	---	---	*183.10*	*100.00%*	---	---	---	*N/A*	*EX. SPECIAL DROP INLET*	*750.33*	*743.00*	*7.33*	*EXISTING INLET TO REMAIN, DWG 12573*
X-5	*X-5*	*0.70*	*2.53*	---	*N/A*	*2.53*	*SUMP*	---	*10.00%*	*2.53*	*100.00%*	*0.01*	*0.05*	---	*N/A*	*EX. GRATE INLET*	*753.45*	*749.89*	*3.56*	*EXISTING INLET TO REMAIN*
X-6	*X-6*	*0.70*	*0.17*	---	*N/A*	*0.17*	*SUMP*	---	*5.00%*	*0.17*	*100.00%*	*0.06*	*1.20*	---	*N/A*	*EX. DROP INLET*	*742.20*	*738.70*	*3.50*	*EXISTING INLET TO REMAIN, IDP 6969*

FOR STORM SEWER PROFILES
SEE SHEETS 93 TO 101

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

INLET DESIGN SUMMARY (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE: HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20	
	FIELD MGR	RCW	7/20	
VERTICAL: 1"= NA	LEAD ENGR	BDC	6/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER

FILE: 313925-C-Drainage_Inlet_Summaries-2.dgn DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006

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PIPE DESIGN SUMMARY

START NODE STR. NO	END NODE STR. NO	DIAM	LENGTH	SLOPE	INV UP	INV DN	TG/TR UP	TG/TR DN	HGL UP	HGL DN	EGL UP	EGL DN	Q100	QCAPACITY	VELOCITY
		IN	LF	%	FT	FT	FT	FT	FT	FT	FT	FT	CFS	CFS	FPS
S-1	S-66	24	34	1.51%	740.99	740.49	747.75	---	742.62	742.32	743.35	743.05	21.61	27.83	6.88
S-2	S-1	24	88	1.51%	742.46	741.13	747.75	747.75	743.58	742.87	744.91	743.31	16.79	27.82	9.26
S-4	S-6	18	82	2.00%	747.25	745.62	751.91	752.21	751.41	749.48	751.52	751.36	4.55	14.86	2.57
S-5	S-8	18	82	0.75%	753.60	752.99	758.26	758.45	754.80	754.19	755.25	754.64	5.52	9.10	5.39
S-6	X-4	36	28	3.00%	744.03	743.22	752.21	---	749.38	746.09	751.27	750.86	77.84	115.53	11.01
S-7	S-6	18	3	2.00%	745.67	745.62	752.02	752.21	751.30	749.44	751.33	751.33	2.35	14.86	6.13
S-8	S-6	36	145	3.00%	748.38	744.03	758.45	752.21	751.82	749.80	753.48	751.68	73.00	115.53	10.33
S-9	S-8	18	3	1.00%	753.02	752.99	758.26	758.45	754.13	754.11	754.59	754.56	3.75	10.50	5.44
S-10	S-8	36	199	3.00%	757.45	751.49	767.45	758.45	759.08	754.29	763.53	755.67	66.50	115.53	16.91
S-11	S-10	30	16	3.00%	758.01	757.54	768.48	767.45	760.04	759.57	764.27	763.80	70.27	71.04	16.50
S-12	S-10	18	142	1.00%	762.91	761.50	770.25	767.45	763.63	762.22	764.16	762.75	4.88	10.50	5.83
S-13	S-12	18	7	1.00%	763.99	763.92	773.36	770.25	764.71	764.64	765.23	765.17	4.88	10.50	5.82
S-14	S-11	18	4	1.00%	764.96	764.92	768.34	768.48	765.59	765.56	766.06	766.04	3.97	10.50	5.53
S-15	S-11	18	75	0.75%	762.55	761.99	768.61	768.48	763.39	762.77	763.81	763.20	4.91	9.08	5.23
S-16	S-48	18	4	1.00%	775.58	775.55	778.80	779.05	776.27	776.25	776.78	776.76	4.59	10.50	5.74
S-17	S-48	18	75	1.50%	772.67	771.56	778.80	779.05	773.60	772.38	774.49	773.26	7.49	12.87	7.55
S-18	S-48	30	161	3.00%	777.04	772.20	787.27	779.05	778.65	773.82	782.56	777.73	53.27	71.04	15.87
S-19	S-18	24	111	3.00%	781.01	777.68	788.93	787.27	782.38	778.93	785.23	781.78	28.01	39.18	13.55
S-20	S-19	24	57	2.00%	785.21	784.07	791.16	788.93	786.61	785.47	788.63	787.49	26.76	31.99	11.40
S-21	S-20	24	39	2.00%	788.26	787.50	791.70	791.16	789.45	788.68	791.29	790.52	21.11	31.99	10.87
S-22	S-49	18	4	1.00%	785.48	785.45	793.03	793.28	786.19	786.16	786.71	786.69	4.78	10.50	5.80
S-23	S-49	24	66	3.00%	787.18	785.20	793.39	793.28	788.25	786.03	790.80	788.58	21.92	39.18	12.82
S-24	S-23	18	4	1.88%	787.74	787.68	793.16	793.39	788.28	788.25	789.05	789.02	4.14	14.40	7.03
S-25	S-23	18	244	5.00%	799.88	787.68	811.84	793.39	800.87	788.68	804.24	792.05	18.43	23.49	14.71
S-26	S-25	18	4	1.70%	805.74	805.68	811.59	811.84	806.29	806.25	806.99	806.94	3.93	13.71	6.69
S-27	S-25	18	83	8.00%	812.33	805.68	819.06	811.84	813.08	806.45	817.48	810.85	14.95	29.71	16.83
S-28	S-27	18	41	2.00%	813.14	812.33	820.13	819.06	813.67	813.08	814.35	813.76	3.01	14.86	6.58
S-29	S-27	18	72	8.00%	818.12	812.33	825.69	819.06	818.74	813.08	822.71	817.05	12.28	29.71	15.98
S-30	S-29	18	73	8.00%	825.55	819.71	832.08	825.69	826.22	820.43	830.21	824.41	12.32	29.71	16.01
S-31	S-30	18	4	2.60%	825.64	825.55	831.86	832.08	826.13	826.22	827.11	827.20	4.20	16.94	7.94
S-32	S-30	18	42	2.00%	826.38	825.55	833.83	832.08	827.00	826.22	827.81	827.03	4.17	14.86	7.22
S-33	S-30	18	83	8.00%	832.21	825.55	838.47	832.08	832.55	826.22	834.84	828.51	4.53	29.71	12.14
S-34	S-33	18	249	5.00%	844.66	832.21	850.38	838.47	845.05	832.60	846.70	834.26	4.61	23.49	10.32
S-35	S-34	18	4	6.00%	844.86	844.66	850.12	850.38	845.06	845.05	846.36	846.34	2.40	25.73	9.12
S-36	S-34	18	76	0.75%	845.23	844.66	850.55	850.38	845.74	845.12	846.03	845.40	2.33	9.10	4.30
S-37	OUTFALL	18	28	0.50%	786.89	786.75	789.60	---	787.39	787.25	787.57	787.43	1.77	7.43	3.45
S-39	S-20	18	88	5.15%	791.76	787.26	795.76	791.16	792.26	787.76	794.19	789.69	5.82	23.83	11.14
S-48	S-11	30	231	3.00%	788.53	761.60	779.05	768.48	770.37	763.44	774.53	767.60	63.36	71.04	16.35
S-49	S-18	24	91	3.00%	784.27	781.55	793.28	787.27	785.45	782.75	788.22	785.53	26.25	39.18	13.37
S-52	X-1	18	50	0.91%	744.45	744.00	748.60	748.80	745.26	744.95	745.79	745.48	5.69	10.00	5.84
S-54	S-55	18	90	2.02%	737.41	735.59	747.14	747.14	737.92	736.11	738.70	736.88	3.82	14.92	7.06
S-55	EXIST. 6.5'X4' RCB	18	33	5.66%	735.49	733.62	747.14	---	736.03	734.88	738.29	737.14	6.91	24.99	12.07
S-63	S-64	18	24	3.00%	843.35	842.65	848.98	848.96	844.01	843.31	845.47	844.77	7.25	18.19	9.70
S-64	OUTFALL	18	73	6.00%	836.76	832.40	848.96	---	837.33	832.97	839.86	835.51	7.89	25.73	12.78
S-65	S-63	18	17	3.00%	843.96	843.45	846.52	848.98	844.49	844.01	845.68	845.20	4.94	18.19	8.75
S-66	S-67	60X48	189	2.25%	741.36	737.05	---	744.60	743.91	739.84	748.86	747.88	276.96	367.88	19.24
S-67	1936	78X48	84	1.10%	731.35	730.44	744.60	742.89	734.09	733.21	736.95	736.14	281.79	359.50	15.67
X-1	X-2	18	66	1.11%	744.00	743.28	748.80	749.89	744.95	744.23	745.68	744.96	8.12	11.07	6.84
X-2	S-2	24	9	1.01%	742.77	742.68	749.89	747.75	743.78	743.69	744.60	744.51	11.57	22.76	7.27
X-3	X-2	18	58	0.75%	743.71	743.27	748.21	749.89	744.39	743.95	744.77	744.33	3.87	9.12	4.94
X-4	S-66	60X48	204	0.82%	742.87	741.36	750.57	---	746.67	745.14	748.33	746.97	257.40	222.58	12.87
X-5	X-3	18	160	3.87%	749.89	743.71	753.45	748.21	750.24	744.39	751.21	745.36	2.53	20.66	7.90
X-6	S-66	15	4	1.32%	737.53	737.48	---	---	746.29	739.81	746.29	746.29	0.17	7.44	2.60
N-1	N-2	18	37	7.35%	825.46	822.73	832.00	828.7	826.21	823.51	830.27	827.57	14.48	28.48	16.17
N-2	N-10	18	65	7.34%	822.25	817.49	828.70	823.21	823.01	818.25	827.07	822.31	14.45	28.47	16.17
N-3	N-43	18	5	2.00%	834.56	834.47	838.15	838.61	835.11	835.02	835.93	835.84	4.31	14.87	7.27
N-4	N-5	18	43	0.99%	829.08	828.66	837.06	835.09	830.19	829.74	830.89	830.43	9.39	10.43	6.68
N-5	N-1	18	37	7.36%	828.63	825.93	835.09	832.00	829.39	826.71	833.46	830.79	14.50	28.51	16.20
N-6	N-5	18	4	2.00%	829.32	829.25	834.83	835.09	829.94	829.89	830.89	830.84	5.59	14.86	7.81
N-7	N-43	18	31	1.00%	829.87	829.57	837.83	838.61	830.25	830.35	830.51	830.62	1.42	10.50	4.14
N-8	N-7	18	31	1.00%	830.18	829.87	835.67	837.83	830.46	830.25	830.64	830.43	0.76	10.52	3.45
N-9	N-10	18	41	2.00%	818.30	817.49	824.15	823.21	818.58	817.87	818.85	818.13	0.61	14.86	4.11
N-10	N-14	18	314	8.00%	816.99	791.90	823.21	799.45	817.87	792.78	822.84	797.75	19.29	29.71	17.88
N-11	N-10	18	4	2.00%	817.56	817.49	822.96	823.21	818.13	818.08	819.02	818.96	4.90	14.86	7.53
N-14	N-17	24	24	4.48%	791.04	789.98	799.45	798.68	792.28	791.07	795.48	794.28	19.06	47.88	14.36
N-15	N-18	24	50	4.48%	788.17	785.95	797.61	792.93	789.18	786.98	792.82	790.61	24.37	47.88	15.30
N-16	N-15	18	4	2.00%	788.74	788.67	797.36	797.61	789.30	789.25	790.15	790.10	4.64	14.86	7.43
N-17	N-15	24	41	4.48%	789.98	788.17	798.68	797.61	791.07	789.18	794.40	792.51	20.41	47.88	14.63
N-18	N-20	24	50	3.00%	783.99	782.50	792.93	788.25	785.12	783.64	787.79	786.32	24.31	39.18	13.13
N-19	N-20	18	41	2.50%	784.01	783.00	789.33	788.25	784.71	783.61	785.83	784.73	5.64	16.61	8.49
N-20	N-22	24	83	3.00%	777.22	774.74	788.25	780.73	778.58	776.12	781.57	779.11	31.60	39.18	13.87
N-21	N-20	18	4	3.00%	783.10	783.00	788.01	788.25	783.47	783.40	784.33	784.25	2.78	18.19	7.42
N-22	N-23	24	83	3.00%	759.73	767.25	780.73	773.20	771.07	768.61	774.05	771.59	31.47	39.18	13.86
N-23	N-25	30	77	3.00%	782.10	759.81	773.20	766.65	763.32	761.04	766.52	764.23	34.33	71.04	14.34
N-24	N-23	18	41	1.50%	788.36	767.75	774.85	773.20	768.96	768.29	769.57	768.89	3.59	12.87	6.23
N-25	N-32	30	104	3.00%	754.67	751.57	766.65	758.00	755.96	752.86	759.30	756.20	37.39	71.04	14.65
N-26	N-25	18	4	2.00%	760.88	760.81	766.41	766.65	761.38	761.33	762.15	762.10	3.84	14.86	7.05
N-27	N-36	18	22	2.50%	754.25	753.69	766.22	759.00	755.44	754.89	757.22	756.67	16.19	16.61	10.71
N-28	N-33	18	5	2.39%	729.55	729.44	733.60	733.73	730.17	730.06	731.27	731.16	5.82	16.24	8.42
N-29	N-42	36	100	2.99%	734.62	731.58	748.30	740.56	736.21	733.49	740.58	737.85	64.19	115.42	16.76
N-30	N-29	18	3	1.00%	741.83	741.80	748.07	748.30	742.53	742.51	743.05	743.02	4.69	10.50	5.78
N-31	N-29	18	82	1.00%	742.62	741.80	748.07	748.30	743.53	742.72	744.17	743.35	7.20	10.50	6.40
N-32	N-38	30	60	3.00%	747.71	745.92	758.00	752.81	749.30	747.52	753.18	751.40	52.18	71.04	15.81
N-33	N-44	18	42	2.00%	725.71	724.88	733.73	734.75	726.59	725.77	727.84	727.01	9.74	14.86	8.96
N-34	N-44	18	43	2.00%	725.72	724.88	734.54	734.75	726.28	725.44	727.11	726.27	4.40	14.86	7.31
N-36	N-32	18	28	2.50%	753.27	752.57	759.00	758.00	754.46	753.76	756.24	755.55	16.16	16.61	10.71
N-38	N-29	36	52	3.00%	741.84	740.30	752.81	748.30	743.28	741.75	747.31	745.77	54.41	115.53	16.09
N-39	N-38	18	26	3.00%	743.61	742.85	754.62	752.81	744.00	743.28	744.84	744.12	2.68	18.19	7.35
N-41	N-42	24	17	2.00%	735.06	734.73	739.95	740.56	736.26	735.92	738.10	737.77	21.33	31.99	10.90
N-42	N-44	36	122	3.00%	731.58	727.95	740.56	734.75	733.49	729.86	738.44	734.81	84.71	115.50	17.85
N-43	N-4	18	50	1.00%	829.57	829.08	838.61	837.06	830.35	830.19	830.91	830.75	5.55	10.49	6.02
N-51	N-31	18	26	2.00%	743.22	742.72	747.00	748.07	743.71	743.53	744.44	744.26	3.43	14.86	6.83
N-14	T-2	18	376	9.24%	791.04	756.31	799.45	761.31	---	---	---	---	19.06	---	---
T-2	T-1	18	238	5.28%	755.31	742.75	761.31	747.75	---	---	---	---	19.06	---	---
T-1	OUTFALL	18	185	2.52%	741.75	737.00	747.75	---	---	---	---	---	19.06	---	---

STORM SEWER SYSTEM DESIGNED FOR 100-YR NETWORK WITH TIMES OF CONCENTRATION.

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

PIPE DESIGN SUMMARY

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20	
	FIELD MGR	BRM	7/20	
	LEAD ENGR	RDL	6/20	
VERTICAL: 1"= NA	RECOMMENDED	HAS	7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-Drainage_Pipe_Summaries-1.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

1/6/2021
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SUMMARY OF DRAINAGE STRUCTURES

STR. NO	ALIGNMENT	STATION			NORTHING	EASTING	DESCRIPTION	CITY OF TULSA/ODOT DESIGN STANDARDS	STORM SEWER DESIGN CRITERIA: CAPTURED "Q" *	TOTAL "Q" IN STRUCTURE *	BY-PASS "Q" *	BY-PASS "Q" TO STR. NO.	HYDRAULIC GRADELINE *	ENERGY GRADELINE *	ELEV. TOP MANHOLE OR GRATE	FLOWLINE IN	FLOWLINE OUT
									100-YEAR								
									CFS	CFS	CFS		FT	FT	FT	FT	FT
S-1	YALE AVE.	29+00.00	46.00	RT	383095.83	2582871.69	INLET W/ LRG. JCT. BOX, CI DES. 2 (B) W/ 34 L.F. 24 " PIPE STUB INTO STR. S-66	751, 753, 755, 762, 764, 765, 766, 767	5.44	21.61	1.34	S-55	742.62	743.35	747.75	741.13 W	740.99 E
S-2	YALE AVE.	29+00.00	46.00	LT	383093.87	2582779.7	INLET W/ LRG. JCT. BOX, CI DES. 2 (B) W/ 5 L.F. 24 " PIPE TIE TO EXISTING 24" RCP	751, 753, 755, 762, 764, 765, 766, 767	5.23	10.79	1.24	S-54	743.58	744.91	747.75	742.08 W	742.40 E
S-3	YALE AVE.	28+01.32	87.39	RT	382998.07	2582915.18	INLET (SMD-TYPE 2) DROP INTO S-66	751, SMD-3-1	6.91	276.96	---	N/A	739.37	745.12	744.65	737.16 N	737.10 S
S-4	YALE AVE.	31+36.69	46.00	RT	383332.47	2582866.63	INLET, CI DES. 4 (STD) W/ 82 L.F. 18 " PIPE STUB INTO STR. S-6	751, 755, 764, 765, 766, 767	4.55	4.55	1.37	S-1	751.41	751.52	751.91	---	747.25 W
S-5	YALE AVE.	32+90.00	46.00	RT	383485.75	2582863.35	INLET, CI DES. 4 (STD) W/ 82 L.F. 18 " PIPE STUB INTO STR. S-8	751, 755, 764, 765, 766, 767	5.52	5.52	1.99	S-4	754.80	755.25	758.26	---	753.60 W
S-6	YALE AVE.	31+40.00	39.50	LT	383333.95	2582781.07	5 ' DIA. MANHOLE W/ 28 L.F. 36 " PIPE STUB INTO EXIST 5' X 4' RCB	751, 753, 775	N/A	77.84	N/A	N/A	749.44	751.33	752.21	744.03 N 745.62 E 745.62 W	744.03 S
S-7	YALE AVE.	31+40.00	46.00	LT	383333.81	2582774.58	INLET, CI DES. 2 (B) W/ 3 L.F. 18 " PIPE STUB INTO STR. S-6	751, 755, 764, 765, 766, 767	2.35	2.35	0.77	S-2	751.30	751.33	752.02	---	745.67 E
S-8	YALE AVE.	32+90.00	39.50	LT	383483.92	2582777.87	5 ' DIA. MANHOLE W/ 145 L.F. 36 " PIPE STUB INTO STR. S-6	751, 753, 775	N/A	73.00	N/A	N/A	754.11	755.76	758.45	751.49 N 752.99 E 752.99 W	748.38 S
S-9	YALE AVE.	32+90.00	46.00	LT	383483.78	2582771.37	INLET, CI DES. 4 (STD) W/ 3 L.F. 18 " PIPE STUB INTO STR. S-8	751, 755, 764, 765, 766, 767	3.75	3.75	1.01	S-7	754.13	754.59	758.26	---	753.02 E
S-10	YALE AVE.	34+93.86	39.50	LT	383687.73	2582773.50	5 ' DIA. MANHOLE W/ 199 L.F. 36 " PIPE STUB INTO STR. S-8	751, 753, 775	N/A	66.50	N/A	N/A	759.08	763.53	767.45	757.54 N 761.50 E	757.45 S
S-11	YALE AVE.	35+14.08	35.50	LT	383708.03	2582777.07	5 ' DIA. MANHOLE W/ 16 L.F. 30 " PIPE STUB INTO STR. S-10	751, 753, 775	N/A	70.27	N/A	N/A	760.04	764.27	768.48	761.60 N 761.99 E 764.92 W	758.01 S
S-12	88TH PL.	11+06.25	17.17	LT	383690.62	2582919.25	4 'DIA. MANHOLE W/ 142 L.F. 18 " PIPE STUB INTO STR. S-10	751, 753, 775	N/A	4.88	N/A	N/A	763.63	764.16	770.25	763.92 N	762.91 W
S-13	88TH PL.	11+06.25	27.24	LT	383700.69	2582919.04	INLET (SMD-TYPE 2) W/ 7 L.F. 18 " PIPE STUB INTO STR. S-12	751, SMD-3-1	4.88	4.88	---	N/A	764.71	765.23	773.36	---	763.99 S
S-14	YALE AVE.	35+16.75	42.67	LT	383710.55	2582769.85	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-11	751, 755, 764, 765, 766, 767, 768	3.97	3.97	1.11	S-9	765.59	766.06	768.34	---	764.96 E
S-15	YALE AVE.	35+22.67	42.67	RT	383718.29	2582855.04	INLET, TYPE RCI DES. 4 (STD) W/ 75 L.F. 18 " PIPE STUB INTO STR. S-11	751, 755, 764, 765, 766, 767, 768	4.91	4.91	1.62	S-5	763.39	763.81	768.61	---	762.55 W
S-16	YALE AVE.	37+50.00	42.67	LT	383943.74	2582764.86	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-48	751, 755, 764, 765, 766, 767, 768	4.59	4.59	1.44	S-14	776.27	776.78	778.80	---	775.58 E
S-17	YALE AVE.	37+50.00	42.67	RT	383945.57	2582850.18	INLET, TYPE RCI DES. 4 (STD) W/ 75 L.F. 18 " PIPE STUB INTO STR. S-48	751, 755, 764, 765, 766, 767, 768	7.49	7.49	3.38	S-15	773.60	774.49	778.80	---	772.67 W
S-18	YALE AVE.	39+19.40	35.50	LT	384110.02	2582765.92	5 ' DIA. MANHOLE W/ 161 L.F. 30 " PIPE STUB INTO STR. S-48	751, 753, 775	N/A	53.27	N/A	N/A	778.65	782.57	787.27	781.55 N 777.68 E	777.04 S
S-19	87TH ST.	10+84.16	28.00	RT	384119.63	2582881.69	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD) W/ 111 L.F. 24 " PIPE STUB INTO STR. S-18	751, 753, 755, 762, 764, 765, 766, 767	1.36	28.01	0.19	S-17	782.38	785.23	788.93	784.07 N	781.01 W
S-20	87TH ST.	10+80.63	32.16	LT	384179.70	2582876.92	4 ' DIA. MANHOLE W/ 57 L.F. 24 " PIPE STUB INTO STR. S-19	751, 753, 775	N/A	26.76	N/A	N/A	786.61	788.63	791.16	787.26 E 787.50 W	785.21 S
S-21	YALE AVE.	40+01.30	60.03	RT	384208.04	2582846.07	INLET (SMD-TYPE 2) W/ 39 L.F. 24 " PIPE STUB INTO STR. S-20	751, SMD-3-1	21.11	21.11	---	N/A	791.29	791.29	791.70	---	788.26 SE
S-22	YALE AVE.	40+20.03	42.67	LT	384202.15	2582741.81	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-49	751, 755, 764, 765, 766, 767, 768	4.78	4.78	1.86	S-16	786.19	786.71	793.03	---	785.48 E
S-23	YALE AVE.	40+21.86	35.50	RT	384223.52	2582817.02	5 ' DIA. MANHOLE W/ 66 L.F. 24 " PIPE STUB INTO STR. S-49	751, 753, 775	N/A	21.92	N/A	N/A	788.25	790.80	793.39	787.68 N 787.68 E	787.18 W
S-24	YALE AVE.	40+21.86	42.67	RT	384225.33	2582823.96	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-23	751, 755, 764, 765, 766, 767, 768	4.14	4.14	1.44	S-17	788.28	789.05	793.16	---	787.74 W
S-25	YALE AVE.	42+69.89	35.50	RT	384462.93	2582749.49	5 ' DIA. MANHOLE W/ 244 L.F. 18 " PIPE STUB INTO STR. S-23	751, 753, 775	N/A	18.43	N/A	N/A	800.87	804.24	811.84	805.68 N 805.68 E	799.88 S
S-26	YALE AVE.	42+69.88	42.67	RT	384464.87	2582756.39	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-25	751, 755, 764, 765, 766, 767, 768	3.93	3.93	1.37	S-24	806.29	806.99	811.59	---	805.74 W
S-27	YALE AVE.	43+60.12	35.50	RT	384547.96	2582726.35	5 ' DIA. MANHOLE W/ 83 L.F. 18 " PIPE STUB INTO STR. S-25	751, 753, 775	N/A	14.95	N/A	N/A	813.08	817.48	819.06	812.33 N 812.33 W	812.33 S
S-28	YALE AVE.	43+60.12	8.00	LT	384538.61	2582683.87	INLET, CI DES. 2 (B) W/ 41 L.F. 18 " PIPE STUB INTO STR. S-27	751, 755, 764, 765, 766, 767	3.01	3.01	1.37	S-22	813.67	814.35	820.13	---	813.14 E
S-29	YALE AVE.	44+43.00	35.50	RT	384624.56	2582715.57	5 ' DIA. MANHOLE W/ 72 L.F. 18 " PIPE STUB INTO STR. S-27	751, 753, 775	N/A	12.28	N/A	N/A	818.74	822.71	825.69	819.71 N	818.12 S
S-30	YALE AVE.	45+26.60	35.50	RT	384702.58	2582716.68	5 ' DIA. MANHOLE W/ 73 L.F. 18 " PIPE STUB INTO STR. S-29	751, 753, 775	N/A	12.32	N/A	N/A	826.22	830.21	832.08	825.55 N 825.55 E 825.55 W	825.55 S
S-31	YALE AVE.	45+27.00	42.67	RT	384702.29	2582723.85	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-30	751, 755, 764, 765, 766, 767, 768	4.20	4.20	1.39	S-26	826.13	827.11	831.86	---	825.64 W
S-32	YALE AVE.	45+35.85	8.00	LT	384715.90	2582674.30	INLET, CI DES. 4 (STD) W/ 42 L.F. 18 " PIPE STUB INTO STR. S-30	751, 755, 764, 765, 766, 767	4.17	4.17	2.14	S-28	827.00	827.81	833.83	---	826.38 E
S-33	YALE AVE.	46+21.06	35.50	RT	384789.31	2582732.38	5 ' DIA. MANHOLE W/ 83 L.F. 18 " PIPE STUB INTO STR. S-30	751, 753, 775	N/A	4.53	N/A	N/A	832.55	834.84	838.47	832.21 N	832.21 S
S-34	YALE AVE.	48+75.00	35.50	RT	385034.28	2582799.28	5 ' DIA. MANHOLE W/ 249 L.F. 18 " PIPE STUB INTO STR. S-33	751, 753, 775	N/A	4.61	N/A	N/A	845.05	846.70	850.38	844.66 E 844.66 W	844.66 S
S-35	YALE AVE.	48+75.00	42.67	RT	385032.39	2582806.2	INLET, TYPE RCI DES. 2 (B) W/ 4 L.F. 18 " PIPE STUB INTO STR. S-34	751, 755, 764, 765, 766, 767, 768	2.40	2.40	0.83	S-31	845.06	846.36	850.12	---	844.86 W
S-36	YALE AVE.	48+89.78	42.67	LT	385069.13	2582727.76	INLET, TYPE RCI DES. 2 (B) W/ 76 L.F. 18 " PIPE STUB INTO STR. S-34	751, 755, 764, 765, 766, 767, 768	2.33	2.33	0.78	S-32	845.74	846.03	850.55	---	845.23 E
S-37	RESIDENTIAL DRIVE	7+15.63	10.10	LT	384413.26	2582573.34	INLET (SMD-TYPE 2) W/ 28 L.F. 18 " PIPE AND 18" PCES	751, SMD-3-1, PCES-4-1	1.77	1.77	---	N/A	787.84	788.02	789.60	---	786.89 S
S-39	87TH ST.	11+72.71	28.00	LT	384177.45	2582969.06	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD) W/ 88 L.F. 18 " PIPE STUB INTO STR. S-20	751, 753, 755, 762, 764, 765, 766, 767	5.82	5.82	2.40	S-17	792.26	794.19	795.76	---	791.76 W
S-48	YALE AVE.	37+50.00	35.50	LT	383943.9	2582772.02	5 ' DIA. MANHOLE W/ 231 L.F. 30 " PIPE STUB INTO STR. S-11	751, 753, 775	N/A	63.36	N/A	N/A	770.37	774.53	779.05	772.20 N 771.56 E 775.55 W	768.53 S
S-49	YALE AVE.	40+20.11	35.50	LT	384203.98	2582748.74	5 DIA. MANHOLE W/ 91 L.F. 24 " PIPE STUB INTO STR. S-18	751, 753, 775	N/A	26.25	N/A	N/A	785.45	788.22	793.28	785.20 E 785.45 W	784.27 S
S-52	YALE AVE.	30+20.00	61.62	LT	383213.51	2582761.53	INLET (SMD-TYPE 2) W/ 50 L.F. 18 " PIPE STUB INTO STR. X-1	751, SMD-3-1	5.69	5.69	---	N/A	745.26	745.79	748.60	---	744.45 S
S-54	YALE AVE.	27+91.10	46.00	LT	382984.99	2582782.04	INLET, CI DES. 2 (B) W/ 90 L.F. 18 " PIPE STUB INTO STR. S-55	751, 755, 764, 765, 766, 767	3.82	3.82	0.89	OFFSITE	737.92	738.70	747.14	---	737.41 E
S-55	YALE AVE.	27+91.10	46.00	RT	382986.96	2582874.02	INLET W/ LRG. JCT. BOX, CI DES. 2 (B) W/ 33 L.F. 18 " PIPE STUB INTO EXIST 6.5' X 4' RCB	751, 753, 755, 762, 764, 765, 766, 767	2.87	6.91	0.50	OFFSITE	736.03	738.29	747.14	735.59 W	735.49 E
S-63	85TH ST.	8+94.94	13.00	LT	384982.52	2582639.66	INLET, CI DES. 4 (STD) W/ 24 L.F. 18 " PIPE STUB INTO STR. S-64	751, 755, 764, 765, 766, 767	2.63	7.25	0.58	S-32	844.01	845.47	848.98	843.45 N	843.35 S
S-64	85TH ST.	8+96.02	13.00	RT	384957.24	2582633.51	INLET, CI DES. 2 (B) W/ 73 L.F. 18 " PIPE AND 18" PCES	751, 755, 764, 765, 766, 767, PCES-4-1	0.67	7.89	0.04	S-32	837.33	839.86	848.96	842.65 N	836.76 S
S-65	85TH ST.	8+94.32	31.90	LT	385000.82	2582644.43	INLET (SMD-TYPE 2) W/ 17 L.F. 18 " PIPE STUB INTO STR. S-63	751, SMD-3-1	4.94	4.94	---	N/A	844.49	845.68	846.52	---	843.96 S
S-66	YALE AVE.	29+79.02	60.54	RT	383175.15	2582884.54	TIE TO EXIST 5'X4' RCB AND EXTEND W/ 189 L.F. 5'x4' RCB STUB INTO STR. S-67	SBI-4-2, RCB-C1-3&4&5(2-20)-01E	N/A	276.96	N/A	N/A	743.91	748.86	---	741.36 SE	737.05 S
S-67	YALE AVE.	27+95.94	86.78	RT	382992.67	2582914.69	MODIFY EXISTING STRUCTURE PER DRAINAGE DETAIL (2)	754, MJB-3-1, DRAINAGE DET. (2)	N/A	281.79	N/A	N/A	734.09	736.95	744.60	737.05 N	731.35 S
S-68	YALE AVE.	28+02.72	89.14	RT	382999.5	252916.9	TIE TO EXIST 15" RCP AND EXTEND W/ 4 L.F. 15 " PIPE STUB INTO STR. S-66	751	0.17	0.17	---	N/A	745.13	745.13	---	737.53 E	737.48 W

* STORM SEWER SYSTEM DESIGNED FOR 100-YR NETWORK WITH TIMES OF CONCENTRATION

MATCH LINE
SEE SHEET 52

FOR STORM SEWER PROFILES
SEE SHEETS 81 TO 92 AND 102

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

SUMMARY OF DRAINAGE STRUCTURES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR.	CAG	6/20	
	FIELD MGR.	ZWM	7/20	
	LEAD ENGR	BDD	10/20	
VERTICAL: 1"= NA	RECOMMENDED	HAS	7.20	
	DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Drainage_Struc_Summaries-1.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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SUMMARY OF DRAINAGE STRUCTURES (cont.)

STR. NO	STRUCTURAL INSTALLATION: CLASS AA CONCRETE	CLASS A CONCRETE, SMALL STRUCTURES	REINFORCING STEEL	STANDARD BEDDING MATERIAL, CLASS B (SPECIAL STRUCTURES ONLY)	TRENCH EXCAVATION (SPECIAL STRUCTURES ONLY)	MANHOLES: MANHOLE (4' DIAMETER), COMPLETE IN PLACE	MANHOLE (5' DIAMETER), COMPLETE IN PLACE	MANHOLE (6' DIAMETER), COMPLETE IN PLACE	ADD'L DEPTH IN 4' MANHOLE (STORM SEWER)	ADD'L DEPTH IN 5' MANHOLE (STORM SEWER)	ADD'L DEPTH IN 6' MANHOLE (STORM SEWER)	INLET DESIGN: INLET CI DES. 2 (B), COMPLETE IN PLACE	INLET, TYPE RCI DES. 2 (B), COMPLETE IN PLACE	INLET CI DES. 2 (D), COMPLETE IN PLACE	INLET CI DES. 4 (STD), COMPLETE IN PLACE	INLET, TYPE RCI DES. 4 (STD), COMPLETE IN PLACE	INLET CI DES. 4 (B), COMPLETE IN PLACE	INLET, TYPE RCI DES. 4 (B), COMPLETE IN PLACE	INLET CI DES. 4 (D), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 2 (B), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 2 (D), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD), COMPLETE IN PLACE	INLET (SMD-TYPE 2)	ADD'L DEPTH IN INLET CI DES. 2	ADD'L DEPTH IN INLET CI DES. 4	ADD'L DEPTH IN INLET W/ LJB, CI DES. 2	ADD'L DEPTH IN INLET W/ LJB, CI DES. 4	ADD'L DEPTH IN INLET (SMD-TYPE 2)	MH FRAME & COVER**	NUMBER OF INLET GRATE**	NUMBER OF CAST IRON HOOD**	PIPE: 15" PIPE, COMPLETE IN PLACE	18" PIPE, COMPLETE IN PLACE	24" PIPE, COMPLETE IN PLACE	30" PIPE, COMPLETE IN PLACE	36" PIPE, COMPLETE IN PLACE	END SECTION: 15" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE	18" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE
	509(A)	509(C)	511(A)	613(S)	613(V)	611(A)	611(A)	611(A)	611(B)	611(B)	611(B)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(H)	611(H)	611(H)	611(H)	611(H)	611(H)				REFER TO STORMWATER PIPE OPTIONS 1 & 2					613(L)	613(L)
	CY	CY	LB	CY	CY	EA	EA	EA	VF	VF	VF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	VF	VF	VF	VF	VF	VF	EA	EA	EA						EA	EA
S-1																				1						3.72			1	2	4			34				
S-2																				1						2.25			1	2	4			5				
S-3																							1															
S-4															1										0.95					4	4		82					
S-5															1										0.95					4	4		82					
S-6							1			2.18																			1								28	
S-7												1												2.64						2	4		3					
S-8							1			4.07																			1								145	
S-9															1										1.53					4	4		3					
S-10							1			4.00																			1								199	
S-11							1			4.47																			1						16			
S-12						1			1.34																				1				142					
S-13																							1					5.66					7					
S-14																1														4	4		4					
S-15																1									2.35					4	4		75					
S-16																1														4	4		4					
S-17																1									2.42					4	4		75					
S-18							1			4.23																			1						161			
S-19																						1					4.88		1	4	4			111				
S-20						1																							1					57				
S-21																							1											39				
S-22																1									3.84					4	4		4					
S-23							1			0.21																			1					66				
S-24																1									1.71					4	4		4					
S-25							1			5.96																			1				244					
S-26																1									2.14					4	4		4					
S-27							1			0.73																			1				83					
S-28												1												3.28						2	4		41					
S-29							1			1.57																			1				72					
S-30							1			0.53																			1				73					
S-31																1									2.51					4	4		4					
S-32															1										3.74					4	4		42					
S-33							1			0.26																			1				83					
S-34							1																						1				249					
S-35													1											1.55						2	4		4					
S-36													1											1.61						2	4		76					
S-37																							1										28					1
S-39																						1					0.96		1	4	4		88					
S-48							1			4.52																			1						231			
S-49							1			3.01																			1					91				
S-52																							1					0.44					50					
S-54												1												6.02						2	4		90					
S-55																				1				8.61					1	2	4		33					
S-63															1										1.92					4	4		24					
S-64												1												8.49						2	4		73					1
S-65																							1										17					
S-66	101		17,100	643	42																																	
S-67	2.5		500																																			
S-68																																4						

** FOR INFORMATION ONLY

SEE SHEET 54 FOR TOTALS

MATCH LINE
SEE SHEET 51

FOR STORM SEWER PROFILES
SEE SHEETS 81 TO 92 AND 102

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

SUMMARY OF DRAINAGE STRUCTURES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20	
	FIELD MGR	ZWR	7/20	
VERTICAL: 1"= NA	LEAD ENGR	BOC	6/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER

FILE: 313925-C-Drainage_Struc_Summaries-2.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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SUMMARY OF DRAINAGE STRUCTURES

STR. NO	ALIGNMENT	STATION			NORTHING	EASTING	DESCRIPTION	CITY OF TULSA/ODOT DESIGN STANDARDS	STORM SEWER DESIGN CRITERIA: CAPTURED "Q" * (CFS)	TOTAL "Q" IN STRUCTURE * (CFS)	BY-PASS "Q" * (CFS)	BY-PASS "Q" TO STR. NO.	HYDRAULIC GRADELINE * (100-YEAR FT)	ENERGY GRADELINE * (100-YEAR FT)	ELEV. TOP MANHOLE OR GRATE (FT)	FLOWLINE IN (FT)	FLOWLINE OUT (FT)
N-1	YALE AVE.	56+74.65	35.50	LT	385808.81	2582839.13	4 ' DIA. MANHOLE W/ 37 L.F. 18 " PIPE STUB INTO STR. N-2	751, 753, 775	N/A	14.48	N/A	N/A	826.21	830.27	832.00	825.93 S	825.46 N
N-2	YALE AVE.	57+18.69	35.50	LT	385846.75	2582823.24	4 ' DIA. MANHOLE W/ 65 L.F. 18 " PIPE STUB INTO STR. N-10	751, 753, 775	N/A	14.45	N/A	N/A	823.01	827.07	828.70	822.73 S	822.25 N
N-3	YALE AVE.	56+15.08	66.00	RT	385780.34	2582954.05	INLET (SMD-TYPE 2) W/ 5 L.F. 18 " PIPE STUB INTO STR. N-43	751, SMD-3-1	4.31	4.31	---	N/A	835.11	835.93	838.15	---	834.56 NW
N-4	YALE AVE.	56+17.37	8.00	RT	385768.51	2582897.23	INLET, CI DES. 4 (STD) W/ 43 L.F. 18 " PIPE STUB INTO STR. N-5	751, 755, 764, 765, 766, 767	3.87	9.39	2.12	N-11	830.19	830.89	837.06	829.08 E	829.08 W
N-5	YALE AVE.	56+30.61	35.50	LT	385769.7	2582851.87	5 ' DIA. MANHOLE W/ 37 L.F. 18 " PIPE STUB INTO STR. N-1	751, 753, 775	N/A	14.50	N/A	N/A	829.39	833.46	835.09	828.66 E 829.25 W	828.63 N
N-6	YALE AVE.	56+30.61	42.67	LT	385767.76	2582844.97	INLET, TYPE RCI DES. 4 (B) W/ 4 L.F. 18 " PIPE STUB INTO STR. N-5	751, 755, 764, 765, 766, 767, 768	5.59	5.59	1.84	N-11	829.94	830.89	834.83	---	829.32 E
N-7	84TH ST.	10+93.02	7.50	RT	385812.84	2582966.58	INLET W/ LRG. JCT. BOX, CI DES. 2 (B) W/ 31 L.F. 18 " PIPE STUB INTO STR. N-43	751, 753, 755, 762, 764, 765, 766, 767	0.66	1.42	0.04	N-16	830.25	830.51	837.83	829.87 NW	829.87 SW
N-8	84TH ST.	10+76.83	27.60	LT	385847.60	2582949.67	INLET, CI DES. 2 (B) W/ 31 L.F. 18 " PIPE STUB INTO STR. N-7	751, 755, 764, 765, 766, 767	0.76	0.76	0.06	N-16	830.46	830.64	835.67	---	830.18 SE
N-9	YALE AVE.	57+88.00	8.00	RT	385927.96	2582833.29	INLET, CI DES. 4 (D) W/ 41 L.F. 18 " PIPE STUB INTO STR. N-10	751, 755, 764, 765, 766, 767	0.61	0.61	0.21	N-16	818.58	818.85	824.15	---	818.30 W
N-10	YALE AVE.	57+88.00	35.50	LT	385909.54	2582793.88	5 ' DIA. MANHOLE W/ 314 L.F. 18 " PIPE STUB INTO STR. N-14	751, 753, 775	N/A	19.29	N/A	N/A	817.87	822.84	823.21	817.49 S 817.49 E 817.49 W	816.99 N
N-11	YALE AVE.	57+88.00	42.67	LT	385906.5	2582787.39	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. N-10	751, 755, 764, 765, 766, 767, 768	4.90	4.90	1.43	N-19	818.13	819.02	822.96	---	817.56 E
N-14	YALE AVE.	61+05.57	35.50	LT	386198.11	2582659.16	5 ' DIA. MANHOLE W/ 24 L.F. 24 " PIPE STUB INTO STR. N-17	751, 753, 775	N/A	19.06	N/A	N/A	792.28	795.48	799.45	791.90 S	791.04 E
N-15	YALE AVE.	61+08.01	35.50	RT	386228.63	2582723.31	5 ' DIA. MANHOLE W/ 50 L.F. 24 " PIPE STUB INTO STR. N-18	751, 753, 775	N/A	24.37	N/A	N/A	789.18	792.82	797.61	788.67 E 788.17 W	788.17 N
N-16	YALE AVE.	61+08.01	42.67	RT	386231.47	2582729.89	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. N-15	751, 755, 764, 765, 766, 767, 768	4.64	4.64	1.86	N-21	789.30	790.15	797.36	---	788.74 W
N-17	YALE AVE.	61+08.00	8.00	LT	386211.38	2582683.38	INLET, CI DES. 2 (B) W/ 41 L.F. 24 " PIPE STUB INTO STR. N-15	751, 755, 764, 765, 766, 767	1.38	20.41	0.26	N-19	791.07	794.40	798.68	789.98 W	789.98 E
N-18	YALE AVE.	61+66.51	35.50	RT	386279.88	2582704.41	5 ' DIA. MANHOLE W/ 50 L.F. 24 " PIPE STUB INTO STR. N-20	751, 753, 775	N/A	24.31	N/A	N/A	785.12	787.79	792.93	785.95 S	783.99 N
N-19	YALE AVE.	62+25.00	8.00	LT	386324.62	2582648.45	INLET, CI DES. 4 (B) W/ 41 L.F. 18 " PIPE STUB INTO STR. N-20	751, 755, 764, 765, 766, 767	5.64	5.64	1.87	N-24	784.71	785.83	789.33	---	784.01 E
N-20	YALE AVE.	62+25.01	35.50	RT	386332.88	2582691.16	5 ' DIA. MANHOLE W/ 83 L.F. 24 " PIPE STUB INTO STR. N-22	751, 753, 775	N/A	31.60	N/A	N/A	778.58	781.57	788.25	782.50 S 783.00 E 783.00 W	777.22 N
N-21	YALE AVE.	62+25.00	42.67	RT	386334.23	2582698.2	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. N-20	751, 755, 764, 765, 766, 767, 768	2.78	2.78	0.72	N-26	783.47	784.33	788.01	---	783.10 W
N-22	YALE AVE.	63+19.05	35.50	RT	386420.15	2582682.07	5 ' DIA. MANHOLE W/ 83 L.F. 24 " PIPE STUB INTO STR. N-23	751, 753, 775	N/A	31.47	N/A	N/A	771.07	774.05	780.73	774.74 S	769.73 N
N-23	YALE AVE.	64+13.10	35.50	RT	386507.69	2582688.24	5 ' DIA. MANHOLE W/ 77 L.F. 30 " PIPE STUB INTO STR. N-25	751, 753, 775	N/A	34.33	N/A	N/A	763.32	766.52	773.20	767.25 S 767.75 W	762.10 N
N-24	YALE AVE.	64+06.00	8.00	LT	386507.39	2582644.20	INLET, CI DES. 2 (D) W/ 41 L.F. 18 " PIPE STUB INTO STR. N-23	751, 755, 764, 765, 766, 767	3.59	3.59	1.21	N-31	768.96	769.57	774.85	---	768.36 E
N-25	YALE AVE.	64+95.00	37.00	RT	386587.43	2582703.74	5 ' DIA. MANHOLE W/ 104 L.F. 30 " PIPE STUB INTO STR. N-32	751, 753, 775	N/A	37.39	N/A	N/A	755.96	759.30	766.65	759.81 S 760.81 E	754.67 N
N-26	YALE AVE.	64+95.00	44.12	RT	386585.9	2582710.75	INLET, TYPE RCI DES. 4 (STD) W/ 4 L.F. 18 " PIPE STUB INTO STR. N-25	751, 755, 764, 765, 766, 767, 768	3.84	3.84	1.31	N-30	761.38	762.15	766.41	---	760.88 W
N-27	YALE AVE.	65+83.55	87.50	RT	386665.89	2582768.93	INLET (SMD-TYPE 2) W/ 22 L.F. 18 " PIPE STUB INTO STR. N-36	751, SMD-3-1	16.19	16.19	---	N/A	755.44	757.22	766.22	---	754.25 NW
N-28	YALE AVE.	69+52.00	59.56	RT	387042.76	2582799.60	INLET (SMD-TYPE 2) W/ 5 L.F. 18 " PIPE STUB INTO STR. N-33	751, SMD-3-1	5.83	5.82	---	N/A	730.17	731.27	733.60	---	729.55 W
N-29	YALE AVE.	67+25.00	39.50	RT	386813.53	2582746.29	5 ' DIA. MANHOLE W/ 100 L.F. 36 " PIPE STUB INTO STR. N-42	751, 753, 775	N/A	64.19	N/A	N/A	736.21	740.58	748.30	740.30 S 741.80 E 741.80 W	734.62 N
N-30	YALE AVE.	67+25.00	46.00	RT	386812.40	2582752.69	INLET, CI DES. 4 (STD) W/ 3 L.F. 18 " PIPE STUB INTO STR. N-29	751, 755, 764, 765, 766, 767	4.69	4.69	1.32	N-33	742.53	743.05	748.07	---	741.83 W
N-31	YALE AVE.	67+25.00	46.00	LT	386828.42	2582662.10	INLET W/ LRG. JCT. BOX, CI DES. 2 (B) W/ 82 L.F. 18 " PIPE STUB INTO STR. N-29	751, 753, 755, 762, 764, 765, 766, 767	3.81	7.20	2.18	N-34	743.53	744.17	748.07	742.72 W	742.62 E
N-32	YALE AVE.	66+03.35	39.50	RT	386693.73	2582725.19	5 ' DIA. MANHOLE W/ 60 L.F. 30 " PIPE STUB INTO STR. N-38	751, 753, 775	N/A	52.18	N/A	N/A	749.30	753.18	758.00	751.57 S 752.57 E	747.71 N
N-33	YALE AVE.	69+51.44	46.00	RT	387042.64	2582786.03	INLET W/ LRG. JCT. BOX, CI DES. 2 (D) W/ 42 L.F. 18 " PIPE STUB INTO STR. N-44	751, 753, 755, 762, 764, 765, 766, 767	3.90	9.74	1.15	OFFSITE	726.59	727.84	733.73	729.44 E	725.71 W
N-34	YALE AVE.	69+48.07	46.57	LT	387042.77	2582696.41	INLET, CI DES. 4 (STD) W/ 43 L.F. 18 " PIPE STUB INTO STR. N-44	751, 755, 764, 765, 766, 767	4.40	4.40	1.28	OFFSITE	726.28	727.11	734.54	---	725.72 E
N-36	YALE AVE.	66+03.38	71.75	RT	386688.16	2582756.88	4 ' DIA. MANHOLE W/ 28 L.F. 18 " PIPE STUB INTO STR. N-32	751, 753, 775	N/A	16.16	N/A	N/A	754.46	756.24	759.00	753.69 SE	753.27 W
N-38	YALE AVE.	66+68.28	39.50	RT	386757.68	2582736.43	5 ' DIA. MANHOLE W/ 52 L.F. 36 " PIPE STUB INTO STR. N-29	751, 753, 775	N/A	54.41	N/A	N/A	743.28	747.31	752.81	745.92 S 742.85 SE	741.84 N
N-39	COMMERICAL DRIVE (1)	10+66.10	13.00	LT	386737.56	2582759.68	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD) W/ 26 L.F. 18 " PIPE STUB INTO STR. N-38	751, 755, 764, 765, 766, 767	2.68	2.68	0.60	N-30	744.00	744.84	754.62	---	743.61 NW
N-40	YALE AVE.	68+30.82	64.98	RT	386913.30	2582789.81	15" PCES TIE ONTO EXISTING 15" RCP	PCES-4-1	21.33	21.33	---	N/A	---	---	---	---	739.95 W
N-41	YALE AVE.	68+31.85	60.43	RT	386915.11	2582785.51	INLET (SMD-TYPE 2) W/ 17 L.F. 24 " PIPE STUB INTO STR. N-42	751, SMD-3-1	21.33	21.33	---	N-28	736.26	738.10	739.95	---	735.06 W
N-42	YALE AVE.	68+31.85	39.50	RT	386918.75	2582764.89	6 ' DIA. MANHOLE W/ 122 L.F. 36 " PIPE STUB INTO STR. N-44	751, 754, 775	N/A	84.71	N/A	N/A	733.49	738.44	740.56	731.58 S 734.73 E	731.58 N
N-43	YALE AVE.	56+20.13	61.00	RT	385784.58	2582947.82	4 ' DIA. MANHOLE W/ 50 L.F. 18 " PIPE STUB INTO STR. N-4	751, 753, 775	N/A	5.55	N/A	N/A	830.35	830.91	838.61	829.57 NE 834.47 SE	829.57 W
N-44	YALE AVE.	69+50.76	0.50	RT	387043.57	2582740.54	7' X 6' JCT. BOX TIE INTO EXISTING EXIST 4' X 4' RCB	754, MJB-3-1	N/A	96.82	N/A	N/A	724.24	726.87	734.75	727.95 S 724.88 E 724.88 W	722.38 N
N-51	YALE AVE.	67+06.00	69.60	LT	386813.82	2582635.55	INLET (SMD-TYPE 2) W/ 26 L.F. 18 " PIPE STUB INTO STR. N-31	751, SMD-3-1	3.44	3.43	---	N/A	743.71	744.44	747.00	---	743.22 E
T-1	YALE AVE.	66+61.65	144.56	LT	386783.19	2582554.01	4 ' DIA. MANHOLE W/ 185 L.F. 18 " PIPE AND 18" PCES	751, 753, 775, 776	N/A	19.06	N/A	N/A	---	---	747.75	742.75 S	741.75 NE
T-2	YALE AVE.	64+20.29	151.17	LT	386546.04	2582505.39	4 ' DIA. MANHOLE W/ 238 L.F. 18 " PIPE STUB INTO STR. T-1	751, 753, 775	N/A	19.06	N/A	N/A	---	---	761.31	756.31 S	755.31 N
T-3	YALE AVE.	61+05.57	35.50	LT	386198.11	2582659.16	STUB INTO STR. N-14 W/ 376 L.F. 18 " PIPE STUB INTO STR. T-2	751	N/A	19.06	N/A	N/A	---	---	---	791.04 N	756.31 N

* STORM SEWER SYSTEM DESIGNED FOR 100-YR NETWORK WITH TIMES OF CONCENTRATION

MATCH LINE
SEE SHEET 54

FOR STORM SEWER PROFILES
SEE SHEETS 93 TO 101

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

SUMMARY OF DRAINAGE STRUCTURES (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR	ZTM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BDC	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Drainage_Struc_Summaries-3.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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SUMMARY OF DRAINAGE STRUCTURES (cont.)

STR. NO	STRUCTURAL INSTALLATION: CLASS AA CONCRETE	CLASS A CONCRETE, SMALL STRUCTURES	REINFORCING STEEL	STANDARD BEDDING MATERIAL, CLASS B (SPECIAL STRUCTURES ONLY)	TRENCH EXCAVATION (SPECIAL STRUCTURES ONLY)	MANHOLES: MANHOLE (4' DIAMETER), COMPLETE IN PLACE	MANHOLE (5' DIAMETER), COMPLETE IN PLACE	MANHOLE (6' DIAMETER), COMPLETE IN PLACE	ADD'L DEPTH IN 4' MANHOLE (STORM SEWER)	ADD'L DEPTH IN 5' MANHOLE (STORM SEWER)	ADD'L DEPTH IN 6' MANHOLE (STORM SEWER)	INLET DESIGN: INLET CI DES. 2 (B), COMPLETE IN PLACE	INLET, TYPE RCI DES. 2 (B), COMPLETE IN PLACE	INLET CI DES. 2 (D), COMPLETE IN PLACE	INLET CI DES. 4 (STD), COMPLETE IN PLACE	INLET, TYPE RCI DES. 4 (STD), COMPLETE IN PLACE	INLET CI DES. 4 (B), COMPLETE IN PLACE	INLET, TYPE RCI DES. 4 (B), COMPLETE IN PLACE	INLET CI DES. 4 (D), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 2 (B), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 2 (D), COMPLETE IN PLACE	INLET W/ LRG. JCT. BOX, CI DES. 4 (STD), COMPLETE IN PLACE	INLET (SMD-TYPE 2)	ADD'L DEPTH IN INLET CI DES. 2	ADD'L DEPTH IN INLET CI DES. 4	ADD'L DEPTH IN INLET W/ LJB, CI DES. 2	ADD'L DEPTH IN INLET W/ LJB, CI DES. 4	ADD'L DEPTH IN INLET (SMD-TYPE 2)	MH FRAME & COVER**	NUMBER OF INLET GRATE**	NUMBER OF CAST IRON HOOD**	PIPE: 15" PIPE, COMPLETE IN PLACE	18" PIPE, COMPLETE IN PLACE	24" PIPE, COMPLETE IN PLACE	30" PIPE, COMPLETE IN PLACE	36" PIPE, COMPLETE IN PLACE	END SECTION: 15" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE	18" PREFAB. CULVERT END SECTION, ROUND, COMPLETE IN PLACE
	509(A)	509(C)	511(A)	613(S)	613(V)	611(A)	611(A)	611(A)	611(B)	611(B)	611(B)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(G)	611(H)	611(H)	611(H)	611(H)	611(H)				REFER TO STORMWATER PIPE OPTIONS 1 & 2					613(L)	613(L)
	CY	CY	LB	CY	CY	EA	EA	EA	VF	VF	VF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	VF	VF	VF	VF	VF	EA	EA	EA						EA	EA
N-1						1			0.54																				1				37					
N-2						1			0.45																				1				65					
N-3																							1										5					
N-4															1										4.27					4	4		43					
N-5							1			0.46																			1				37					
N-6																			1						1.80					4	6		4					
N-7																					1					4.92			1	2	4		31					
N-8												1												1.78						2	4		31					
N-9																				1				2.14						4	8		41					
N-10							1			0.22																			1				314					
N-11																1									1.69					4	4		4					
N-14							1			2.41																			1					24				
N-15							1			3.44																			1					50				
N-16																1									4.91					4	4		4					
N-17												1												4.99						2	4			41				
N-18							1			1.61																			1					50				
N-19																		1							1.61					4	6		41					
N-20							1			5.03																			1					83				
N-21																1									1.20					4	4		4					
N-22							1			5.00																			1					83				
N-23							1			5.10																			1						77			
N-24														1										2.78						2	6		41					
N-25							1			5.98																			1						104			
N-26																1									1.82					4	4		4					
N-27																							1					8.26					22					
N-28																							1					0.34					5					
N-29							1			7.68																			1							100		
N-30															1										2.53					4	4		3					
N-31																					1			1.74					1	2	4		82					
N-32							1			4.29																			1						60			
N-33																						1				4.98			1	2	6		42					
N-34															1										5.11					4	4		43					
N-36						1																							1				28					
N-38							1			4.97																			1							52		
N-39																						1		7.30					1	4	4		26					
N-40																																					1	
N-41																							1					1.18						17				
N-42								1			2.98																		1							122		
N-43						1			3.04																				1				50					
N-44	3	10.00	287																										1									
N-51																							1					0.07					26					
T-1						1																							1				185					1
T-2						1																							1				238					
T-3																																	376					
TOTALS	**107**	**10.00**	**17,887**	**643**	**42**	**8**	**26**	**1**	**6**	**82**	**3**	**6**	**2**	**1**	**8**	**12**	**1**	**1**	**1**	**5**	**1**	**3**	**11**	**53**	**49**	**16**	**6**	**16**	**45**	**134**	**176**	**4**	**3,695**	**751**	**649**	**646**	**1**	**3**

** FOR INFORMATION ONLY

MATCH LINE
SEE SHEET 53

FOR STORM SEWER PROFILES
SEE SHEETS 93 TO 101

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

SUMMARY OF DRAINAGE STRUCTURES (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		6/20
	RECOMMENDED DESIGN MANAGER	HAS	7.20

APPROVED: CITY ENGINEER

FILE: 313925-C-Drainage_Struc_Summaries-4.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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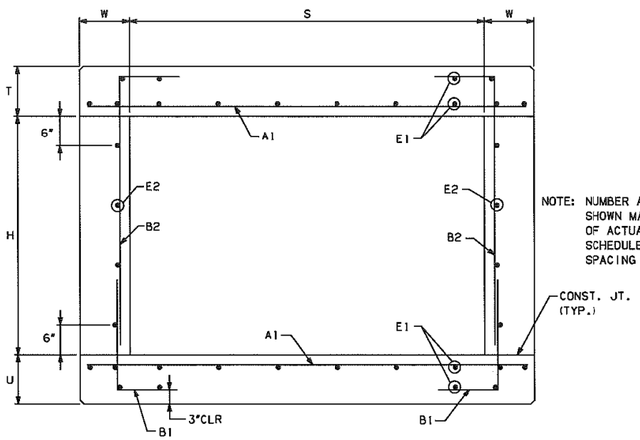
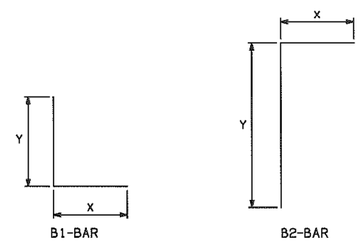
SECTION DIMENSIONS					REINFORCING STEEL																								SECTION DIMENSIONS		QUANTITIES PER FOOT OF BARREL	
					A1-BARS				B1-BARS						B2-BARS						E1-BARS AT 12" MAX.			E2-BARS AT 12" MAX.							
S	H	T	U	W	SIZE	SPA	LENGTH	WEIGHT PER FT.	SIZE	SPA	"X"	"Y"	LENGTH	WEIGHT PER FT.	SIZE	SPA	"X"	"Y"	LENGTH	WEIGHT PER FT.	NO.	SIZE	WEIGHT PER FT.	NO.	SIZE	WEIGHT PER FT.	S	H	CONC. (C.Y.)	REINF. (LB.)
3'	2'	7"	8"	6"	#5	6"	3'-8"	15.3	#4	12"	0'-8"	1'-9"	2'-5"	3.2	#4	12"	0'-8"	2'-5"	3'-1"	4.1	18	#4	12.0	4	#4	2.7	3'	2'	0.26	37.3
3'	3'	7"	8"	7"	#5	6"	3'-10"	16.0	#4	12"	0'-8"	1'-9"	2'-5"	3.2	#4	12"	0'-8"	3'-5"	4'-1"	5.5	18	#4	12.0	6	#4	4.0	3'	3'	0.32	40.7
4'	2'	9"	10"	7"	#5	6"	4'-10"	20.2	#4	12"	0'-8"	1'-11"	2'-7"	3.5	#4	12"	0'-8"	2'-7"	3'-3"	4.3	20	#4	13.4	4	#4	2.7	4'	2'	0.39	44.1
4'	3'	9"	10"	7"	#5	6"	4'-10"	20.2	#4	12"	0'-8"	1'-11"	2'-7"	3.5	#4	12"	0'-8"	3'-7"	4'-3"	5.7	20	#4	13.4	6	#4	4.0	4'	3'	0.43	46.8
4'	4'	9"	10"	8"	#5	6"	5'-0"	20.9	#5	12"	0'-10"	2'-3"	3'-1"	6.4	#5	12"	0'-10"	4'-7"	5'-5"	11.3	20	#4	13.4	8	#4	5.3	4'	4'	0.51	57.3
5'	2'	9"	10"	6"	#6	6"	5'-8"	34.0	#4	12"	0'-8"	1'-11"	2'-7"	3.5	#4	12"	0'-8"	2'-7"	3'-3"	4.3	22	#4	14.7	4	#4	2.7	5'	2'	0.43	59.2
5'	3'	9"	10"	6"	#6	6"	5'-8"	34.0	#5	6"	0'-10"	2'-3"	3'-1"	12.9	#5	6"	0'-10"	3'-7"	4'-5"	18.4	22	#4	14.7	6	#4	4.0	5'	3'	0.46	84.0
5'	4'	9"	10"	7"	#6	6"	5'-10"	35.0	#5	6"	0'-10"	2'-3"	3'-1"	12.9	#5	6"	0'-10"	4'-7"	5'-5"	22.6	22	#4	14.7	8	#4	5.3	5'	4'	0.53	90.5
5'	5'	9"	10"	8"	#6	6"	6'-0"	36.0	#5	6"	0'-10"	2'-3"	3'-1"	12.9	#5	6"	0'-10"	5'-7"	6'-5"	26.8	22	#4	14.7	10	#4	6.7	5'	5'	0.62	97.1
5'	7'	10"	11"	10"	#6	6"	6'-4"	38.1	#5	6"	0'-10"	2'-4"	3'-2"	13.2	#5	6"	0'-10"	7'-8"	8'-6"	35.5	22	#4	14.7	14	#4	9.4	5'	7'	0.86	110.9



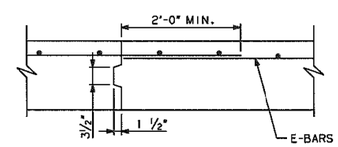
NOTE: NUMBER AND SPACING OF E-BARS SHOWN MAY NOT BE REPRESENTATIVE OF ACTUAL CULVERT SECTIONS, SEE SCHEDULE ABOVE FOR NUMBER AND SPACING OF E-BARS.

BARREL SECTION



BAR BEND DIAGRAMS

NOTE: ALL "X" DIMENSIONS ARE HORIZONTAL IN BARREL SECTION.
ALL "Y" DIMENSIONS ARE VERTICAL IN BARREL SECTION.



TRANSV. CONSTR. JOINT

DESIGN DATA:

1. DESIGNED IN ACCORDANCE WITH 2007 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND INTERIM SPECIFICATIONS FROM 2008.
2. DESIGNED FOR HL-93 LOADING AND ODOT OVERLOAD TRUCK.
3. MATERIALS:
   CONCRETE (CLASS AA) f'c = 4 KSI
   REINFORCING STEEL fy = 60 KSI

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
2. ALL CONCRETE EDGES SHALL HAVE A 1 ½" CHAMFER UNLESS OTHERWISE SHOWN OR NOTED. ALL CHAMFER STRIPS SHALL BE SIZED LUMBER.
3. ALL REINFORCING STEEL SHALL HAVE A 2" MINIMUM CLEAR COVER UNLESS OTHERWISE SHOWN.
4. THE QUANTITY FOR REINFORCING STEEL DOES NOT INCLUDE LAP SPLICES OF E1-BARS OR E2-BARS IN THE LENGTH OF THE BARREL OR AT TRANSVERSE CONSTRUCTION JOINTS. THE SPLICE LENGTH FOR E-BARS SHALL BE 24" MINIMUM. THE NUMBER OF SPLICES USED IS TO BE APPROVED BY THE ENGINEER. REINFORCING STEEL FOR SPLICES SHALL NOT BE MEASURED FOR PAYMENT, AND ALL COSTS WILL BE INCLUDED IN THE UNIT BID PRICE FOR REINFORCING STEEL.
5. TRANSVERSE CONSTRUCTION JOINTS SHALL BE PLACED IN ALL CULVERTS 100 FT. OR MORE IN LENGTH. JOINTS SHALL BE SPACED AT 60 FT. MAX.
6. REINFORCING STEEL SHALL BE CONTINUOUS THROUGH THE TRANSVERSE CONSTRUCTION JOINT AND EXTEND A MIN. OF 24" INTO ADJACENT SECTION.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
509.06 (A)	CLASS AA CONCRETE	C.Y.
511.06 (A)	REINFORCING STEEL	LB.

ODOT STANDARD DRAWING

REVISIONS		
DESCRIPTION		DATE

APPROVED BY BRIDGE ENGINEER DATE 4/2/10

OKLAHOMA DEPT. OF TRANSPORTATION
BRIDGE STANDARD (ENGLISH)
RCB CULVERTS - BARREL DETAILS
3'-0", 4'-0" & 5'-0" SPANS - SINGLE CELL
2 FT. TO 20 FT. FILL

2009 SPECIFICATIONS | RCB-C1-3&4&5(2-20) | 01E | B-510E

DRAINAGE DETAIL (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Drain_Det_01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 55 OF 334 SHEETS

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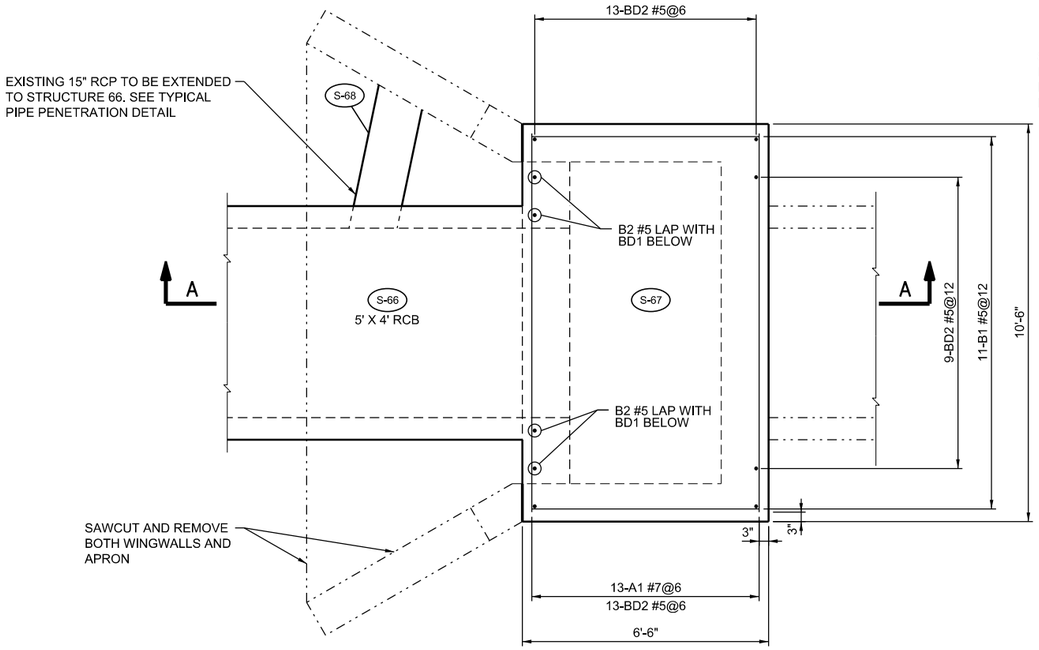
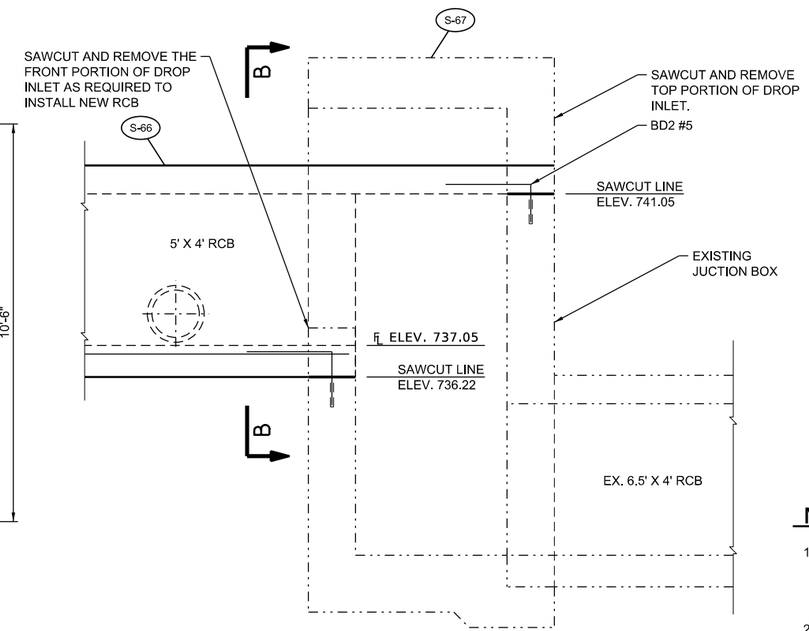


STR. 66 & 67 - PLAN

SCALE: NONE



SECTION A-A

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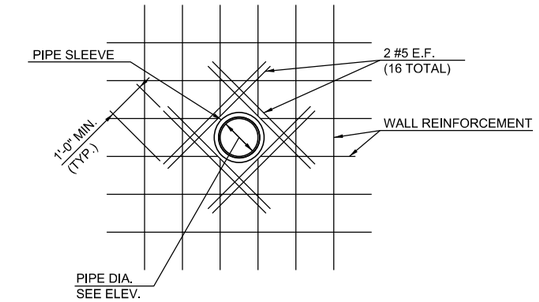


NOTE:

FOR LOCATIONS WHERE WALL PENETRATION SEAL IS REQUIRED, SIZE OPENING TO ACCOMODATE WALL SLEEVE. SEE SHEET 69 FOR LOCATIONS.

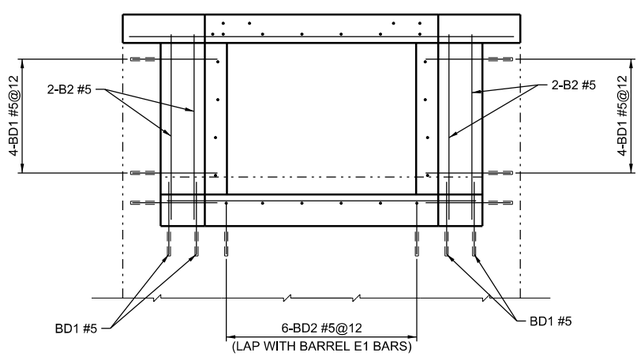
TYPICAL PIPE PENETRATION

SCALE: NONE

NOTE:

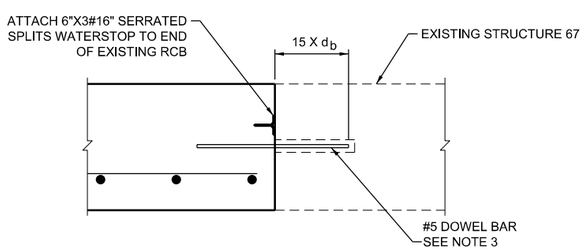
1. CONTRACTOR SHALL FIELD VERIFY EXISTING JUNCTION BOX DIMENSIONS PRIOR TO CONSTRUCTION. IF THE EXISTING DIMENSIONS DO NOT MATCH THE PLANS, THEN THE CONTRACTOR SHALL ADJUST THE INFILL WALLS AND REBAR AS REQUIRED FOR CONSTRUCTION.
2. CONTRACTOR SHALL PROVIDE A WATERSTOP ALONG JOINTS OF THE NEW BOX STRUCTURE. COST OF WATERSTOP MATERIALS AND LABOR SHALL BE INCLUDED IN THE BID PRICE PER CY OF "CLASS AA CONCRETE"
3. CONTRACTOR SHALL DRILL AND EPOXY GROUT A MINIMUM OF (15xdb) OR AS PER MANUFACTURER'S SPECIFICATIONS. ALL COST FOR DRILL AND EPOXY GROUT SHALL BE INCLUDED IN THE BID PRICE PER CY OF "CLASS AA CONCRETE".
4. COST OF REMOVAL OF EXISTING JUNCTION BOX SHALL BE INCLUDED IN THE BID PRICE PER CY OF "CLASS AA CONCRETE".
5. REMOVE A SUFFICIENT AMOUNT OF EXISTING JUNCTION BOX TO ENSURE FLOWLINE AT END OF STRUCTURE 66 IS AT ELEVATION 737.05.
6. SEE ODOT STANDARD RCB-C1-3&4&5(2-20) FOR ADDITIONAL INFORMATION.

FOR RCB LOCATION
SEE SHEETS 69 AND 82



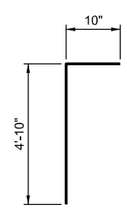
SECTION B-B

SCALE: NONE

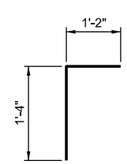


PLAN VIEW RCB WALL

SCALE: NONE



B2 #5 X 5'-8"



BD2 #5 X 2'-6"

STRUCTURE 66 QUANTITES

ITEM	UNIT	TOTAL
CLASS AA CONCRETE	CY	101.0
REINFORCING STEEL	LB	17100

STRUCTURE 67 QUANTITES

ITEM	UNIT	TOTAL
CLASS AA CONCRETE	CY	2.5
REINFORCING STEEL	LB	500

STRUCTURE 67 REINFORCING

(REINFORCING SHOWN IS PER BOX)

MARK	SIZE	QTY.	FORM	LENGTH	REMARKS
A1	#7	13	STR.	10'-0"	
B1	#5	11	STR.	6'-0"	
B2	#5	4	BNT.	5'-8"	
BD1	#5	12	STR.	2'-3"	
BD2	#5	41	BNT.	2'-6"	

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-26-2018

DRAINAGE DETAIL (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	01/16
	DESIGNED	KSJ	01/16
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CMG	6/20
	FIELD MGR	ZMM	7/20
	LEAD ENGR	BDC	6/20
VERTICAL: 1"= NA	RECOMMENDED	HBS	7-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER
DATE: OCTOBER 2018

FILE: 313925-C-Drain_Det_02.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006

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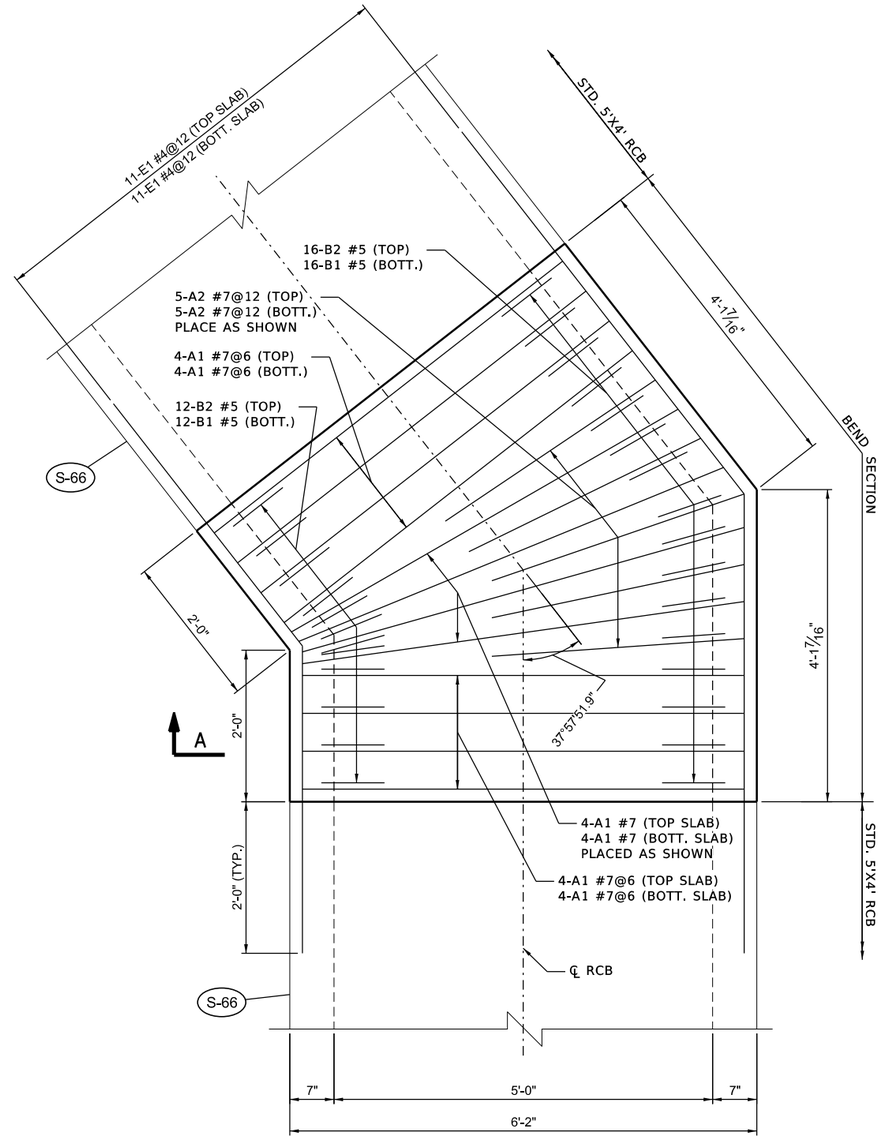
BEND SECTION BAR LIST
(STR. 66)

MARK	SIZE	QTY.	FORM	LENGTH	REMARKS
A1	#7	16	STR.	5'-10"	
A2	#7	8	STR.	6'-0" (AVG.)	5'-11" TO 6'-1"
A3	#7	10	STR.	3'-5" (AVG.)	3'-4" TO 3'-6" NOTE 3
B1	#5	27	BNT.	3'-1"	
B2	#5	28	BNT.	5'-5"	
E1	#5	28	BNT.	10'-2" (AVG.)	8'-2" TO 12'-2" NOTE 1,2
E2	#4	4	BNT.	8'-4"	NOTE 1
E3	#4	4	BNT.	12'-0"	NOTE 1

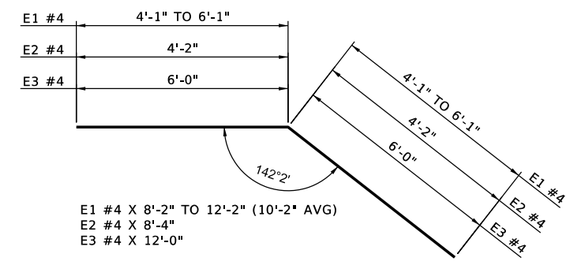
NOTES:

1. INCLUDES (2) 2'-0" EXTENSIONS (ONE INTO EACH OF TWO STANDARD 5'x4' RCB BARRELS).
2. 2 SETS OF 11 REQUIRED.
3. 2 SETS OF 5 REQUIRED.

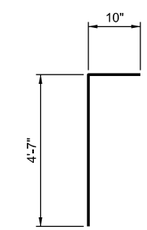


TOP AND BOTTOM SLAB REINFORCING.
SEE SECTION A-A FOR ADDITIONAL WALL REINFORCING

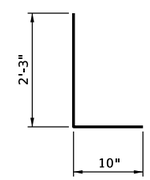
BEND REINFORCING DETAIL



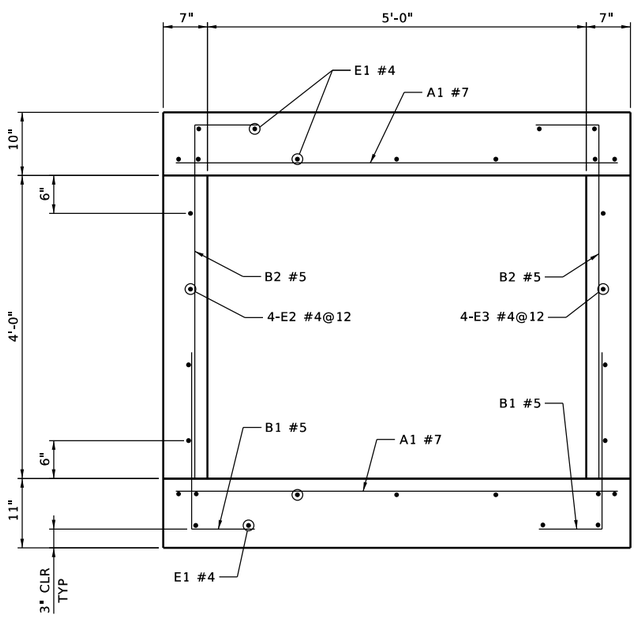
E1 #4 X 8'-2" TO 12'-2" (10'-2" AVG)
E2 #4 X 8'-4"
E3 #4 X 12'-0"



B2 #5 x 5'-5"



B1 #5 X 3'-1"



SECTION A-A

STRUCTURE 66 BEND QUANTITIES

ITEM	UNIT	TOTAL
CLASS AA CONCRETE	CY	2.7
REINFORCING STEEL	LB	890

DRAINAGE DETAIL (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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(918) 492-1600

REVISION	BY	DATE

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	FIELD MGR		7/20	
VERTICAL: 1" = NA	LEAD ENGR		6/20	
	RECOMMENDED HAS 7-20 DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Drain_Det_03.dgn DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006 SHEET 57 OF 334 SHEETS

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: S. YALE AVENUE BETWEEN 81st STREET SOUTH & 91st STREET SOUTH.

PROJECT DESCRIPTION: ARTERIAL STREET WIDENING.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:

1) AS GRADING OPERATIONS PROCEED, INSTALL TEMPORARY CONTROL DEVICES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THESE DEVICES SHALL BE MAINTAINED AS REQUIRED BY THE CITY OF TULSA STANDARD SPECIFICATIONS AND THE WEEKLY INSPECTION REPORTS PER PHASE.
2) PLACE PERMANENT SOLID SLAB SODDING PER PHASE.

SOIL TYPE: GRAVEL, FAT CLAY, LEAN CLAY, SAND, SILT, SHALE, SANDSTONE

TOTAL AREA OF THE CONSTRUCTION SITE: 20.13 AC

ESTIMATED AREA TO BE DISTURBED: 14.81 AC

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 5.48 AC

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 10.01 AC

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: 0.72 AC

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 36°02'22"N; 95°55'20"W

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: VENSEL CREEK

SENSITIVE WATERS OR WATERSHEDS: YES ☐ NO ☒

303(d) IMPAIRED WATERS: YES ☐ NO ☒

IF YES, LIST IMPAIRMENT:

LOCATED IN A TMDL: YES ☐ NO ☒

LAKE THUNDERBIRD TMDL: YES ☐ NO ☒

MS4 ENTITY YES ☒ NO ☐

IF YES, LOCATION: CITY OF TULSA

NOTE:
THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- X TEMPORARY SEEDING
- X PERMANENT SODDING, SPRIGGING OR SEEDING
- X VEGETATIVE MULCHING
- ___ SOIL RETENTION BLANKET
- X PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- X STABILIZED CONSTRUCTION EXIT
- X TEMPORARY SILT FENCE
- X TEMPORARY SILT DIKES
- ___ TEMPORARY FIBER LOG
- ___ DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ___ ROCK FILTER DAMS
- ___ TEMPORARY SLOPE DRAIN
- X PAVED DITCH W/ DITCH LINER PROTECTION
- ___ TEMPORARY DIVERSION CHANNELS
- ___ TEMPORARY SEDIMENT BASINS
- ___ TEMPORARY SEDIMENT TRAPS
- X TEMPORARY SEDIMENT FILTERS
- X TEMPORARY SEDIMENT REMOVAL
- X RIP RAP
- ___ INLET SEDIMENT FILTER
- ___ TEMPORARY BRUSH SEDIMENT BARRIERS
- ___ SANDBAG BERMS
- ___ TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- X HAUL ROADS DAMPENED FOR DUST CONTROL
- X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- X EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

* USE CITY OF TULSA STANDARD 126, CONSTRUCTION ENTRANCE

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
- 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
- 221 TEMPORARY SEDIMENT CONTROL

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

STORMWATER MANAGEMENT PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CMG	6/20
	FIELD MGR	RCM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BOC	6/20
	RECOMMENDED	HAS	7-20
	DESIGN MANAGER		CITY ENGINEER

APPROVED:

FILE: 313925-C-SMP.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 58 OF 334 SHEETS

REVISED 08 / 18 / 2017

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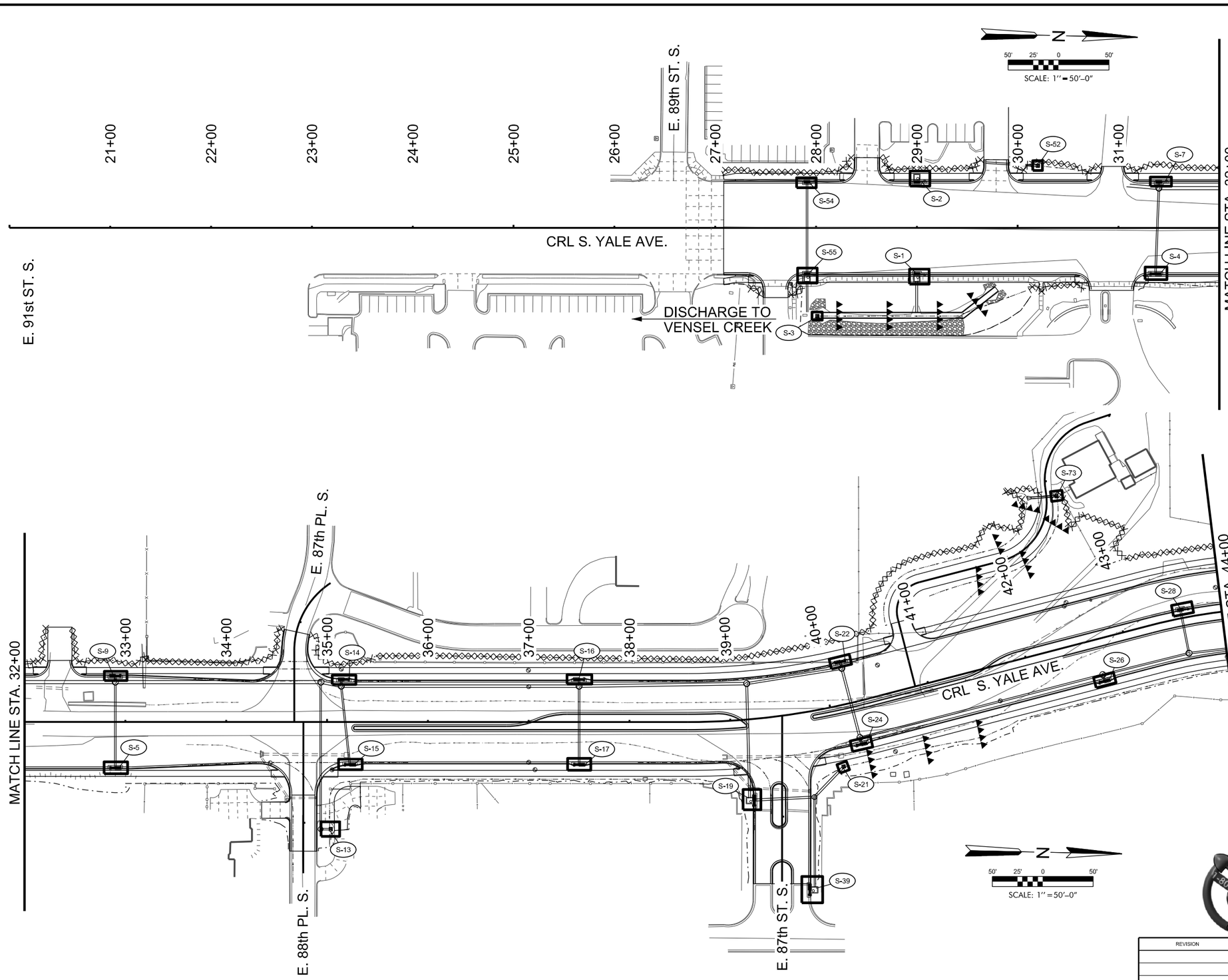

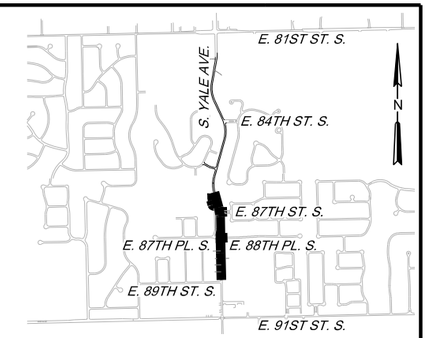

KEYMAP

LEGEND:

- X-X DRAINAGE STRUCTURE NUMBER
- TEMPORARY SEDIMENT FILTER
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKE

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

EROSION CONTROL (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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a Haskell Company
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REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
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PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR	ZZW	7/20
VERTICAL: 1"= NA	LEAD ENGR	BDC	6/20
	RECOMMENDED	HRS	7.20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Erosion_Ctrl_01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 59 OF 334 SHEETS

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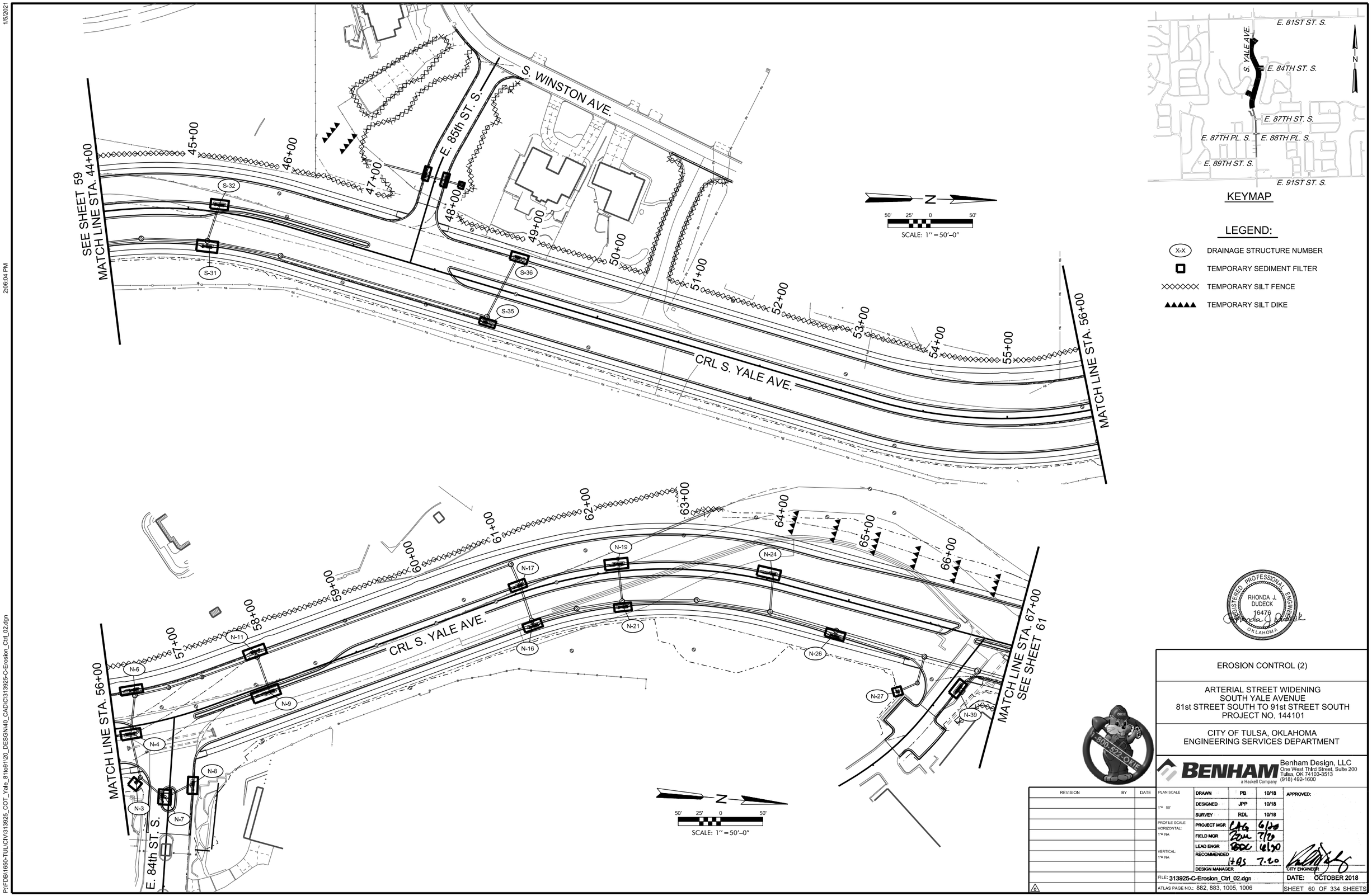

EROSION CONTROL (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	CAG	6/20
FIELD MGR	ZEM	7/20
LEAD ENGR	BDC	6/20
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Erosion_Ctrl_02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 60 OF 334 SHEETS

1/5/2021
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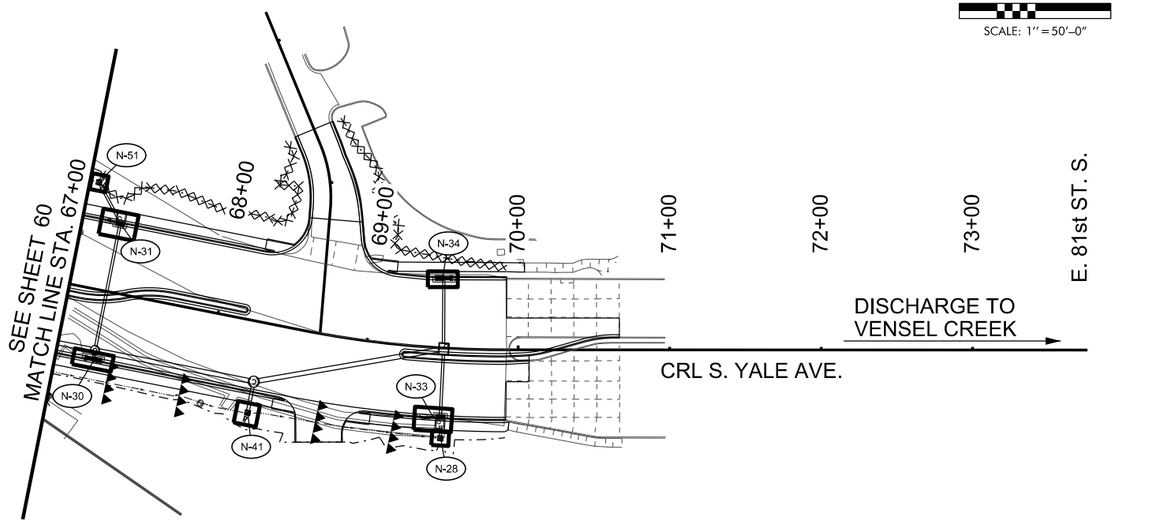

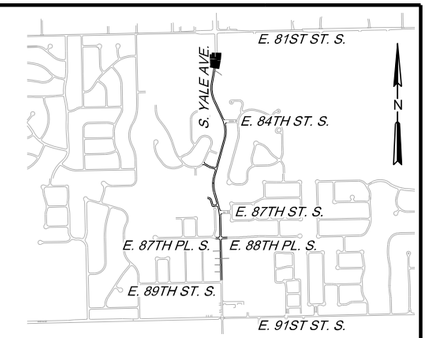

KEYMAP

LEGEND:

- X-X DRAINAGE STRUCTURE NUMBER
- TEMPORARY SEDIMENT FILTER
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKE

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

EROSION CONTROL (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR	ZZW	7/20
	LEAD ENGR	BDC	10/20
VERTICAL: 1"= NA	RECOMMENDED	HAS	7-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Erosion_Ctrl_03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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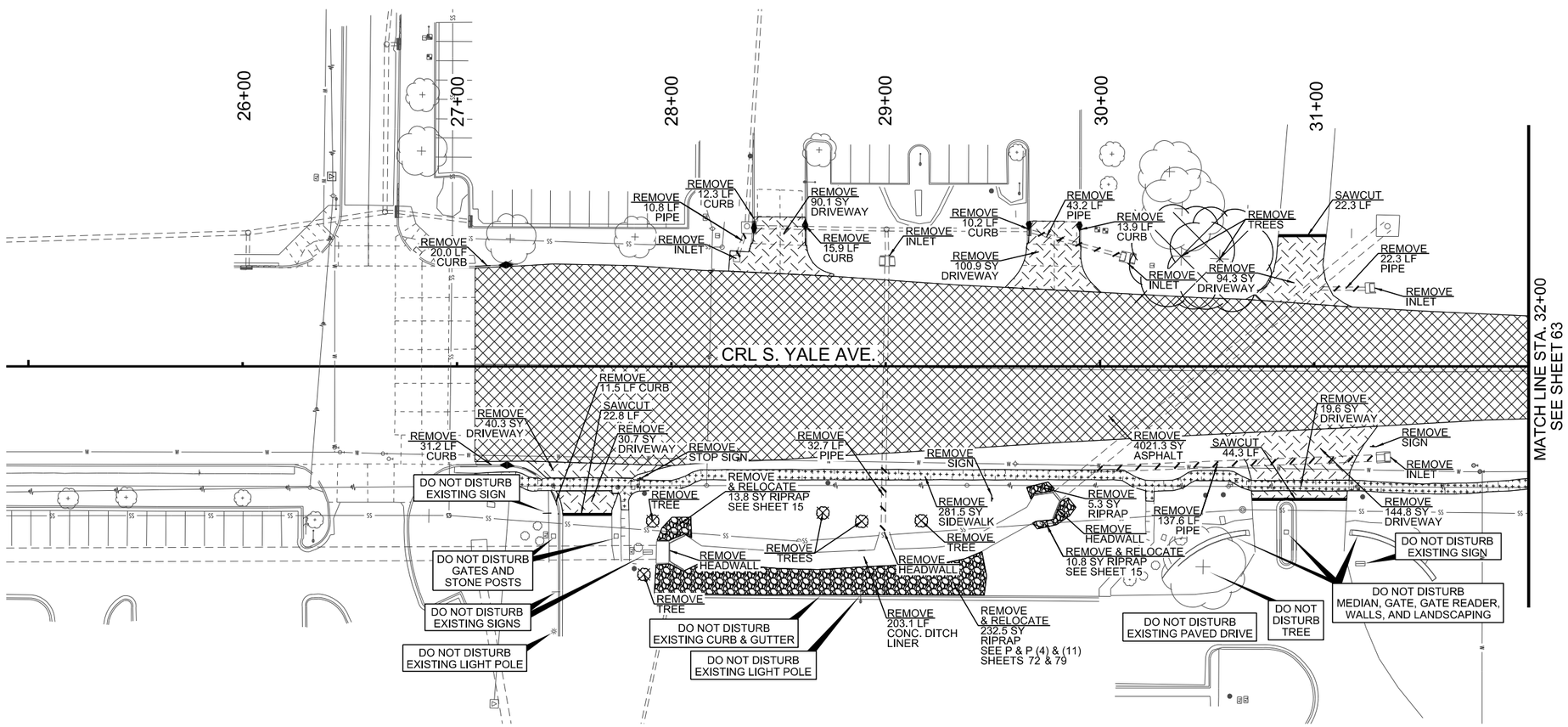
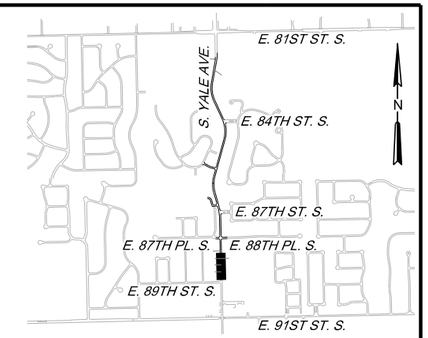




KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

LANDSCAPING REMOVAL
CONTRACTOR SHALL GIVE PROPERTY OWNERS 14 DAYS NOTICE BEFORE REMOVAL OF LANDSCAPING OR OTHER IMPROVEMENTS WITHIN THE LIMIT OF CONSTRUCTION TO ALLOW ITEMS TO BE SALVAGED BY OWNERS.

REMOVALS (1)

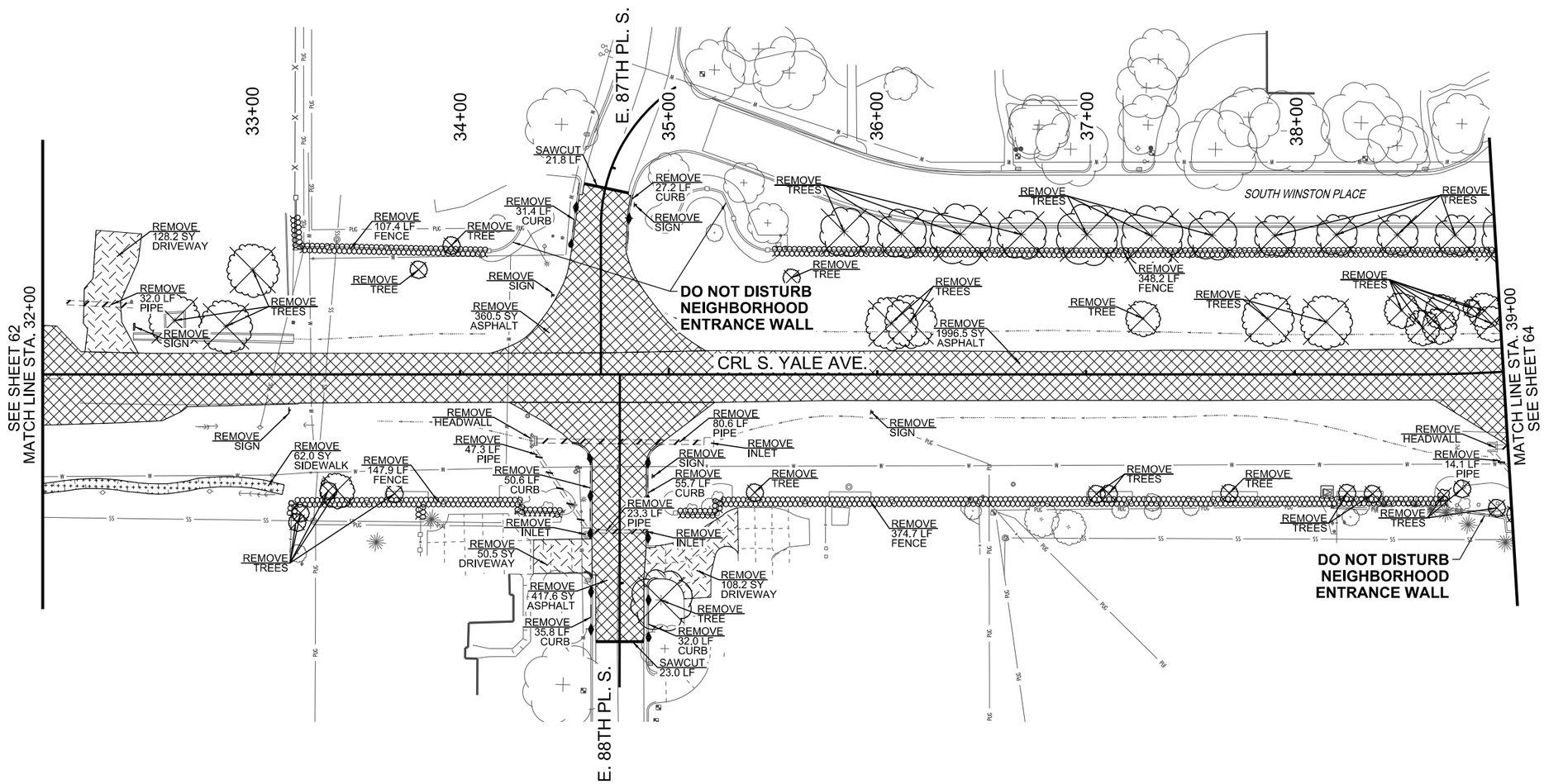
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

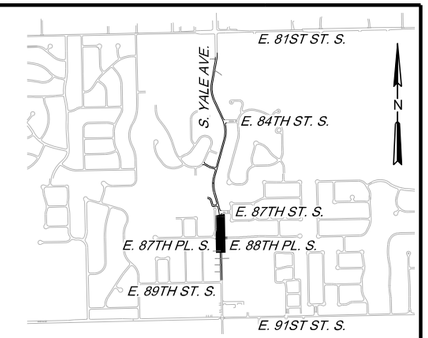
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BOC	12/18	
	FIELD MGR		7/20	
	LEAD ENGR		11/19	
VERTICAL: 1"= NA	RECOMMENDED	HAS	7-20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Removals-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 62 OF 334 SHEETS





KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

REMOVALS (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR	ZEM	7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:

CITY ENGINEER

FILE: 313925-C-Removals-02.dgn

DATE: OCTOBER 2018

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1/5/2021

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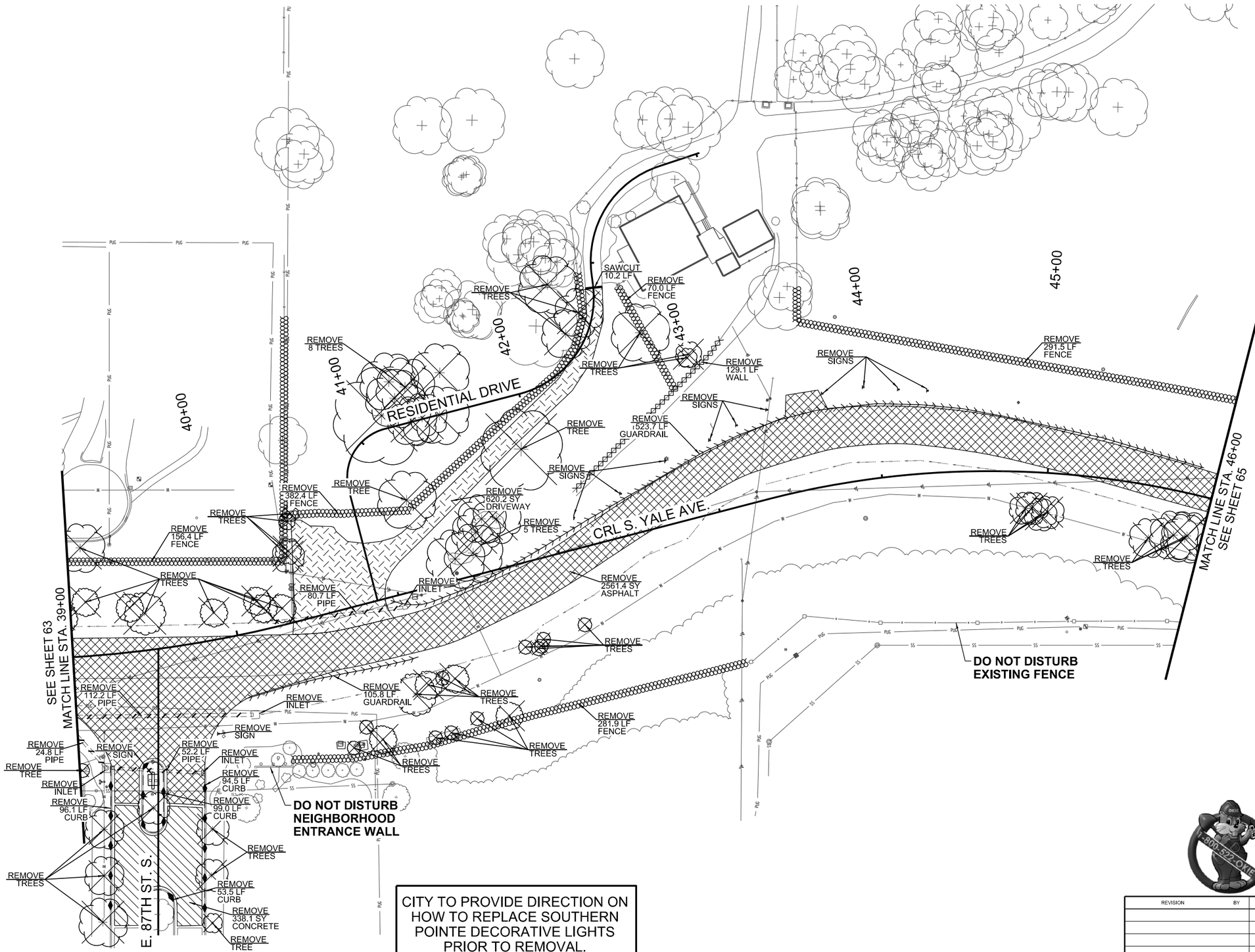
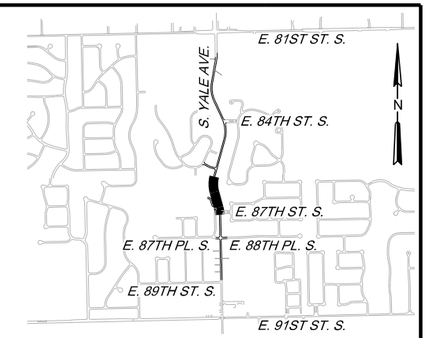


CITY TO PROVIDE DIRECTION ON HOW TO REPLACE SOUTHERN POINTE DECORATIVE LIGHTS PRIOR TO REMOVAL.



KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

REMOVALS (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18	
	FIELD MGR		7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"= NA	RECOMMENDED		7-20	CITY ENGINEER
	DESIGN MANAGER			
FILE: 313925-C-Removals-03.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 64 OF 334 SHEETS

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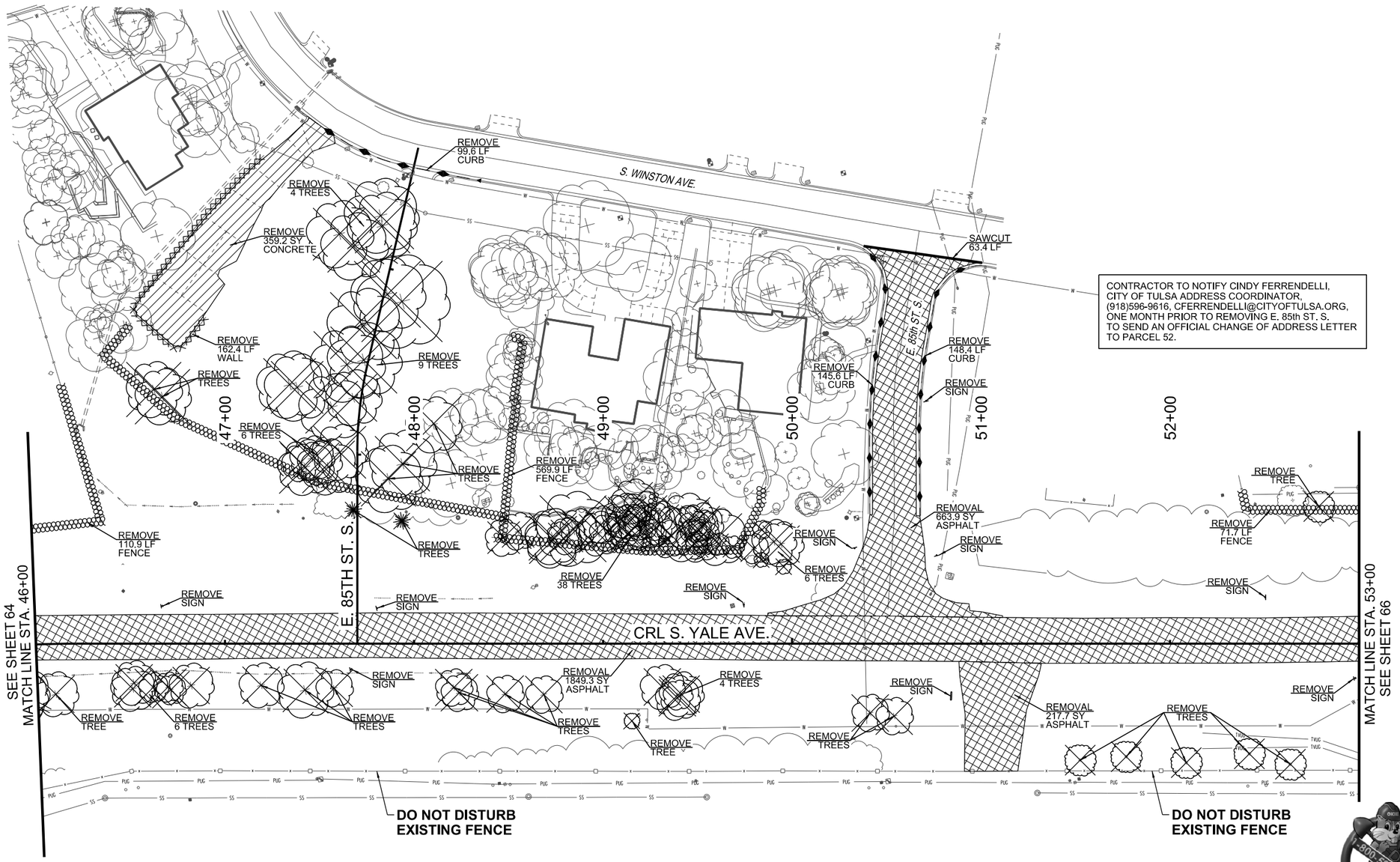
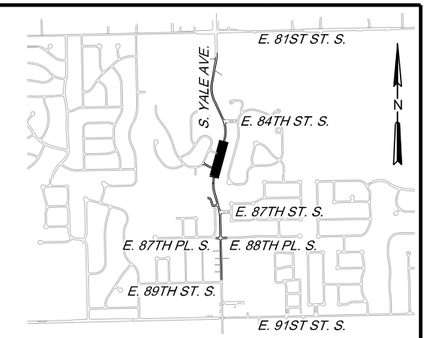


CONTRACTOR TO NOTIFY CINDY FERRENDELLI, CITY OF TULSA ADDRESS COORDINATOR, (918)596-9616, CFERRENDELLI@CITYOFTULSA.ORG, ONE MONTH PRIOR TO REMOVING E. 85th ST. S. TO SEND AN OFFICIAL CHANGE OF ADDRESS LETTER TO PARCEL 52.



KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

REMOVALS (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BOC	12/18
FIELD MGR	ZZW	7/20
LEAD ENGR	[illegible]	1/19
RECOMMENDED	HAS	7.20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Removals-04.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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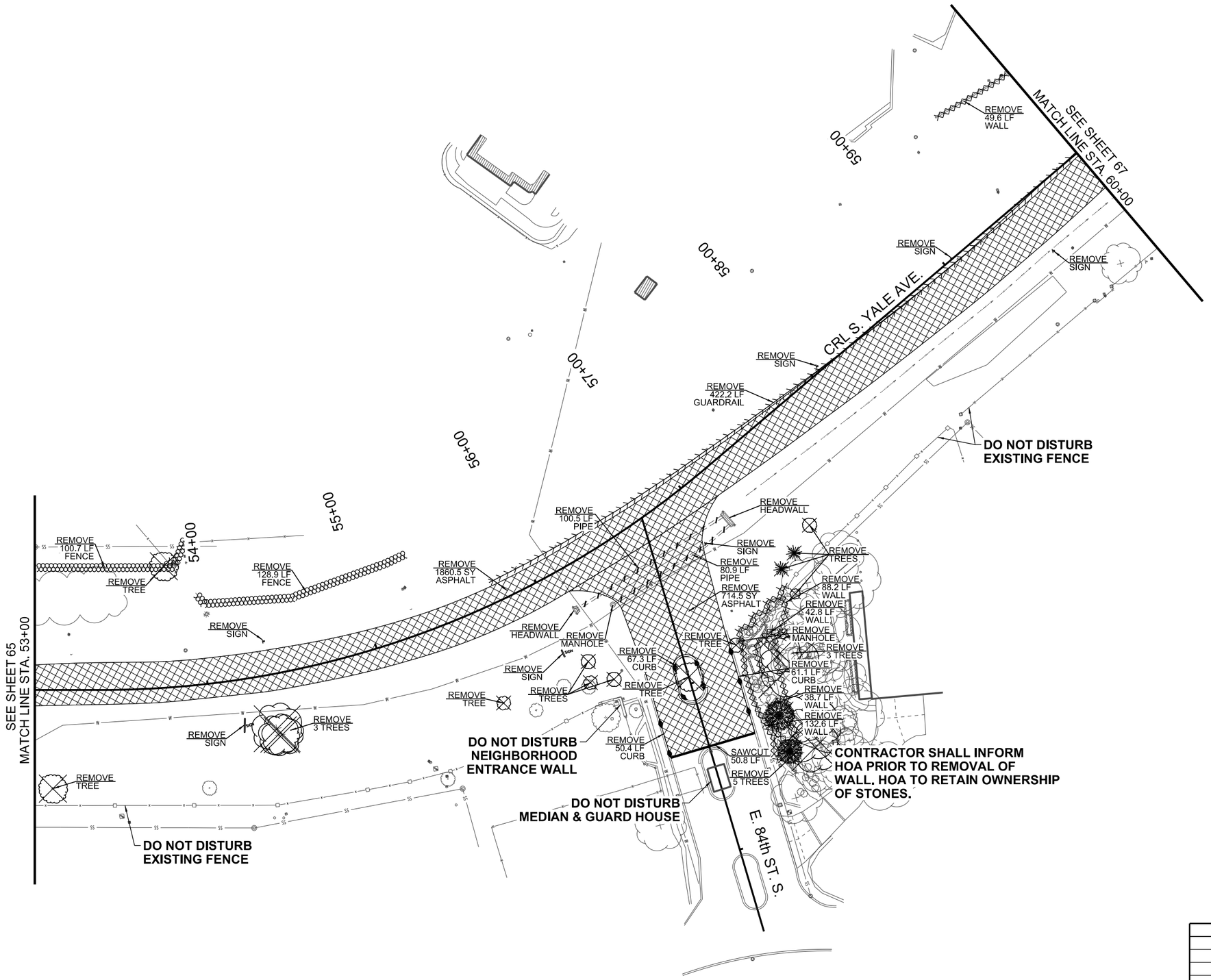

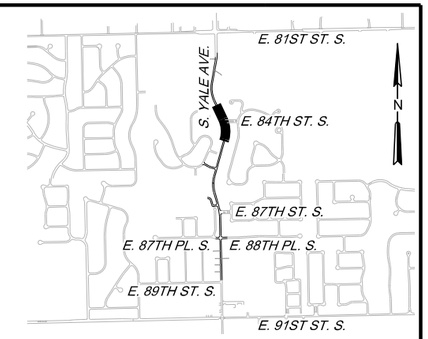

KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

REMOVALS (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	7.20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Removals-05.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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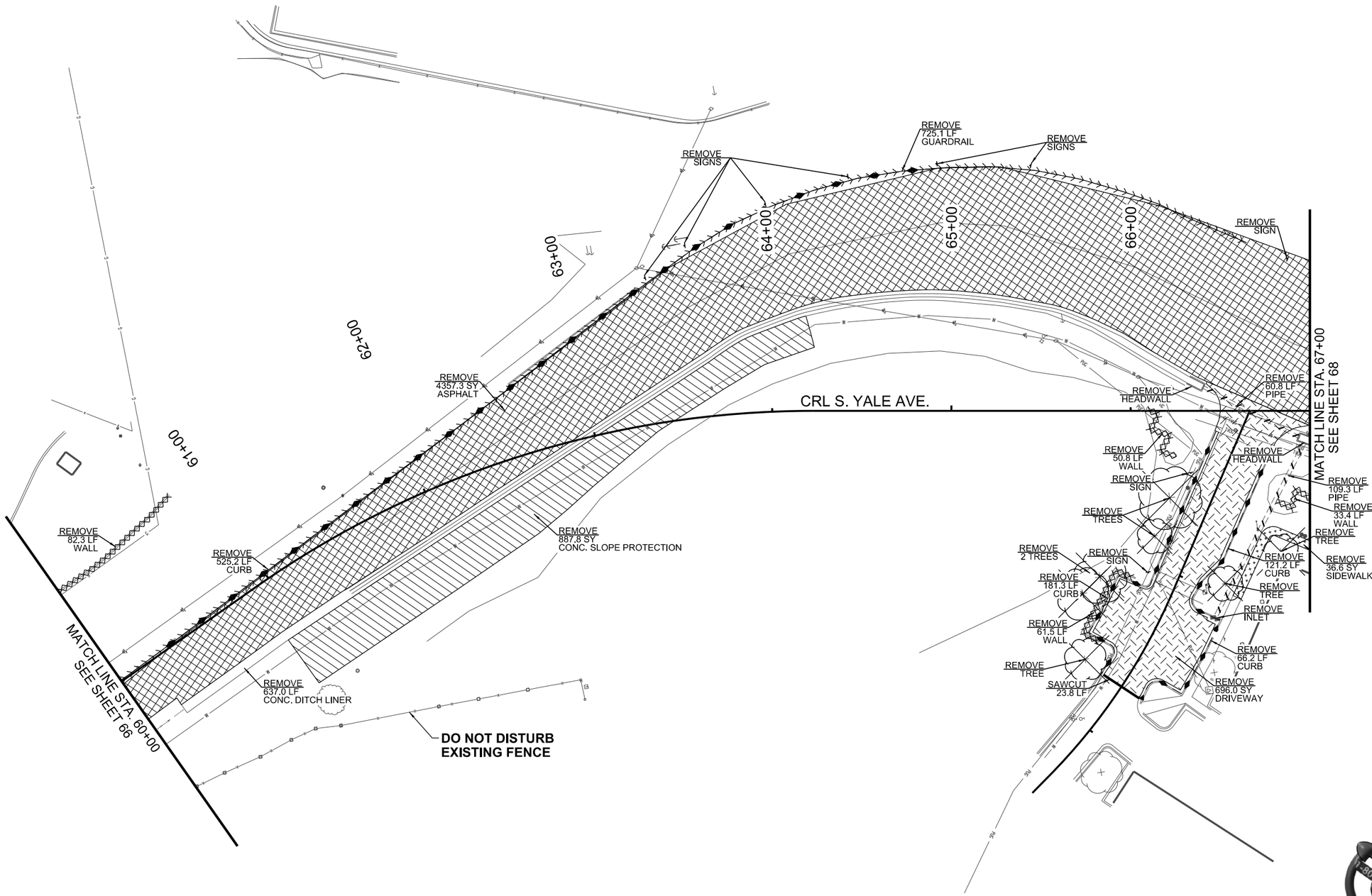

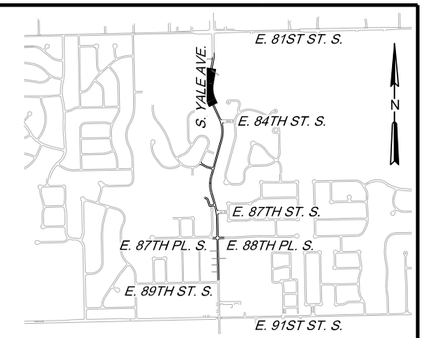

KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

REMOVALS (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR	Zzm	7/20
LEAD ENGR	DD	1/19
RECOMMENDED	HAS	7.20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Removals-06.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 67 OF 334 SHEETS

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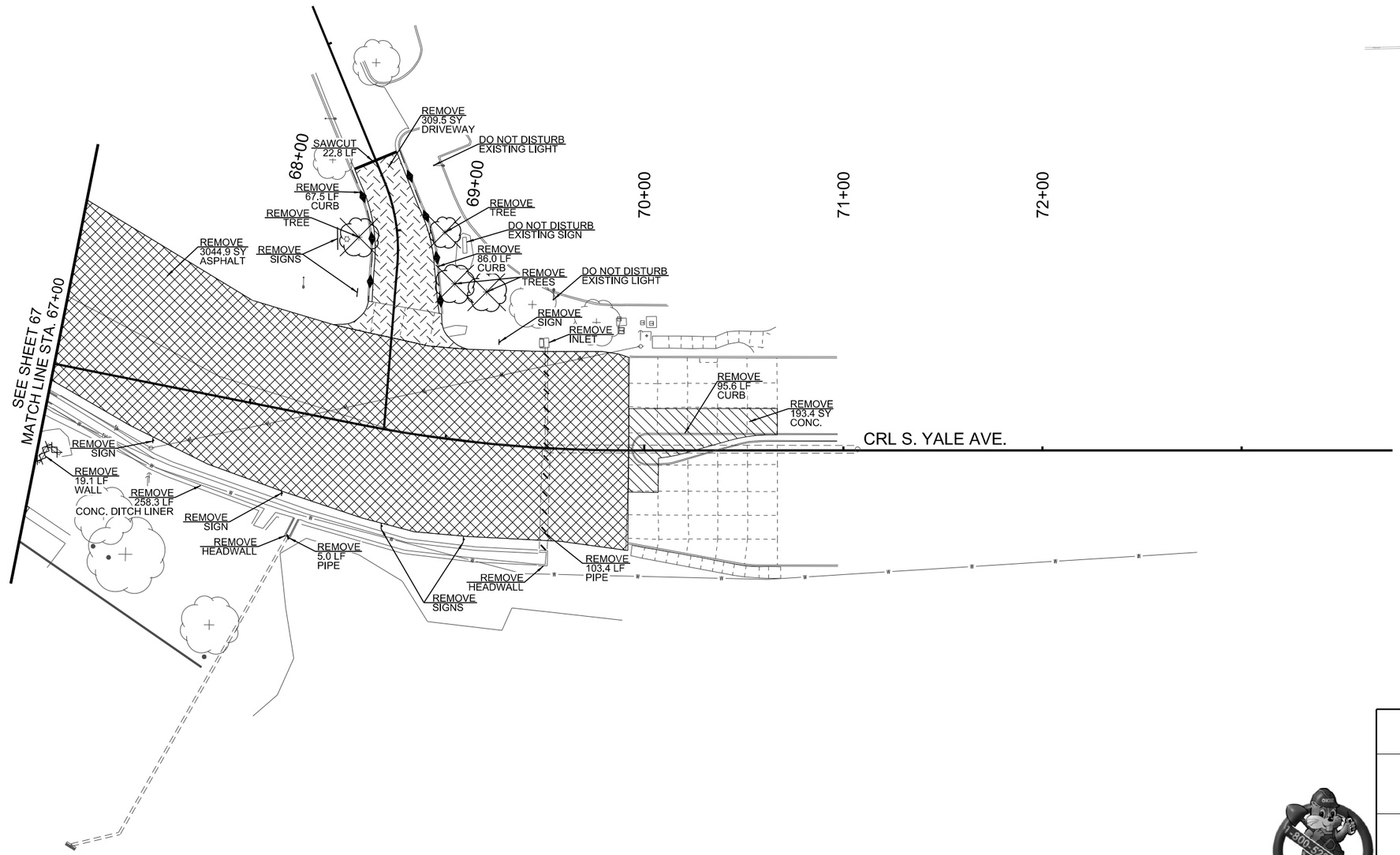

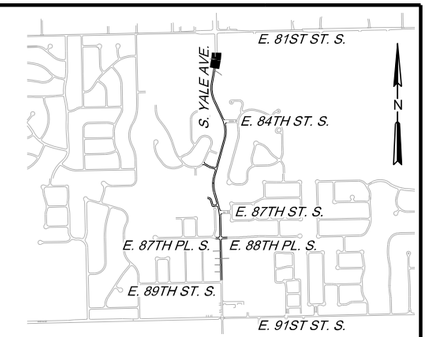

KEYMAP

REMOVAL LEGEND:

- ASPHALT
- CONCRETE
- DRIVEWAY
- SIDEWALK
- CURB
- SAWCUT
- FENCE
- PIPE
- WALL
- GUARDRAIL
- TREE

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

REMOVALS (7)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	12/18
FIELD MGR	ZZW	7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Removals-07.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 68 OF 334 SHEETS

1/5/2021

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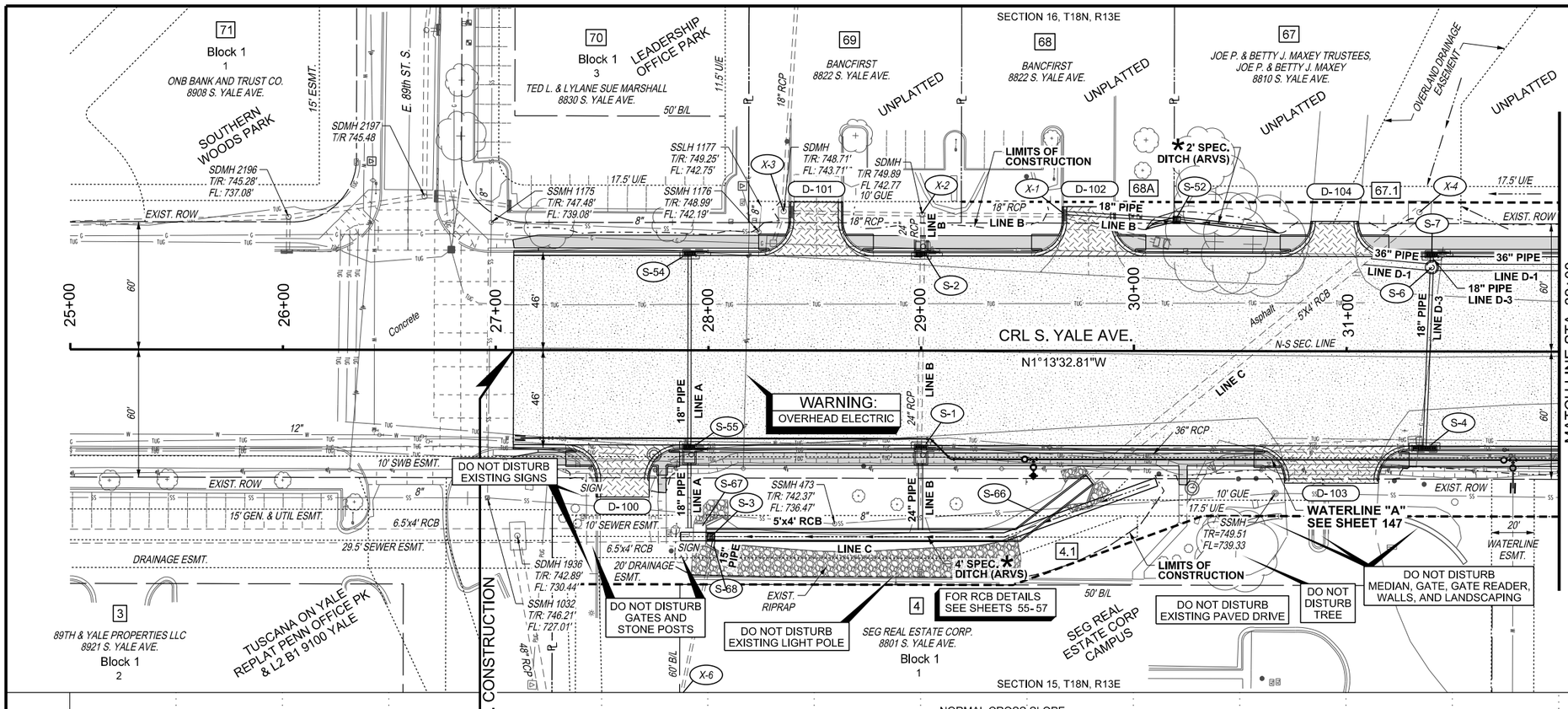
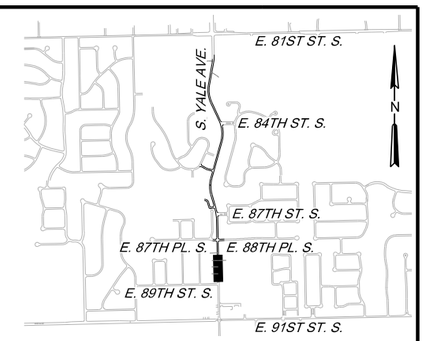




KEYMAP

LEGEND

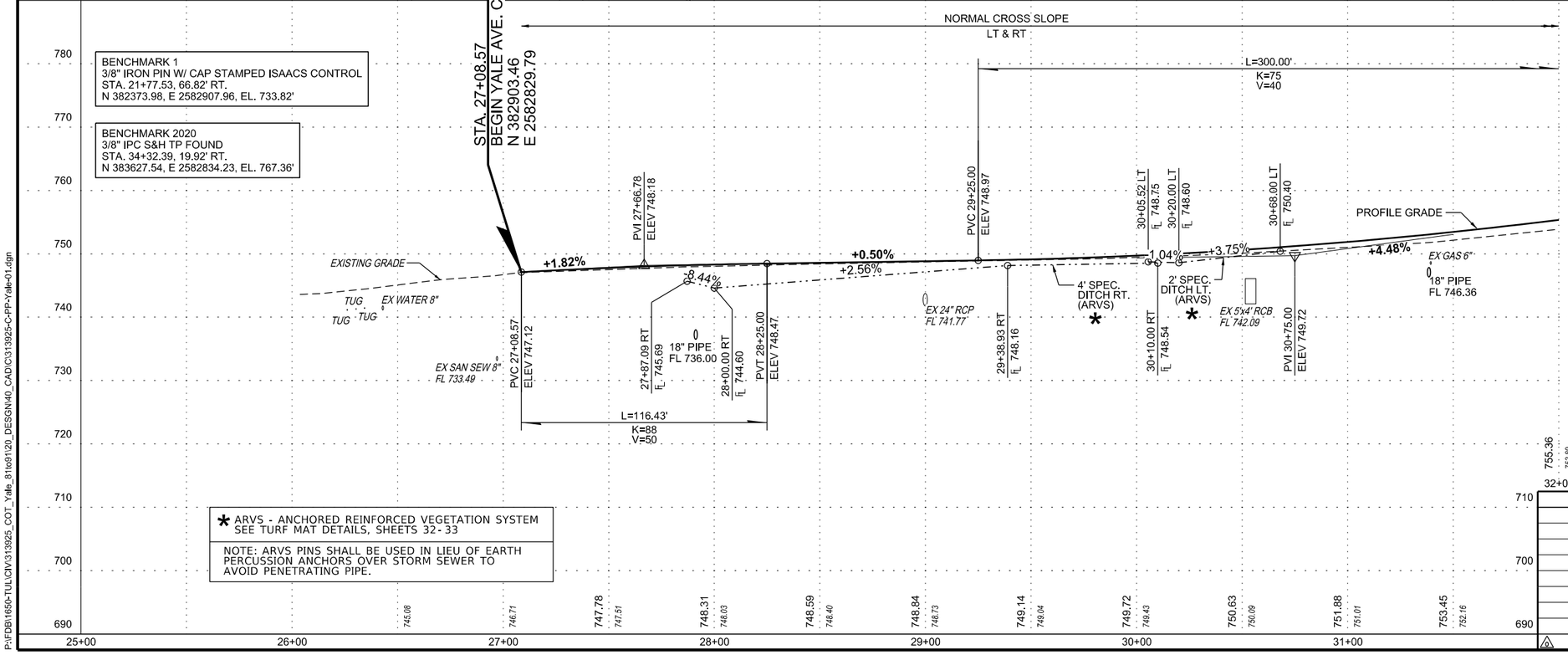
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"



* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32-33

NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

PROFESSIONAL ENGINEER
REGISTERED
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PLAN AND PROFILE (1)
YALE AVENUE
STA. 25+00 TO STA. 32+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		12/18
	FIELD MGR		7/10
	LEAD ENGR		1/19
VERTICAL: 1"= 10'	RECOMMENDED		7.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER
DATE: OCTOBER 2018

FILE: 313925-C-PP-Yale-01.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 69 OF 334 SHEETS

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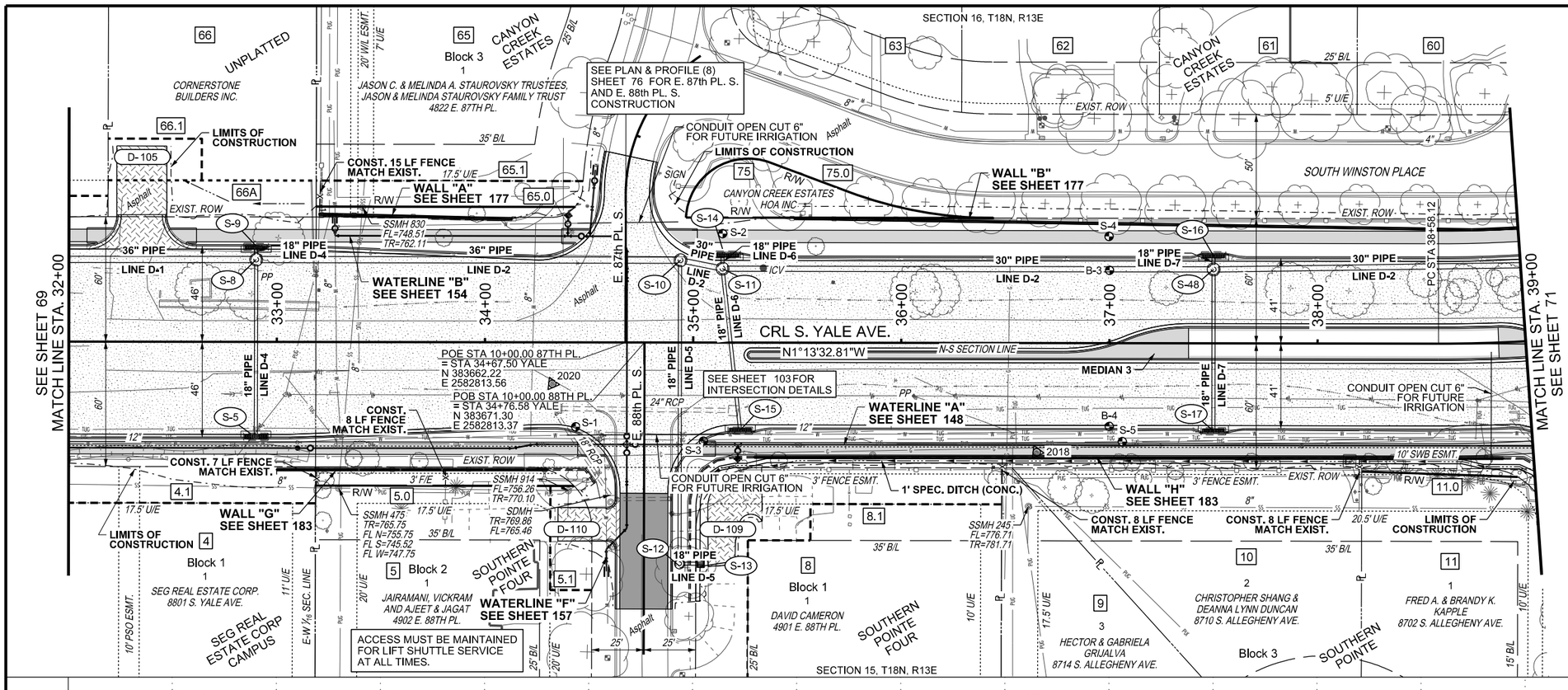
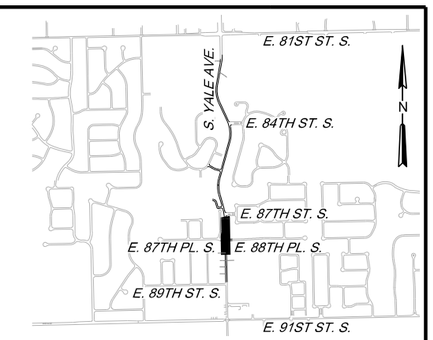




KEYMAP

LEGEND

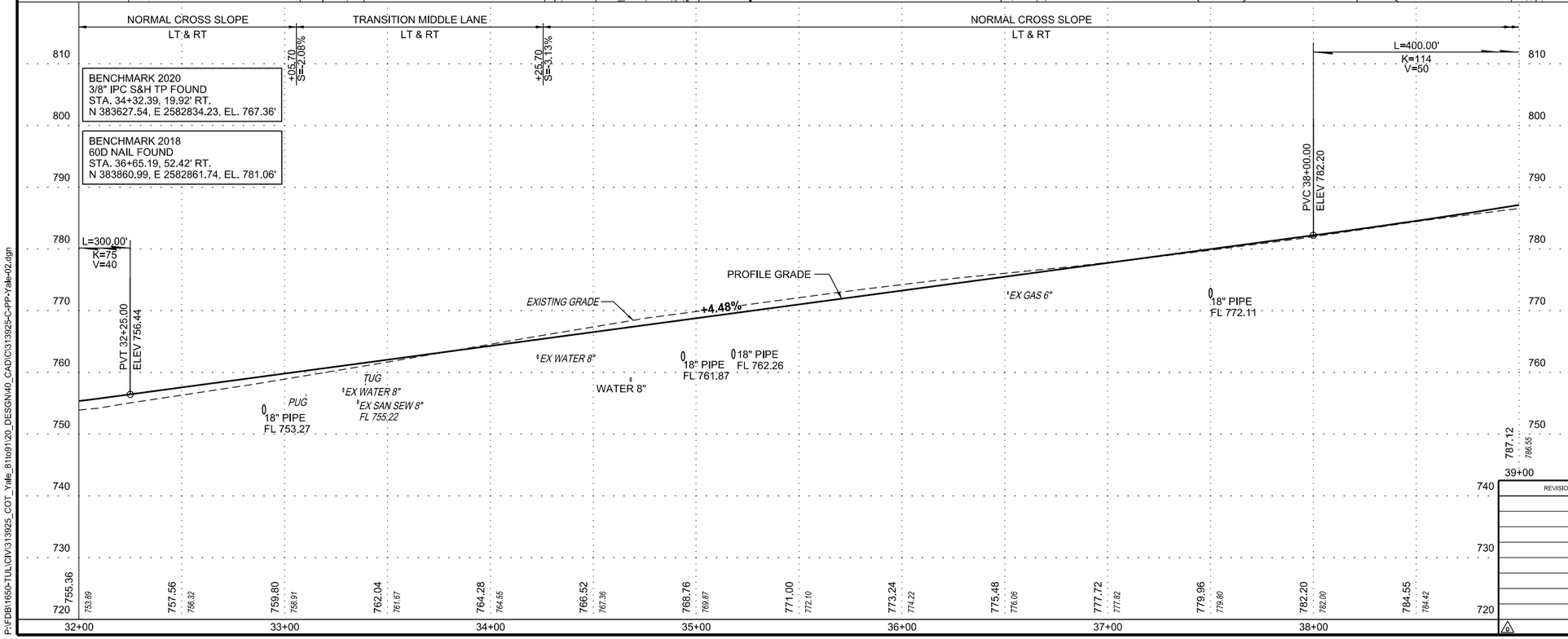
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"



RHONDA J. DUDECK 16476 OKLAHOMA REGISTERED PROFESSIONAL ENGINEER

October 31, 2018

PLAN AND PROFILE (2)
YALE AVENUE
STA. 32+00 TO STA. 39+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE: HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	12/18	
	FIELD MGR	BDM	7/20	
	LEAD ENGR	BD	1/12	
VERTICAL: 1"= 10'	RECOMMENDED	HBS	7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-Yale-02.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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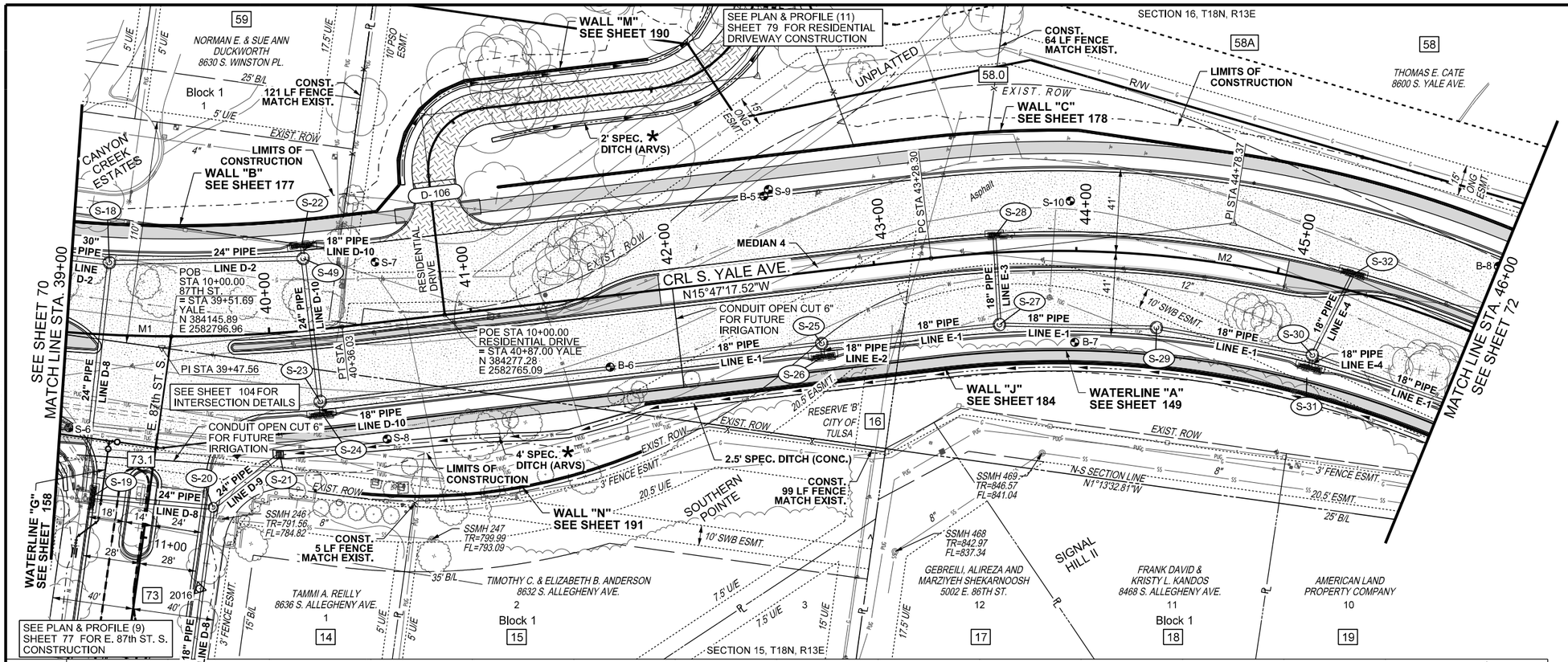
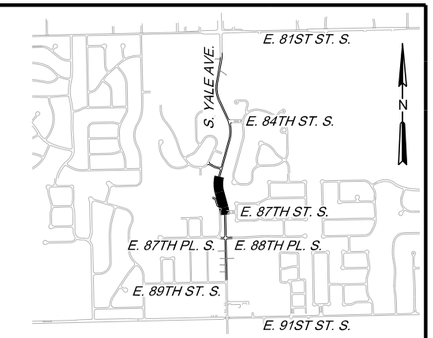




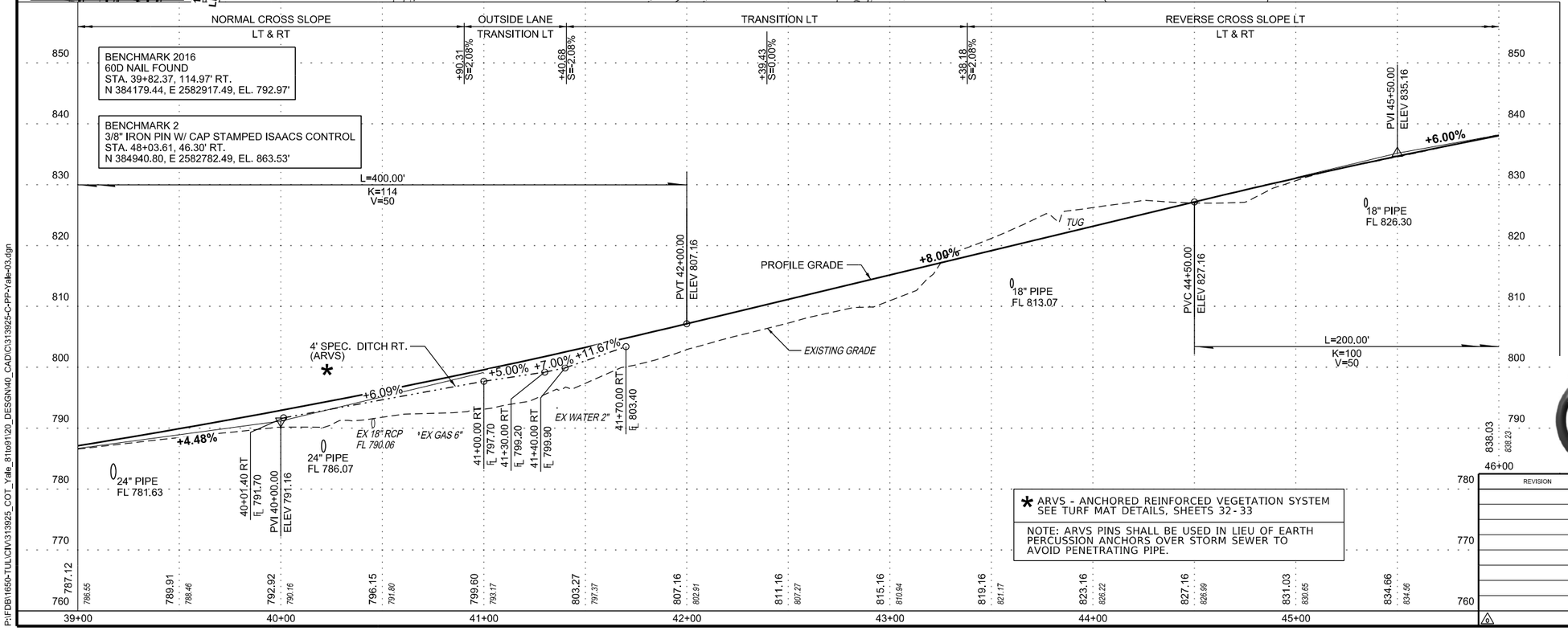
KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

SCALE: 1" = 30'-0"



* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32 - 33

NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

PLAN AND PROFILE (3)
YALE AVENUE
STA. 39+00 TO STA. 46+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	12/18	
	FIELD MGR		7/20	
VERTICAL: 1"= 10'	LEAD ENGR		11/19	
	RECOMMENDED		7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-Yale-03.dgn
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ATLAS PAGE NO.: 882, 883, 1005, 1006
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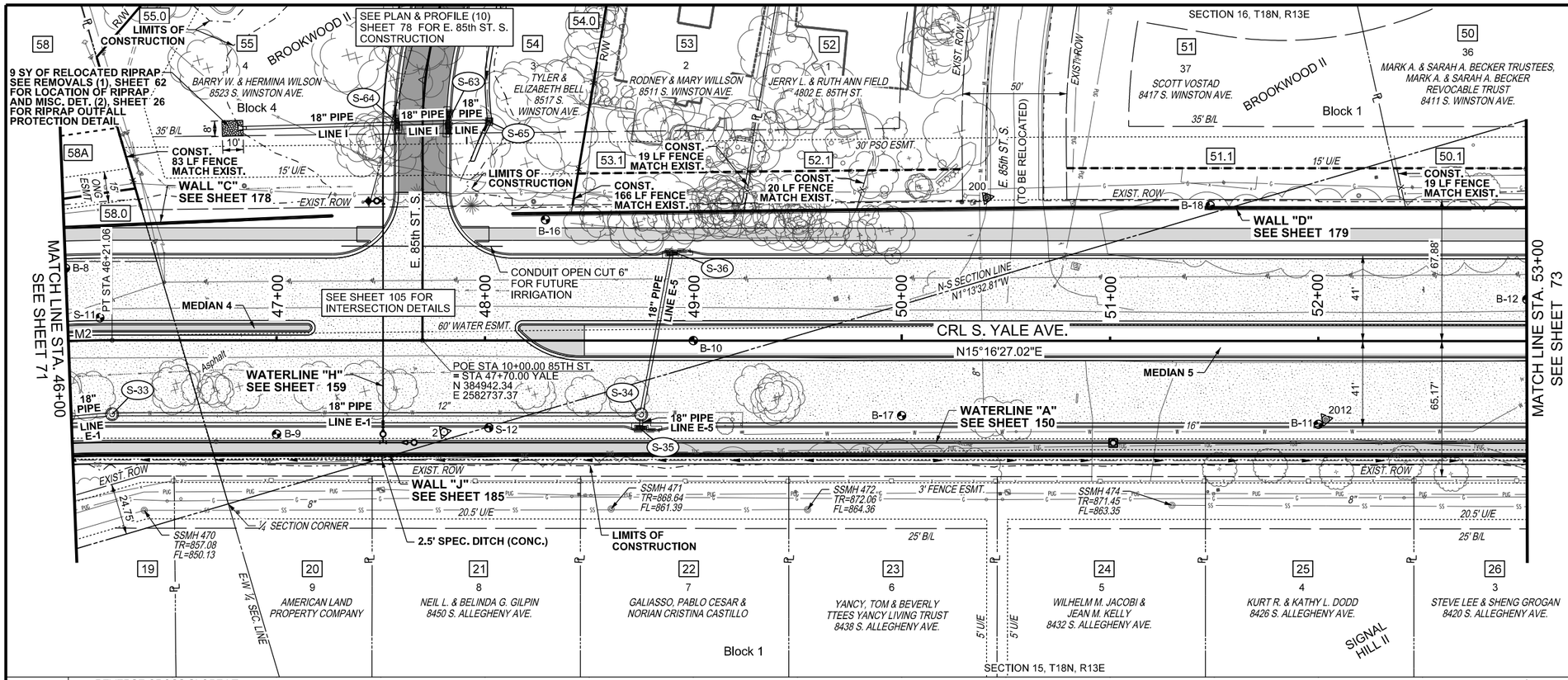
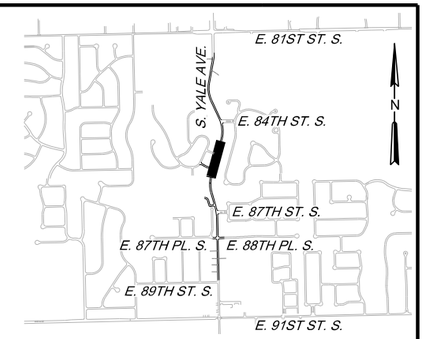
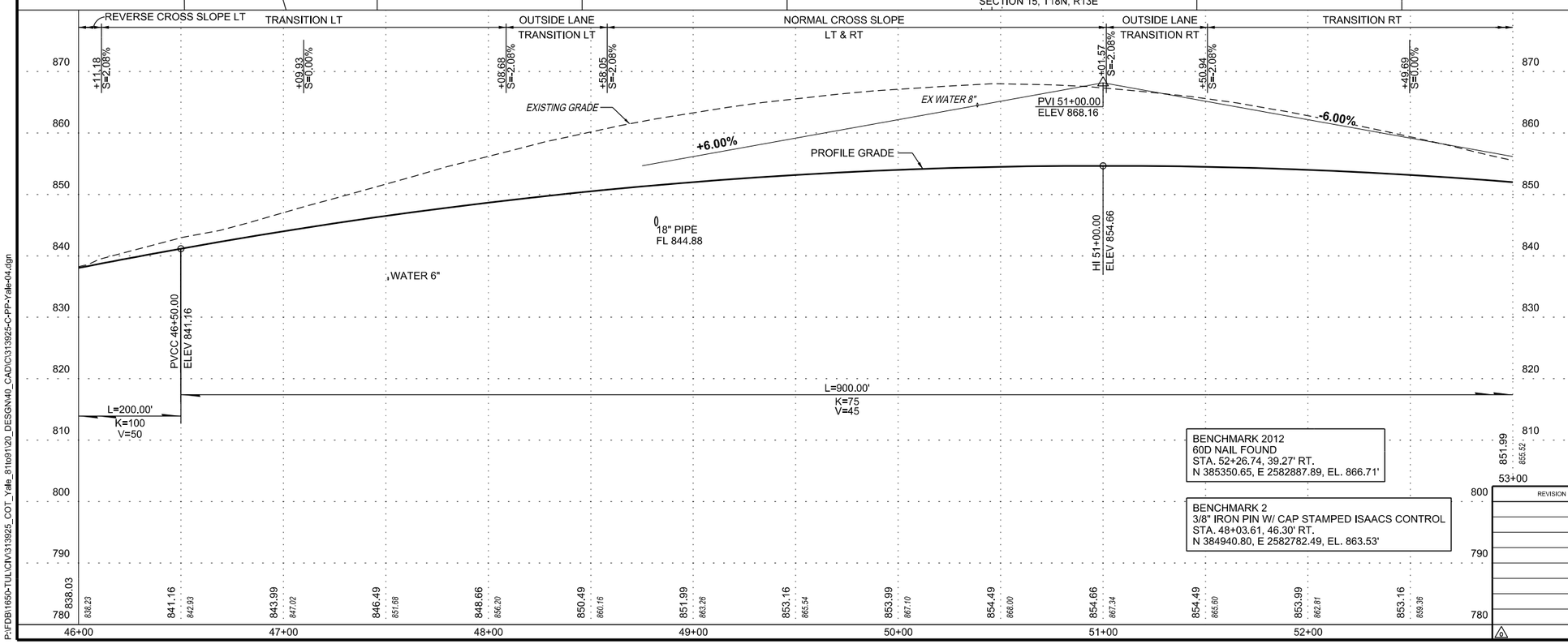




KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA



FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

BENCHMARK 2012
60D NAIL FOUND
STA. 52+26.74, 39.27' RT.
N 385350.65, E 2582887.89, EL. 866.71'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'

PLAN AND PROFILE (4)
YALE AVENUE
STA. 46+00 TO STA. 53+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= 10'	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 313925-C-PP-Yale-04.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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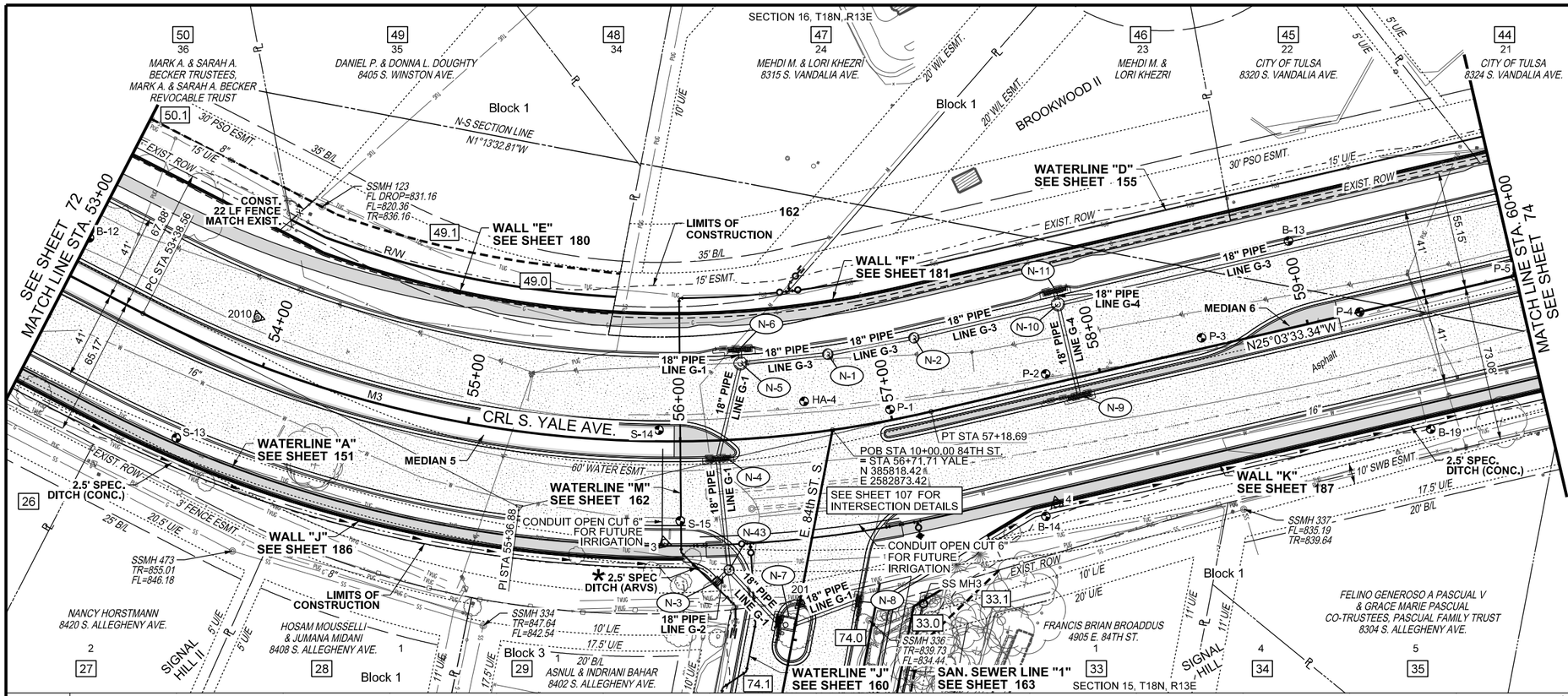

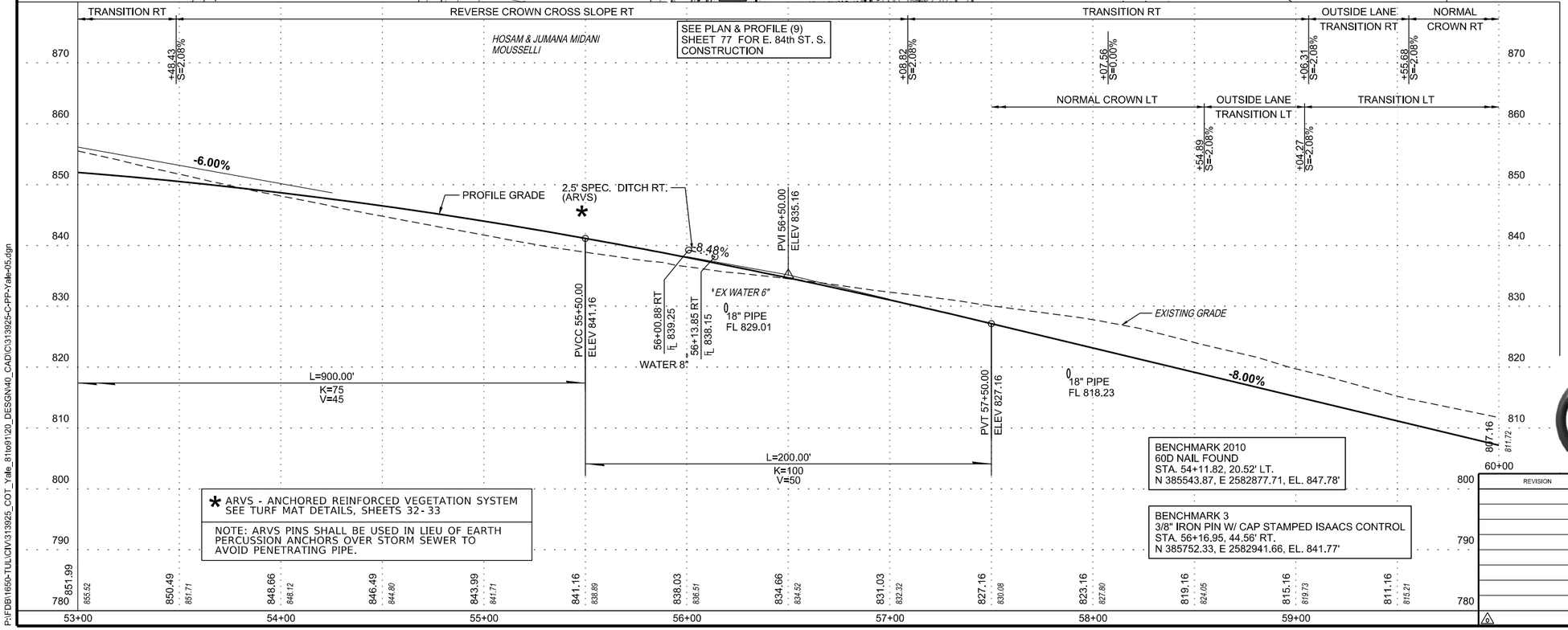

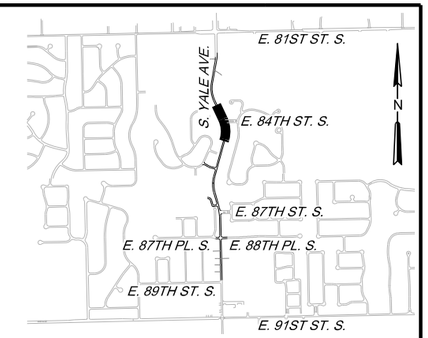

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018

PLAN AND PROFILE (5)
YALE AVENUE
STA. 53+00 TO STA. 60+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		12/18	
	FIELD MGR		7/20	
VERTICAL: 1"= 10'	LEAD ENGR		11/19	
	RECOMMENDED HAS 7-20 DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-PP-Yale-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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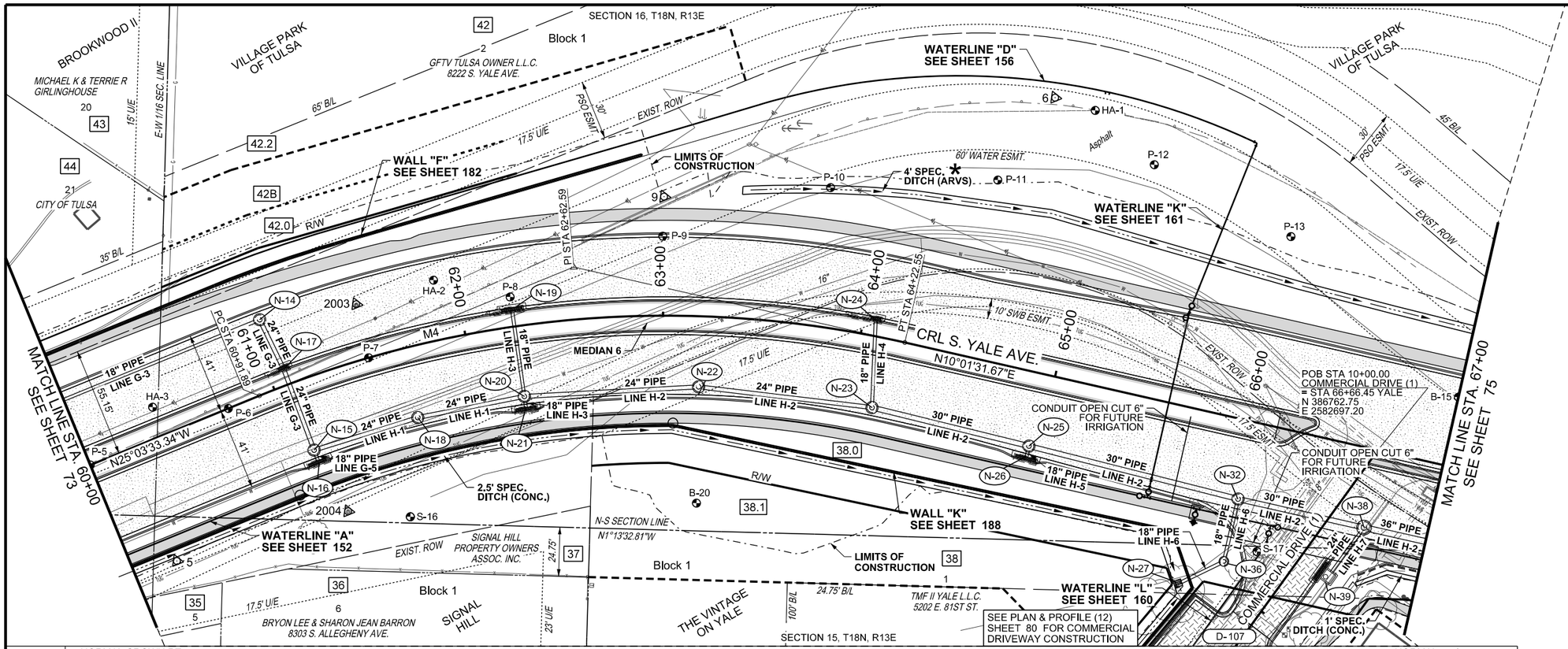
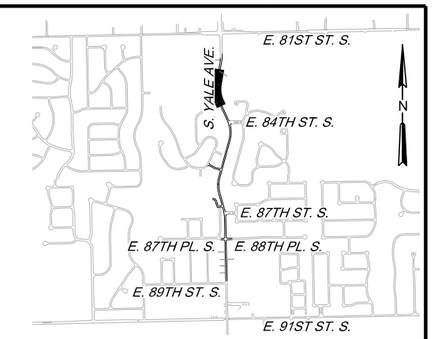




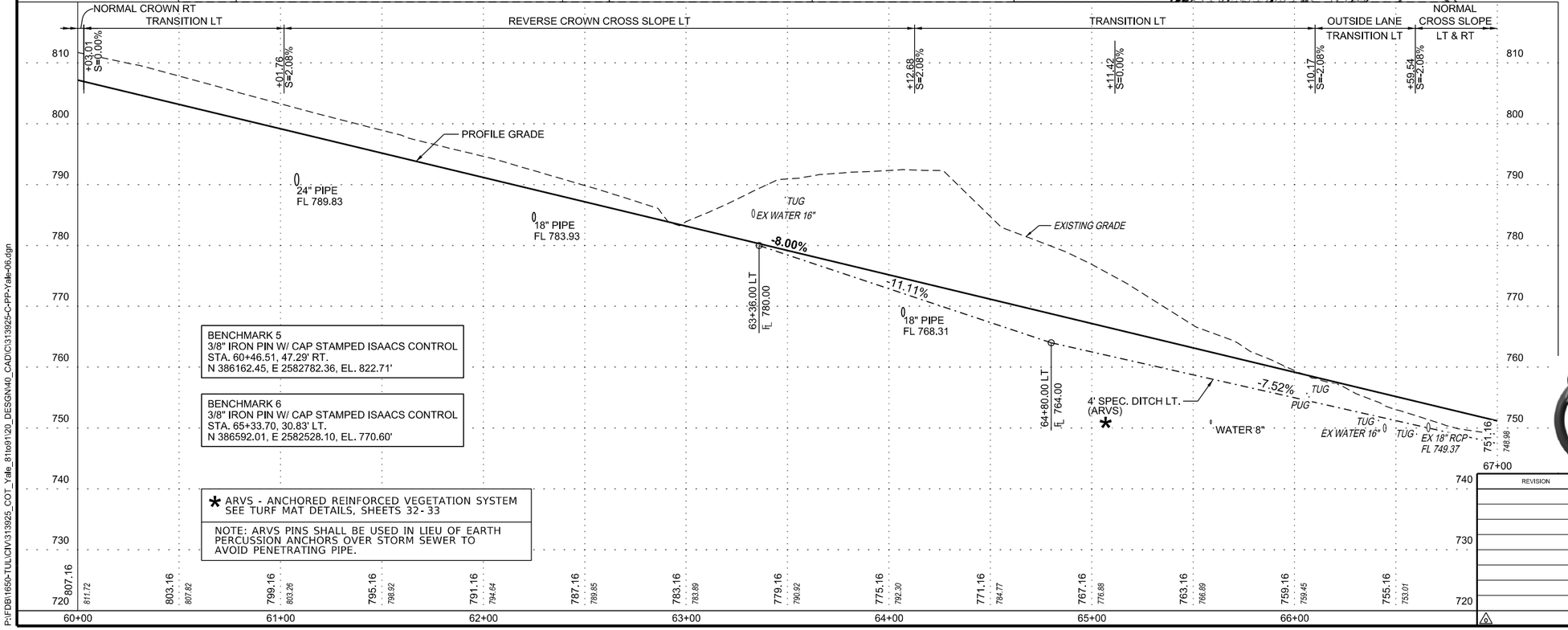
KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

SCALE: 1" = 30'-0"



BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 60+46.51, 47.29' RT.
N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'

* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32 - 33

NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018

PLAN AND PROFILE (6)
YALE AVENUE
STA. 60+00 TO STA. 67+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE: HORIZONTAL: 1"= 30'	PROJECT MGR	BDL	12/18	
	FIELD MGR		7/12	
	LEAD ENGR		1/19	
VERTICAL: 1"= 10'	RECOMMENDED	HAS	7-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-Yale-06.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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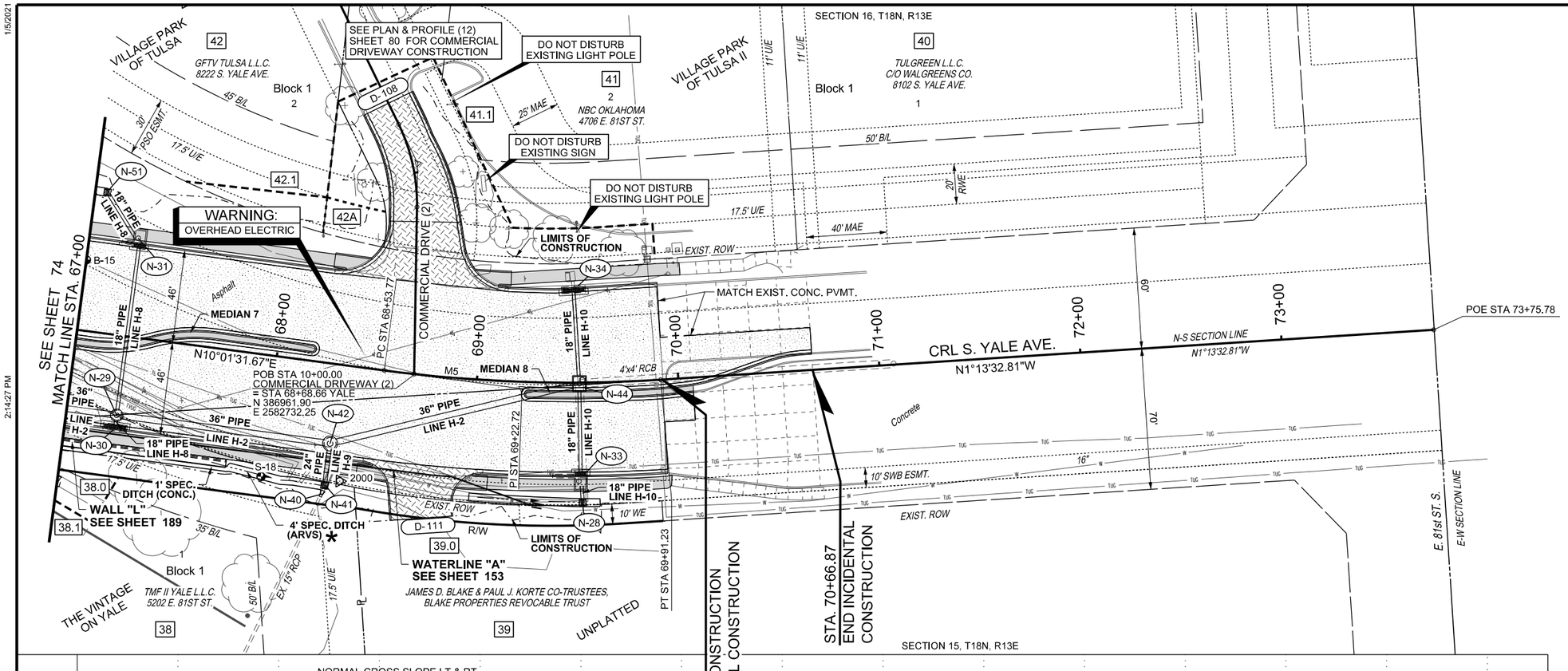
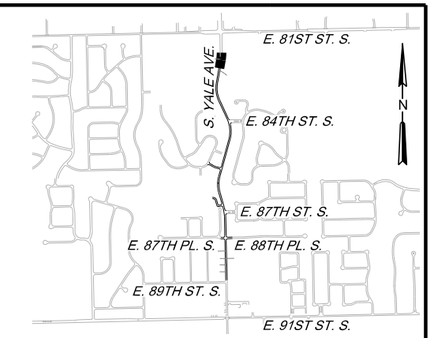
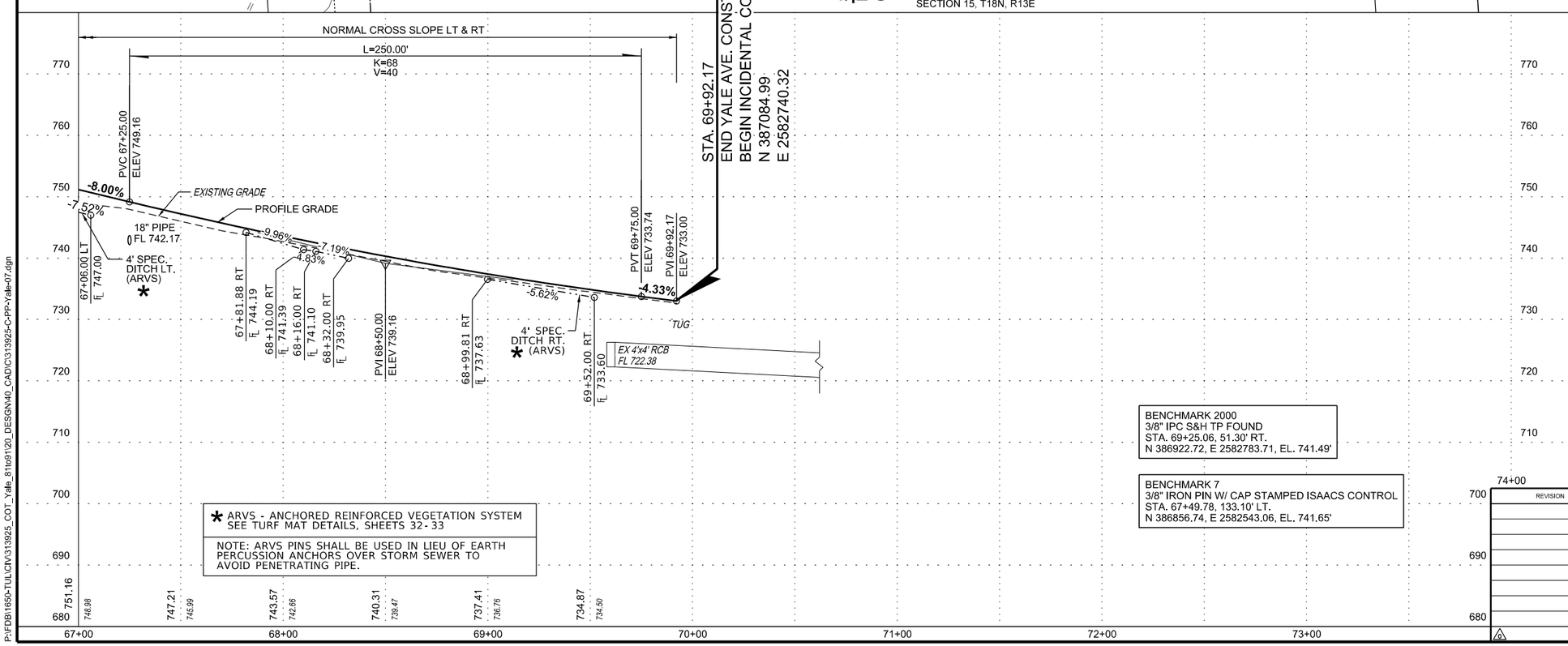




KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA



BENCHMARK 2000
3/8" IPC S&H TP FOUND
STA. 69+25.06, 51.30' RT.
N 386922.72, E 2582783.71, EL. 741.49'

BENCHMARK 7
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 67+49.78, 133.10' LT.
N 386856.74, E 2582543.06, EL. 741.65'

* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32-33

NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PLAN AND PROFILE (7)
YALE AVENUE
STA. 67+00 TO STA. 73+75

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDL	12/18
	FIELD MGR		7/20
VERTICAL: 1"= 10'	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER	HAS 7.20	

APPROVED: CITY ENGINEER

FILE: 313925-C-PP-Yale-07.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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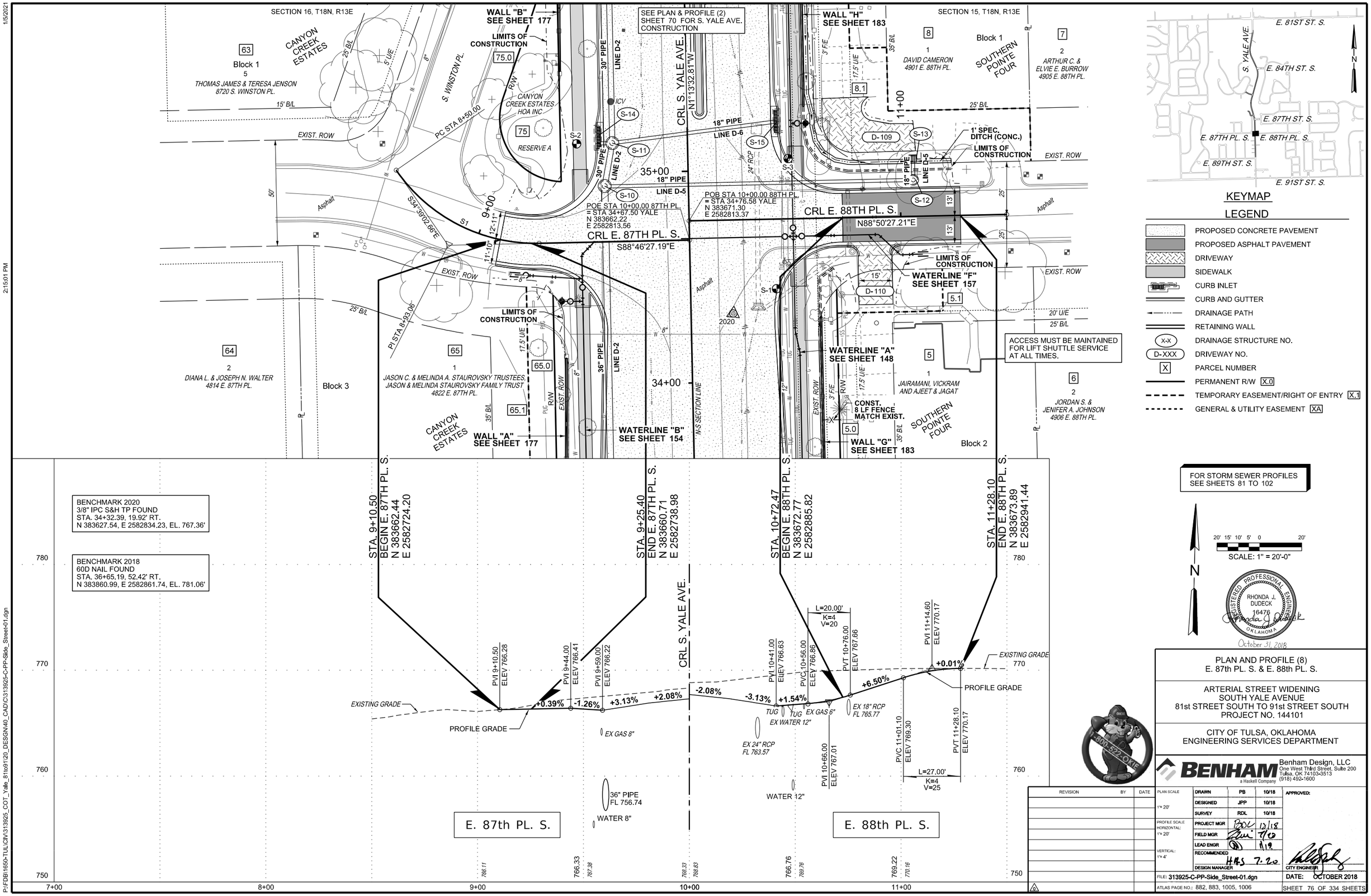
SECTION 16, T18N, R13E
SECTION 15, T18N, R13E
WALL "B" SEE SHEET 177
LIMITS OF CONSTRUCTION
SEE PLAN & PROFILE (2) SHEET 70 FOR S. YALE AVE. CONSTRUCTION
WALL "H" SEE SHEET 183
CANYON CREEK ESTATES
Block 1
THOMAS JAMES & TERESA JENSON 8720 S. WINSTON PL.
S. WINSTON PL.
CANYON CREEK ESTATES HOA INC
RESERVE A
PC STA 8+50.00
CRL S. YALE AVE.
N1°13'32.81"W
18" PIPE
LINE D-6
30" PIPE
LINE D-2
LINE D-5
35+00
9+00
POE STA 10+00.00 87TH PL.
= STA 34+67.50 YALE
N 383662.22
E 2582813.56
POB STA 10+00.00 88TH PL.
= STA 34+76.58 YALE
N 383671.30
E 2582813.37
CRL E. 87TH PL. S.
S88°46'27.19"E
CRL E. 88TH PL. S.
N88°50'27.21"E
S34°39'02.68"E
PI STA 8+93.06
11+00
1' SPEC. DITCH (CONC.)
WATERLINE "F" SEE SHEET 157
WATERLINE "A" SEE SHEET 148
WALL "A" SEE SHEET 177
WATERLINE "B" SEE SHEET 154
WALL "G" SEE SHEET 183
CONST. 8 LF FENCE MATCH EXIST.
34+00
N-S SECTION LINE
DAVID CAMERON 4901 E. 88TH PL.
ARTHUR C. & ELVIE E. BURROW 4905 E. 88TH PL.
DIANA L. & JOSEPH N. WALTER 4814 E. 87TH PL.
JASON C. & MELINDA A. STAUROVSKY TRUSTEES, JASON & MELINDA STAUROVSKY FAMILY TRUST 4822 E. 87TH PL.
JAIRAMANI, VICKRAM AND AJEET & JAGAT
JORDAN S. & JENIFER A. JOHNSON 4906 E. 88TH PL.
SOUTHERN POINTE FOUR
ACCESS MUST BE MAINTAINED FOR LIFT SHUTTLE SERVICE AT ALL TIMES.
KEYMAP
E. 81ST ST. S.
S. YALE AVE.
E. 84TH ST. S.
E. 87TH ST. S.
E. 87TH PL. S.
E. 88TH PL. S.
E. 89TH ST. S.
E. 91ST ST. S.
LEGEND
PROPOSED CONCRETE PAVEMENT
PROPOSED ASPHALT PAVEMENT
DRIVEWAY
SIDEWALK
CURB INLET
CURB AND GUTTER
DRAINAGE PATH
RETAINING WALL
DRAINAGE STRUCTURE NO.
DRIVEWAY NO.
PARCEL NUMBER
PERMANENT R/W
TEMPORARY EASEMENT/RIGHT OF ENTRY
GENERAL & UTILITY EASEMENT
FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102
SCALE: 1" = 20'-0"
BENCHMARK 2020
3/8" IPC S&H TP FOUND
STA. 34+32.39, 19.92' RT.
N 383627.54, E 2582834.23, EL. 767.36'
BENCHMARK 2018
60D NAIL FOUND
STA. 36+65.19, 52.42' RT.
N 383860.99, E 2582861.74, EL. 781.06'
STA. 9+10.50 BEGIN E. 87TH PL. S. N 383662.44 E 2582724.20
STA. 9+25.40 END E. 87TH PL. S. N 383660.71 E 2582738.98
STA. 10+72.47 BEGIN E. 88TH PL. S. N 383672.77 E 2582885.82
STA. 11+28.10 END E. 88TH PL. S. N 383673.89 E 2582941.44
EXISTING GRADE
PROFILE GRADE
+0.39%
-1.26%
+3.13%
+2.08%
-2.08%
-3.13%
+1.54%
+6.50%
+0.01%
L=20.00' K=4 V=20
L=27.00' K=4 V=25
PVI 9+10.50 ELEV 766.28
PVI 9+44.00 ELEV 766.41
PVI 9+59.00 ELEV 766.22
PVI 10+41.00 ELEV 766.63
PVC 10+56.00 ELEV 766.86
PVT 10+76.00 ELEV 767.66
PVI 11+14.60 ELEV 770.17
PVC 11+01.10 ELEV 769.30
PVT 11+28.10 ELEV 770.17
PVI 10+66.00 ELEV 767.01
EX GAS 8"
EX 24" RCP FL 763.57
EX WATER 12"
EX 18" RCP FL 765.77
36" PIPE FL 756.74
WATER 8"
WATER 12"
E. 87th PL. S.
E. 88th PL. S.
RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018
PLAN AND PROFILE (8)
E. 87th PL. S. & E. 88th PL. S.
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600
DRAWN PB 10/18
DESIGNED JPP 10/18
SURVEY RDL 10/18
PROJECT MGR 12/18
FIELD MGR 7/20
LEAD ENGR 1/19
RECOMMENDED
DESIGN MANAGER
CITY ENGINEER
APPROVED:
DATE: OCTOBER 2018
FILE: 313925-C-PP-Side_Street-01.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 76 OF 334 SHEETS
REVISION
BY
DATE
1/5/2021
2:15:01 PM
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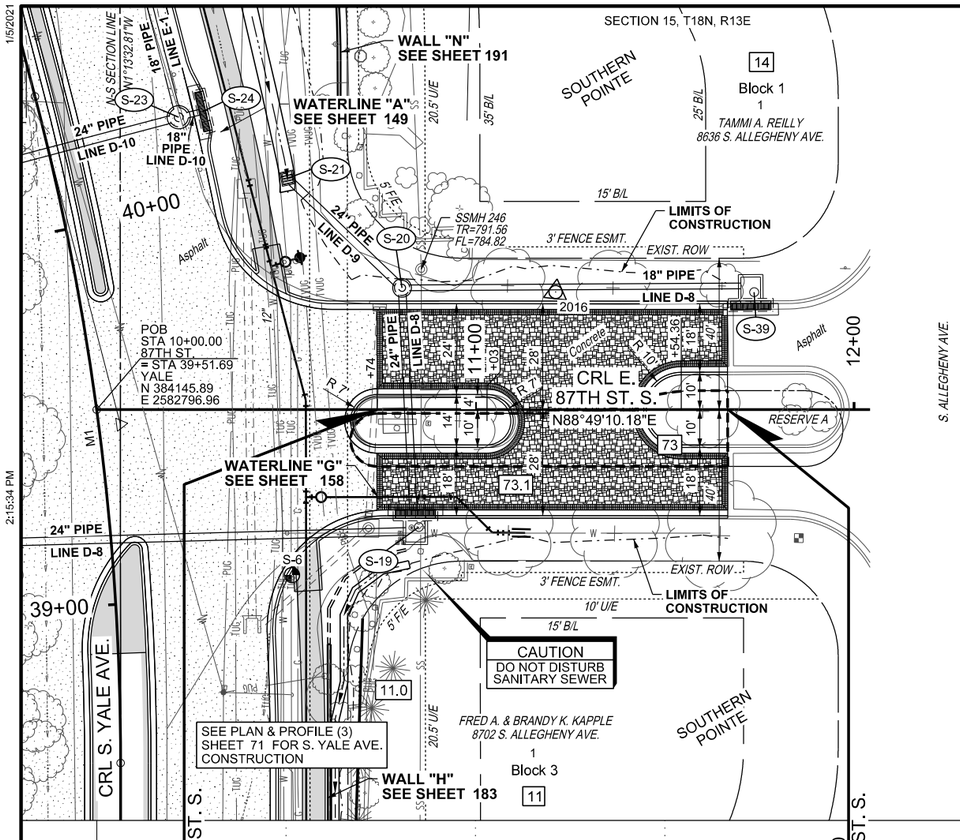

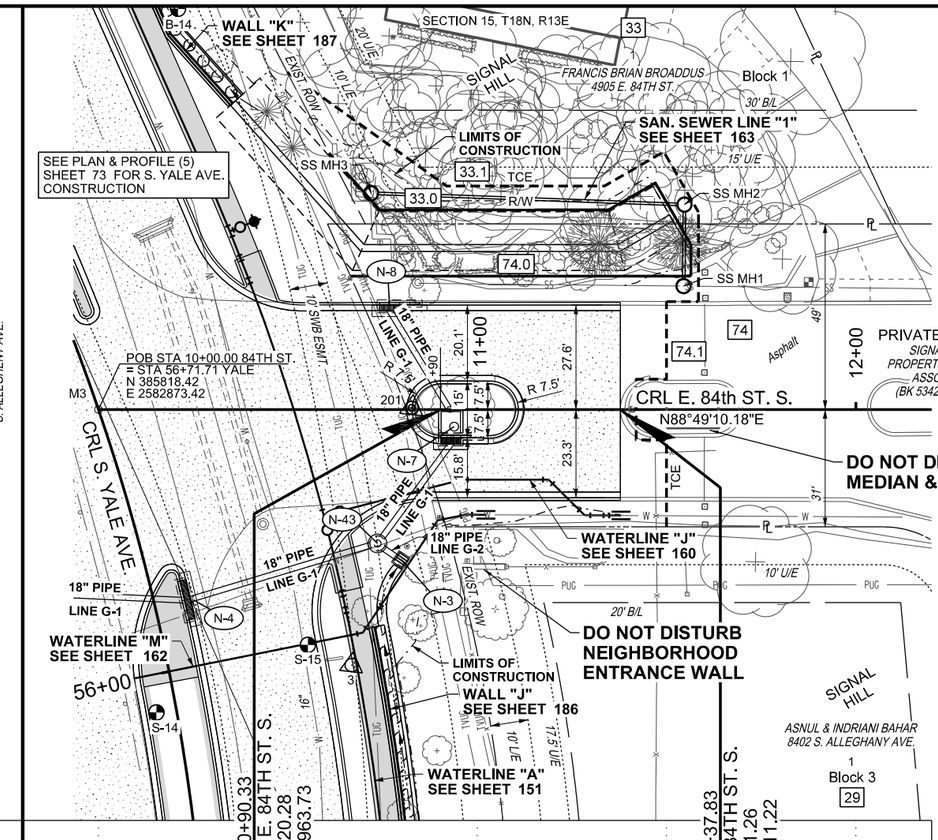

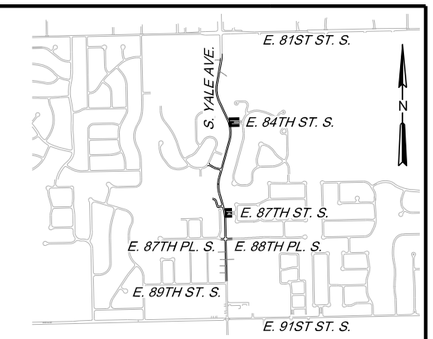

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES
SEE SHEETS 81 TO 102

N

20' 15' 10' 5' 0 20'

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PLAN AND PROFILE (9)
E. 87th ST. S. & E. 84th ST. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 20'	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= 4'	LEAD ENGR		1/19
	RECOMMENDED	HAS 7-20	
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER
DATE: OCTOBER 2018

FILE: 313925-C-PP-Side_Street-02.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 77 OF 334 SHEETS

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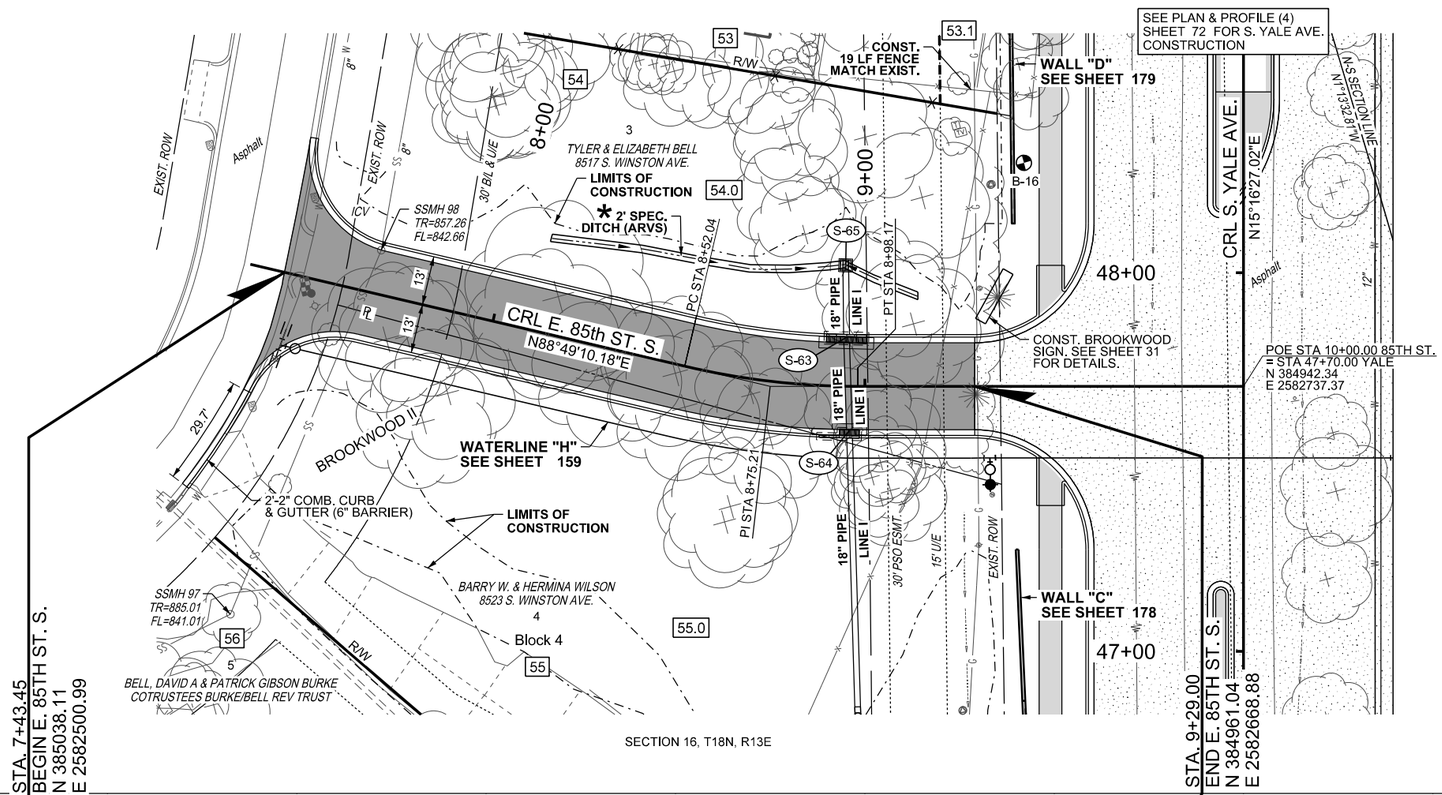
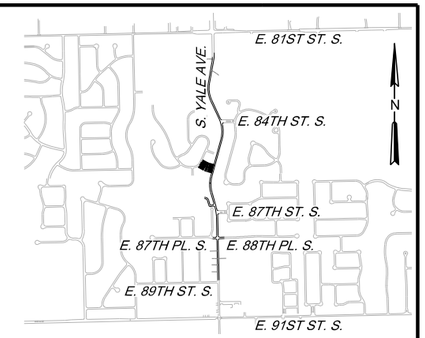




KEYMAP

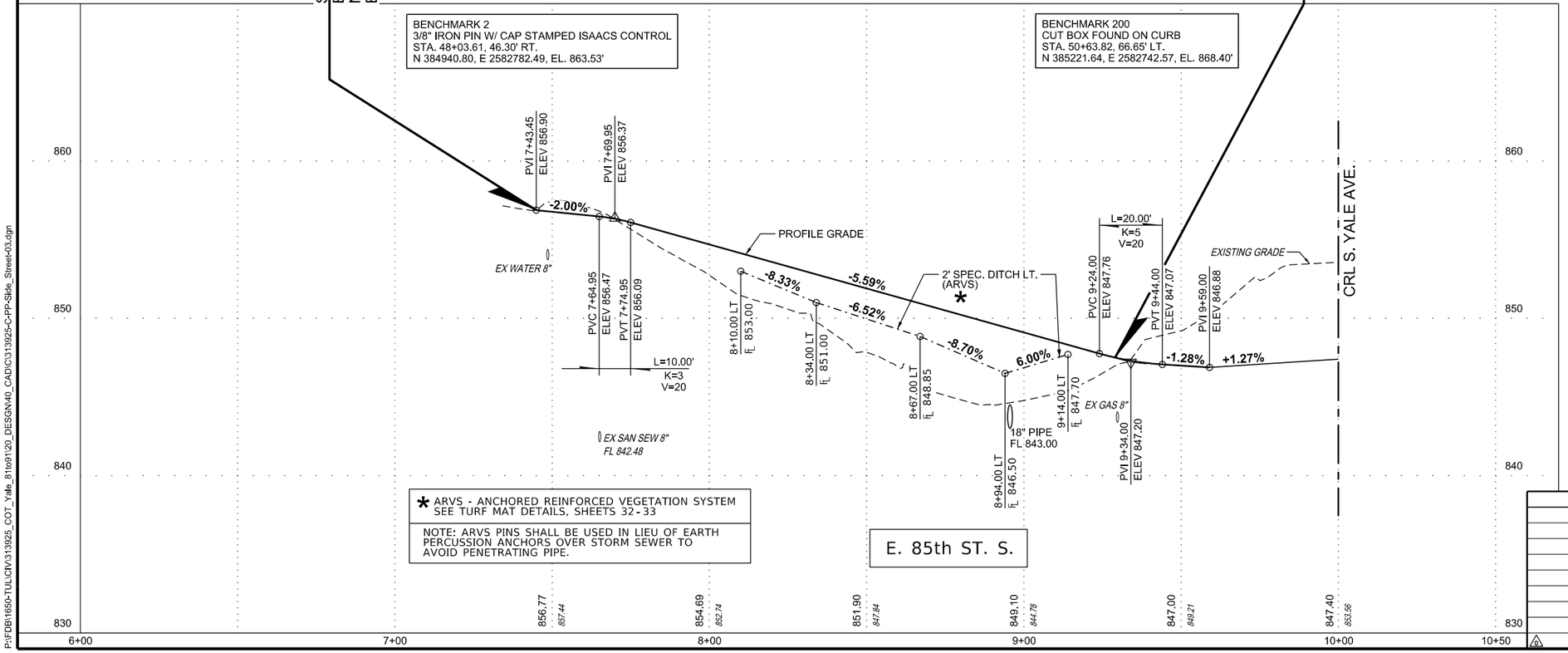
LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA



* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32-33

NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.

PLAN AND PROFILE (10)
E. 85TH ST. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 20'	PROJECT MGR	RDL	10/19	
	FIELD MGR	ZCM	9/10	
	LEAD ENGR		1/19	
VERTICAL: 1"= 4'	RECOMMENDED	HAS	7-20	
	DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-PP-Side_Street-03.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 78 OF 334 SHEETS

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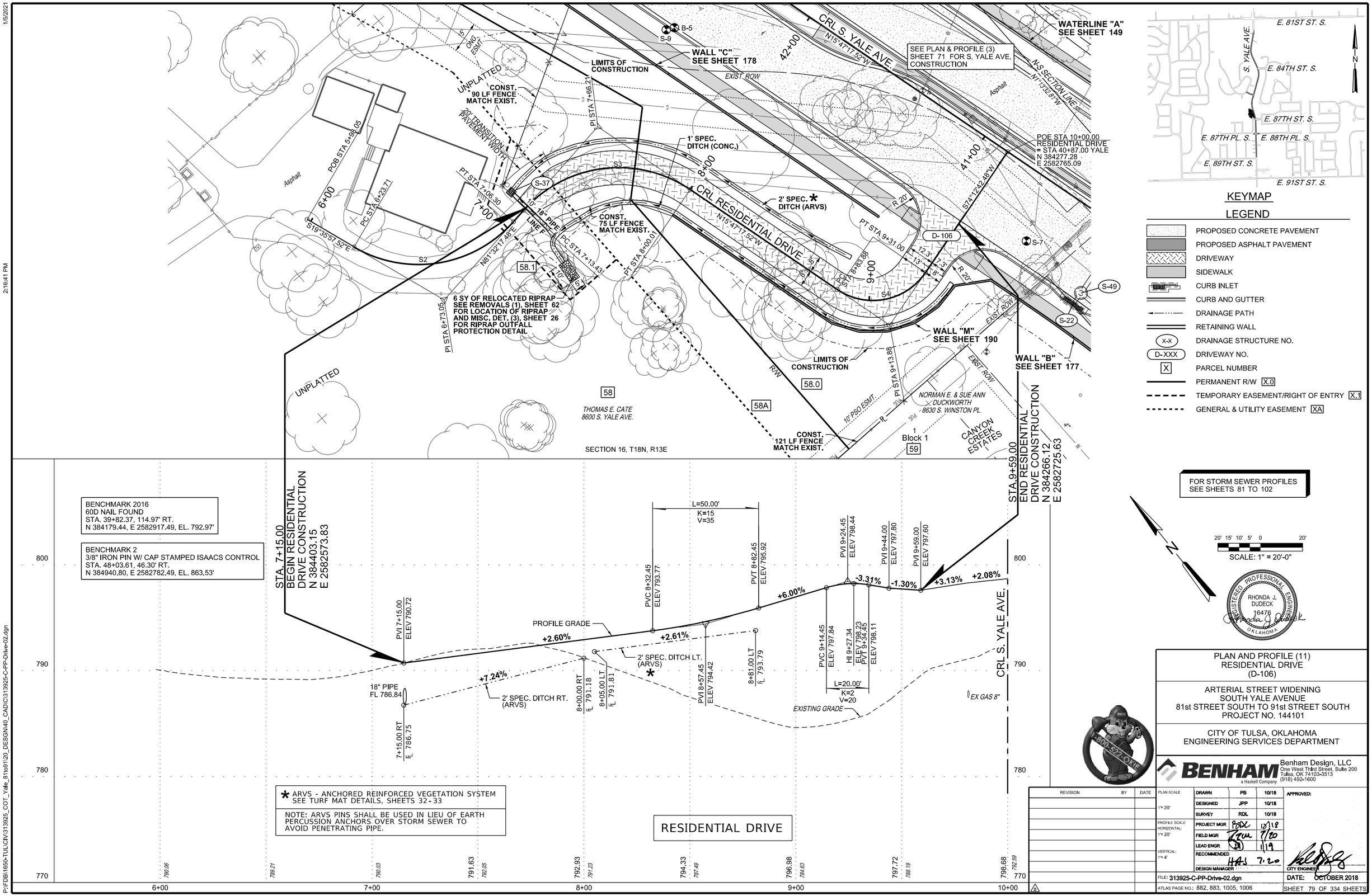
CRL S. YALE AVE
N15°47'17.52"W
WALL "C"
SEE SHEET 178
LIMITS OF CONSTRUCTION
EXIST ROW
SEE PLAN & PROFILE (3) SHEET 71 FOR S. YALE AVE. CONSTRUCTION
WATERLINE "A"
SEE SHEET 149
N-S SECTION LINE
N1°13'32.81"W
POE STA 10+00.00
RESIDENTIAL DRIVE
= STA 40+87.00 YALE
N 384277.28
E 2582765.09
S74°12'42.48"W
UNPLATTED
CONST. 90 LF FENCE MATCH EXIST.
20' TRANSITION PAVEMENT WIDTH
POB STA 5+94.05
PC STA 6+23.71
PT STA 7+06.30
S19°35'57.52"E
S2
S3
S4
S-37
18" PIPE
N81°32'17.48"E
CONST. 75 LF FENCE MATCH EXIST.
PC STA 7+13.43
PT STA 8+00.01
1' SPEC. DITCH (CONC.)
2' SPEC. DITCH (ARVS)
CRL RESIDENTIAL DRIVE
N15°47'17.52"W
PT STA 9+31.00
PC STA 8+83.88
D-106
S-7
S-49
S-22
S-9
B-5
6 SY OF RELOCATED RIPRAP SEE REMOVALS (1), SHEET 62 FOR LOCATION OF RIPRAP AND MISC. DET. (3), SHEET 26 FOR RIPRAP OUTFALL PROTECTION DETAIL
PI STA 6+73.05
58.1
58
58A
58.0
THOMAS E. CATE
8600 S. YALE AVE.
SECTION 16, T18N, R13E
WALL "M"
SEE SHEET 190
WALL "B"
SEE SHEET 177
LIMITS OF CONSTRUCTION
R/W
PI STA 9+13.88
10' PSO ESMT.
NORMAN E. & SUE ANN DUCKWORTH
8630 S. WINSTON PL.
CONST. 121 LF FENCE MATCH EXIST.
Block 1
59
CANYON CREEK ESTATES
STA. 9+59.00
END RESIDENTIAL DRIVE CONSTRUCTION
N 384266.12
E 2582725.63
STA. 7+15.00
BEGIN RESIDENTIAL DRIVE CONSTRUCTION
N 384403.15
E 2582573.83
BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'
BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'
L=50.00'
K=15
V=35
PVC 8+32.45
ELEV 793.77
PVT 8+82.45
ELEV 795.92
PVI 9+24.45
ELEV 798.44
PVI 9+44.00
ELEV 797.80
PVI 9+59.00
ELEV 797.60
PVI 7+15.00
ELEV 790.72
PROFILE GRADE
+2.60%
+2.61%
+6.00%
-3.31%
-1.30%
+3.13%
+2.08%
+7.24%
2' SPEC. DITCH LT. (ARVS)
2' SPEC. DITCH RT. (ARVS)
18" PIPE
FL 786.84
7+15.00 RT
FL 786.75
8+00.00 RT
FL 791.18
8+05.00 LT
FL 791.81
PVI 8+57.45
ELEV 794.42
8+81.00 LT
FL 793.79
PVC 9+14.45
ELEV 797.84
HI 9+27.34
ELEV 798.23
PVT 9+34.45
ELEV 798.11
L=20.00'
K=2
V=20
EXISTING GRADE
EX GAS 8"
CRL S. YALE AVE.
790.06
789.21
790.03
791.63
792.05
792.93
791.23
794.33
787.49
796.98
784.63
797.72
788.19
798.68
792.59
6+00
7+00
8+00
9+00
10+00
800
790
780
770
* ARVS - ANCHORED REINFORCED VEGETATION SYSTEM SEE TURF MAT DETAILS, SHEETS 32-33
NOTE: ARVS PINS SHALL BE USED IN LIEU OF EARTH PERCUSSION ANCHORS OVER STORM SEWER TO AVOID PENETRATING PIPE.
RESIDENTIAL DRIVE
E. 81ST ST. S.
S. YALE AVE.
E. 84TH ST. S.
E. 87TH ST. S.
E. 87TH PL. S.
E. 88TH PL. S.
E. 89TH ST. S.
E. 91ST ST. S.
KEYMAP
LEGEND
PROPOSED CONCRETE PAVEMENT
PROPOSED ASPHALT PAVEMENT
DRIVEWAY
SIDEWALK
CURB INLET
CURB AND GUTTER
DRAINAGE PATH
RETAINING WALL
DRAINAGE STRUCTURE NO.
DRIVEWAY NO.
PARCEL NUMBER
PERMANENT R/W X.0
TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
GENERAL & UTILITY EASEMENT XA
FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102
SCALE: 1" = 20'-0"
REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
PLAN AND PROFILE (11)
RESIDENTIAL DRIVE
(D-106)
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600
REVISION
BY
DATE
PLAN SCALE 1"= 20'
PROFILE SCALE HORIZONTAL: 1"= 20'
VERTICAL: 1"= 4'
DRAWN PB 10/18
DESIGNED JPP 10/18
SURVEY RDL 10/18
PROJECT MGR 10/18
FIELD MGR 7/20
LEAD ENGR 1/19
RECOMMENDED
DESIGN MANAGER 7/20
APPROVED:
CITY ENGINEER
FILE: 313925-C-PP-Drive-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 79 OF 334 SHEETS
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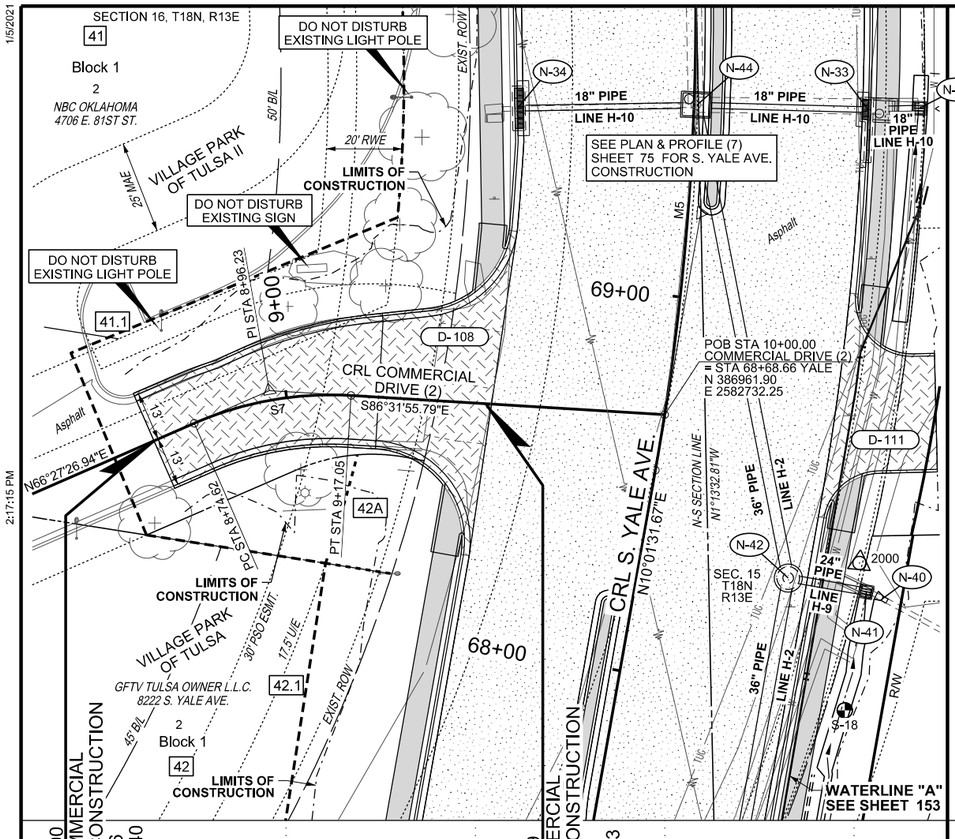
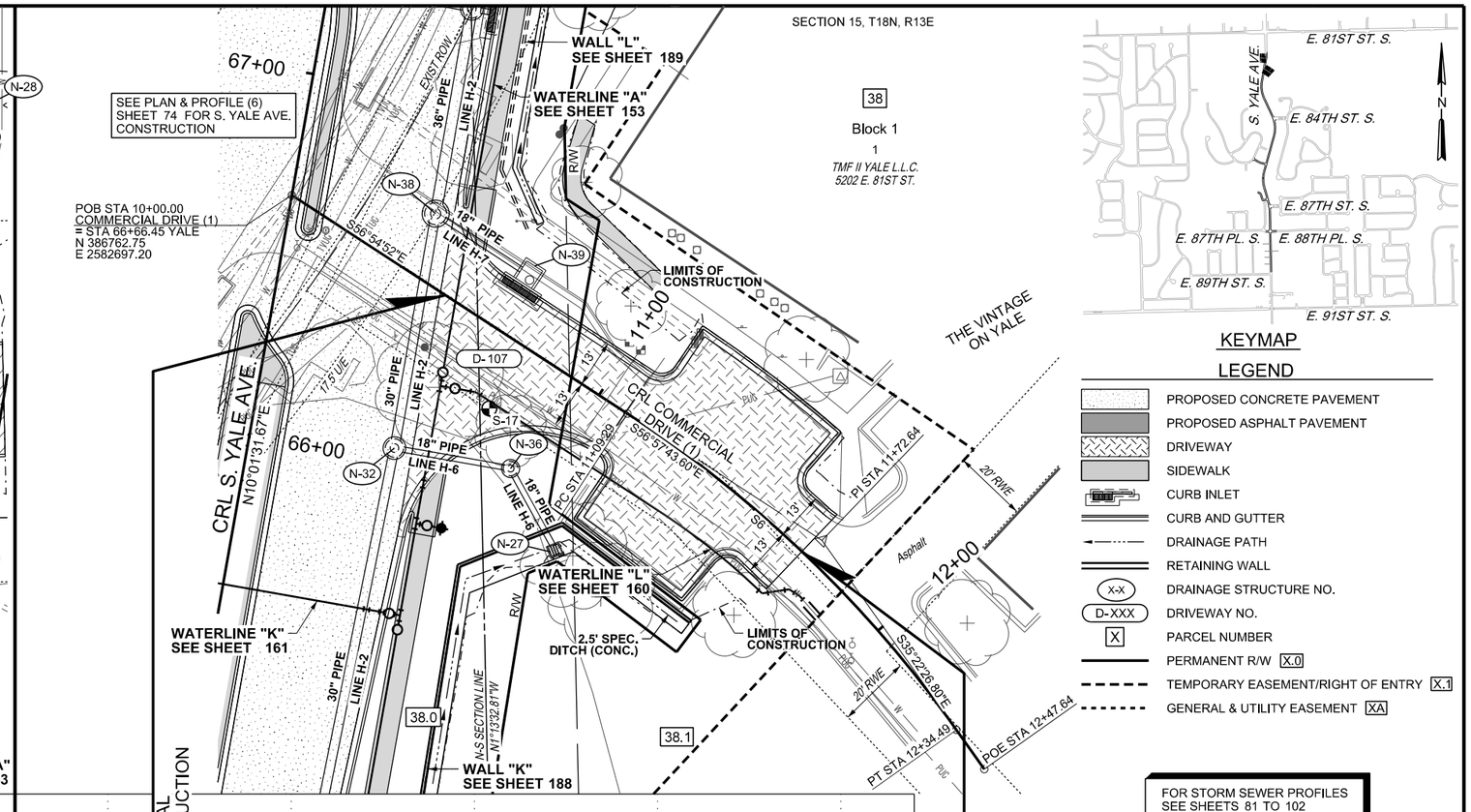


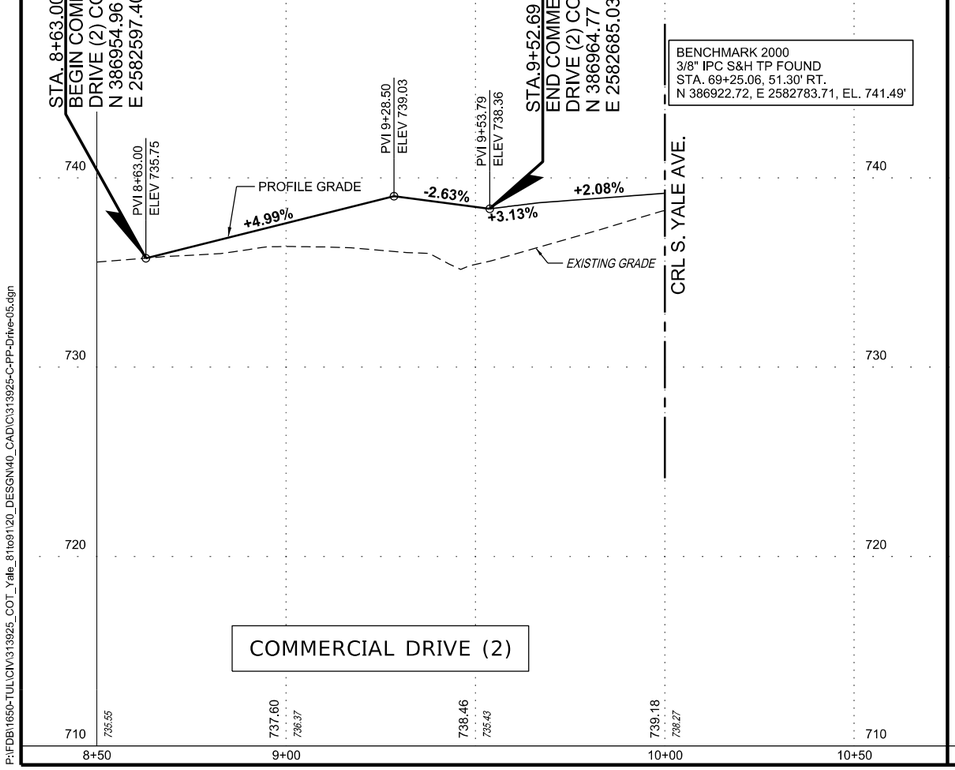


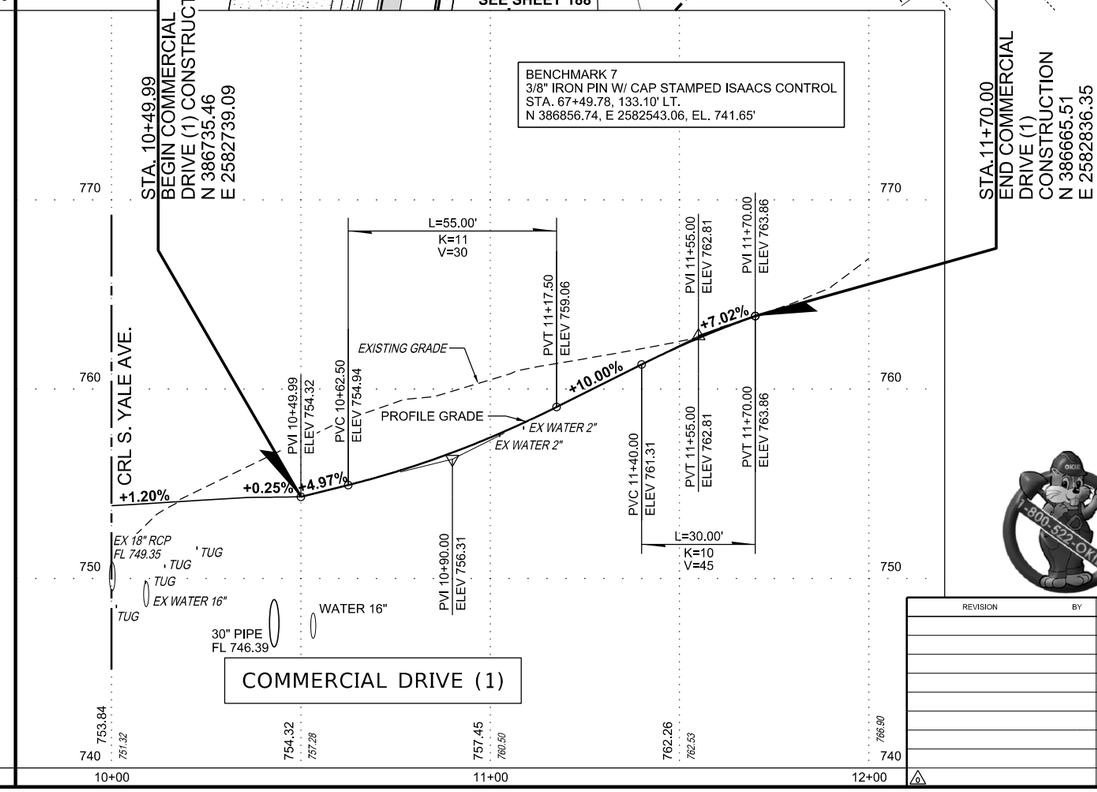
KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- (X-X) DRAINAGE STRUCTURE NO.
- (D-XXX) DRIVEWAY NO.
- [X] PARCEL NUMBER
- PERMANENT R/W [X.0]
- TEMPORARY EASEMENT/RIGHT OF ENTRY [X.1]
- GENERAL & UTILITY EASEMENT [XA]

FOR STORM SEWER PROFILES SEE SHEETS 81 TO 102





N

20' 15' 10' 5' 0 20'

SCALE: 1" = 20'-0"

PROFESSIONAL ENGINEER — REGISTERED — RHONDA J. DUDECK 16476 — OKLAHOMA

PLAN AND PROFILE (12)
COMMERCIAL DRIVES (1) & (2)
(D-107) & (D-108)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 20'	PROJECT MGR		12/18	
	FIELD MGR		7/20	
VERTICAL: 1"= 4'	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER		7-20	CITY ENGINEER

FILE: 313925-C-PP-Drive-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 80 OF 334 SHEETS

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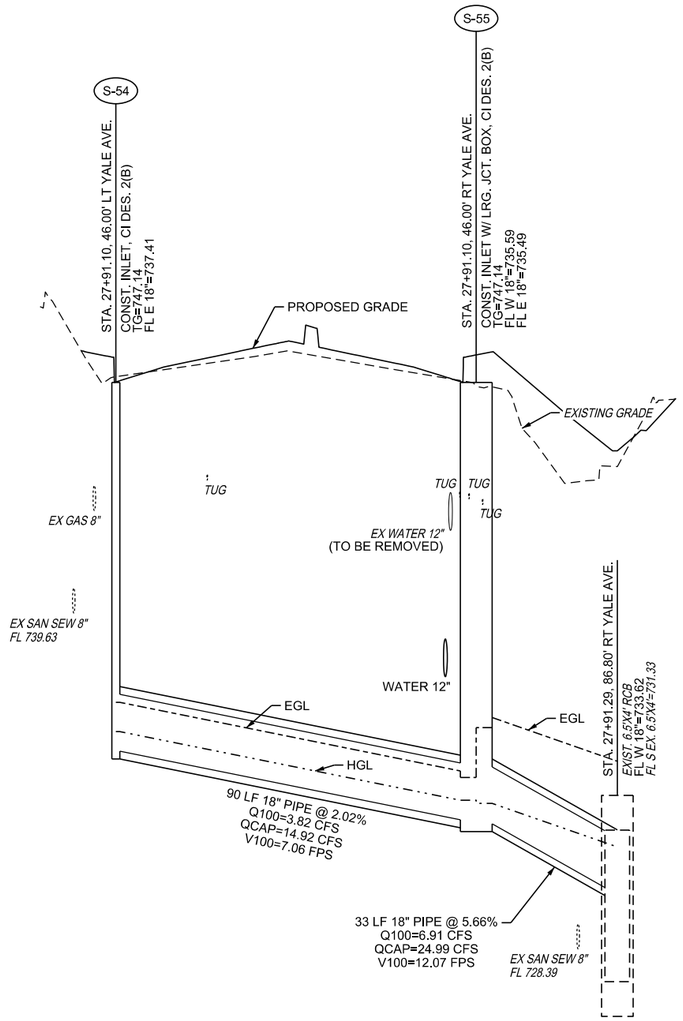
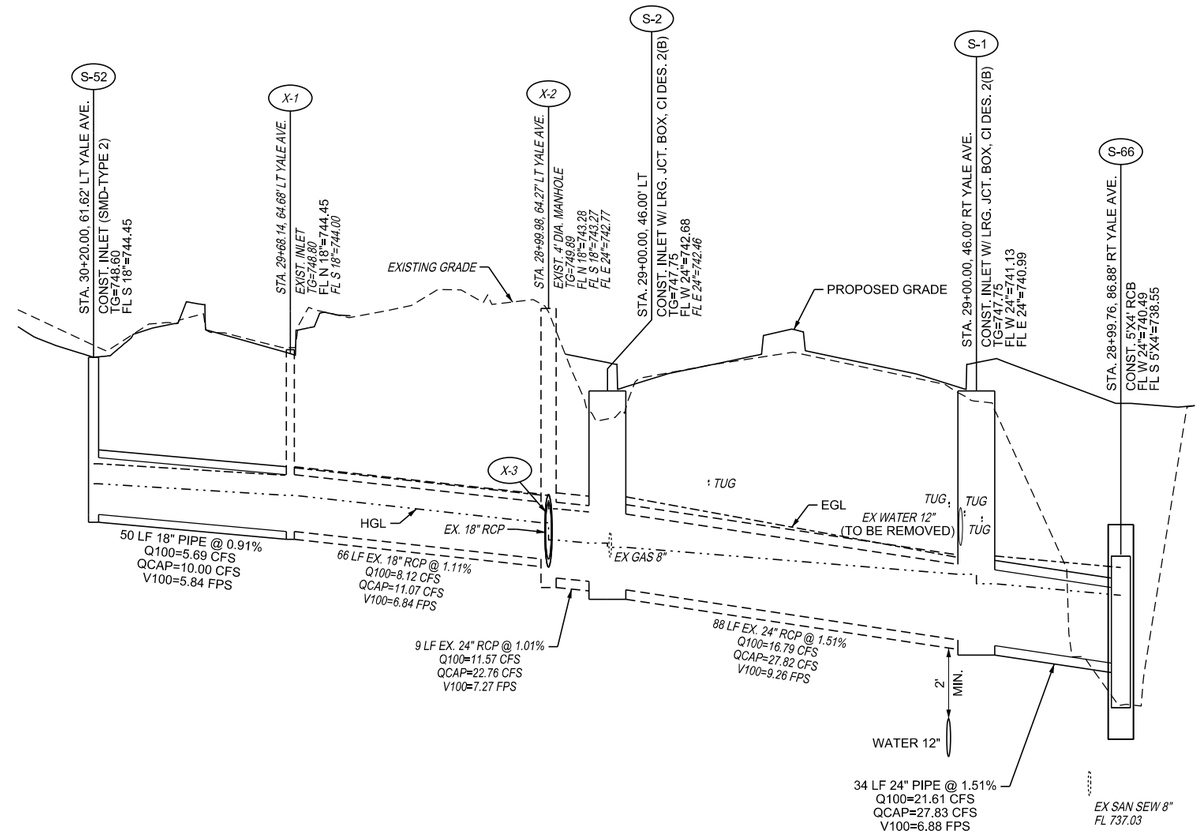


LINE A



LINE B

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LHG	6/20
	FIELD MGR		7/20
	LEAD ENGR	BDL	6/20
VERTICAL: 1"= NA	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER
DATE: OCTOBER 2018

FILE: 313925-C-Drainage_Profile-01.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006

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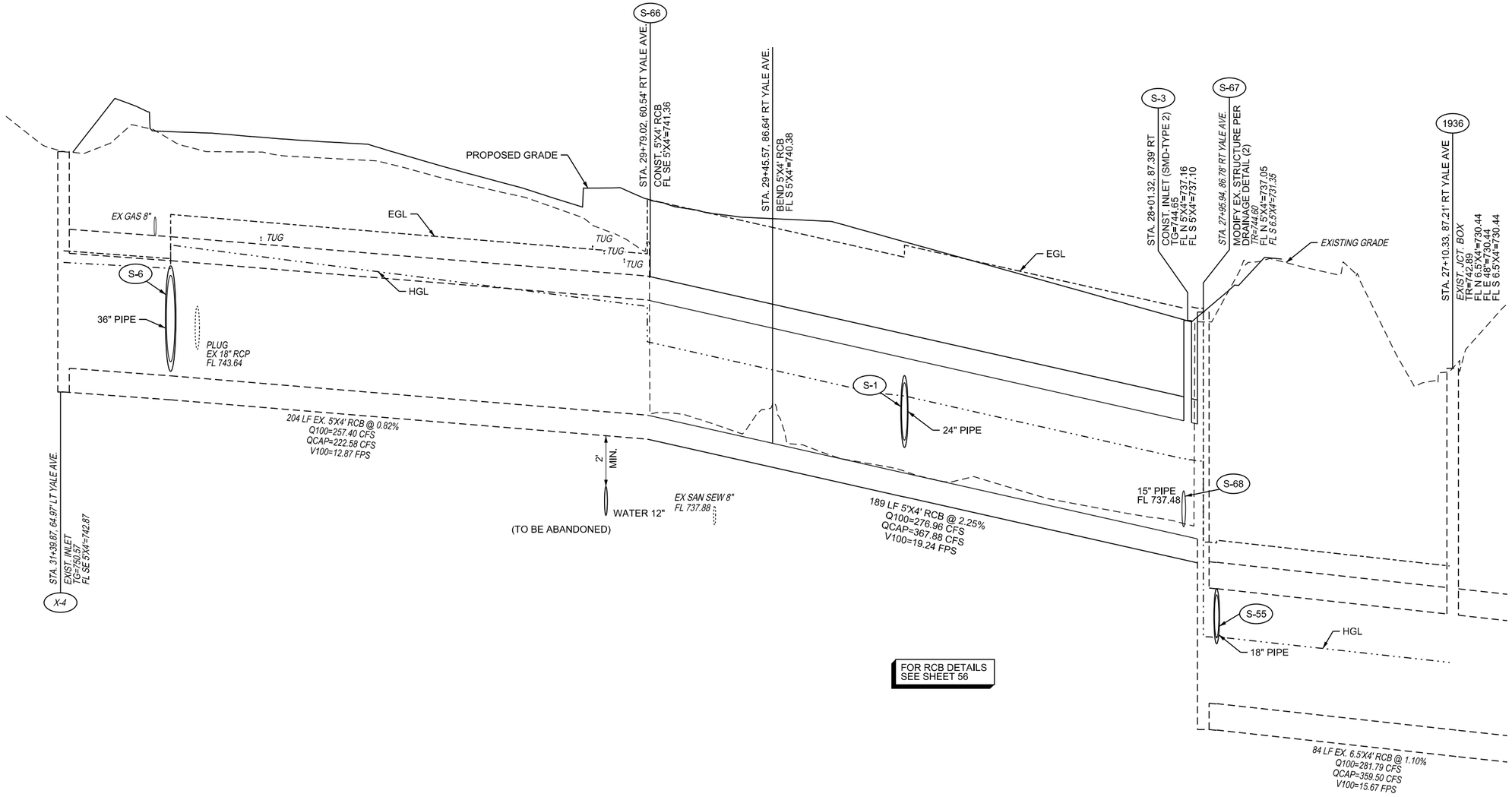

FOR RCB DETAILS
SEE SHEET 56

LINE C

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR		6/20
FIELD MGR		7/20
LEAD ENGR		8/20
RECOMMENDED		
DESIGN MANAGER		7.20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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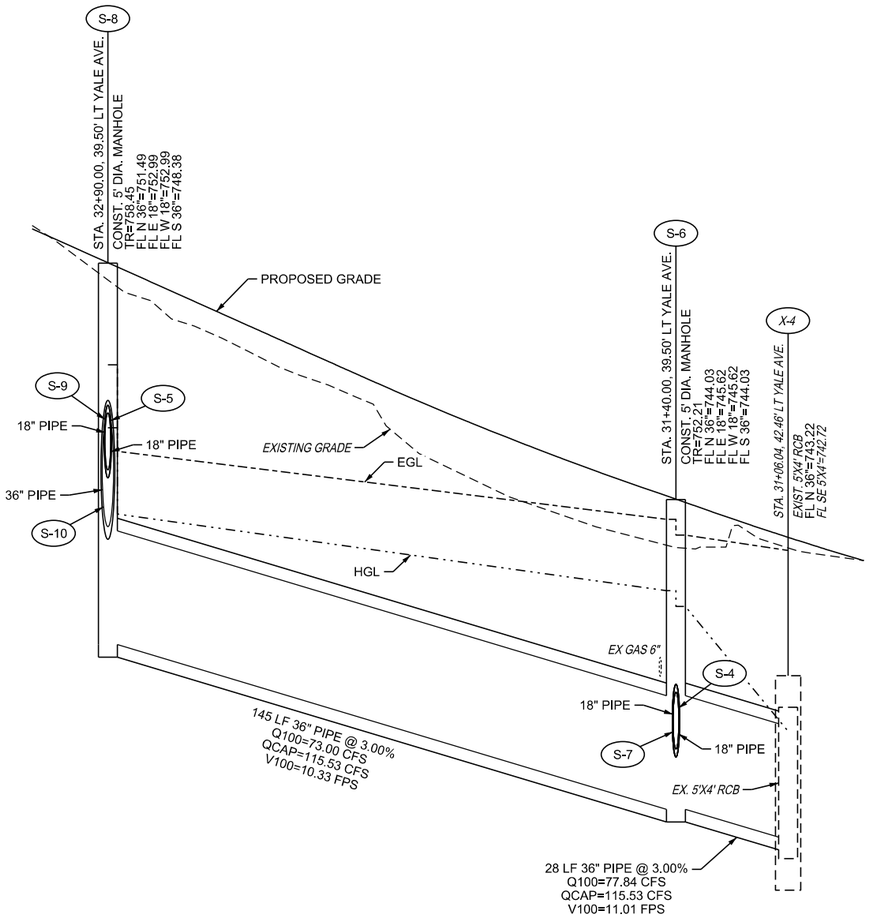
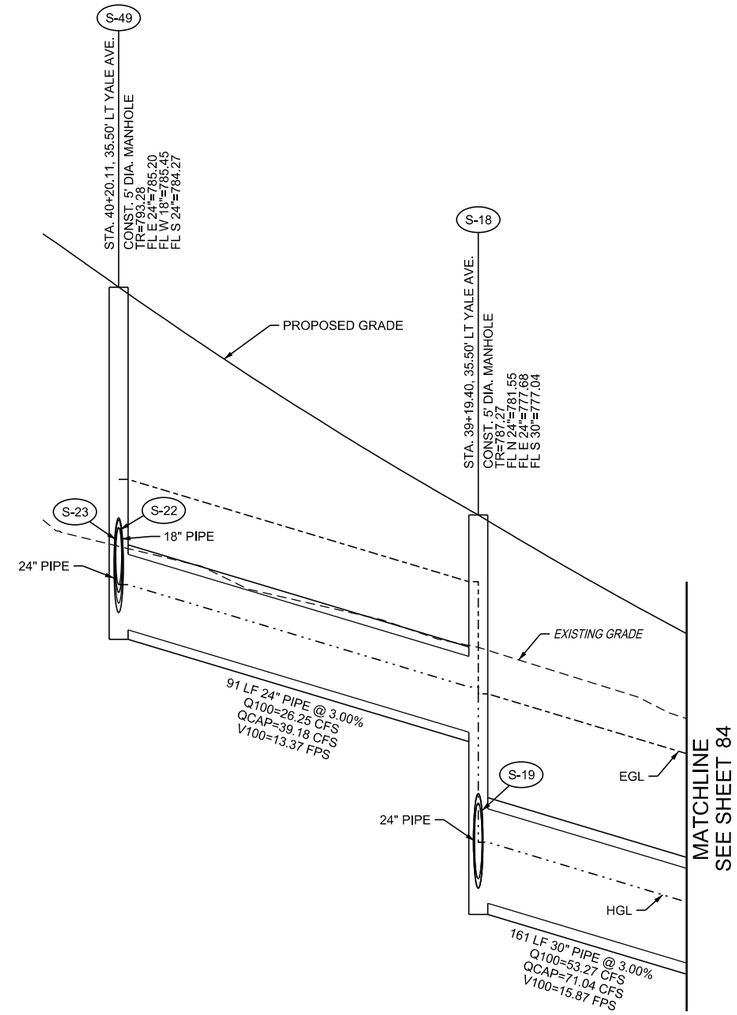


LINE D-1



LINE D-2

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR.	LAG	6/20
	FIELD MGR.		7/20
VERTICAL: 1"= NA	LEAD ENGR	BAL	6/20
	RECOMMENDED	HBS	7-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-03.dgn
DATE: OCTOBER 2018
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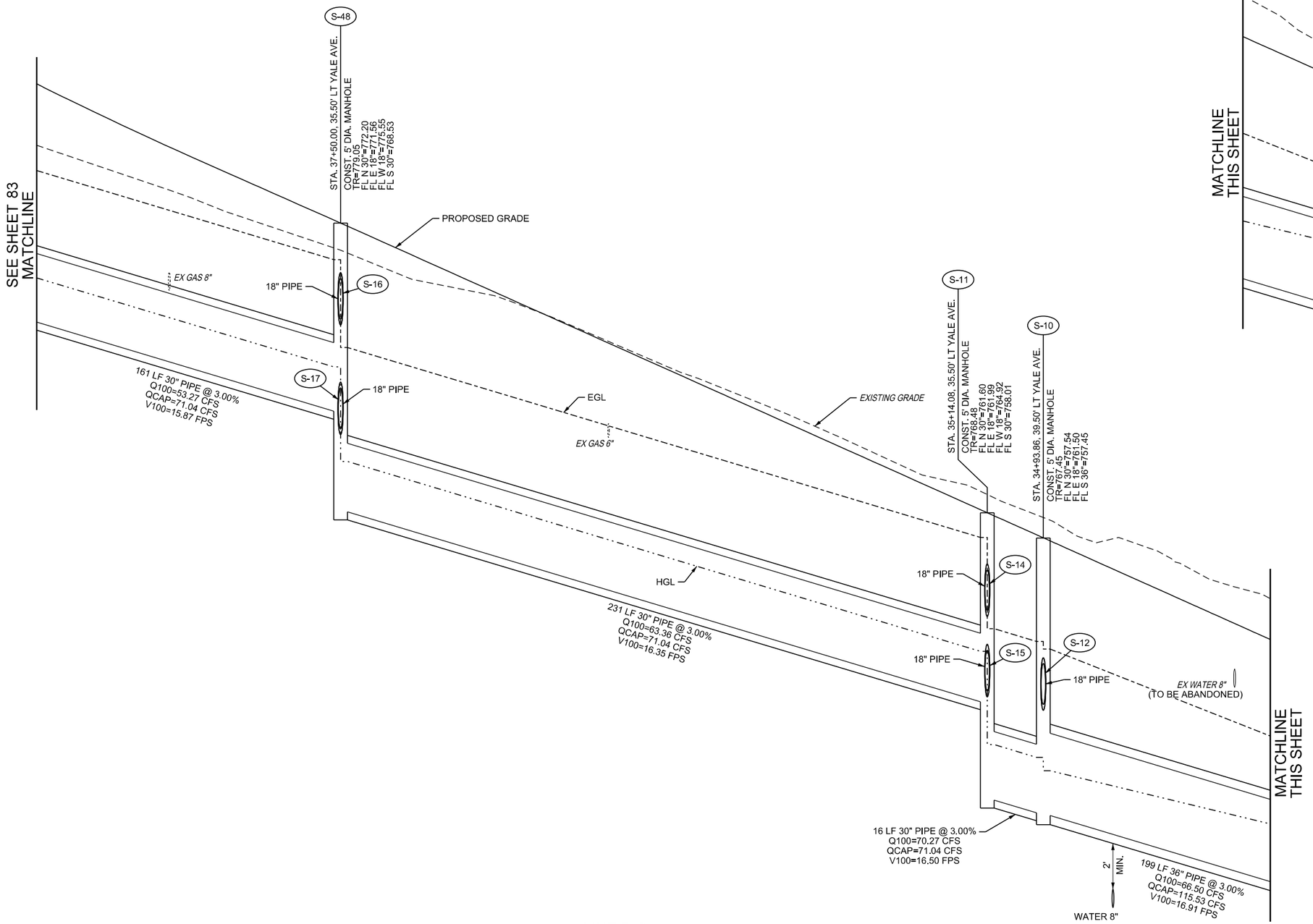

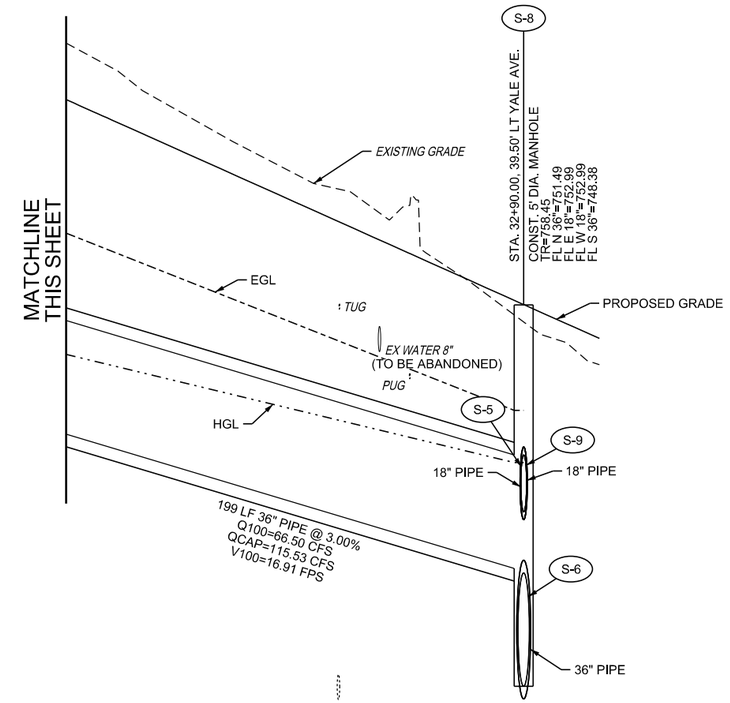

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR	RDL	7/20
VERTICAL: 1"= NA	LEAD ENGR	BDL	6/20
	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-04.dgn
DATE: OCTOBER 2018
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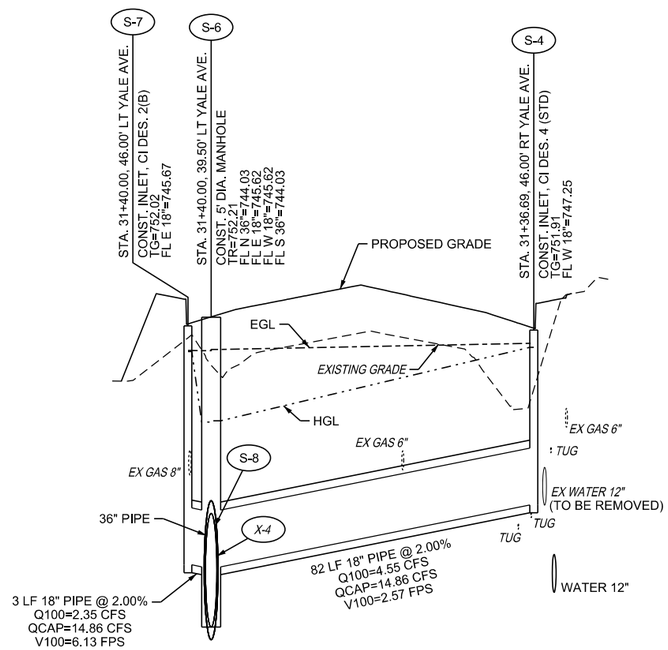
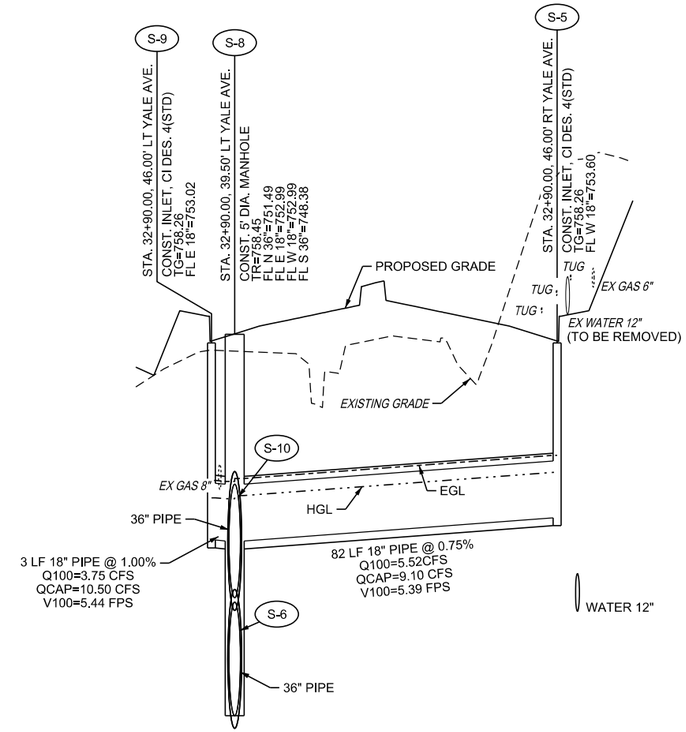


LINE D-3



LINE D-4

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		10/20
	RECOMMENDED HAS 7-20 DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-05.dgn
DATE: OCTOBER 2018
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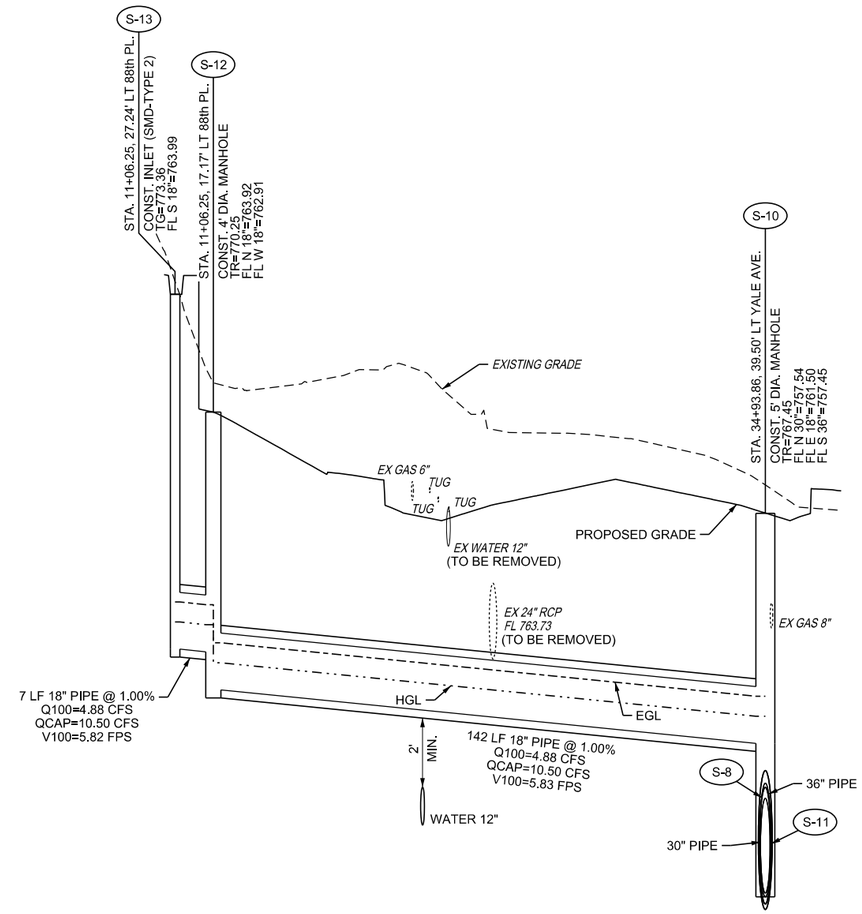
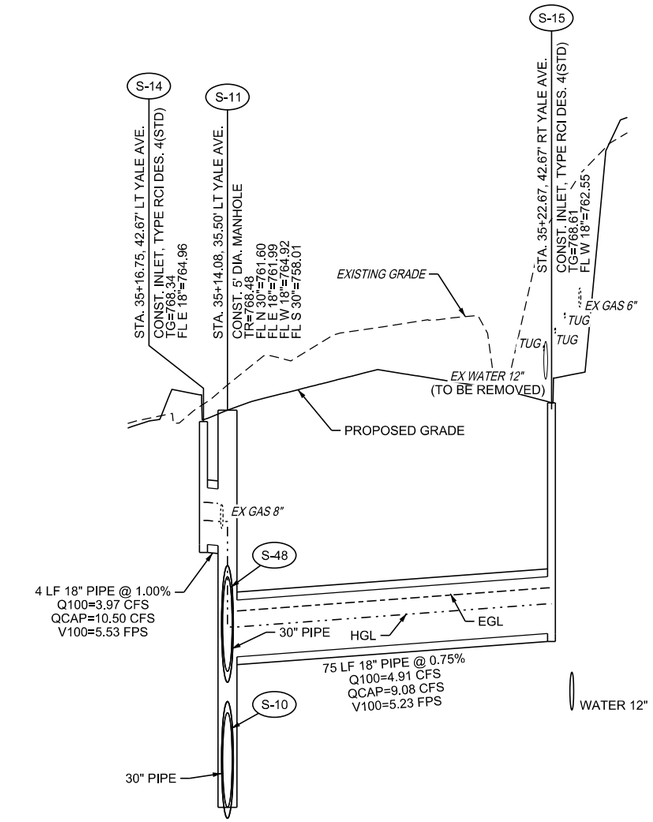


LINE D-5



LINE D-6

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LMG	6/20	
	FIELD MGR	CCH	7/20	
VERTICAL: 1"= NA	LEAD ENGR	RDD	6/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER
FILE: 313925-C-Drainage_Profile-06.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 86 OF 334 SHEETS

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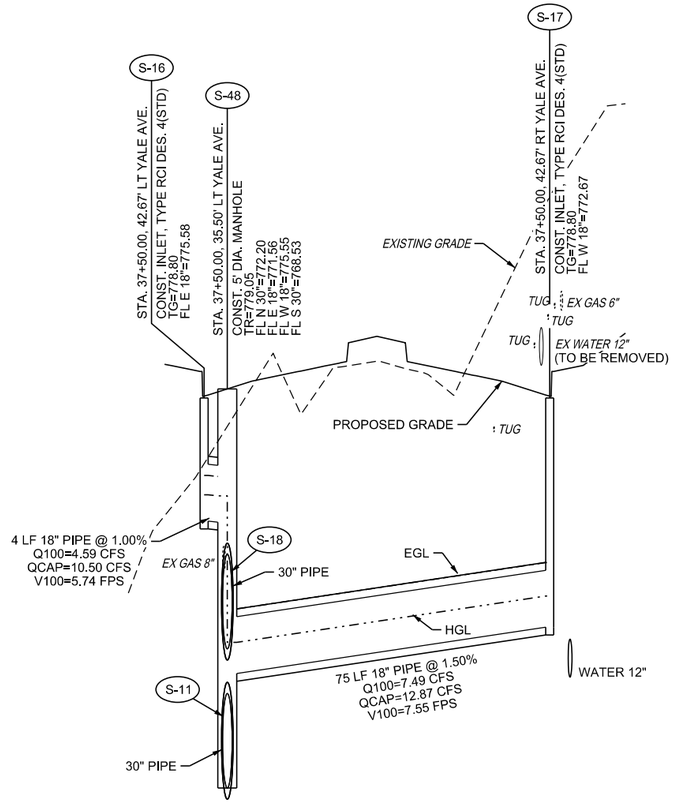
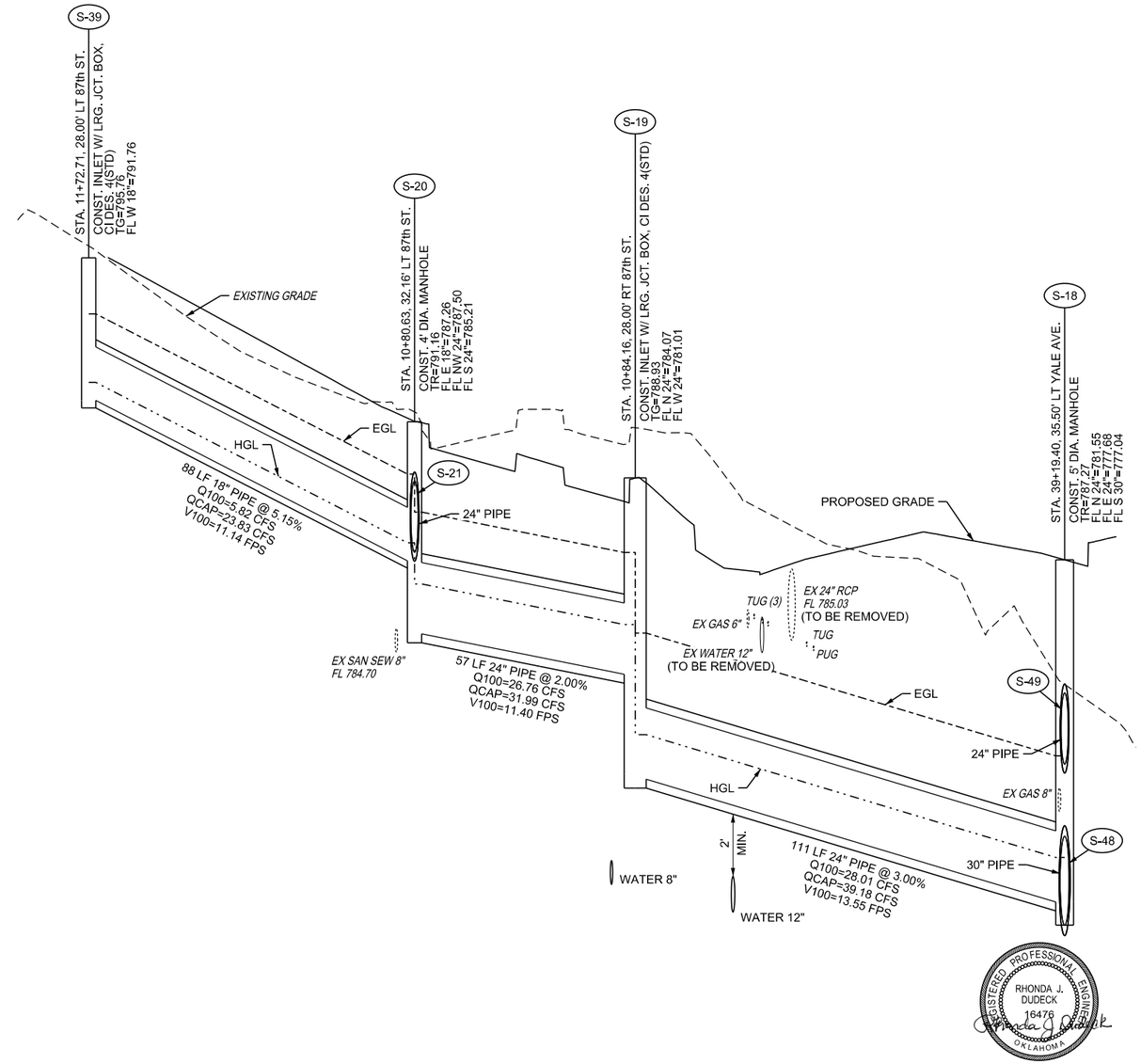


LINE D-7



LINE D-8

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

DRAINAGE PROFILES (7)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE: HORIZONTAL: 1"= NA	PROJECT MGR	CAG	6/20
	FIELD MGR	JCW	7/20
VERTICAL: 1"= NA	LEAD ENGR	RDL	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7.20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-07.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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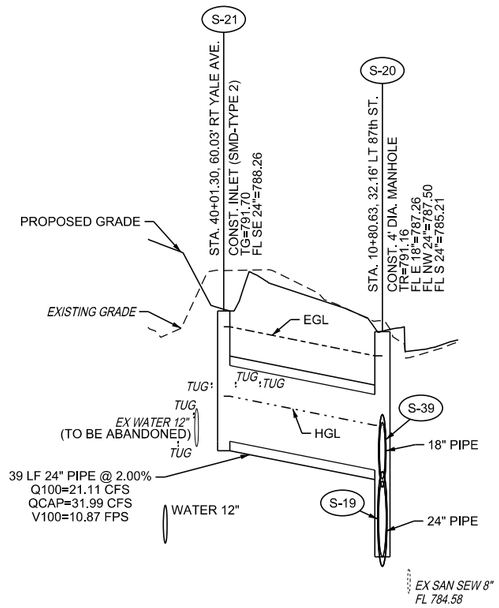

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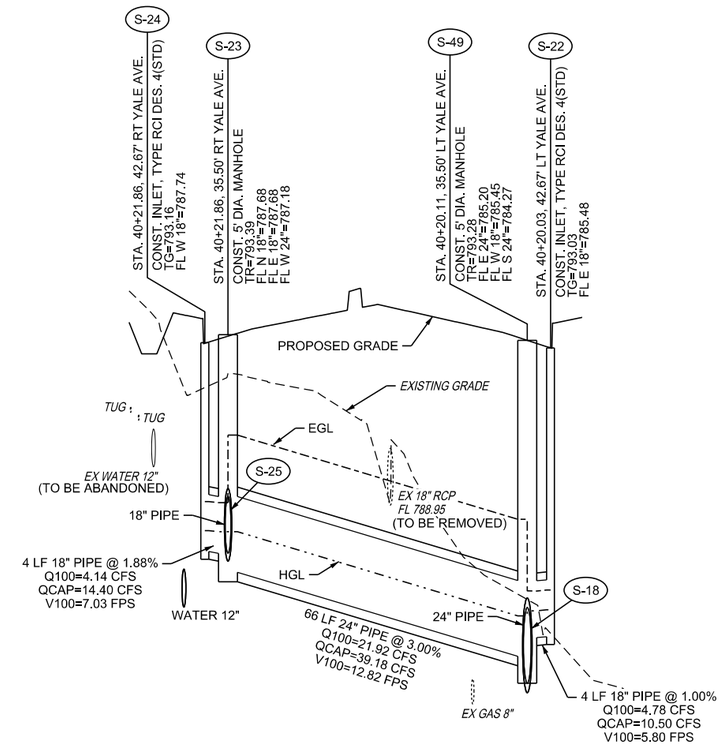

LINE D-10

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (8)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-08.dgn
DATE: OCTOBER 2018
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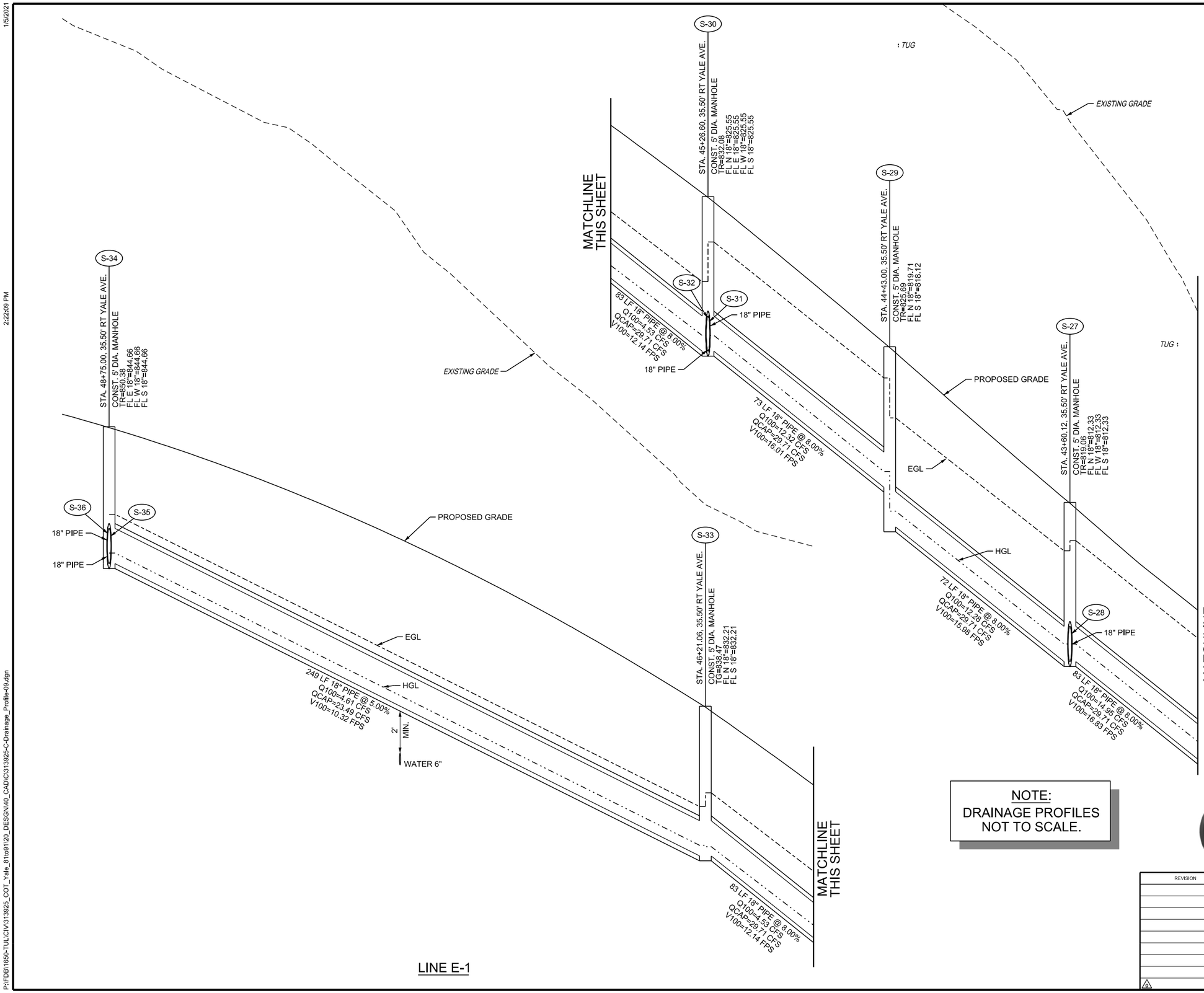

LINE E-1

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (9)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		6/20	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR		6/20	
	RECOMMENDED DESIGN MANAGER		7-20	CITY ENGINEER

FILE: 313925-C-Drainage_Profile-09.dgn
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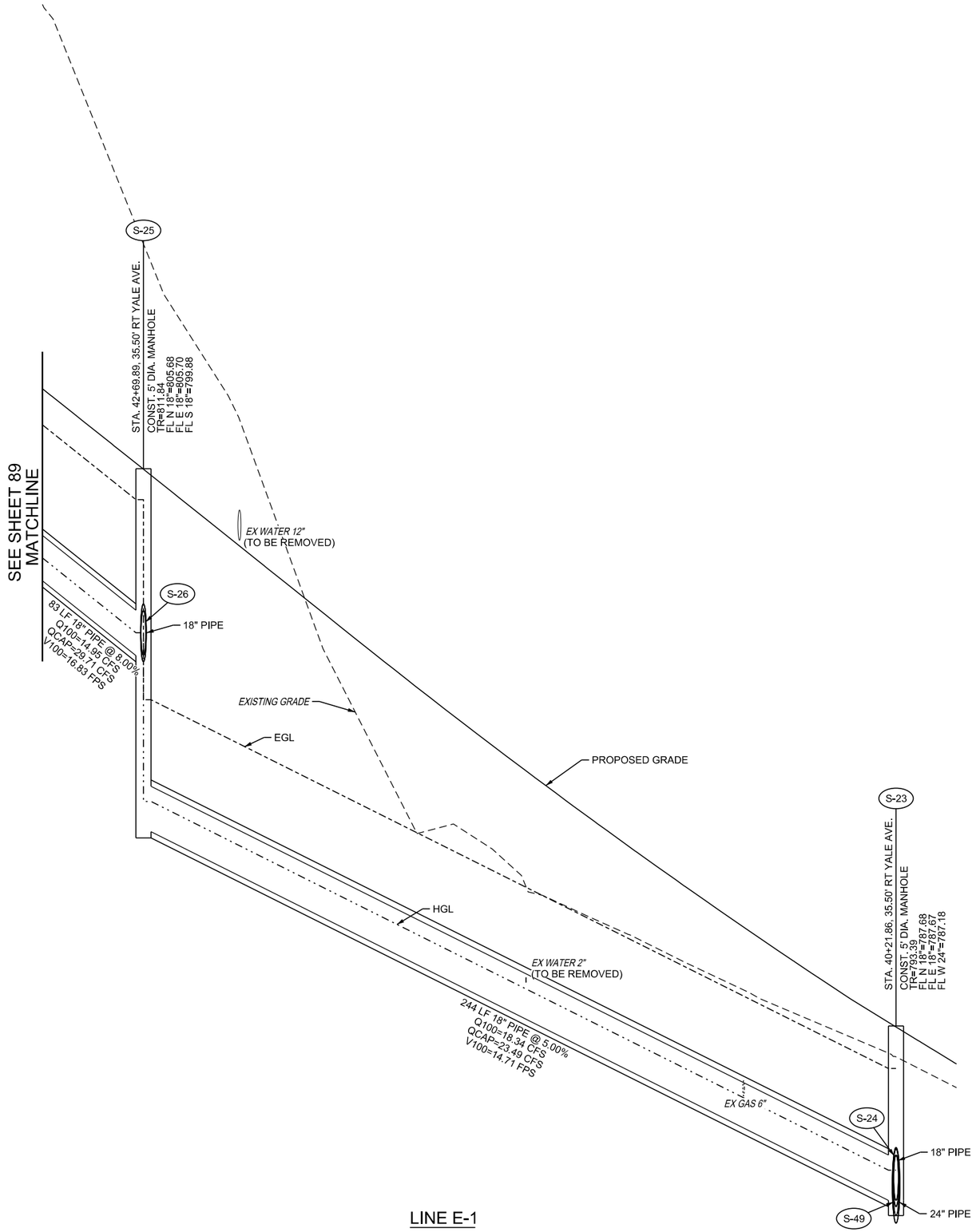
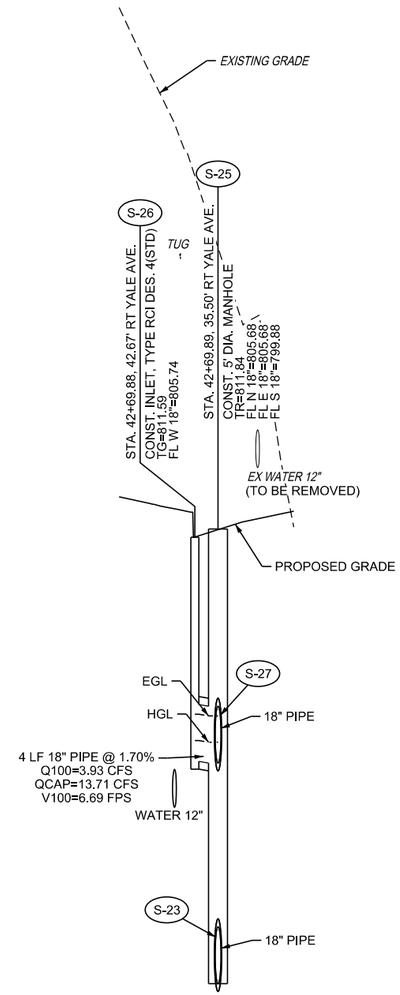


LINE E-1



LINE E-2

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (10)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	AG	6/20	
	FIELD MGR	RDL	6/20	
VERTICAL: 1"= NA	LEAD ENGR	RDL	6/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER
FILE: 313925-C-Drainage_Profile-10.dgn				DATE: OCTOBER 2018
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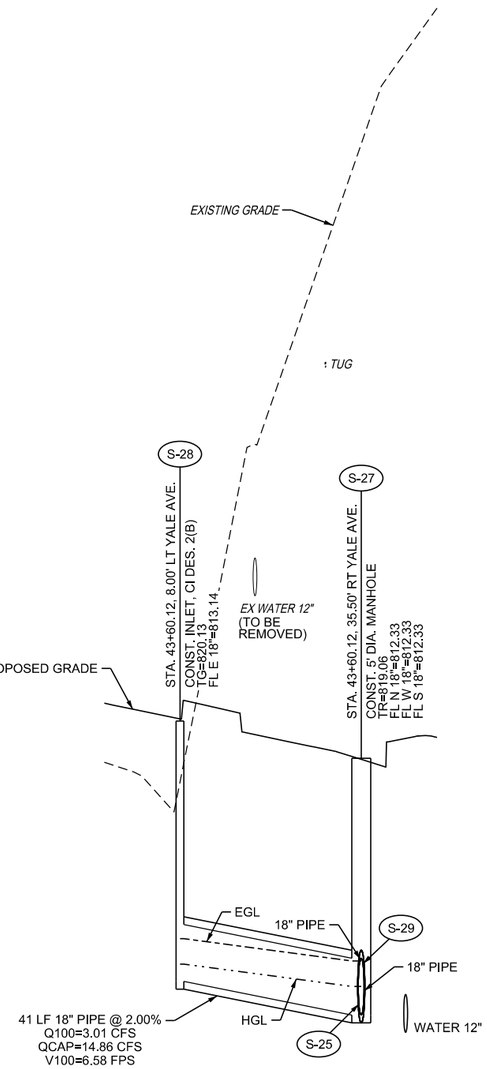

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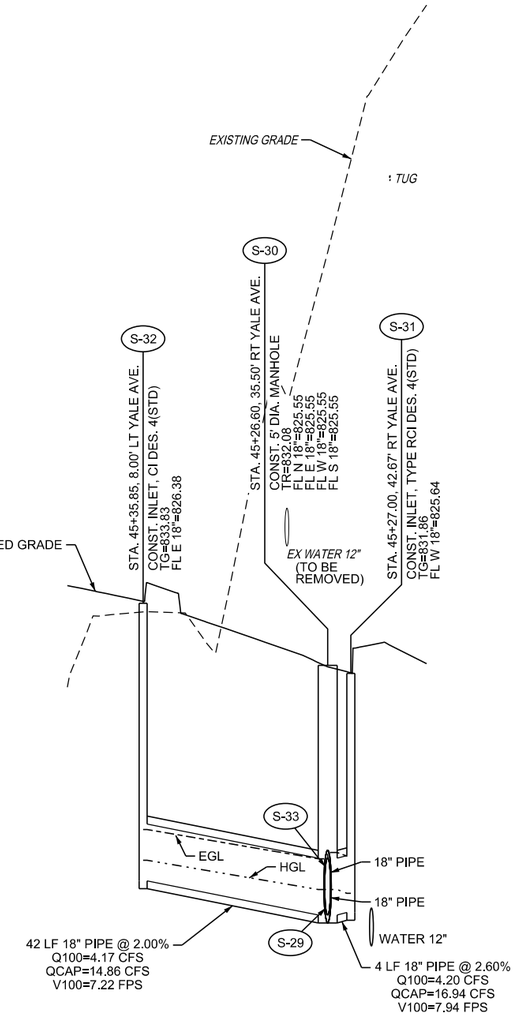

LINE E-4

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (11)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR	ZCW	7/20
VERTICAL: 1"= NA	LEAD ENGR	BOL	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-11.dgn
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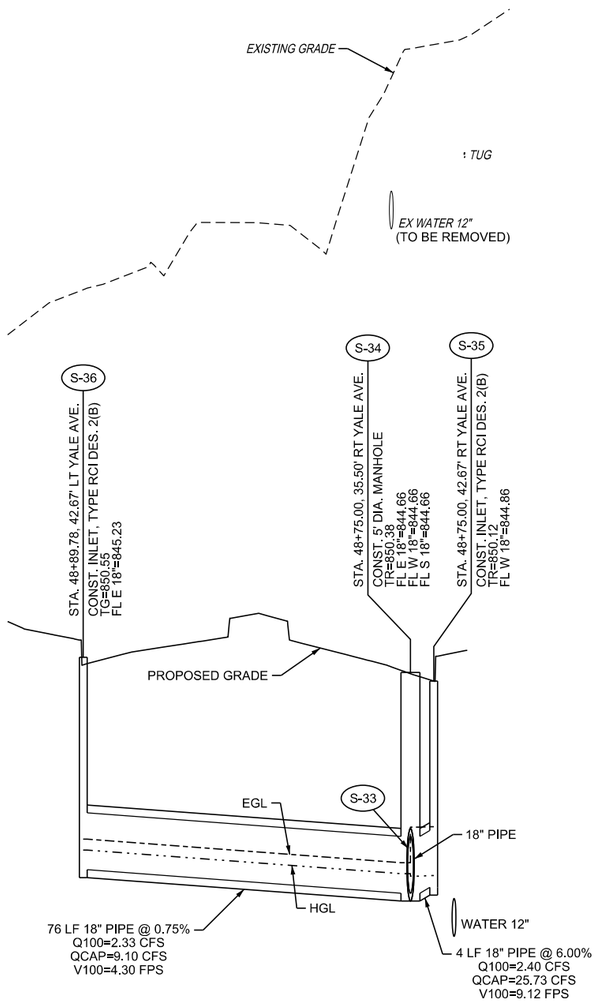

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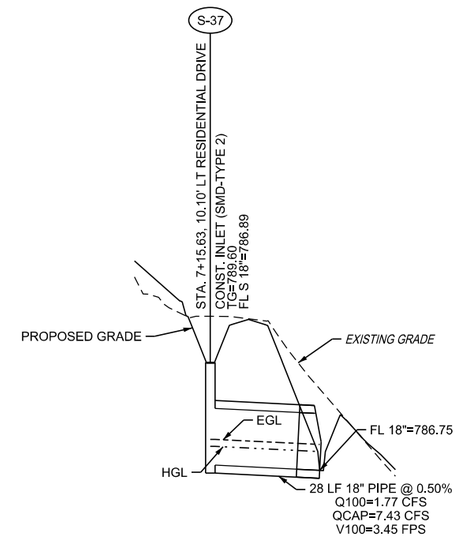

LINE F

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (12)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CMG	6/20
	FIELD MGR	RZM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BAC	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-12.dgn
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DATE: OCTOBER 2018
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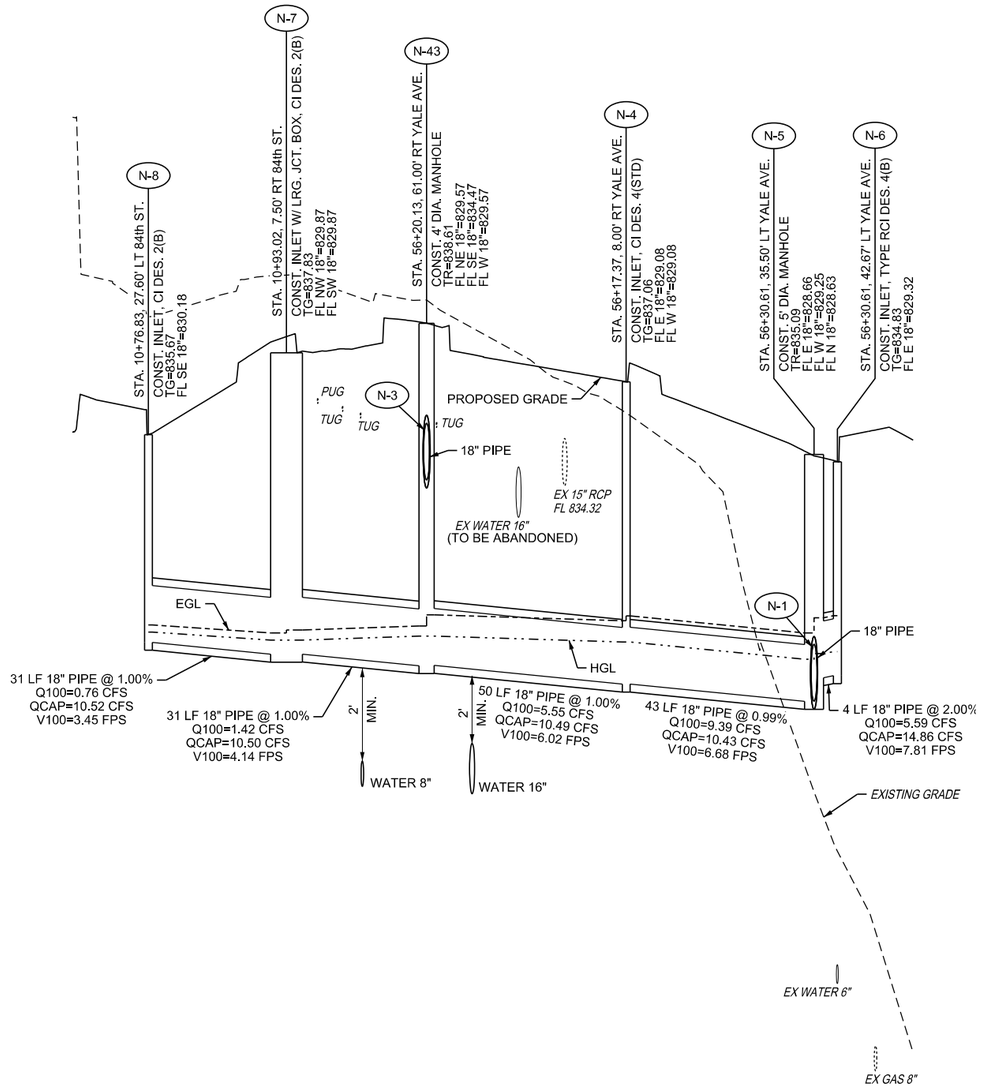

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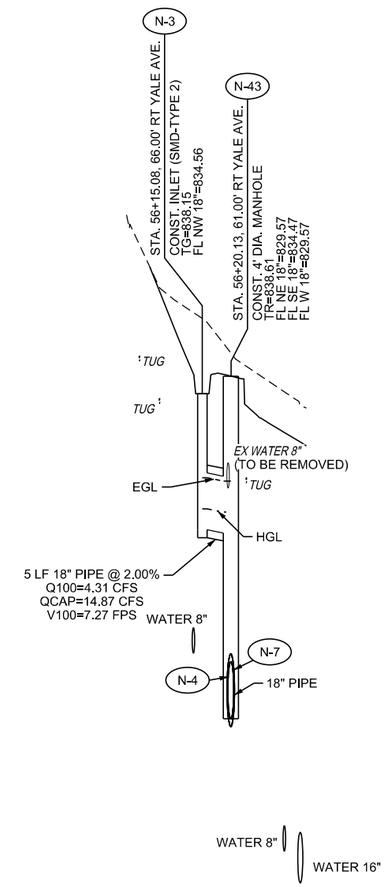

LINE G-2

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (13)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20	
	FIELD MGR		7/20	
	LEAD ENGR		6/20	
VERTICAL: 1"= NA	RECOMMENDED		7-20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Drainage_Profile-13.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 93 OF 334 SHEETS

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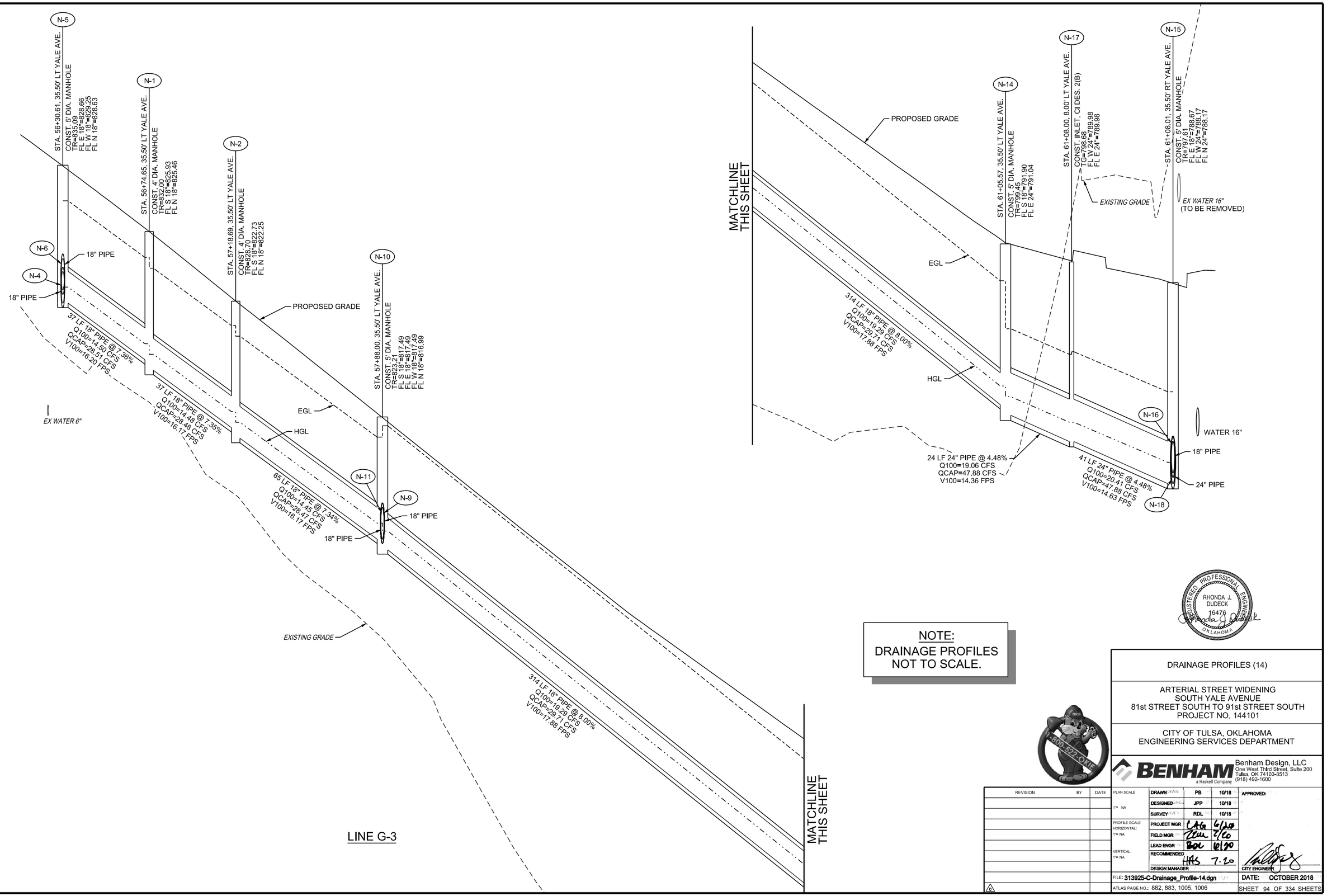

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (14)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR	BOL	6/20
	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-14.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 94 OF 334 SHEETS

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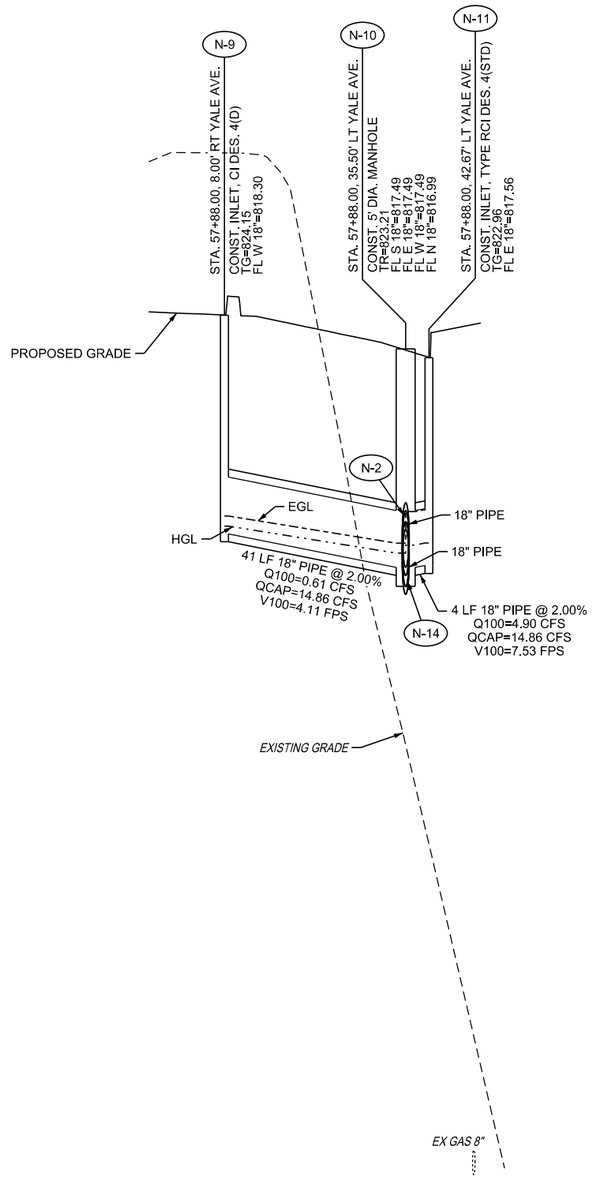
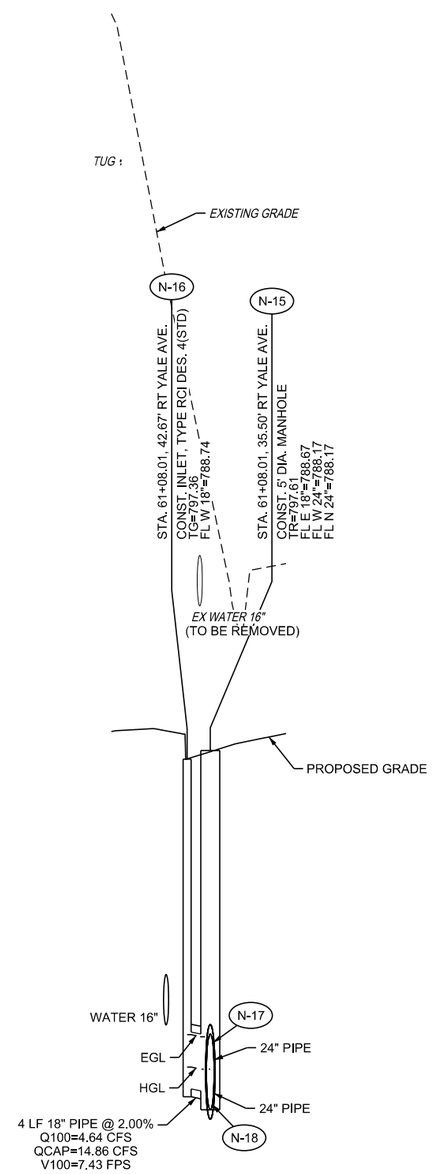


LINE G-4



LINE G-5

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (15)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	CMG	6/20
	FIELD MGR	ZCW	6/20
	LEAD ENGR	BDL	6/20
VERTICAL: 1"= NA	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-15.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 95 OF 334 SHEETS

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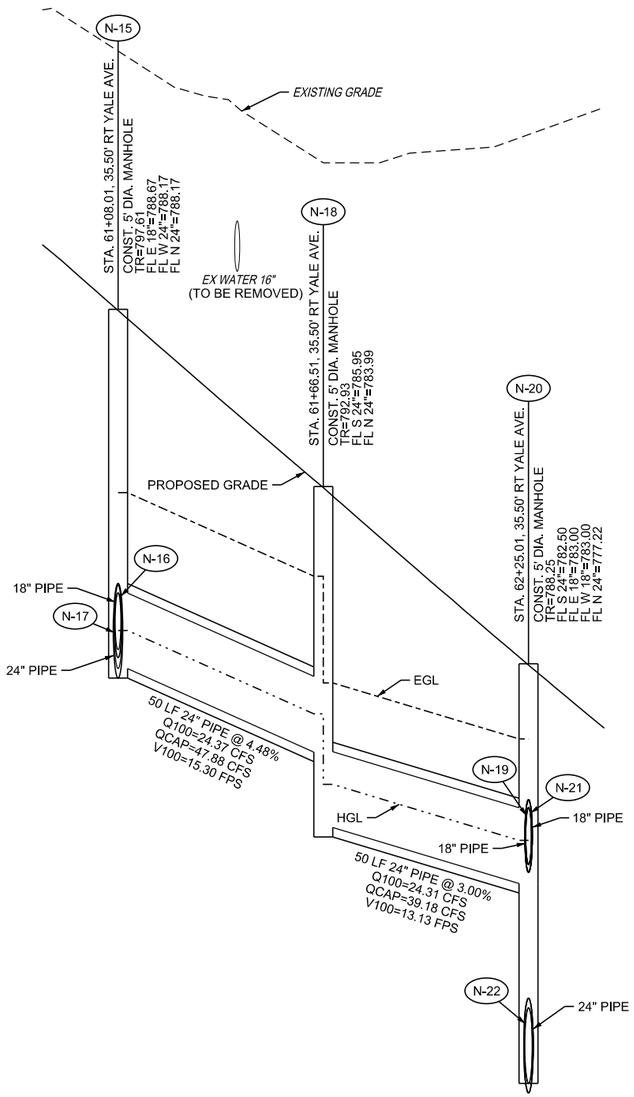
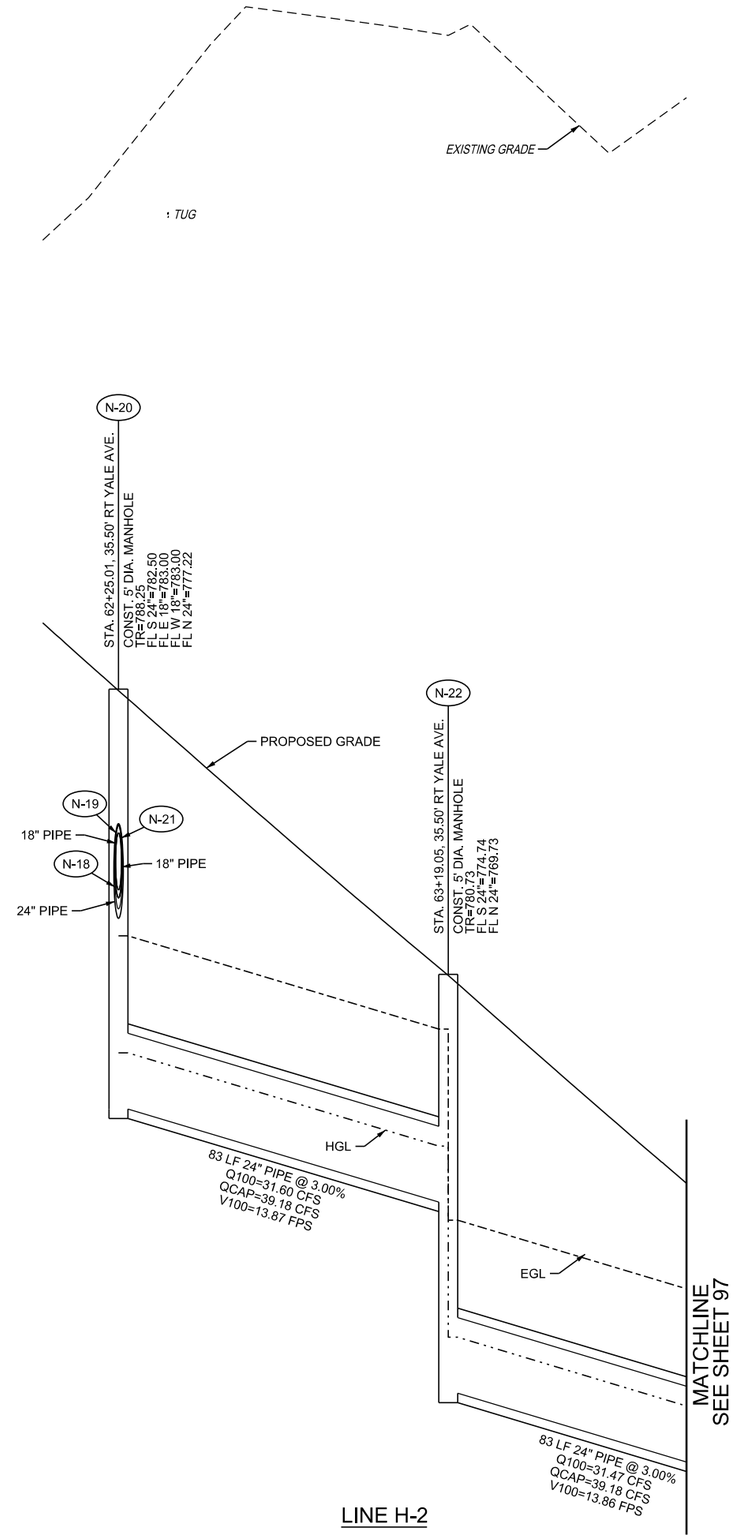


LINE H-1



LINE H-2

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (16)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20
	FIELD MGR	ZEM	7/20
VERTICAL: 1"= NA	LEAD ENGR	BDL	6/20
	RECOMMENDED	HAS	7-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Drainage_Profile-16.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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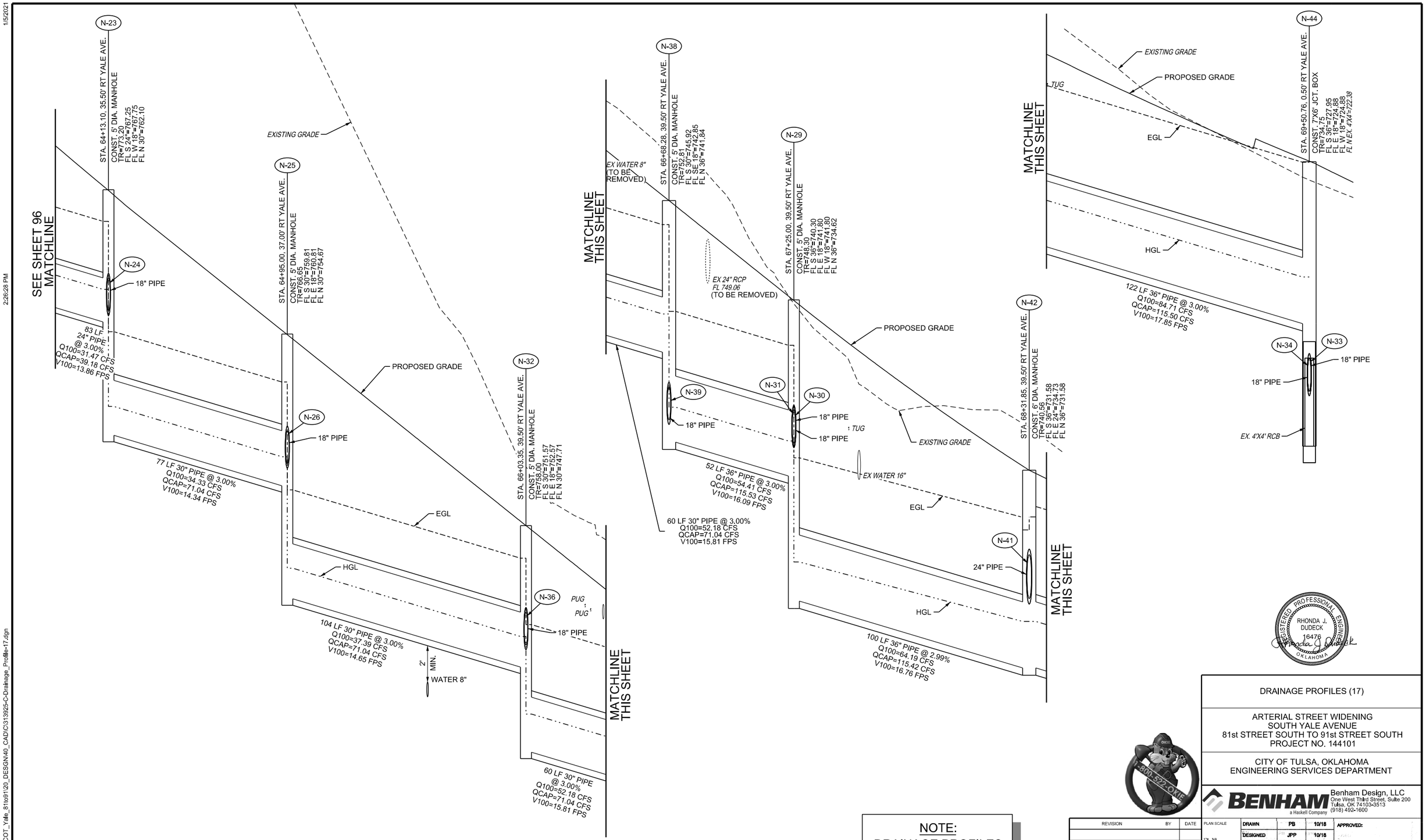

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

LINE H-2

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (17)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LKG	6/20	
	FIELD MGR	ZCL	7/20	
VERTICAL: 1"= NA	LEAD ENGR	BDL	8/20	
	RECOMMENDED DESIGN MANAGER	HAS	7.20	CITY ENGINEER
FILE: 313925-C-Drainage_Profile-17.dgn			DATE: OCTOBER 2018	
ATLAS PAGE NO.: 882, 883, 1005, 1006			SHEET 97 OF 334 SHEETS	

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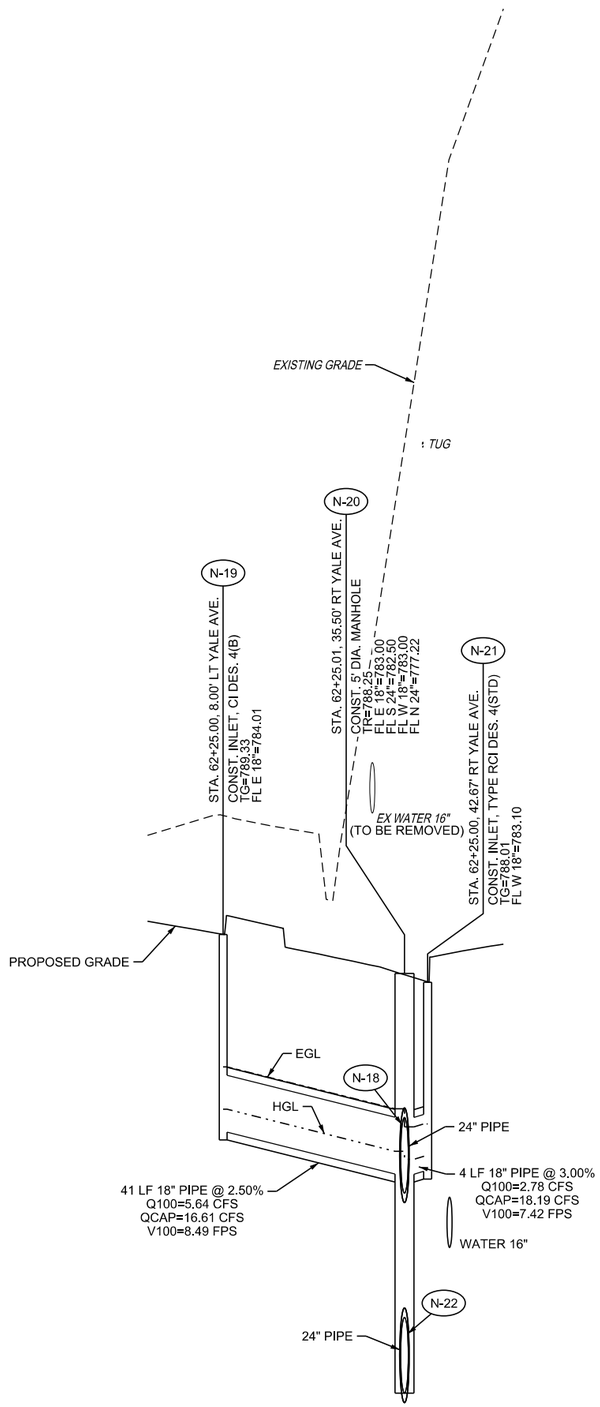
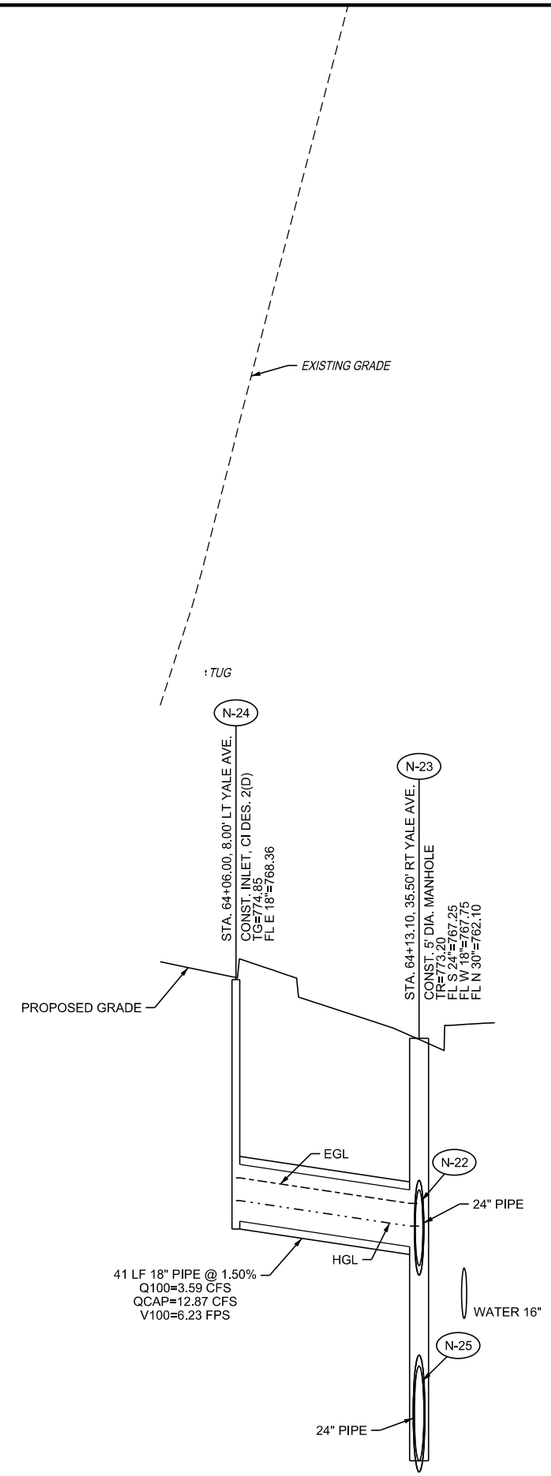


LINE H-3



LINE H-4

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (18)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		6/20	
	FIELD MGR		7/20	
	LEAD ENGR		6/20	
VERTICAL: 1"= NA	RECOMMENDED:		7-20	
	DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Drainage_Profile-18.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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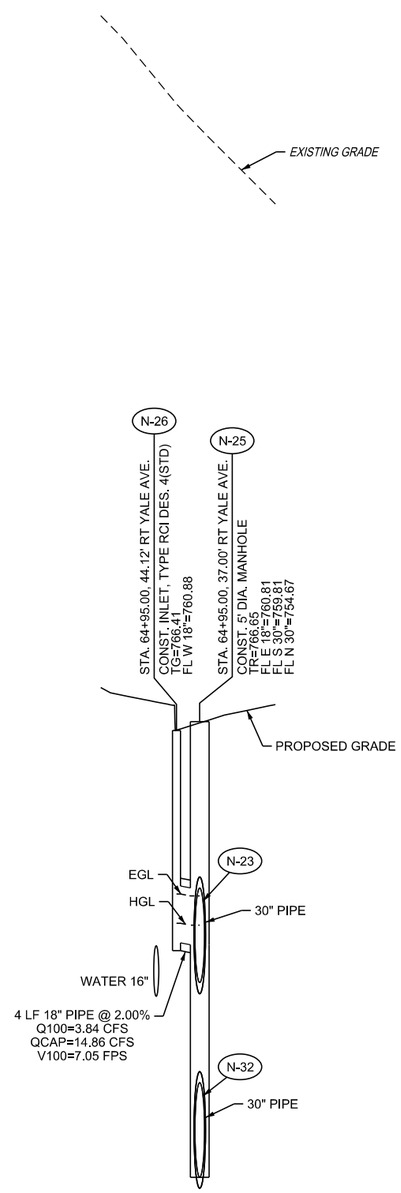
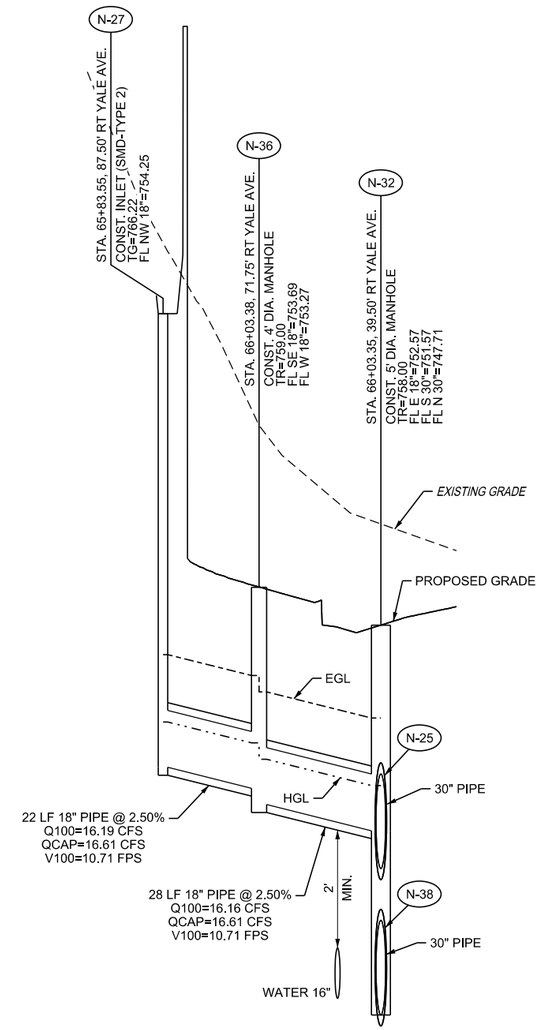


LINE H-5



LINE H-6

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (19)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN:	PB	10/18	APPROVED:
	DESIGNED:	JPP	10/18	
	SURVEY:	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR:	LKS	6/20	
	FIELD MGR:		7/20	
VERTICAL: 1"= NA	LEAD ENGR:	BDL	6/20	
	RECOMMENDED: DESIGN MANAGER	HAS	7-20	CITY ENGINEER
FILE: 313925-C-Drainage_Profile-19.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 99 OF 334 SHEETS

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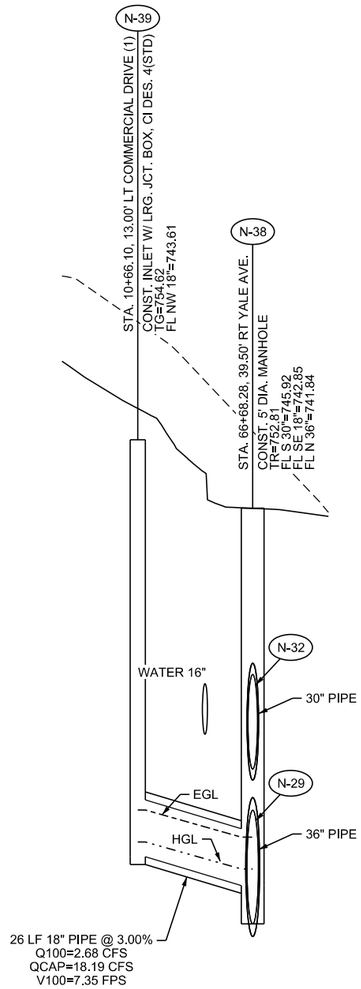
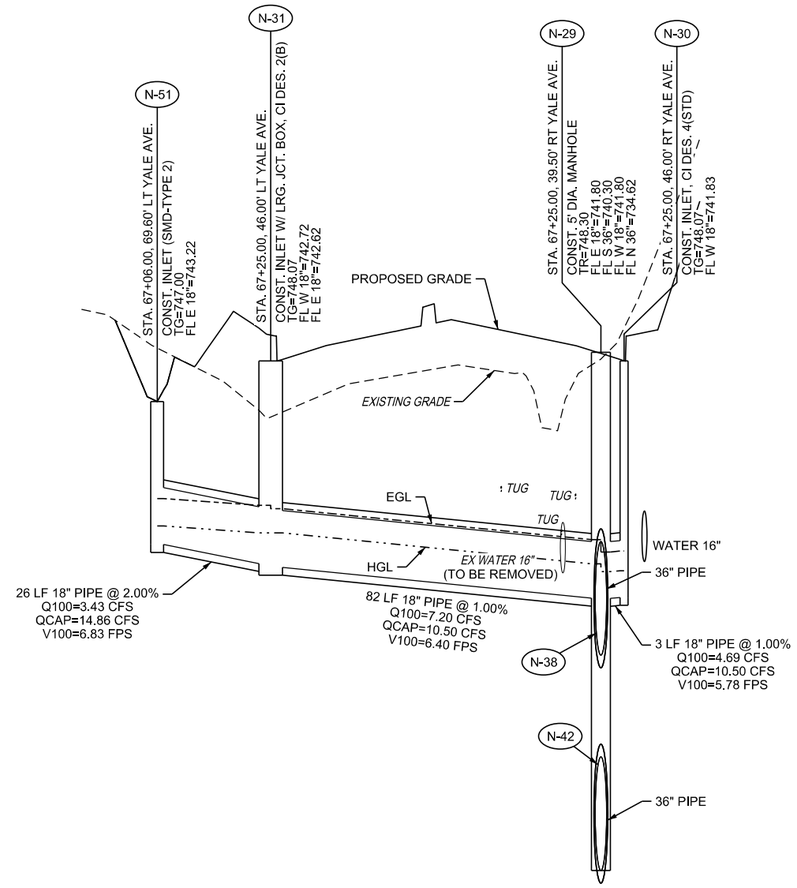


LINE H-7



LINE H-8

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (20)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	LAG	6/20	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR	BDL	11/20	
	RECOMMENDED DESIGN MANAGER	HAS	7-20	CITY ENGINEER
FILE: 313925-C-Drainage_Profile-20.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 100 OF 334 SHEETS

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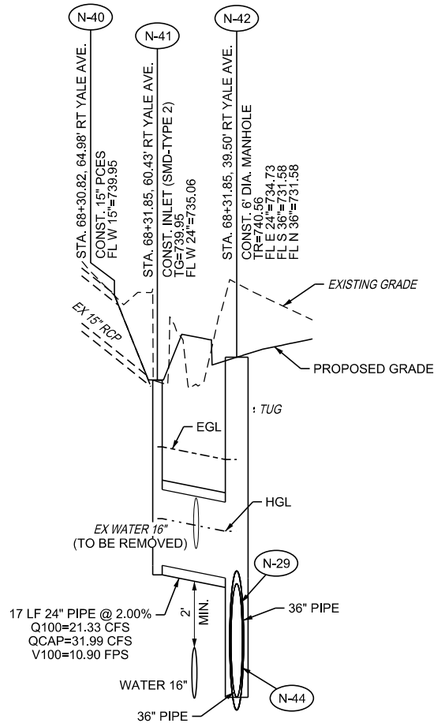

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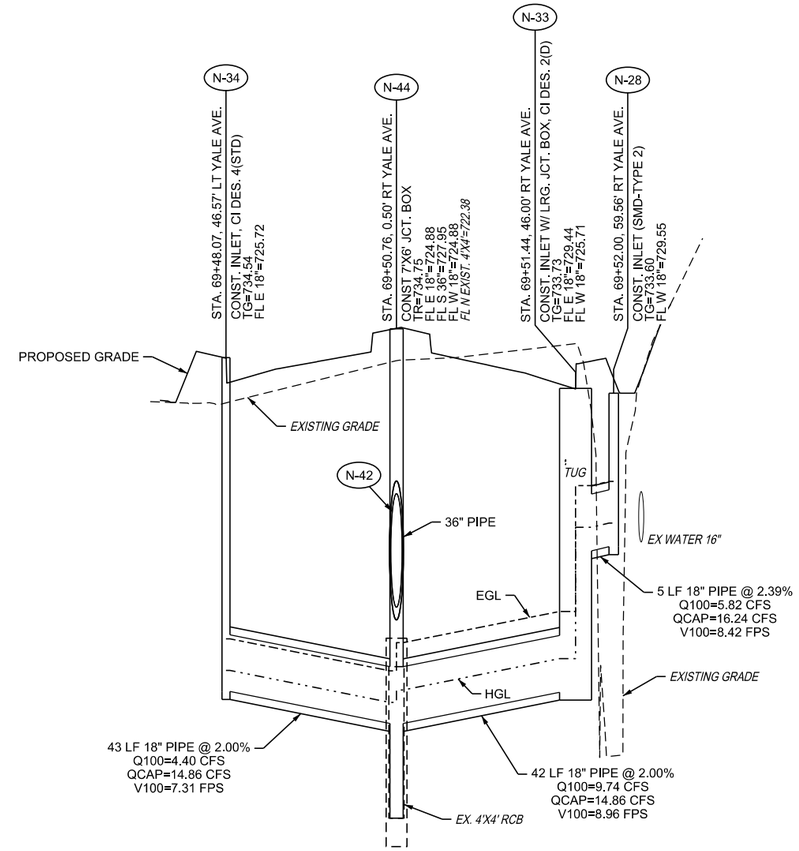

LINE H-10

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (21)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR		
VERTICAL: 1"= NA	LEAD ENGR		
	RECOMMENDED		
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-21.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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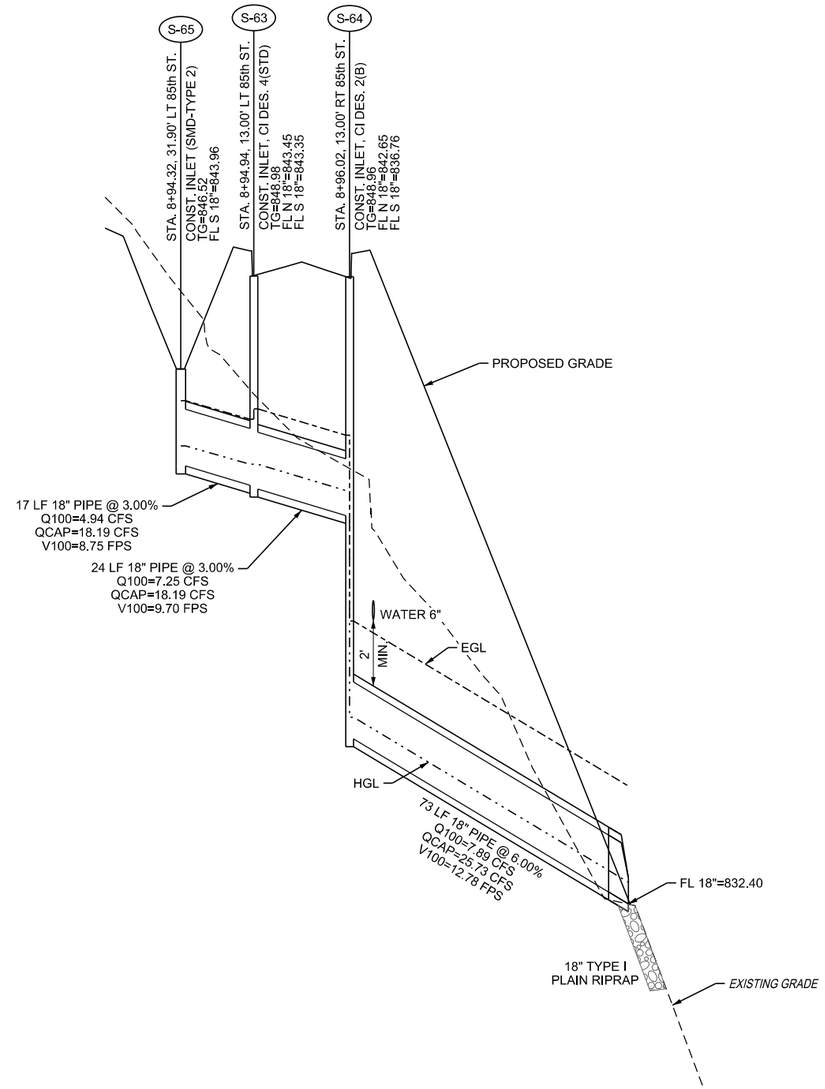

LINE E-I

NOTE:
DRAINAGE PROFILES
NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

DRAINAGE PROFILES (22)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		6/20
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		10/20
	RECOMMENDED: DESIGN MANAGER		7-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drainage_Profile-22.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 102 OF 334 SHEETS

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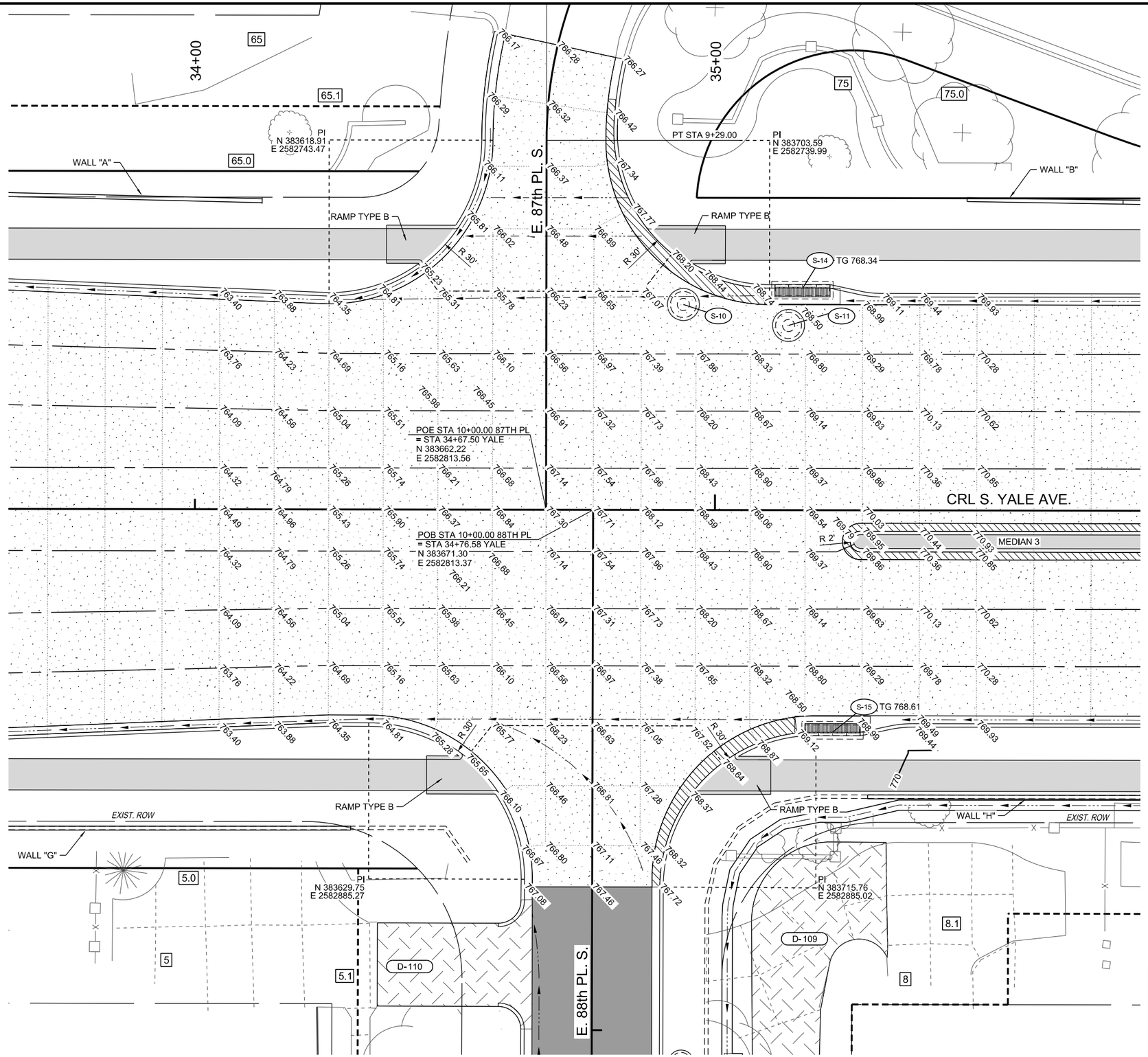

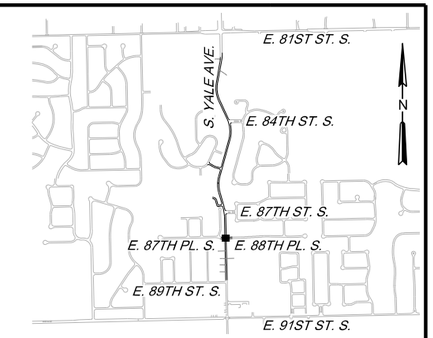

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER

SEE PLAN & PROFILE (8) SHEET 76 FOR E. 87th PL. S. AND E. 88th PL. S. CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.
3. REFER TO SHEETS 118 - 122 FOR JOINT LOCATIONS.

N

0 5' 10' 20'

SCALE: 1"=10'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

INTERSECTION DETAIL (1)
S. YALE AVENUE &
E. 87th PL. S. & E. 88th PL. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Int_Det-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 103 OF 334 SHEETS

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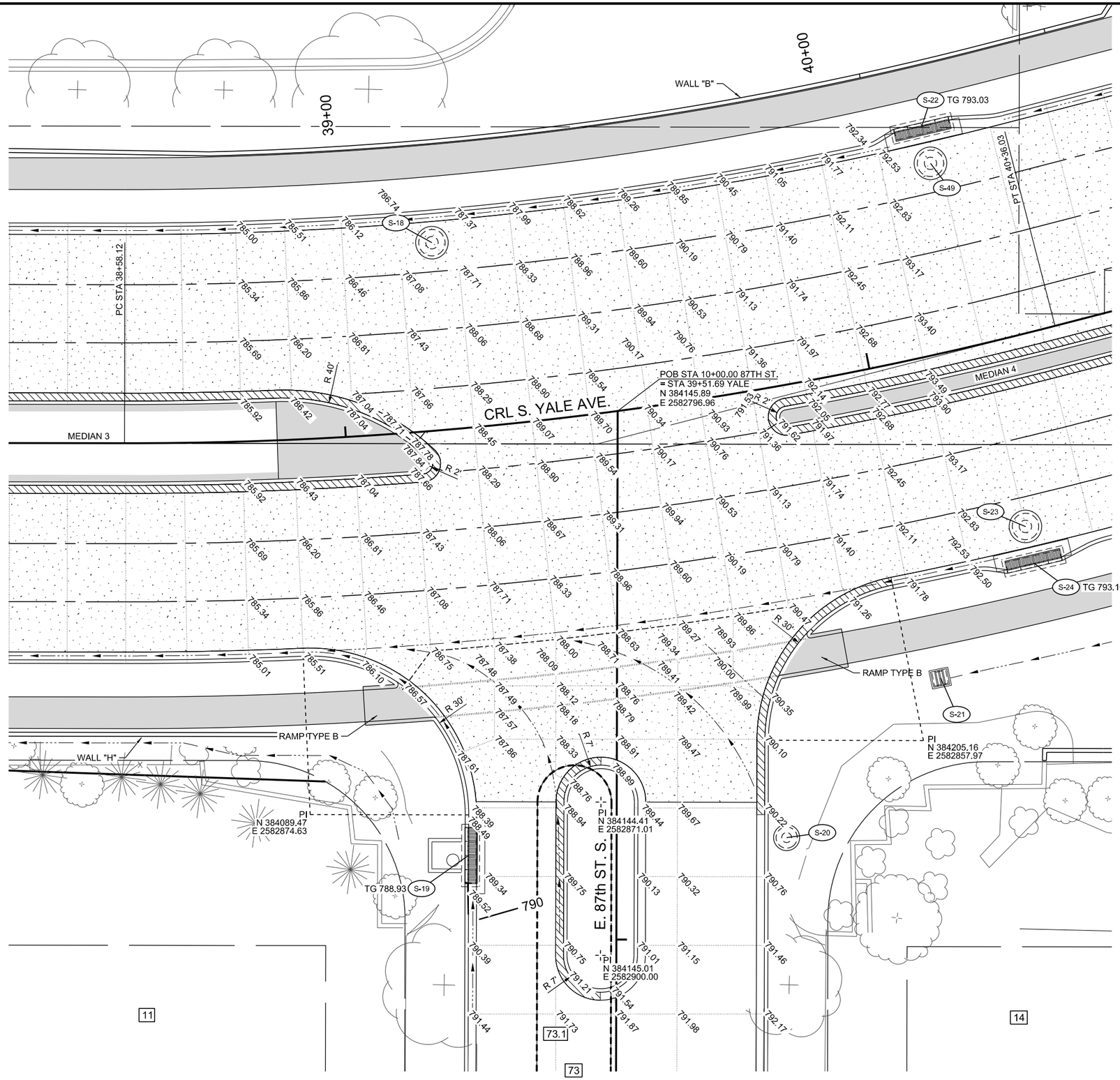

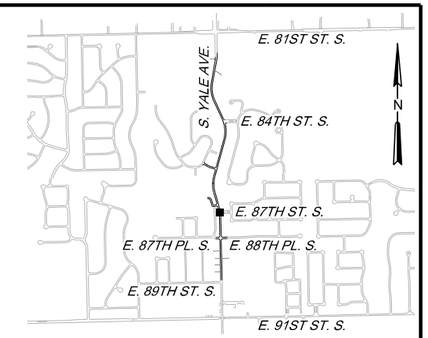

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER
- ADA PATH

SEE PLAN & PROFILE (9) SHEET 77 FOR E. 87th ST. S. CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.
3. REFER TO SHEETS 118 - 122 FOR JOINT LOCATIONS.

N

0 5' 10' 20'

SCALE: 1"=10'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

INTERSECTION DETAIL (2)
S. YALE AVENUE &
E. 87th ST. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		7/20
LEAD ENGR		7/20
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Int_Det-02.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
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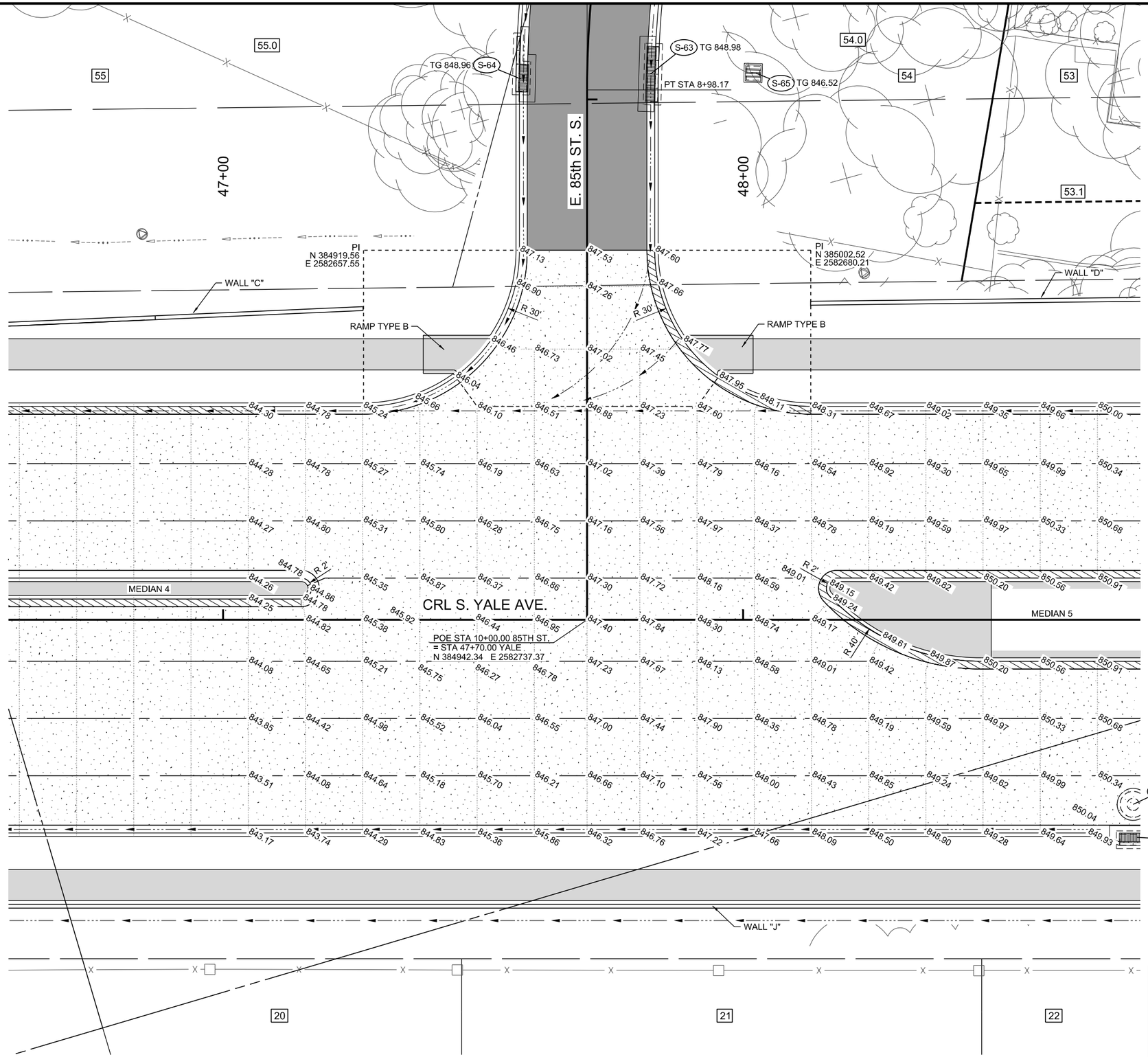

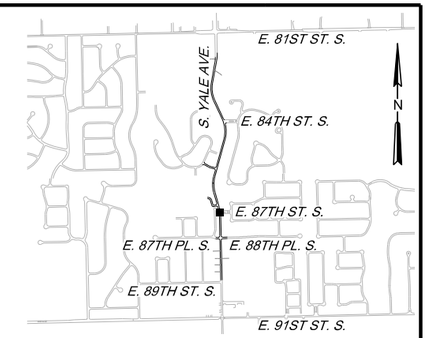

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- (X-X) DRAINAGE STRUCTURE NO.
- (D-XXX) DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER

SEE PLAN & PROFILE (10) SHEET 78 FOR E. 85th ST. S. CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.
3. REFER TO SHEETS 118 - 122 FOR JOINT LOCATIONS.

N

0 5' 10' 20'

SCALE: 1"=10'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

INTERSECTION DETAIL (3)
S. YALE AVENUE &
E. 85th ST. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED: DESIGN MANAGER		7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Int_Det-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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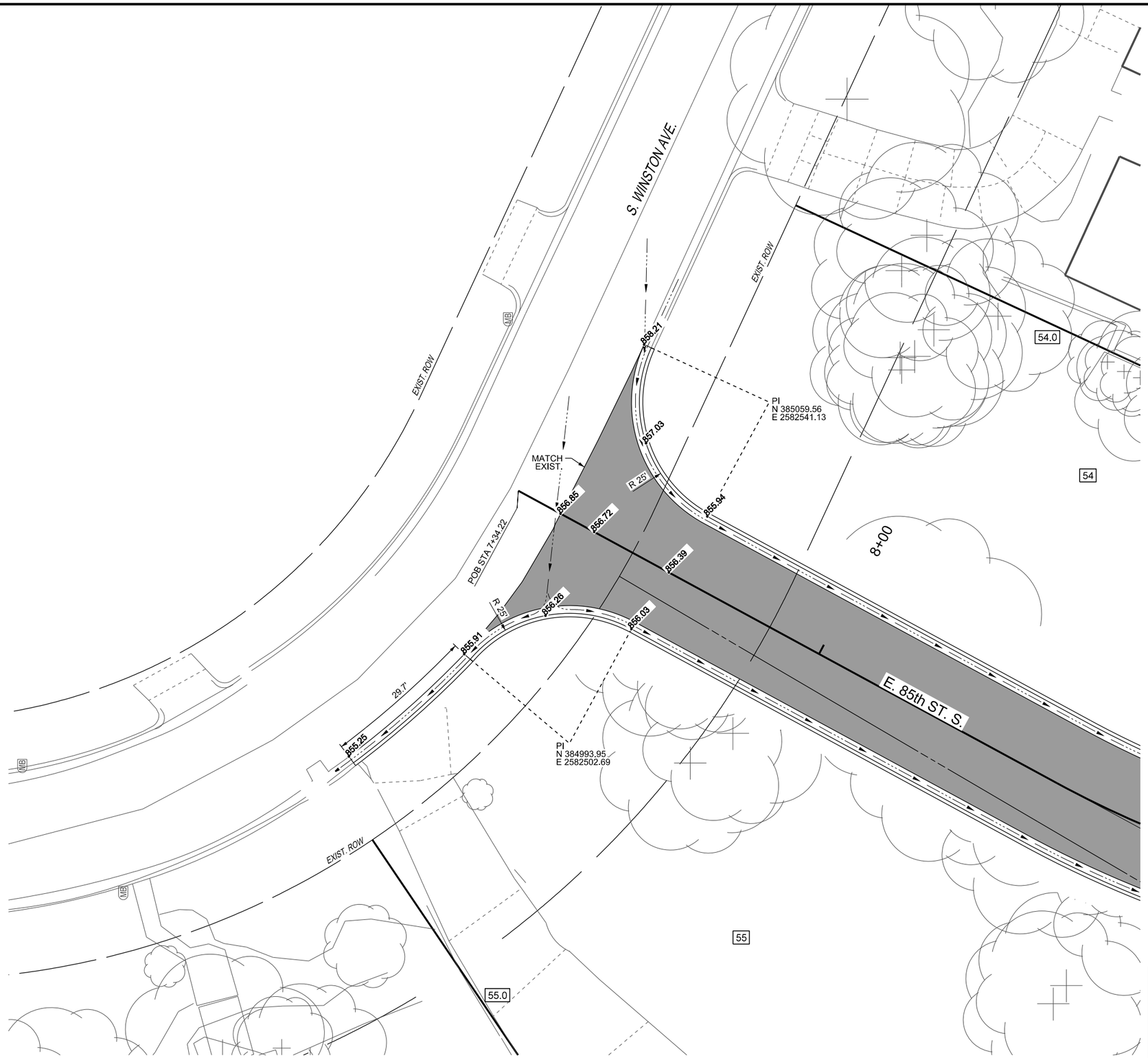

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER

SEE PLAN & PROFILE (10) SHEET 78 FOR E. 85th ST. S. CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.
3. REFER TO SHEETS 118 - 122 FOR JOINT LOCATIONS.

0 5' 10' 20'
SCALE: 1"=10'-0"

N

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

INTERSECTION DETAIL (4)
E. 85th ST. S. &
S. WINSTON AVE.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR	ZEW	2/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HK	7.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Int_Det-05.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
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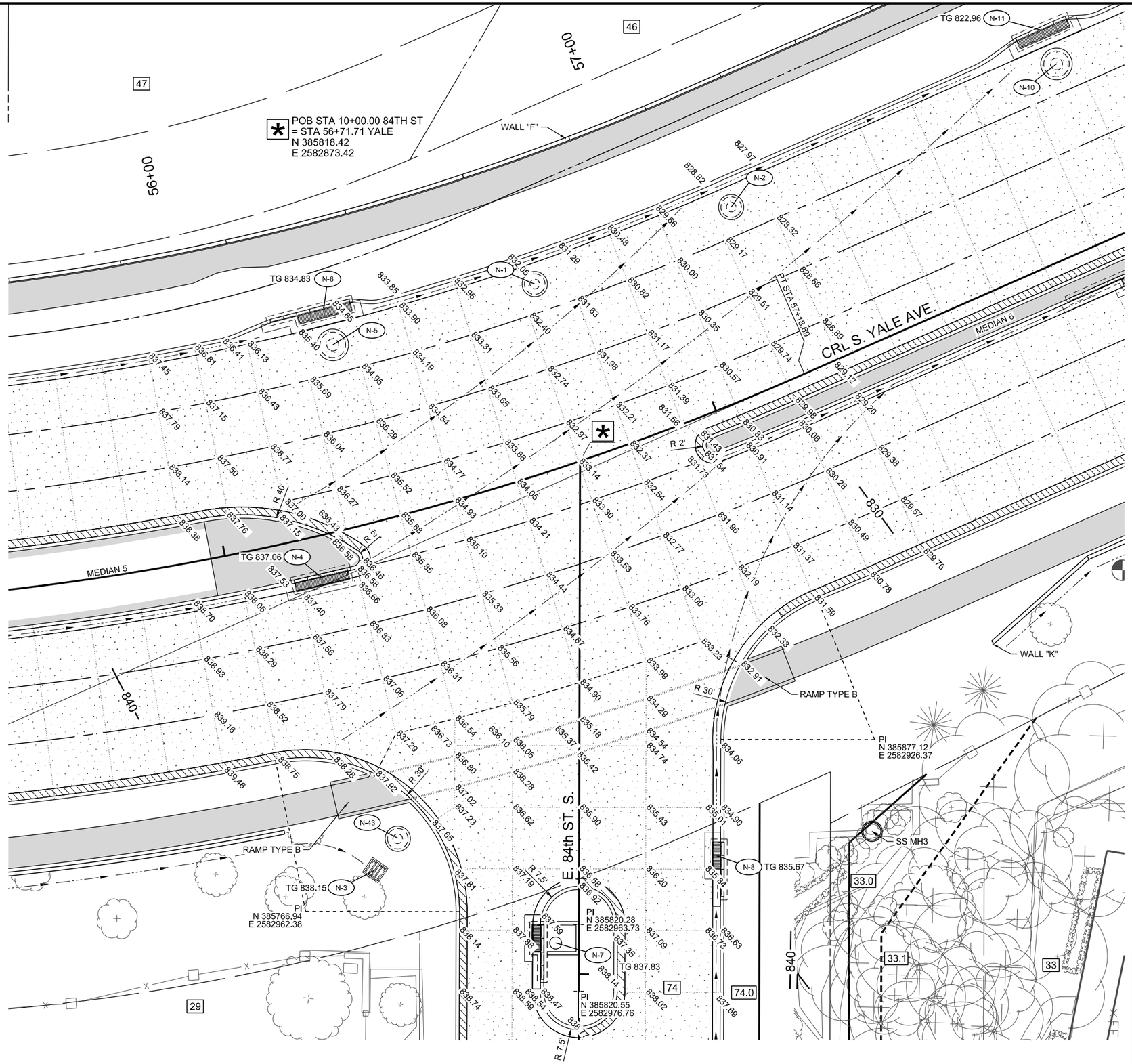

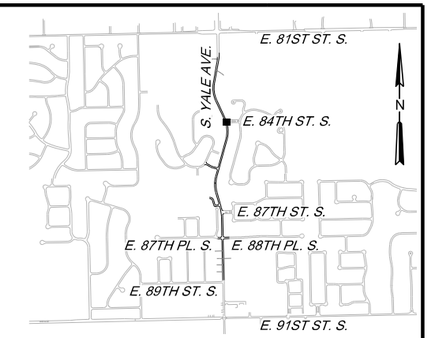

KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER
- ADA PATH

SEE PLAN & PROFILE (9)
SHEET 77 FOR E. 84th ST. S.
CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.
3. REFER TO SHEETS 118 - 122 FOR JOINT LOCATIONS.

N
0 5' 10' 20'
SCALE: 1"=10'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

INTERSECTION DETAIL (5)
S. YALE AVENUE &
E. 84th ST. S.

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BSDE	12/18	
	FIELD MGR		7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"= NA	RECOMMENDED		7-20	CITY ENGINEER
	DESIGN MANAGER			
FILE: 313925-C-Int_Det-04.dgn				DATE: OCTOBER 2018
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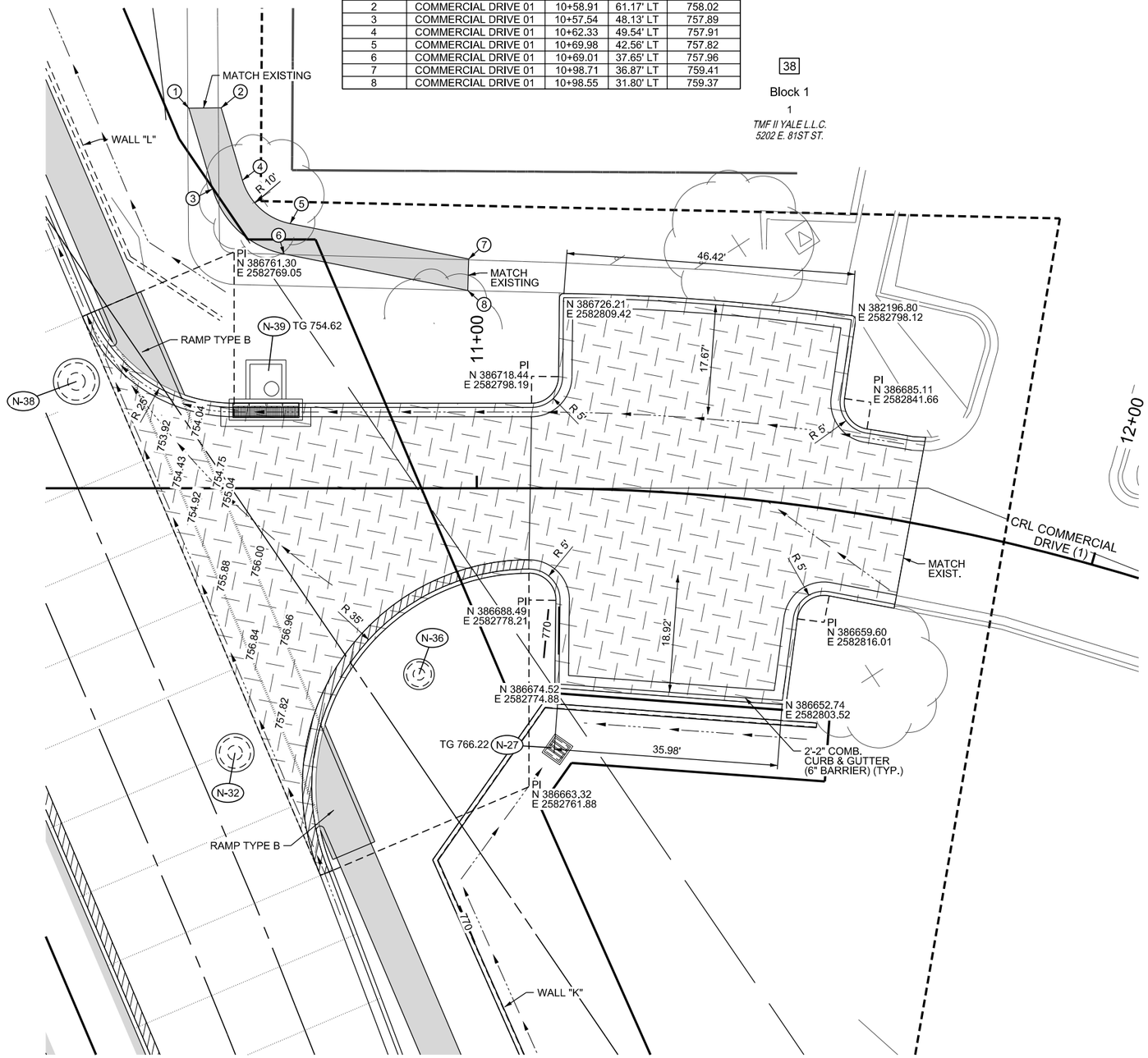
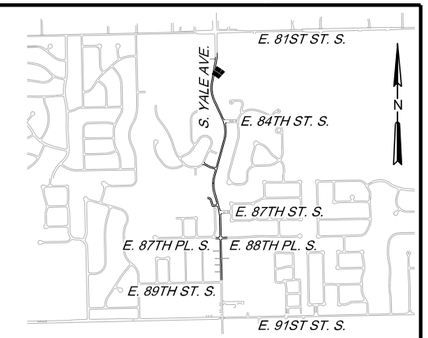
POINT NO.	ALIGNMENT	STATION	OFFSET	ELEVATION
1	COMMERCIAL DRIVE 01	10+53.71	61.13' LT	757.85
2	COMMERCIAL DRIVE 01	10+58.91	61.17' LT	758.02
3	COMMERCIAL DRIVE 01	10+57.54	48.13' LT	757.89
4	COMMERCIAL DRIVE 01	10+62.33	49.54' LT	757.91
5	COMMERCIAL DRIVE 01	10+69.98	42.56' LT	757.82
6	COMMERCIAL DRIVE 01	10+69.01	37.65' LT	757.96
7	COMMERCIAL DRIVE 01	10+98.71	36.87' LT	759.41
8	COMMERCIAL DRIVE 01	10+98.55	31.80' LT	759.37





KEYMAP

LEGEND

- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- X-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- SPOT ELEVATION GRID
- FALL-AWAY (REVERSE) CURB & GUTTER
- ADA PATH

SEE PLAN & PROFILE (12) SHEET 80 FOR DRIVEWAY CONSTRUCTION

NOTES:
1. THE SPOT ELEVATIONS ARE TO THE TOP OF PAVEMENT.
2. THE CONTOUR INTERVAL IS 1.0 FOOT.

0 5' 10' 20'
SCALE: 1"=10'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA
October 31, 2018

PARKING DETAIL
COMMERCIAL DRIVE (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED: DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Pav_Det-01.dgn
DATE: OCTOBER 2018
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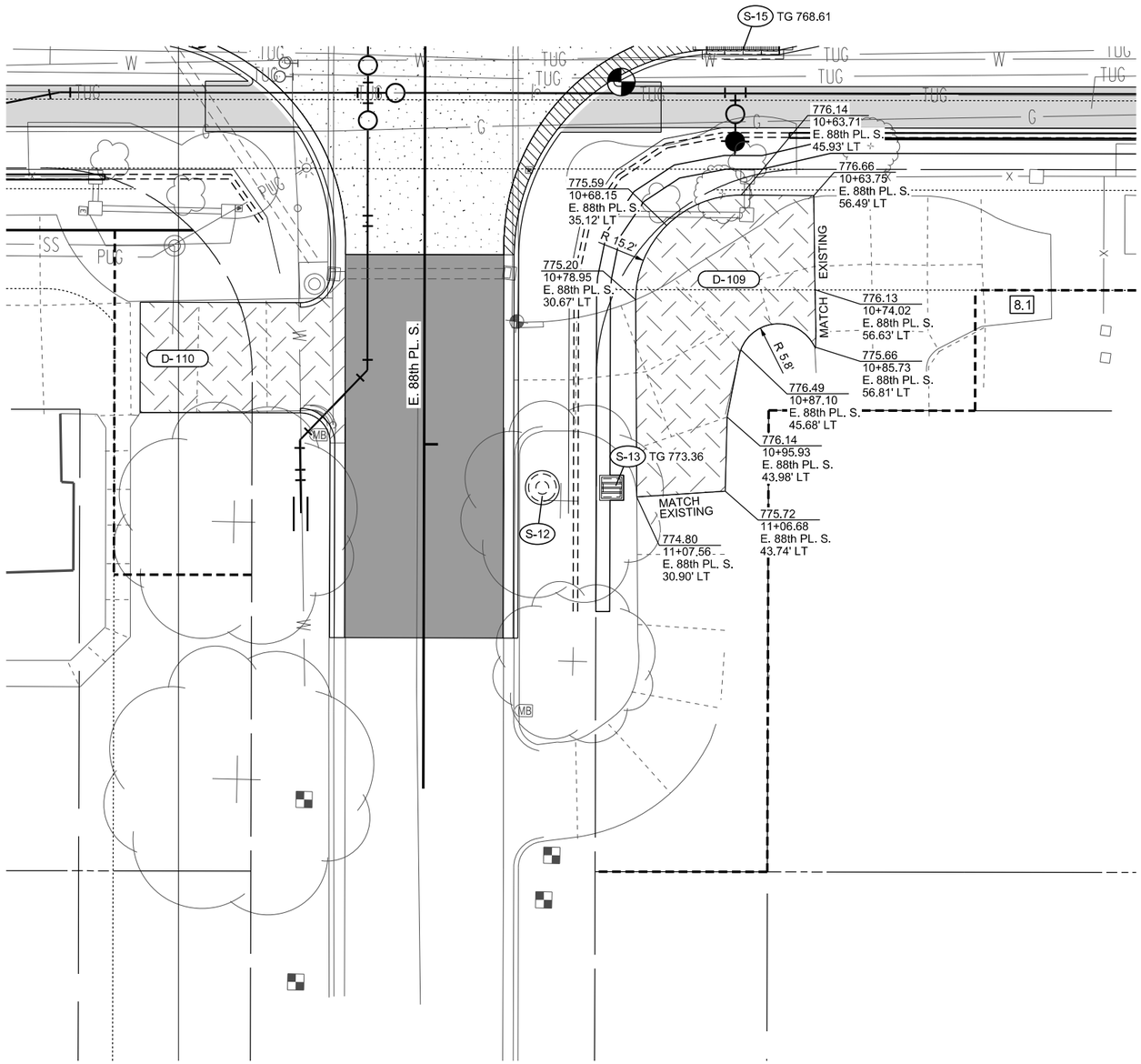
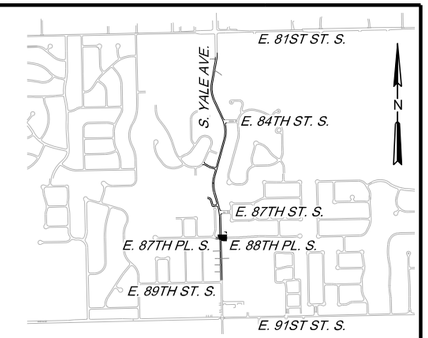


D-109 STA. 10+73.50, LT
E. 88th PL. S.

SEE PLAN & PROFILE (8)
SHEET 76 FOR PLAN &
PROFILE AND LEGEND



KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- DRIVEWAY
- SIDEWALK
- RECESSED CURB INLET
- CURB AND GUTTER
- XXX-X DRAINAGE STRUCTURE NO.
- D-XXX DRIVEWAY NO.
- FLOW ARROW
- FALL-AWAY (REVERSE) CURB & GUTTER

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

DRIVEWAY DETAIL (1)
(D-109)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'
PROFILE SCALE HORIZONTAL: 1"= 30'
VERTICAL: 1"= 10'

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDL	12/18
FIELD MGR	ZZM	7/20
LEAD ENGR	[illegible]	1/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Drive-Det-01.dgn
DATE: OCTOBER 2018
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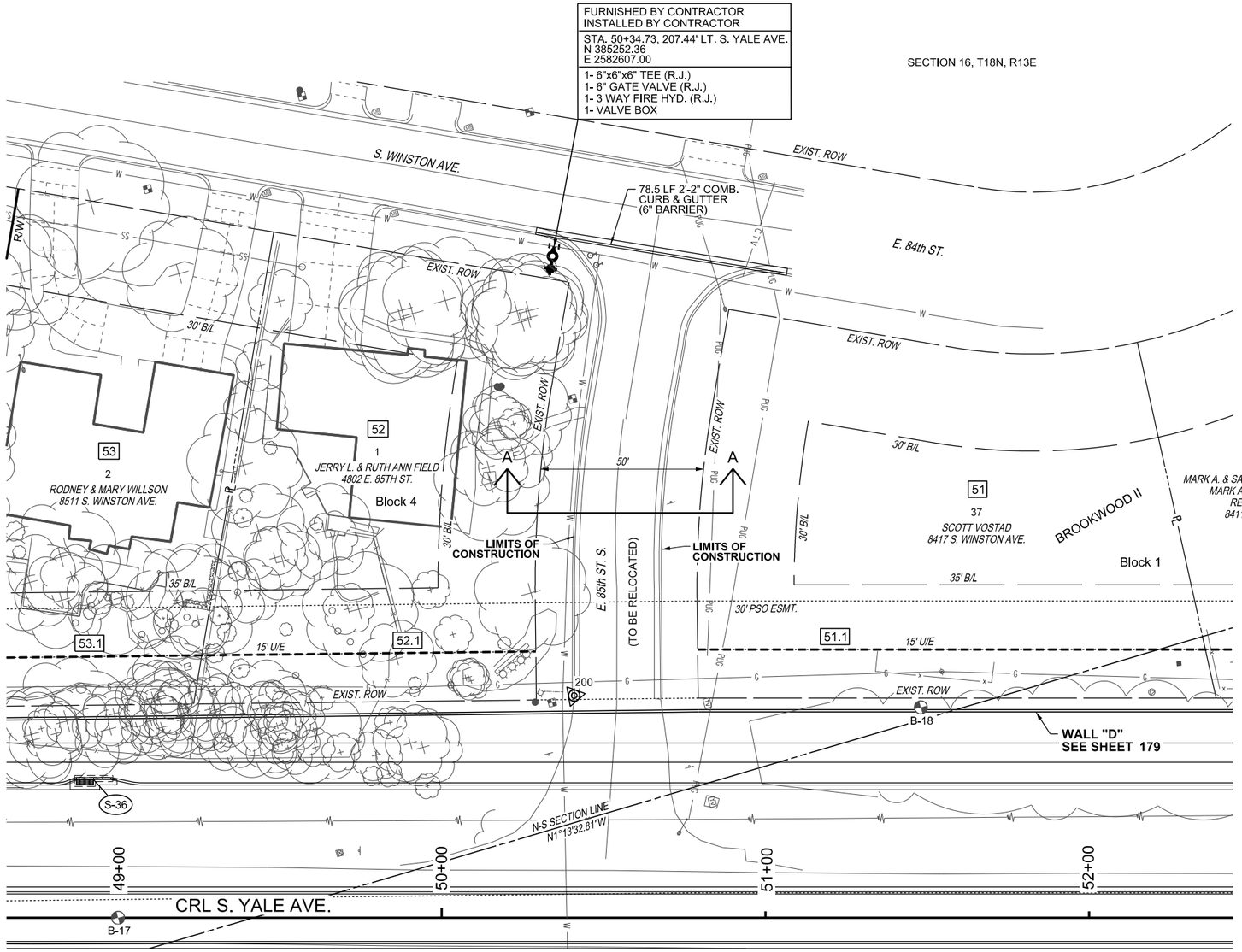
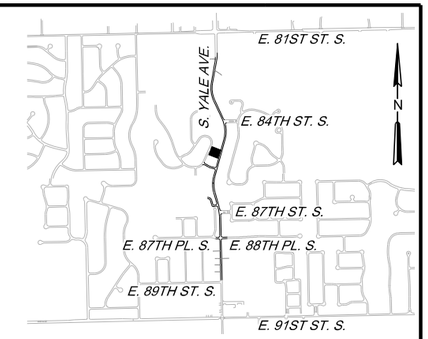
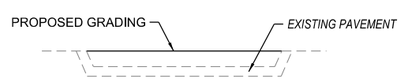


SEE PLAN & PROFILE (4)
SHEET 72 FOR RELOCATION
OF E. 85th ST. S.



KEYMAP

SECTION 15, T18N, R13E



SECTION A-A
NTS

NOTE: REMOVE ROADWAY PAVEMENT & CURBS OF EXISTING E. 85th ST. S.

N

20' 15' 10' 5' 0 20'

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

E. 85th ST. & S. WINSTON AVE.
DETAIL

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HBK	7.20

APPROVED:
CITY ENGINEER

FILE: 313925-C-85th_Detail-01.dgn
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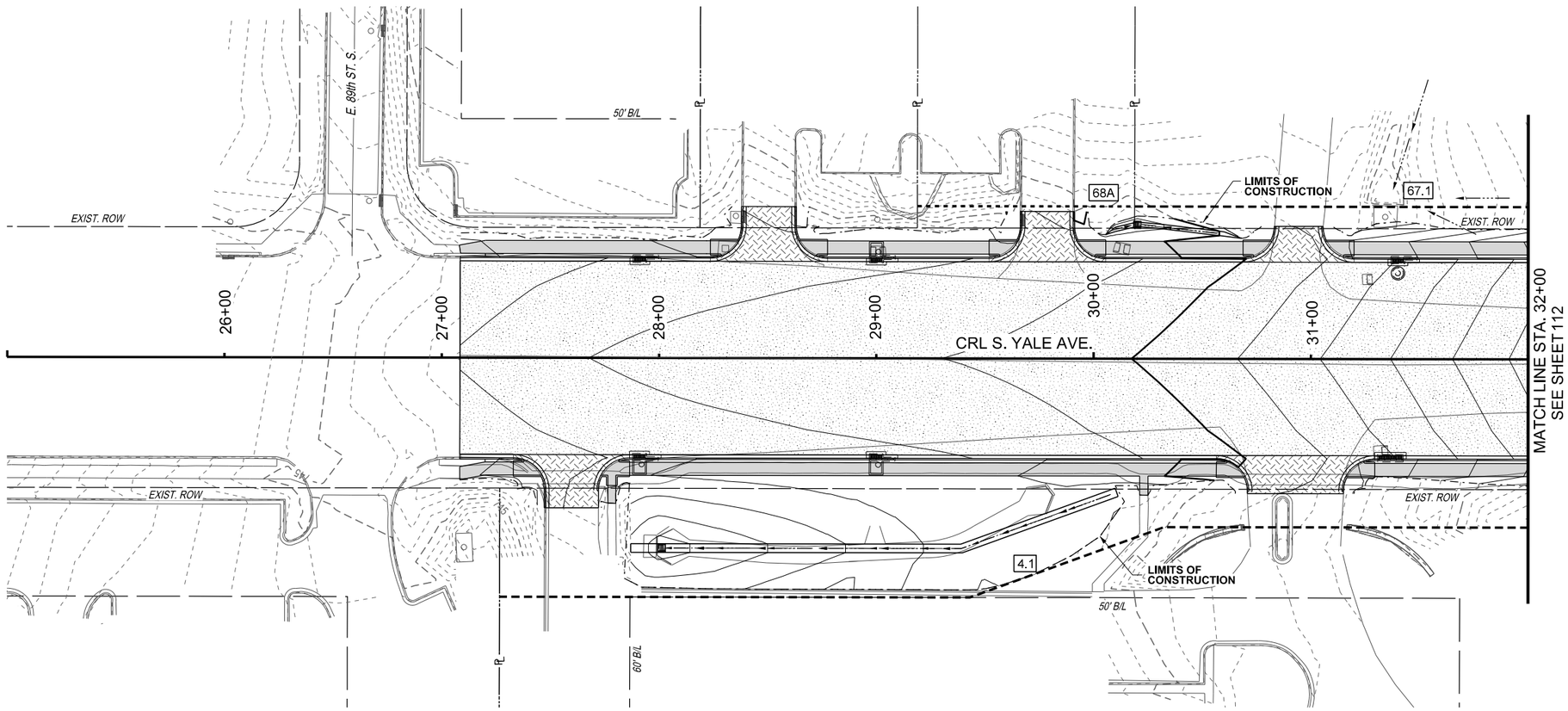

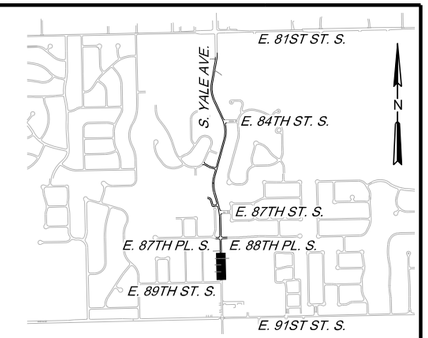

KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

GRADING PLAN (1)
YALE AVENUE
STA. 25+00 TO STA. 32+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18
	FIELD MGR		7/20
	LEAD ENGR		7/20
VERTICAL: 1"= NA	RECOMMENDED		7/20
	DESIGN MANAGER		7/20

APPROVED:

CITY ENGINEER

FILE: 313925-C-Grading-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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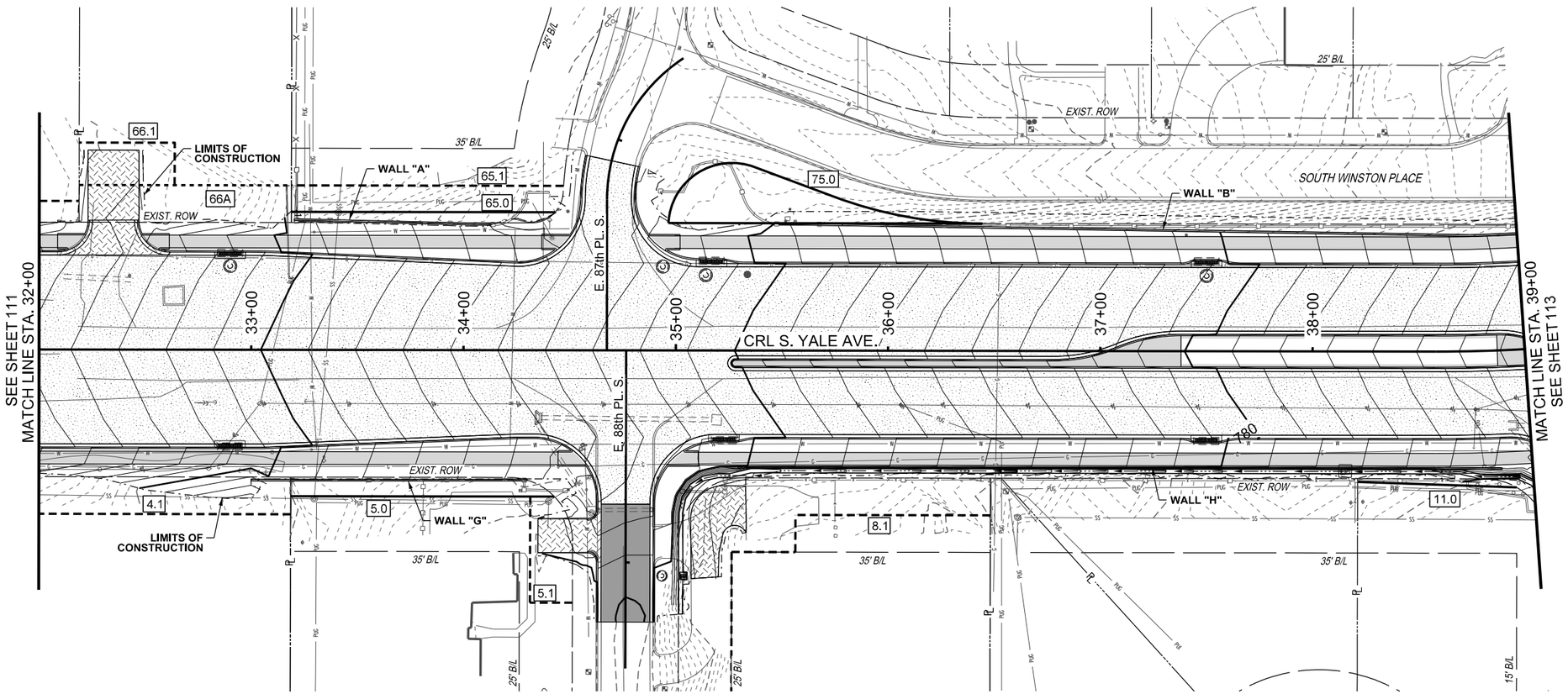

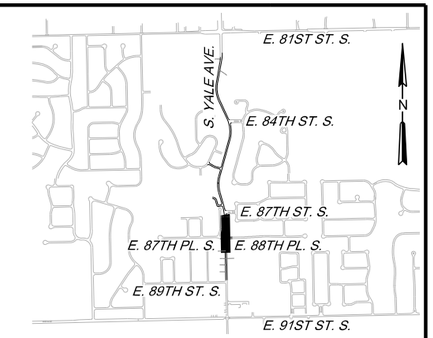

KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

GRADING PLAN (2)
YALE AVENUE
STA. 32+00 TO STA. 39+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDL	12/18
FIELD MGR	[illegible]	7/20
LEAD ENGR	[illegible]	1/19
RECOMMENDED	HAS	7.20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Grading-02.dgn

DATE: OCTOBER 2018

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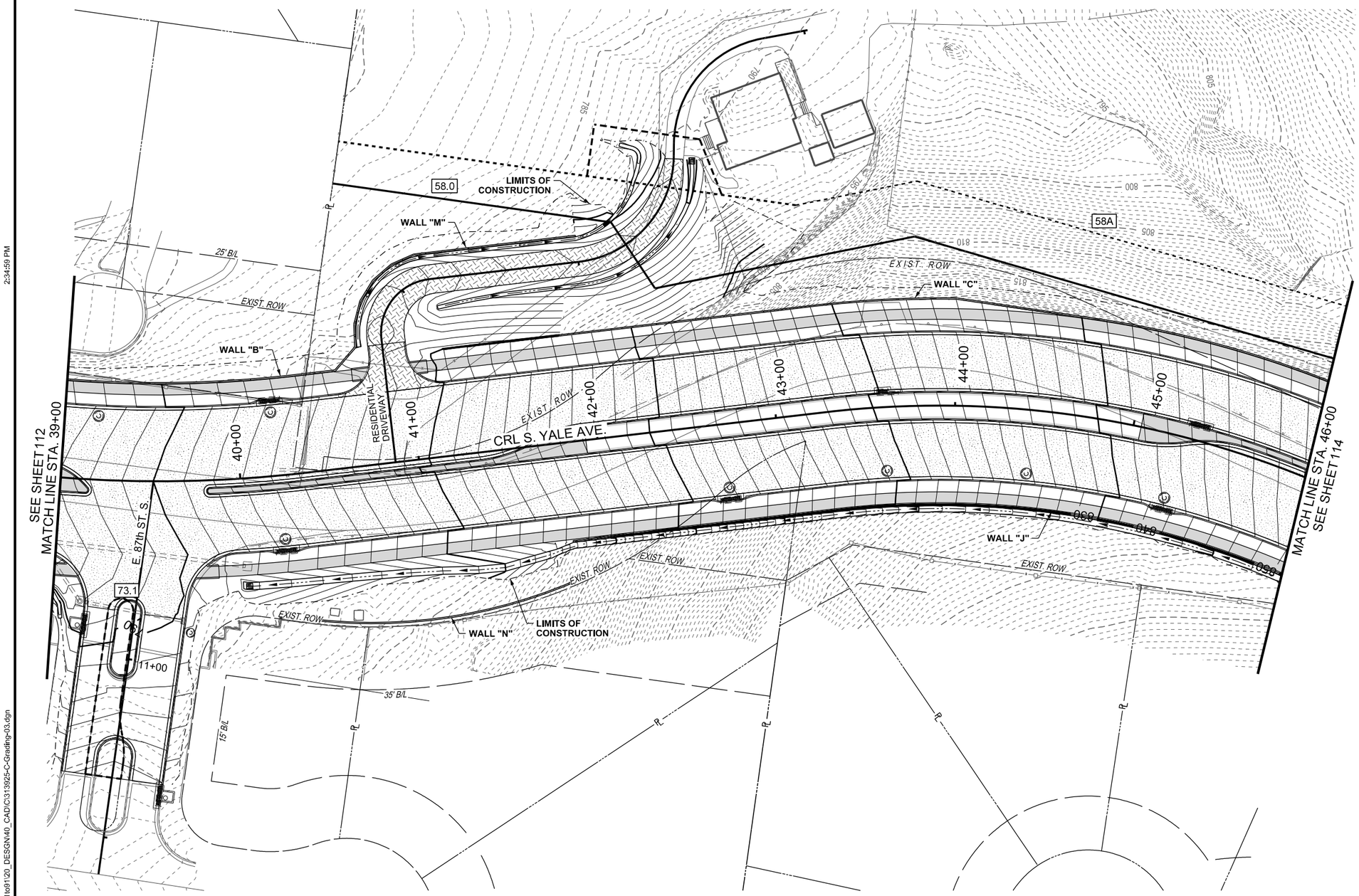
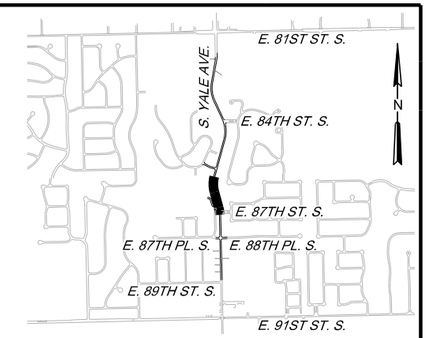




KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X — PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

GRADING PLAN (3)
YALE AVENUE
STA. 39+00 TO STA. 46+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

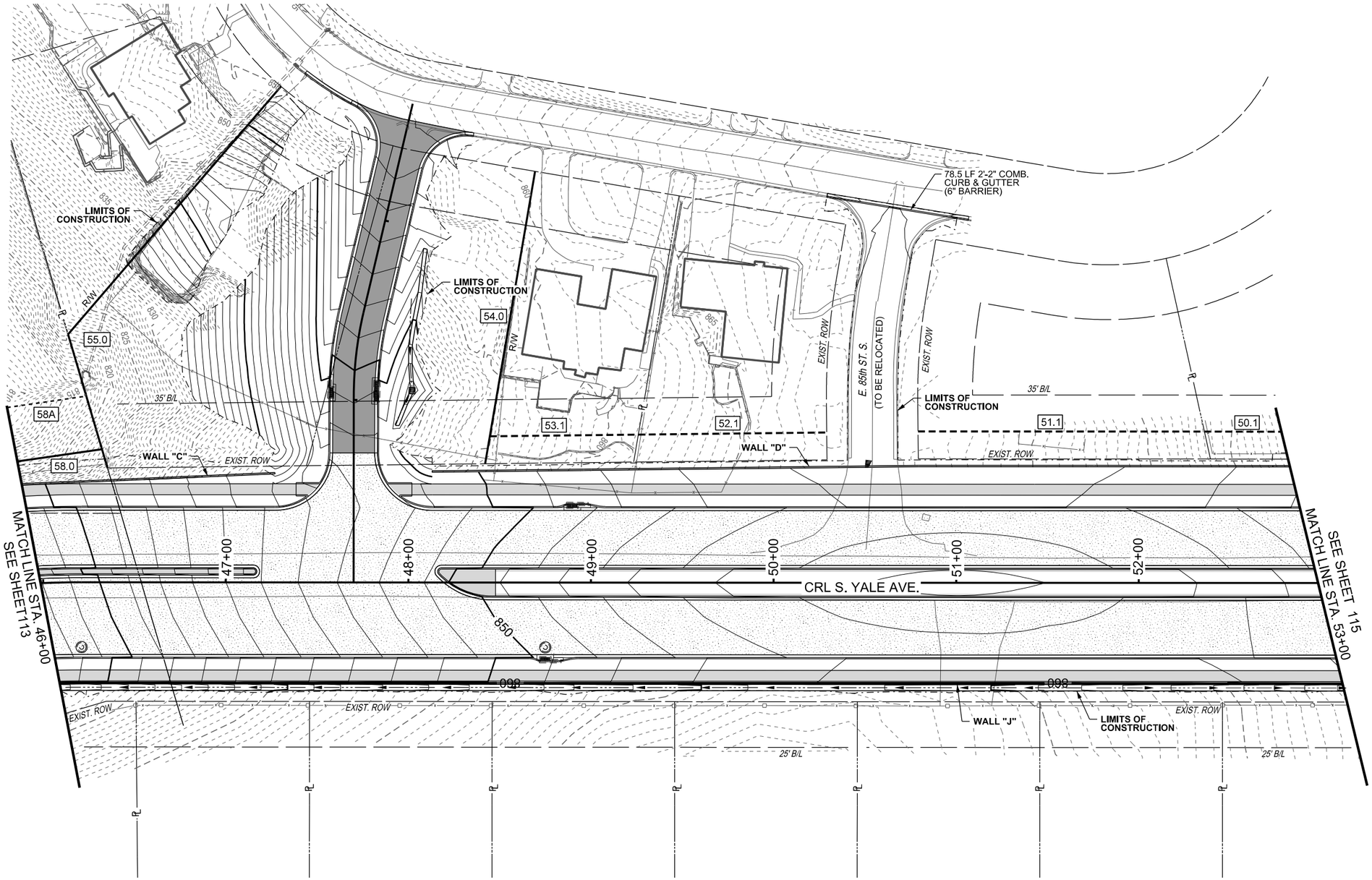
APPROVED:

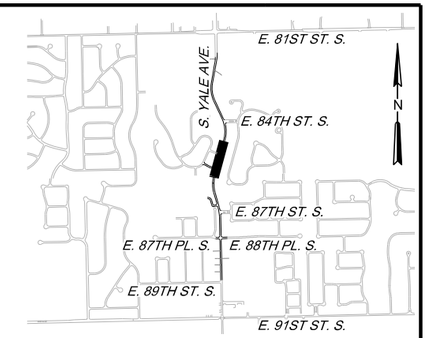
CITY ENGINEER

FILE: 313925-C-Grading-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006





KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

GRADING PLAN (4)
YALE AVENUE
STA. 46+00 TO STA. 53+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	RDL	10/18
FIELD MGR	ZW	7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	7-20
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Grading-04.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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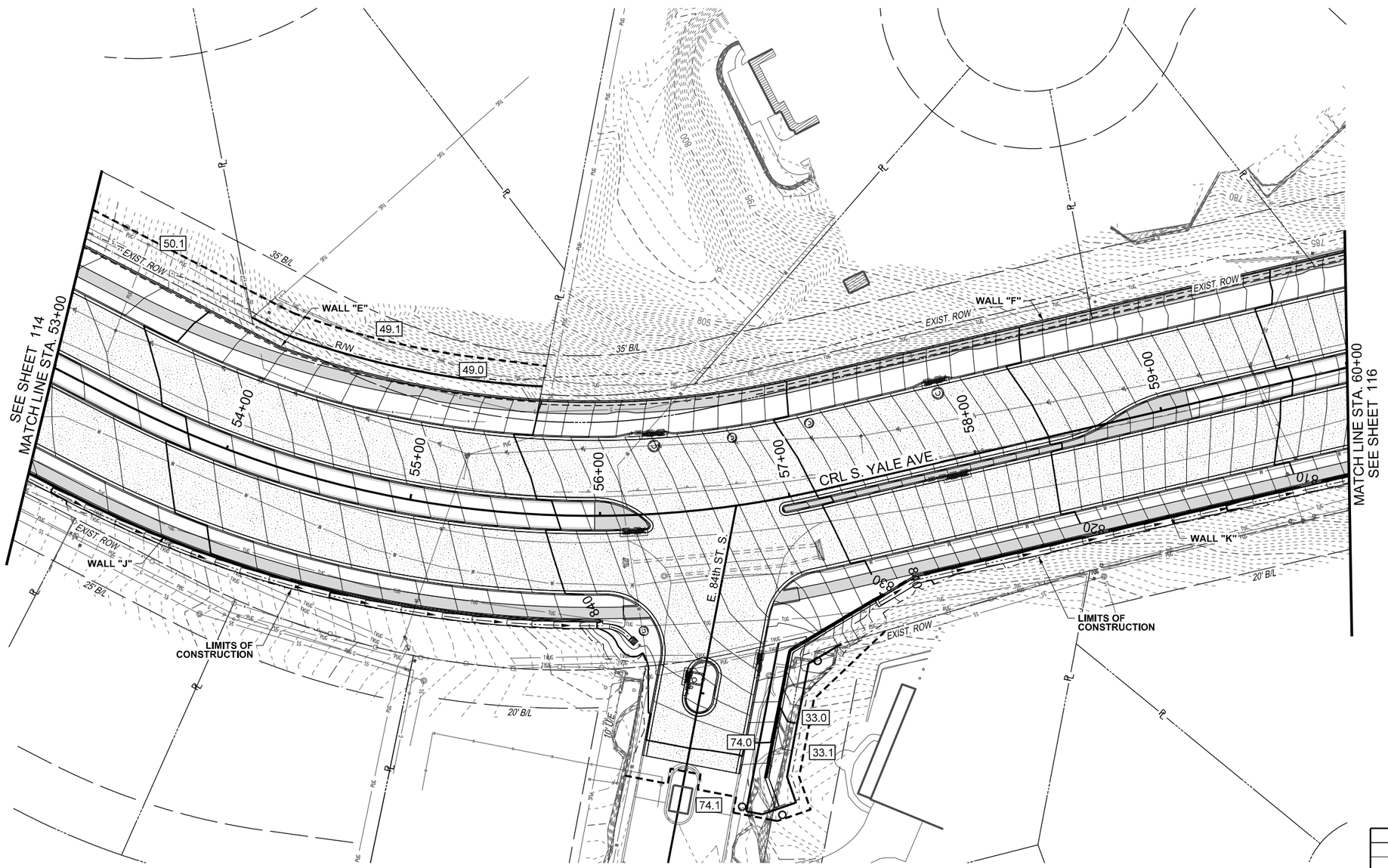

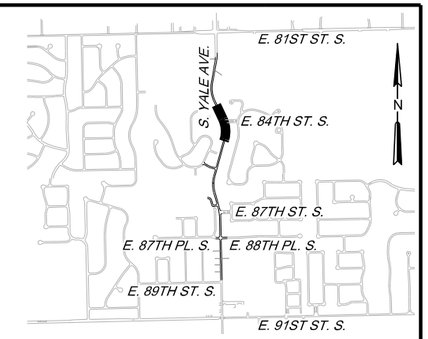

KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X — PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

GRADING PLAN (5)
YALE AVENUE
STA. 53+00 TO STA. 60+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED HAS 7-20 DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Grading-05.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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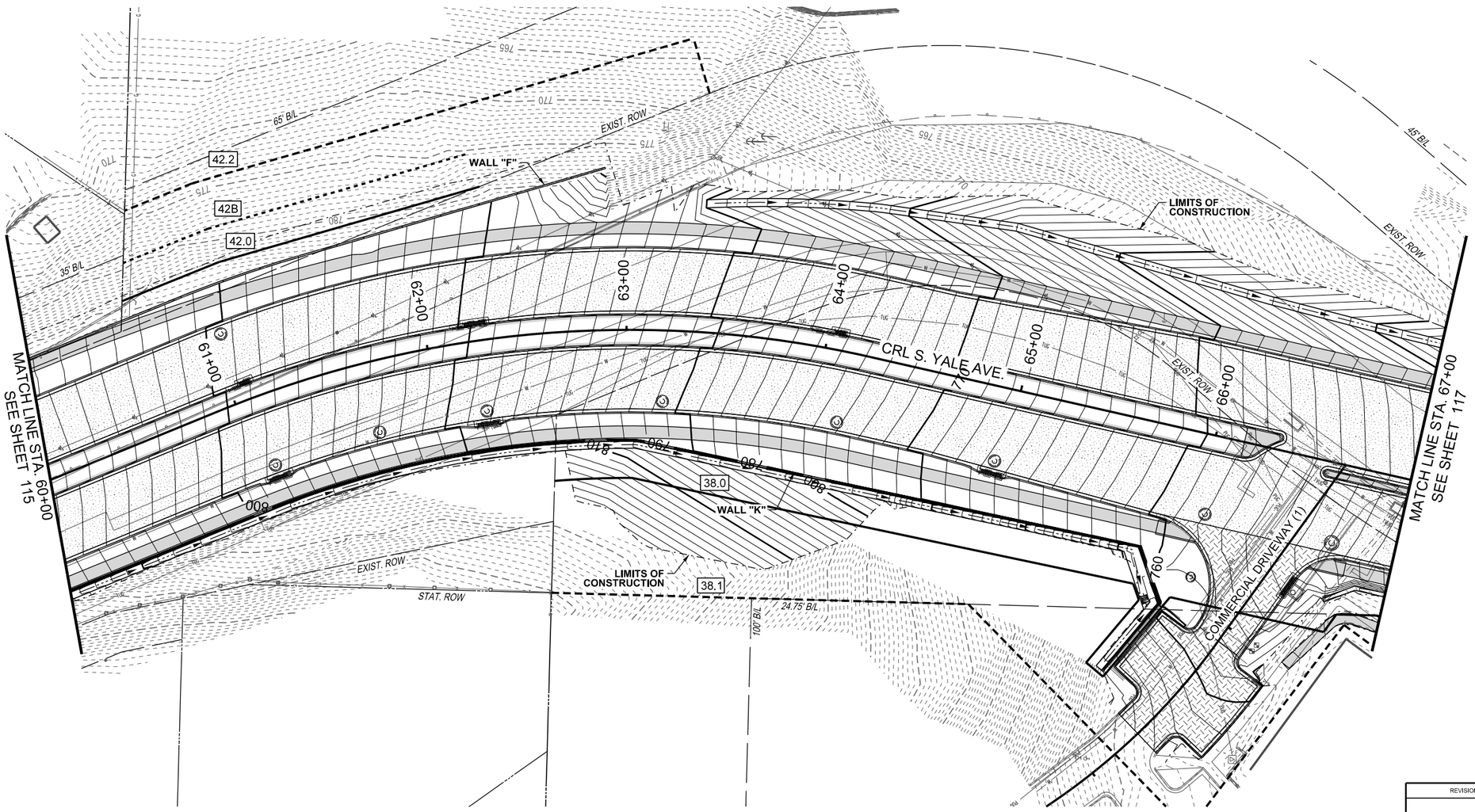

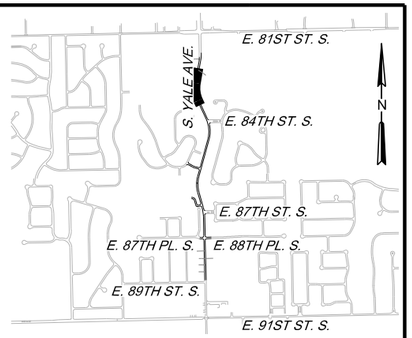

KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X — PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDEK
16476
OKLAHOMA

October 31, 2018

GRADING PLAN (6)
YALE AVENUE
STA. 60+00 TO STA. 67+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDL	11/18
	FIELD MGR	ZCH	7/20
	LEAD ENGR		11/20
VERTICAL: 1"= NA	RECOMMENDED: DESIGN ENG.	HBI	7-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Grading-06.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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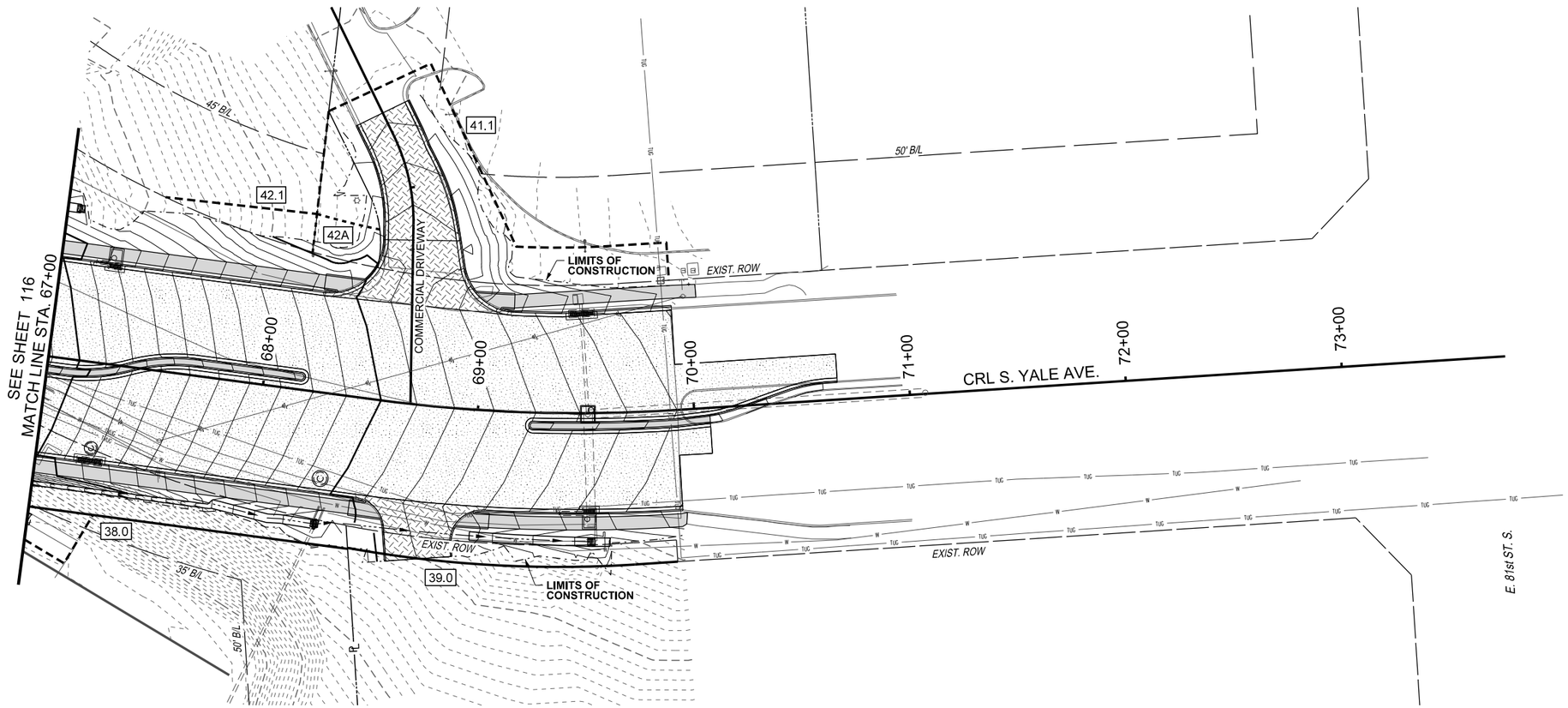

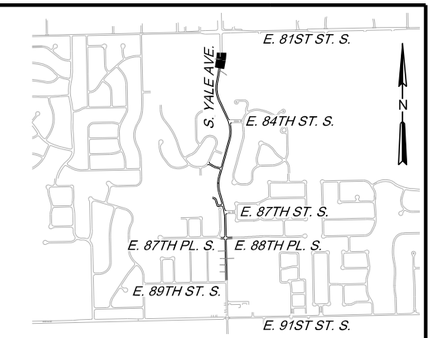

KEYMAP

LEGEND

- PROPOSED PAVEMENT OPTIONS A & B
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- X — PARCEL NUMBER
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

GRADING PLAN (7)
YALE AVENUE
STA. 67+00 TO STA. 71+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDD	12/18	
	FIELD MGR	[illegible]	7/20	
	LEAD ENGR	[illegible]	1/19	
VERTICAL: 1"= NA	RECOMMENDED	HBS	7-20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Grading-07.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 117 OF 334 SHEETS

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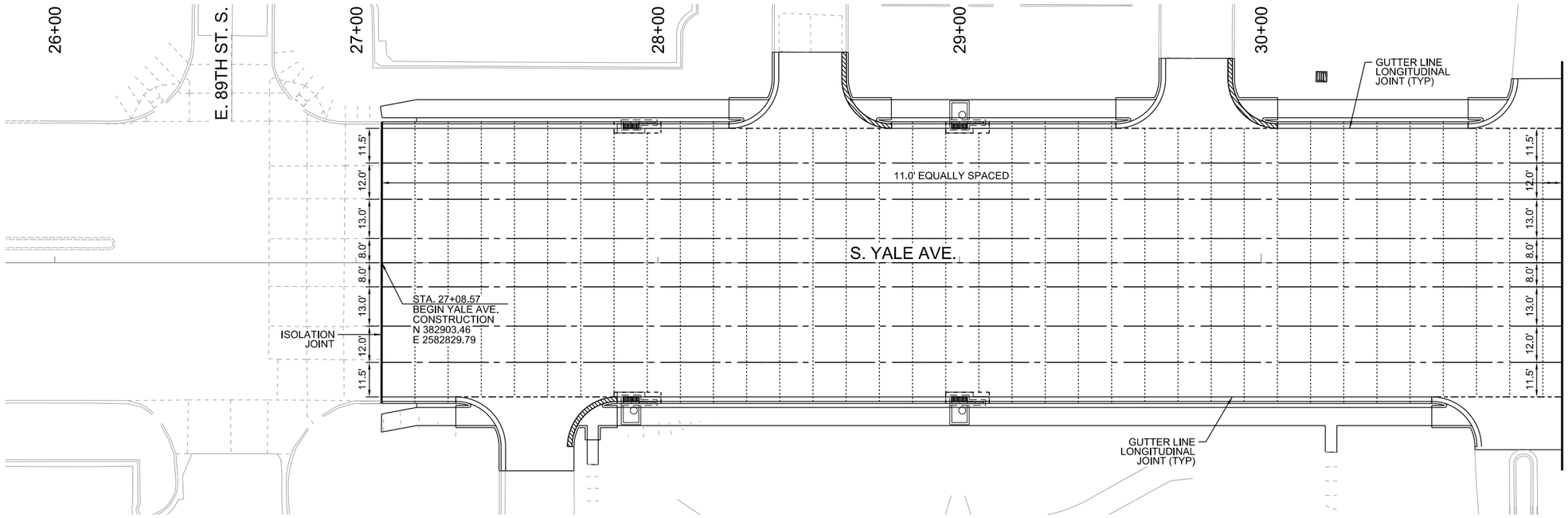
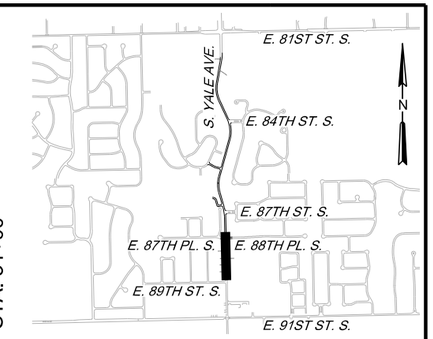


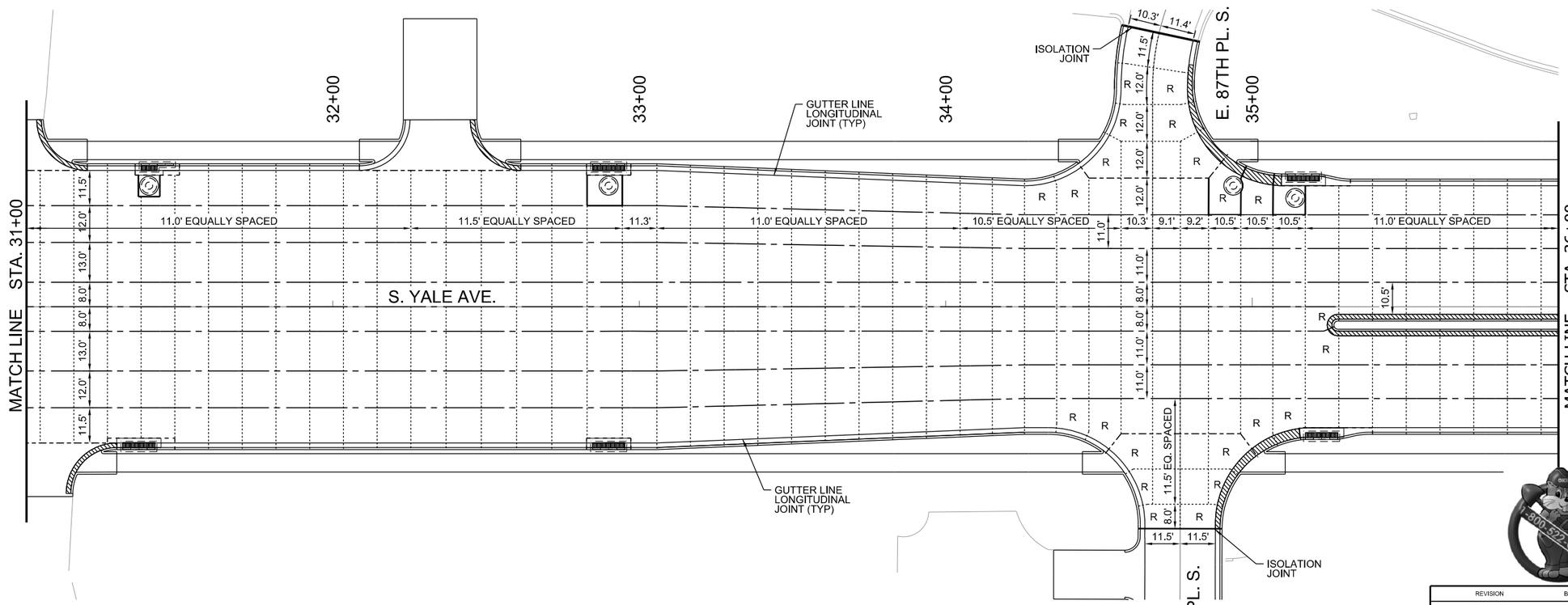


KEYMAP

LEGEND :

- NON-DOWELED CONTRACTION JOINT
- * DOWELED CONTRACTION JOINT
- ISOLATION JOINT
- EXPANSION JOINT
- LONGITUDINAL JOINT
- R REINFORCED PANEL
- FALL-AWAY (REVERSE) CURB & GUTTER

* NOTE:
REFER TO ODOT STD. LTU-5-0 FOR DOWELED CONTRACTION JOINT REINFORCEMENT.



N

20' 10' 0 20'

SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

JOINT LAYOUT (1)
YALE AVENUE
STA. 27+08 TO STA. 36+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	11/18	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR		1/19	
	RECOMMENDED HAS		7-20	
	DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Joint-01.dgn

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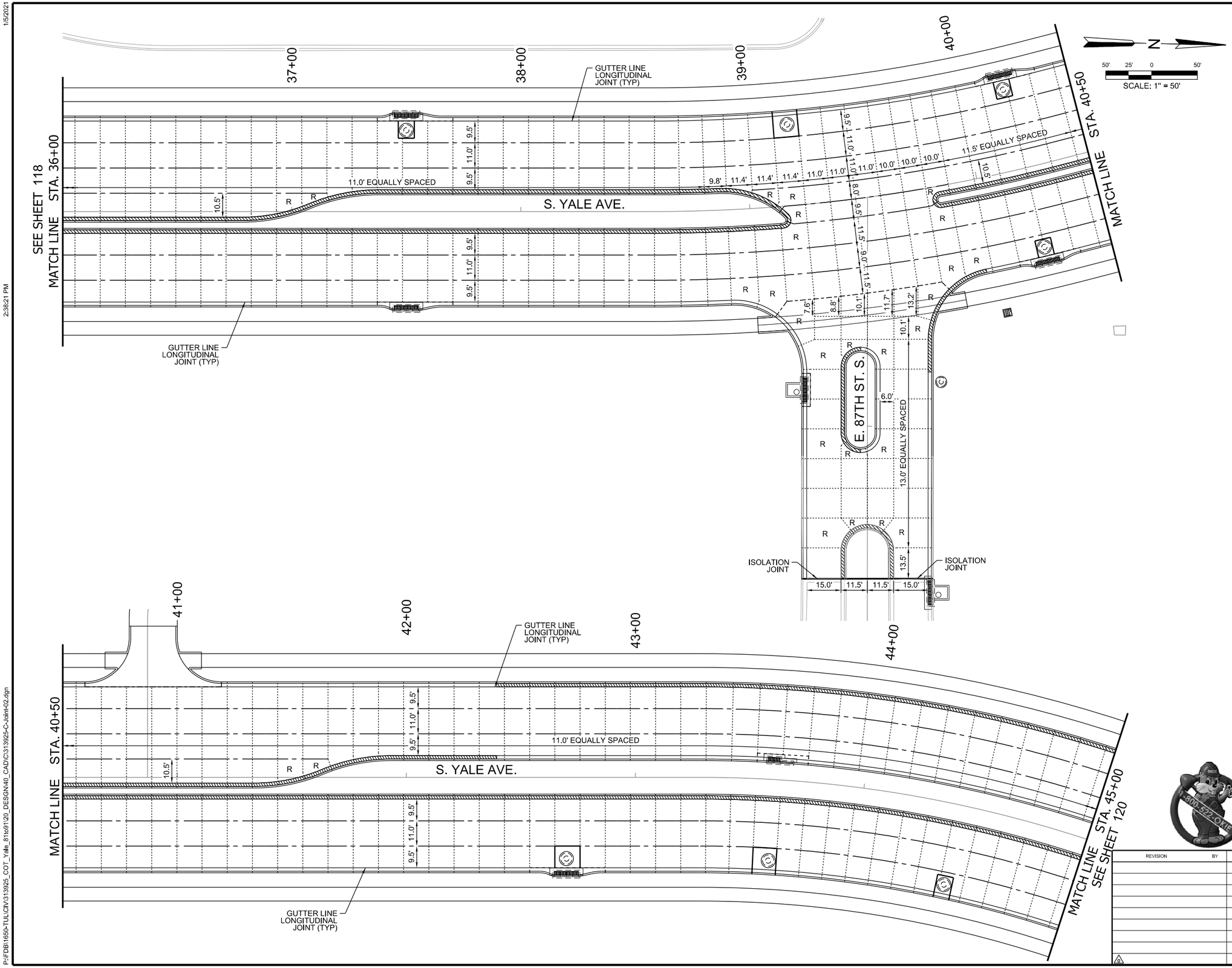

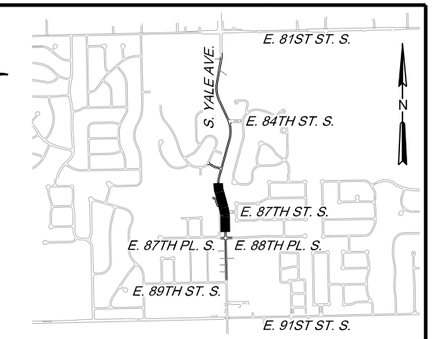

KEYMAP

LEGEND :

- NON-DOWELED CONTRACTION JOINT
- * DOWELED CONTRACTION JOINT
- ISOLATION JOINT
- EXPANSION JOINT
- LONGITUDINAL JOINT
- R REINFORCED PANEL
- FALL-AWAY (REVERSE) CURB & GUTTER

* NOTE:
REFER TO ODOT STD. LTU-5-0 FOR DOWELED CONTRACTION JOINT REINFORCEMENT.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

JOINT LAYOUT (2)
YALE AVENUE
STA. 36+00 TO STA. 45+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDC	12/18
	FIELD MGR		7/20
	LEAD ENGR		7/19
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HAS	7·20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Joint-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 119 OF 334 SHEETS

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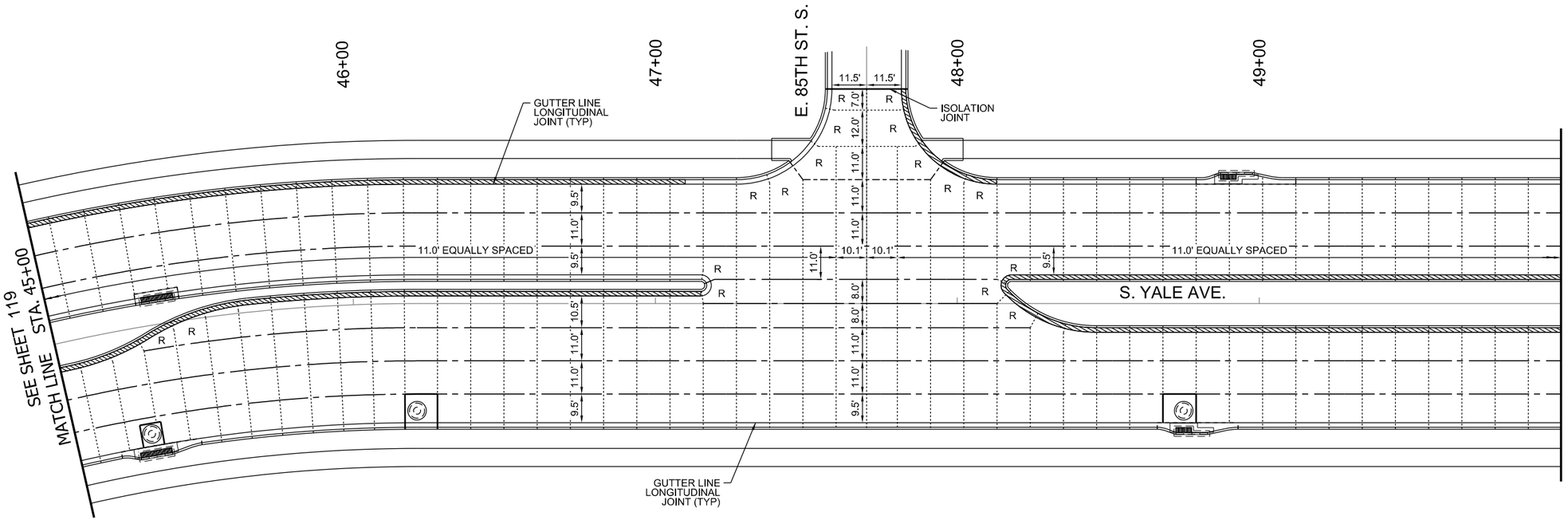
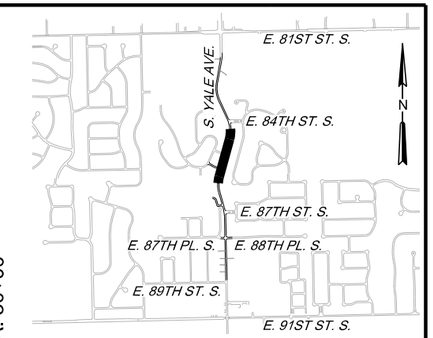


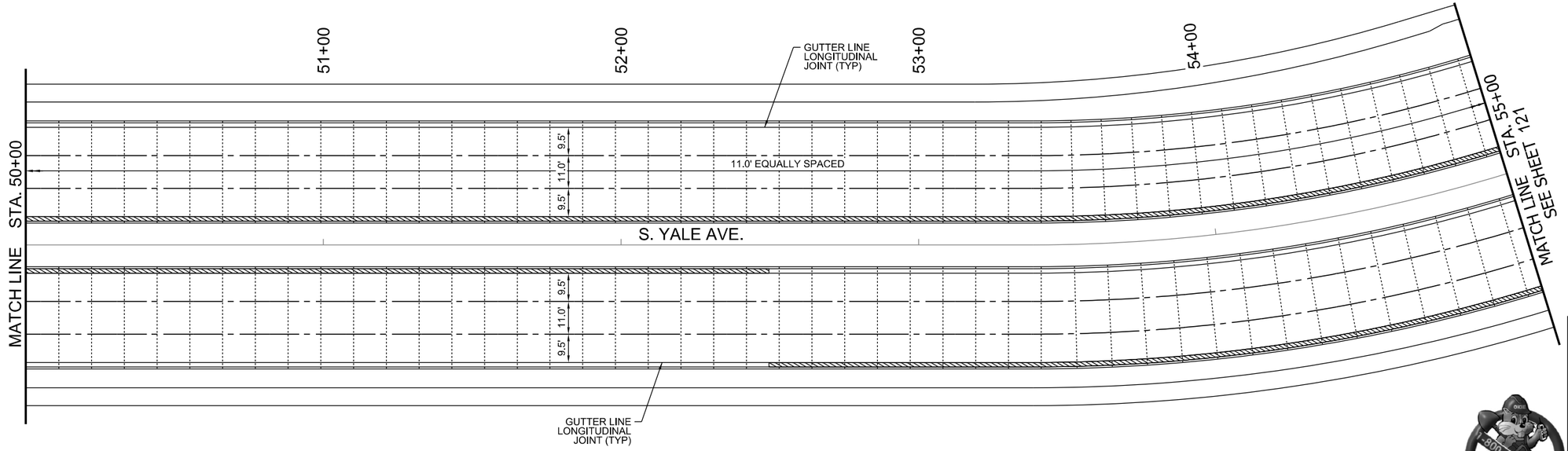


KEYMAP

LEGEND :

- NON-DOWELED CONTRACTION JOINT
- * DOWELED CONTRACTION JOINT
- ISOLATION JOINT
- EXPANSION JOINT
- LONGITUDINAL JOINT
- R REINFORCED PANEL
- FALL-AWAY (REVERSE) CURB & GUTTER

* NOTE:
REFER TO ODOT STD. LTU-5-0 FOR DOWELED CONTRACTION JOINT REINFORCEMENT.



20' 10' 0 20'

SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

JOINT LAYOUT (3)
YALE AVENUE
STA. 45+00 TO STA. 55+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDC	12/18
	FIELD MGR	ZCM	2/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS	7.20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Joint-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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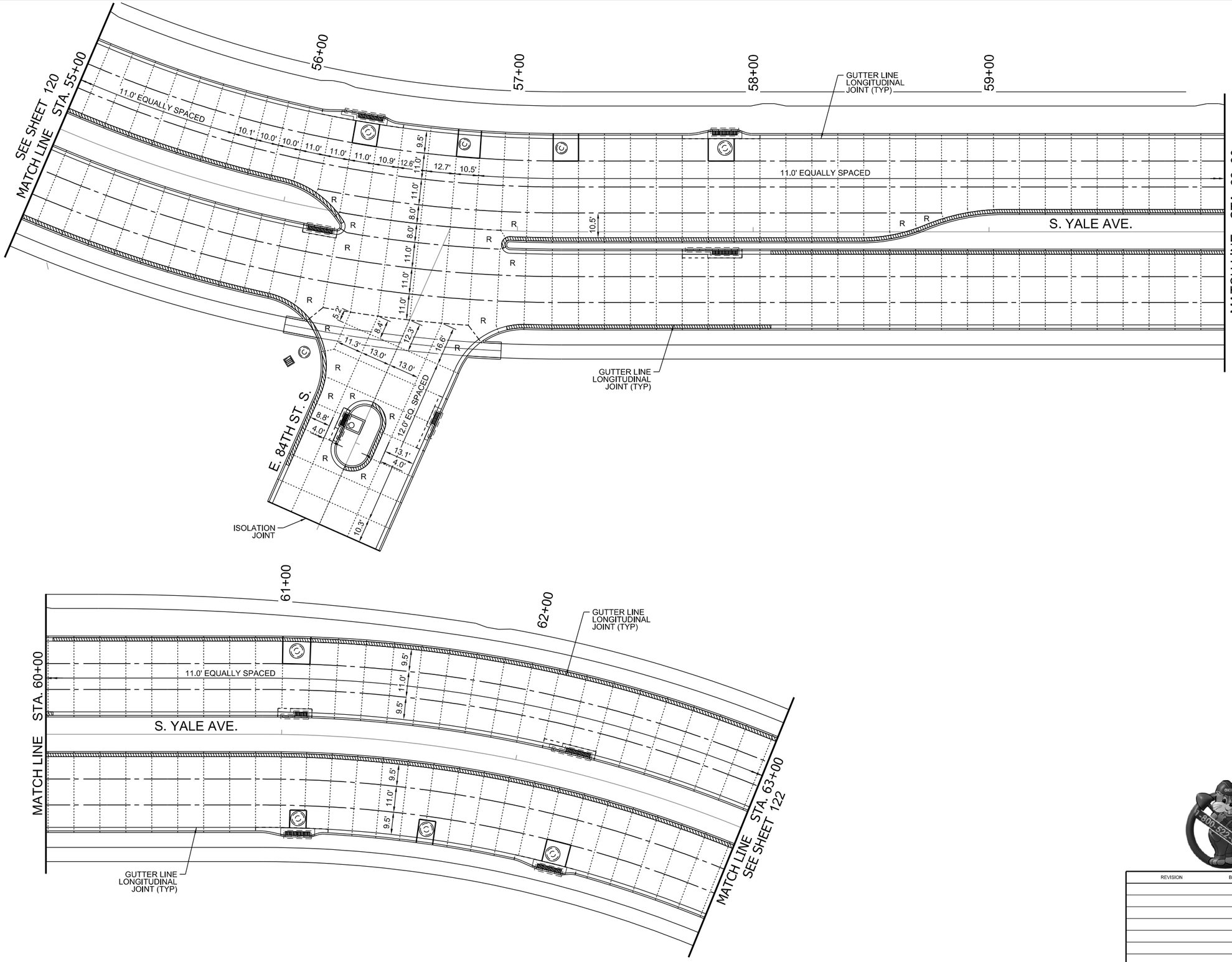

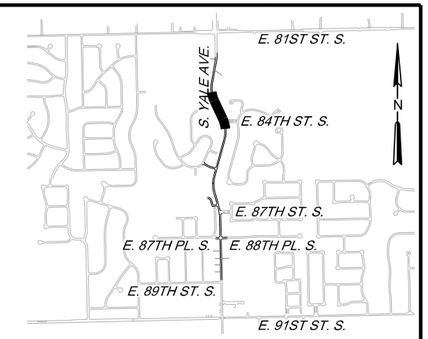

KEYMAP

LEGEND :

- NON-DOWELED CONTRACTION JOINT
- * DOWELED CONTRACTION JOINT
- ISOLATION JOINT
- EXPANSION JOINT
- LONGITUDINAL JOINT
- R REINFORCED PANEL
- FALL-AWAY (REVERSE) CURB & GUTTER

* NOTE:
REFER TO ODOT STD. LTU-5-0 FOR DOWELED CONTRACTION JOINT REINFORCEMENT.

N

20' 10' 0 20'

SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

JOINT LAYOUT (4)
YALE AVENUE
STA. 55+00 TO STA. 63+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RDC	10/18
	FIELD MGR		7/20
	LEAD ENGR		11/18
VERTICAL: 1"= NA	RECOMMENDED	HAs	7-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Joint-04.dgn
DATE: OCTOBER 2018
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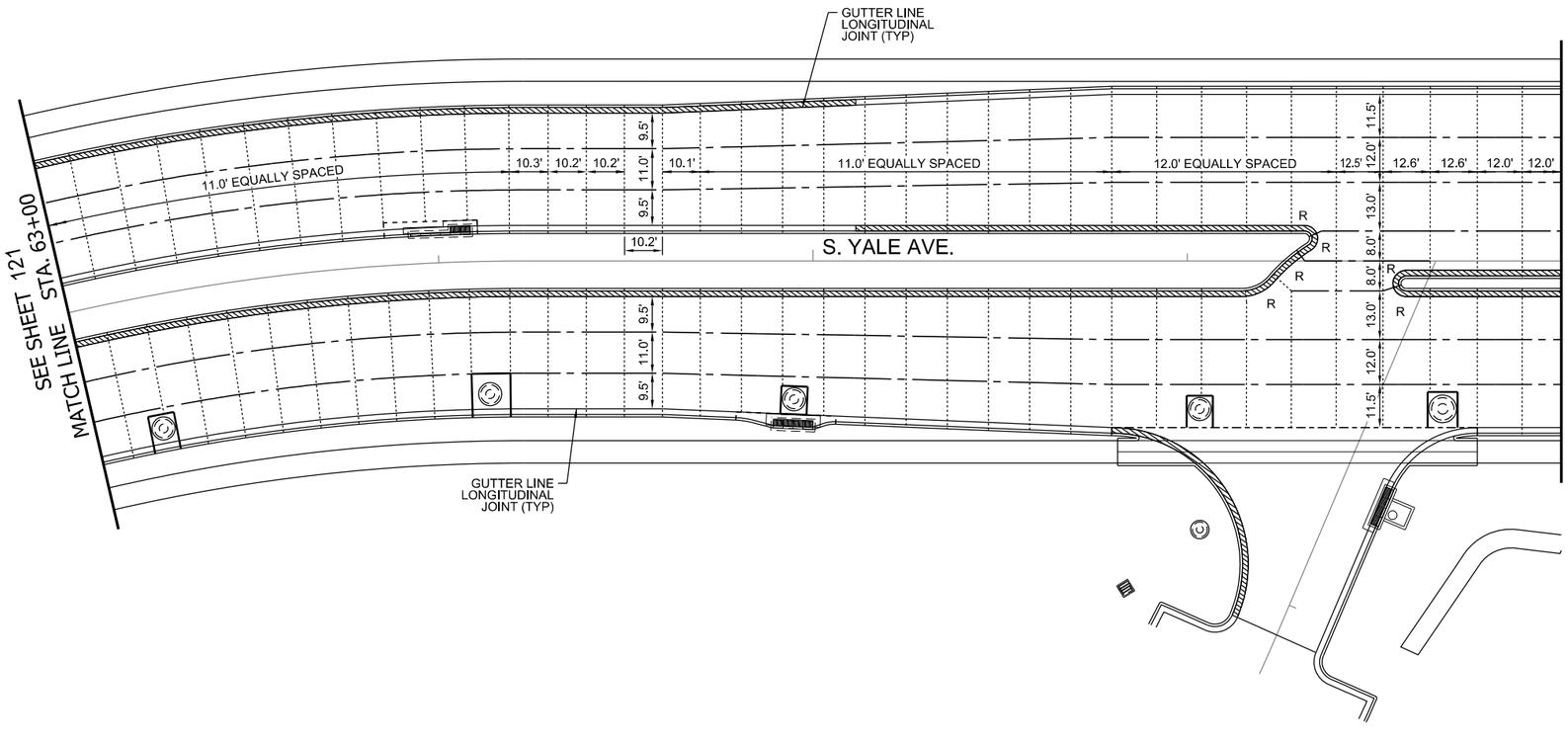
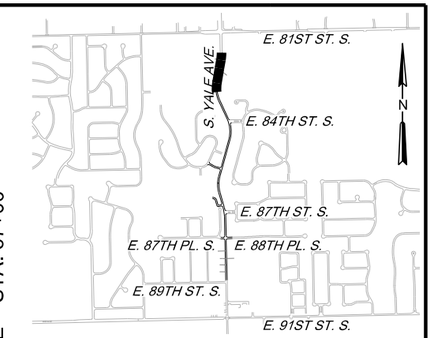


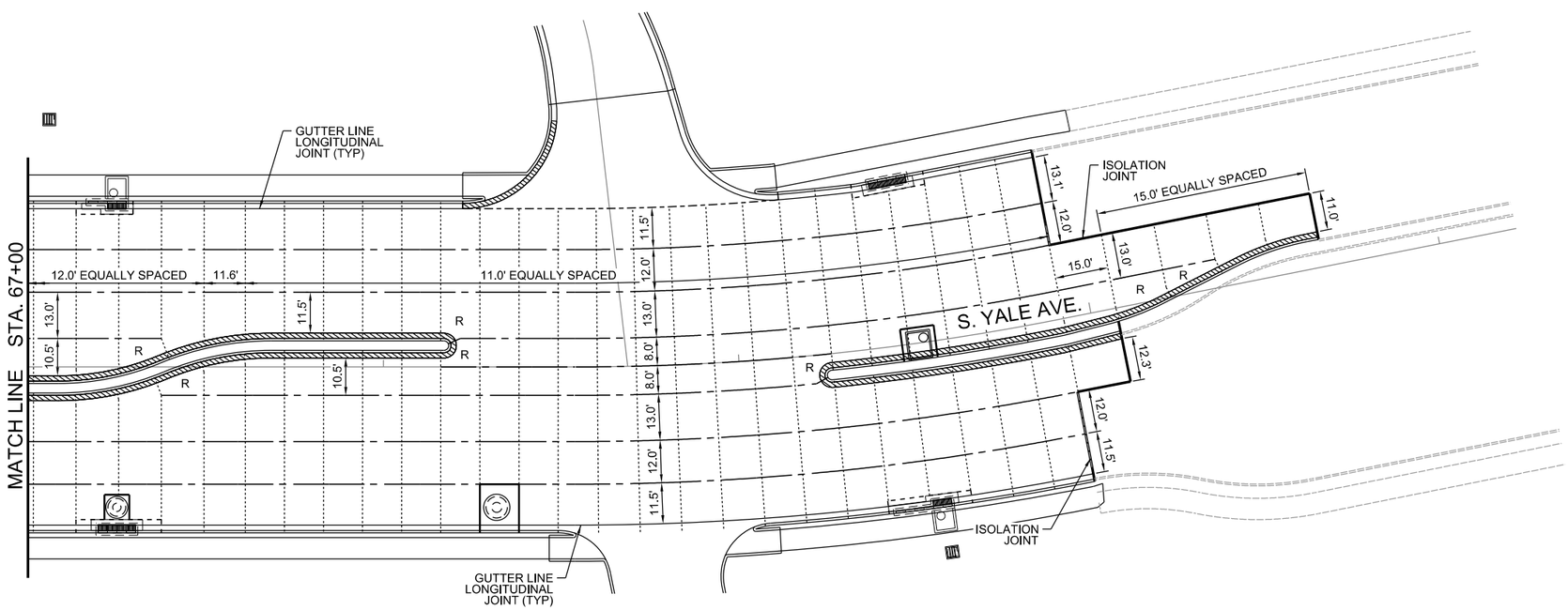


KEYMAP

LEGEND :

- NON-DOWELED CONTRACTION JOINT
- * DOWELED CONTRACTION JOINT
- ISOLATION JOINT
- EXPANSION JOINT
- LONGITUDINAL JOINT
- R REINFORCED PANEL
- FALL-AWAY (REVERSE) CURB & GUTTER

* NOTE:
REFER TO ODOT STD. LTU-5-0 FOR DOWELED CONTRACTION JOINT REINFORCEMENT.



SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

JOINT LAYOUT (5)
YALE AVENUE
STA. 63+00 TO STA. 69+92

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RJDC	12/18	
	FIELD MGR		7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"= NA	RECOMMENDED	HAS	7-20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Joint-05.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 122 OF 334 SHEETS

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10/4/2018

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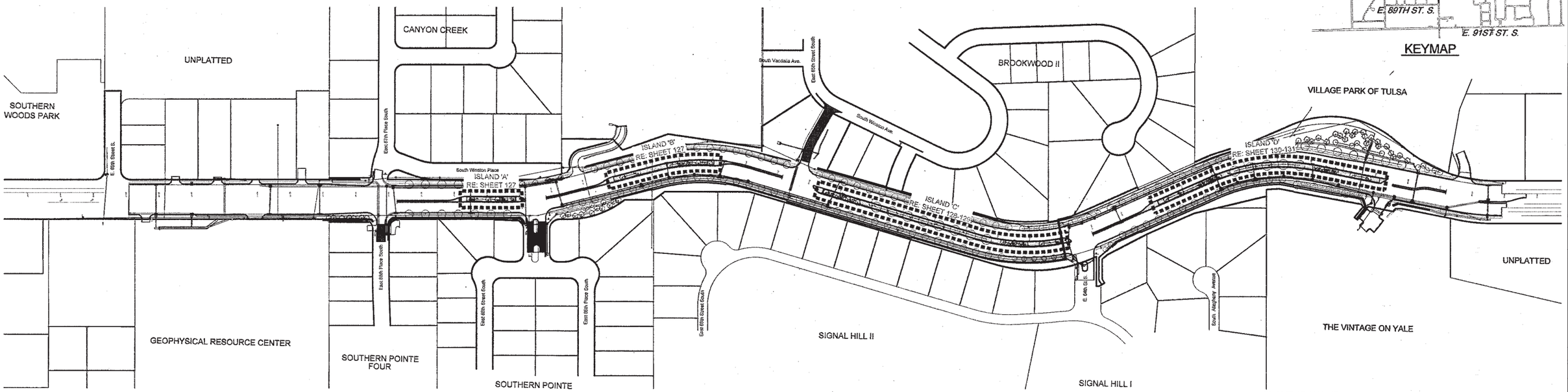

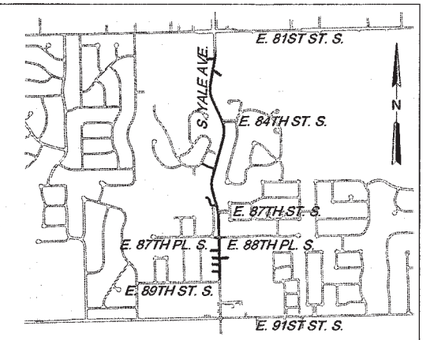

KEYMAP

1 YALE AVENUE - OVERALL SITE PLAN

SCALE: 1"=150'-0"

150 0 75 150 300

NORTH

APPROVED VENDOR LIST

TREES
TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM THE FOLLOWING OR APPROVED EQUAL:

BOLD SPRINGS NURSERY
1366 COLUMBUS HIGHWAY
HAWKINSVILLE, GA 31036
PH: 478-185-4479
RUSSELL@BOLDSPRINGS.COM

DEEP FORK TREE FARM
100 S. WESTMINSTER ROAD
ARCADIA, OK 73007
PH: 405-233-2020
WWW.DFTREES.COM

DECOMPOSED GRANITE
DECOMPOSED GRANITE IN THE LANDSCAPE MATERIAL LIST IS TO BE OBTAINED FROM THE FOLLOWING OR APPROVED EQUAL:

HARDSCAPE MATERIALS INC.
1810 S. MEMORIAL DRIVE
BIXBY, OK 74008
PH: 918-364-1710
HARDSCAPEMATERIALS.COM

MINICK MATERIALS
326 N. COUNCIL ROAD
OKLAHOMA CITY, OK 73128
PH: 405-794-2066
MINICKMATERIALS.COM

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 8' CAL.	B&B
*AT'MS'	55	Acer truncatum 'NF-AT' pp 20109 Main Street Shantung Maple	15-18' H. 8" CAL.	B&B
CA'KF'	518	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
CM'MR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HPP'	552	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	3 GAL
LMPE'	1,548	Liriope muscari 'EXC 051 Purple Explosion Liriope	6-8" H. 12" O.C.	1 GAL
MC'P'	352	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NP'WL'	252	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nuhly' pp 22451 Green Gable Black Gum	15-18' H. 5" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	58	Pistachia chinensis Chinese Pistache	12-15' H. 5" CAL.	B&B
PT	83	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	3 GAL
SH	204	Sporobolus heterolepis Prairie Dropseed	12-15" H. 24" O.C.	1 GAL
*TD'SB'	15	Taxodium distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 3 1/2" CAL. (ABH)	B&B
MULCH	1908	Cedar Mulch	8 C.F.	1 BAG
COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
EDGE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	4,755	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H=HEIGHT, S=SPREAD CAL=CALIPER, O.C.=ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ABH=AT BREAST HEIGHT
THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR FIGURING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET [illegible] FOR LIST OF PRE-APPROVED VENDORS.

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.

7-1-20

REGISTERED LANDSCAPE ARCHITECT — JAMES C. CROSBY 121 — OKLAHOMA

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.

OVERALL LANDSCAPE SITE PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM Benham Design, LLC
a Haskell Company
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1500

PDG Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 150'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PDR	7/1/20
	FIELD MGR		7/20
	LEAD ENGR		7/20
VERTICAL: 1"= N/A	RECOMMENDED: DESIGN MANAGER	HAI	12-20

APPROVED:
CITY ENGINEER

FILE: Yale Landscaping.dwg
DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 123 OF 308 SHEETS

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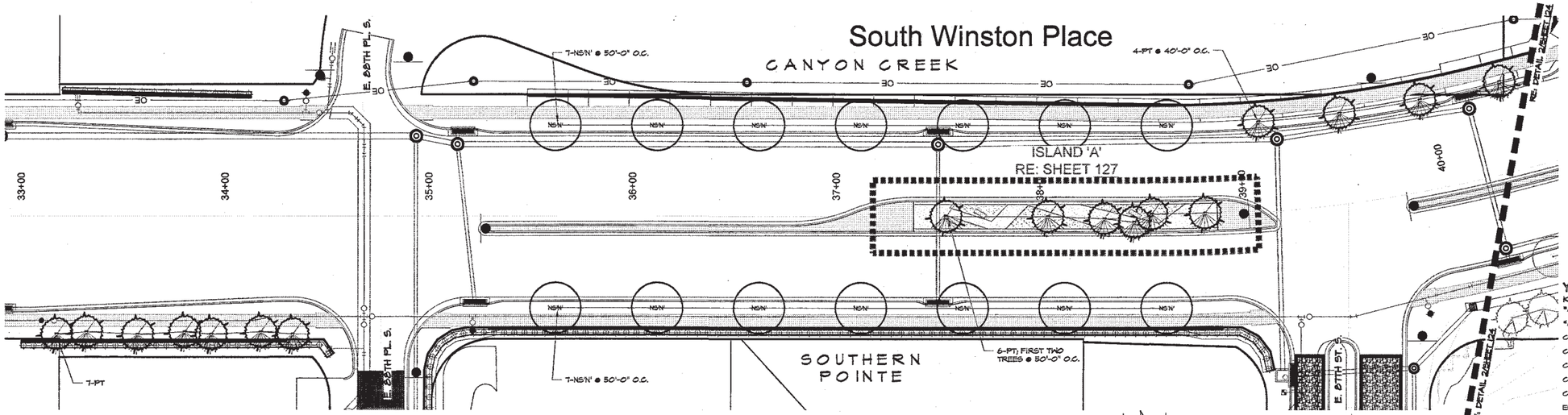
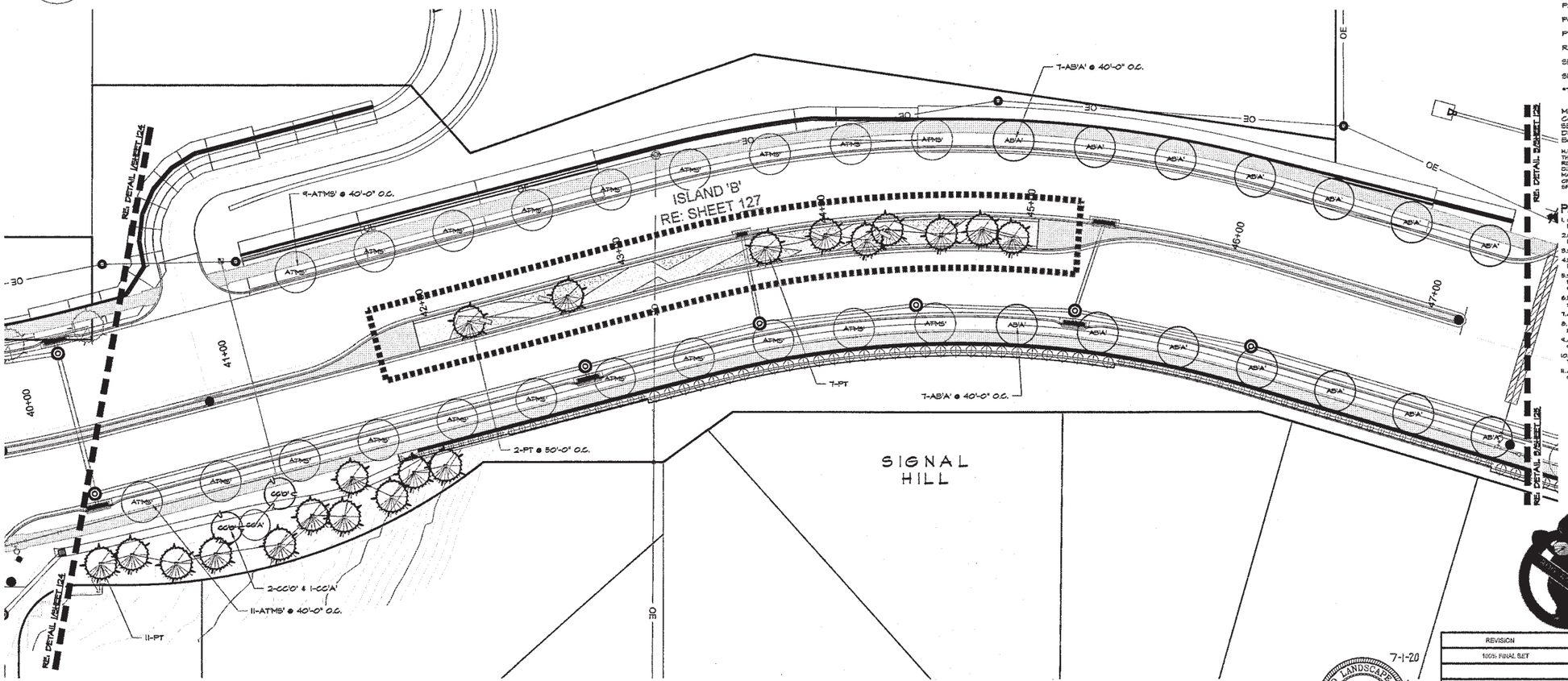


1 YALE AVENUE LANDSCAPING 33+00 to 40+00

SCALE: 1"=30'-0"



2 YALE AVENUE LANDSCAPING 40+00 to 47+00

SCALE: 1"=30'-0"

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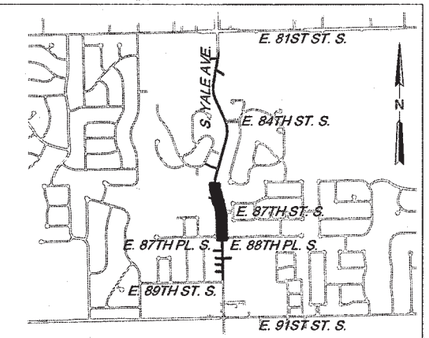
NORTH



KEYMAP

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 5" CAL.	B&B
*ATM5'	55	Acer truncatum 'HF-ATI' pp 20104 Main Street Shantung Maple	15-18' H. 5" CAL.	B&B
CA'KF'	518	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
Cx'HR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	552	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	5 GAL
LMF'E'	1548	Liriope muscari 'EXC 051' Purple Explosion Lilyturf	6-8" H. 12" O.C.	1 GAL
MC'P'	552	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NP'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
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PA'LS'	100	Perovskia abrotanoides 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	55	Pistachia chinensis Chinese Pistache	12-15' H. 5" CAL.	B&B
PT	53	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
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COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	4,788	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	30	Brown Gold Hackett Stone Boulders	TONS	

H.HEIGHT, S.SPREAD CAL.CALIPER, O.C. ON CENTER, B&B.BALLED & BURLAPPED, GAL.GALLON, ABH. AT BREAST HEIGHT THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET L00 FOR LIST OF PRE-APPROVED VENDORS.

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LANDSCAPE SITE PLAN (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

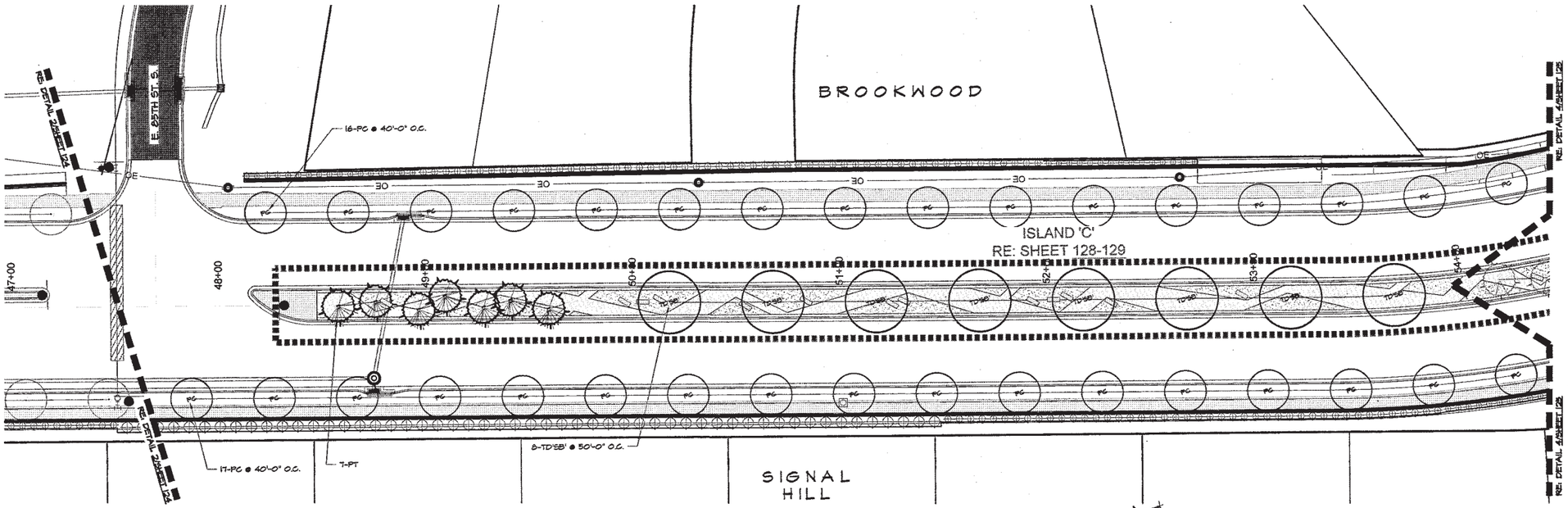
PLAN SCALE 1"= 30'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PJP	7/20
	FIELD MGR		7/20
	LEAD ENGR		
VERTICAL: 1"= N/A	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: Yale Landscaping.dwg
DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 124 OF 306 SHEETS

7-1-20
REGISTERED LANDSCAPE ARCHITECT JAMES C. CROSBY 121 OKLAHOMA
JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD



3 YALE AVENUE LANDSCAPING 47+00 to 54+00

SCALE: 1"=30'-0"

30 0 15 30 60

NORTH

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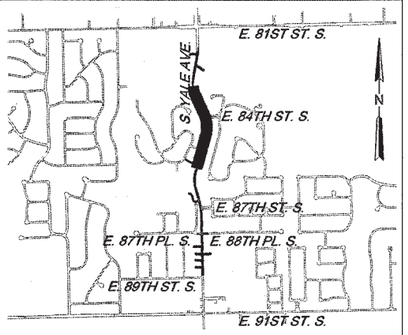

KEYMAP

YALE AVENUE LANDSCAPE MATERIAL LIST

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RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
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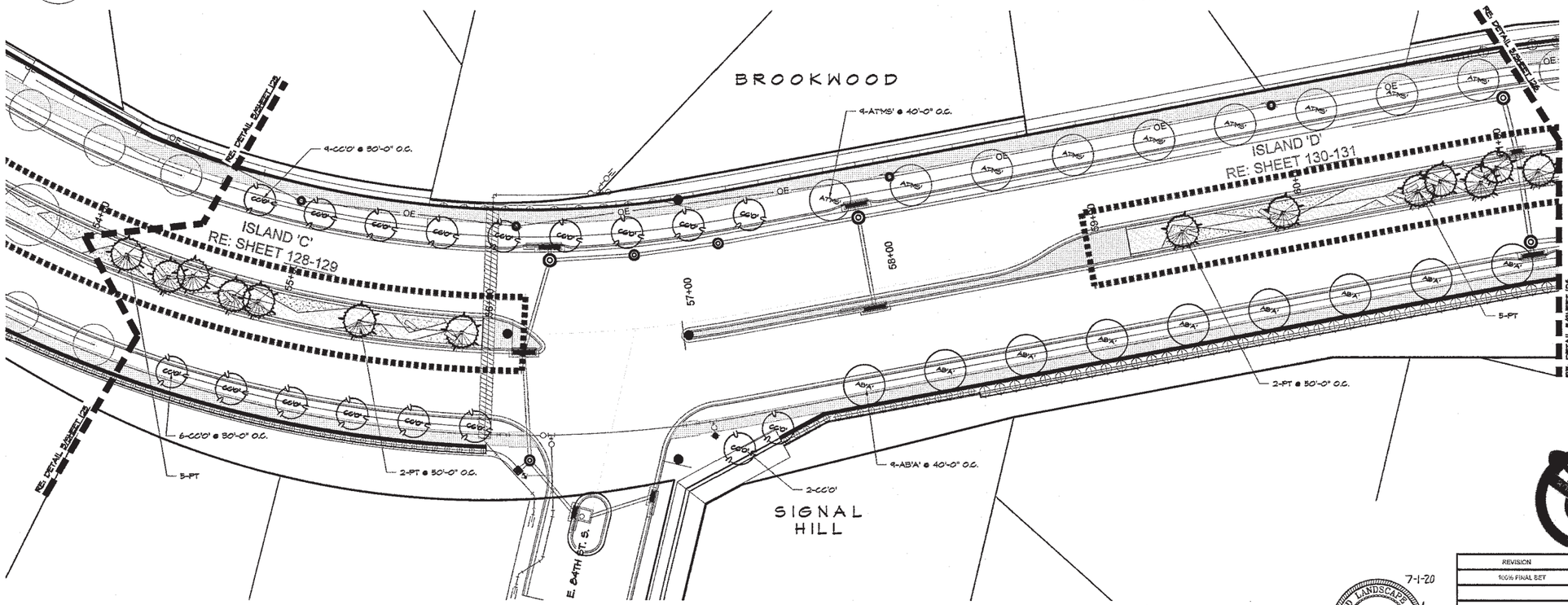
DG	4,155	Desert Gold Decomposed Granite	S.Q. FT	
BOULDERS	90	Brown Gold Hackett Stone Boulders	TONS	

*HEIGHT, SUPREAD CAL=CALIPER, O.C.= ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ASH= AT BREAST HEIGHT THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTORS CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS, WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET 126 FOR LIST OF PRE-APPROVED VENDORS.

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TREE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.



4 YALE AVENUE LANDSCAPING 54+00 to 61+00

SCALE: 1"=30'-0"

30 0 15 30 60

NORTH

LANDSCAPE SITE PLAN (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PDG Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 30'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PJP	7/20
	FIELD MGR		7/20
	LEAD ENGR		
VERTICAL: 1"= N/A	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: Yale Landscaping.dwg

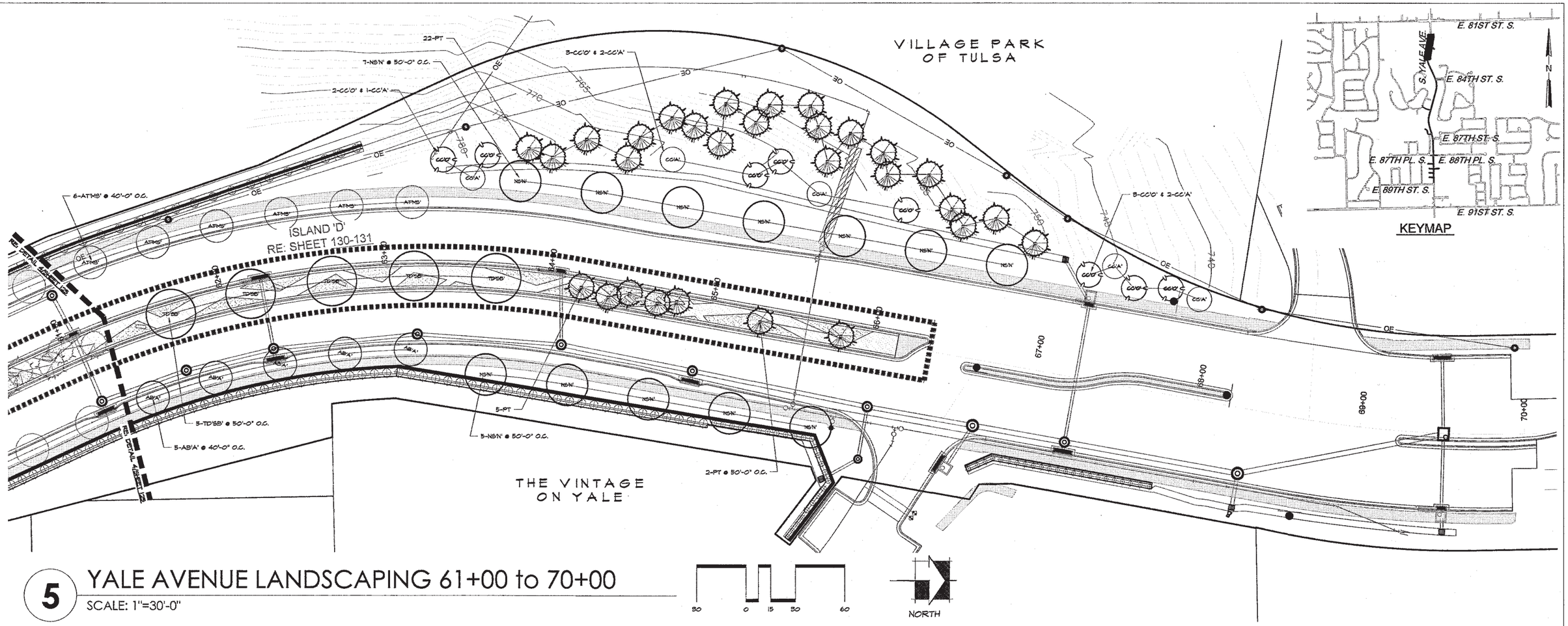
DATE: JULY 2020

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 125 OF 306 SHEETS

7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD



5 YALE AVENUE LANDSCAPING 61+00 to 70+00

SCALE: 1"=30'-0"

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 3" CAL.	B&B
*AT'MS'	35	Acer truncatum 'HF-ATI' pp 20104 Main Street Shantung Maple	15-18' H. 3" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Feathered Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
CsMR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EPWB'	181	Echinacea purpurea 'PowWow Wild Berry' PowWow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	352	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-18" H. 30" O.C.	3 GAL
LM'PE'	1,548	Liriope muscari 'EXC GB' Purple Explosion Lilyturf	6-8" H. 12" O.C.	1 GAL
MC'F'	352	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NF'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nuhn' pp 22451 Green Gable Black Gum	15-18' H. 3" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-18" H. 24" O.C.	1 GAL
PC	33	Pistachia chinensis Chinese Pistache	12-18' H. 3" CAL.	B&B
PT	83	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-18" H. 30" O.C.	3 GAL
SH	209	Sporobolus heterolepis Prairie Dropseed	12-18" H. 24" O.C.	1 GAL
*TD'SB'	13	Taxodium distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 3 1/2" CAL. (ABH)	B&B
MULCH	1,308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	9,785	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H.HEIGHT, S.SPREAD CAL.CALIPER, O.C. ON CENTER, B&B.BALLED & BURLAPPED, GAL.GALLON, ABH. AT BREAST HEIGHT
THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PURCHING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET 128 FOR LIST OF PRE-APPROVED VENDORS.

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. NORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.

7-1-20

REGISTERED LANDSCAPE ARCHITECT JAMES C. CROSBY 121 OKLAHOMA

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

LANDSCAPE SITE PLAN (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
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(918) 492-1600

PDG Planning Design Group
6314 S. Yale Ave., Suite 510
Tulsa, OK 74136
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 30'-0"	DRAWN	CC	10/31	APPROVED:
	DESIGNED	TLP	10/31	
	SURVEY			
PROFILE SCALE HORIZONTAL 1"= N/A	PROJECT MGR	RDP	7/20	
	FIELD MGR		7/20	
VERTICAL 1"= N/A	LEAD ENGR			
	RECOMMENDED DESIGN MANAGER	HAS	12-20	CITY ENGINEER
FILE: Yale Landscaping.dwg				DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 126 OF 306 SHEETS

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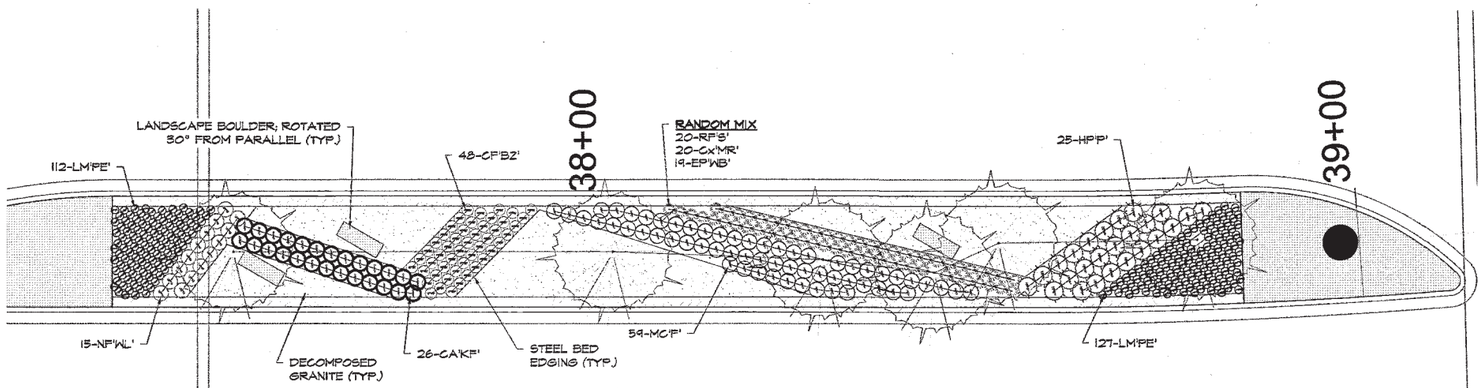


1 YALE AVENUE ISLAND 'A' PLANTING

SCALE: 1"=10'-0"

10 0 5 10 20

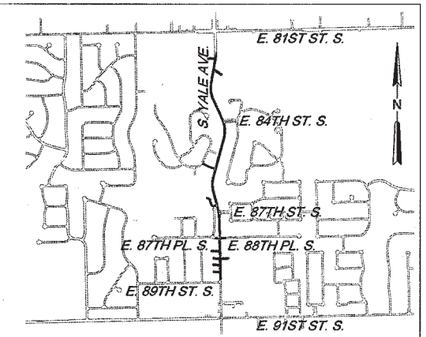
NORTH

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 5" CAL.	B&B
*ATM5'	35	Acer truncatum 'NF-ATI' pp 20109 Main Street Shantung Maple	15-18' H. 5" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	462	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
Cx'MR'	151	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising	10-12" H. 18" O.C.	1 GAL
EP'WB'	151	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	352	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	3 GAL
LM'PE'	1,346	Liriope muscari 'EXC 051' Purple Explosion Lilyturf	6-8" H. 12" O.C.	1 GAL
MC'F'	352	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NF'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nsuhn' pp 22451 Green Gable Black Gum	15-18' H. 5" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	33	Pistachia chinensis Chinese Pistache	12-15' H. 5" CAL.	B&B
PT	83	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	3 GAL
SH	209	Sporobolus heterolepis Prairie Dropseed	12-15" H. 24" O.C.	1 GAL
*TD'SB'	15	Taxodium distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 5 1/2" CAL. (ABH)	B&B
MULCH	1,308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,218	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	4,733	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H=HEIGHT, S=SPREAD CAL=CALIPER, O.C.= ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ABH= AT BREAST HEIGHT
THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR FIGURING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET [illegible] FOR LIST OF PRE-APPROVED VENDORS.

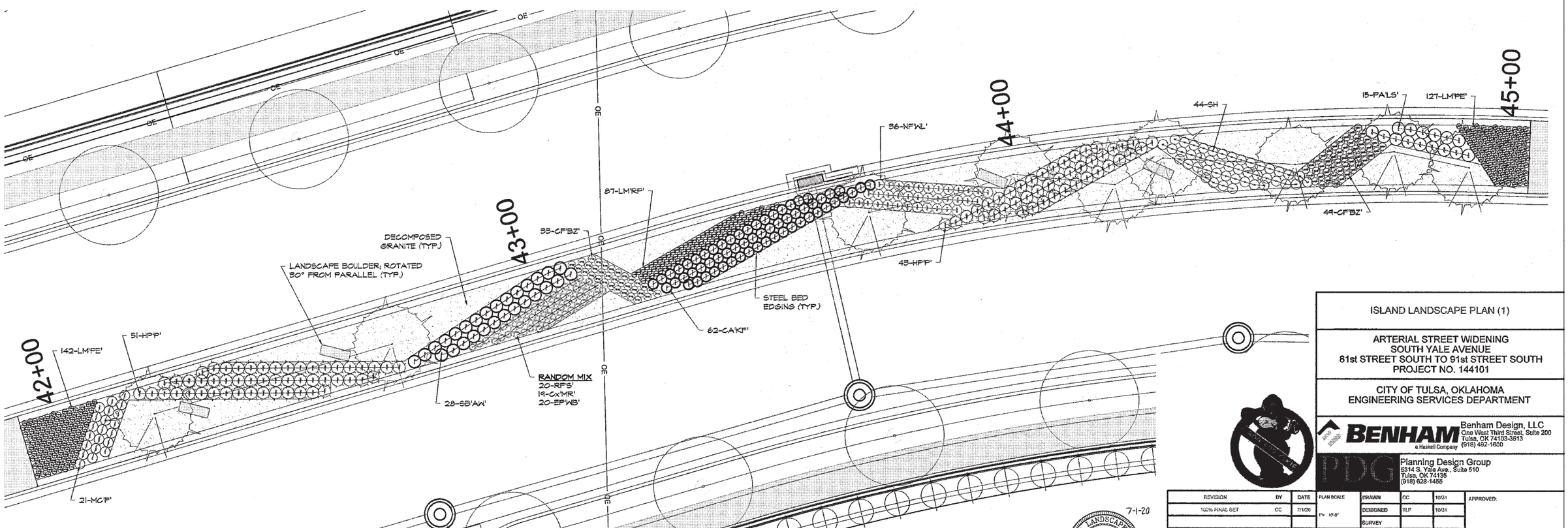
NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.



KEYMAP

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL. LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL. LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TREE FENCE POSTS AND TIED WITH HOSE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.



2 YALE AVENUE ISLAND 'B' PLANTING

SCALE: 1"=10'-0"

10 0 5 10 20

NORTH

7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

ISLAND LANDSCAPE PLAN (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Benham Design, LLC
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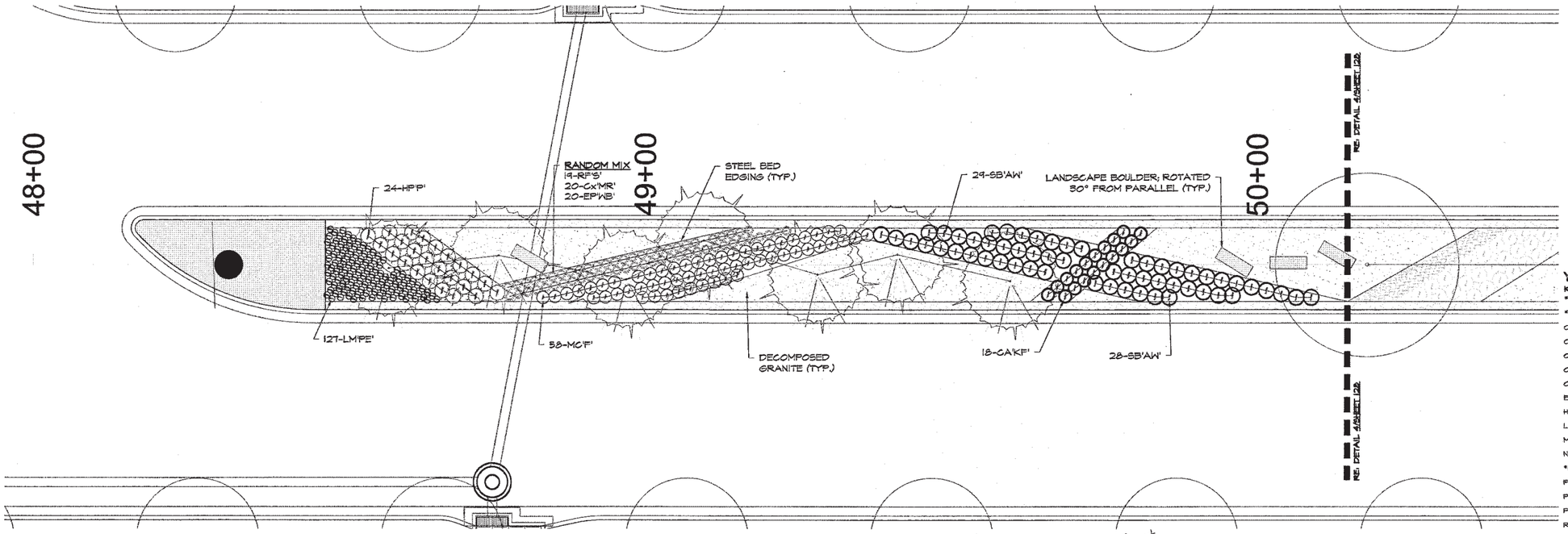
PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1" = 10'-0"	DRAWN	CC	10/31	APPROVED:
	DESIGNED	TLP	10/31	
	SURVEY			
PROFILE SCALE HORIZONTAL: 1" = N/A	PROJECT MGR	PJR	7/20	
	FIELD MGR		7/20	
	LEAD ENGR		12/20	
VERTICAL: 1" = N/A	RECOMMENDED: HAS		12-20	CITY ENGINEER
	DESIGN MANAGER			
FILE: Yale Landscaping.dwg				DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 127 OF 306 SHEETS



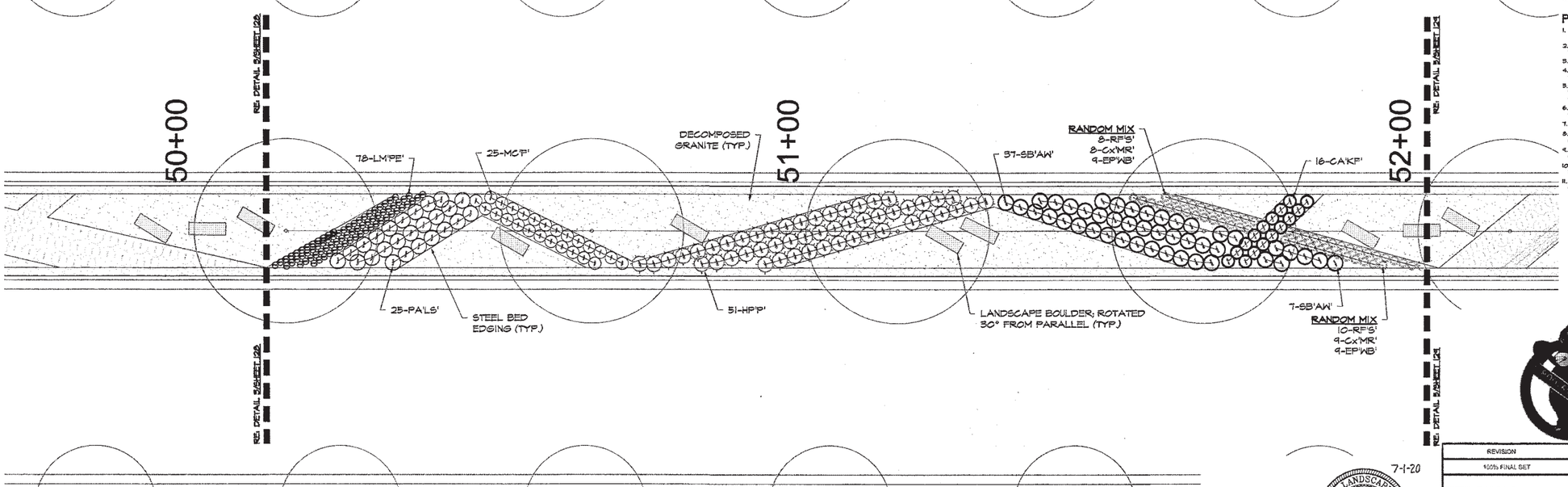
3 YALE AVENUE ISLAND 'C' PLANTING PT. 1

SCALE: 1"=10'-0"

10 0 5 10 20

NORTH

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.



4 YALE AVENUE ISLAND 'C' PLANTING PT. 2

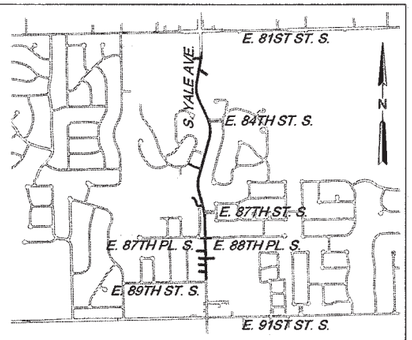
SCALE: 1"=10'-0"

10 0 5 10 20

NORTH

7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD



KEYMAP

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 5" CAL.	B&B
*AT'MS'	55	Acer truncatum 'VF-ATI' pp 20109 Main Street Shantung Maple	15-18' H. 3" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
Cx'MR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	582	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	3 GAL
LM'PE'	1548	Liriope muscari 'EXC 051' Purple Explosion Lilyturf	6-8" H. 12" O.C.	1 GAL
MC'F'	582	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NP'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nuuh' pp 22451 'Green' Gole Black Gum	15-18' H. 3" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	58	Pistachia chinensis Chinese Pistache	12-15' H. 3" CAL.	B&B
PT	88	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	5 GAL
SH	209	Sporobolus heterolepis Prairie Dropseed	12-15" H. 24" O.C.	1 GAL
*TD'SS'	15	Taxodium Distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 3 1/2" CAL. (ABH)	B&B
MULCH	1308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	9,155	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H=HEIGHT, S=SPREAD CAL=CALIPER, O.C.= ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ABH= AT BREAST HEIGHT THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR FIGURING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET L26 FOR LIST OF PRE-APPROVED VENDORS.

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A (1) MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.

ISLAND LANDSCAPE PLAN (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 10'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL 1"= N/A	PROJECT MGR	PDP	7/20
	FIELD MGR		7/20
	LEAD ENGR	ZLL	12/20
VERTICAL 1"= N/A	RECOMMENDED		12·20
	DESIGN MANAGER		
FILE: Yale Landscaping.dwg			
ATLAS PAGE NO.: 882, 883, 1005, 1006			

APPROVED:

CITY ENGINEER

DATE: JULY 2020

SHEET 128 OF 306 SHEETS

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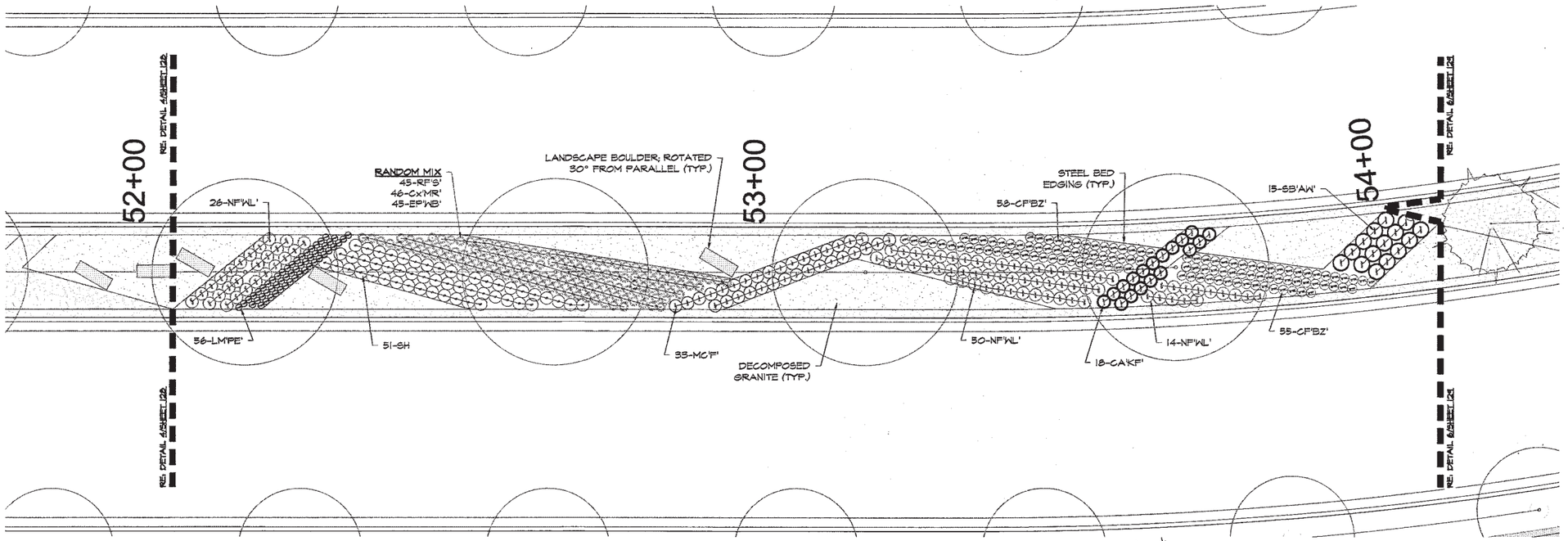
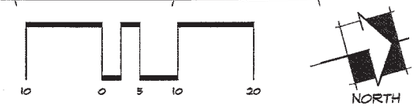
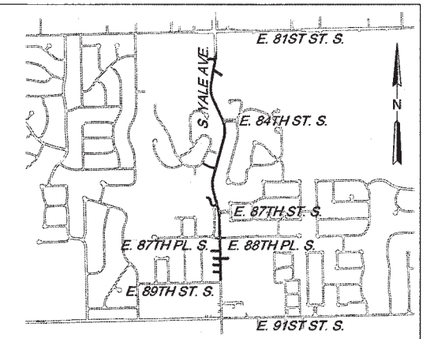


5 YALE AVENUE ISLAND 'C' PLANTING PT. 3

SCALE: 1"=10'-0"



NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.



KEYMAP

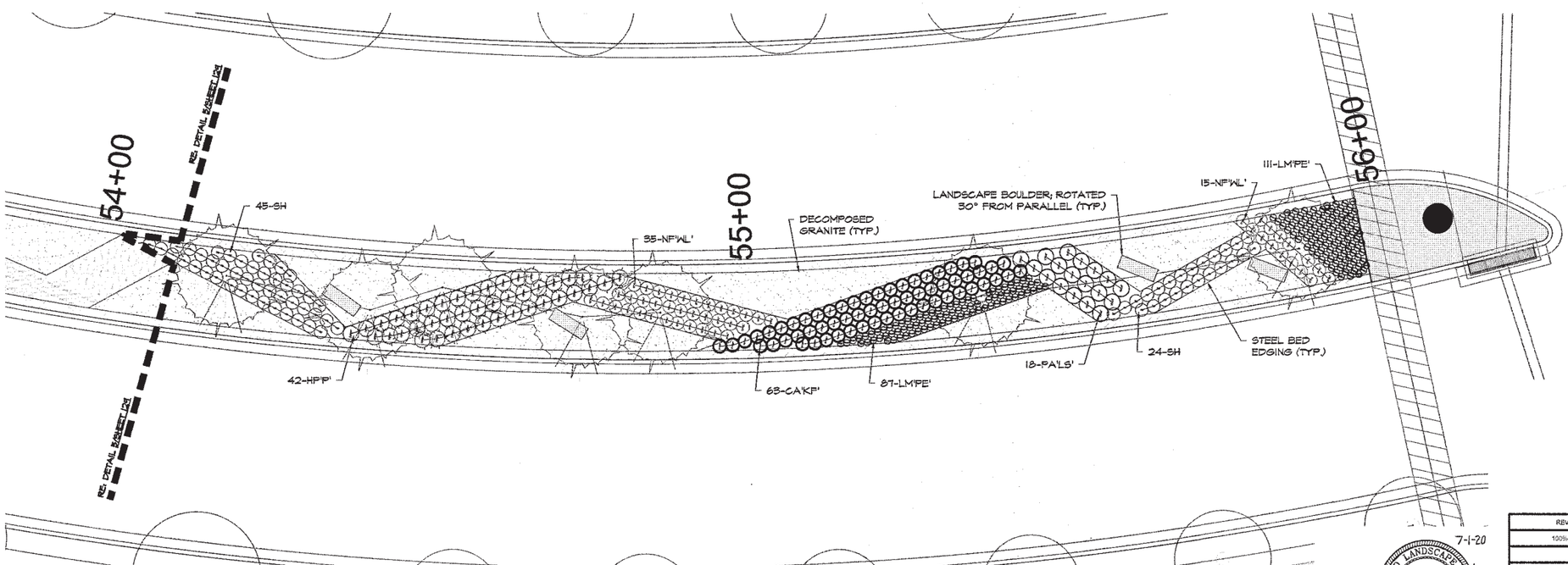
YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 5" CAL.	B&B
*AT'MS'	55	Acer truncatum 'HF-ATI' pp 20109 Main Street Shantung Maple	15-18' H. 3" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
Cx'MR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	332	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	3 GAL
LM'PE'	1348	Liriope muscari 'EXC 051' Purple Explosion Liriope	8-9" H. 12" O.C.	1 GAL
MC'F'	382	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NF'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nuhh' pp 22451 'Green Gable' Black Gum	15-18' H. 3" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	33	Pistachia chinensis Chinese Pistache	12-15' H. 3" CAL.	B&B
PT	83	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	5 GAL
SH	209	Sporobolus heterolepis 'Prairie Dropseed'	12-15" H. 24" O.C.	1 GAL
*TD'SS'	15	Taxodium distichum 'Nickelson' Shawnee Brave Bald Cypress	12-14' H. 5 1/2" CAL. (ASH)	B&B
MULCH	1308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	4,755	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H=HEIGHT, S=SPREAD CAL=CALIPER, O.C.= ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ASH= AT BREAST HEIGHT THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET L2.6 FOR LIST OF PRE-APPROVED VENDORS.

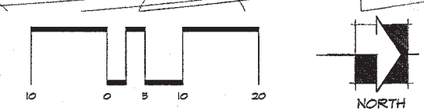
PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.



6 YALE AVENUE ISLAND 'C' PLANTING PT. 4

SCALE: 1"=10'-0"



7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

ISLAND LANDSCAPE PLAN (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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(918) 492-1600

PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
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(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 10'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL 1"= N/A	PROJECT MGR	PSP	7/20
	FIELD MGR		7/20
VERTICAL: 1"= N/A	LEAD ENGR		12/20
	RECOMMENDED DESIGN MANAGER	HAI	12-20

APPROVED:
CITY ENGINEER
DATE: JULY 2020

FILE: Yale Landscaping.dwg
ATLAS PAGE NO.: 882, 883, 1005, 1006

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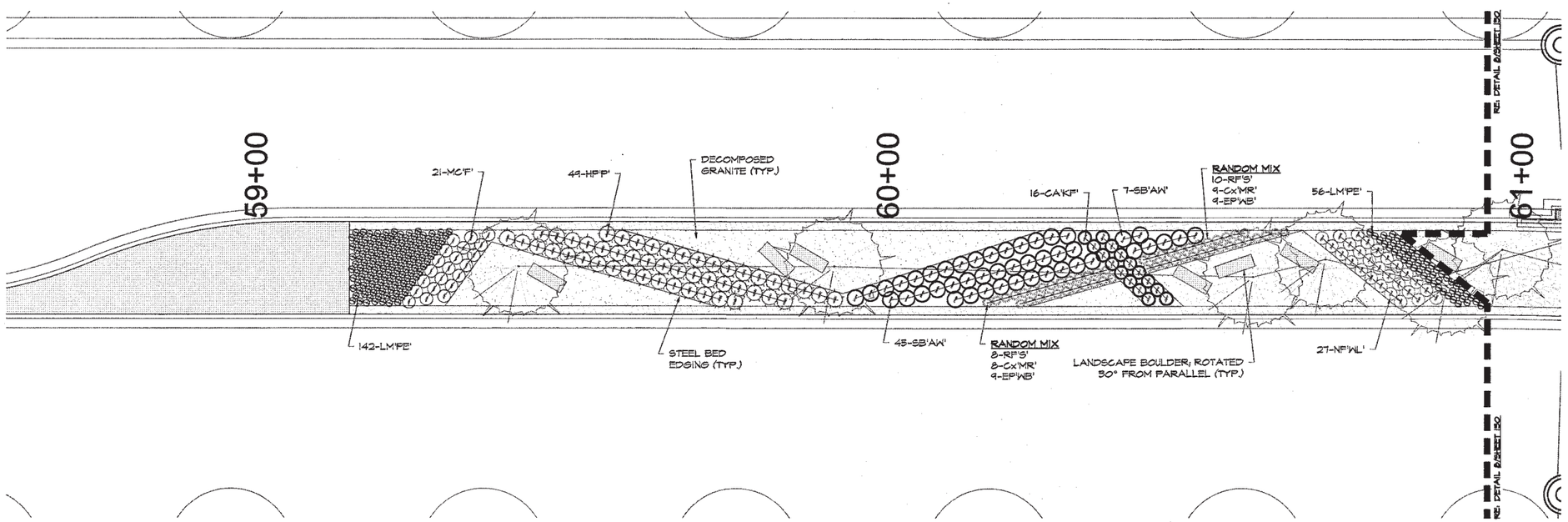


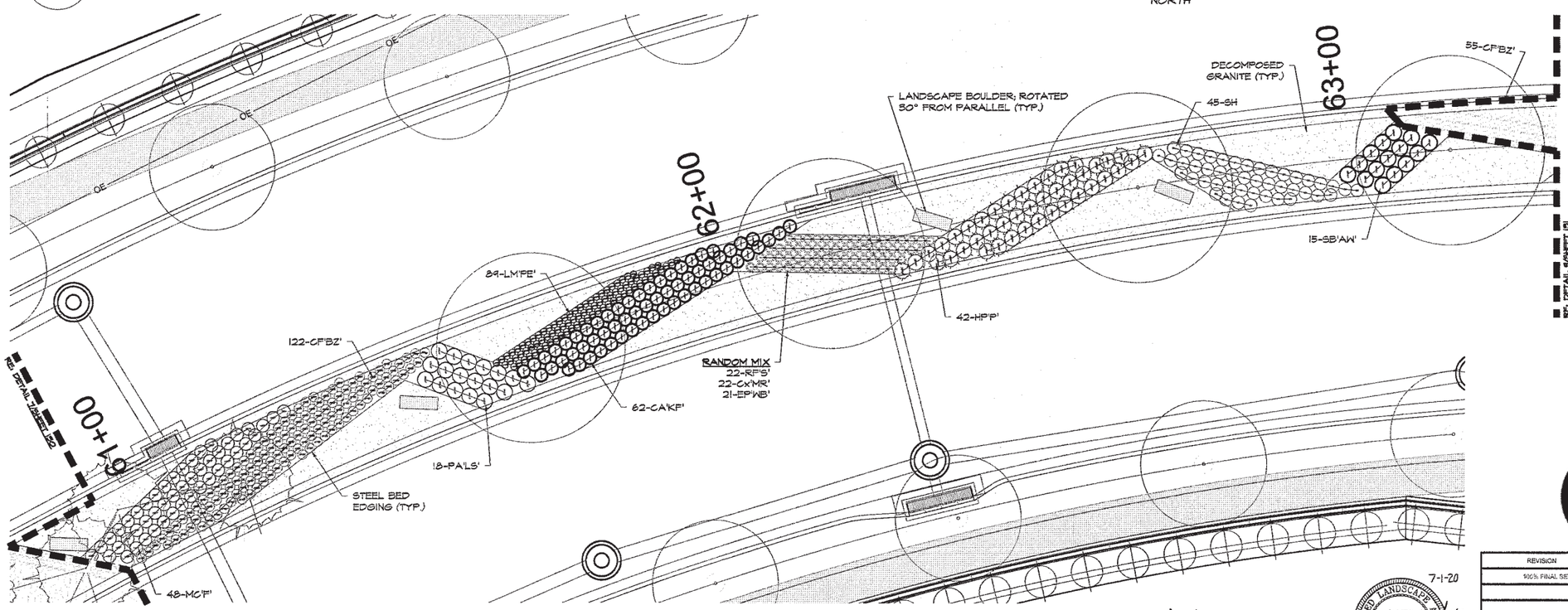
7 YALE AVENUE ISLAND 'D' PLANTING PT. 1

SCALE: 1"=10'-0"

10 0 5 10 20

NORTH

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.



8 YALE AVENUE ISLAND 'D' PLANTING PT. 2

SCALE: 1"=10'-0"

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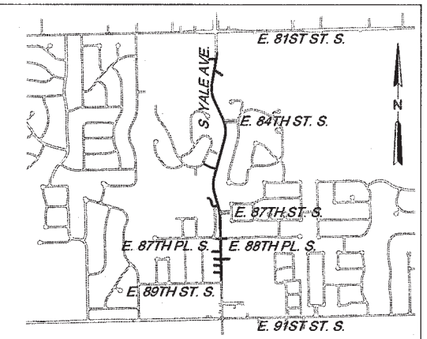
NORTH

7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD



KEYMAP

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	15-18' H. 5" CAL.	B&B
*AT'MS'	58	Acer truncatum 'NF-ATI' pp 20104 Main Street Shantung Maple	15-18' H. 5" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
Cx'MR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow' Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	332	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	5 GAL
LM'PE'	1,348	Liriope muscari EXC 031' Purple Explosion Lilyturf	6-9" H. 12" O.C.	1 GAL
MC'F'	332	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NF'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'N'	26	Nyssa sylvatica 'Nuhn' pp 22451 Green Gable Black Gum	15-18' H. 3" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	53	Pistachia chinensis Chinese Pistache	12-15' H. 5" CAL.	B&B
PT	85	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	281	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	5 GAL
SH	209	Sporobolus heterolepis 'Prairie Dropseed'	12-15" H. 24" O.C.	1 GAL
*TD'SB'	13	Taxodium Distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 3 1/2" CAL. (ASH)	B&B
MULCH	1,308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,218	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	9,755	Desert Gold Decomposed Granite	SQ. FT	
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H=HEIGHT, S=SPREAD CAL=CALIPER, O.C. ON CENTER, B&B=BALLED & BURLAPPED, GAL=GALLON, ASH. AT BREAST HEIGHT

THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET 150 FOR LIST OF PRE-APPROVED VENDORS.

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING; FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY OSMOCOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.

ISLAND LANDSCAPE PLAN (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Benham Design, LLC
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5314 S. Yale Ave., Suite 510
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(918) 828-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1" = 10'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1" = N/A	PROJECT MGR	POP	7/20
	FIELD MGR		7/20
	LEAD ENGR		7/20
VERTICAL: 1" = N/A	RECOMMENDED DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: Yale Landscaping.dwg
DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 130 OF 306 SHEETS

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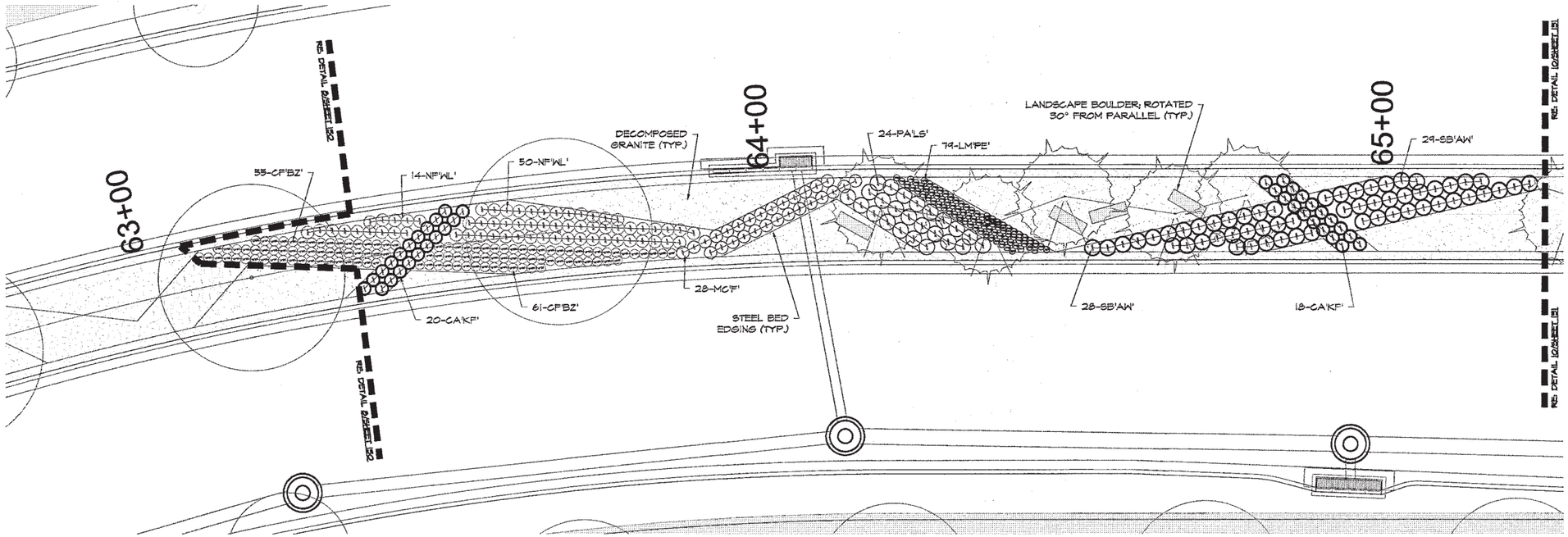

9 YALE AVENUE ISLAND 'D' PLANTING PT. 3

SCALE: 1"=10'-0"

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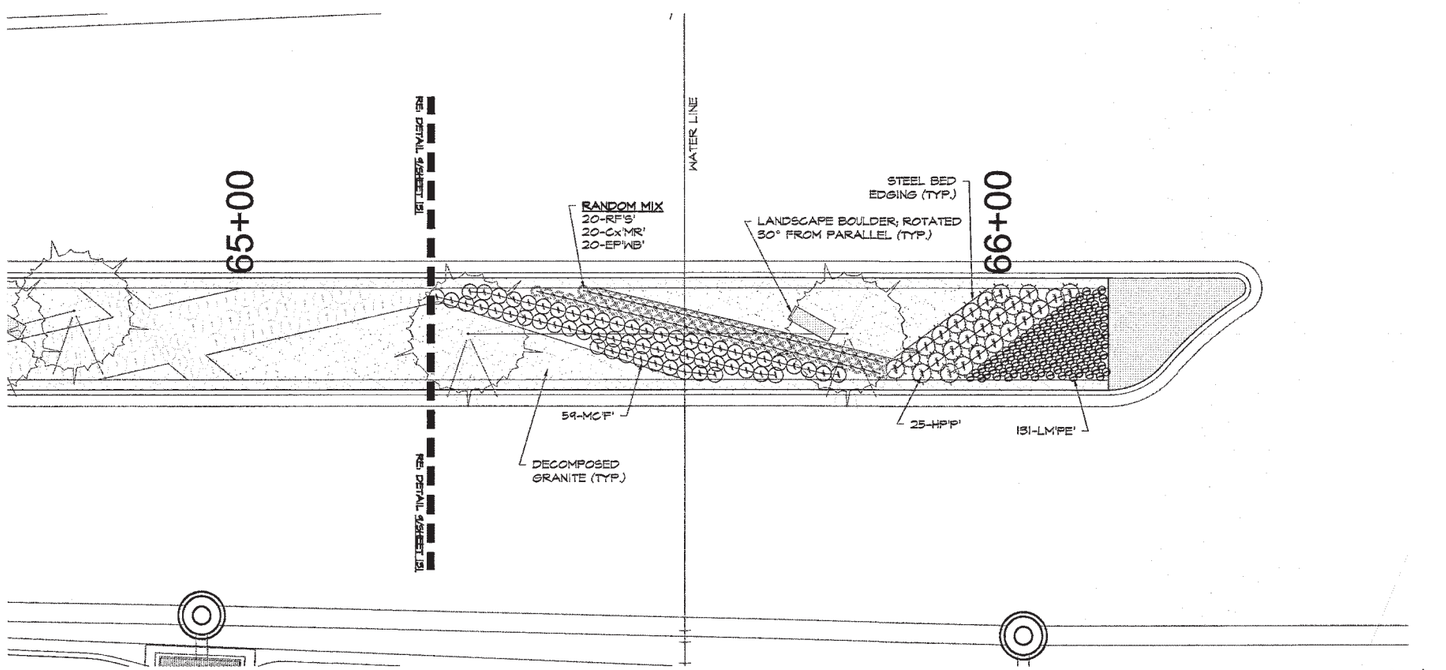
NORTH



10 YALE AVENUE ISLAND 'D' PLANTING PT. 4

SCALE: 1"=10'-0"

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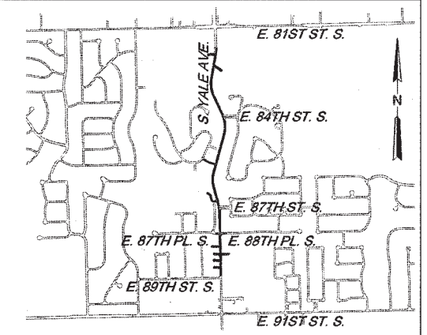
NORTH



KEYMAP

YALE AVENUE LANDSCAPE MATERIAL LIST

KEY	QUAN.	MATERIAL NAME	SIZE/REMARK	TYPE
*AB'A'	28	Acer buergerianum Trident Maple	18-18" H. 5" CAL.	B&B
*AT'MS'	35	Acer truncatum x p.-ATI' pp 20109 Main Street Shantung Maple	15-18" H. 3" CAL.	B&B
CA'KF'	318	Calamagrostis acutiflora 'Karl Foerster' Karl Foerster's Featherreed Grass	15-18" H. 24" O.C.	1 GAL
CC'A'	6	Cercis canadensis 'Alba' Eastern Whitebud	7-8' H. 2" CAL.	B&B
CC'O'	27	Cercis canadensis 'Oklahoma' Oklahoma Redbud	7-8' H. 2" CAL.	B&B
CF'BZ'	482	Carex flacca 'Blue Zinger' Blue Zinger Sedge	8-10" H. 18" O.C.	1 GAL
CX'MR'	181	Big Bang Mercury Rising Coreopsis Coreopsis x 'Mercury Rising'	10-12" H. 18" O.C.	1 GAL
EP'WB'	181	Echinacea purpurea 'Powwow Wild Berry' Powwow Wild Berry Coneflower	10-12" H. 18" O.C.	1 GAL
HP'P'	352	Hesperaloe parviflora 'Perpa' Brakelights Red Yucca	12-15" H. 30" O.C.	5 GAL
LM'PE'	1348	Liriope muscari 'EXC 051' Purple Explosion Liriope	6-8" H. 12" O.C.	1 GAL
MC'F'	352	Muhlenbergia capillaris var. filipes Coastal Muhly Grass	15-18" H. 24" O.C.	1 GAL
NF'WL'	282	Nepeta x faassenii 'Walker's Low' Walker's Low Catmint	10-12" H. 24" O.C.	1 GAL
*NS'W	26	Nyssa sylvatica 'Wu'h' pp 22481 Street Sable Black Gum	15-18" H. 5" CAL.	B&B
PA'LS'	100	Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	12-15" H. 24" O.C.	1 GAL
PC	35	Pistachia chinensis Chinese Pistache	12-15' H. 3" CAL.	B&B
PT	85	Pinus taeda Loblolly Pine	12-14' H. FULL	45 GAL
RF'S'	182	Rudbeckia fulgida var. speciosa 'Viette's Little Suzy' Little Suzy Black-Eyed Susan	10-12" H. 18" O.C.	1 GAL
SB'AW'	261	Spiraea x bumalda 'Anthony Waterer' Anthony Waterer Spirea	12-15" H. 30" O.C.	5 GAL
SH	209	Sporobolus heterolepis 'Prairie Dropseed	12-15" H. 24" O.C.	1 GAL
*TD'SS'	13	Taxodium distichum 'Mickelson' Shawnee Brave Bald Cypress	12-14' H. 3 1/2" CAL. (ASH)	B&B
MULCH	1,308	Cedar Mulch	3 C.F.	1 BAG
COMPOST	1,214	Back To Nature	3 C.F.	1 BAG
SBE	2,420	Pro-Steel Bed Edging	3/16" BY 4"	L.F.
DG	4,193	Desert Gold Decomposed Granite	SQ. FT	
BOULDERS	50	Brown Gold Hackett Stone Boulders	TONS	

H.HEIGHT, S.SPREAD CAL.CALIPER, O.C. ON CENTER, B&B.BALLED & BURLAPPED, GAL.GALLON, ASH. AT BREAST HEIGHT
THE MATERIAL LIST IS PROVIDED FOR THE CONTRACTORS CONVENIENCE. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVING ALL QUANTITIES FROM THE PLANTING PLAN AND COVERAGES FOR ALL BED AREAS. WHEN DISCREPANCIES OCCUR BETWEEN THE MATERIAL LIST AND THE PLANTING PLAN, THE PLANTING PLAN SUPERSEDES THE MATERIAL LIST IN ALL CASES. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR ALL PLANTS AND COVERAGE OF BED AREAS ON THE PLANTING PLAN. TREES IN THE LANDSCAPE MATERIAL LIST WITH (*) ARE TO BE OBTAINED FROM SPECIFIC VENDORS OR APPROVED EQUAL. REFER TO SHEET [illegible] FOR LIST OF PRE-APPROVED VENDORS.

NOTE: COASTAL MUHLY GRASS MUST BE PLANTED BETWEEN APRIL 15TH AND AUGUST 1ST. IF PLANTING IS SCHEDULED OUTSIDE OF THIS TIMEFRAME, THE CONTRACTOR IS TO CONSULT THE LANDSCAPE ARCHITECT WHO POSSIBLY WILL PROVIDE AN APPROPRIATE PLANT SUBSTITUTION.

PLANTING NOTES

1. CONTRACTOR TO MAKE PLANT MATERIAL ADJUSTMENTS TO MEET SITE CONDITIONS AFTER PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER.
2. OUTLINE ALL PLANTING BEDS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WITH BED PREPARATION.
3. STAKE ALL TREE LOCATIONS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DIGGING TREE PITS.
4. REMOVE ALL WEEDS AND GRASSES FROM PLANTING BEDS. IF BERMUDA GRASS IS PRESENT, IT SHALL BE ERADICATED BY APPROVED MEANS.
5. STEEL EDGING AT ENTRY SHALL BE 3/16" X 4" STEEL LANDSCAPE EDGING WITH STEEL STAKES AS MANUFACTURED BY PRO-STEEL LANDSCAPE EDGING, FT. WORTH, TEXAS. EDGING TO BE SHOVEL CUT, SMOOTH FLOWING AS INDICATED ON PLAN.
6. WITHIN APPROVED BED AREAS, PREPARE SOIL BY ROTO-TILLING THREE INCHES (3") OF COMPOST (BACK TO NATURE SOIL CONDITIONER) OVER THE ENTIRE BED AREA TO A DEPTH OF SIX INCHES (6").
7. ALL VEGETATION MUST BE PLANTED IN SUCH A MANNER THAT SITE DISTANCE TRIANGLES ARE NOT OBSTRUCTED.
8. SPREAD AN EVEN THREE INCHES (3") LAYER OF MULCH OVER THE ENTIRE PLANTING BED AND WITHIN ALL TREE WELLS. ON ALL TREES THE TOP SIX INCHES (6") OF BACKFILL SHALL CONSIST OF A 1:1 MIXTURE OF COMPOST TO SOIL.
9. AROUND ALL TREES FORM A CIRCULAR RING FREE OF VEGETATION. CIRCLE SHALL BE TRUE IN FORM AND CENTERED ON TREE.
10. ALL TREES SHALL BE STAKED WITH TWO (2) GREEN METAL SPLIT TEE FENCE POSTS AND TIED WITH WIRE THROUGH THE HOSE AS PER DETAIL.
11. APPLY CIMOSOTE AT A RATE OF 1/2 POUND PER TREE AND 1 POUND PER 100 SQUARE FEET TO SHRUB AND GROUNDCOVER PLANTING BEDS.

ISLAND LANDSCAPE PLAN (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= 10'-0"	DRAWN	CC	10/31
	DESIGNED	TLP	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PJP	7/20
	FIELD MGR		7/20
	LEAD ENGR		12/20
VERTICAL: 1"= N/A	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: Yale Landscaping.dwg
DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 131 OF 306 SHEETS

7-1-20
REGISTERED LANDSCAPE ARCHITECT JAMES C. CROSBY 121 OKLAHOMA
JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

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10/4/2018

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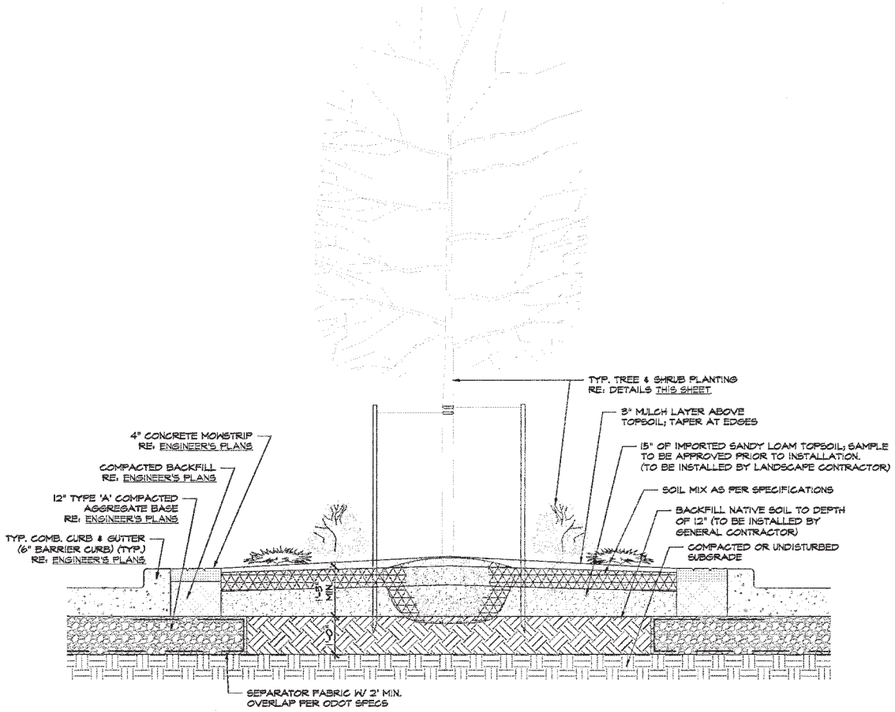
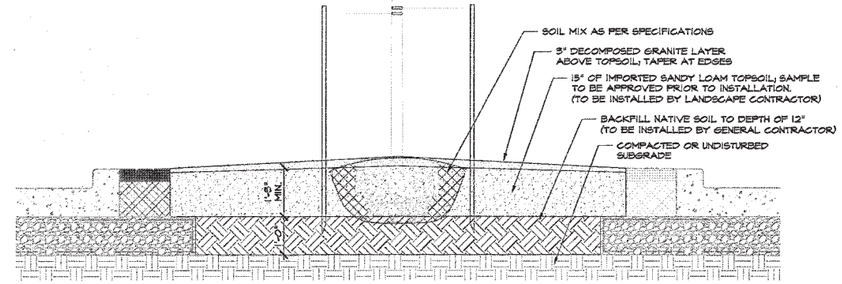
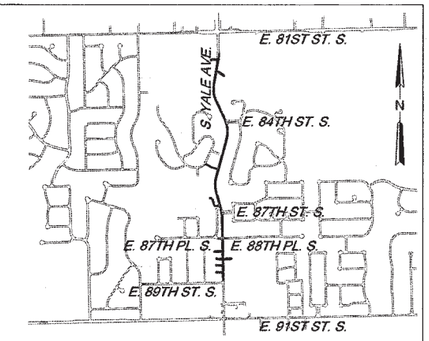


1 LANDSCAPE ISLAND PLANTING BED - TYPICAL SECTION
NOT TO SCALE



2 TREE PLANTING IN DECOMPOSED GRANITE - TYPICAL SECTION
NOT TO SCALE



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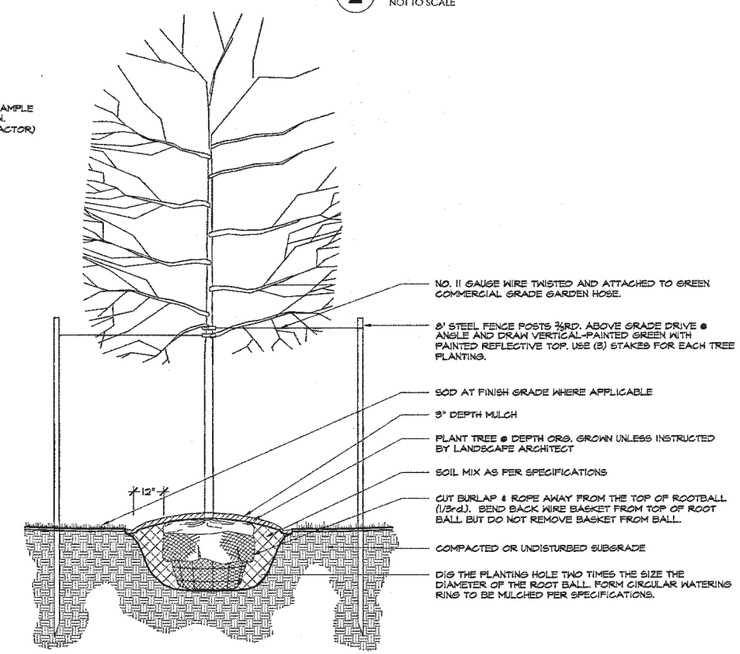
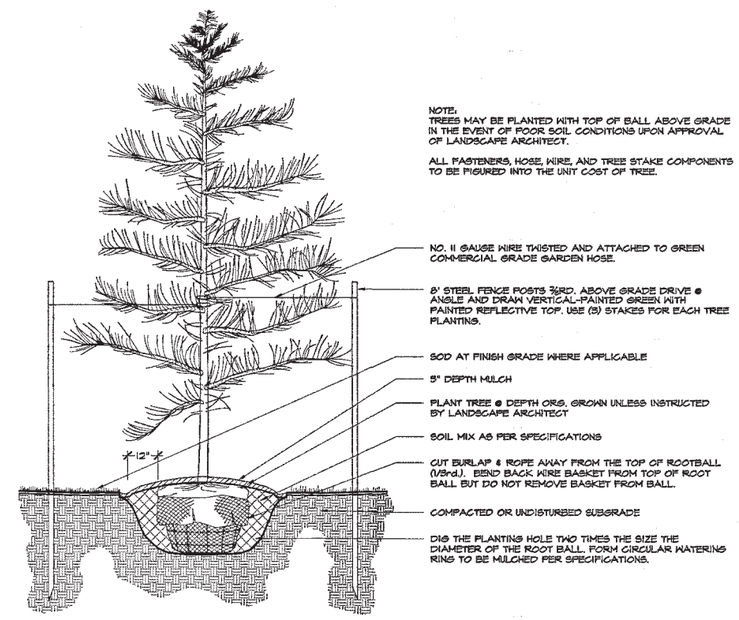


3 DECIDUOUS TREE PLANTING - TYPICAL SECTION
NOT TO SCALE

NOTE:
TREES MAY BE PLANTED WITH TOP OF BALL ABOVE GRADE IN THE EVENT OF POOR SOIL CONDITIONS UPON APPROVAL OF LANDSCAPE ARCHITECT.

ALL FASTENERS, HOSE, WIRE, AND TREE STAKE COMPONENTS TO BE FIGURED INTO THE UNIT COST OF TREE.



4 CONIFEROUS TREE PLANTING - TYPICAL SECTION
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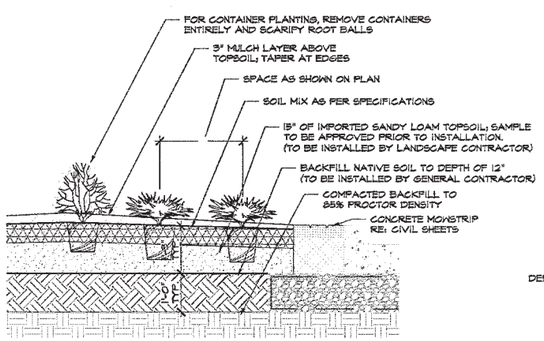
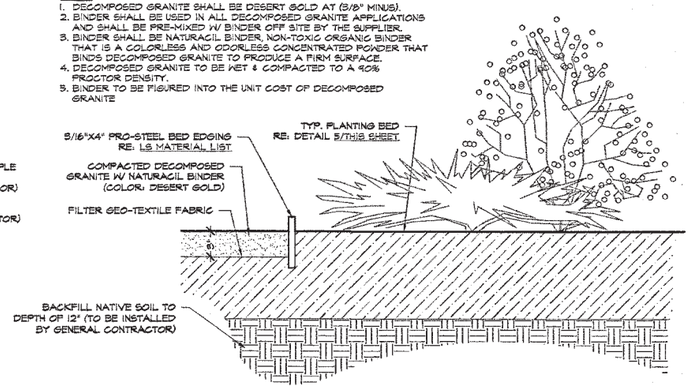


5 SHRUB PLANTING - TYPICAL SECTION
NOT TO SCALE

NOTES:
1. DECOMPOSED GRANITE SHALL BE DESERT GOLD AT (3/8" MINUS).
2. BINDER SHALL BE USED IN ALL DECOMPOSED GRANITE APPLICATIONS AND SHALL BE PRE-MIXED W/ BINDER OFF SITE BY THE SUPPLIER.
3. BINDER SHALL BE NATURACIL BINDER, NON-TOXIC ORGANIC BINDER THAT IS A COLORLESS AND ODORLESS CONCENTRATED POWDER THAT BINDS DECOMPOSED GRANITE TO PRODUCE A FIRM SURFACE.
4. DECOMPOSED GRANITE TO BE WET & COMPACTED TO A 90% PROCTOR DENSITY.
5. BINDER TO BE FIGURED INTO THE UNIT COST OF DECOMPOSED GRANITE



6 DECOMPOSED GRANITE - TYPICAL SECTION
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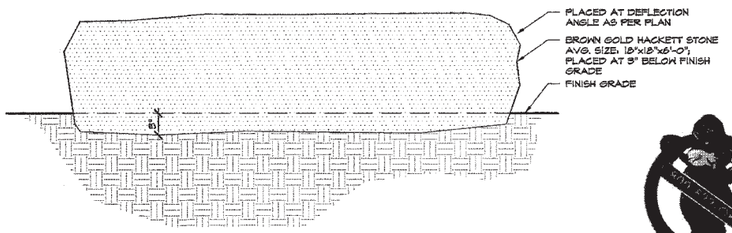

7 LANDSCAPE BOULDERS - TYPICAL SECTION
NOT TO SCALE

7-1-20

JAMES C. CROSBY, ASLA
LANDSCAPE ARCHITECT OF RECORD

LANDSCAPE CONSTRUCTION DETAILS

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
Benham Design, LLC
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(918) 492-1800
a Haskell Company

PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% FINAL SET	CC	7/1/20

PLAN SCALE 1"= N/A	DRAWN	CC	10/31	APPROVED:
	DESIGNED	TLP	10/31	
	SURVEY			
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	FIELD MGR		7/20	
VERTICAL: 1"= N/A	LEAD ENGR		11/20	
	RECOMMENDED DESIGN MANAGER	HAS	12-20	CITY ENGINEER
FILE: Yale Landscaping.dwg				DATE: JULY 2020
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 132 OF 308 SHEETS

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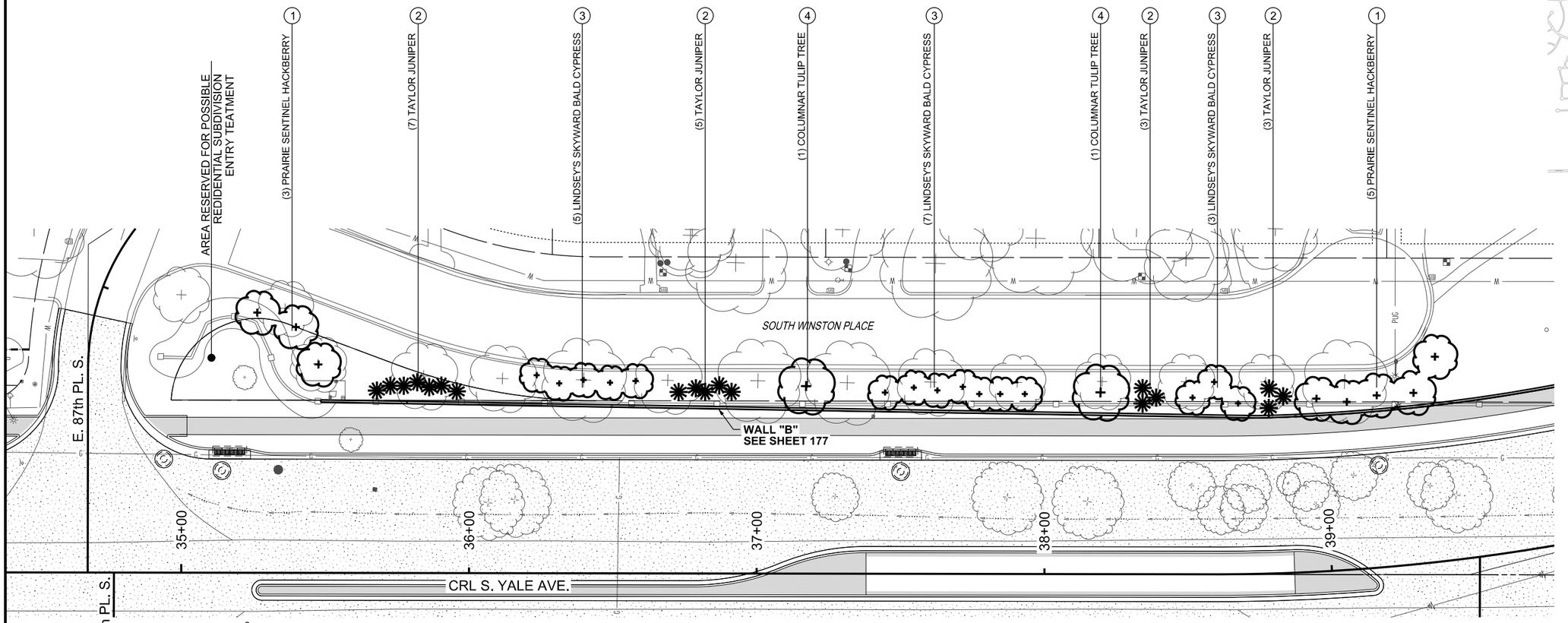
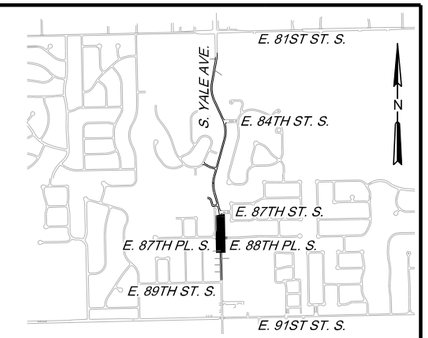


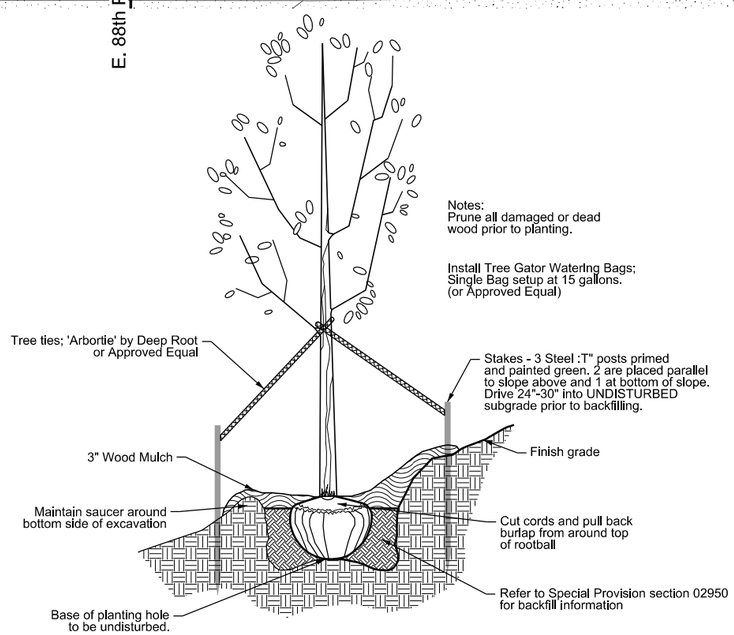


KEYMAP

N

20' 10' 0 20'

SCALE: 1" = 20'



Single-Trunk Tree Planting on Slope

NTS

General Notes:

Call OKIE prior to digging or trenching. Landscape Contractor is responsible for any damage to existing and new utility lines above or below ground and shall repair any damage caused during landscape or hardscape construction activities at no cost to the owner.

Locations of all plant materials shown on plans is approximate and may need to be field adjusted. Obtained Landscape Architects approval prior to making any major changes.

Wood cellulose fiber mulch shall meet ODOT specification 233(d) or be approved by the engineer. The City of Tulsa's greenwaste wood chips are an acceptable alternative to the ODOT specified mulch. An unlimited amount of free wood chips may be obtained by visiting the City of Tulsa's greenwaste site, while supplies are available. The city of Tulsa's greenwaste site is located at 10401 E. 56th St. North (one-half mile west of Highway 169 on 56th St. North), is open seven days a week, 8 a.m. to 4 p.m. (excluding city holidays).

Wood mulch from grinding, shredding and chipping operations on site are also an acceptable wood mulch source.

PLANT MATERIAL SCHEDULE

#	COMMON NAME	BOTANICAL NAME	SIZE	SPACING/REMARKS
1	PRAIRIE SENTINEL HACKBERRY	CELTIS OCCIDENTALIS 'PRAIRIE SENTINEL'	6' - 8' B & B	AS SHOWN
2	TAYLOR JUNIPER	JUNIPEROUS VIRGINANA 'TAYLOR'	6' - 8' B & B	AS SHOWN
3	LINDSEY'S SKYWARD BALD CYPRESS	TAXODIUM DISTICHOM 'SKYWARD'	6' - 8' B & B	AS SHOWN
4	COLUMNAR TULIP TREE	LIRIODENDRON TULIPIFERA 'ARNOLD'	6' - 8' B & B	AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

S. WINSTON PLACE LANDSCAPE PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
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(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
	LEAD ENGR		11/19
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HAS	7-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Landscape-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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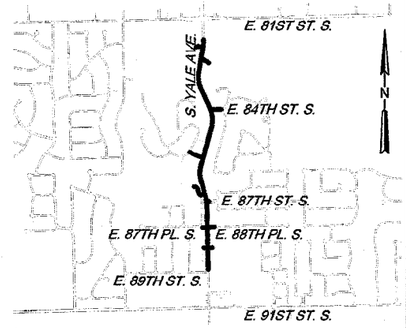

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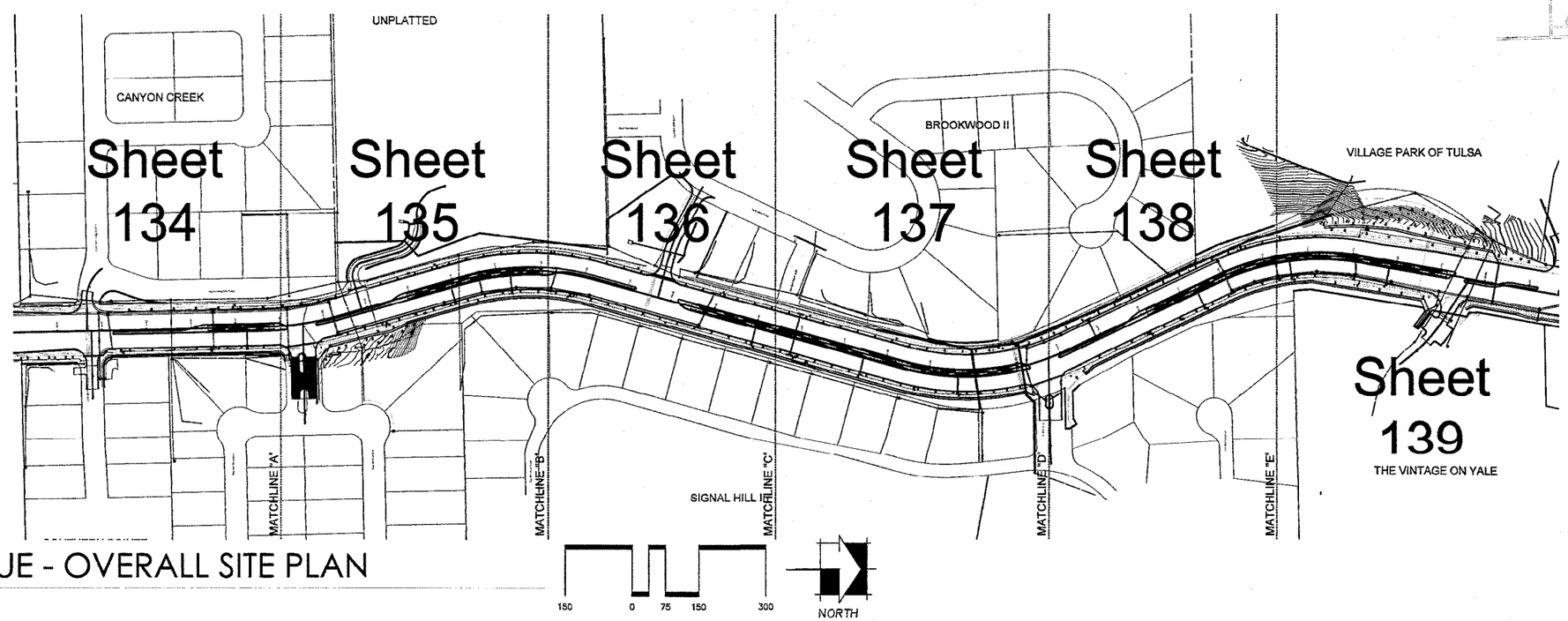

1 YALE AVENUE - OVERALL SITE PLAN

SCALE: 1"=150'-0"

IRRIGATION OVERALL SITE PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1456

REGISTERED PROFESSIONAL ENGINEER
JAMES EDWIN MOORE
11859
OKLAHOMA

DATE SIGNED: 7-01-20

Moore Engineering, Inc. CA 1186
P.O. Box 814
Stillwater, OK 74076

REVISION	BY	DATE
100% Final Set	JM	7/1/20

FLAN SCALE 1"= 150'-0"	DRAWN	JM	10/31
	DESIGNED	JM	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PJP	7/20
	FIELD MGR		7/20
	LEAD ENGR		12/20
VERTICAL: 1"= N/A	RECOMMENDED		
	DESIGN MANAGER		12/20

APPROVED:

CITY ENGINEER

FILE: YaleAve_070120.dwg

DATE: JULY 2020

ATLAS PAGE NO.: 882, 883, 1005, 1006

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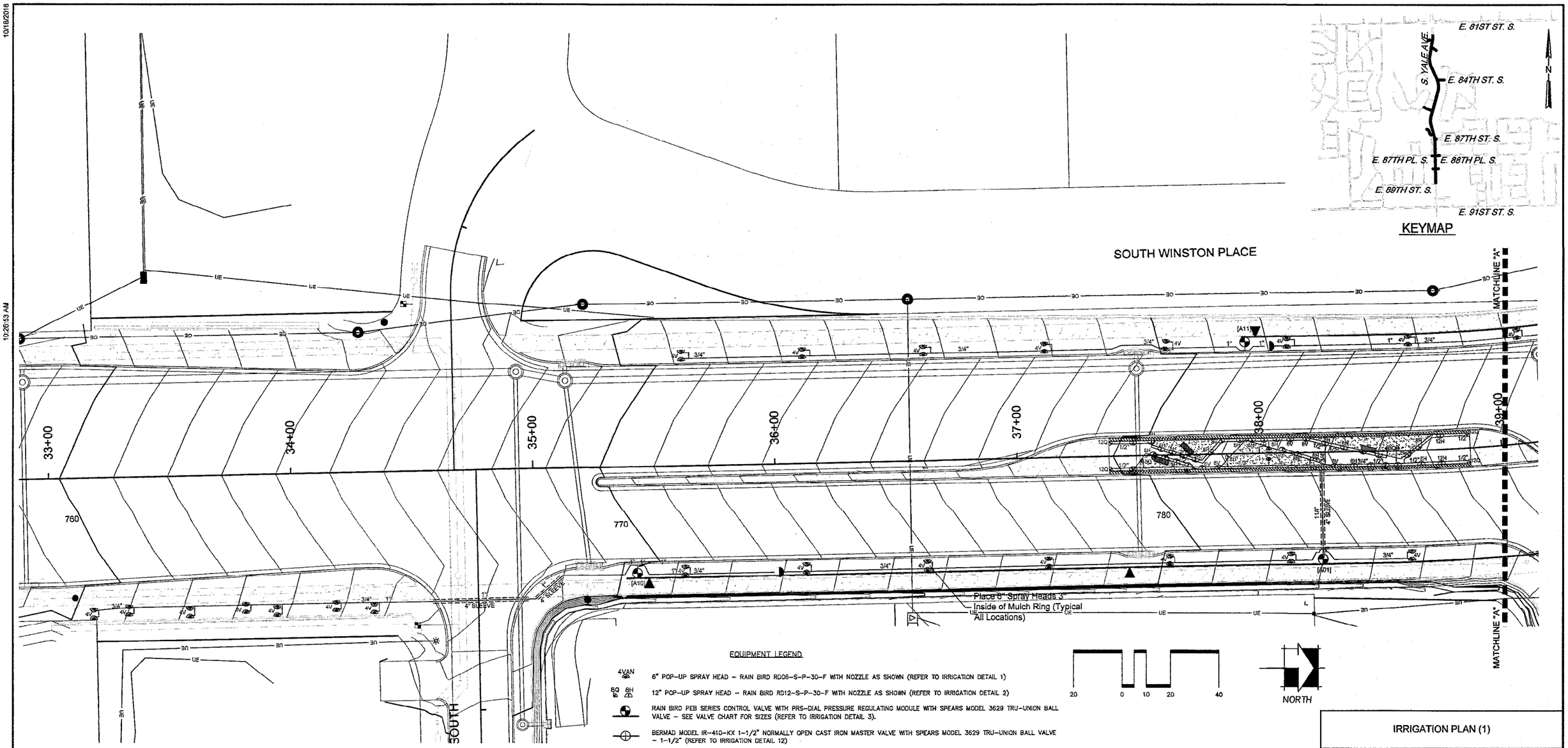

REFER TO SHEET 141 AND 142 FOR IRRIGATION INSTALLATION DETAILS AND NOTES

REFER TO SHEET 143 FOR TWO-WIRE IRRIGATION WIRE PATH

REFER TO SHEET 144 AND 144A FOR TWO-WIRE IRRIGATION INSTALLATION DETAILS AND NOTES

NOTE: THE PERFORMANCE OF THE IRRIGATION SYSTEM IS DEPENDENT ON THE CORRECT PLACEMENT OF THE CONTROL VALVES, CHECK VALVES, LATERAL PIPING AND MAIN LINE PRESSURE REGULATING VALVES. THE ELEVATION AND CONFIGURATION OF EACH OF THESE COMPONENTS HAS BEEN TAKEN INTO ACCOUNT IN THE DESIGN. CONTRACTOR IS TO MAINTAIN THE COMPONENT PLACEMENT SHOWN AND SHALL NOT DEVIATE WITHOUT OWNER APPROVAL.

CONTROL VALVE LIST

VALVE ID	SIZE	MODEL	ZONE FLOW (GPM)
A01	1"	RAINBIRD 100-PEB	21
A02	1-1/2"	RAINBIRD 150-PEB	27
A03	1"	RAINBIRD 100-PEB	24
A04	1-1/2"	RAINBIRD 150-PEB	37
A05	1-1/2"	RAINBIRD 150-PEB	35
A06	1-1/2"	RAINBIRD 150-PEB	35
A07	1-1/2"	RAINBIRD 150-PEB	35
A08	1-1/2"	RAINBIRD 150-PEB	33
A09	1-1/2"	RAINBIRD 150-PEB	35
A10	1"	RAINBIRD 100-PEB	10
A11	1"	RAINBIRD 100-PEB	8
A12	1"	RAINBIRD 100-PEB	16
A13	1"	RAINBIRD 100-PEB	9
A14	1"	RAINBIRD 100-PEB	8
A15	1"	RAINBIRD 100-PEB	15
A16	1"	RAINBIRD 100-PEB	10
A17	1"	RAINBIRD 100-PEB	7
A18	1"	RAINBIRD 100-PEB	10
A19	1"	RAINBIRD 100-PEB	11
A20	1"	RAINBIRD 100-PEB	8
A21	1"	RAINBIRD 100-PEB	13
A22	1"	RAINBIRD 100-PEB	16

EQUIPMENT LEGEND

- 4VAN — 6" POP-UP SPRAY HEAD – RAIN BIRD RD06-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 1)
- 8Q 8H — 12" POP-UP SPRAY HEAD – RAIN BIRD RD12-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 2)
- RAIN BIRD PEB SERIES CONTROL VALVE WITH PRS-DIAL PRESSURE REGULATING MODULE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – SEE VALVE CHART FOR SIZES (REFER TO IRRIGATION DETAIL 3).
- BERMAD MODEL IR-410-KX 1-1/2" NORMALLY OPEN CAST IRON MASTER VALVE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – 1-1/2" (REFER TO IRRIGATION DETAIL 12)
- RAIN BIRD 5LRC 1" QUICK COUPLING VALVE WITH LOCKING RUBBER COVER WITH THREE KEYS AND HOSE SWIVELS (REFER TO IRRIGATION DETAIL 5)
- C 50 — RAIN BIRD ESP-LXD TWO-WIRE CONTROLLER – 50 STATIONS MOUNTED IN RAIN BIRD LXMMSS STAINLESS STEEL CABINET (REFER TO IRRIGATION DETAIL 10). PROVIDE ONE (1) RAIN BIRD MODEL LIMR REMOTE PROGRAMMER KIT.
- RFS — COMBINATION RAIN AND FREEZE SENSOR – REMOTE WIRELESS – RAIN BIRD WR2-RFC (REFER TO IRRIGATION DETAILS 13 & 14)
- FLS — FLOW SENSOR – RAIN BIRD MODEL FS150P MOUNTED IN 1-1/2" TEE (FLOW RANGE 5 GPM TO 100 GPM). (REFER TO IRRIGATION DETAIL 12)
- RPZ — REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER – WILKINS MODEL 975 1-1/2" WITH HUBBELL MODEL HB1.5 HEATED FIBERGLASS ENCLOSURE (REFER TO IRRIGATION DETAIL 11)
- PRV — PRESSURE REGULATING VALVE – WILKINS MODEL 112-600XLHLRP – 1.5" WITH PRESSURE GAUGE (REFER TO IRRIGATION DETAIL 6)
- ISOLATION VALVE – HAMMOND MODEL IB645 GATE VALVE – 2" (REFER TO IRRIGATION DETAIL 4)
- CHECK VALVE – SPEARS S1720 TRUE UNION SERIES SWING CHECK VALVE – SIZE AS PER PIPE SIZE (REFER TO IRRIGATION DETAIL 7)
- PVC PIPE — MAIN LINES – PVC SCHEDULE 40 SOLVENT WELD JOINT – 2"
  - LATERAL LINES – CL200 SDR21 SOLVENT WELD JOINTS – SIZE AS SHOWN
  - SLEEVES – PVC SCHEDULE 40 – 4" (REFER TO IRRIGATION DETAIL 15)
- M 1-1/2 — WATER METER – 1-1/2" NEPTUNE HP SERIES

REGISTERED PROFESSIONAL ENGINEER JAMES EDWIN MOORE 11869 OKLAHOMA

DATE SIGNED: 7-01-20

Moore Engineering, Inc. CA 1186
P.O. Box 614
Stillwater, OK 74076

IRRIGATION PLAN (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM — Benham Design, LLC, One West Third Street, Suite 200, Tulsa, OK 74103-3513, (918) 492-1600, a Haskell Company

PDG — Planning Design Group, 6514 S. Yale Ave., Suite 510, Tulsa, OK 74135, (918) 628-1455

REVISION	BY	DATE
100% Final Set	JM	7/1/20

PLAN SCALE 1"= 20'-0"	DRAWN	JM	10/31
	DESIGNED	JM	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	PSP	7/20
	FIELD MGR	DD	7/20
	LEAD ENGR	ZMM	12/20
VERTICAL: 1"= N/A	RECOMMENDED DESIGN MANAGER	HA	12-20

APPROVED: CITY ENGINEER

FILE: YaleAve_070120.dwg — DATE: JULY 2020

ATLAS PAGE NO.: 882, 883, 1005, 1006

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10/16/2018 10:26:53 AM

10/19/2016

10:29:53 AM

EQUIPMENT LEGEND

- 4VAN — 6" POP-UP SPRAY HEAD – RAIN BIRD RD06-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 1)
- 8Q 8H — 12" POP-UP SPRAY HEAD – RAIN BIRD RD12-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 2)
- RAIN BIRD PEB SERIES CONTROL VALVE WITH PRS-DIAL PRESSURE REGULATING MODULE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – SEE VALVE CHART FOR SIZES (REFER TO IRRIGATION DETAIL 3).
- BERMAD MODEL IR-410-KX 1-1/2" NORMALLY OPEN CAST IRON MASTER VALVE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – 1-1/2" (REFER TO IRRIGATION DETAIL 12)
- RAIN BIRD 5LRC 1" QUICK COUPLING VALVE WITH LOCKING RUBBER COVER WITH THREE KEYS AND HOSE SWIVELS (REFER TO IRRIGATION DETAIL 5)
- C 50 — RAIN BIRD ESP-LXD TWO-WIRE CONTROLLER – 50 STATIONS MOUNTED IN RAIN BIRD LXMMSS STAINLESS STEEL CABINET (REFER TO IRRIGATION DETAIL 10). PROVIDE ONE (1) RAIN BIRD MODEL LIMR REMOTE PROGRAMMER KIT.
- RFS — COMBINATION RAIN AND FREEZE SENSOR – REMOTE WIRELESS – RAIN BIRD WR2-RFC (REFER TO IRRIGATION DETAILS 13 & 14)
- FLS — FLOW SENSOR – RAIN BIRD MODEL FS150P MOUNTED IN 1-1/2" TEE (FLOW RANGE 5 GPM TO 100 GPM). (REFER TO IRRIGATION DETAIL 12)
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- CHECK VALVE – SPEARS S1720 TRUE UNION SERIES SWING CHECK VALVE – SIZE AS PER PIPE SIZE (REFER TO IRRIGATION DETAIL 7)
- PVC PIPE — MAIN LINES – PVC SCHEDULE 40 SOLVENT WELD JOINT – 2"
  - LATERAL LINES – CL200 SDR21 SOLVENT WELD JOINTS – SIZE AS SHOWN
  - SLEEVES – PVC SCHEDULE 40 – 4" (REFER TO IRRIGATION DETAIL 15)
- M 1-1/2 — WATER METER – 1-1/2" NEPTUNE HP SERIES

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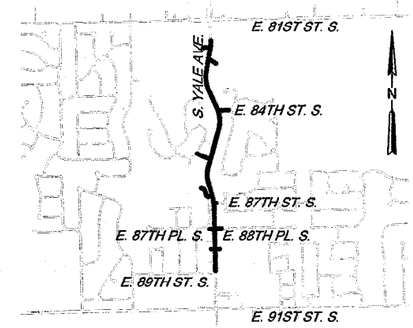
REFER TO SHEET 141 AND 142 FOR IRRIGATION INSTALLATION DETAILS AND NOTES

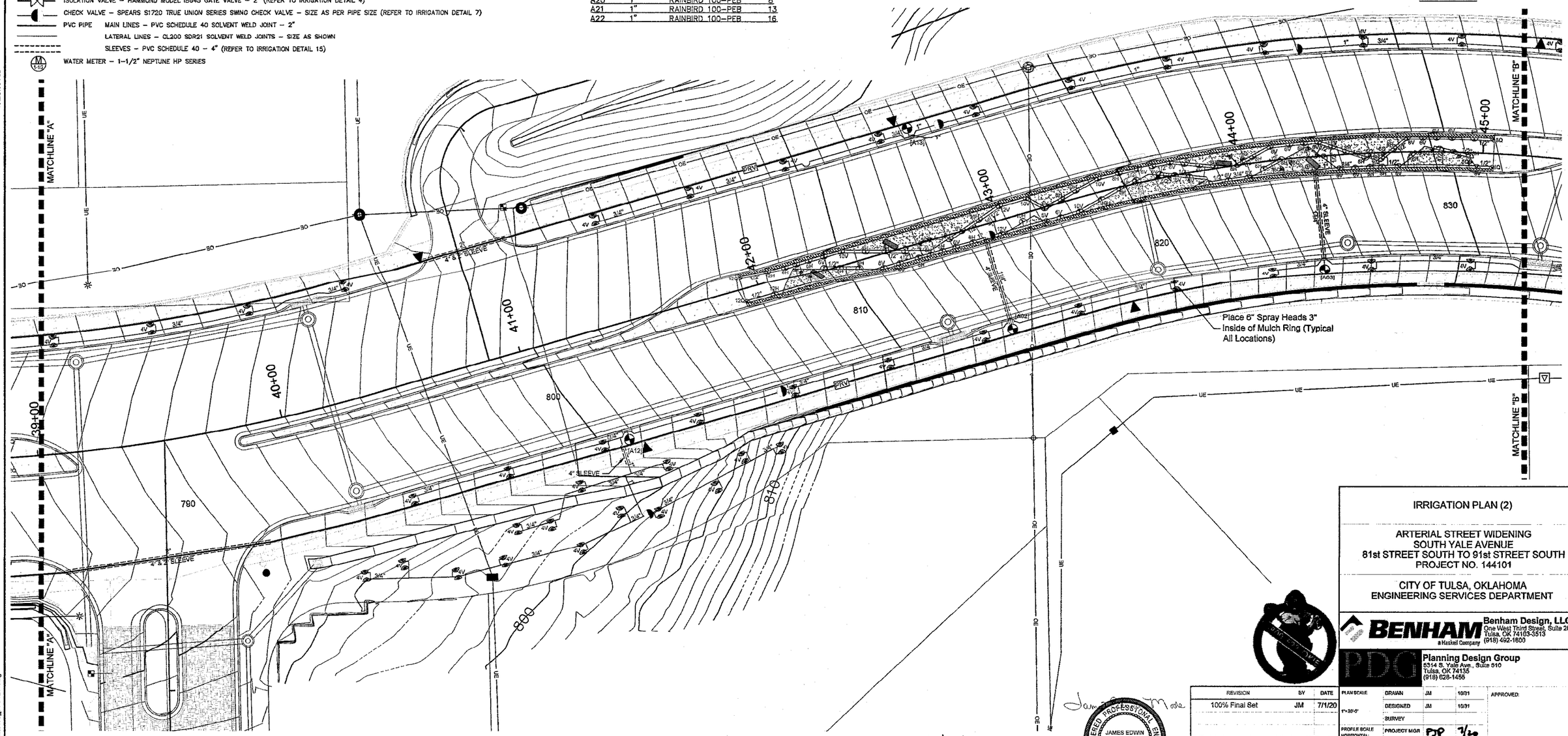
REFER TO SHEET 143 FOR TWO-WIRE IRRIGATION WIRE PATH

REFER TO SHEET 144 AND 144A FOR TWO-WIRE IRRIGATION INSTALLATION DETAILS AND NOTES

NOTE: THE PERFORMANCE OF THE IRRIGATION SYSTEM IS DEPENDENT ON THE CORRECT PLACEMENT OF THE CONTROL VALVES, CHECK VALVES, LATERAL PIPING AND MAIN LINE PRESSURE REGULATING VALVES. THE ELEVATION AND CONFIGURATION OF EACH OF THESE COMPONENTS HAS BEEN TAKEN INTO ACCOUNT IN THE DESIGN. CONTRACTOR IS TO MAINTAIN THE COMPONENT PLACEMENT SHOWN AND SHALL NOT DEVIATE WITHOUT OWNER APPROVAL.



KEYMAP



REGISTERED PROFESSIONAL ENGINEER JAMES EDWIN MOORE 11869 OKLAHOMA

DATE SIGNED: 7-01-20

Moore Engineering, Inc. CA 1186
P.O. Box 514
Stillwater, OK 74076

IRRIGATION PLAN (2)

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81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Tulsa, OK 74103-3513
(918) 492-1600

PDG
Planning Design Group
5314 S. Yale Ave., Suite 510
Tulsa, OK 74135
(918) 628-1455

REVISION	BY	DATE
100% Final Set	JM	7/1/20

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VERTICAL: 1"= N/A	RECOMMENDED DESIGN MANAGER	HAI	12-20

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SHEET 136 OF 308 SHEETS

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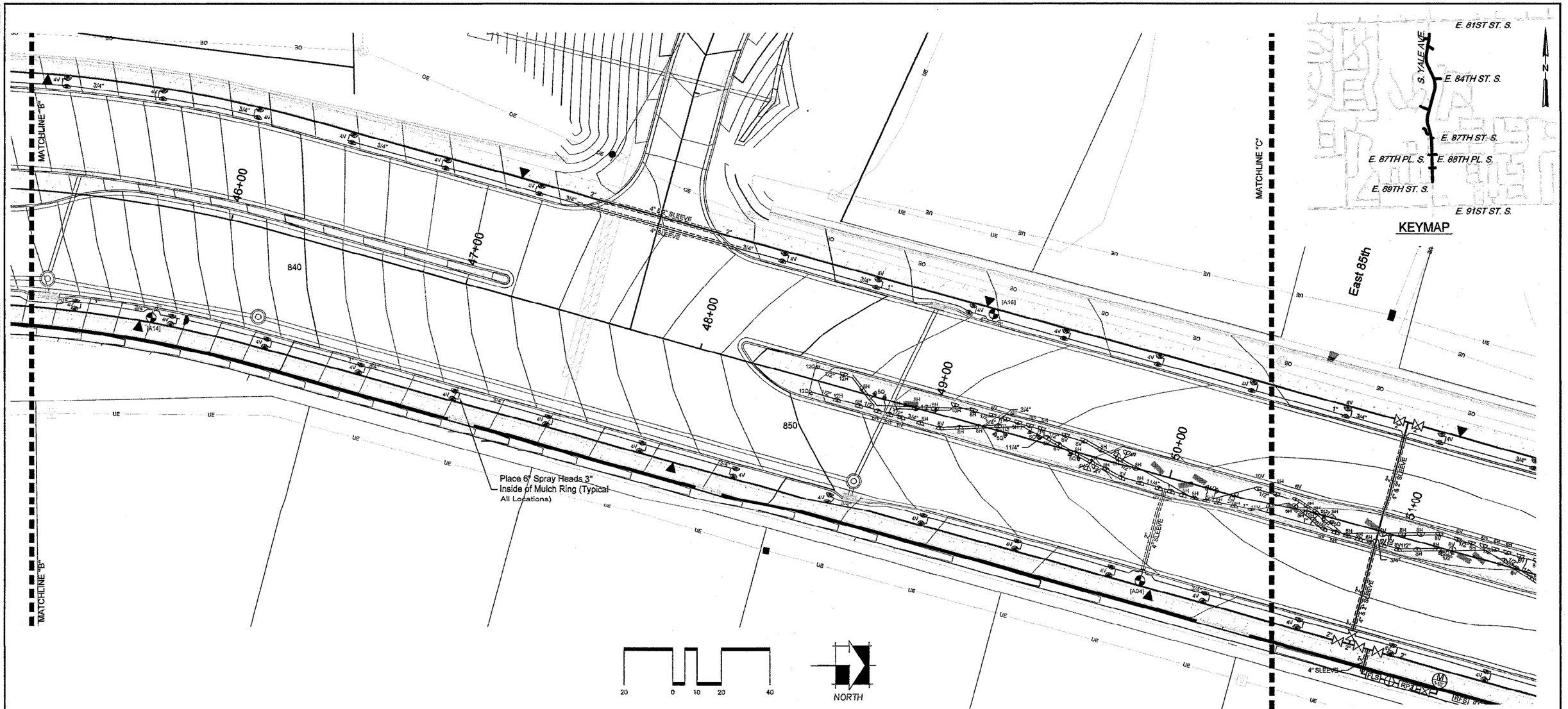

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REFER TO SHEET 143 FOR TWO-WIRE IRRIGATION WIRE PATH

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REGISTERED PROFESSIONAL ENGINEER JAMES EDWIN MOORE 11869 OKLAHOMA

DATE SIGNED: 7-01-20
Moore Engineering, Inc. CA 1186
P.O. Box 614
Stillwater, OK 74076

IRRIGATION PLAN (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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REVISION	BY	DATE
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PLAN SCALE 1"=20'-0"	DRAWN	JM	10/31
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APPROVED: CITY ENGINEER

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ATLAS PAGE NO.: 882, 883, 1005, 1006 — SHEET 137 OF 305 SHEETS

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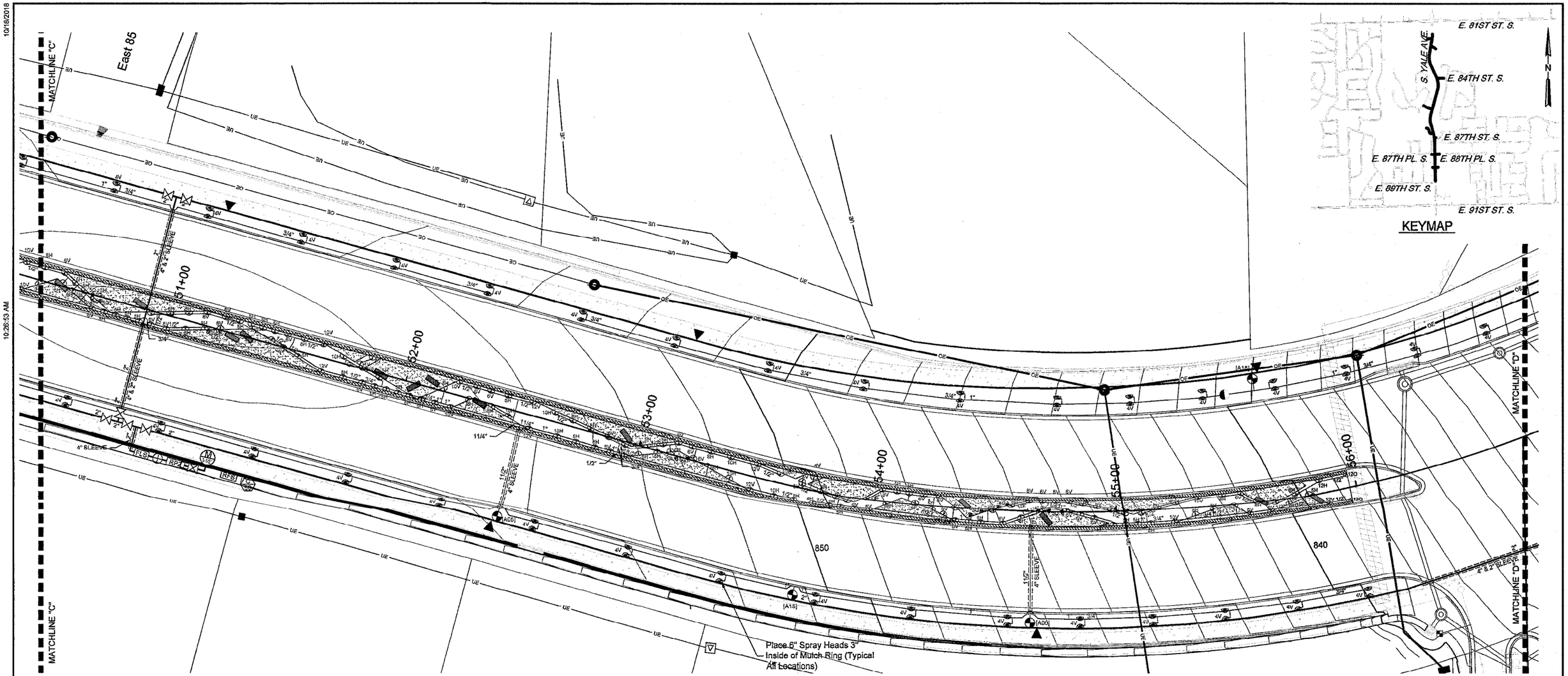

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20 0 10 20 40

NORTH

IRRIGATION PLAN (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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APPROVED:

CITY ENGINEER

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SHEET 138 OF 308 SHEETS

REGISTERED PROFESSIONAL ENGINEER — JAMES EDWIN MOORE — 11869 — OKLAHOMA

DATE SIGNED 7-01-20

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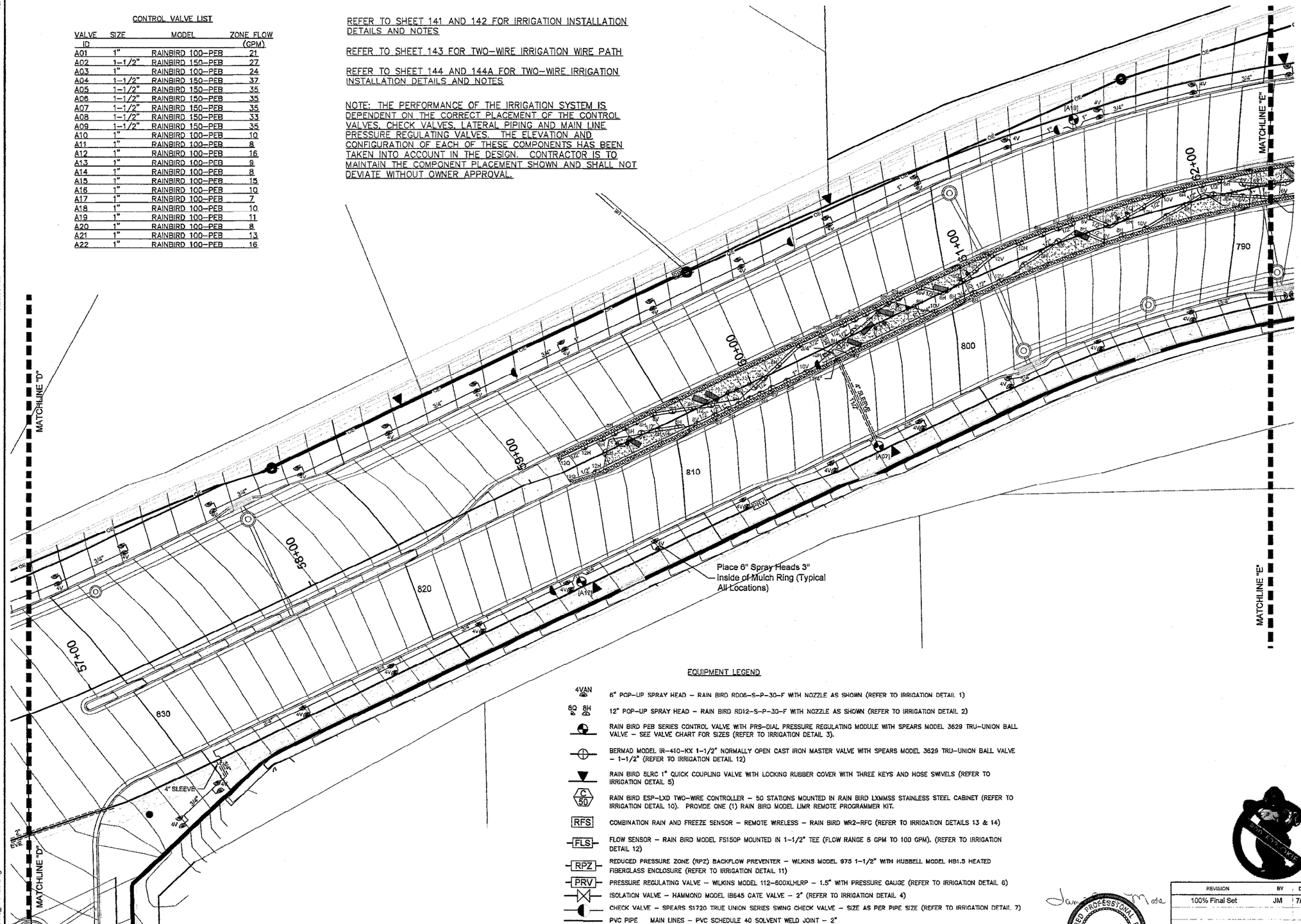

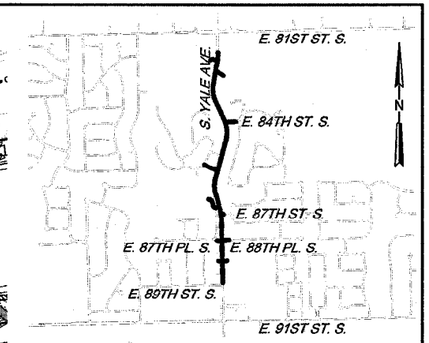

KEYMAP

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- RPZ — REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER – WILKINS MODEL 975 1-1/2" WITH HUBBELL MODEL HB1.5 HEATED FIBERGLASS ENCLOSURE (REFER TO IRRIGATION DETAIL 11)
- PRV — PRESSURE REGULATING VALVE – WILKINS MODEL 112-600XLHLRP – 1.5" WITH PRESSURE GAUGE (REFER TO IRRIGATION DETAIL 6)
- ISOLATION VALVE – HAMMOND MODEL IB645 GATE VALVE – 2" (REFER TO IRRIGATION DETAIL 4)
- CHECK VALVE – SPEARS S1720 TRUE UNION SERIES SWING CHECK VALVE – SIZE AS PER PIPE SIZE (REFER TO IRRIGATION DETAIL 7)
- PVC PIPE — MAIN LINES – PVC SCHEDULE 40 SOLVENT WELD JOINT – 2"
  - LATERAL LINES – CL200 SDR21 SOLVENT WELD JOINTS – SIZE AS SHOWN
  - SLEEVES – PVC SCHEDULE 40 – 4" (REFER TO IRRIGATION DETAIL 15)
- M 1-1/2 — WATER METER – 1-1/2" NEPTUNE HP SERIES

REGISTERED PROFESSIONAL ENGINEER — JAMES EDWIN MOORE — 11869 — OKLAHOMA

DATE SIGNED: 7-01-20

Moore Engineering, Inc. CA 1186
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Stillwater, OK 74076

IRRIGATION PLAN (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company — Benham Design, LLC, One West Third Street, Suite 200, Tulsa, OK 74103-3513, (918) 492-1600

PDG Planning Design Group, 5314 S. Yale Ave., Suite 510, Tulsa, OK 74135, (918) 628-1485

REVISION	BY	DATE
100% Final Set	JM	7/1/20

PLAN SCALE 1"= 20'-0"	DRAWN	JM	10/31
	DESIGNED	JM	10/31
	SURVEY		
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR	RB	7/20
	FIELD MGR		7/20
	LEAD ENGR		12/20
VERTICAL: 1"= N/A	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: YaleAve_070120.dwg

DATE: JULY 2020

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 139 OF 306 SHEETS

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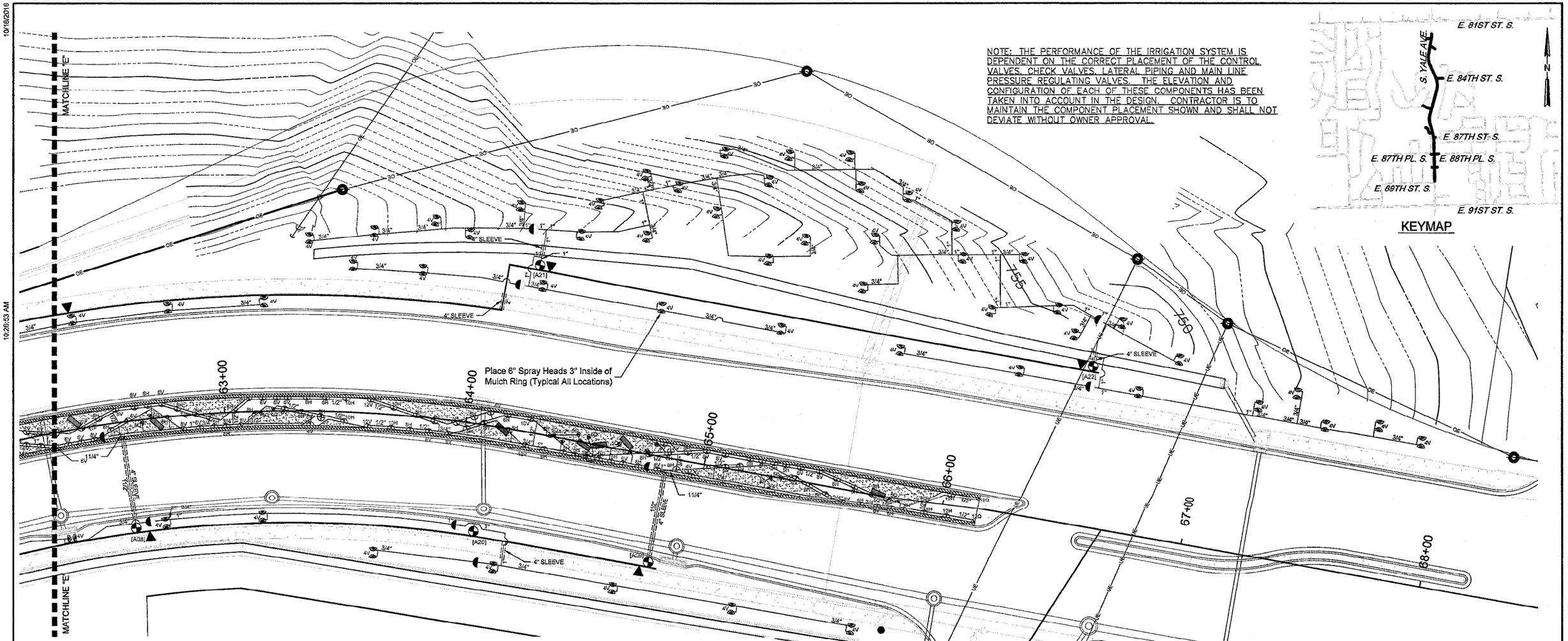

NOTE: THE PERFORMANCE OF THE IRRIGATION SYSTEM IS DEPENDENT ON THE CORRECT PLACEMENT OF THE CONTROL VALVES, CHECK VALVES, LATERAL PIPING AND MAIN LINE PRESSURE REGULATING VALVES. THE ELEVATION AND CONFIGURATION OF EACH OF THESE COMPONENTS HAS BEEN TAKEN INTO ACCOUNT IN THE DESIGN. CONTRACTOR IS TO MAINTAIN THE COMPONENT PLACEMENT SHOWN AND SHALL NOT DEVIATE WITHOUT OWNER APPROVAL.

CONTROL VALVE LIST

VALVE ID	SIZE	MODEL	ZONE FLOW (GPM)
A01	1"	RAINBIRD 100-PEB	21
A02	1-1/2"	RAINBIRD 150-PEB	27
A03	1"	RAINBIRD 100-PEB	24
A04	1-1/2"	RAINBIRD 150-PEB	37
A05	1-1/2"	RAINBIRD 150-PEB	35
A06	1-1/2"	RAINBIRD 150-PEB	35
A07	1-1/2"	RAINBIRD 150-PEB	35
A08	1-1/2"	RAINBIRD 150-PEB	33
A09	1-1/2"	RAINBIRD 150-PEB	35
A10	1"	RAINBIRD 100-PEB	10
A11	1"	RAINBIRD 100-PEB	8
A12	1"	RAINBIRD 100-PEB	16
A13	1"	RAINBIRD 100-PEB	9
A14	1"	RAINBIRD 100-PEB	8
A15	1"	RAINBIRD 100-PEB	15
A16	1"	RAINBIRD 100-PEB	10
A17	1"	RAINBIRD 100-PEB	7
A18	1"	RAINBIRD 100-PEB	10
A19	1"	RAINBIRD 100-PEB	11
A20	1"	RAINBIRD 100-PEB	8
A21	1"	RAINBIRD 100-PEB	13
A22	1"	RAINBIRD 100-PEB	16

EQUIPMENT LEGEND

- 4VAN — 6" POP-UP SPRAY HEAD – RAIN BIRD RD06-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 1)
- 8Q 8H 8S — 12" POP-UP SPRAY HEAD – RAIN BIRD RD12-S-P-30-F WITH NOZZLE AS SHOWN (REFER TO IRRIGATION DETAIL 2)
- RAIN BIRD PEB SERIES CONTROL VALVE WITH PRS-DIAL PRESSURE REGULATING MODULE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – SEE VALVE CHART FOR SIZES (REFER TO IRRIGATION DETAIL 3).
- BERMAD MODEL IR-410-KX 1-1/2" NORMALLY OPEN CAST IRON MASTER VALVE WITH SPEARS MODEL 3629 TRU-UNION BALL VALVE – 1-1/2" (REFER TO IRRIGATION DETAIL 12)
- RAIN BIRD 5LRC 1" QUICK COUPLING VALVE WITH LOCKING RUBBER COVER WITH THREE KEYS AND HOSE SWIVELS (REFER TO IRRIGATION DETAIL 5)
- C 50 — RAIN BIRD ESP-LXD TWO-WIRE CONTROLLER – 50 STATIONS MOUNTED IN RAIN BIRD LXMMSS STAINLESS STEEL CABINET (REFER TO IRRIGATION DETAIL 10). PROVIDE ONE (1) RAIN BIRD MODEL LIMR REMOTE PROGRAMMER KIT.
- RFS — COMBINATION RAIN AND FREEZE SENSOR – REMOTE WIRELESS – RAIN BIRD WR2-RFC (REFER TO IRRIGATION DETAILS 13 & 14)
- FLS — FLOW SENSOR – RAIN BIRD MODEL FS150P MOUNTED IN 1-1/2" TEE (FLOW RANGE 5 GPM TO 100 GPM). (REFER TO IRRIGATION DETAIL 12)
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- PVC PIPE — MAIN LINES – PVC SCHEDULE 40 SOLVENT WELD JOINT – 2"
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  - SLEEVES – PVC SCHEDULE 40 – 4" (REFER TO IRRIGATION DETAIL 15)
- M 1-1/2 — WATER METER – 1-1/2" NEPTUNE HP SERIES

20 0 10 20 40

NORTH

REGISTERED PROFESSIONAL ENGINEER JAMES EDWIN MOORE 11869 OKLAHOMA

DATE SIGNED 7-01-20

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Stillwater, OK 74076

REFER TO SHEET 141 AND 142 FOR IRRIGATION INSTALLATION DETAILS AND NOTES

REFER TO SHEET 143 FOR TWO-WIRE IRRIGATION WIRE PATH

REFER TO SHEET 144 AND 144A FOR TWO-WIRE IRRIGATION INSTALLATION DETAILS AND NOTES

IRRIGATION PLAN (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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	DESIGNED	JM	10/31
	SURVEY		
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	FIELD MGR		7/20
	LEAD ENGR		12/20
VERTICAL: 1"= N/A	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: YaleAve_070120.dwg

DATE: JULY 2020

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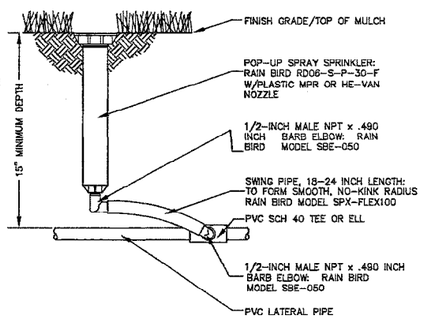
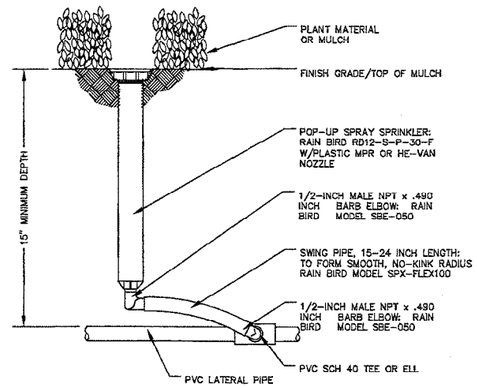
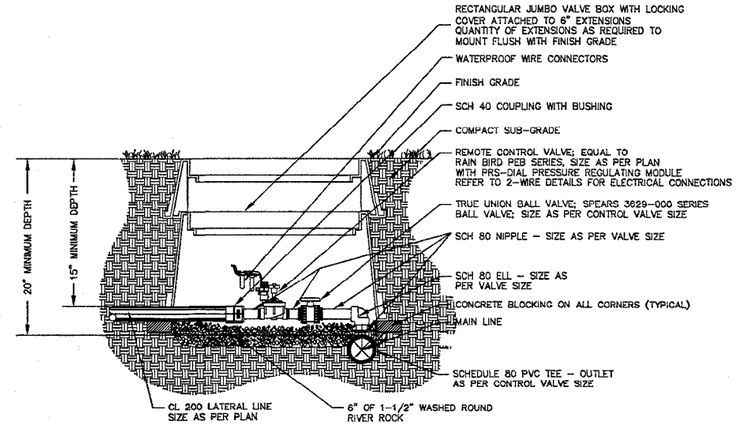


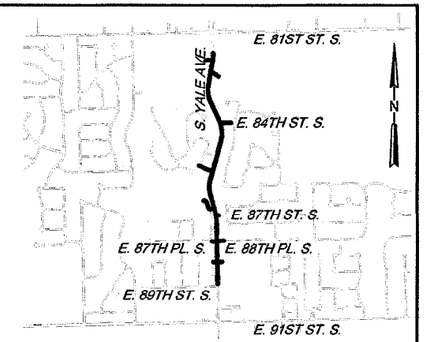
1 6" POP-UP SPRAY HEAD ASSEMBLY– TYPICAL SECTION
NOT TO SCALE



2 12" POP-UP SPRAY HEAD ASSEMBLY – TYPICAL SECTION
NOT TO SCALE



3 CONTROL VALVE ASSEMBLY–TYPICAL SECTION
NOT TO SCALE



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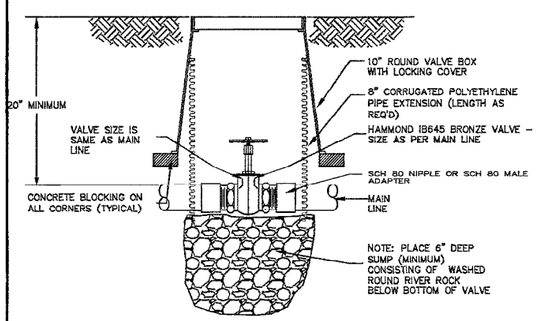
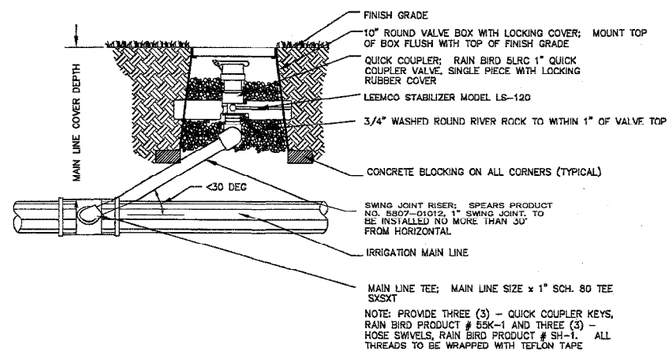
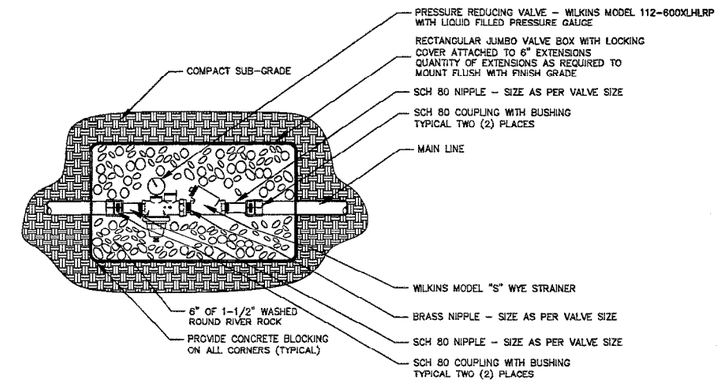


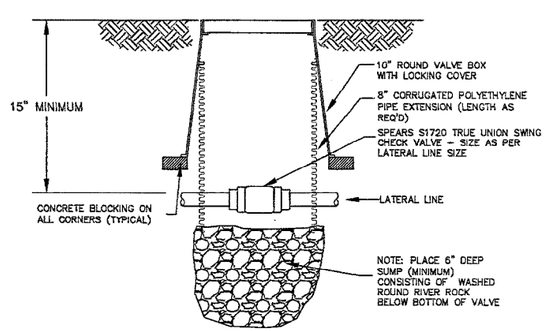
4 ISOLATION VALVE ASSEMBLY–TYPICAL SECTION



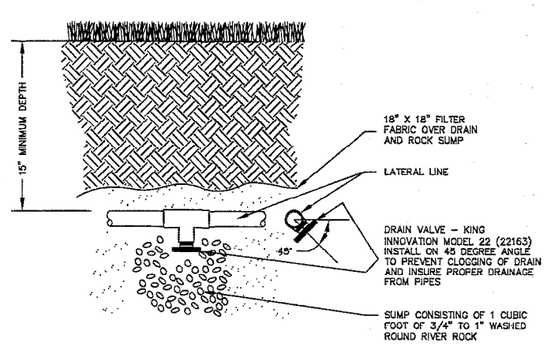
5 TYPICAL QUICK COUPLING VALVE SECTION
NOT TO SCALE



6 PRESSURE REDUCING VALVE – TYPICAL TOP VIEW
NOT TO SCALE



7 TRUE UNION SWING CHECK VALVE INSTALLATION – TYPICAL SECTION



8 AUTOMATIC DRAIN VALVE INSTALLATION – TYPICAL SECTION
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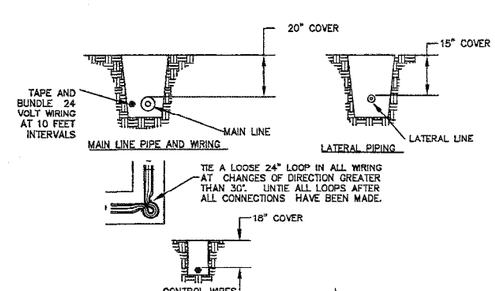

9 TYPICAL TRENCH SECTION
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
JAMES EDWIN MOORE
11869
OKLAHOMA

DATE SIGNED: 7-01-20

Moore Engineering, Inc. CA 1186
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Stillwater, OK 74076

IRRIGATION DETAILS (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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	SURVEY		
PROFILE SCALE HORIZONTAL 1"= N/A	PROJECT MGR		7/20
	FIELD MGR		7/20
	LEAD ENGR		12/20
VERTICAL 1"= N/A	RECOMMENDED		12-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

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ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 141 OF 308 SHEETS

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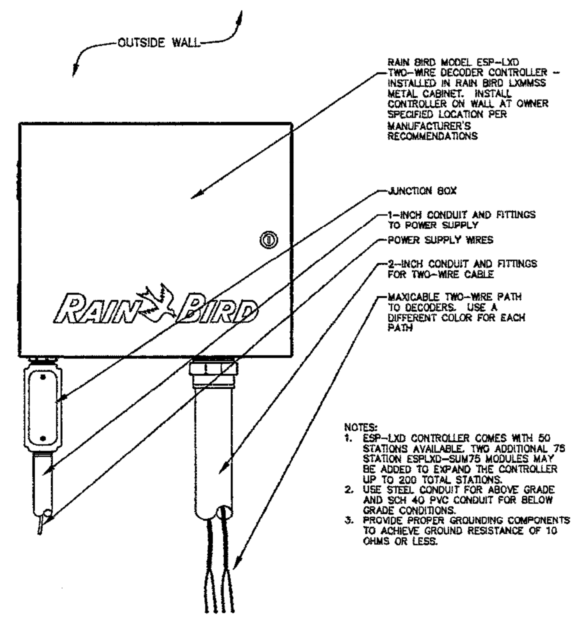
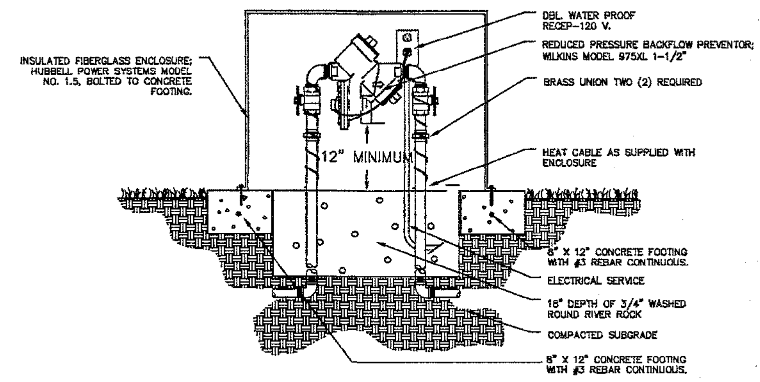


NOTES:
1. ESP-LXD CONTROLLER COMES WITH 50 STATIONS AVAILABLE. TWO ADDITIONAL 75 STATION ESPLXD-SUM75 MODULES MAY BE ADDED TO EXPAND THE CONTROLLER UP TO 200 TOTAL STATIONS.
2. USE STEEL CONDUIT FOR ABOVE GRADE AND SCH 40 PVC CONDUIT FOR BELOW GRADE CONDITIONS.
3. PROVIDE PROPER GROUNDING COMPONENTS TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.

(10) RAIN BIRD ESP-LXD CONTROLLER ASSEMBLY – TYPICAL SECTION
NOT TO SCALE



(11) RPZ BACKFLOW PREVENTER INSTALLATION – TYPICAL SECTION
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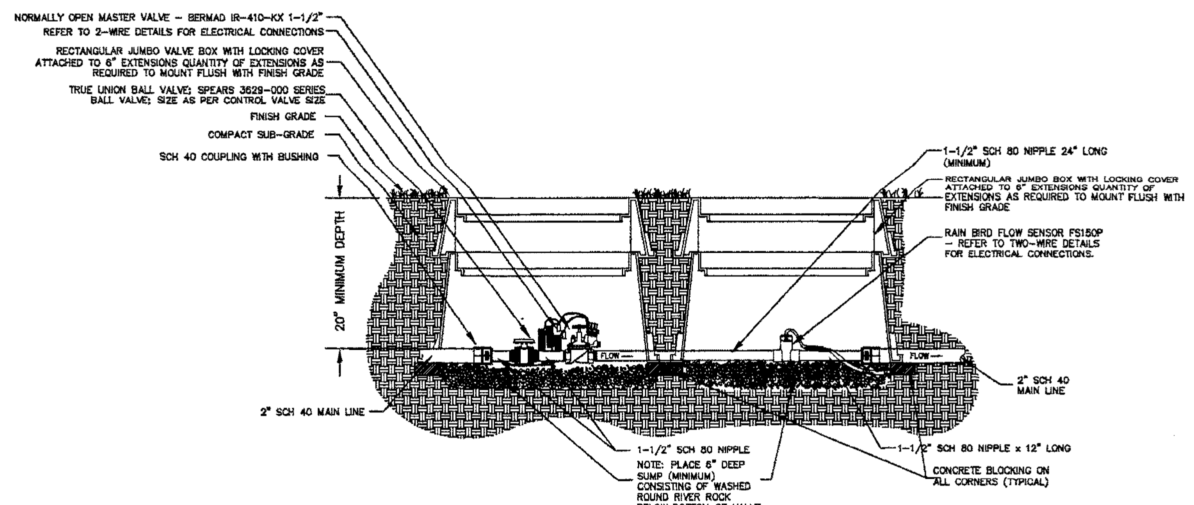
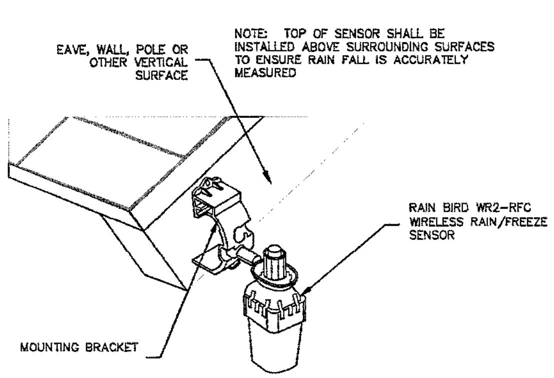
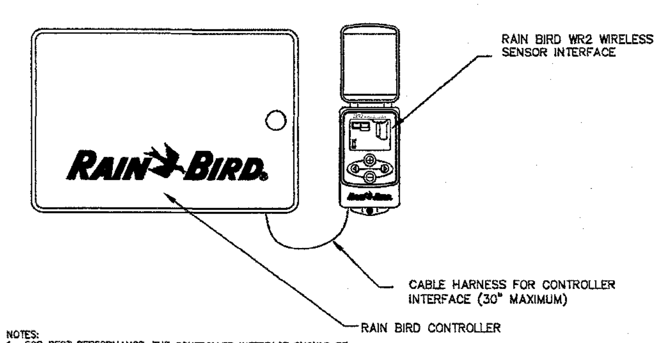


(12) MASTER VALVE AND FLOW SENSOR – TYPICAL SECTION
NOT TO SCALE



(13) WIRELESS REMOTE RAIN-FREEZE SENSOR INSTALLATION – TYPICAL SECTION
NOT TO SCALE



NOTES:
1. FOR BEST PERFORMANCE, THE CONTROLLER INTERFACE SHOULD BE INSTALLED AT LEAST FIVE FEET ABOVE THE GROUND.
2. IT IS RECOMMENDED THAT THE CONTROLLER INTERFACE BE INSTALLED AWAY FROM SOURCES OF ELECTRICAL INTERFERENCE (SUCH AS TRANSFORMERS, GENERATORS, PUMPS, FANS, ELECTRICAL METER BOXES) AND METAL OBJECTS TO MAXIMIZE COMMUNICATION RANGE.

(14) WIRELESS REMOTE SENSOR CONTROLLER INTERFACE – TYPICAL SECTION
NOT TO SCALE

INSTALLATION NOTES

1) Prior to excavation, contractor shall verify utility locations with telephone, gas, cable tv, and electric companies. Owner Representative and Contractor to review site electrical, site grading and drainage, site irrigation and all other drawings pertaining to underground utility locations.

2) Contractor shall measure the static water pressure at all locations of the water meters and shall report to Landscape Architect in writing a minimum of two (2) weeks prior to commencement of irrigation installation. Should static water pressure be less than 79 psi at elevation 854, Contractor shall receive approval from Owner Representative prior to proceeding.

3) The irrigation design is diagrammatic. The intent of the drawings is to show the general layout and logic of the system. Scaled measurements may not be accurate. Actual locations and quantities of pipe and fittings may vary due to actual installation conditions. Note: All irrigation lines shown on the drawing are diagrammatical in nature. All lines are to be placed within the full patch areas or under gutter construction in overlay areas. There will be no bores as part of this project. Contractor shall refer to landscape drawings for specific planting plans and locations. Although irrigation pipe may be shown inside existing tree drip/canopy area for convenience and clarity, contractor shall route lines outside of canopy of existing trees. When obstructions (trees, shrubs, hydrants, lights, etc.) interfere with spray pattern of sprinkler heads so as to prevent proper coverage, adjust sprinkler system by installing adjustable pattern sprinkler heads on each side of the obstruction so as to provide proper coverage. Contractor shall perform all adjustments at no additional cost to Owner.

4) Irrigation installation shall be coordinated with excavation, grading, building, paving and planting operations.

5) Contractor is responsible for the location and placement of all sleeves on the project whether shown on the drawings or not. Sleeves not shown on the drawings shall be sized two (2) times the nominal diameter of the largest pipe passing through the sleeve. Minimum sleeve size shall be 4" for main lines and 4" for 2" and smaller lateral lines passing under pavement. A separate minimum 2" diameter sleeve shall be provided for the two-wire control wires to pass through at each crossing. Sleeves shall be installed at a minimum cover depth of twenty (20) inches from finish grade. Coordinate horizontal and vertical elevations with utilities and footings. Contractor shall receive owner representative's approval for all required bores under roads, paths and sidewalks. Note: All irrigation lines shown on the drawing are diagrammatical in nature.

6) Contractor shall follow drawings, specifications and specific manufacturers recommendations to ensure proper installation of the irrigation system. Contractor shall notify Owner Representative in writing whenever there appears to be a conflict between any of the above stated documents. Contractor shall not willfully install the irrigation system as indicated on the drawings when it obvious in the field that obstructions, grade differences or area dimensions exist that might not have been considered during design. contractor shall bring such obstructions or differences to the attention of Owner's Representative. In the event this notification is not performed, Contractor assumes responsibility for all required revisions.

7) Backflow preventer shall be installed at the locations indicated on the plans. Contractor shall receive Owner Representative's approval for final location. Backflow preventer installation shall meet City of Tulsa, OK codes and requirements. Backflow preventer shall be installed with two (2) unions for ease of removal. All required sleeving, conduits and pipes for installing the backflow preventer are the responsibility of the contractor. Backflow preventer shall be installed in the specified insulated and heated fiberglass enclosure. Contractor shall be responsible for supplying and connecting electrical service for the enclosure heater.

8) Controller shall be mounted inside specified enclosure to the wall at the location shown. Contractor shall receive Owner Representative's approval for specific placement prior to installation. Owner shall be responsible for providing 120 volt power to a disconnect point adjacent to the controller. Contractor shall be responsible for connection of 120 volt power to controller. Contractor shall provide necessary 2" Schedule 40 PVC conduit for irrigation control wires to the controller location.

9) One (1) combination rain and freeze sensor shall be installed for the controller at the location selected to ensure proper operation and protection of the sensors according to manufacturer's recommendations. Contractor shall receive Owner Representative's approval for acceptable location prior to installation of the sensor.

10) Irrigation decoder wire shall meet manufacturer's specifications for size and configuration of two-wire system. Installation of 2-wire decoder system shall strictly follow manufacturer's recommendations for installation procedures and equipment. Methods to achieve grounding resistance shall be according to guidelines provided by the 2-wire decoder system manufacturer. Contractor is referred to the two-wire plan and detail sheets for further installation instructions of two-wire system.

11) Turbine style water meter shall be installed at the location shown. Supply line from the water meters to the backflow preventers shall be sized as shown and shall meet City of Tulsa, OK codes and requirements.

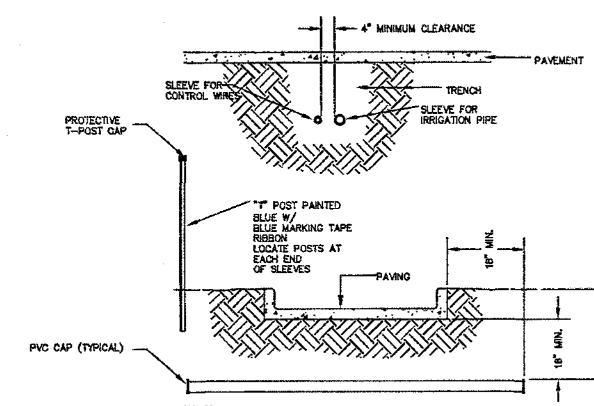
12) The performance of the irrigation system is dependent on the correct placement of the control valves, check valves, lateral piping. The elevation and configuration of each of these components has been taken into account in the design. Contractor is to maintain the component placement shown and shall not deviate without owner approval.

13) Pressure reducing valves shall be installed at the four (4) locations shown. The performance of the irrigation system is dependent on the pressure reducing valves being installed at the designed elevations. Contractor shall notify Owner in advance if the locations shown for the pressure reducing valves can not be achieved.

14) Spray heads with check valves are required to prevent low head drainage. Contractor shall install additional in-line pipe check valves as required when head of water in upstream pipe exceeds the capacity of downstream sprinkler head check valves (14 feet).

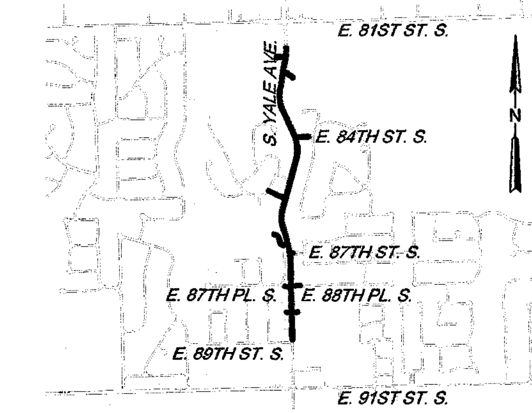
15) All 6" pop-up spray heads for tree irrigation are to be installed 3" inside of mulch ring. Adjust spray arc to maximize coverage within mulch ring.

16) All spray heads and rotary heads shall be installed perpendicular (90 degrees) to finished grade. Adjust all heads to minimize over spray onto hardscape and buildings.



NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE SCHEDULE 40 PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. MECHANICALLY TAMP TO 95% PROCTOR DENSITY AND/OR FILL CONCRETE PER PROJECT SPECIFICATIONS.
4. ALL COMPONENTS SHOWN AND ASSOCIATED WITH THIS ASSEMBLY INSTALLATION SHALL BE FIGURED INTO THE UNIT COST OF THE DOUBLE SLEEVE ASSEMBLY.

(15) PIPE AND WIRE SLEEVES – TYPICAL DETAIL
NOT TO SCALE



KEYMAP

IRRIGATION DETAILS (2)

ARTERIAL STREET WIDENING
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81st STREET SOUTH TO 91st STREET SOUTH
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	RECOMMENDED	HAS	12-20	
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ATLAS PAGE NO.: 882, 883, 1005, 1006

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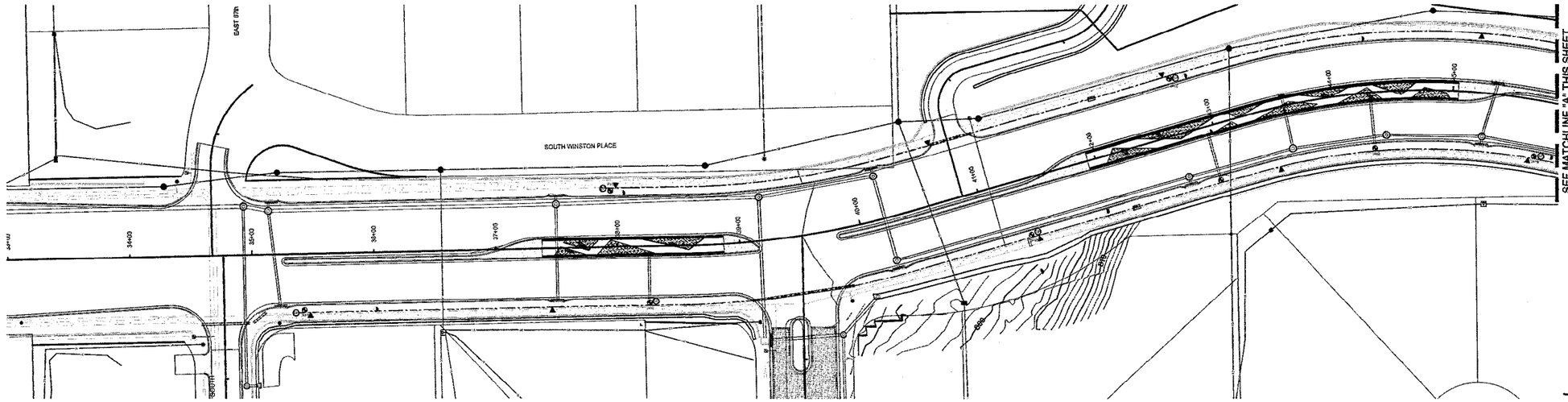

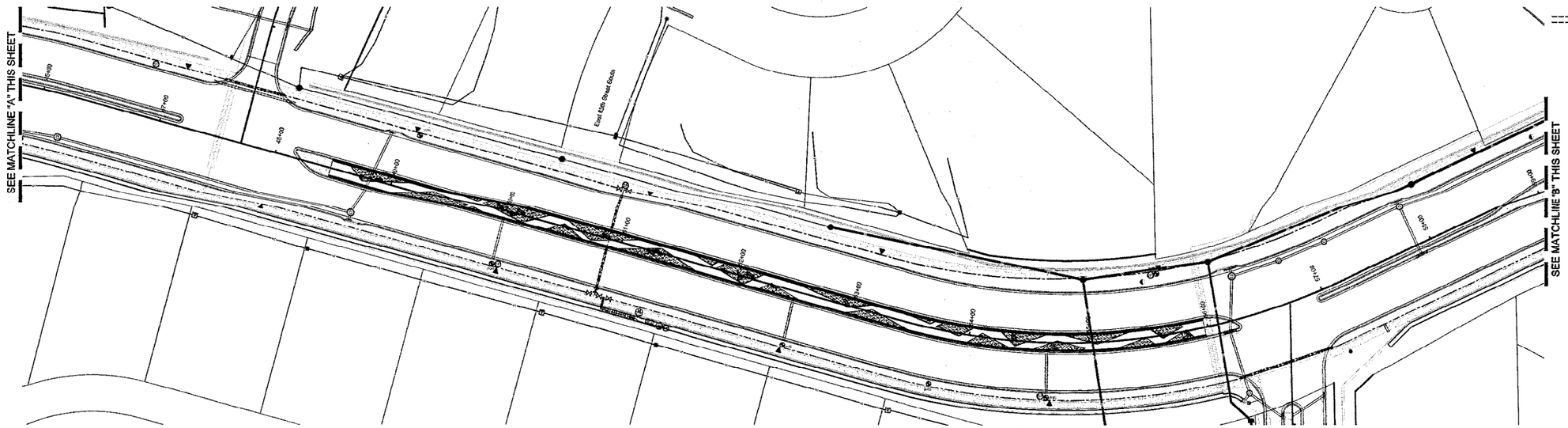

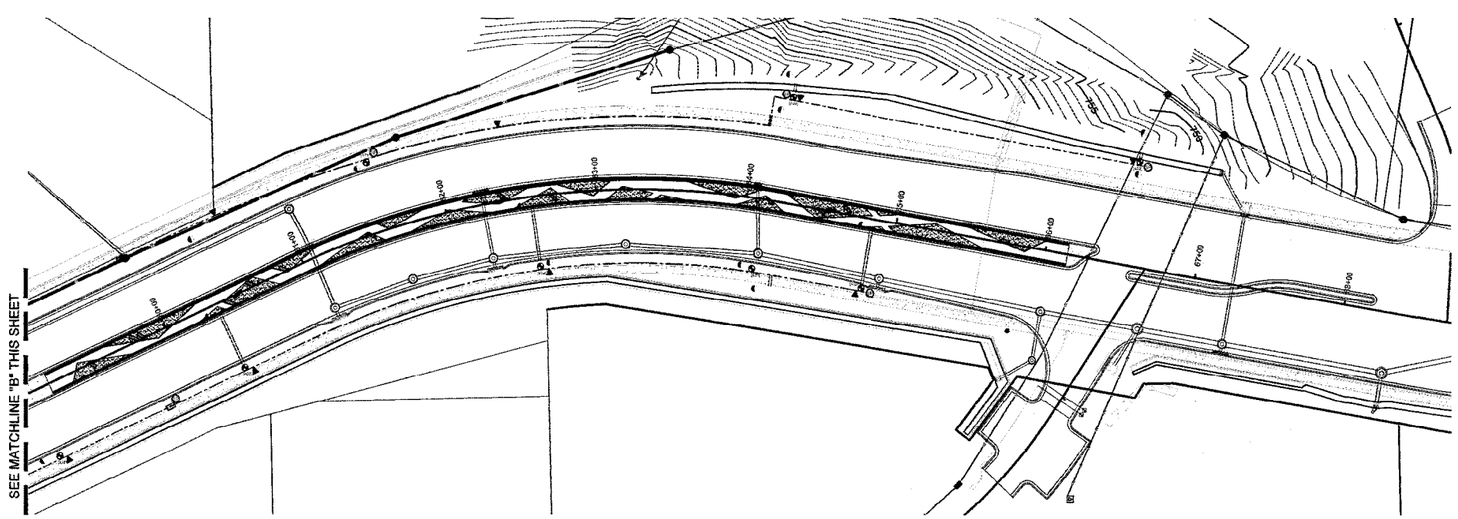

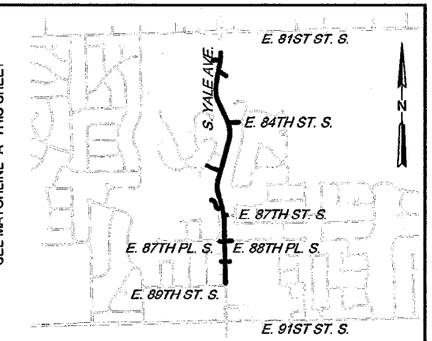

KEYMAP

TWO-WIRE DECODER SYSTEM LEGEND

- C 50 — RAIN BIRD ESP-LXD TWO-WIRE CONTROLLER – 50 STATIONS WITH ONE (1) LIMR REMOTE PROGRAMMER. INSTALL IN RAIN BIRD LXMMSS METAL CABINET
- TWO-WIRE CABLE – RAIN BIRD MAXICOM 14 AWG SOLID CORE PAIR WITH OUTER JACKET
- SLEEVE FOR TWO-WIRE CABLES – PVC SCHEDULE 40 2" DIAMETER MINIMUM
- RAIN BIRD PEB SERIES CONTROL VALVE WITH RAIN BIRD MODEL FD101TURF SINGLE-STATION DECODER
- FLS — FLOW SENSOR – RAIN BIRD MODEL FS150P 1-1/2"
- SP — LINE SURGE PROTECTOR – RAIN BIRD MODEL LSP-1TURF WITH GROUNDING SYSTEM AS SPECIFIED BY TWO-WIRE MANUFACTURER (REFER TO TWO-WIRE NOTES AND DETAILS FOR INSTALLATION REQUIREMENTS)

50 0 25 50 100

NORTH

TWO-WIRE ROUTING PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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REGISTERED PROFESSIONAL ENGINEER
JAMES EDWIN MOORE
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DATE SIGNED 7-01-20
Moore Engineering, Inc. CA 1185
P.O. Box 614
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REVISION	BY	DATE
100% Final Set	JM	7/1/20

PLAN SCALE 1"= 50'-0"	DRAWN	JM	10/31
	DESIGNED	JM	10/31
	SURVEY		
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	FIELD MGR		7/20
	LEAD ENGR		11/20
VERTICAL: 1"= N/A	RECOMMENDED		
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: YaleAve_070120.dwg

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ATLAS PAGE NO.: 882, 883, 1005, 1006

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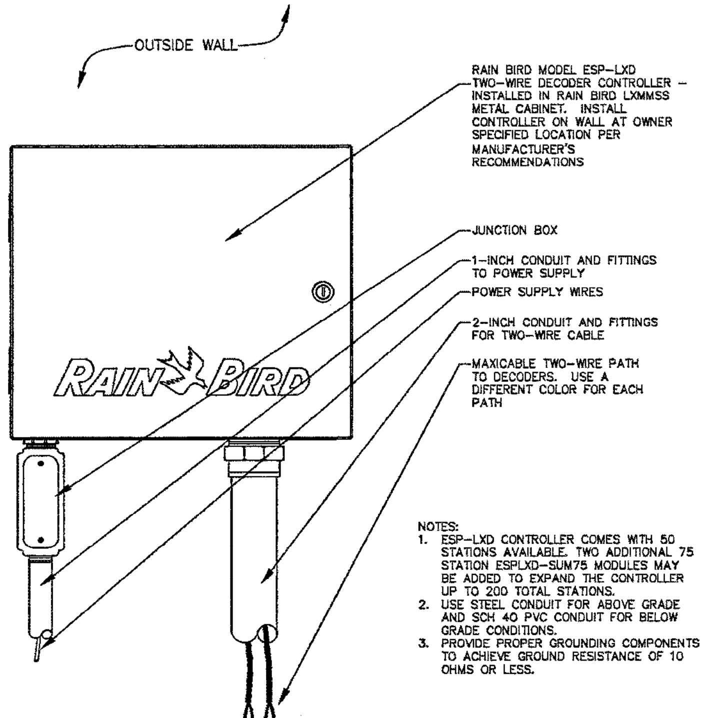
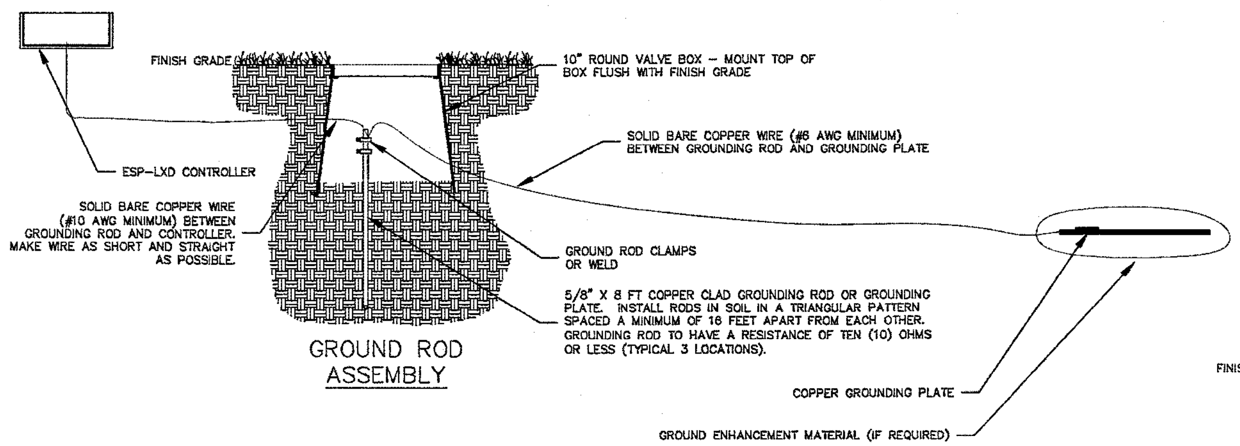
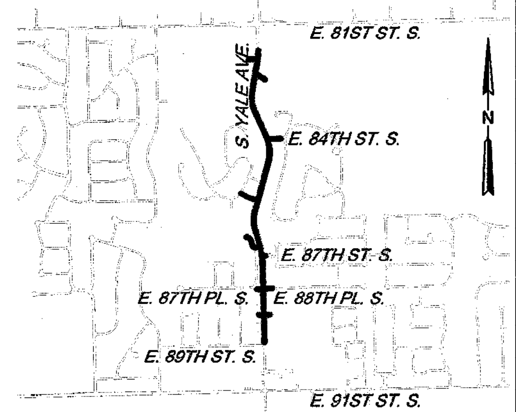


NOTES:
1. ESP-LXD CONTROLLER COMES WITH 50 STATIONS AVAILABLE. TWO ADDITIONAL 75 STATION ESPLXD-SUM75 MODULES MAY BE ADDED TO EXPAND THE CONTROLLER UP TO 200 TOTAL STATIONS.
2. USE STEEL CONDUIT FOR ABOVE GRADE AND SCH 40 PVC CONDUIT FOR BELOW GRADE CONDITIONS.
3. PROVIDE PROPER GROUNDING COMPONENTS TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.

(1) RAIN BIRD ESP-LXD CONTROLLER ASSEMBLY - TYPICAL SECTION
NOT TO SCALE



(2) CONTROLLER GROUNDING GRID - GROUNDING PLATE DESIGN TYPICAL LAYOUT
NOT TO SCALE



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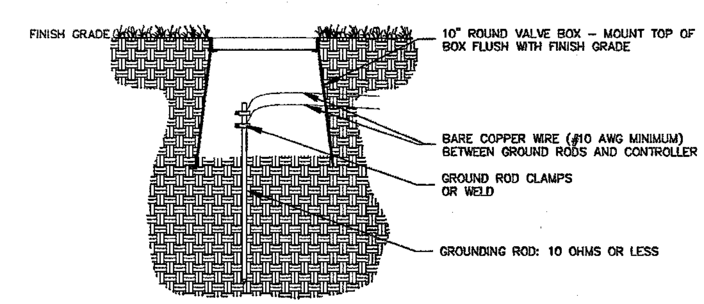
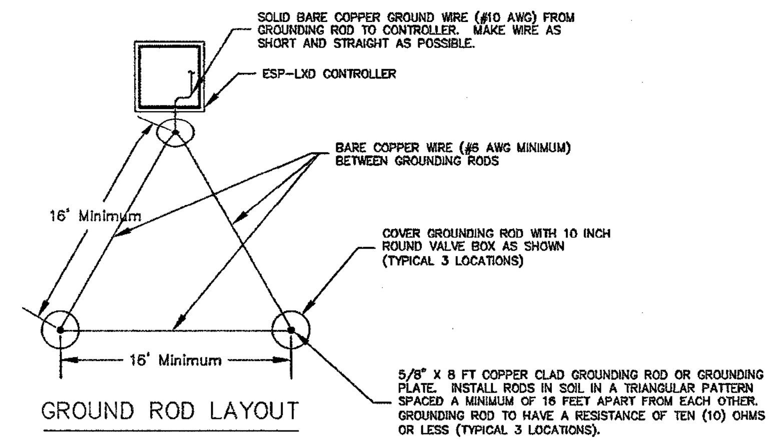
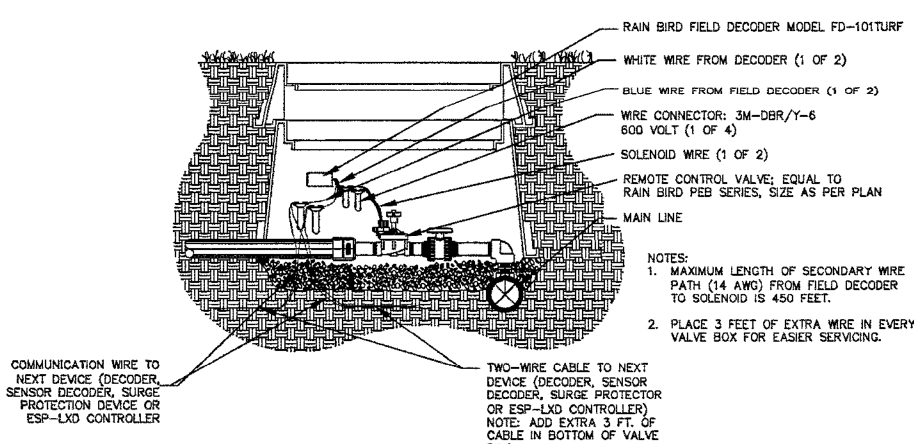


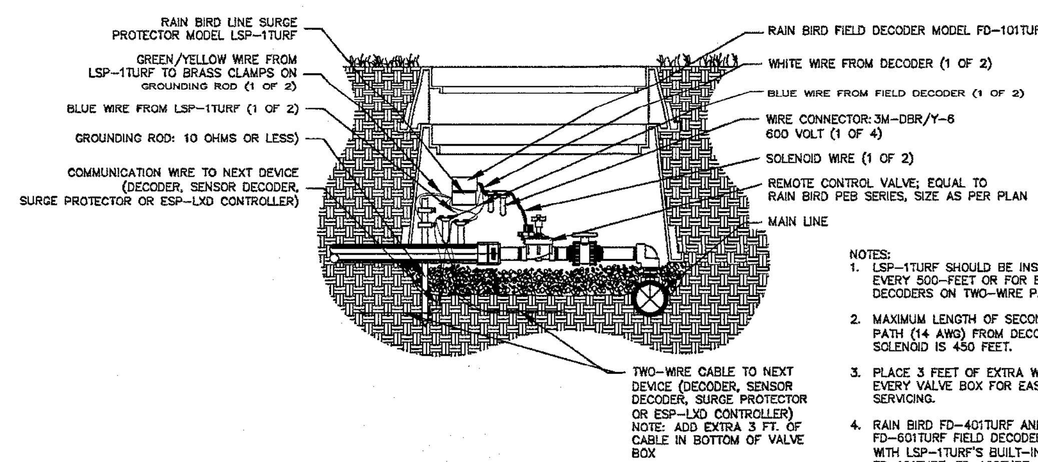


(5) CONTROLLER GROUNDING GRID "Y" GROUND ROD DESIGN TYPICAL LAYOUT
NOT TO SCALE



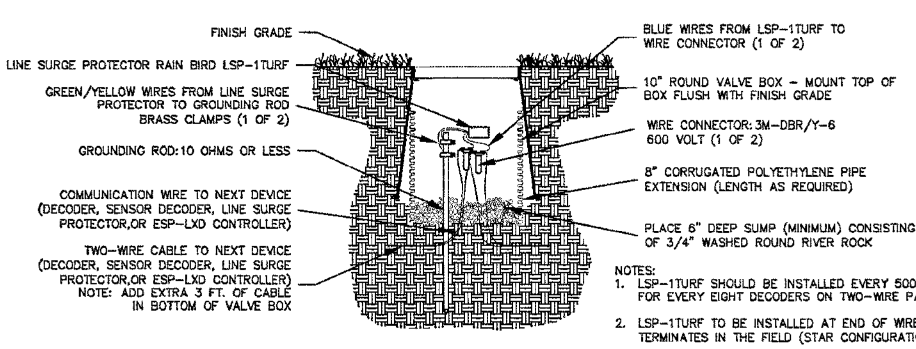
NOTES:
1. MAXIMUM LENGTH OF SECONDARY WIRE PATH (14 AWG) FROM FIELD DECODER TO SOLENOID IS 450 FEET.
2. PLACE 3 FEET OF EXTRA WIRE IN EVERY VALVE BOX FOR EASIER SERVICING.

(3) FD-101TURF DECODER CONNECTION TO VALVE AND TWO-WIRE CABLE - TYPICAL INSTALLATION
NOT TO SCALE



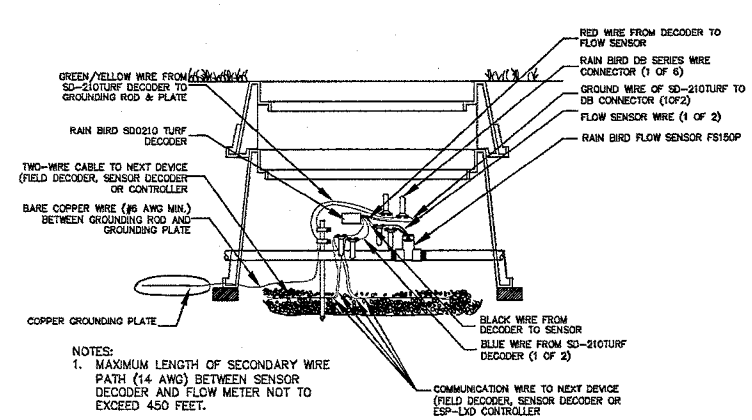
NOTES:
1. LSP-1TURF SHOULD BE INSTALLED EVERY 500-FEET OR FOR EVERY EIGHT DECODERS ON TWO-WIRE PATH.
2. MAXIMUM LENGTH OF SECONDARY WIRE PATH (14 AWG) FROM DECODER TO SOLENOID IS 450 FEET.
3. PLACE 3 FEET OF EXTRA WIRE IN EVERY VALVE BOX FOR EASIER SERVICING.
4. RAIN BIRD FD-401TURF AND FD-601TURF FIELD DECODERS COME WITH LSP-1TURF'S BUILT-IN. FD-101TURF, FD-102TURF AND FD-202TURF REQUIRE SEPARATE LSP-1TURF SURGE PROTECTION.

(4) LSP-1TURF LINE SURGE PROTECTOR CONNECTION TO DECODER AND TWO-WIRE PATH - TYPICAL INSTALLATION
NOT TO SCALE



NOTES:
1. LSP-1TURF SHOULD BE INSTALLED EVERY 500-FEET OR FOR EVERY EIGHT DECODERS ON TWO-WIRE PATH.
2. LSP-1TURF TO BE INSTALLED AT END OF WIRE RUN THAT TERMINATES IN THE FIELD (STAR CONFIGURATION).
3. RAIN BIRD FD-401TURF AND FD-601TURF FIELD DECODERS COME WITH LSP-1TURF'S BUILT-IN. FD-101TURF, FD-102TURF AND FD--202TURF REQUIRE SEPARATE LSP-1TURF PROTECTION.

(6) LSP-1TURF LINE SURGE PROTECTOR CONNECTION TO TWO-WIRE PATH - TYPICAL INSTALLATION
NOT TO SCALE



NOTES:
1. MAXIMUM LENGTH OF SECONDARY WIRE PATH (14 AWG) BETWEEN SENSOR DECODER AND FLOW METER NOT TO EXCEED 450 FEET.
2. PLACE 3 FEET OF EXTRA WIRE IN EVERY VALVE BOX FOR EASIER SERVICING.
3. GROUNDING SHOULD BE TO 10 OHMS OR LESS

(7) SENSOR DECODER AND FLOW SENSOR - TYPICAL INSTALLATION
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
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REVISION	BY	DATE
100% Final Set	JM	7/1/20

TWO-WIRE DETAILS

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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PLAN SCALE 1"= N/A	DRAWN	JM	10/31
	DESIGNED	JM	10/31
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	RECOMMENDED DESIGN MANAGER	HAJ	12-20

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2-WIRE DECODER SYSTEM INSTALLATION NOTES

1) THE IRRIGATION DESIGN IS DIAGRAMMATIC. THE INTENT OF THE DRAWINGS IS TO SHOW THE GENERAL LAYOUT AND LOGIC OF THE SYSTEM. SCALED MEASUREMENTS MAY NOT BE ACCURATE. ACTUAL LOCATIONS AND QUANTITIES OF WIRE MAY VARY DUE TO ACTUAL INSTALLATION CONDITIONS.

2) INSTALLATION OF TWO-WIRE DECODER SYSTEM SHALL STRICTLY FOLLOW THE DRAWINGS, SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION PROCEDURES AND EQUIPMENT. CONTRACTOR IS REFERRED TO THE RAIN BIRD PUBLICATION "ESP-LXD 2-WIRE DECODER SYSTEM DESIGN GUIDE". CONTRACTOR SHALL NOTIFY OWNER REPRESENTATIVE IN WRITING WHENEVER THERE APPEARS TO BE A CONFLICT BETWEEN ANY OF THE ABOVE STATED DOCUMENTS AND THE 2-WIRE SYSTEM AS INDICATED ON THE PLAN AND DETAIL DRAWINGS. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL REQUIRED REVISIONS.

3) CONTROLLER SHALL BE MOUNTED AT THE LOCATION SHOWN. CONTRACTOR SHALL RECEIVE OWNER REPRESENTATIVE'S APPROVAL FOR SPECIFIC PLACEMENT PRIOR TO INSTALLATION. 120 VOLT POWER SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR TO A DISCONNECT POINT ADJACENT TO THE CONTROLLERS. IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTION OF 120 VOLT POWER TO EACH CONTROLLER. CONTROLLER SHALL BE GROUNDED ACCORDING TO MANUFACTURER'S RECOMMENDATION AND AS SHOWN ON THE TWO-WIRE CONTROL SYSTEM DETAILS SHEET.

4) IRRIGATION DECODER WIRE SHALL MEET MANUFACTURER'S SPECIFICATIONS FOR SIZE AND CONFIGURATION OF TWO-WIRE SYSTEM. INSTALLATION OF 2-WIRE DECODER SYSTEM SHALL STRICTLY FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION PROCEDURES AND EQUIPMENT. CONTRACTOR IS REFERRED TO THE TWO-WIRE PLAN AND DETAILS SHEET FOR FURTHER INSTALLATION INSTRUCTIONS OF THE TWO-WIRE SYSTEM.

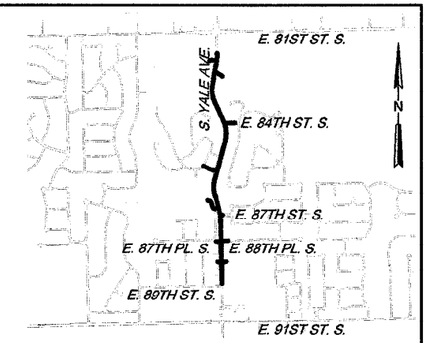
5) METHODS TO ACHIEVE GROUNDING RESISTANCE SHALL BE ACCORDING TO GUIDELINES PROVIDED BY THE TWO-WIRE SYSTEM MANUFACTURER AND AS SHOWN ON THE TWO-WIRE DETAILS SHEET.

6) LINE SURGE PROTECTORS SHALL BE INSTALLED EVERY EIGHTH (8TH) DECODER OR 500 FT ALONG THE WIRE PATH, WHICHEVER IS SHORTER. A LINE SURGE PROTECTOR SHALL BE INSTALLED AT THE END OF THE 2-WIRE PATH IN A "STAR" CONFIGURATION..

7) THE EARTH-TO-GROUND RESISTANCE OF THE TWO-WIRE CONTROLLER GROUNDING CIRCUIT SHALL BE NO MORE THAN 10 OHMS. DECODER CONTROLLERS SHALL BE GROUNDED AT THE VERY MINIMUM USING EITHER THE GROUND ROD "Y" SYSTEM OR THE GROUNDING PLATE SYSTEM SPECIFIED IN THE MANUFACTURER'S LITERATURE AND THE TWO-WIRE DETAIL SHEET. ADDITIONAL GROUND RODS OR GROUNDING PLATES WITH "POWERSET" EARTH CONTACT MATERIAL MAY BE REQUIRED TO REACH THE 10 OHM REQUIRED GROUNDING RESISTANCE. ALL CONNECTIONS AND SPLICES IN THE TWO-WIRE PATH SHALL BE MADE WITH MANUFACTURER'S RECOMMENDED WIRE CONNECTORS (NO EXCEPTIONS ALLOWED).

8) THE EARTH-TO-GROUND RESISTANCE OF THE LINE SURGE PROTECTOR GROUNDING CIRCUIT SHALL BE NO MORE THAN 10 OHMS. DECODER SHALL BE GROUNDED AT THE VERY MINIMUM USING A COPPER GROUND ROD. ADDITIONAL GROUND RODS AND GROUND PLATES AND EARTH CONTACT MATERIAL MAY BE REQUIRED TO MEET THE 10 OHM RESISTANCE REQUIREMENT. ALL CONNECTIONS AND SPLICES IN THE TWO-WIRE PATH SHALL BE MADE WITH MANUFACTURER'S RECOMMENDED WIRE CONNECTORS (NO EXCEPTIONS ALLOWED) ADDITIONAL SPLICES AND CONNECTIONS IN THE TWO-WIRE PATH MUST BE MADE WITH THE SPECIFIED WATERPROOF CONNECTIONS.

9) ALL SPLICES REQUIRED AT WIRE PATH JUNCTIONS NOT LOCATED AT CONTROL VALVE LOCATIONS SHALL BE MADE USING THE SPECIFIED WATERPROOF CONNECTORS AND SHALL BE LOCATED IN MINIMUM 10 INCH ROUND VALVE BOXES AND NOTED ON THE AS-BUILT DRAWINGS.



KEYMAP

TWO-WIRE INSTALLATION NOTES

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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100% Final Set	JM	7/1/20

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PLAN SCALE 1"= N/A	DRAWN	JM	10/31
	DESIGNED	JM	10/31
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APPROVED:

CITY ENGINEER

FILE: YaleAve_070120.dwg

DATE: JULY 2020

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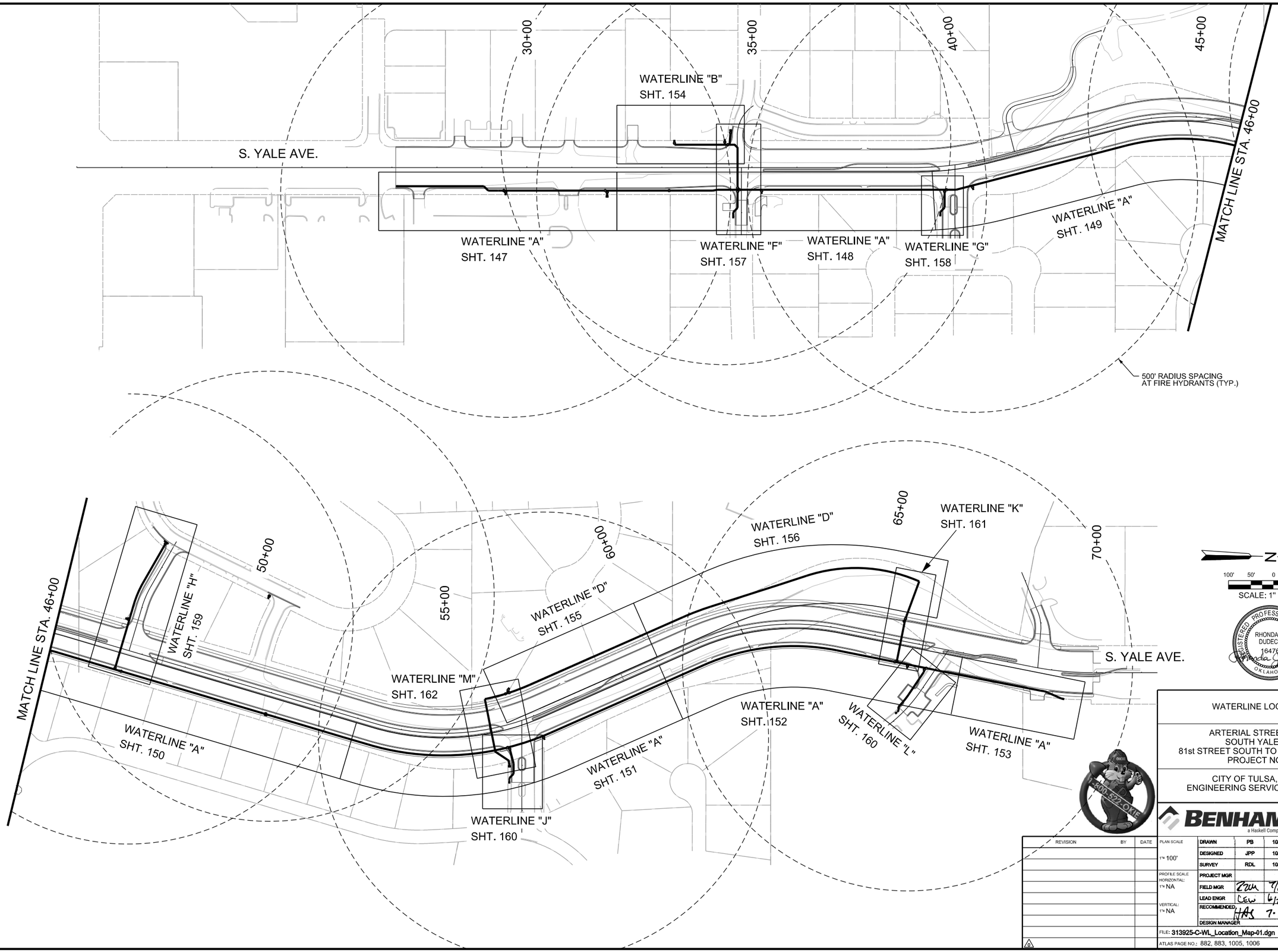

WATERLINE LOCATION MAP

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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REVISION	BY	DATE

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	SURVEY	RDL	10/18
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CITY ENGINEER

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DATE: OCTOBER 2018
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WATERLINE CONSTRUCTION SEQUENCE NOTES

PHASE 1

1) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 8+62.12 TO STA. 9+53.00.
BORE WATERLINE UNDER EXISTING YALE AVE.

2) INSTALL PROPOSED 8" WATERLINE "D".

3) INSTALL TEMPORARY 8" WATERLINE "M".

4) CONNECT PROPOSED 8" WATERLINE "K" TO EXISTING 16" WATERLINE AT STA. 9+53.00
EAST OF YALE AVE. CONNECTION SHALL BE LOCATED ON THE NORTH SIDE OF THE EXISTING
16" VALVE. THE CONNECTION TO THE EXISTING 16" WATERLINE SHALL BE A LIVE TAP.

5) CONNECT PROPOSED 8" WATERLINE "D" TO EXISTING 6" WATERLNE AT STA. 56+16.41
EXISTING 6" WATERLINE EAST OF CONNECTION IS TO BE ABANDONED IN PLACE.

6) CONNECT TEMPORARY 8" WATERLINE "M" TO EXISTING 8" WATERLINE AT STA. 7+67.83
EAST OF YALE AVE. ON E. 84TH ST. S.

PHASE 2

7) INSTALL PROPOSED 8" WATERLINE "F".

8) INSTALL PROPOSED 8" WATERLINE "B".

9) CONNECT PROPOSED 8" WATERLINE "F" TO EXISTING 8" WATERLINES AT
STA. 9+03.00 AND STA. 11+14.00

10) CONNECT PROPOSED 8" WATERLINE "B" TO EXISTING 8" WATERLINE AT
STA. 31+51.16.

PHASE 3

11) INSTALL PROPOSED 12" WATERLINE "A" FROM STA. 27+09.89 TO STA. 41+44.00.
INSTALL TEMPORARY BLIND FLANGE AT STA. 41+44.00.
CONNECT PROPOSED 8" WATERLINE "F" TO PROPOSED 12" WATERLINE "A"
AT STA. 34+70.55
INSTALL PROPOSED 16" WATERLINE "A" FROM STA. 55+00.00 TO STA. 69+31.34.
INSTALL TEMPORARY BLIND FLANGE AT STA. 55+00.00.

12) INSTALL PROPOSED 8" WATERLINE "G".

13) INSTALL PROPOSED 8" WATERLINE "J".

14) INSTALL PROPOSED 8" WATERLINE "L".

15) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 9+53.00 TO STA. 10+51.27.
REMOVE TEMPORARY CONNECTION TO EXISTING 16" WATERLINE INSTALLED IN PHASE 2.
CONNECT PROPOSED 8" WATERLINE "K" TO PROPOSED 16" WATERLINE "A" AT STA. 10+51.27.

16) CONNECT PROPOSED 12" WATERLINE "A" TO EXISTING 12" WATERLINE AT STA. 27+09.89.
CONNECT PROPOSED 16" WATERLINE "A" TO EXISTING 16" WATERLINE AT STA. 69+31.34.

17) CONNECT PROPOSED 8" WATERLINE "J" TO EXISTING 8" WATERLINE AT STA. 11+43.00.
CONNECT PROPOSED 8" WATERLINE "L" TO EXISTING 8" WATERLINE AT STA. 11+84.79.

18) INSTALL PROPOSED 12" AND 16" WATERLINE "A" FROM STA. 41+44.00 TO STA. 55+00.00.

19) ABANDON TEMPORARY 8" WATERLINE "M".

20) INSTALL PROPOSED 6" WATERLINE "H". BORE WATERLINE UNDER EXISTING YALE AVE.
CONNECT PROPOSED 8" WATERLINE "H" TO EXISTING 6" WATERLINE AT STA. 6+91.41.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TMUA-W 14-82

WATERLINE CONSTRUCTION SEQUENCE NOTES

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18	APPROVED:
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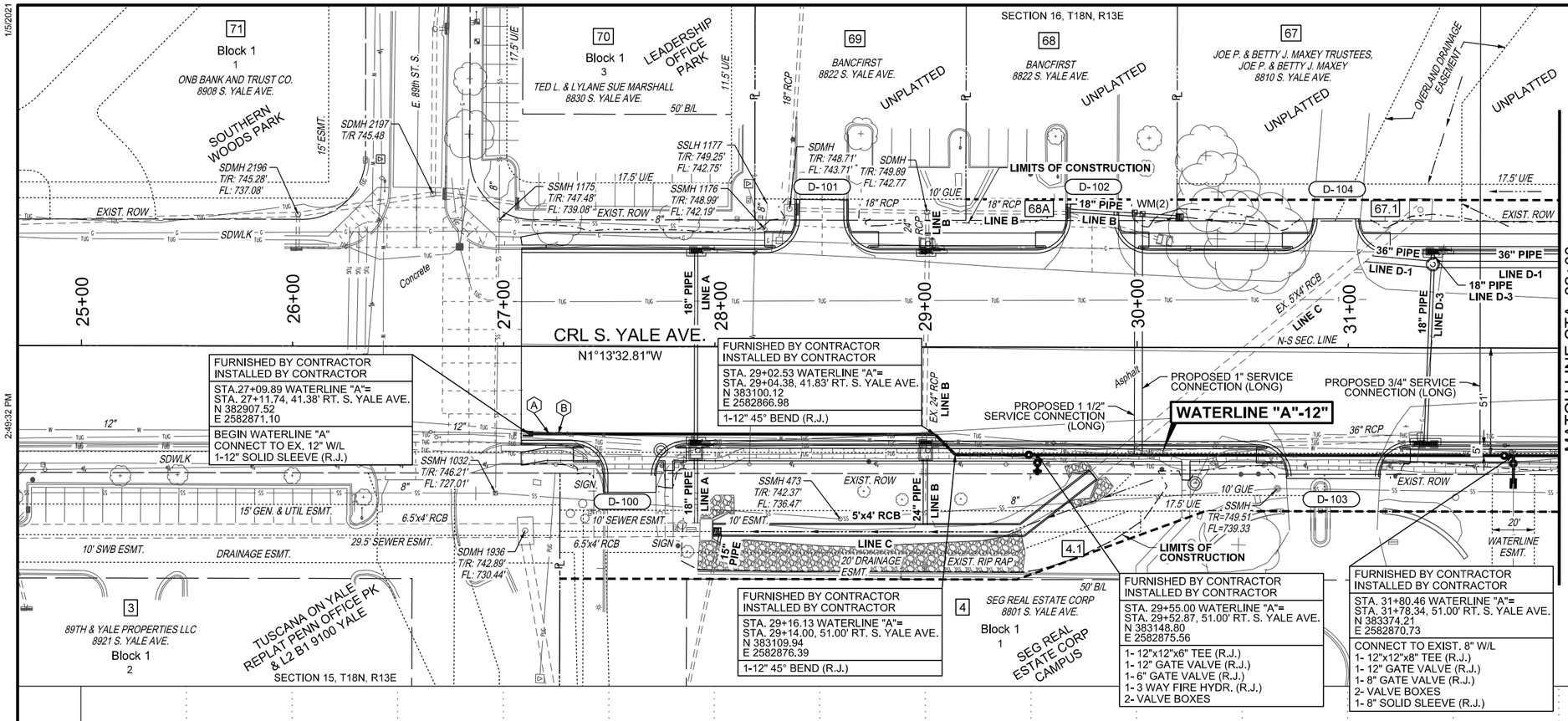
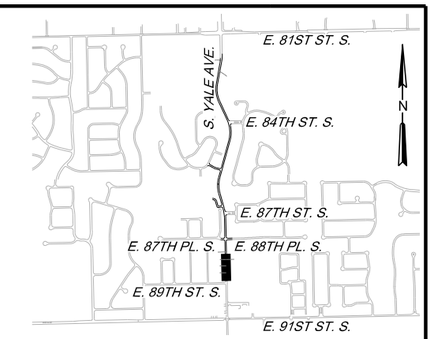




KEYMAP

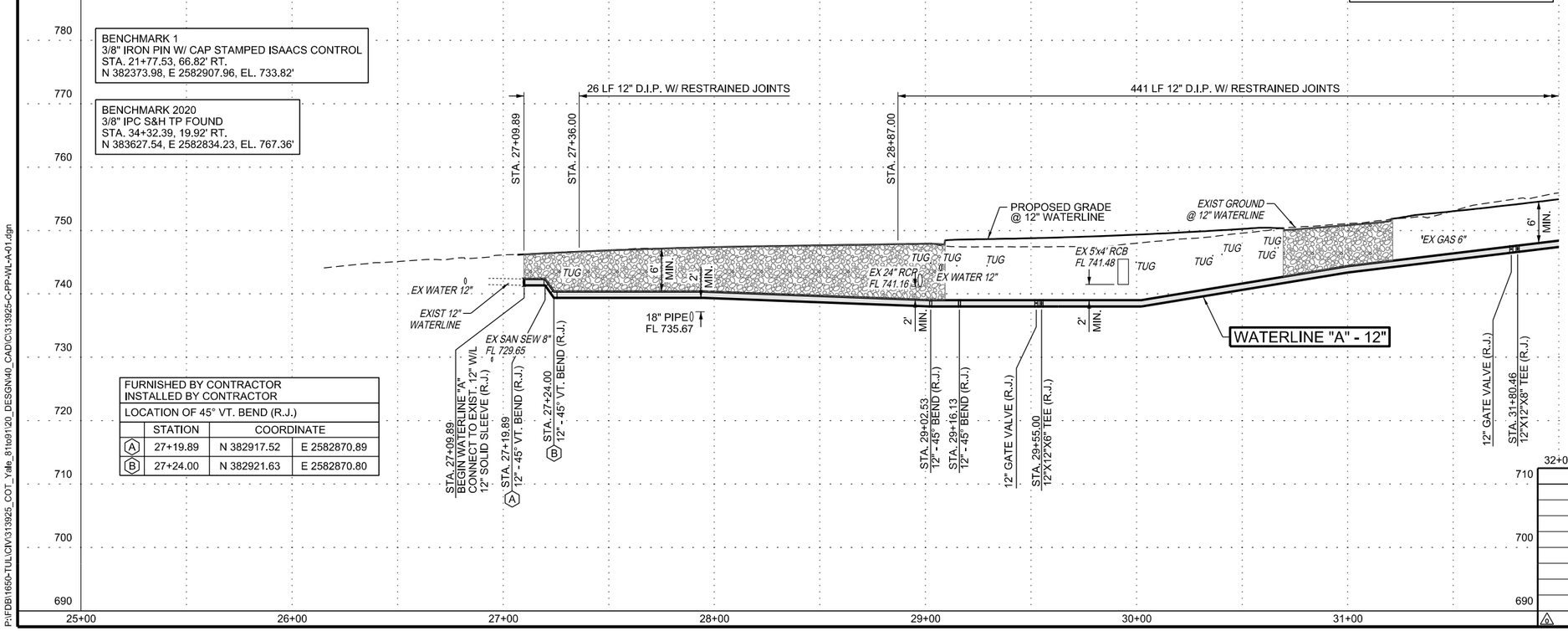
LEGEND

PAVEMENT REMOVAL

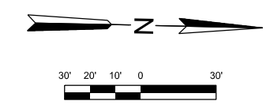
WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
3. SEE SHEET 17 , SUMMARIES (4) FOR DRIVEWAY, SIDEWALK AND PAVEMENT REMOVAL INFORMATION.
4. EXISTING WATER METERS TO BE RECONNECTED TO NEW WATERLINE AFTER THE NEW LINE HAS BEEN CHLORINATED, TESTED AND ACCEPTED. EXACT LOCATION OF WATER METER TIE-IN SHALL BE DETERMINED IN THE FIELD.
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR			
LOCATION OF 45° VT. BEND (R.J.)			
	STATION	COORDINATE	
A	27+19.89	N 382917.52	E 2582870.89
B	27+24.00	N 382921.63	E 2582870.80



SCALE: 1" = 30'-0"

TMUA-W 14-82

WATERLINE "A" - 12" LINE
PLAN AND PROFILE (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR		
VERTICAL: 1"= 10'	LEAD ENGR	CEW	10/20
	RECOMMENDED		
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-PP-WL-A-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 147 OF 334 SHEETS

1/5/2021

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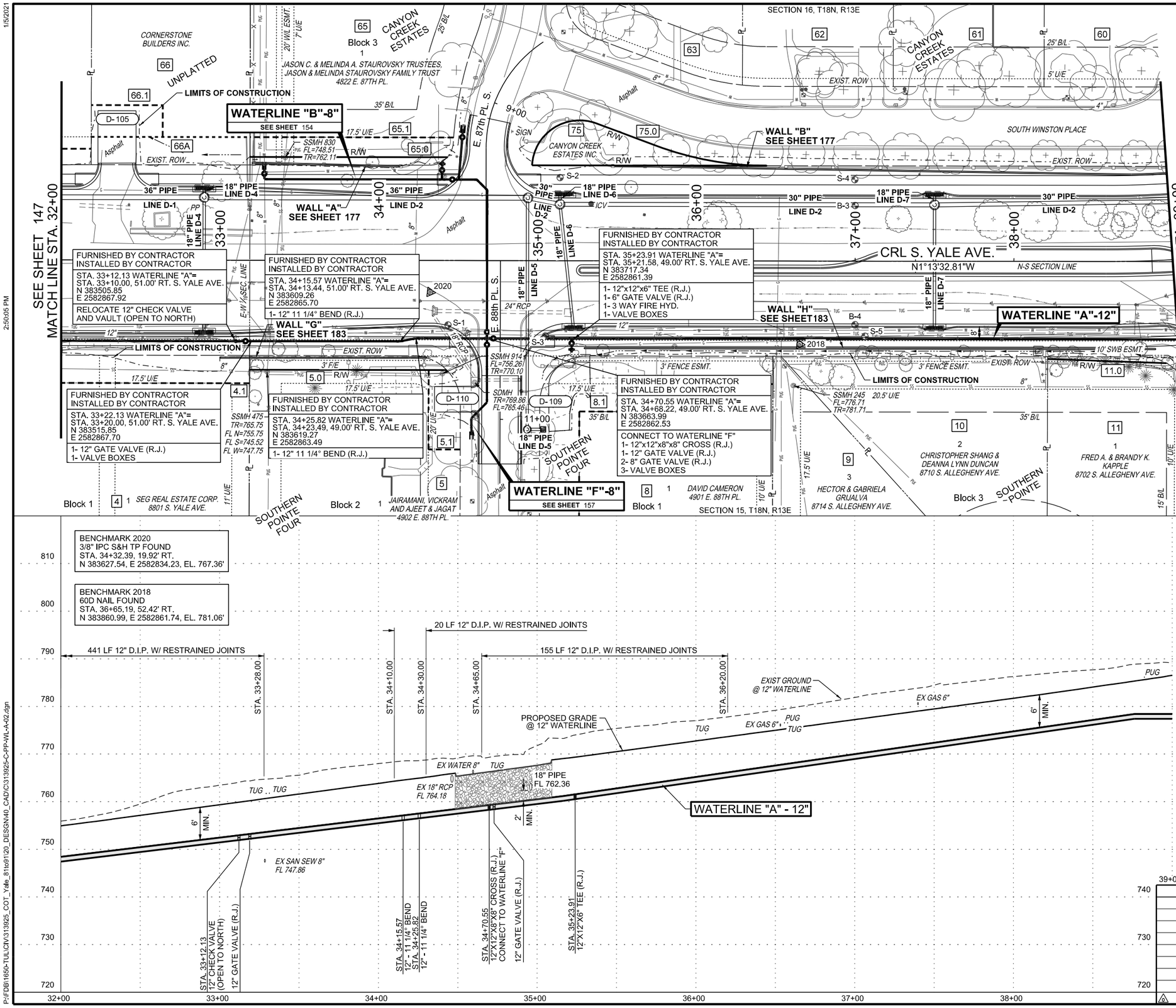

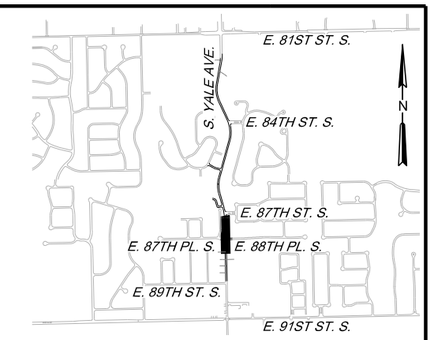

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
3. SEE SHEET 17 , SUMMARIES (4) FOR DRIVEWAY, SIDEWALK AND PAVEMENT REMOVAL INFORMATION.
4. EXISTING WATER METERS TO BE RECONNECTED TO NEW WATERLINE AFTER THE NEW LINE HAS BEEN CHLORINATED, TESTED AND ACCEPTED. EXACT LOCATION OF WATER METER TIE-IN SHALL BE DETERMINED IN THE FIELD.
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

TMUA-W 14-82

WATERLINE "A" - 12" LINE
PLAN AND PROFILE (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR			
	FIELD MGR	RCW	9/20	
	LEAD ENGR	CEW	10/20	
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-WL-A-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 148 OF 334 SHEETS

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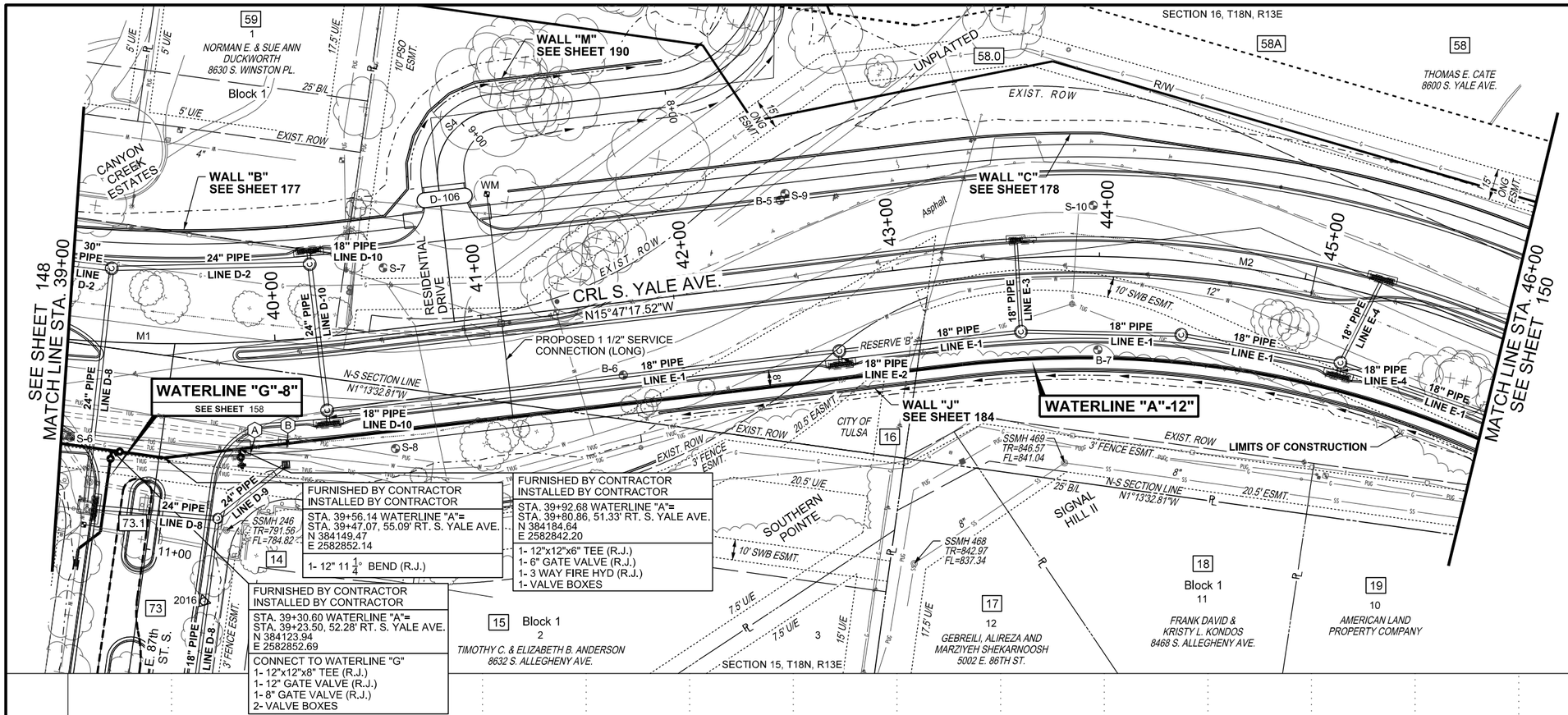
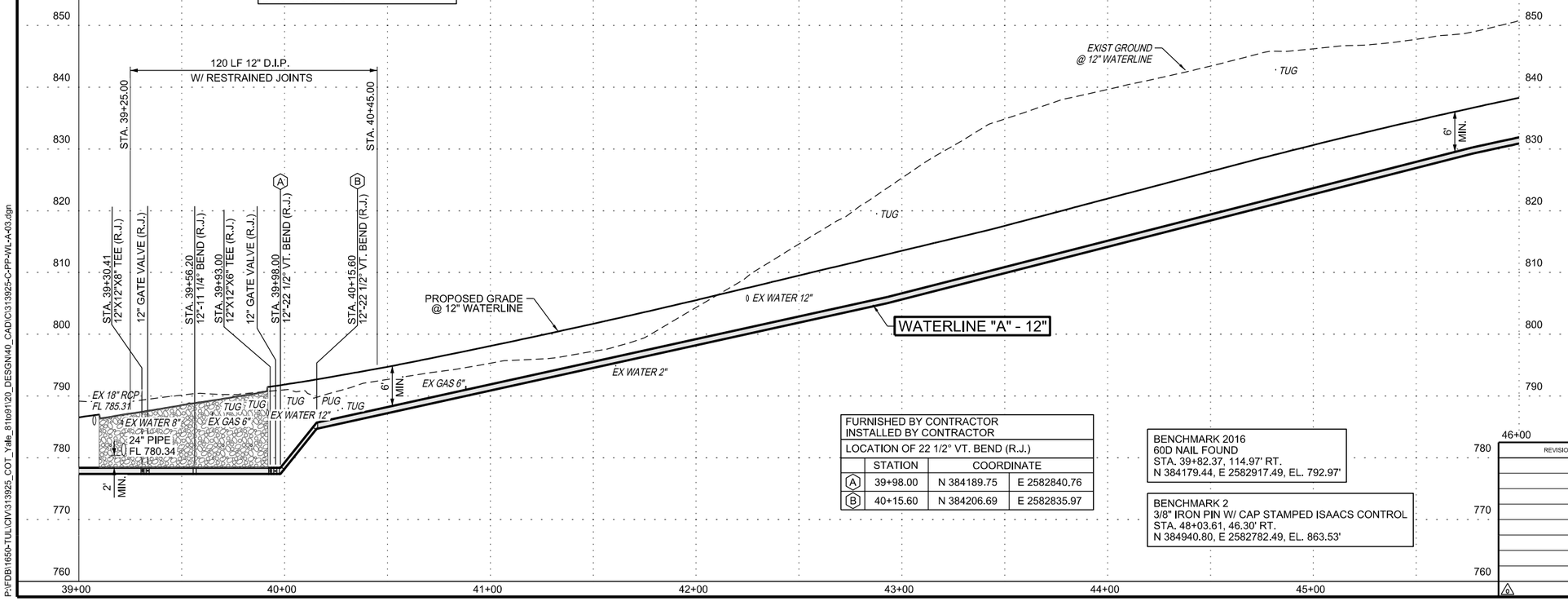


FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 39+56.14 WATERLINE "A"= STA. 39+47.07, 55.09' RT. S. YALE AVE. N 384149.47 E 2582852.14
1- 12" 11 1/4° BEND (R.J.)

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 39+92.68 WATERLINE "A"= STA. 39+80.86, 51.33' RT. S. YALE AVE. N 384184.64 E 2582842.20
1- 12"x12"x6" TEE (R.J.) 1- 6" GATE VALVE (R.J.) 1- 3 WAY FIRE HYD (R.J.) 1- VALVE BOXES

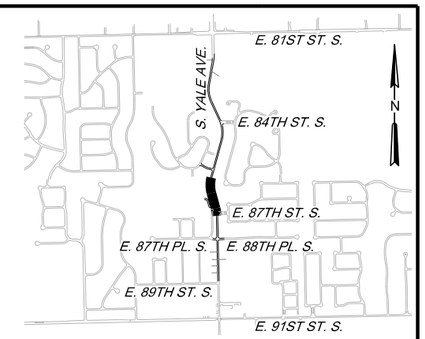
FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 39+30.60 WATERLINE "A"= STA. 39+23.50, 52.28' RT. S. YALE AVE. N 384123.94 E 2582852.69
CONNECT TO WATERLINE "G" 1- 12"x12"x8" TEE (R.J.) 1- 12" GATE VALVE (R.J.) 1- 8" GATE VALVE (R.J.) 2- VALVE BOXES



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR		
LOCATION OF 22 1/2° VT. BEND (R.J.)		
STATION	COORDINATE	
(A) 39+98.00	N 384189.75	E 2582840.76
(B) 40+15.60	N 384206.69	E 2582835.97

BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

TMUA-W 14-82

WATERLINE "A" - 12" LINE
PLAN AND PROFILE (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR		7/20
VERTICAL: 1"= 10'	LEAD ENGR	CEW	6/20
	RECOMMENDED HAS 8-20 DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 313925-C-PP-WL-A-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 149 OF 334 SHEETS

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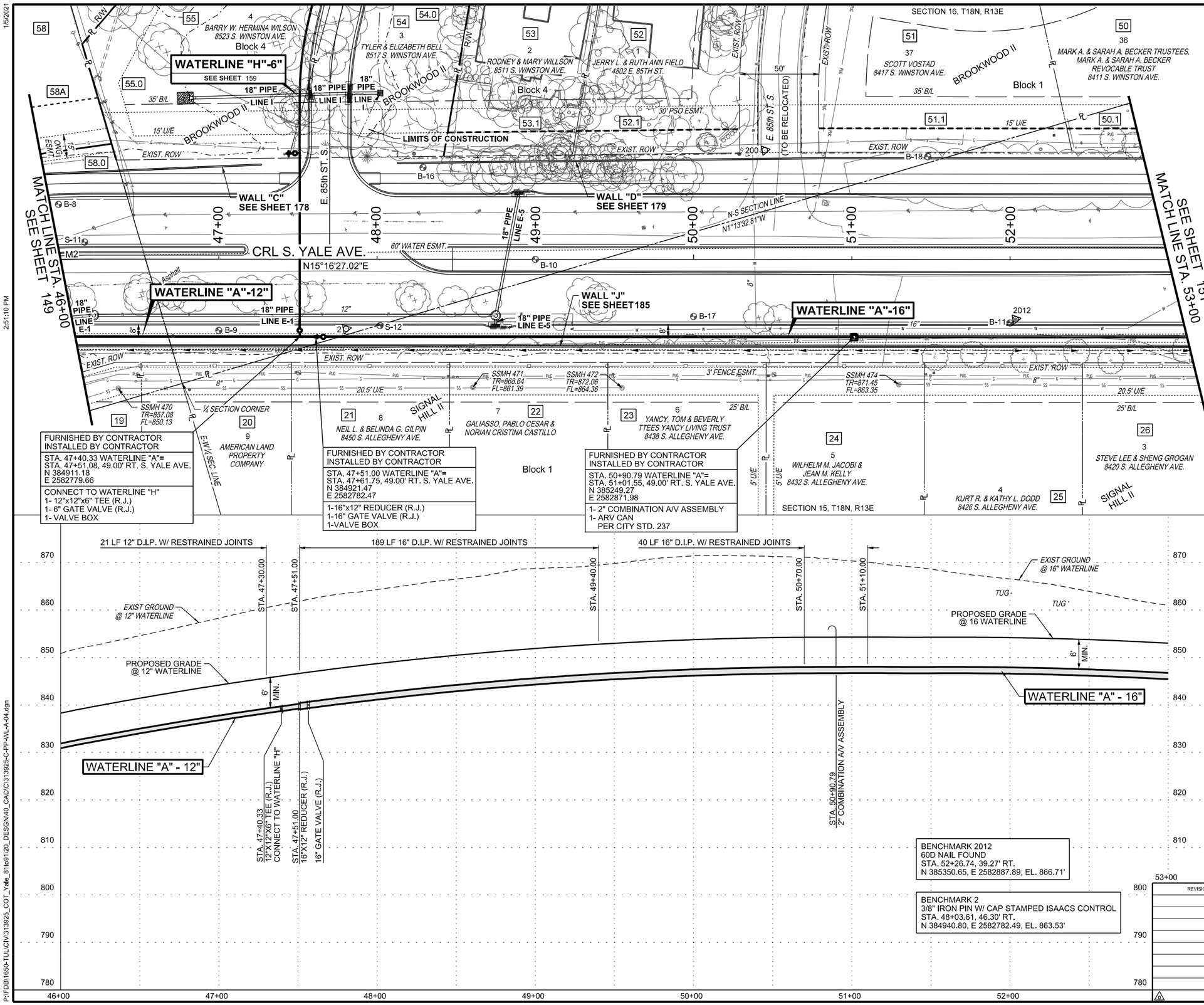

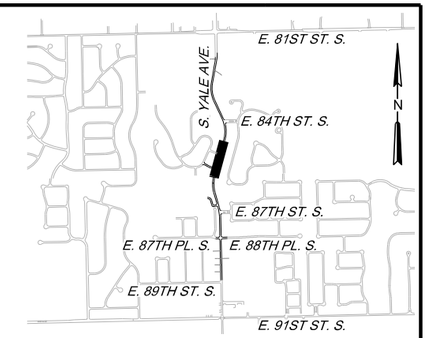

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "A" - 12"-16" LINE
PLAN AND PROFILE (4)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR.			
	FIELD MGR			
	LEAD ENGR	CEW	6/20	
VERTICAL: 1"= 10'	RECOMMENDED HAS 8-20			CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-WL-A-04.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 150 OF 334 SHEETS

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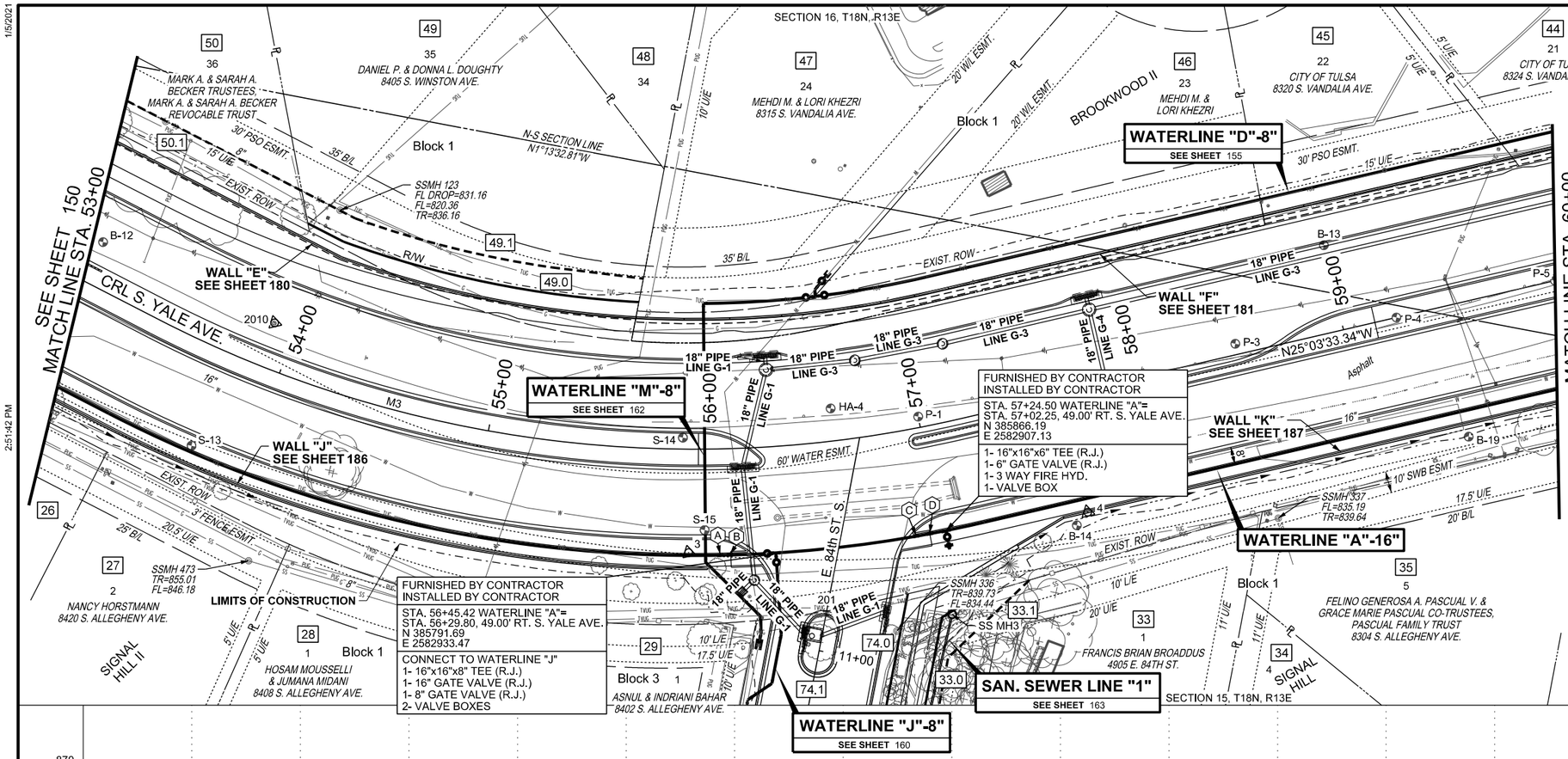

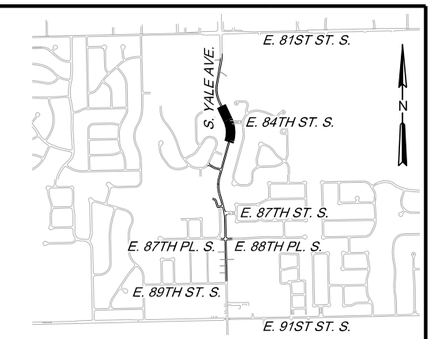

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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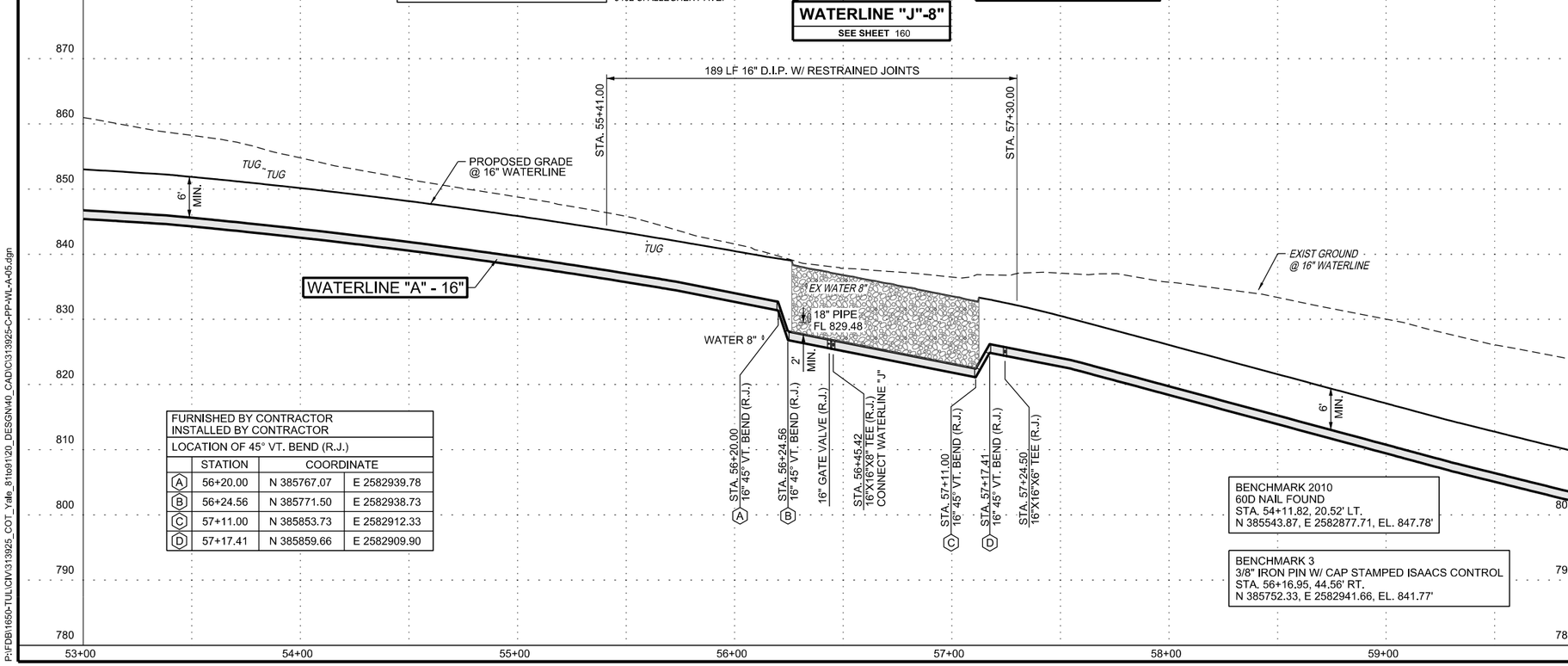

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 45° VT. BEND (R.J.)

	STATION	COORDINATE	
A	56+20.00	N 385767.07	E 2582939.78
B	56+24.56	N 385771.50	E 2582938.73
C	57+11.00	N 385853.73	E 2582912.33
D	57+17.41	N 385859.66	E 2582909.90

BENCHMARK 2010
60D NAIL FOUND
STA. 54+11.82, 20.52' LT.
N 385543.87, E 2582877.71, EL. 847.78'

BENCHMARK 3
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 56+16.95, 44.56' RT.
N 385752.33, E 2582941.66, EL. 841.77'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "A" - 16" LINE
PLAN AND PROFILE (5)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	BEW	7/20
	LEAD ENGR	CEW	8/20
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

DATE: OCTOBER 2018

FILE: 313925-C-PP-WL-A-05.dgn

ATLAS PAGE NO.: 882, 883, 1005, 1006

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SECTION 16, T18N, R13E

BROOKWOOD II
MICHAEL K & TERRIE R GIRLINGHOUSE
VILLAGE PARK OF TULSA
GFTV TULSA OWNER L.L.C. 8222 S. YALE AVE.
CITY OF TULSA
E-W 1/16 SEC. LINE
15' U/E
65' B/L
35' B/L
R/W
EXIST. ROW
17.5' U/E
PSO ESMT.
30'
Block 1
Asphalt
60' WATER ESMT.
45' B/L
10' SWB ESMT.
17.5' ESMT.
CRL S. YALE AVE.
N10°01'31.67"E
N25°03'33.34"W
N-S SECTION LINE
N1°13'32.81"W
SIGNAL HILL PROPERTY OWNERS ASSOC. INC.
BRYON LEE & SHARON JEAN BARRON 8303 S. ALLEGHENY AVE.
SIGNAL HILL
THE VINTAGE ON YALE
TMF II YALE L.L.C. 5202 E. 81ST ST.
SECTION 15, T18N, R13E
COMMERCIAL DRIVE (1)
D-107
24.75' B/L
100' B/L
23' U/E

WATERLINE "D"-8"
SEE SHEET 156

WATERLINE "K"-8"
SEE SHEET 161

WATERLINE "A"-16"

WATERLINE "L"-8"
SEE SHEET 160

LIMITS OF CONSTRUCTION

WALL "F"
SEE SHEET 182

WALL "K"
SEE SHEET 188

WALL "L"
SEE SHEET 189

MATCH LINE STA. 60+00
SEE SHEET 151

MATCH LINE STA. 67+00
SEE SHEET 153

18" PIPE LINE G-3
18" PIPE LINE G-5
24" PIPE LINE G-3
24" PIPE LINE H-1
18" PIPE LINE H-3
18" PIPE LINE H-4
24" PIPE LINE H-1
24" PIPE LINE H-2
30" PIPE LINE H-2
18" PIPE LINE H-5
18" PIPE LINE H-6
18" PIPE LINE H-7
36" PIPE LINE H-2

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

STA. 65+52.42 WATERLINE "A"=
STA. 65+58.69, 49.00' RT. S. YALE AVE.
N 386648.11
E 2582726.70

CONNECT TO WATERLINE "K"
1- 16"x16"x8" TEE (R.J.)
1- 16" GATE VALVE (R.J.)
1- 8" GATE VALVE (R.J.)
2- VALVE BOXES

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

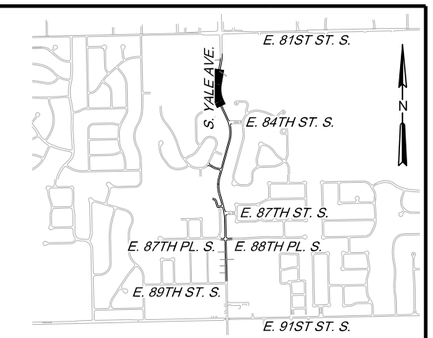
STA. 65+77.83 WATERLINE "A"=
STA. 65+84.09, 49.00' RT. S. YALE AVE.
N 386673.13
E 2582731.12

1- 16"x16"x6" TEE (R.J.)
1- 3 WAY FIRE HYDR. (R.J.)
1- 6" GATE VALVE (R.J.)
1- VALVE BOX

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

STA. 66+15.96 WATERLINE "A"=
STA. 66+22.23, 49.00' RT. S. YALE AVE.
N 386710.68
E 2582737.76

CONNECT TO WATERLINE "L"
1- 16"x16"x8" TEE (R.J.)
1- 16" GATE VALVE (R.J.)
1- 8" GATE VALVE (R.J.)
2- VALVE BOXES



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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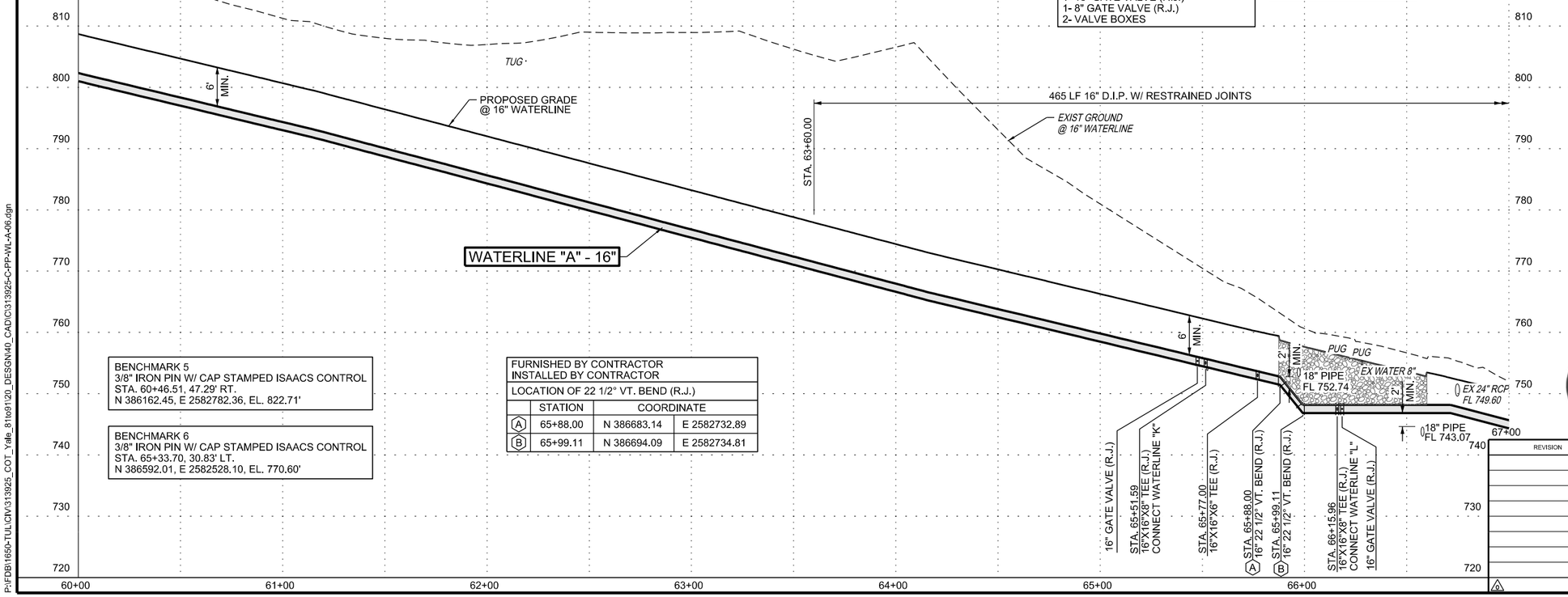
N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"



BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 60+46.51, 47.29' RT.
N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 22 1/2° VT. BEND (R.J.)

	STATION	COORDINATE	
A	65+88.00	N 386683.14	E 2582732.89
B	65+99.11	N 386694.09	E 2582734.81

REVISION	BY	DATE

TMUA-W 14-82

WATERLINE "A" - 16" LINE
PLAN AND PROFILE (6)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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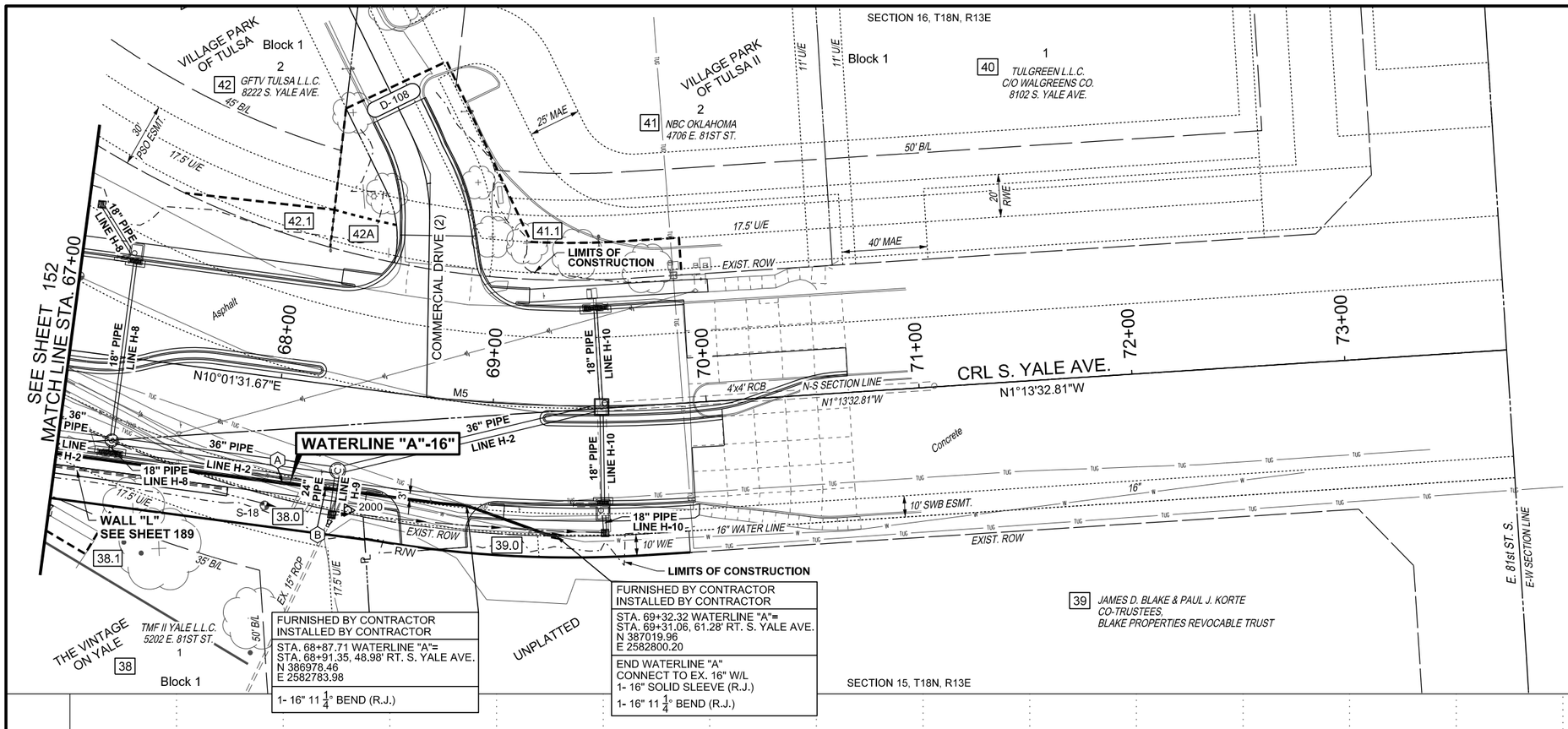
Tulsa, OK 74103-3513
(918) 492-1600

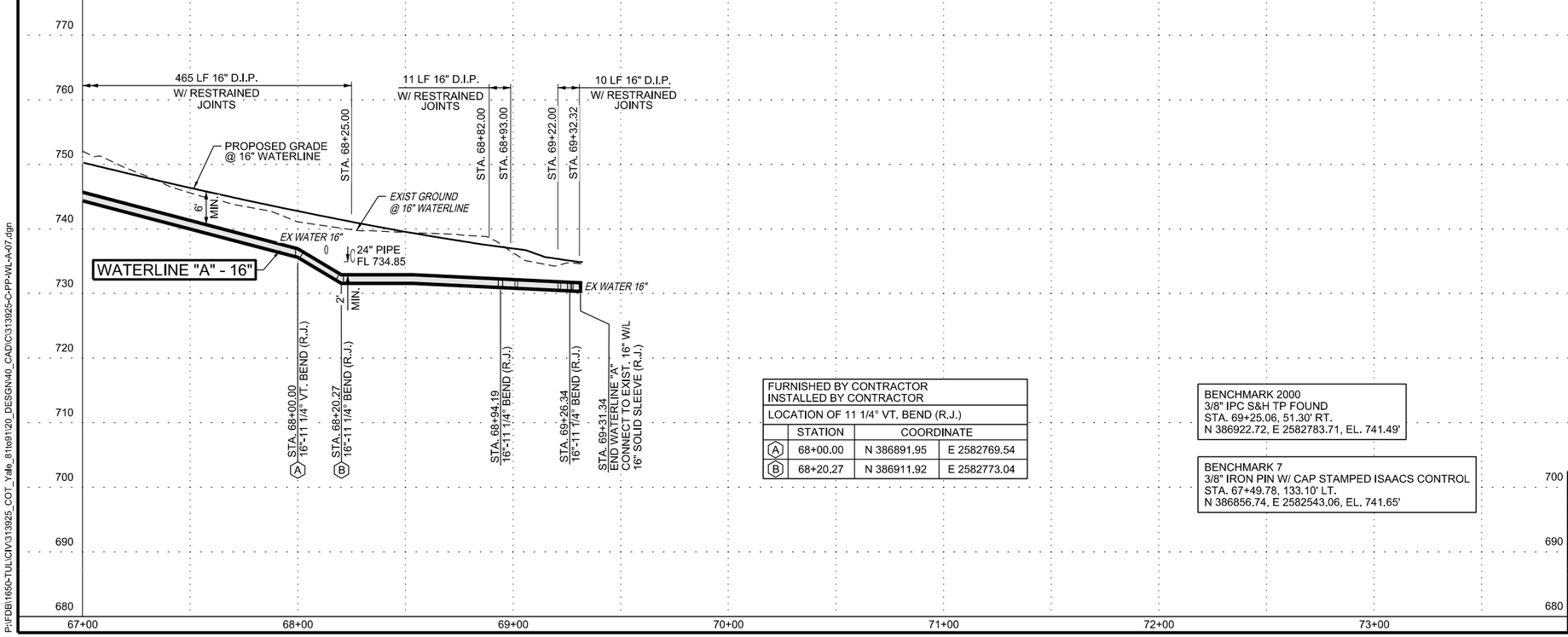
PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR			
	FIELD MGR	ZWM	4/20	
	LEAD ENGR	CEW	4/20	
VERTICAL: 1"= 10'	RECOMMENDED HBS 8-20 DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-PP-WL-A-06.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 152 OF 334 SHEETS



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 68+87.71 WATERLINE "A"= STA. 68+91.35, 48.98' RT. S. YALE AVE. N 386978.46 E 2582783.98
1- 16" 11 $\frac{1}{4}$° BEND (R.J.)

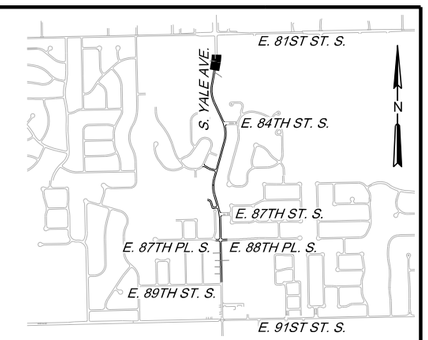
FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 69+32.32 WATERLINE "A"= STA. 69+31.06, 61.28' RT. S. YALE AVE. N 387019.96 E 2582800.20
END WATERLINE "A" CONNECT TO EX. 16" W/L 1- 16" SOLID SLEEVE (R.J.)
1- 16" 11 $\frac{1}{4}$° BEND (R.J.)



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR		
LOCATION OF 11 1/4° VT. BEND (R.J.)		
STATION	COORDINATE	
(A) 68+00.00	N 386891.95	E 2582769.54
(B) 68+20.27	N 386911.92	E 2582773.04

BENCHMARK 2000
3/8" IPC S&H TP FOUND
STA. 69+25.06, 51.30' RT.
N 386922.72, E 2582783.71, EL. 741.49'

BENCHMARK 7
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 67+49.78, 133.10' LT.
N 386856.74, E 2582543.06, EL. 741.65'



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
3. SEE SHEET 17 , SUMMARIES (4) FOR DRIVEWAY, SIDEWALK AND PAVEMENT REMOVAL INFORMATION.
4. EXISTING WATER METERS TO BE RECONNECTED TO NEW WATERLINE AFTER THE NEW LINE HAS BEEN CHLORINATED, TESTED AND ACCEPTED. EXACT LOCATION OF WATER METER TIE-IN SHALL BE DETERMINED IN THE FIELD.
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDEK 16476 OKLAHOMA

TMUA-W 14-82

WATERLINE "A" - 16" LINE
PLAN AND PROFILE (7)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR		
	LEAD ENGR		6/20
VERTICAL: 1"= 10'	RECOMMENDED HAS 8-20		
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-PP-WL-A-07.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 153 OF 334 SHEETS

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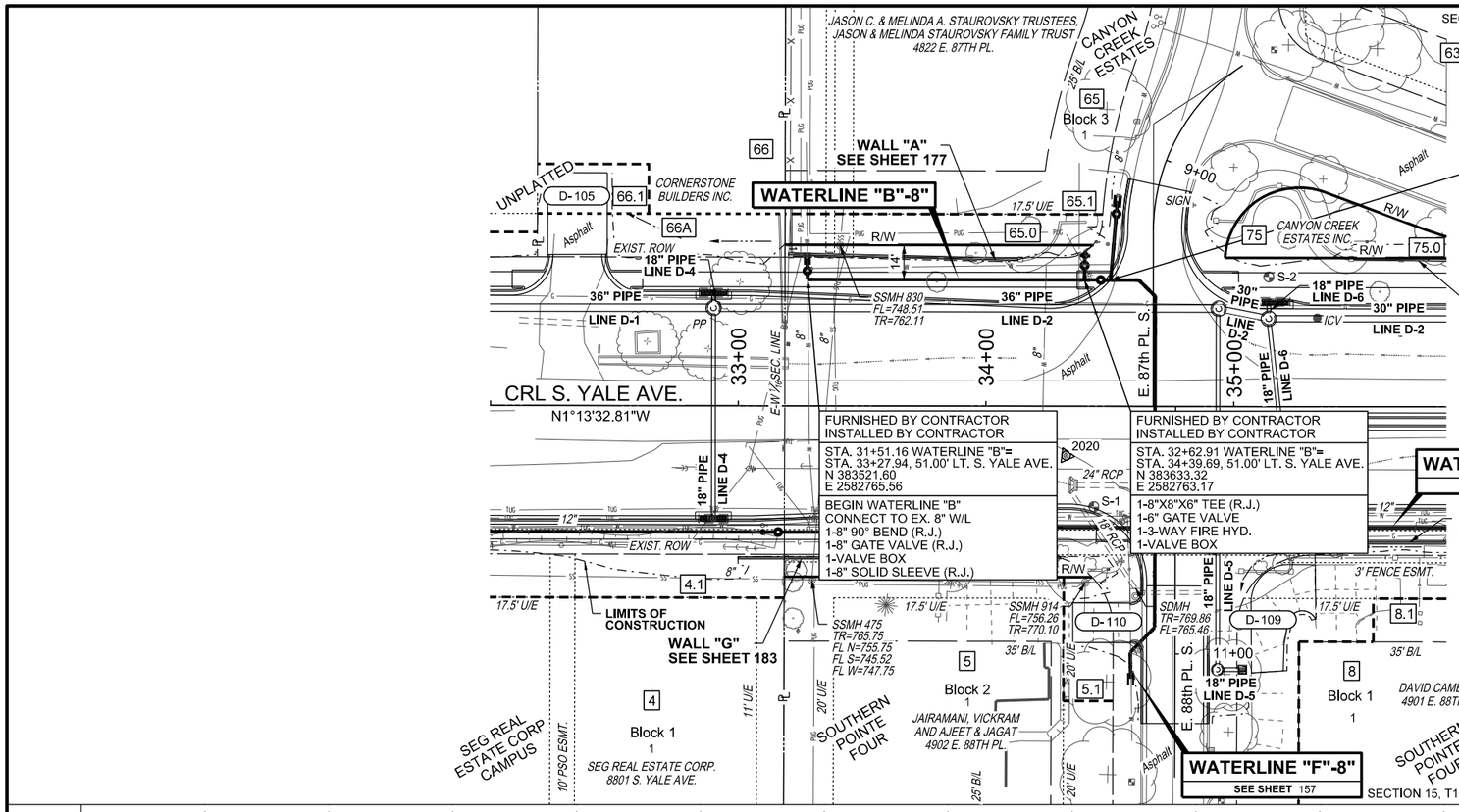

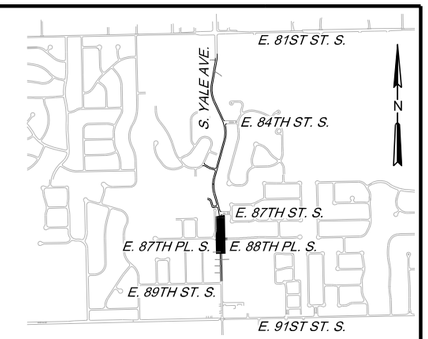

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
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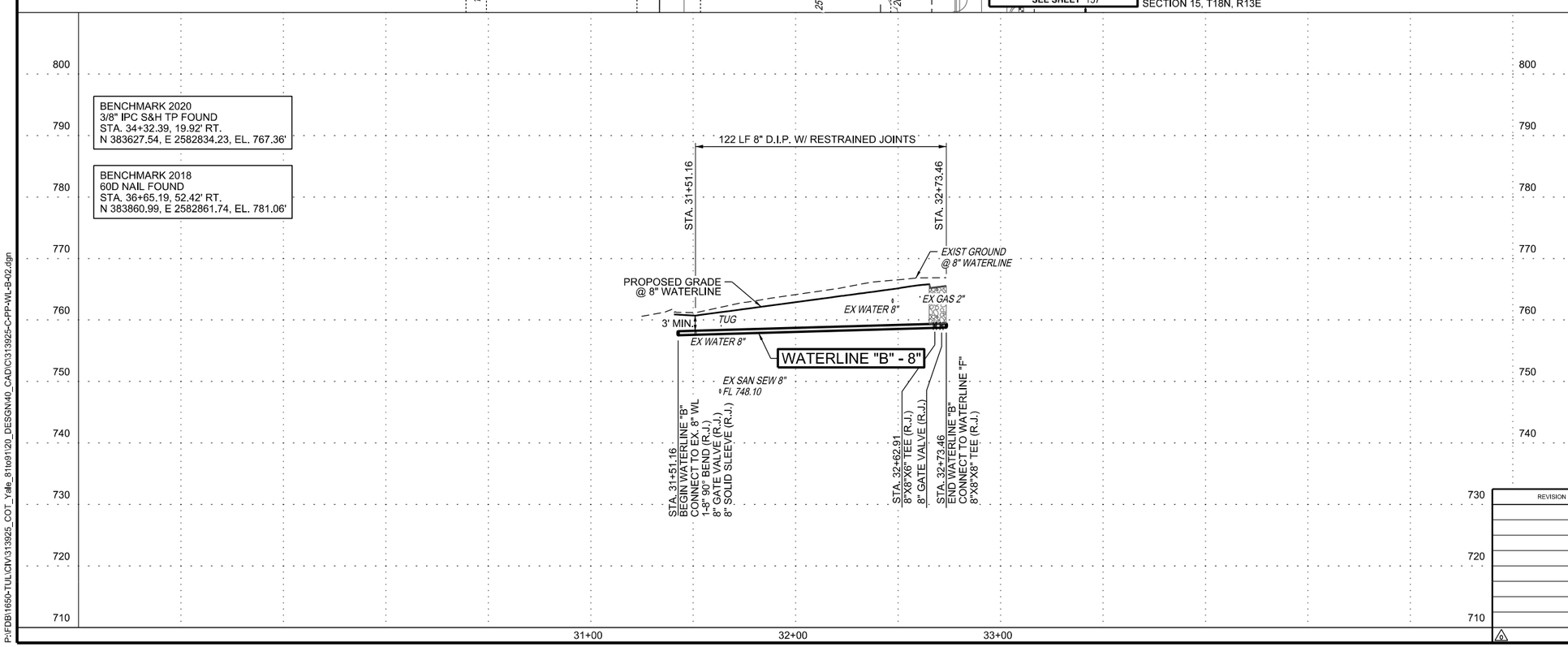
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.



SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "B" - 8" LINE
PLAN AND PROFILE (8)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

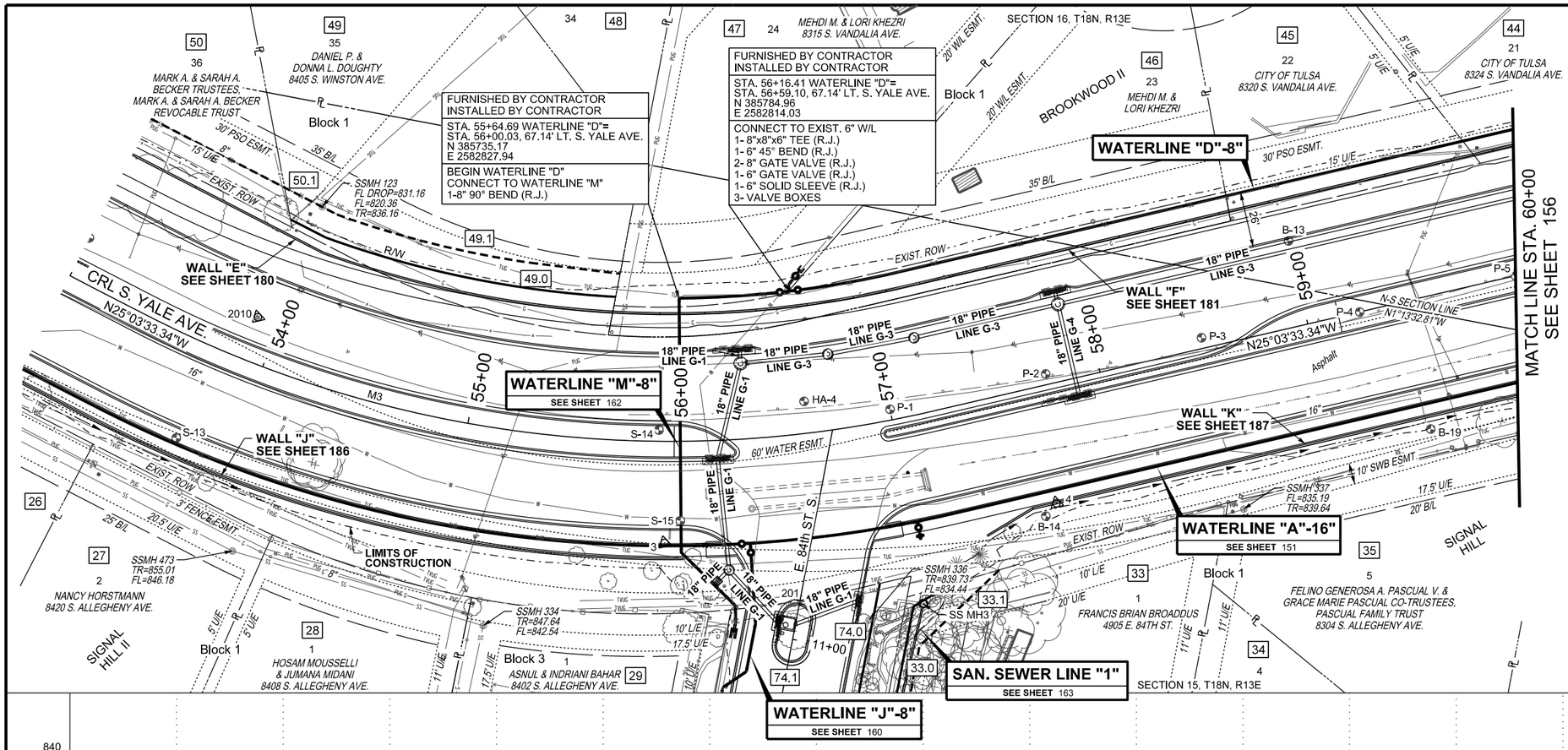
BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

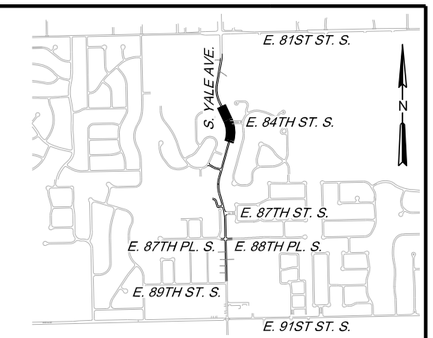
REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	ZCM	6/20
VERTICAL: 1"= 10'	LEAD ENGR	CEW	6/20
	RECOMMENDED DESIGN MANAGER	HAL	8-20

APPROVED:
CITY ENGINEER

FILE: 313925-C-PP-WL-B-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006





KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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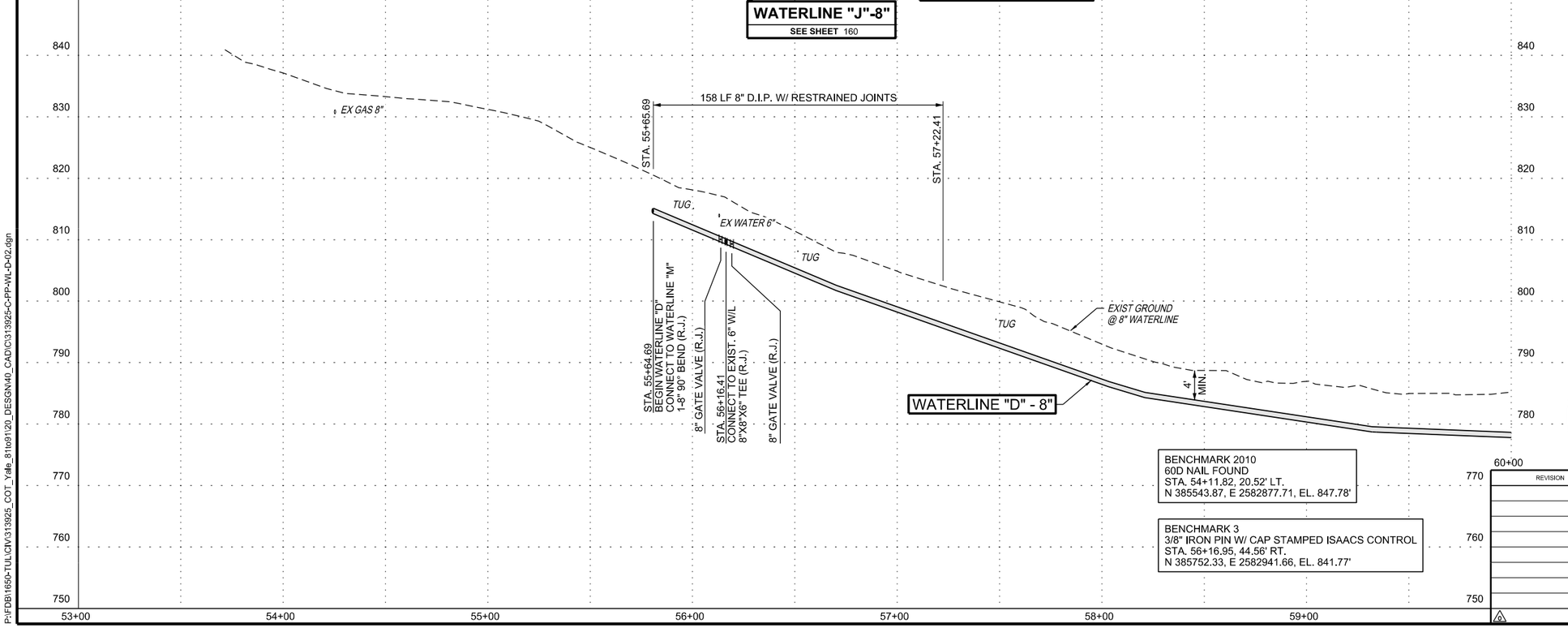

BENCHMARK 2010
60D NAIL FOUND
STA. 54+11.82, 20.52' LT.
N 385543.87, E 2582877.71, EL. 847.78'

BENCHMARK 3
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 56+16.95, 44.56' RT.
N 385752.33, E 2582941.66, EL. 841.77'

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "D" - 8" LINE
PLAN AND PROFILE (9)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	RWM	7/20
	LEAD ENGR	CEW	6/20
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8/20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

DATE: OCTOBER 2018

FILE: 313925-C-PP-WL-D-02.dgn

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 155 OF 334 SHEETS

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SECTION 16, T18N, R13E

BROOKWOOD II

VILLAGE PARK OF TULSA

MICHAEL K & TERRIE R GIRLINGHOUSE

GFTV TULSA OWNER L.L.C. 8222 S. YALE AVE.

CITY OF TULSA

E-W 1/16 SEC. LINE

15' U/E

65' B/L

35' B/L

R/W

EXIST. ROW

17.5' U/E

PSO ESMT.

30'

WATERLINE "D"-8"

LIMITS OF CONSTRUCTION

WALL "F" SEE SHEET 182

MATCH LINE STA. 60+00 SEE SHEET 155

N25°03'33.34"W

Block 1

HA-1

Asphalt

P-12

60' WATER ESMT.

P-13

45' B/L

P-10

P-11

P-9

P-8

HA-2

2003

M4

P-7

HA-3

P-6

P-5

16"

10' SWB ESMT.

CRL S. YALE AVE.

N10°01'31.67"E

WATERLINE "K"-8"

SEE SHEET 161

EXIST. ROW

17.5' ESMT.

18" PIPE LINE G-3

18" PIPE LINE G-5

24" PIPE LINE G-3

24" PIPE LINE H-1

18" PIPE LINE H-3

18" PIPE LINE H-4

24" PIPE LINE H-2

30" PIPE LINE H-2

18" PIPE LINE H-5

18" PIPE LINE H-6

8" PIPE LINE H-6

18" PIPE LINE K-7

36" PIPE LINE H-2

61+00

62+00

63+00

64+00

65+00

66+00

38.0

38.1

38

37

36

35

WALL "K" SEE SHEET 188

B-20

N-S SECTION LINE

N1°1332.81"W.

WATERLINE "A"-16"

SEE SHEET 152

2004

S-16

S-17

SIGNAL HILL PROPERTY OWNERS ASSOC. INC.

STAT. ROW

23' U/E

100' B/L

24.75' B/L

COMMERCIAL DRIVE (1)

D-107

11.00

BRYON LEE & SHARON JEAN BARRON 8303 S. ALLEGHENY AVE.

SIGNAL HILL

SECTION 15, T18N, R13E

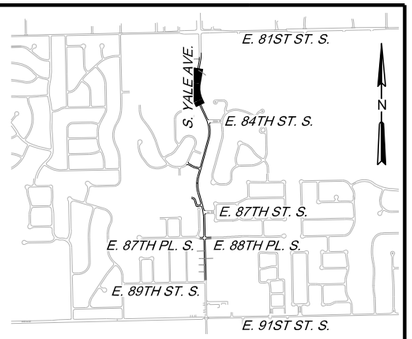
THE VINTAGE ON YALE

TMF II YALE L.L.C. 5202 E. 81ST ST.

WATERLINE "L"-8"

SEE SHEET 160

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 65+86.25 WATERLINE "D"= STA. 65+72.93, 137.02' LT. S. YALE AVE. N 386694.52 E 2582545.99
END WATERLINE "D" CONNECT TO WATERLINE "K" 1- 8" 90° BEND (R.J.)



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
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5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

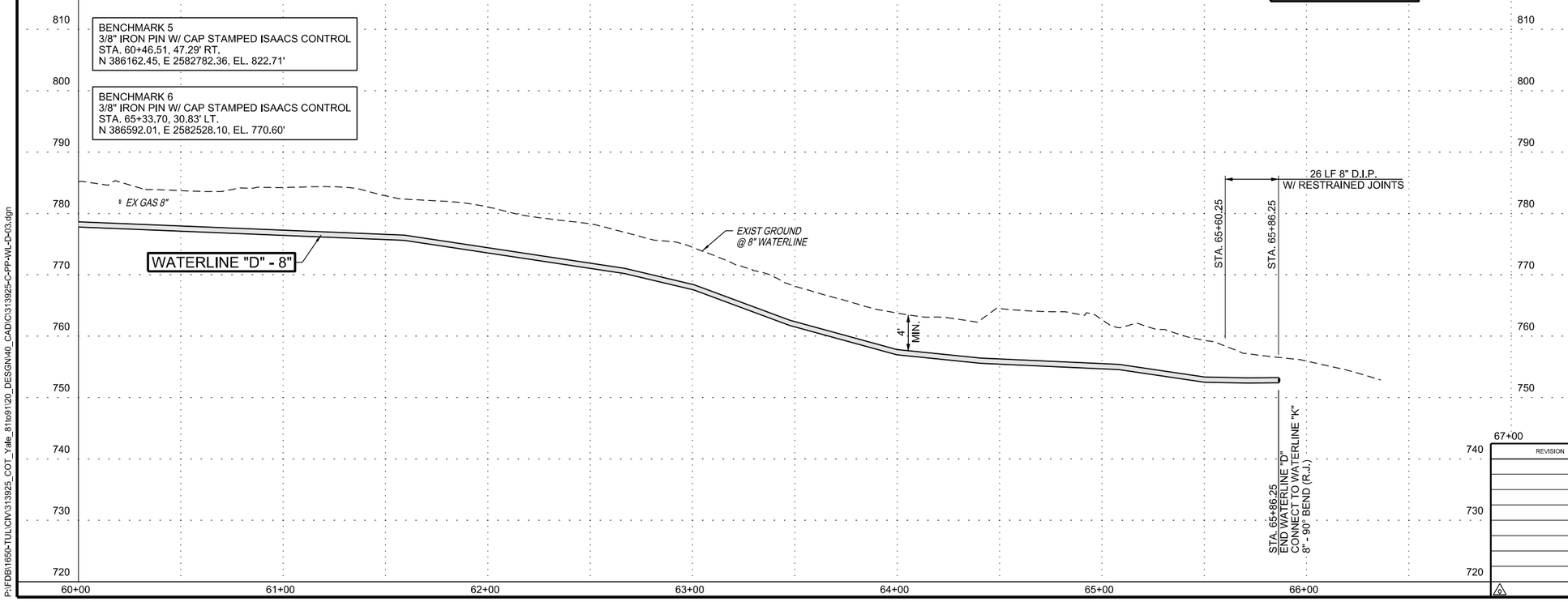
N

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL STA. 60+46.51, 47.29' RT. N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL STA. 65+33.70, 30.83' LT. N 386592.01, E 2582528.10, EL. 770.60'



REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

TMUA-W 14-82

WATERLINE "D" - 8" LINE
PLAN AND PROFILE (10)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

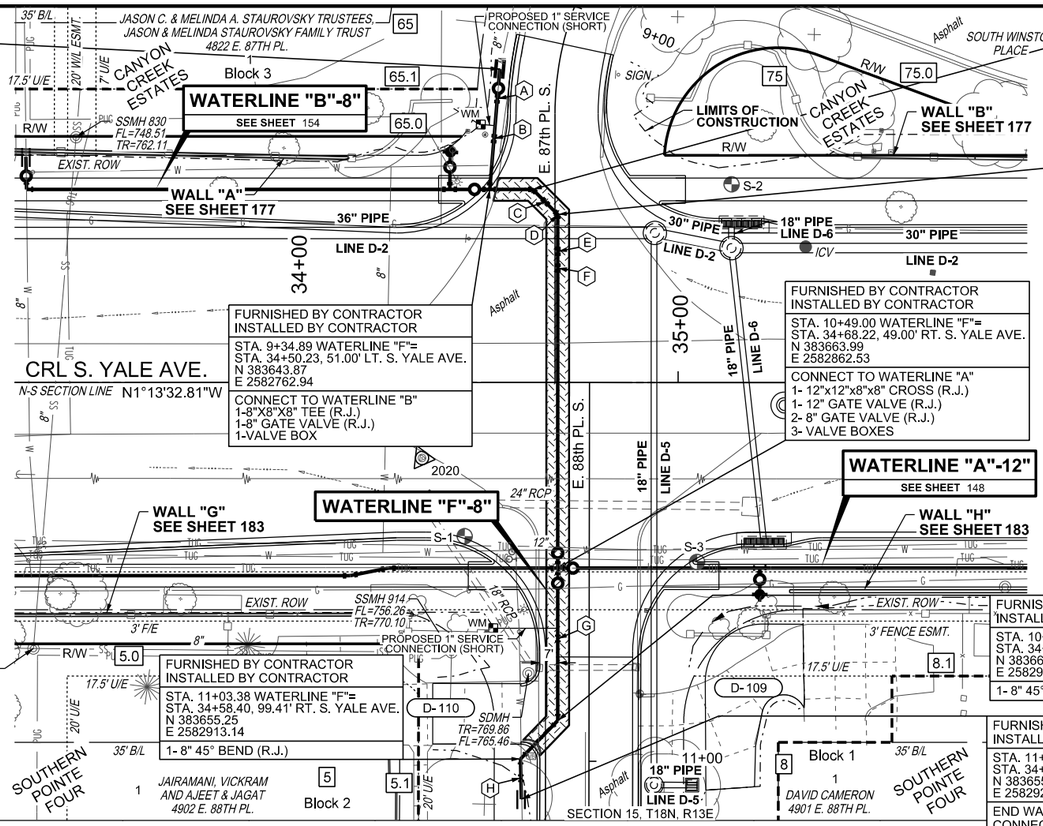
PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR.			
	FIELD MGR		7/20	
	LEAD ENGR	GEW	6/20	
VERTICAL: 1"= 10'	RECOMMENDED			
	DESIGN MANAGER	HAS	8-20	CITY ENGINEER

FILE: 313925-C-PP-WL-D-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 156 OF 334 SHEETS



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 9+03.00 WATERLINE "F"= STA. 34+52.92, 82.77' LT. S. YALE AVE. N 383645.88 E 2582731.12
BEGIN WATERLINE "F" CONNECT TO EX. 8" W/L 1- 8" GATE VALVE (R.J.) 1- VALVE BOX 1- 8" SOLID SLEEVE (R.J.)

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 9+34.89 WATERLINE "F"= STA. 34+50.23, 51.00' LT. S. YALE AVE. N 383643.87 E 2582762.94
CONNECT TO WATERLINE "B" 1-8"X8"X8" TEE (R.J.) 1-8" GATE VALVE (R.J.) 1-VALVE BOX

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 9+46.27 WATERLINE "F"= STA. 34+61.61, 51.00' LT. S. YALE AVE. N 383655.24 E 2582762.70
1- 8" 45° BEND (R.J.)

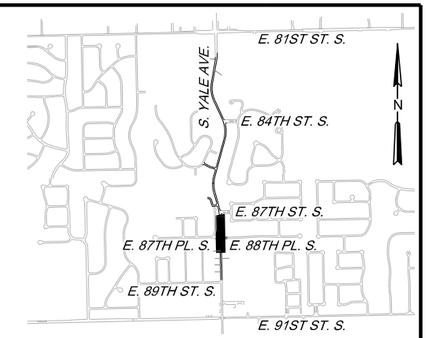
FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 9+55.61 WATERLINE "F"= STA. 34+68.22, 44.39' LT. S. YALE AVE. N 383661.99 E 2582769.16
1- 8" 45° BEND (R.J.)

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 10+49.00 WATERLINE "F"= STA. 34+68.22, 49.00' RT. S. YALE AVE. N 383663.99 E 2582862.53
CONNECT TO WATERLINE "A" 1- 12"x12"x8"x8" CROSS (R.J.) 1- 12" GATE VALVE (R.J.) 2- 8" GATE VALVE (R.J.) 3- VALVE BOXES

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 10+89.26 WATERLINE "F"= STA. 34+68.22, 89.26' RT. S. YALE AVE. N 383664.85 E 2582902.78
1- 8" 45° BEND (R.J.)

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 11+03.38 WATERLINE "F"= STA. 34+58.40, 99.41' RT. S. YALE AVE. N 383655.25 E 2582913.14
1- 8" 45° BEND (R.J.)

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR
STA. 11+14.00 WATERLINE "F"= STA. 34+58.59, 110.03' RT. S. YALE AVE. N 383655.66 E 2582923.75
END WATERLINE "F" CONNECT TO EX. 8" W/L 1- 8" SOLID SLEEVE (R.J.)



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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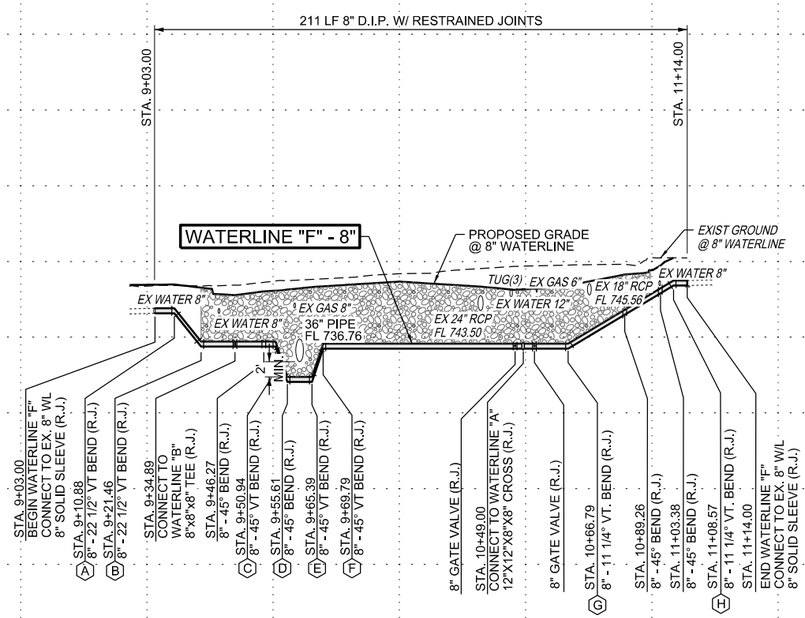
BENCHMARK 2020
3/8" IPC S&H TP FOUND
STA. 34+32.39, 19.92' RT.
N 383627.54, E 2582834.23, EL. 767.36'

BENCHMARK 2018
60D NAIL FOUND
STA. 36+65.19, 52.42' RT.
N 383860.99, E 2582861.74, EL. 781.06'



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR		
LOCATION OF 22 1/2° VT. BEND (R.J.)		
	STATION	COORDINATE
A	9+10.88	N 383645.38 E 2582738.99
B	9+21.46	N 383644.71 E 2582749.54

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR		
LOCATION OF 45° VT. BEND (R.J.)		
	STATION	COORDINATE
C	9+50.94	N 383658.62 E 2582765.93
D	9+55.61	N 383661.99 E 2582769.16
E	9+65.39	N 383662.20 E 2582778.94
F	9+69.79	N 383662.29 E 2582783.34

FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR		
LOCATION OF 11 1/4° VT. BEND (R.J.)		
	STATION	COORDINATE
G	10+66.79	N 383664.39 E 2582881.12
H	11+08.57	N 383655.45 E 2582918.22

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

TMUA-W 14-82

WATERLINE "F" - 8" LINE
PLAN AND PROFILE (11)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

REVISION	BY	DATE

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR		4/20
VERTICAL: 1"= 10'	LEAD ENGR	CEW	4/20
	RECOMMENDED	HAS	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-PP-WL-E&F-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 157 OF 334 SHEETS

1/5/2021 2:54:58 PM

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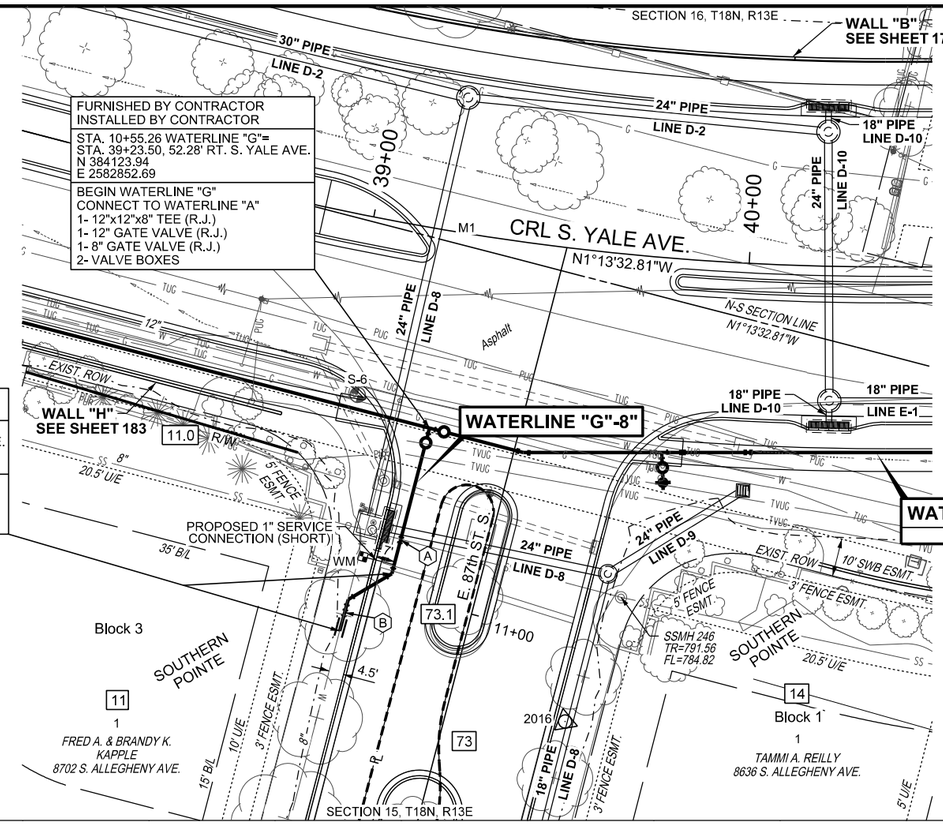


FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

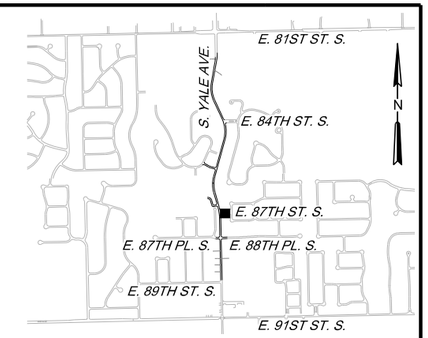
STA. 10+55.26 WATERLINE "G"=
STA. 39+23.50, 52.28' RT. S. YALE AVE.
N 384123.34
E 2582852.69

BEGIN WATERLINE "G"
CONNECT TO WATERLINE "A"
1- 12"x12"x8" TEE (R.J.)
1- 12" GATE VALVE (R.J.)
1- 8" GATE VALVE (R.J.)
2- VALVE BOXES

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

STA. 11+16.98 WATERLINE "G"=
STA. 39+10.63, 109.11' RT. S. YALE AVE.
N 384115.66
E 2582910.71

END WATERLINE "G"
CONNECT EX. 8" W/L
1- 8" SOLID SLEEVE (R.J.)
2- 8" 45° BENDS (R.J.)



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

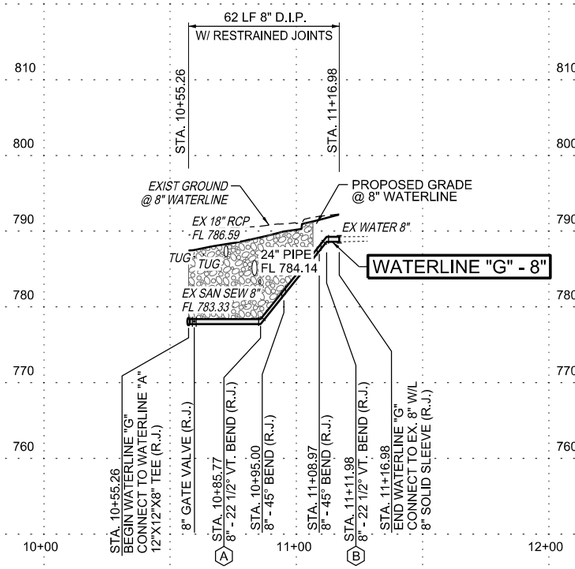
1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
3. SEE SHEET 17 , SUMMARIES (4) FOR DRIVEWAY, SIDEWALK AND PAVEMENT REMOVAL INFORMATION.
4. EXISTING WATER METERS TO BE RECONNECTED TO NEW WATERLINE AFTER THE NEW LINE HAS BEEN CHLORINATED, TESTED AND ACCEPTED. EXACT LOCATION OF WATER METER TIE-IN SHALL BE DETERMINED IN THE FIELD.
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 22 1/2° VT. BEND (R.J.)

	STATION	COORDINATE	
(A)	10+85.77	N 384124.59	E 2582883.19
(B)	11+11.98	N 384115.56	E 2582905.71

BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'



20' 10' 0 20'

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "G" - 8" LINE
PLAN AND PROFILE (12)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

REVISION	BY	DATE

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	RCM	7/20
VERTICAL: 1"= 10'	LEAD ENGR	CEW	6/20
	RECOMMENDED	HAJ	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-PP-WL-G&I-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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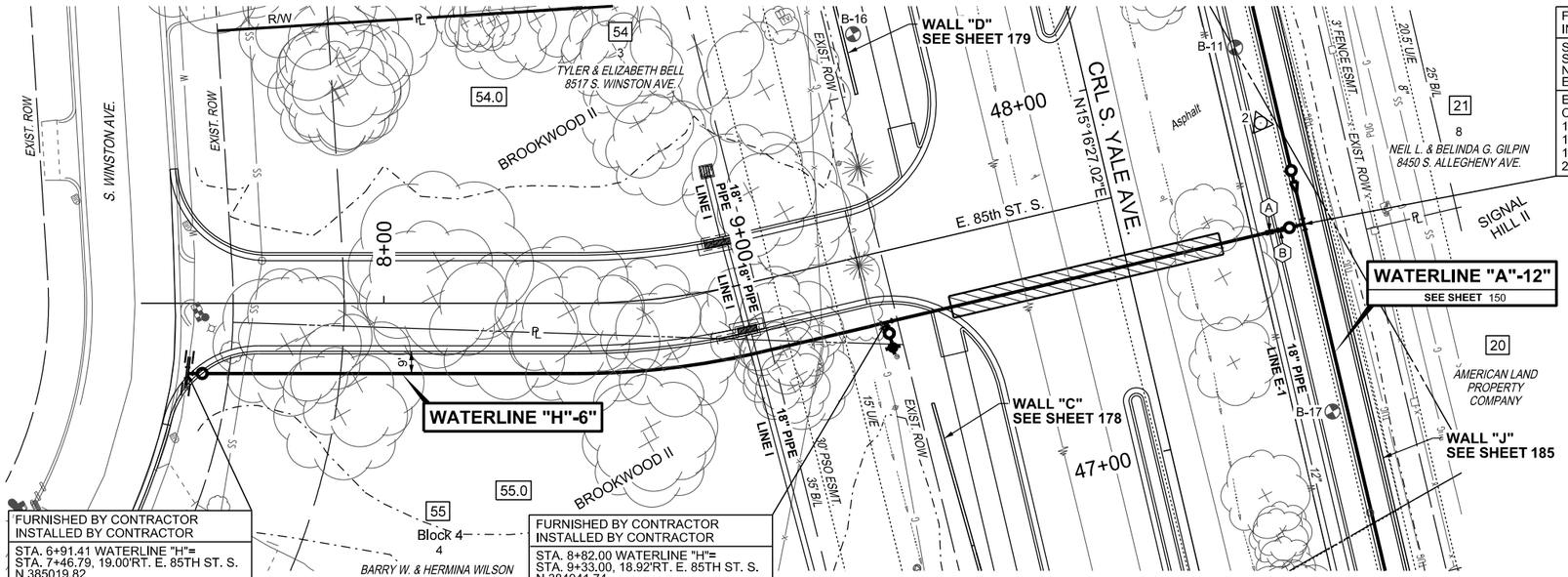
SECTION 16, T18N, R13E

REFER TO SHEET 110
FOR ADDITIONAL FIRE HYDRANT
ON S. WINSTON AVE.



FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

STA. 6+91.41 WATERLINE "H"=
STA. 7+46.79, 19.00'RT. E. 85TH ST. S.
N 385019.82
E 2582494.86

BEGIN WATERLINE "H"
CONNECT TO EX. 6" W/L
1- 6"x6"x6" TEE (R.J.)
1- 6" GATE VALVE (R.J.)
2- 6" SOLID SLEEVES (R.J.)
1- VALVE BOX

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

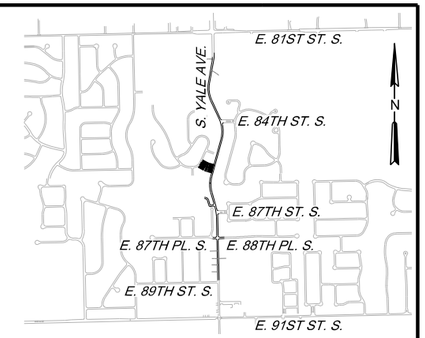
STA. 8+82.00 WATERLINE "H"=
STA. 9+33.00, 18.92'RT. E. 85TH ST. S.
N 384941.74
E 2582667.75

1- 6"x6"x6" TEE (R.J.)
1- 6" GATE VALVE (R.J.)
1- 3 WAY FIRE HYD. (R.J.)
1- VALVE BOX

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

STA. 9+98.00 WATERLINE "H"=
STA. 47+51.08, 49.00' RT. S. YALE AVE.
N 384911.18
E 2582779.66

END WATERLINE "H"
CONNECT TO WATERLINE "A"
1- 12"x12"x6" TEE (R.J.)
1- 12" GATE VALVE (R.J.)
1- 6" GATE VALVE (R.J.)
2- VALVE BOXES



KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
3. SEE SHEET 17 , SUMMARIES (4) FOR DRIVEWAY, SIDEWALK AND PAVEMENT REMOVAL INFORMATION.
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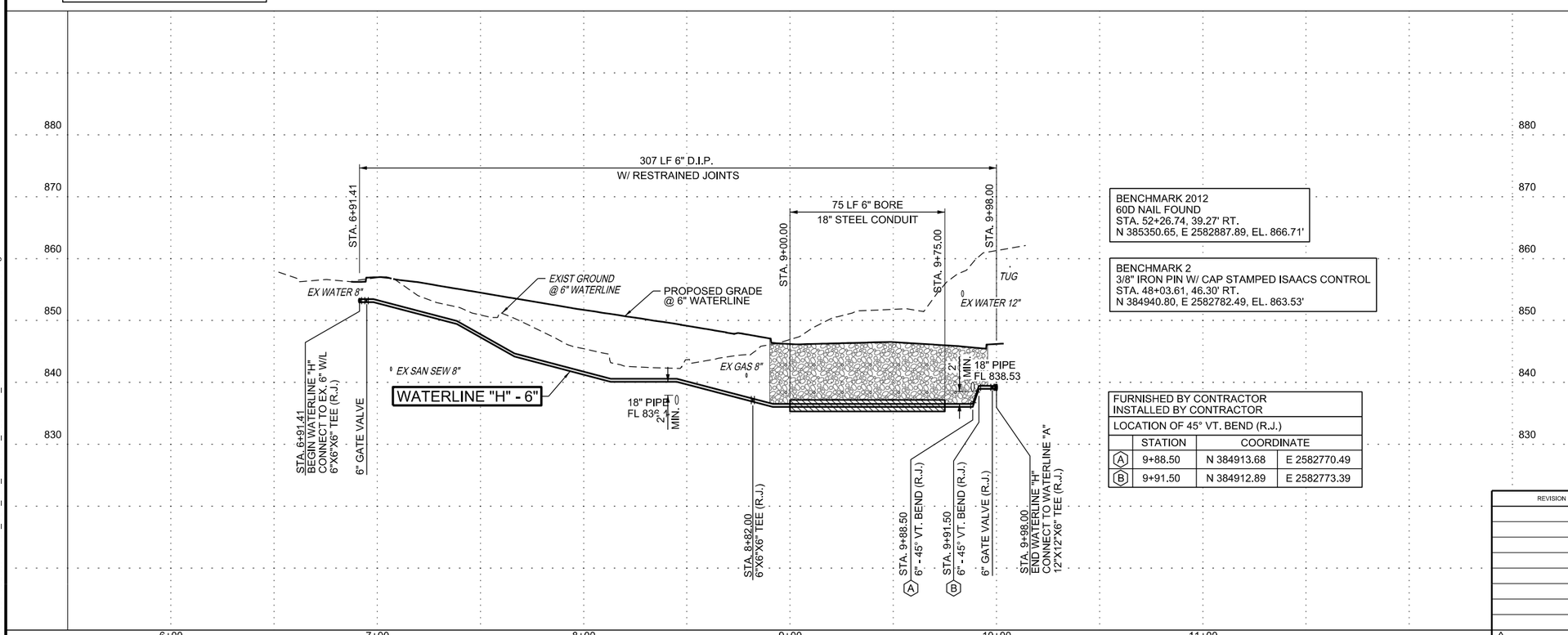
5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.



BENCHMARK 2012
60D NAIL FOUND
STA. 52+26.74, 39.27' RT.
N 385350.65, E 2582887.89, EL. 866.71'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 45° VT. BEND (R.J.)

	STATION	COORDINATE	
A	9+88.50	N 384913.68	E 2582770.49
B	9+91.50	N 384912.89	E 2582773.39

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "H" - 6" LINE
PLAN AND PROFILE (13)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	RDM	7/20
VERTICAL: 1"= 10'	LEAD ENGR	CGW	6/20
	RECOMMENDED HAS 8-20 DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-PP-WL-H-01.dgn
DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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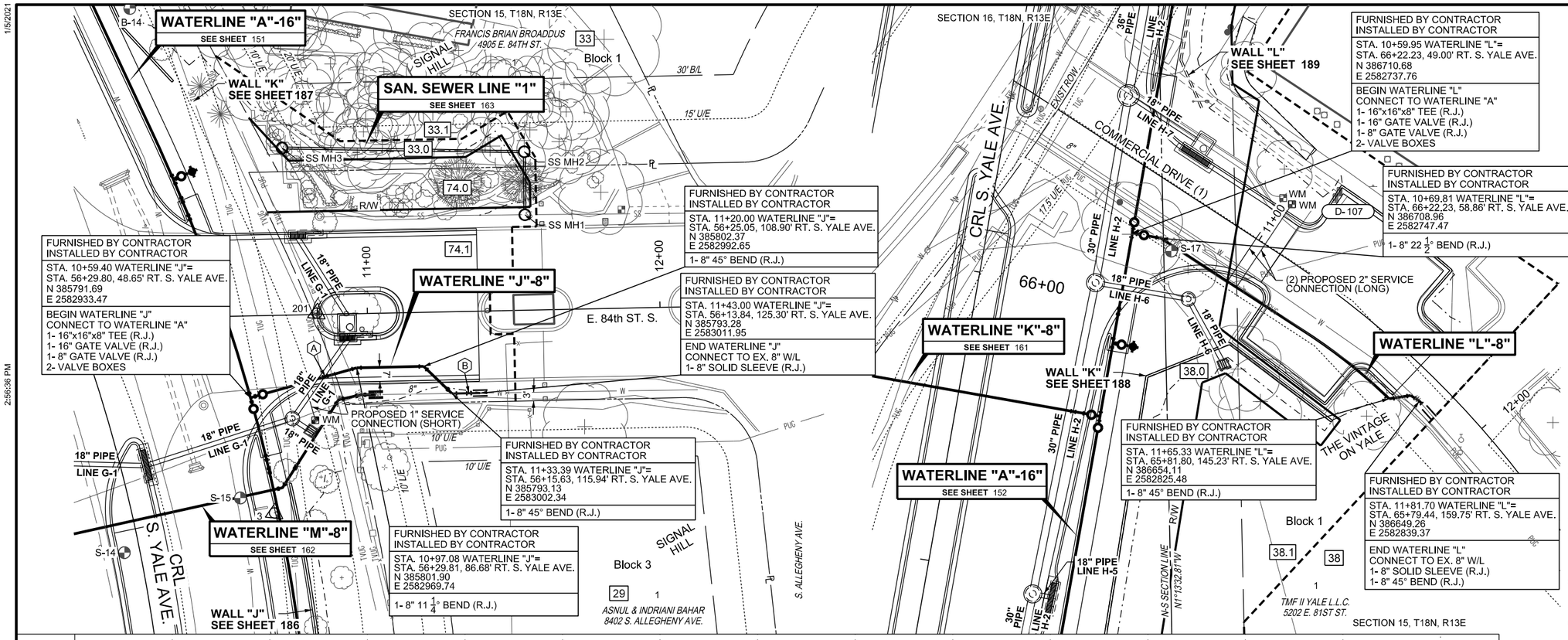

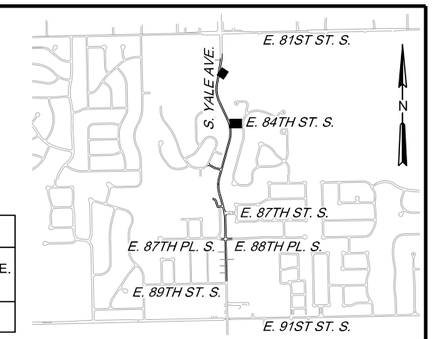

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
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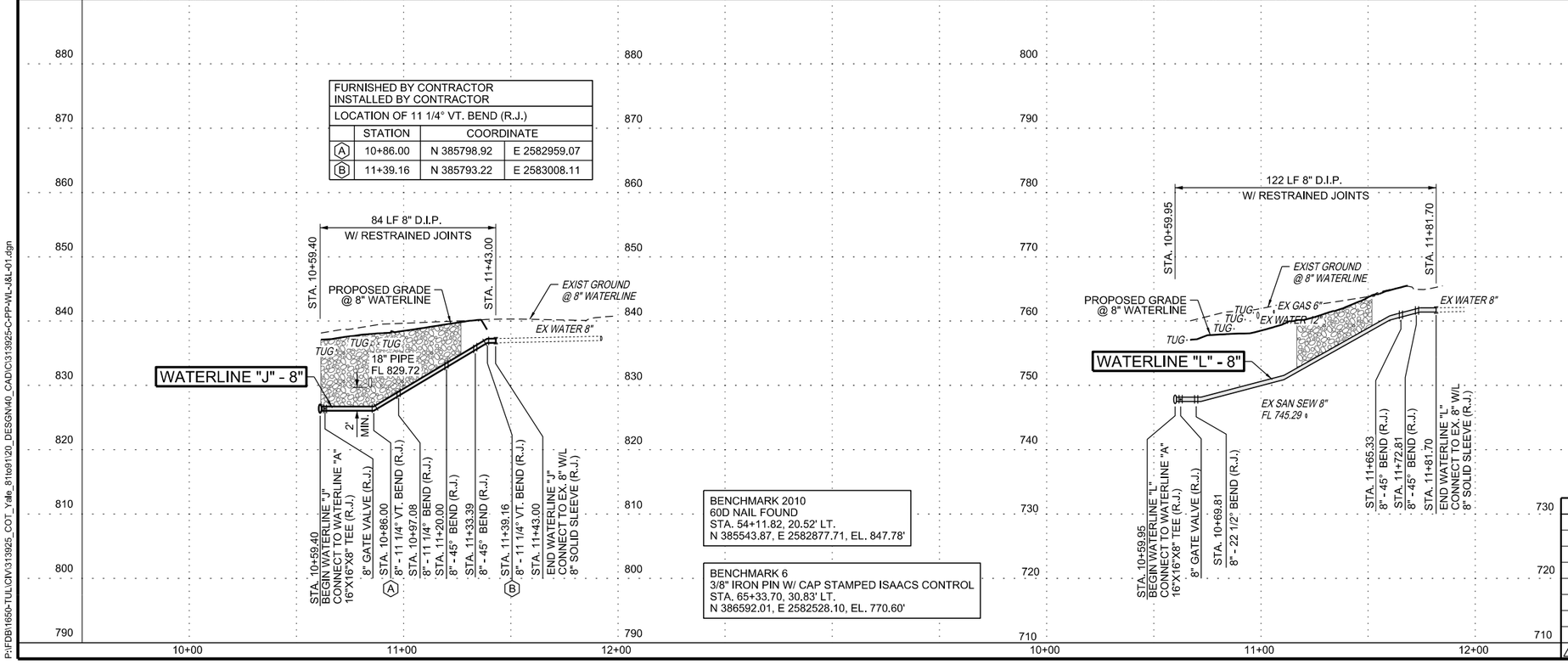
   ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
5. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 11 1/4° VT. BEND (R.J.)

	STATION	COORDINATE	
A	10+86.00	N 385798.92	E 2582959.07
B	11+39.16	N 385793.22	E 2583008.11



BENCHMARK 2010
60D NAIL FOUND
STA. 54+11.82, 20.52' LT.
N 385543.87, E 2582877.71, EL. 847.78'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'

20' 10' 0 20'
SCALE: 1" = 20'-0"

N

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "J" - 8" LINE
WATERLINE "L" - 8" LINE
PLAN AND PROFILE (14)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR		7/20
VERTICAL: 1"= 10'	LEAD ENGR		7/20
	RECOMMENDED		8-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-PP-WL-J&L-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 160 OF 334 SHEETS

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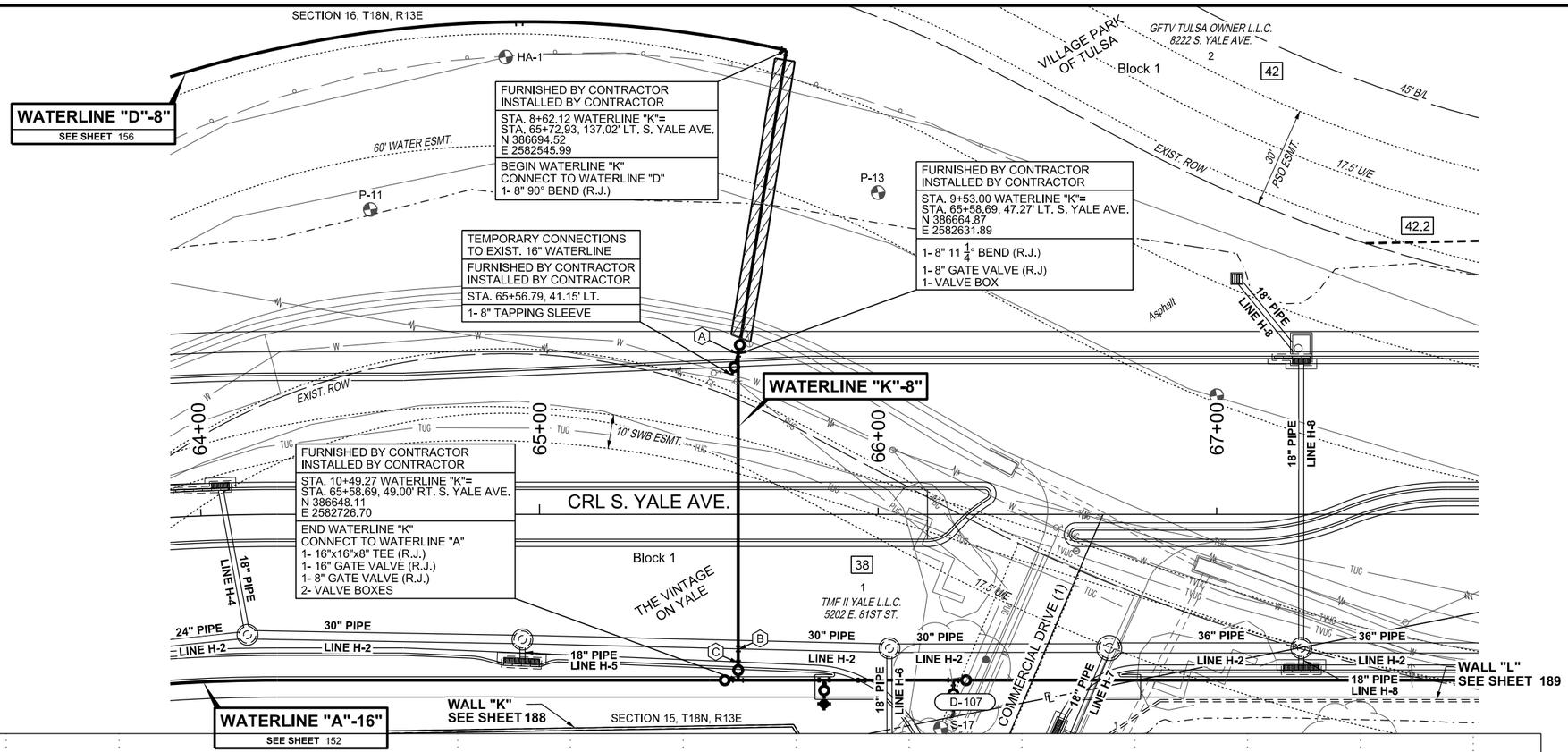

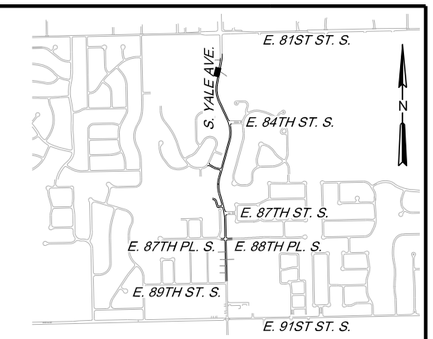

KEYMAP

LEGEND

- PAVEMENT REMOVAL
- WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
2. EXISTING WATERLINE MAY BE ABANDONED IN-PLACE UNLESS NOTED OTHERWISE.
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5. ALL WATER METER CANS ON THE WATERLINE SIDE OF THE STREET TO BE RELOCATED TO 2 FEET FROM THE STREET RIGHT-OF-WAY LINE.
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.

BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 60+46.51, 47.29' RT.
N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

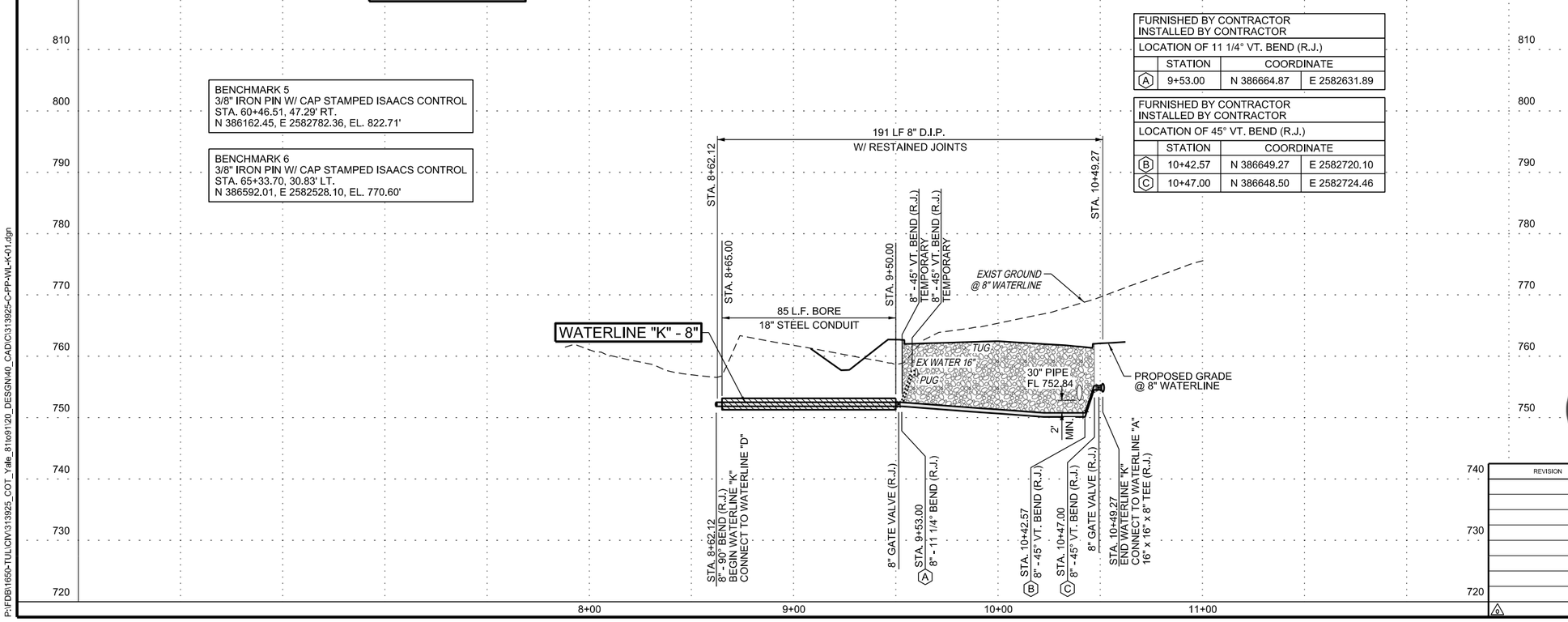
LOCATION OF 11 1/4° VT. BEND (R.J.)

	STATION	COORDINATE	
A	9+53.00	N 386664.87	E 2582631.89

FURNISHED BY CONTRACTOR
INSTALLED BY CONTRACTOR

LOCATION OF 45° VT. BEND (R.J.)

	STATION	COORDINATE	
B	10+42.57	N 386649.27	E 2582720.10
C	10+47.00	N 386648.50	E 2582724.46



Z

20' 10' 0 20'

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "K" - 8" LINE
PLAN AND PROFILE (15)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

REVISION	BY	DATE

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PLAN SCALE 1"= 20'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR			
	FIELD MGR	CGW	7/20	
	LEAD ENGR	CGW	4/20	
VERTICAL: 1"= 10'	RECOMMENDED	HAJ	8-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-WL-K-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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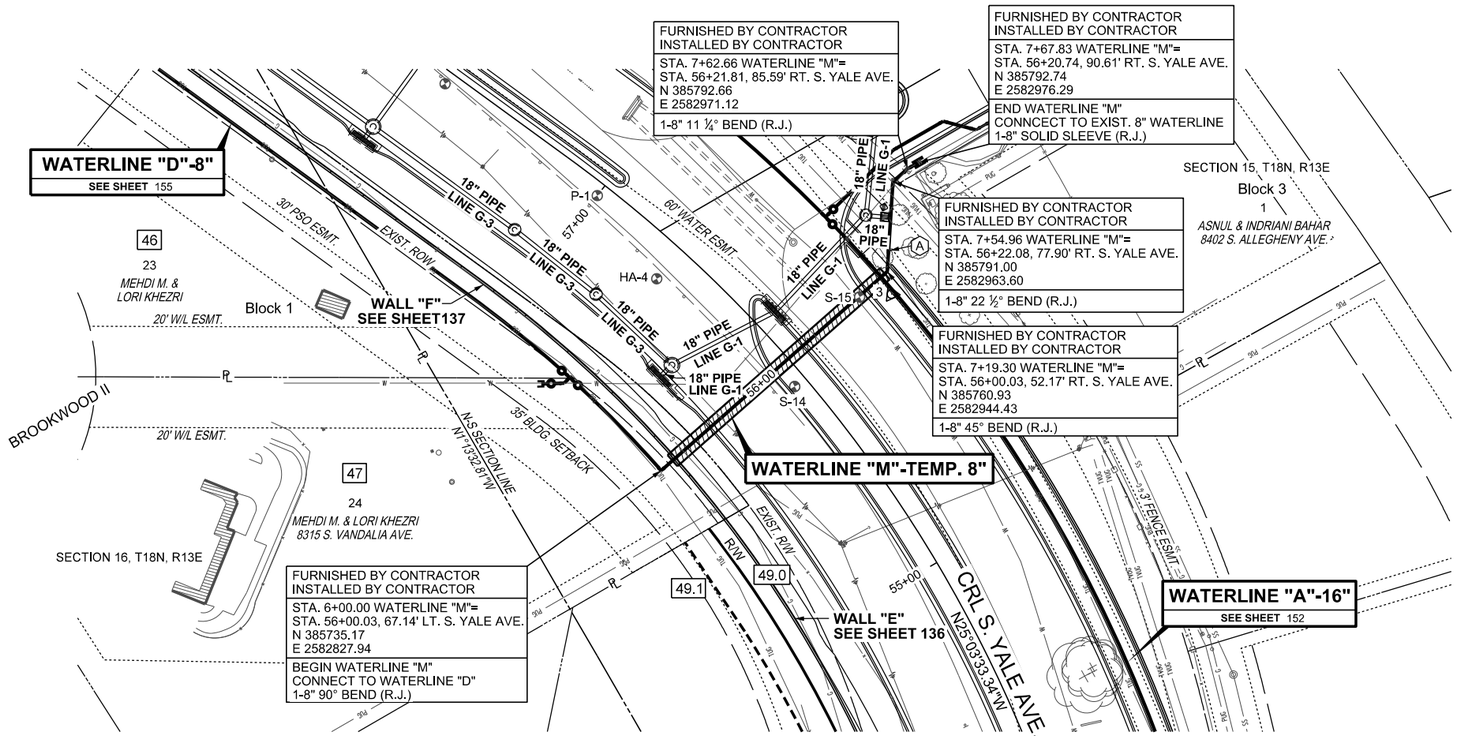

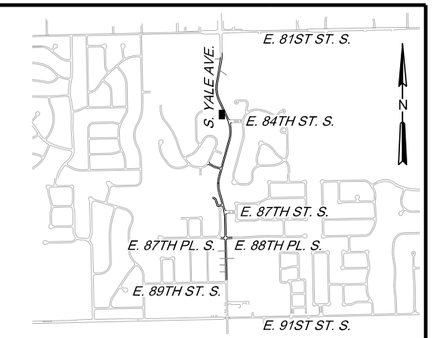

KEYMAP

LEGEND

PAVEMENT REMOVAL

WATERLINE BORE

NOTES:

1. SEE SHEET 17 , SUMMARIES (4) FOR LOCATION OF WATER METERS TO BE RECONNECTED TO NEW WATERLINE AND SERVICE CONNECTIONS.
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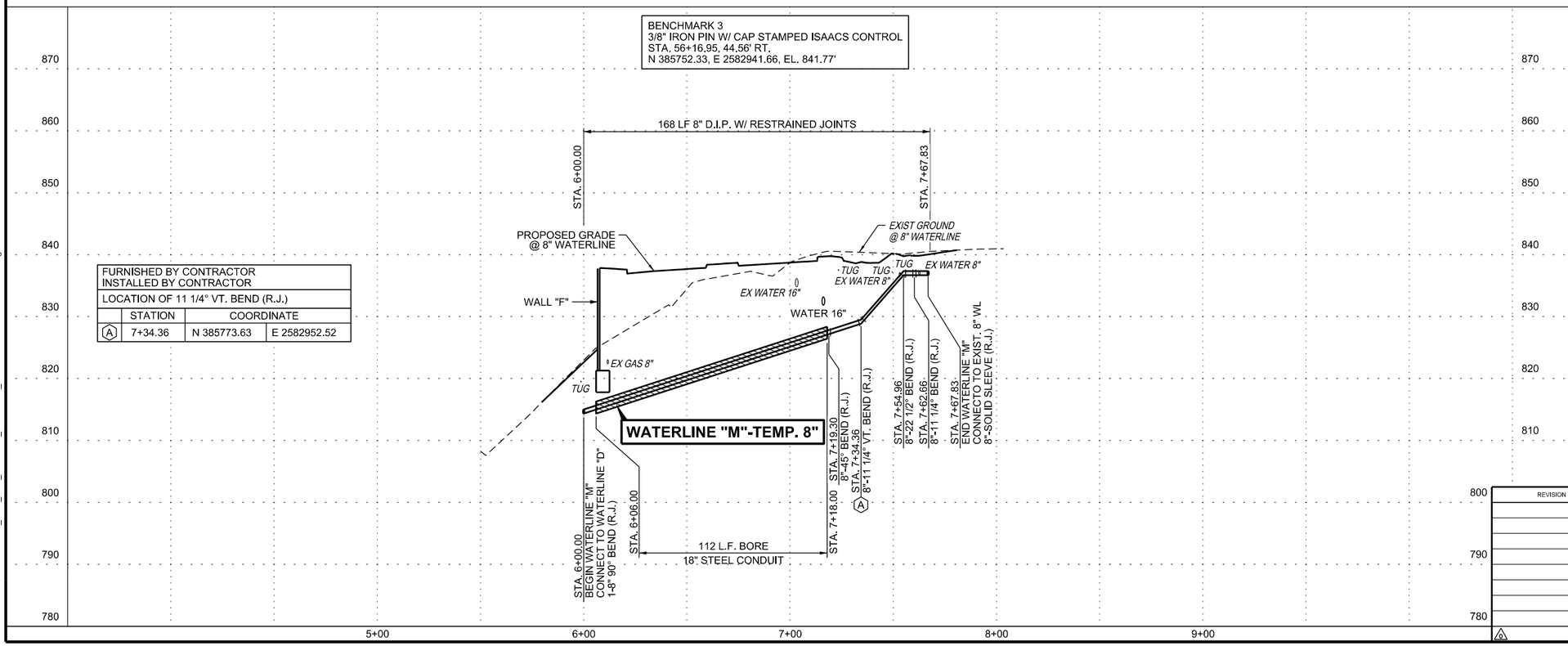
6. BACKFILL ALL STREET AND DRIVEWAY CROSSINGS WITH TYPE 'A' AGGREGATE BASE MATERIAL PER C.O.T. STD. DETAIL 713.



FURNISHED BY CONTRACTOR INSTALLED BY CONTRACTOR			
LOCATION OF 11 1/4° VT. BEND (R.J.)			
	STATION	COORDINATE	
A	7+34.36	N 385773.63	E 2582952.52

SCALE: 1" = 30'-0"

30' 20' 10' 0 30'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

TMUA-W 14-82

WATERLINE "M" - TEMP. 8" LINE
PLAN AND PROFILE (16)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		
	FIELD MGR	RWM	7/20
VERTICAL: 1"= 10'	LEAD ENGR	CEW	4/20
	RECOMMENDED DESIGN MANAGER	HAI	8.20

APPROVED:

CITY ENGINEER

DATE: OCTOBER 2018

FILE: 313925-C-PP-WL-M-01.dgn

ATLAS PAGE NO.: 882, 883, 1005, 1006

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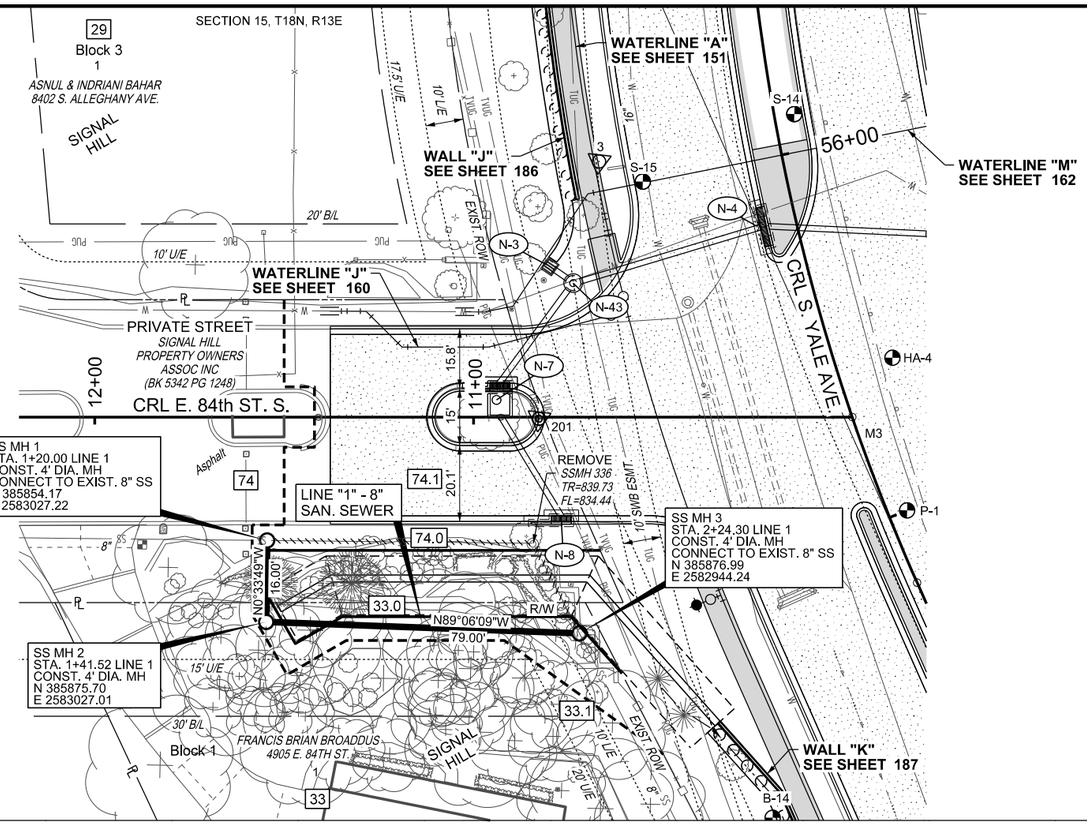
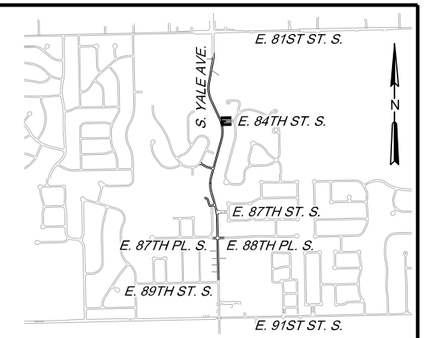
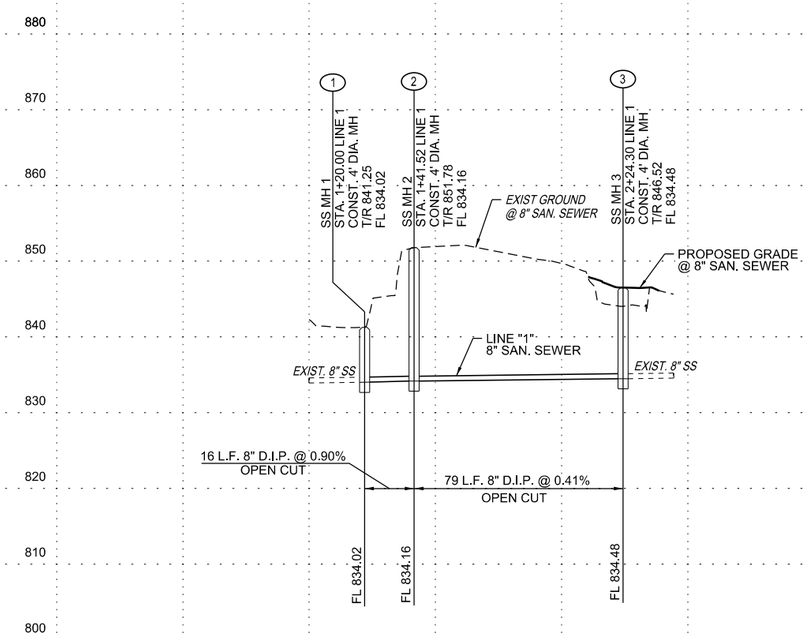




KEYMAP

LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- DRIVEWAY
- SIDEWALK
- CURB INLET
- CURB AND GUTTER
- DRAINAGE PATH
- RETAINING WALL
- (X-X) DRAINAGE STRUCTURE NO.
- (D-XXX) DRIVEWAY NO.
- [X] PARCEL NUMBER
- PERMANENT R/W [X.0]
- TEMPORARY EASEMENT/RIGHT OF ENTRY [X.1]
- GENERAL & UTILITY EASEMENT [XA]
- EXISTING SANITARY SEWER TO BE REMOVED



N

20' 15' 10' 5' 0 20'

SCALE: 1" = 20'-0"

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MS-635

SANITARY SEWER LINE "1"
PLAN AND PROFILE (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR			
	FIELD MGR		7/20	
	LEAD ENGR	ADJ	6-20	
VERTICAL: 1"= 4'	RECOMMENDED HAS 8-20			CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-C-PP-SS-02.dgn
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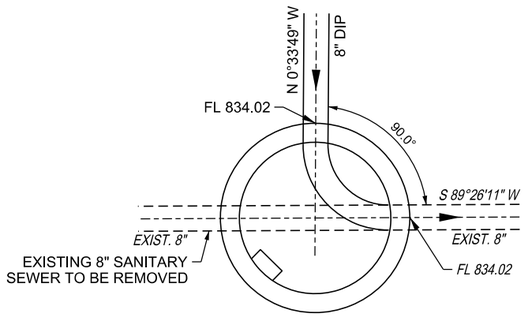
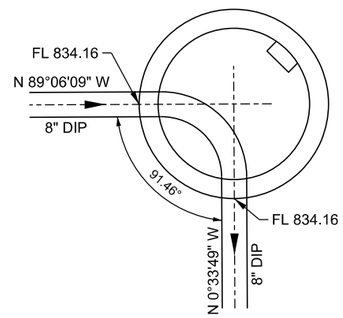
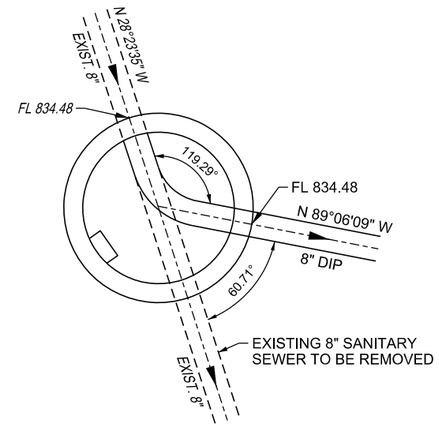


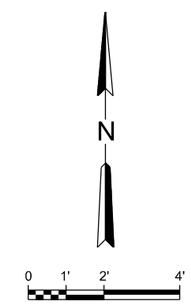
SS MH 1
4' DIA.
TR=841.25



SS MH 2
4' DIA.
TR=851.78



SS MH 3
4' DIA.
TR=846.52



HORIZONTAL SCALE

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

MANHOLE INVERT DETAILS

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 10'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE: HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR	Zach	7/20
VERTICAL: 1"= NA	LEAD ENGR		
	RECOMMENDED DESIGN MANAGER	HAI 8-20	

APPROVED:
CITY ENGINEER

FILE: 313925-C-SS_MH_Inverts_1.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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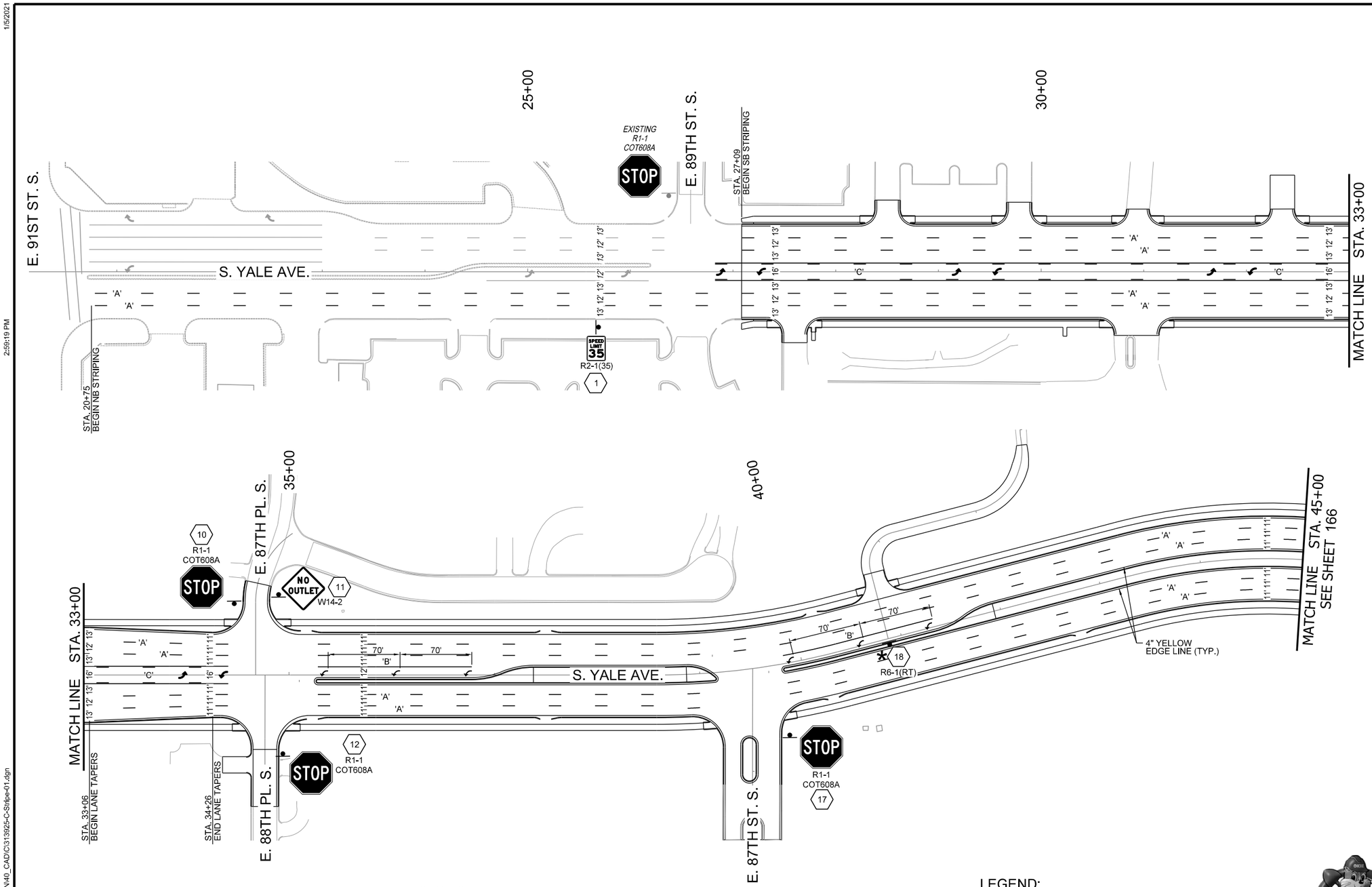
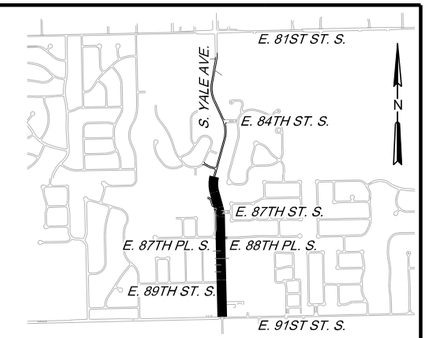




KEYMAP

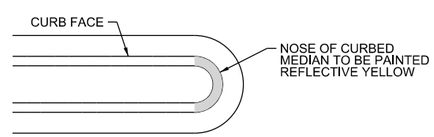
ONE WAY

* R6-1(RT)

N

30' 20' 10' 0 30'

SCALE: 1" = 50'-0"



CURBED MEDIAN NOSE DETAIL

LEGEND:

'A' 12' 28' 12' 40' CYCLE	TYPE 'A' LINE 4" BROKEN WHITE LINE
'B'	TYPE 'B' LINE 4"SOLID WHITE LINE
'C' 12' 28' 12'	TYPE 'C' LINE 4" OUTSIDE SOLID YELLOW LANE LINE W/4" INSIDE BROKEN YELLOW LANE LINE. 2-WAY LEFT TURN LANE LINE
	ARROW PAVEMENT MARKING
	SIGN

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

SIGNING & STRIPING (1)
YALE AVENUE
STA. 20+00 TO STA. 45+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR			
	FIELD MGR		12/20	
	LEAD ENGR		12/20	
VERTICAL: 1"= NA	RECOMMENDED		12-20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Stripe-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 165 OF 334 SHEETS

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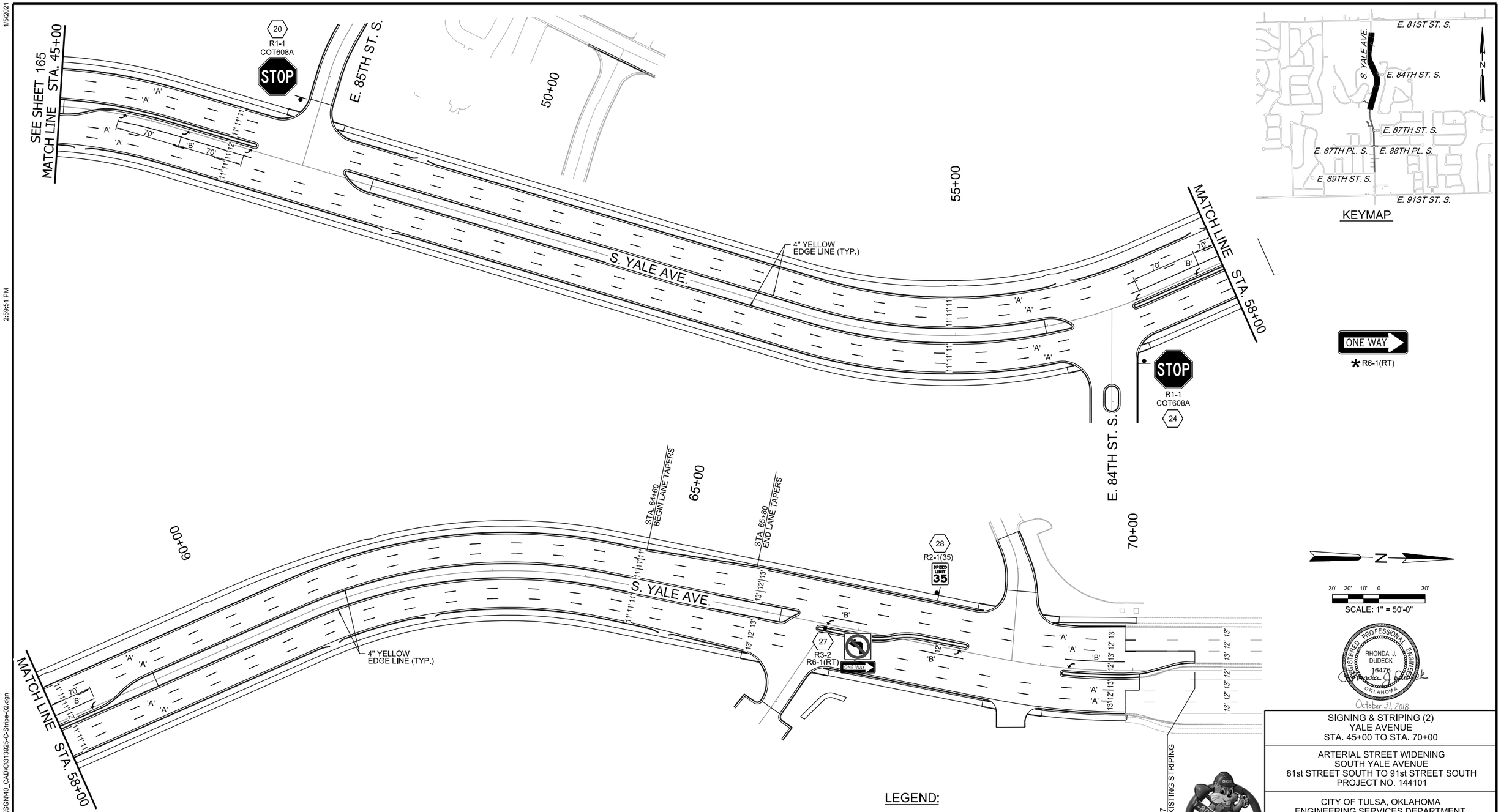

LEGEND:

12' 28' 12' (40' CYCLE) 'A'	TYPE 'A' LINE 4" BROKEN WHITE LINE
'B'	TYPE 'B' LINE 4"SOLID WHITE LINE
'C' 12' 28' 12'	TYPE 'C' LINE 4" OUTSIDE SOLID YELLOW LANE LINE W/4" INSIDE BROKEN YELLOW LANE LINE. 2-WAY LEFT TURN LANE LINE
	ARROW PAVEMENT MARKING
	SIGN

PROFESSIONAL ENGINEER
REGISTERED
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

SIGNING & STRIPING (2)
YALE AVENUE
STA. 45+00 TO STA. 70+00

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		
	FIELD MGR		12/20
VERTICAL: 1"= NA	LEAD ENGR		12/20
	RECOMMENDED HAS 12-20 DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 313925-C-Stripe-02.dgn
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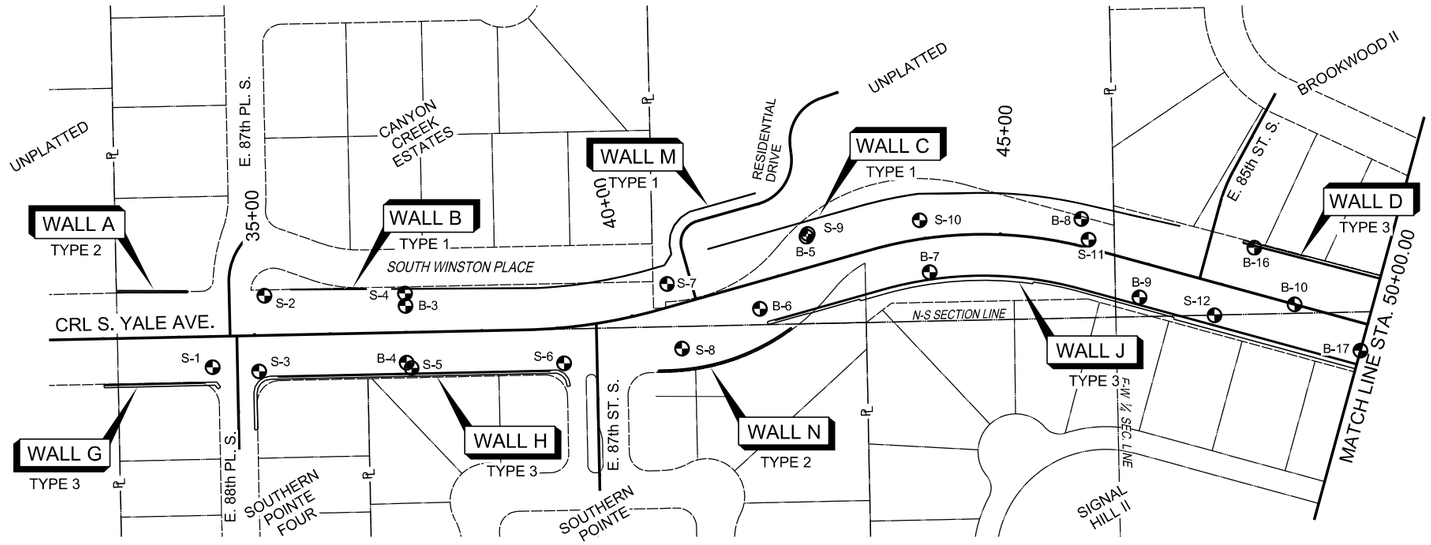

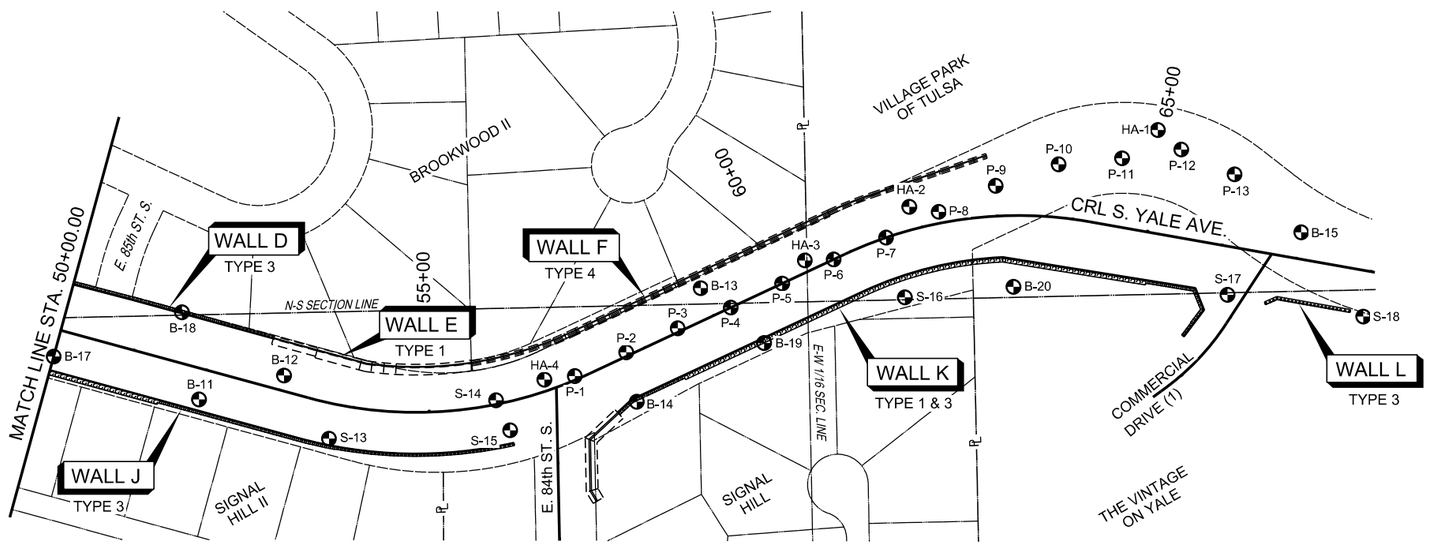

N

100′ 50′ 0 100′
SCALE: 1″ = 100′-0″

LEGEND

BORING LOCATION

WALL DRAWING INDEX

167	GENERAL WALL PLAN
168-170	WALL GEOMETRIC DATA (1) TO (3)
171-172	WALL GENERAL NOTES (1) TO (2)
173-176	WALL TYPICAL SECTIONS (1) TO (4)
177-191	GENERAL PLAN & ELEVATION (1) TO (15)
192-193	WALL SURFACE TREATMENTS (1) TO (2)
194-195	WALL EXCAVATION DETAILS (1) TO (2)
196-206	SUBSTRUCTURE LAYOUT (1) TO (11)
207-213	REINFORCEMENT DETAILS (1) TO (7)
214-221	GEOMETRY SCHEDULES (1) TO (8)
222-231	REINFORCING SCHEDULES (1) TO (10)

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-26-2018

GENERAL WALL PLAN

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 100'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR		
	FIELD MGR		
	LEAD ENGR		
VERTICAL: 1" = NA	RECOMMENDED		
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Gen_Wall_Plan-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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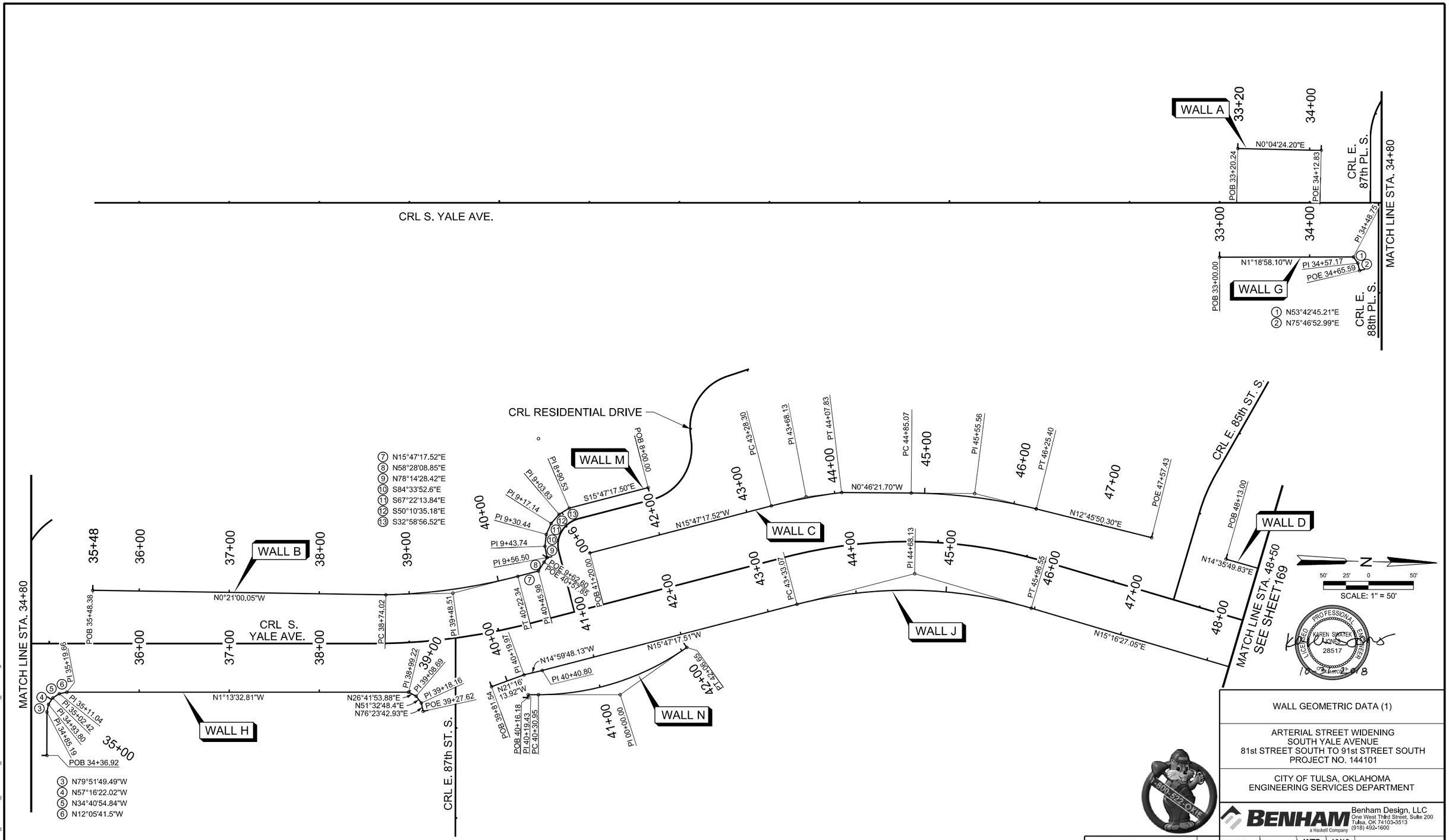

YALE ALIGNMENT GEOMETRY SHOWN ON SHEETS 42 - 44

WALL COORDINATES & CURVE DATA ON SHEET 171

WALL GEOMETRIC DATA (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 100'
PROFILE SCALE HORIZONTAL: 1" = NA
VERTICAL: 1" = NA

DRAWN	WZB	10/18	APPROVED:
DESIGNED	KSJ	10/18	
SURVEY	RDL	10/18	
PROJECT MGR		10/18	
FIELD MGR		2/20	
LEAD ENGR		1/19	
RECOMMENDED	HAJ	8-30	CITY ENGINEER
DESIGN MANAGER			DATE: OCTOBER 2018

FILE: 313925-S-Geo_Data-01.dgn
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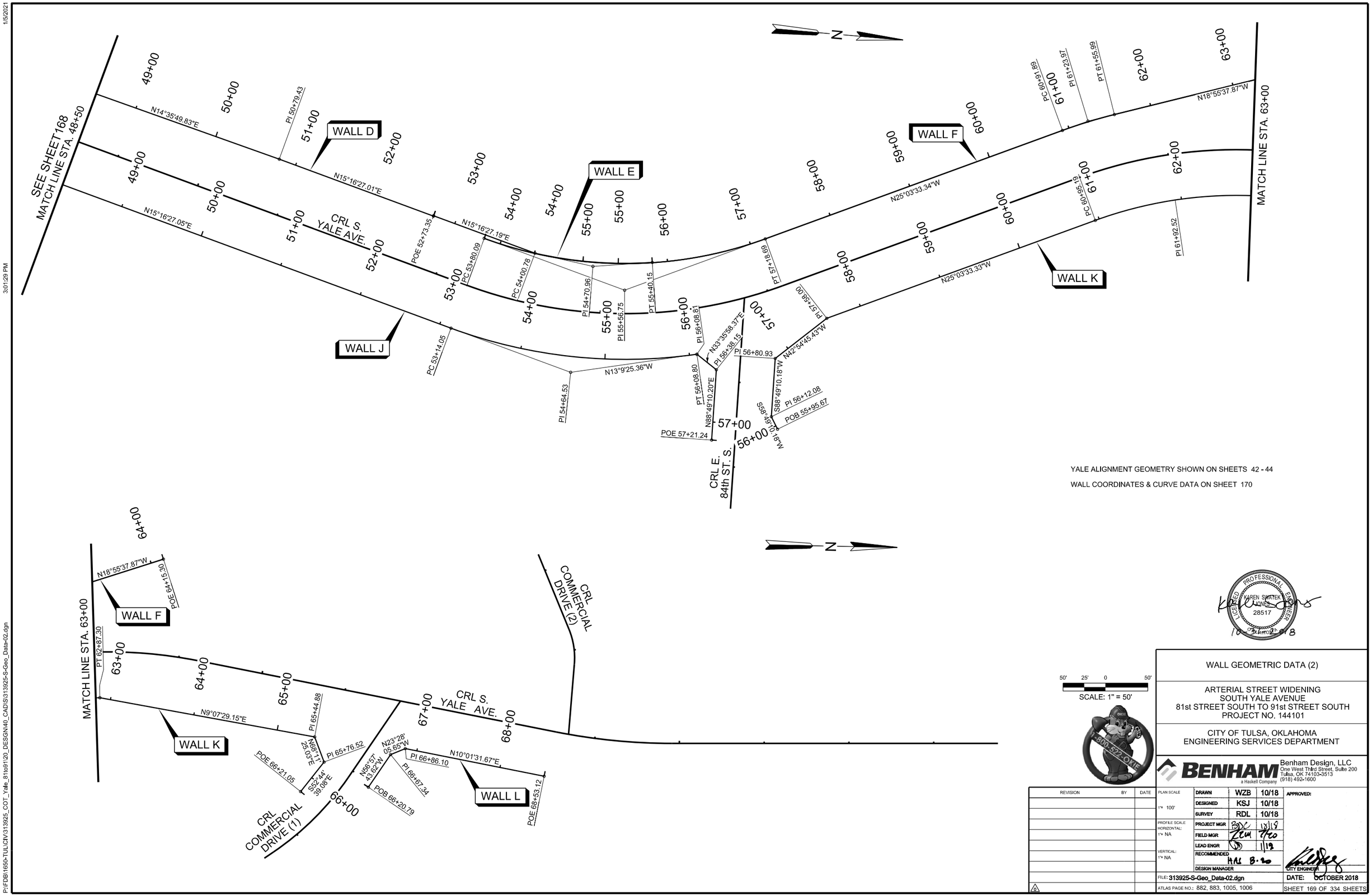

YALE ALIGNMENT GEOMETRY SHOWN ON SHEETS 42 - 44

WALL COORDINATES & CURVE DATA ON SHEET 170

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-22-2018

50' 25' 0 50'

SCALE: 1" = 50'

1-800-522-OKIE

WALL GEOMETRIC DATA (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 100'

PROFILE SCALE HORIZONTAL: 1"= NA

VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR	ZEM	7/20
LEAD ENGR	JD	1/19
RECOMMENDED	HAS 8-20	
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Geo_Data-02.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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CRL WALL A

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	33+20.24	2582756.3965	383513.7029						
	POE	34+12.83	2582756.5151	383606.2891						

CRL WALL B

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	35+48.38	2582752.8707	383741.8184						
	PC	38+74.02	2582750.8815	384067.4468						
R1	PI	39+48.51	2582747.2598	384141.8583	13°09'19.58" LT	8°52'09.54"	646.000	74.490	148.325	4.281
	PT	40+22.34	2582726.9924	384213.5383						
	PI	40+45.98	2582720.5613	384236.2831						
	POE	40+57.58	2582710.8758	384242.3482						

CRL WALL C

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	41+20.00	2582699.3342	384292.9801						
	PC	43+28.30	2582642.8589	384493.4242						
R2	PI	43+68.13	2582631.8235	384531.7458	7°36'26.35"RT	9°33'54.86"	599.000	39.824	79.531	1.322
	PT	44+07.83	2582626.1566	384571.1645						
	PC	44+85.07	2582625.1150	384648.3909						
R3	PI	45+55.56	2582624.1657	384718.8816	13°32'11.88"RT	9°38'44.71"	594.000	70.497	140.338	4.169
	PT	46+25.40	2582639.7424	384787.6363						
	POE	47+57.43	2582668.9080	384916.3963						

CRL WALL D

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	48+13.00	2582691.0804	384999.5543						
	PI	50+79.43	2582758.2262	385257.3830						
	POE	52+73.35	2582809.3136	385444.4587						

CRL WALL E

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	52+73.34	2582808.8313	385444.5905						
	PC	54+00.78	2582842.4060	385567.5363						
R4	PI	54+70.96	2582851.9739	385637.0574	16°36'46.00"LT	11°55'12.23"	480.667	70.176	139.368	5.096
	PT	55+40.15	2582841.2662	385706.4121						

CRL WALL F

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	PC	53+80.09	2582830.2371	385506.3568						
R5	PI	55+56.75	2582876.7751	385676.7730	40°20'00.36"LT	11°54'42.50"	481.000	176.656	338.601	31.414
	PT	57+18.69	2582801.9513	385836.8007						
	PC	60+91.89	2582643.8832	386174.8656						
R6	PI	61+23.97	2582630.2936	386203.9301	6°07'55.47"RT	9°33'54.86"	599.000	32.085	64.108	0.859
	PT	61+55.99	2582619.8864	386234.2799						
	POE	64+15.30	2582535.7776	386479.5619						

CRL WALL G

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	33+00.00	2582877.5122	383496.0506						
	PI	34+48.75	2582874.0956	383644.7610						
	PI	34+57.17	2582880.8838	383649.7452						
	POE	34+65.59	2582889.0474	383651.8137						

CRL WALL H

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	34+36.92	2582937.1326	383694.8089						
	PI	34+85.19	2582888.8746	383693.8325						
	PI	34+93.80	2582880.3910	383695.3492						
	PI	35+02.42	2582873.1409	383700.0086						
	PI	35+11.04	2582868.2370	383707.0956						
	PI	35+19.66	2582866.4312	383715.5226						
	PI	38+99.22	2582858.3114	384095.0018						
	PI	39+08.69	2582862.5646	384103.4591						
	PI	39+18.16	2582869.9781	384109.3461						
	POE	39+27.62	2582879.1790	384111.5728						

CRL WALL J

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	39+81.54	2582850.2483	384186.9928						
	PI	40+19.97	2582836.3084	384222.8010						
	PI	40+40.80	2582830.9180	384242.9232						
	PC	43+33.07	2582751.3958	384524.1696						
R7	PI	44+68.13	2582714.6471	384654.1388	31°03'44.56"RT	11°47'21.32"	486.000	135.065	263.480	18.419
	PT	45+96.55	2582750.2284	384784.4325						
	PC	53+14.05	2582939.2455	385476.5881						
R8	PI	54+64.53	2582978.8870	385621.7500	28°25'52.41"LT	9°38'44.71"	594.000	150.477	294.754	18.764
	PT	56+08.80	2582944.6352	385768.2773						
	PI	56+08.81	2582944.6352	385768.2775						
	PI	56+38.15	2582960.8720	385792.7163						
	POE	57+21.24	2583043.9520	385794.4283						

CRL WALL K

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	55+95.67	2583024.4188	385870.7480						
	PI	56+12.08	2583010.3776	385862.2509						
	PI	56+80.93	2582941.5400	385860.8324						
	PI	57+58.00	2582889.0651	385917.2772						
	PC	60+95.19	2582746.2465	388222.7274						
R9	PI	61+92.52	2582705.0226	388310.8942	22°38'56.17"RT	11°47'21.32"	486.000	97.328	192.115	9.650
	PT	62+87.30	2582700.9294	388408.1363						
	PI	65+44.88	2582741.7767	388662.4508						
	PI	65+76.52	2582771.1576	388674.2081						
	POE	66+21.05	2582806.5994	388647.2518						

CRL WALL L

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	66+20.79	2582799.7531	388727.0488						
	PI	66+67.34	2582760.7303	388752.4271						
	PI	66+86.10	2582753.2582	388769.6379						
	POE	68+53.12	2582782.3330	388934.1017						

CRL WALL M

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	8+00.00	2582625.3670	384356.1110						
	PI	8+90.53	2582649.9977	384268.9994						
	PI	9+03.83	2582657.2402	384257.8394						
	PI	9+17.14	2582667.4580	384249.3191						
	PI	9+30.44	2582679.7379	384244.2001						
	PI	9+43.74	2582692.9822	384242.9399						
	PI	9+56.50	2582705.4735	384245.5401						
	POE	9+62.60	2582710.6758	384242.3482						

CRL WALL N

CURVE NO	CARDINAL POINTS STATION		X (EASTING) (feet)	Y (NORTHING) (feet)	CURVE DATA DELTA	DEGREE	RADIUS (feet)	TANGENT (feet)	ARC LENGTH (feet)	EXTERNAL (feet)
	POB	40+16.18	2582681.4700	384227.7500						
	PI	40+19.43	2582858.2200	384227.7600						
	PC	40+30.95	2582857.9800	384239.2700						
	PI	41+21.70	2582856.0300	384330.0100	35°23'05.32"LT	20°08'18.26"	284.51	90.76	175.71	14.12
	PT	42+06.65	2582801.9100	384402.8600						

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10/18/2018

WALL GEOMETRIC DATA (3)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER	HAS	8-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Geo_Data-03.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 170 OF 334 SHEETS

WALL GENERAL NOTES

WALL NOTES:

SPECIFICATIONS:

COMPLY WITH THE REQUIREMENTS OF THE 2009 OKLAHOMA DEPARTMENT OF TRANSPORTATION (ODOT) STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EXCEPT AS MODIFIED BY THE PLANS.

GENERAL NOTES:

THE DOUBLE CASING METHOD OF DRILLED SHAFT CONSTRUCTION SHALL NOT BE ALLOWED. TEMPORARY CASING MAY BE USED AS NECESSARY.

ALL SHAFTS SHALL BE PLUMB TO WITHIN 0.5% OF THE LENGTH, BASED ON THE TOTAL LENGTH OF THE SHAFT.

SURFACE TREATMENT SHALL BE AS SHOWN ON SHEETS 192 AND 193.

CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF UTILITIES PRIOR TO EXCAVATION OR DRILLING.

ALTERNATE WALL SYSTEMS WILL NOT BE ACCEPTED.

PRECAST CONCRETE IS NOT ALLOWED.

THE GEOTECHNICAL REPORTS WERE PREPARED BY TERRACON FOR THIS PROJECT.

TERRACON PROJECT NO.	DATE	DESCRIPTION
04015182	July 16, 2002	Proposed South Yale Avenue Widening East 81st and 91st Street
04155215	January 6, 2012	Yale Avenue Slope Study
04155215	April 16, 2013	Geotechnical Design Report Yale Avenue Widening
04155121	September 25, 2015	Realignment of S. Yale Ave Between 81st and 91st Streets
04155121.001	December 22, 2105	Addendum 1 – Lateral Design Analysis
04155121.002	December 18, 2015	Addendum 2 – Foundation Design
04155121.003	January 28, 2016	Addendum 3 – Additional LPILE design
04155121.004	March 25, 2016	Addendum 4 – Additional recommendations
04155121.005	June 14, 2016	Addendum 5 – Wall K cantilever design recommendations

LOCATIONS OF SOIL BORINGS ARE SHOWN ON THE PLANS. THE GEOTECHNICAL REPORTS ARE AVAILABLE FOR REVIEW AT THE OFFICE OF BENHAM DESIGN, ONE WEST 3RD ST., SUITE 200, TULSA, OK 74103. ANY INFORMATION CONTAINED IN THE GEOTECHNICAL REPORTS SHOULD NOT BE CONSTRUED AS REPRESENTATIVE OF ALL FIELD CONDITIONS.

EXCAVATIONS ARE ANTICIPATED TO EXTEND THROUGH SAND, CLAY, SOFT ROCK, AND HARD ROCK. EXCAVATIONS IN HARD ROCK WILL REQUIRE PNEUMATIC RAM HOES.

DRILLED SHAFTS WILL BEAR EITHER IN SAND OR SHALE/SANDSTONE BEDROCK. CONSTRUCTING PIERS IN THE SAND WILL REQUIRE THE USE OF MUD SLURRY. CONSTRUCTING DRILLED SHAFTS IN BEDROCK WILL REQUIRE THE USE OF A HEAVY-DUTY DRILLING RIG EQUIPPED WITH A ROCK AUGER OR CORE BARREL.

SPECIAL PROVISIONS:

REFER TO ODOT SPECIAL PROVISION 516-3(a-s)09 FOR CROSS-HOLE SONIC LOGGING (CSL) TUBES AND TESTING.

REFER TO SHOTCRETE SPECIAL PROVISION FOR SHOTCRETE.

TYPE 1 CONVENTIONAL CONCRETE CANTILEVER FOOTING:

DESIGN DATA:

DESIGN
CAST-IN-PLACE RETAINING WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION.

MATERIAL
CONCRETE IN CAST-IN-PLACE RETAINING WALLS SHALL BE CLASS A, f'c = 3,000 PSI.

REINFORCING FOR RETAINING WALLS SHALL BE PLAIN REINFORCING STEEL, GRADE 60. SCREEN WALL CONNECTION BARS SHALL BE EPOXY COATED REINFORCING STEEL, GRADE 60.

BACKFILL FOR RETAINING WALLS SHALL BE GRANULAR BACKFILL IN ACCORDANCE WITH SECTION 703.07 OF THE 2009 ODOT STANDARD SPECIFICATIONS.

THE UPPER 2' BEHIND THE WALL STEM SHALL HAVE A COMPACTED CLAY CAP LAYER IN ACCORDANCE WITH ODOT STANDARD SPECIFICATION SECTION 208. EXCAVATED MATERIAL MAY BE USED IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATION.

ALL FOOTINGS FOR TYPE 1 RETAINING WALLS SHALL HAVE A 2' THICK LAYER OF AGGREGATE BASE BELOW THE FOOTING THAT EXTENDS TO THE FOOTING LIMITS. AGGREGATE BASE SHALL BE IN ACCORDANCE WITH SECTION 703.01 OF THE ODOT STANDARD SPECIFICATIONS.

NOTES:

EXISTING SOIL IN FRONT OF THE RETAINING WALL FOOTING TOE SHALL NOT BE DISTURBED.

WALL GENERAL NOTES (cont.)

TYPE 2 SCREEN WALL ON DRILLED SHAFTS:

DESIGN DATA:

DESIGN
DRILLED SHAFTS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION.

MATERIAL
CONCRETE IN SCREEN WALLS AND DRILLED SHAFTS SHALL BE CLASS AA, f'c = 4,000 PSI.

REINFORCING STEEL FOR SCREEN WALLS AND ANY BARS CONNECTING TO THE SCREEN WALLS SHALL BE EPOXY COATED REINFORCING STEEL, GRADE 60. DRILLED SHAFTS SHALL USE PLAIN REINFORCING STEEL, GRADE 60.

NOTE:
SCREEN WALL HEIGHTS SHALL HAVE A MINIMUM EXPOSED HEIGHT OF 8'. STEPS IN THE WALL SHALL BE NOT LESS THAN 6" AND NOT GREATER THAN 1'.

TYPE 3 DRILLED SHAFT RETAINING WALL:

DESIGN DATA:

DESIGN
DRILLED SHAFT RETAINING WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION.

MATERIAL
CONCRETE IN DRILLED SHAFTS, CAST-IN-PLACE FACADE AND COPING SHALL BE CLASS AA, f'c = 4,000 PSI.

SHOTCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI.

REINFORCING STEEL FOR CAST-IN-PLACE FACADE, COPING, SCREEN WALLS AND ANY BARS CONNECTING TO THE SCREEN WALLS SHALL BE EPOXY COATED REINFORCING STEEL, GRADE 60.

DRILLED SHAFTS SHALL USE PLAIN REINFORCING STEEL, GRADE 60.

NOTES:

THE CONCEPT OF DRILLED SHAFT WALLS IS THAT THE DRILLED SHAFTS ARE DRILLED IN-SITU, AND AFTER THE CONCRETE HAS ATTAINED STRENGTH OF 3,000 PSI, THE SOIL ON THE LOW SIDE OF THE WALL IS EXCAVATED UP TO THE FACE OF THE DRILLED SHAFTS.

ALL SHAFTS SHALL BE PLUMB TO WITHIN 0.5% OF THE LENGTH, BASED ON TOTAL LENGTH OF SHAFT.

SOIL ON THE LOW SIDE OF THE WALL SHALL BE EXCAVATED IN MAXIMUM HEIGHTS OF 6 FEET AND SHOTCRETE PLACED PRIOR TO EXCAVATING THE NEXT LIFT. THE LENGTH OF EXCAVATION PARALLEL TO THE WALL SHALL BE LIMITED TO THE AMOUNT THAT SHOTCRETE CAN BE PLACED BEFORE OPERATIONS CLOSE FOR EACH DAY. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION BE LEFT WITHOUT SHOTCRETE AT THE END OF EACH DAY.

THE SHOTCRETE SHALL BE COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATE, AND WATER. THE CONCRETE SHALL BE REINFORCED WITH POLYPROPYLENE FIBERS. THE POLYPROPYLENE FIBER CONTENT SHALL NOT BE LESS THAN FOUR LBS. FOR EACH CUBIC FOOT OF SHOTCRETE. WET MIX SHOTCRETE SHALL BE USED.

THE SHOTCRETE FACING SHALL BE REINFORCED AS DETAILED IN THE PLANS. GRADE 60 REINFORCING SHALL BE USED FOR THE REINFORCING GRID AND SHOTCRETE AND FAÇADE ANCHORS.

REFER TO SPECIAL PROVISION FOR STRUCTURAL SHOTCRETE. IN ADDITION, THE CONTRACTOR SHALL ADHERE TO THE AMERICAN CONCRETE INSTITUTE'S "GUIDE TO SHOTCRETE" (ACI 506R-05), AND THE "CRAFTSMAN WORKBOOK FOR ACI CERTIFICATION OF SHOTCRETE NOZZLEMAN" (ACI CP-60, CURRENT EDITION). THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF SHOTCRETE MIX AND FOR THE QUALITY OF THE SHOTCRETE PLACED IN THE WORK.

A 1 FOOT WIDE GEOCOMPOSITE DRAIN STRIP (MEL-DRAIN 5035, OR APPROVED EQUIVALENT) SHALL BE USED TO FACILITATE DRAINAGE FROM BEHIND THE SHOTCRETE FACING BETWEEN EACH DRILLED SHAFT. THE DRAIN STRIP SHALL EXTEND THE FULL EXPOSED HEIGHT OF DRILLED SHAFT, PLUS AN ADDITIONAL 4" BELOW THE CAST-IN-PLACE FAÇADE. A 4 INCH MINIMUM DIAMETER PERFORATED PIPE SHALL BE CONNECTED TO THE DRAIN GRATE AT THE BOTTOM OF SHOTCRETE FACING; DRAIN GRATES SHALL BE CONNECTED TO A HORIZONTAL DRAINAGE BOARD AND THE VERTICAL DRAIN STRIPS. THE PERFORATED PIPE THAT EXTENDS THROUGH THE CAST-IN-PLACE FACADE SHOULD BE CONNECTED TO A COLLECTION SYSTEM THAT RUNS PARALLEL TO THE WALL IN FRONT OF THE WALL ON THE LOW SIDE. CONTRACTOR SHALL SUBMIT METHOD FOR CONNECTING DRAINS TO SOIL AND PVC PERFORATED PIPES TO DRAIN GRATES FOR REVIEW AND APPROVAL FROM FIELD ENGINEERING.
OPTIONAL HORIZONTAL CONSTRUCTION JOINTS ARE ALLOWED ON DESIGN TYPE 3C AND TYPE 3D FAÇADES TALLER THAN 15' HIGH; JOINT SHALL BE FINISHED IN A MANNER THAT COORDINATES WITH THE FORMLINER PATTERN TO MINIMIZE VISIBILITY. A CONSTRUCTION KEY SHALL BE USED BETWEEN LIFTS.

FINAL FAÇADE FACE SHALL BE IN ALIGNMENT WITHIN 1/8" PER 10 FEET.

WALL GENERAL NOTES (cont.)

TYPE 3 DRILLED SHAFT RETAINING WALL, CONT'D.:

A CONCRETE COPING SHALL BE PLACED ALONG THE TOP OF THE DRILLED SHAFTS. COPING ALIGNMENT SHALL BE SMOOTH AND NOT STEPPED. THE JOINTS BETWEEN ALL COPING SEGMENTS SHALL BE SEALED TO PREVENT INFILTRATION OF WATER INTO THE DRILLED SHAFT WALL SYSTEM. SEALING SHALL BE IN ACCORDANCE WITH SECTION 504 OF ODOT STANDARD SPECIFICATIONS. COPING JOINTS SHALL COINCIDE WITH CAST-IN-PLACE FACADE JOINTS.

IN ADDITION TO SUBMITTALS REQUIRED BY ODOT STANDARD SPECIFICATION SECTION 516, THE CONTRACTOR SHALL SUBMIT AN OVERALL OPERATION SEQUENCE AND THE SEQUENCE OF DRILLED SHAFT WALL CONSTRUCTION TO FIELD ENGINEERING FOR APPROVAL AT LEAST THIRTY DAYS PRIOR TO THE BEGINNING OF SHAFT CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT FOUR COPIES OF AN INSTALLATION PLAN FOR APPROVAL BY FIELD ENGINEERING. IN PREPARING THE SUBMITTAL, THE CONTRACTOR SHALL REFERENCE THE AVAILABLE SUBSURFACE DATA PROVIDED IN THE GEOTECHNICAL REPORTS.

THE PLAN AND ALL SUBMITTALS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OKLAHOMA. THE PLAN SHALL PROVIDE AT LEAST THE FOLLOWING INFORMATION:

1. AN OVERALL CONSTRUCTION OPERATION SEQUENCE AND THE SEQUENCE OF SHAFT CONSTRUCTION.
2. LIST, DESCRIPTION, AND CAPACITIES OF THE PROPOSED EQUIPMENT INCLUDING, BUT NOT LIMITED TO CRANES, DRILLS, AUGERS, BAILING BUCKETS, FINAL CLEANING EQUIPMENT, AND DRILLING UNITS.
3. DETAILS OF SHAFT EXCAVATION METHODS INCLUDING PROPOSED DRILLING METHODS, TEMPORARY CASING METHODS, METHODS FOR CLEAN OUT OF THE SHAFTS, DISPOSAL PLAN FOR EXCAVATED MATERIAL, AND A REVIEW OF METHOD SUITABILITY TO THE ANTICIPATED SITE AND SUBSURFACE CONDITIONS.
4. DESCRIBE EQUIPMENT SUITABILITY TO ENSURE SHAFT LOCATIONS AND PLUMBNESS ARE WITHIN SPECIFIED TOLERANCES.
5. DETAILS OF CONCRETE PLACEMENT, INCLUDING PROPOSED OPERATIONAL PROCEDURES FOR PUMPING AND/OR TREMIE METHODS.
6. DETAILS OF METHODS TO PREVENT UNAUTHORIZED ENTRY INTO A SHAFT EXCAVATION.
7. A DETAILED QA/QC PLAN WHICH WILL INCLUDE A FULL-TIME ON-SITE REPRESENTATIVE THAT WILL BE RESPONSIBLE FOR REVIEWING AND OVERSEEING ALL CONSTRUCTION ACTIVITIES AND PROCEDURES DURING ALL DRILLING, TESTING, EXCAVATION AND PLACEMENT OF THE DRILLED SHAFT WALLS.

WORK SHALL NOT BEGIN UNTIL THE APPROPRIATE SUBMITTALS HAVE BEEN APPROVED IN WRITING BY FIELD ENGINEERING.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-12-2018

WALL GENERAL NOTES (1)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = NA	PROJECT MGR	RSP	12/20
	FIELD MGR		12/20
VERTICAL: 1" = NA	LEAD ENGR		12/20
	RECOMMENDED DESIGN MANAGER	HAS	12-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Gen_Notes-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 171 OF 334 SHEETS

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WALL GENERAL NOTES (cont.)

TYPE 4 SLOPE STABILIZATION WALL:

DESIGN DATA:

DESIGN
SLOPE STABILIZATION RETAINING WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 4TH EDITION, 2007 WITH 2008 INTERIMS.

MATERIAL
CONCRETE IN RETAINING WALLS AND GRADE BEAM SHALL BE CLASS A, f'c = 3,000 PSI.
CONCRETE IN DRILLED SHAFTS SHALL BE CLASS AA, f'c = 4,000 PSI.

REINFORCING STEEL FOR RETAINING WALLS, GRADE BEAM, AND DRILLED SHAFTS SHALL BE PLAIN REINFORCING, GRADE 60. REINFORCING STEEL FOR SCREEN WALLS AND ANY BARS CONNECTING TO THE SCREEN WALLS SHALL BE EPOXY COATED REINFORCING STEEL, GRADE 60.

BACKFILL FOR THE SLOPE STABILIZATION WALLS SHALL BE GRANULAR BACKFILL IN ACCORDANCE WITH SECTION 703.07 OF THE 2009 ODOT STANDARD SPECIFICATIONS.

THE UPPER 2' BEHIND THE WALL STEM SHALL HAVE A COMPACTED CLAY CAP LAYER IN ACCORDANCE WITH ODOT STANDARD SPECIFICATION SECTION 208. EXCAVATED MATERIAL MAY BE USED IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATION.

NOTES:

ALL SHAFTS SHALL BE PLUMB TO WITHIN 0.5% OF THE LENGTH, BASED ON TOTAL LENGTH OF SHAFT.

CONTRACTOR SHOULD ANTICIPATE THE NEED FOR TEMPORARY CASING IN ISOLATED CASES WHERE GROUNDWATER SEEPAGE MAY OCCUR ON TOP OF THE ROCK FORMATION.

FROM STATION 59+00 TO 62+00: LOCATION OF THE EXISTING EMBANKMENT EXHIBITS SIGNS OF DISTRESS AND SLOPE INSTABILITY. OPEN EXCAVATION WITHIN AND ADJACENT TO THIS STATION RANGE SHALL BE LIMITED TO A MAXIMUM OF 100 FEET AT ANY GIVEN TIME. LIMITING THE EXCAVATION EXTENTS IS CRITICAL TO THE STABILITY OF THE EXISTING SLOPES.

CAST IN PLACE SCREEN WALL | TYPES 1, 2, 3, & 4:

DESIGN DATA:

DESIGN
SCREEN WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 4TH EDITION, 2007 WITH 2008 INTERIMS.

MATERIAL
CONCRETE IN SCREEN WALLS SHALL BE CLASS AA, f'c = 4,000 PSI.
REINFORCING STEEL FOR SCREEN WALLS SHALL BE EPOXY COATED GRADE 60.

NOTE:
SCREEN WALL HEIGHTS SHALL HAVE A MINIMUM EXPOSED HEIGHT OF 8'. STEPS IN THE WALL SHALL BE NOT LESS THAN 6" AND NOT GREATER THAN 1'.

CONCRETE SURFACE TREATMENTS:

THE CONCRETE SURFACES OF THE RETAINING WALLS AND SCREEN WALLS SHALL HAVE A TEXTURED SURFACE TREATMENT AS INDICATED. THE RETAINING WALL SURFACES SHALL BE THE TYPE AND MANUFACTURER SHOWN IN TABLE, OR APPROVED EQUAL. THE TREATMENT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. ANY ADDITIONAL MANUFACTURER REQUIREMENTS NECESSARY TO OBTAIN FULL WARRANTY SHALL ALSO APPLY. THE THICKNESS OF SURFACE TREATMENT SHALL BE 2½" MAXIMUM. IF A LESS THICK SURFACE TREATMENT IS USED, THE CONTRACTOR SHALL ADJUST CONSTRUCTION REFERENCE LINES AS NEEDED.

ALL EXPOSED SURFACES OF THE RETAINING WALLS AND SCREEN WALLS SHALL BE PAINTED AND FINISHED WITH A SACRIFICIAL ANTI-GRAFFITI COATING.

AESTHETIC DETAILS FOR WALLS ARE DETAILED IN THE TABLE. SEE SHEETS 192 AND 193.

THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PRODUCT DATA FOR THE TEXTURED SURFACE TREATMENT. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL AND SHALL INDICATE THE FORMLINER LAYOUT AND TERMINATION DETAILS, AS WELL AS THE LOCATIONS OF BACKUP, RUSTICATION, REVEAL, AND CHAMFER STRIPS, JOINTS AND FORM TIES.

THE CONTRACTOR SHALL PROVIDE FIELD ENGINEERING WITH A 12" X 12" SAMPLE FINISHED WITH THE FORMLINER FOR APPROVAL. FOLLOWING APPROVAL OF THE SMALL PANEL, THE CONTRACTOR SHALL PROVIDE A FULL SCALE MOCK-UP PANEL USING PROPOSED MATERIALS, METHODS AND WORKMANSHIP. THE PANEL SHALL BE PREPARED ON THE JOBSITE FOR APPROVAL BY FIELD ENGINEERING. THE MOCK-UP PANEL SHALL BE A MINIMUM OF 50 SQUARE FEET IN SIZE.

WALL GENERAL NOTES (cont.)

CONCRETE SURFACE TREATMENTS, CONT'D.:

THE MOCK-UP PANEL SHALL INCORPORATE PROPOSED CONCRETE MIX, FORMWORK, TIES, FORMLINER, FORM RELEASE AGENTS, PLACEMENT RATE, FORM PRESSURES, JOINT SEALING, VIBRATING, AND FORM STRIPPING PRACTICES. THE PANEL SHALL INCLUDE ONE VERTICAL FORMLINER BUTT JOINT AND ONE HORIZONTAL BUTTLINER JOINT. IT SHALL ALSO INCLUDE THE PROPOSED END TREATMENTS FOR THE TOP, BOTTOM, AND SIDES OF THE FORMLINER. PATCHING AND REPAIR PROCEDURES FOR TIE HOLES, SPALLED CONCRETE AND VOIDS CAUSED BY HONEYCOMBING OR BUGHOLES SHALL BE PERFORMED ON THE MOCK-UP PANEL. THE FORMLINER FOR THE RETAINING WALLS SHALL MATCH THE FORMLINER USED FOR THE MOCK-UP PANEL.

THE MOCK-UP PANEL SHALL BE ACCEPTED BY FIELD ENGINEERING PRIOR TO BEGINNING FORMWORK FOR THE PROJECT. THE ACCEPTED MOCK-UP WILL BE THE STANDARD BY WHICH THE REMAINING WORK WILL BE EVALUATED FOR TECHNICAL AND AESTHETIC MERIT.

FOLLOWING ACCEPTANCE OF THE MOCK-UP PANEL FOR FORMLINER AND REPAIR WORK, THE PANEL SHALL HAVE THE SPECIFIED PAINT AND/OR MORTAR FINISH APPLIED. THE COLORS AND FINISHES SHALL CONSIST OF THE BASE COLOR AND ACCENT COLORS (AS APPLICABLE) AS SHOWN IN THE PLANS. THE COLOR AND FINISH ON THE MOCK-UP PANEL SHALL MATCH THE COLOR AND FINISH ON THE RETAINING WALLS AND SCREEN WALLS. THE COLORS AND FINISHES SHALL BE SUBJECT TO APPROVAL BY FIELD ENGINEERING.

FOR THE SURFACE TREATMENT APPLIED TO THE CAST-IN-PLACE RETAINING WALLS, NO VERTICAL FORMLINER BUTT JOINTS WILL BE ALLOWED, AND HORIZONTAL FORMLINER BUTT JOINTS WILL NOT BE ALLOWED AT A SPACING OF LESS THAN 4 FEET.

FORMWORK SHALL BE DESIGNED BY THE CONTRACTOR TO COMPLY WITH ALL REQUIREMENTS BY THE FORMLINER MANUFACTURER. IN ADDITION, ALL REQUIREMENTS OF THE FORMLINER MANUFACTURER FOR HANDLING AND INSTALLATION OF THE FORMLINERS, APPLICATION OF RELEASE AGENTS, PLACEMENT OF CONCRETE, VIBRATING OF CONCRETE, AND REMOVAL OF FORMS SHALL BE FOLLOWED. FORMLINER BUTT JOINTS SHALL BE CAREFULLY LINED UP TO PROVIDE A SURFACE FREE FROM VISIBLE LINES.

PRIOR TO CONCRETE PLACEMENT IN THE RETAINING WALLS, FIELD ENGINEERING SHALL VERIFY THE LINES AND FORMLINER PANEL PATTERNS. AFTER STRIPPING OF THE FORMS, THE SURFACE TREATMENT SHALL BE APPLIED TO THE RETAINING WALLS TO MATCH THE APPROVED COLORS AND FINISHES FROM THE MOCK-UP PANEL, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL EXPOSED WALL SURFACES SHALL RECEIVE AN ANTI-GRAFFITI COATING OF POLYESTER, BARRIER TYPE B, SOLVENT, OR APPROVED EQUIVALENT. THE COATING SHALL BE APPLIED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

TEMPORARY EARTH RETAINAGE:

TEMPORARY EARTH RETAINAGE SHALL BE REQUIRED TO CONSTRUCT THE CANTILEVER PORTION OF WALL K ALONG 84TH STREET SOUTH. TEMPORARY RETAINAGE MAY INCLUDE, BUT IS NOT LIMITED TO, SOLDIER PILE AND LAGGING OR SHEET PILING WALL. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE TYPE OF WALL TO ACCOMMODATE THE SITE AND GEOLOGICAL CONDITIONS. TEMPORARY EARTH RETAINAGE SHALL BE IN ACCORDANCE WITH SECTION 502 OF THE 2009 ODOT STANDARD SPECIFICATIONS.

LOCATIONS AND EXTENTS OF TEMPORARY EARTH RETAINAGE SHOWN IN THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE FINAL LOCATIONS AND EXTENTS. EXISTING LANDSCAPING AND HARDSCAPING NORTH OF WALL K LOCATION SHALL NOT BE DISTURBED OR UNDERMINED.

ALL REMOVED TEMPORARY EARTH RETAINAGE SHALL BECOME PROPERTY OF THE CONTRACTOR AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER AND IN ACCORDANCE WITH SECTION 619.04(B)2 OF THE STANDARD SPECIFICATIONS. IF APPROVED BY THE ENGINEER, CONTRACTOR HAS THE OPTION TO LEAVE THE TEMPORARY EARTH RETAINAGE STRUCTURE IN PLACE AT NO ADDITIONAL COST TO THE CITY.

TEMPORARY EARTH RETAINAGE SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OKLAHOMA FOR THE IN-SITU CONDITIONS ON THIS PROJECT. THE DESIGN SHALL BE BASED ON AASHTO LRFD BRIDGE SPECIFICATIONS, 7TH EDITION. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY EARTH RETAINAGE STRUCTURES. IF STEEL PILES ARE REQUIRED AT SPECIFIC OR CRITICAL LOCATIONS, THOSE ELEMENTS SHALL ALSO BE DESIGNED AND SHOWN ON THE CALCULATIONS. FINAL SIGNED AND SEALED DESIGN CALCULATIONS AND DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

ALL COST FOR TEMPORARY EARTH RETAINAGE INCLUDING MATERIAL, ENGINEERING, LABOR, AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LUMP SUM FOR "TEMPORARY EARTH RETAINAGE".

LICENSED PROFESSIONAL ENGINEER KAREN SWITZER JONES 28517 OKLAHOMA 10-26-18

WALL GENERAL NOTES (2)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDU	10/18
	FIELD MGR		7/18
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS 8-20	
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Gen_Notes-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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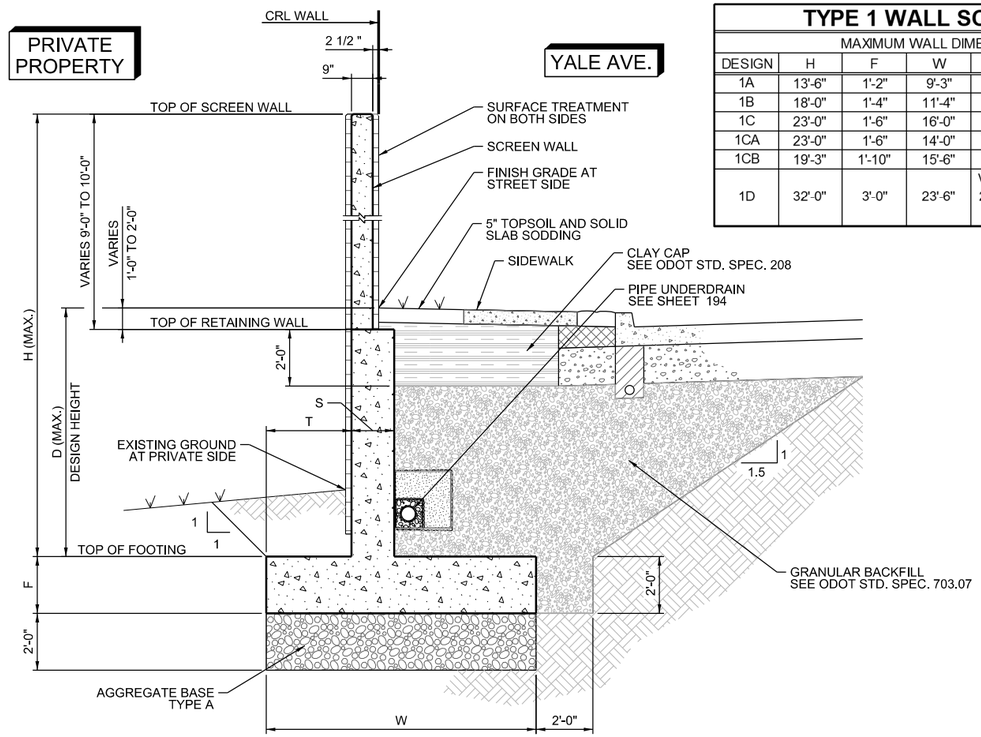
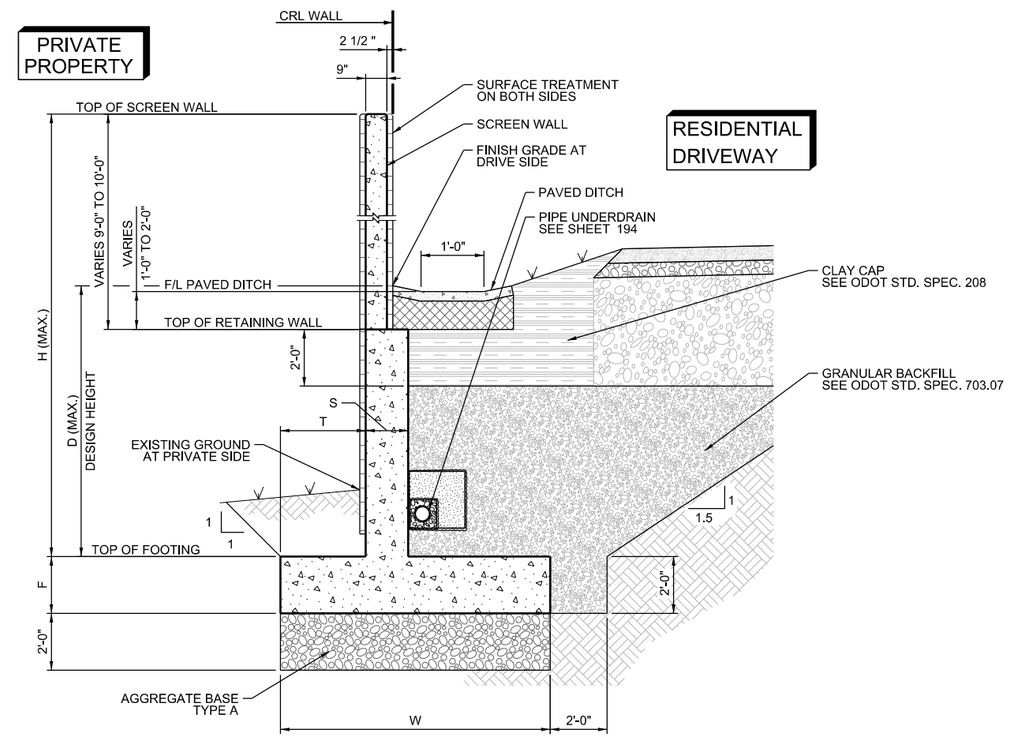
TYPE 1 WALL SCHEDULE

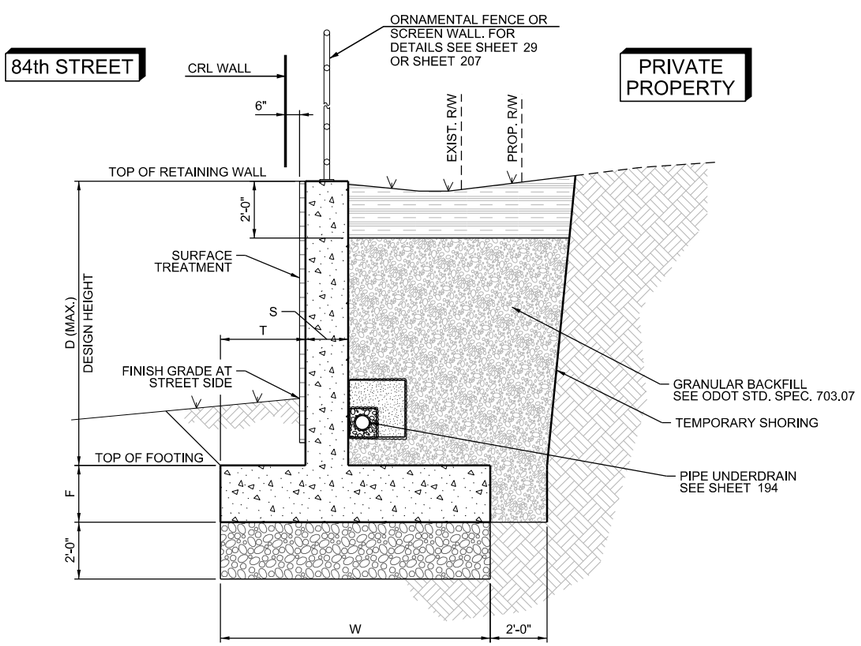
MAXIMUM WALL DIMENSIONS						
DESIGN	H	F	W	S	T	D (MAX.)
1A	13'-6"	1'-2"	9'-3"	1'-0"	2'-6"	5'-6"
1B	18'-0"	1'-4"	11'-4"	1'-4"	2'-6"	10'-0"
1C	23'-0"	1'-6"	16'-0"	1'-6"	5'-0"	15'-0"
1CA	23'-0"	1'-6"	14'-0"	1'-6"	3'-0"	15"-0"
1CB	19'-3"	1'-10"	15'-6"	1'-10"	5'-0"	19'-0"
1D	32'-0"	3'-0"	23'-6"	VARIES 2'-0" TO 3'-6"	6'-0"	24'-0"



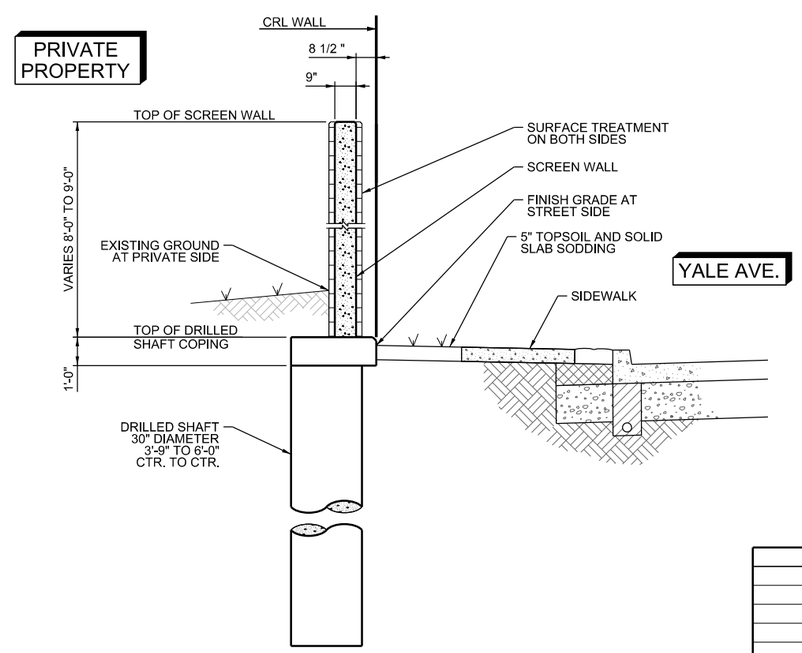
TYPE 1 (WALLS B, C AND E)
CONVENTIONAL CONCRETE CANTILEVER FOOTING N.T.S.



TYPE 1 (WALL M)
CONVENTIONAL CONCRETE CANTILEVER FOOTING N.T.S.



TYPE 1 (WALL K)
CONVENTIONAL CONCRETE CANTILEVER FOOTING N.T.S.



TYPE 2 (WALL A)
SCREEN WALL ON DRILLED SHAFTS N.T.S.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-19-2018

WALL TYPICAL SECTIONS (1)
TYPE 1 & TYPE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18	
	FIELD MGR	BZW	7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"= NA	RECOMMENDED	HAS B-20		
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-S-Typ_Sections-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 173 OF 334 SHEETS

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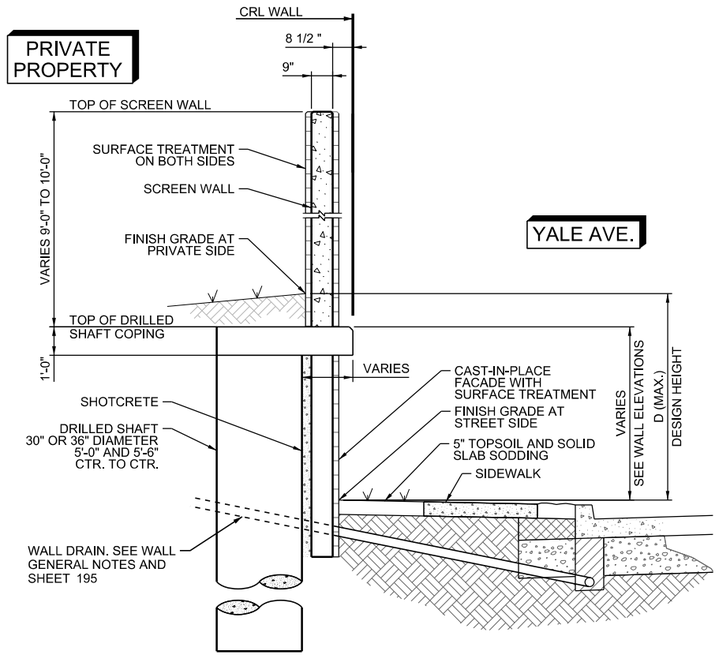
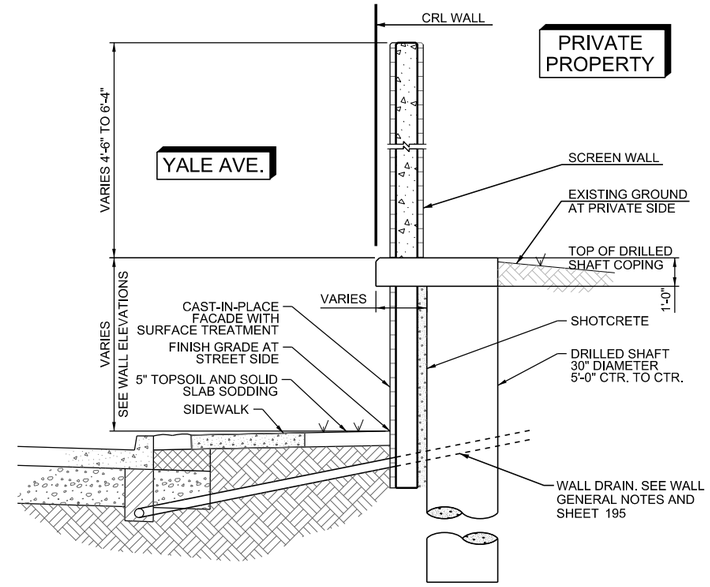


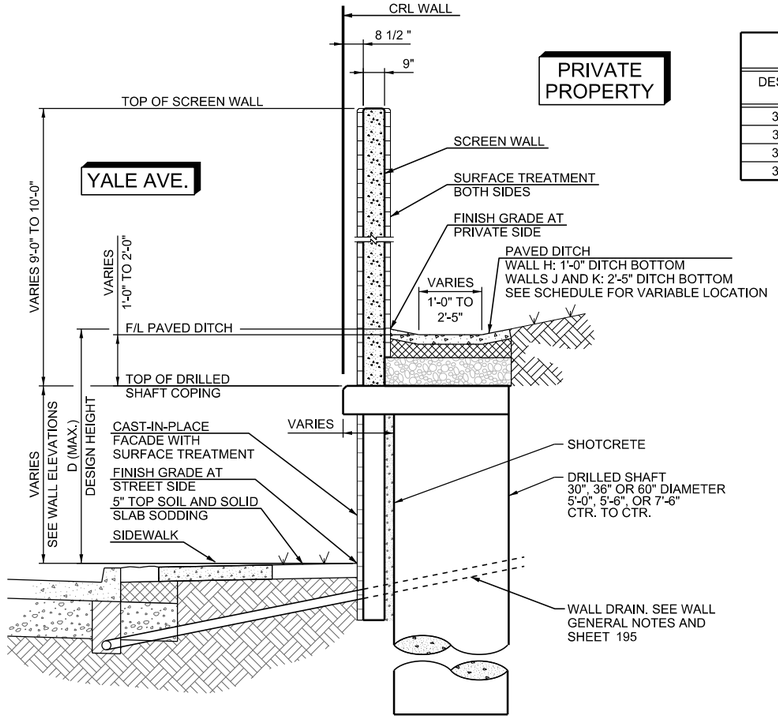
TYPE 3 (WALL D)

DRILLED SHAFT RETAINING WALL N.T.S.



TYPE 3 (WALL G)

DRILLED SHAFT RETAINING WALL N.T.S.

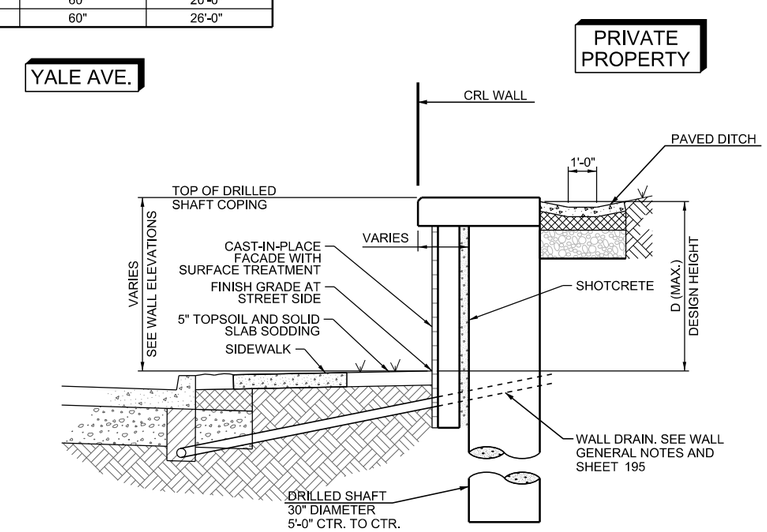


TYPE 3 (WALLS J AND K)

DRILLED SHAFT RETAINING WALL N.T.S.

TYPE 3 WALL SCHEDULE

DESIGN	DRILLED SHAFT DIAMETER	D (MAX. HEIGHT)
3A	30"	6'-0"
3B	36"	15'-0"
3C	60"	20'-0"
3D	60"	26'-0"



TYPE 3 (WALL L)

DRILLED SHAFT RETAINING WALL N.T.S.

WALL TYPICAL SECTIONS (2)
TYPE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER	HAS 8-20		CITY ENGINEER
FILE: 313925-S-Typ_Sections-02.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 174 OF 334 SHEETS

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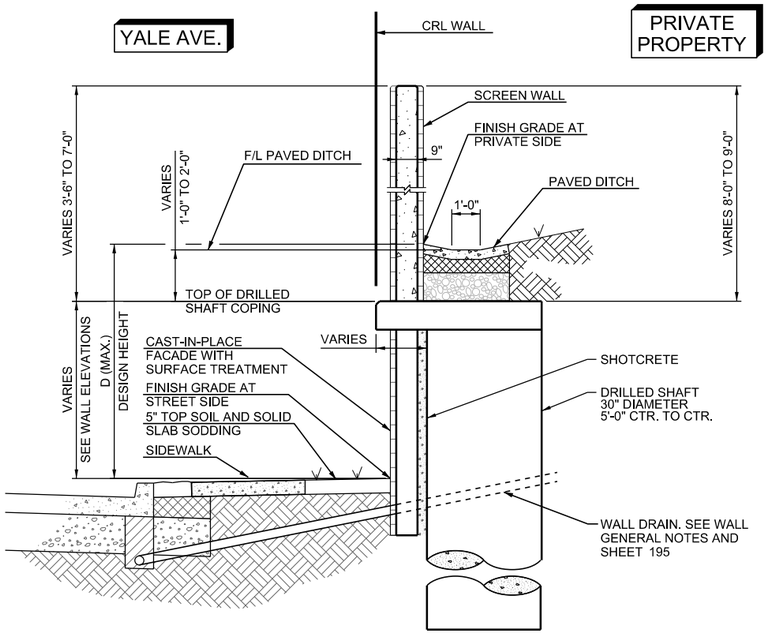
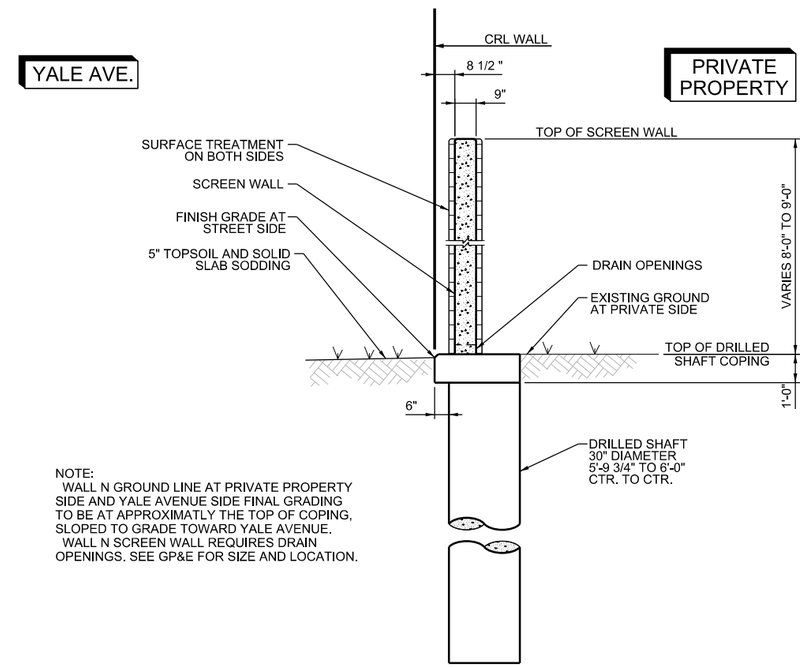
WALL 'H' DITCH FLOWLINE LOCATION		
	STATION, WALL H	OFFSET FROM CRL WALL
	34+36.92	5.00' RT.
TRANSITION	35+25.44	5.00' RT.
	35+35.44	2.68' RT.
TRANSITION	38+69.66	2.68' RT.
	38+79.66	5.00' RT.
	39+27.62	5.00' RT.



TYPE 3 TYPICAL SECTION (WALL H)

DRILLED SHAFT RETAINING WALL N.T.S.



NOTE:
WALL N GROUND LINE AT PRIVATE PROPERTY SIDE AND YALE AVENUE SIDE FINAL GRADING TO BE AT APPROXIMATLY THE TOP OF COPING, SLOPED TO GRADE TOWARD YALE AVENUE.
WALL N SCREEN WALL REQUIRES DRAIN OPENINGS. SEE GP&E FOR SIZE AND LOCATION.

TYPE 2 (WALL N)

SCREEN WALL ON DRILLED SHAFTS N.T.S.

LICENSED PROFESSIONAL ENGINEER KAREN SKITTEK JONES 28517 OKLAHOMA 10-31-2018

WALL TYPICAL SECTIONS (3)
TYPE 2 & TYPE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RJP	12/20
	FIELD MGR	ZLM	11/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	HB	12-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Typ_Sections-03.dgn
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ATLAS PAGE NO.: 882, 883, 1005, 1006
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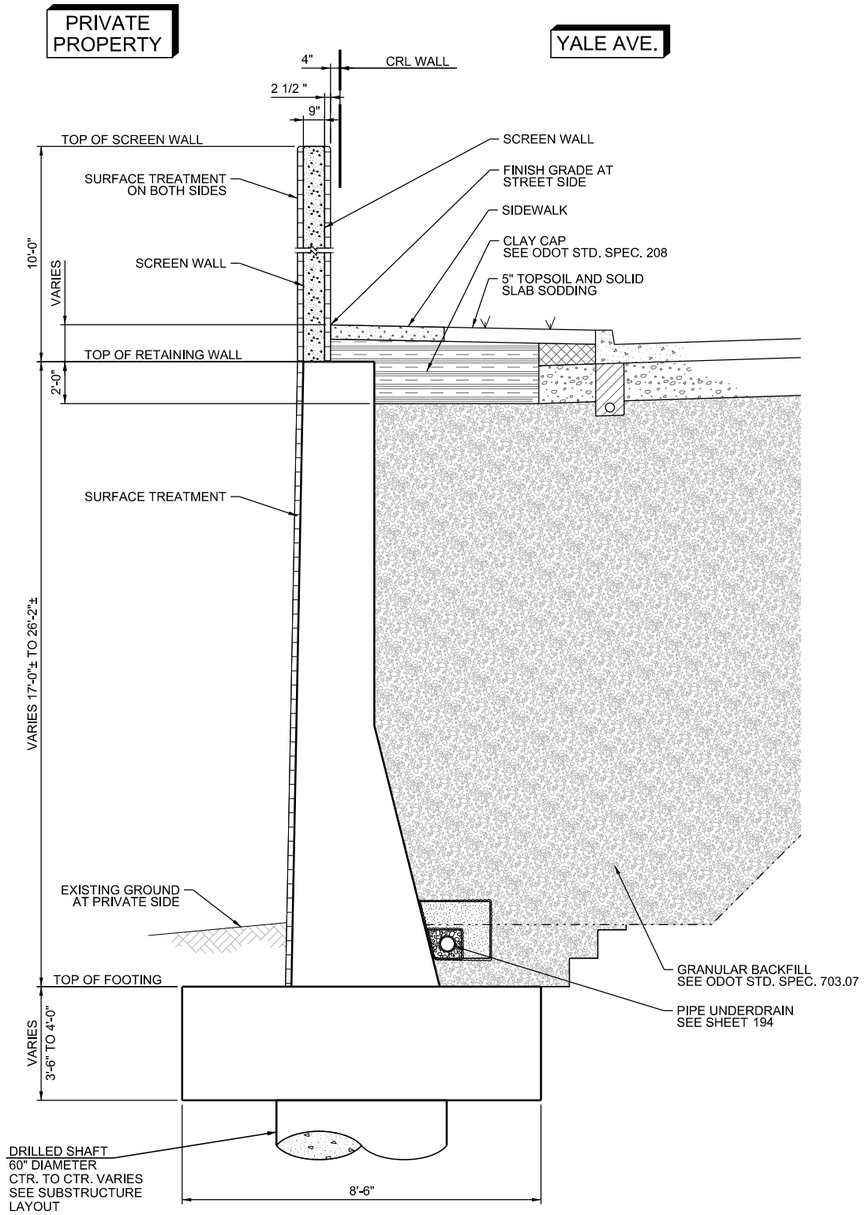
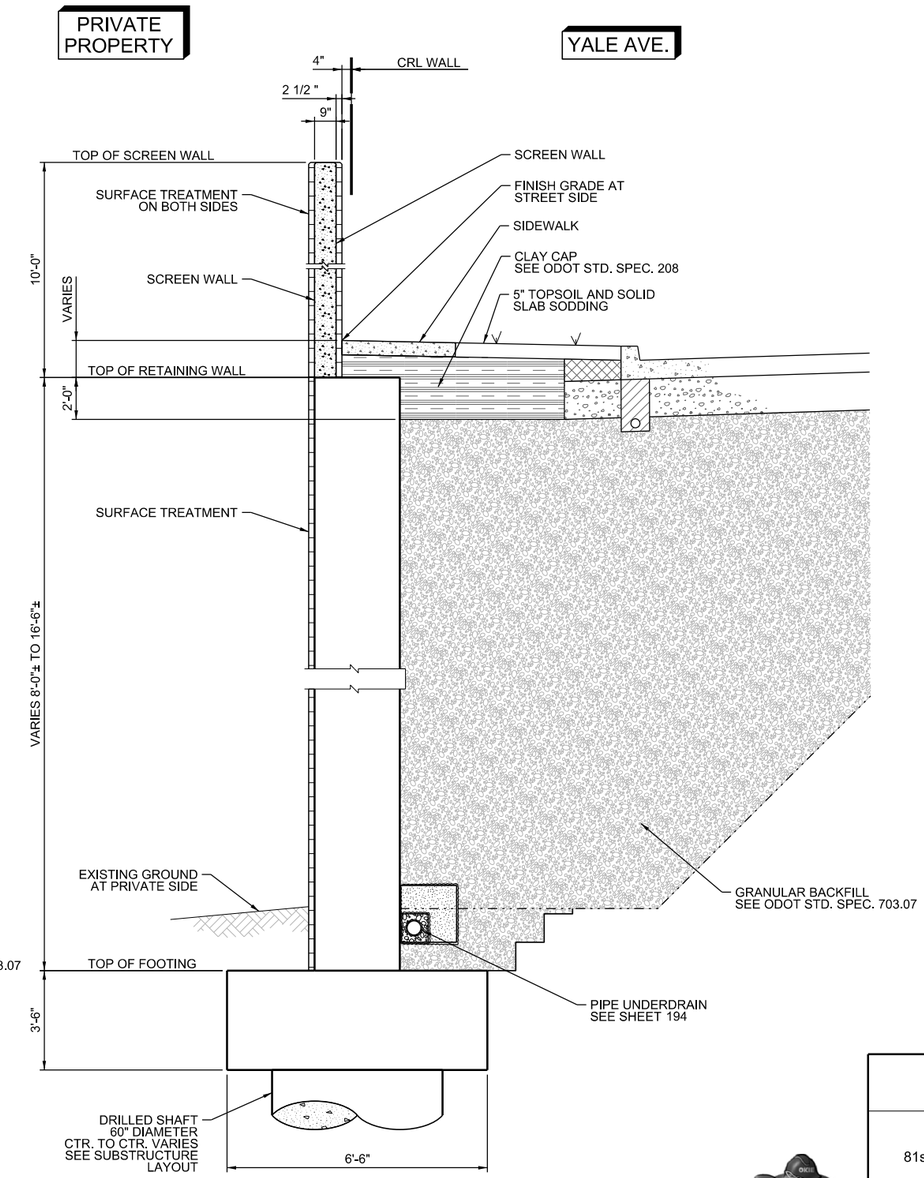


TYPE 4 (WALL F - PANELS 6-25)

SLOPE STABILIZATION WALL N.T.S.



TYPE 4 (WALL F - PANELS 1-5, 26-36)

SLOPE STABILIZATION WALL N.T.S.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-31-18

WALL TYPICAL SECTIONS (4)
TYPE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18
	FIELD MGR	RWL	7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED	HAS 8-20	
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Typ_Sections-04.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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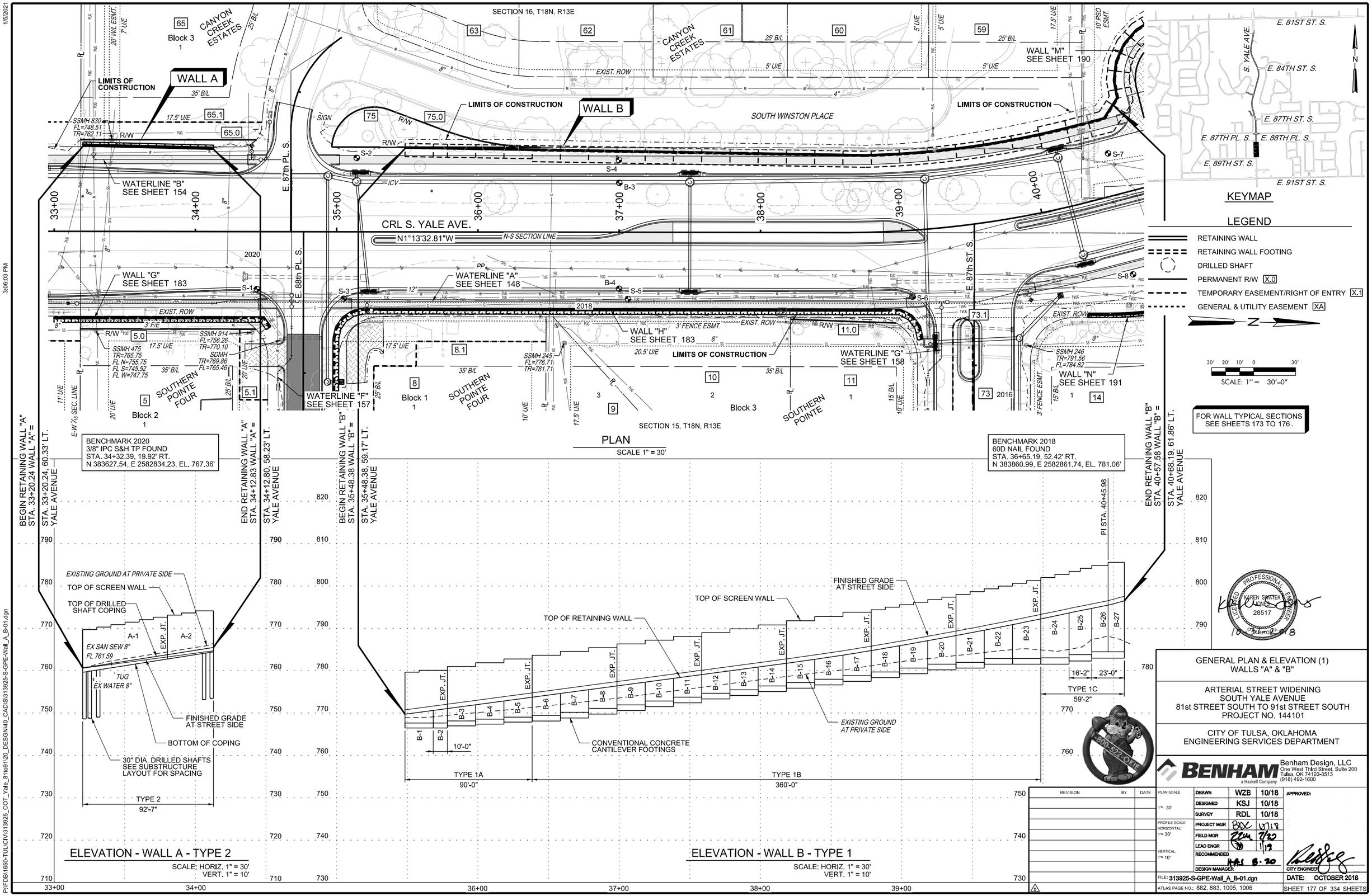

GENERAL PLAN & ELEVATION (1)
WALLS "A" & "B"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600
a Haskell Company

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	10/18
	FIELD MGR	ZEM	7/20
VERTICAL: 1"= 10'	LEAD ENGR		1/19
	RECOMMENDED	HAS 8-20	
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-GPE-Wall_A_B-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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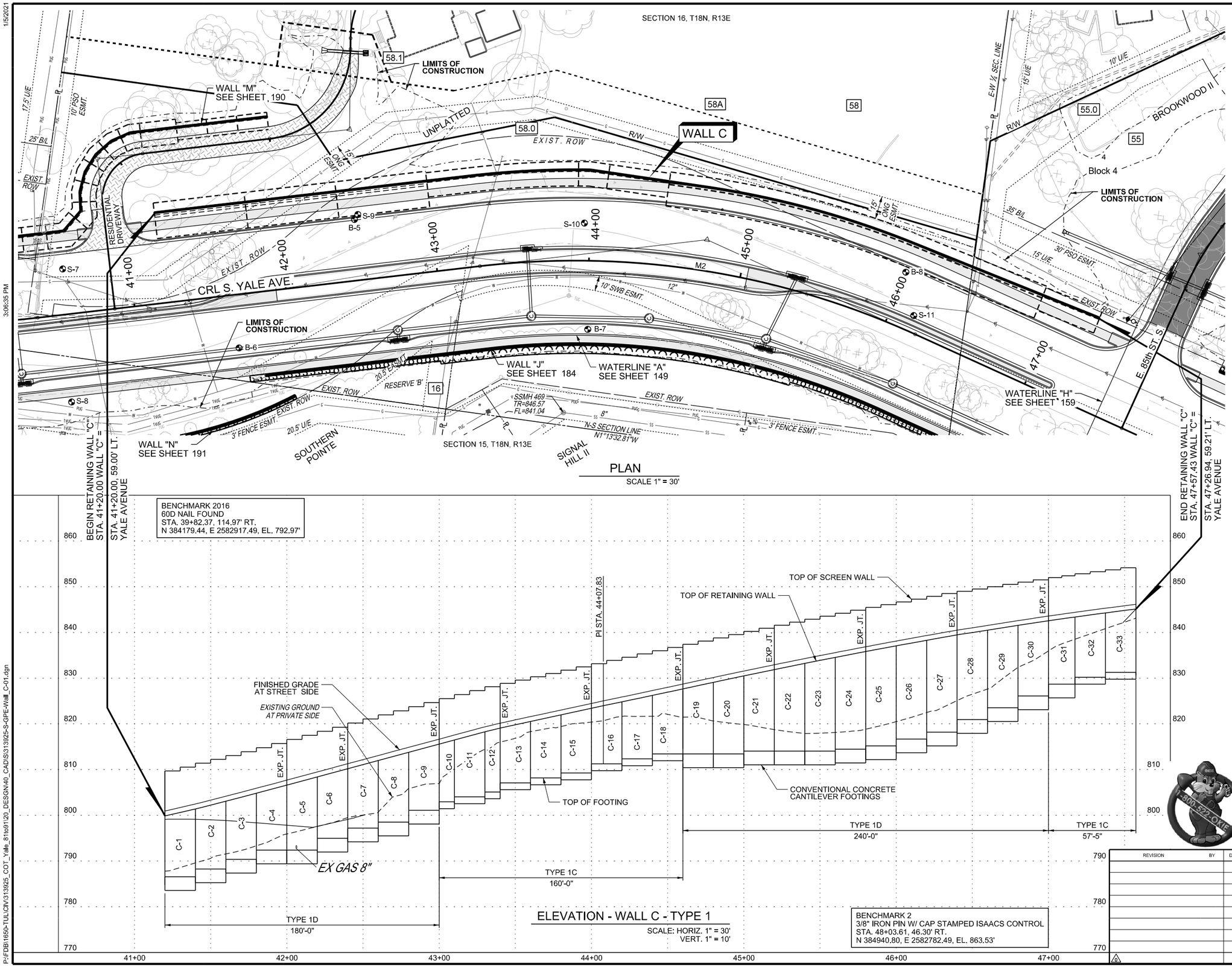

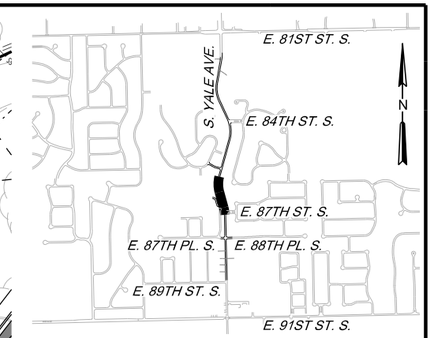

KEYMAP

LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-3-2018

GENERAL PLAN & ELEVATION (2)
WALL "C"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	10/18
	FIELD MGR	[illegible]	7/20
VERTICAL: 1"= 10'	LEAD ENGR	[illegible]	1/19
	RECOMMENDED DESIGN MANAGER	HAS	8-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-GPE-Wall_C-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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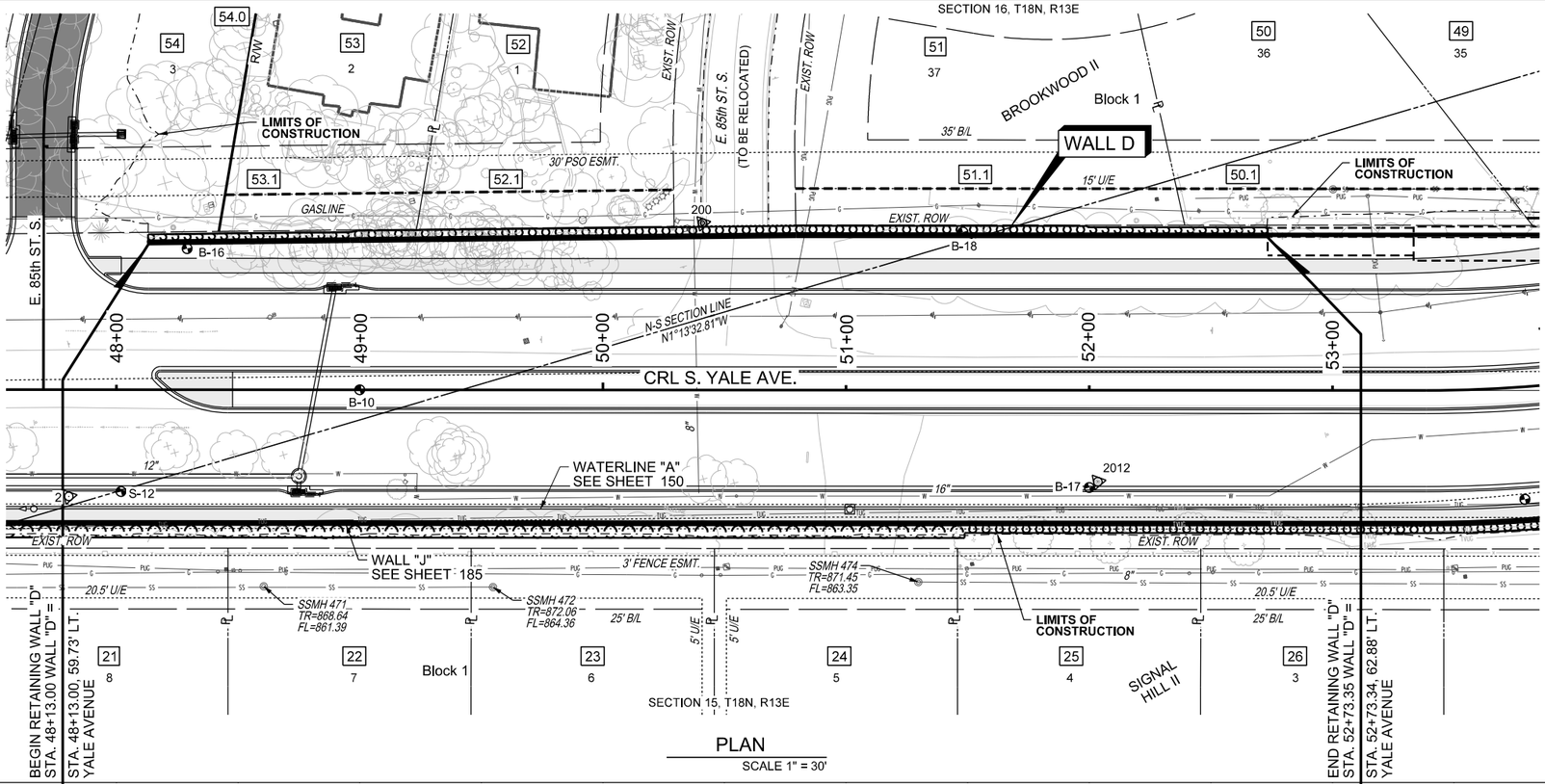
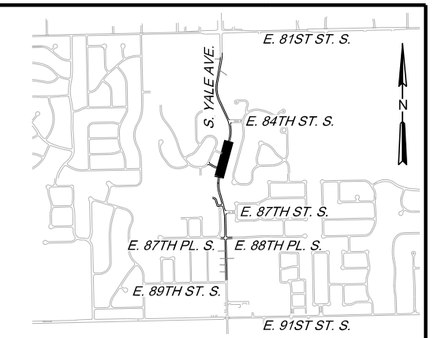


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

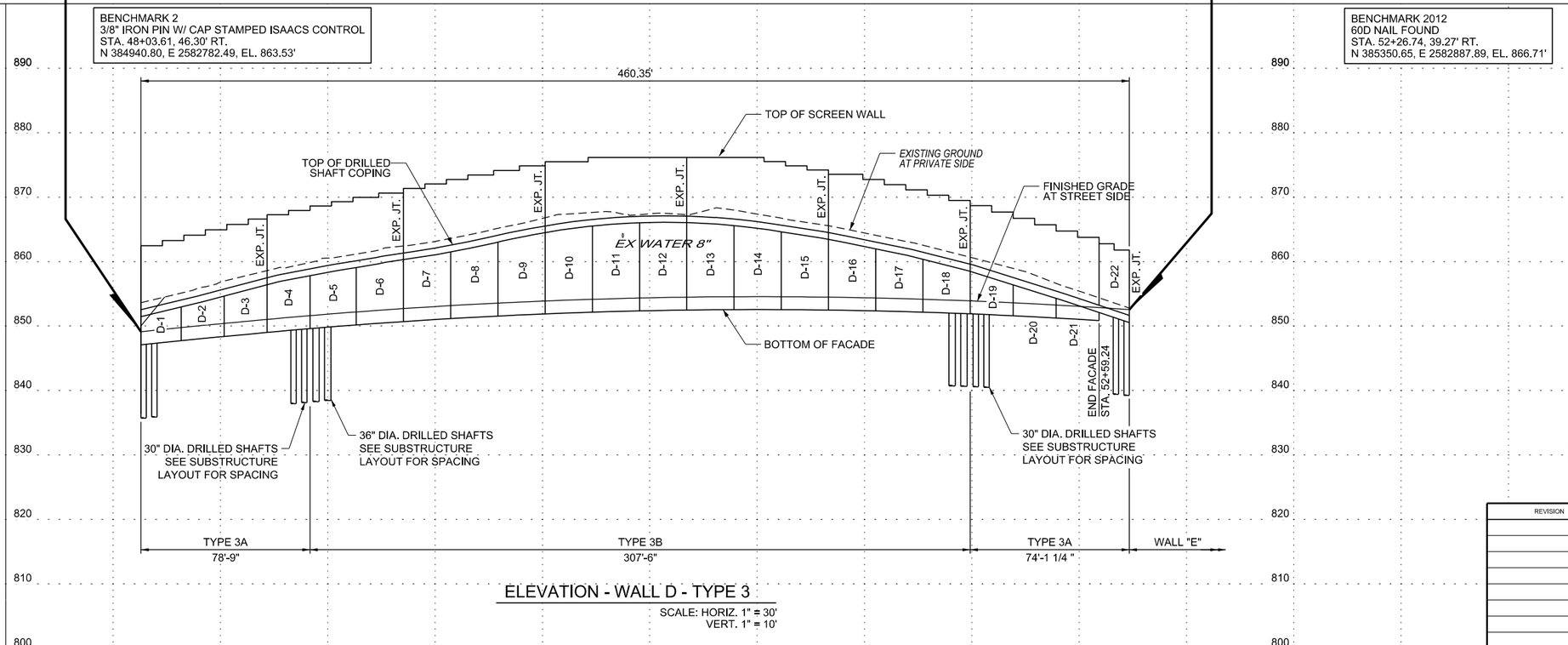
- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'

BENCHMARK 2012
60D NAIL FOUND
STA. 52+26.74, 39.27' RT.
N 385350.65, E 2582887.89, EL. 866.71'



ELEVATION - WALL D - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

LICENSED PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-3-2018

GENERAL PLAN & ELEVATION (3)
WALL "D"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	10/18
	FIELD MGR	ZZW	7/20
	LEAD ENGR		4/19
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_D-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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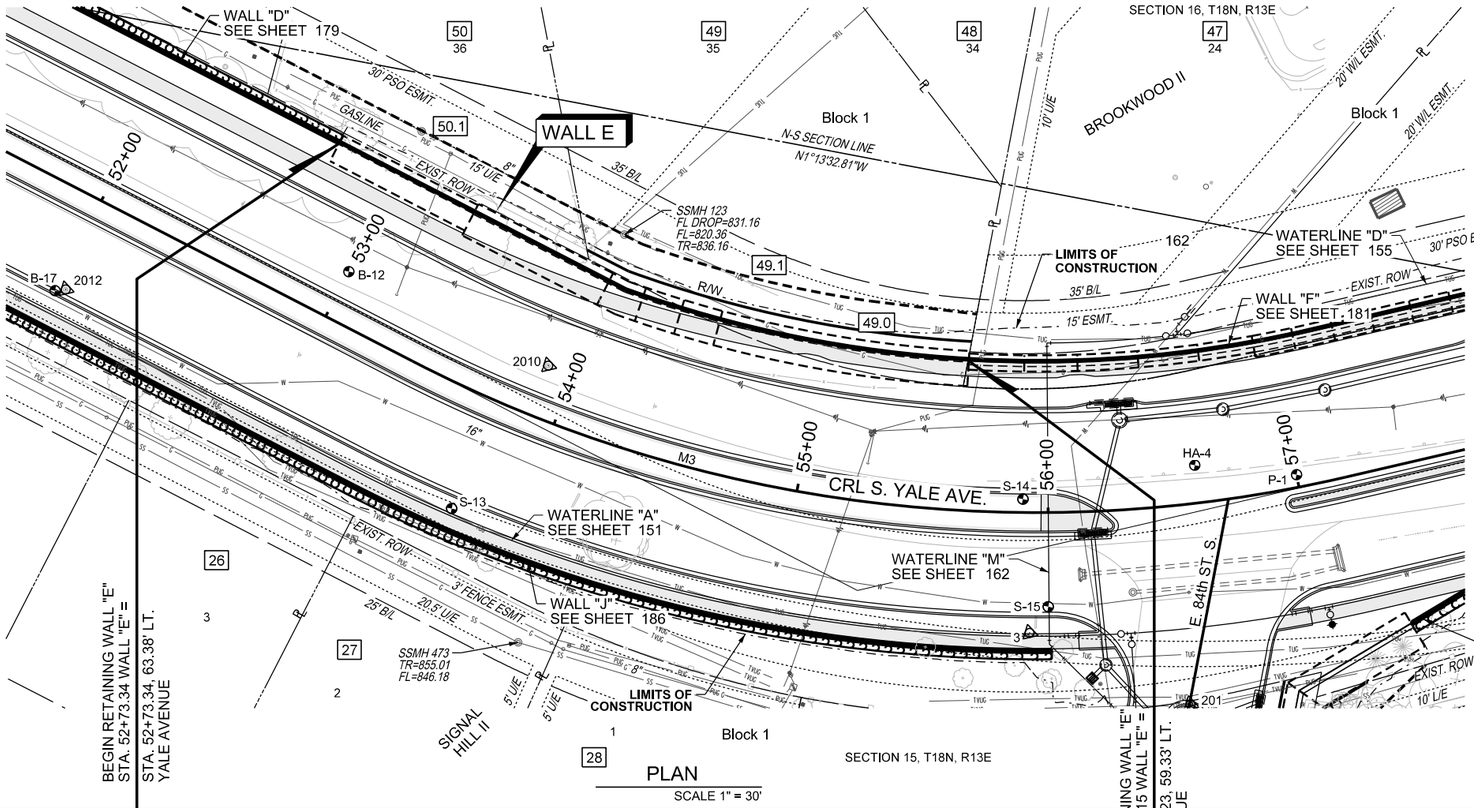
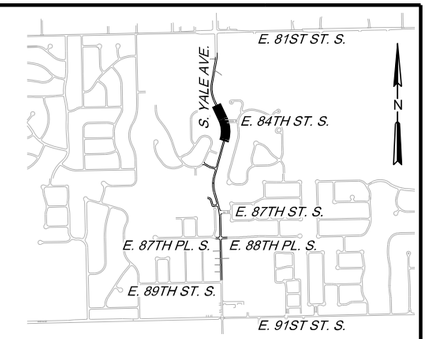


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

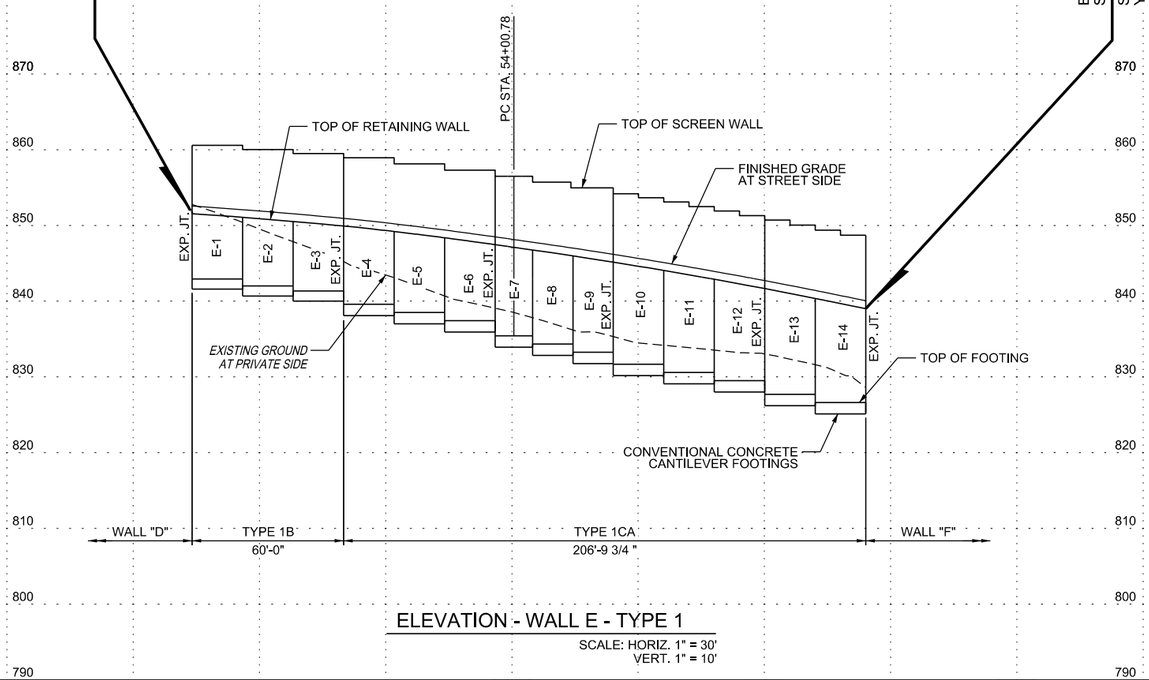
30' 20' 10' 0 30'

SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176 .

BENCHMARK 2010
60D NAIL FOUND
STA. 54+11.82, 20.52' LT.
N 385543.87, E 2582877.71, EL. 847.78'

BENCHMARK 3
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 56+16.95, 44.56' RT.
N 385752.33, E 2582941.66, EL. 841.77'



ELEVATION - WALL E - TYPE 1

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (4)
WALL "E"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 30'				APPROVED:
	DRAWN	WZB	10/18	
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1" = 30'	PROJECT MGR		10/18	
	FIELD MGR		7/20	
VERTICAL: 1" = 10'	LEAD ENGR		7/19	
	RECOMMENDED HAS 8.20 DESIGN MANAGER			CITY ENGINEER
FILE: 313925-S-GPE-Wall_E-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 180 OF 334 SHEETS

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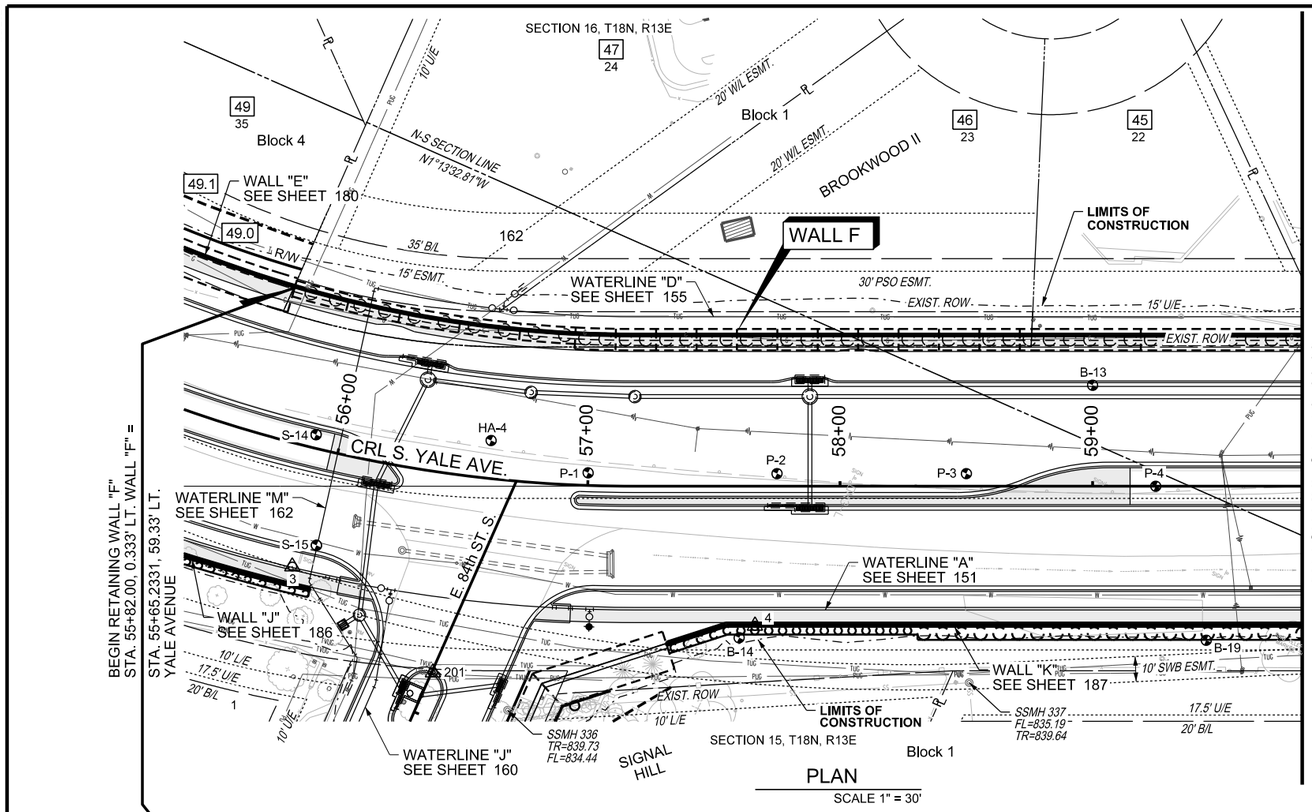
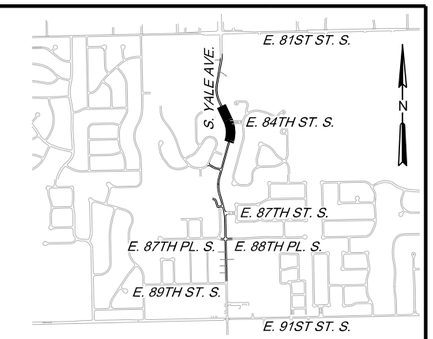


PLAN

SCALE 1" = 30'



KEYMAP

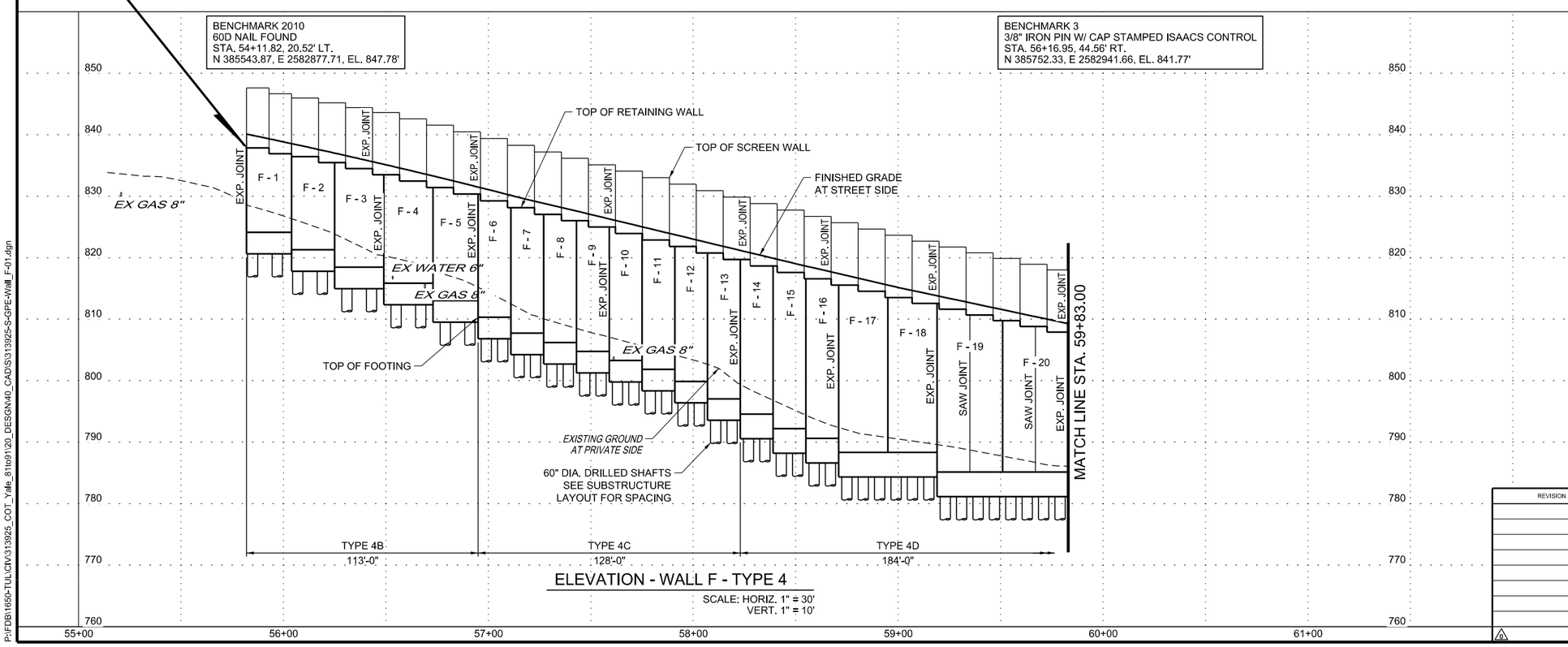
LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.



ELEVATION - WALL F - TYPE 4

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

LICENSED PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-31-2018

GENERAL PLAN & ELEVATION (5)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'
PROFILE SCALE HORIZONTAL: 1"= 30'
VERTICAL: 1"= 10'

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	10/18
FIELD MGR	RZM	7/20
LEAD ENGR	DJ	1/19
RECOMMENDED	HAS 8-20	
DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_F-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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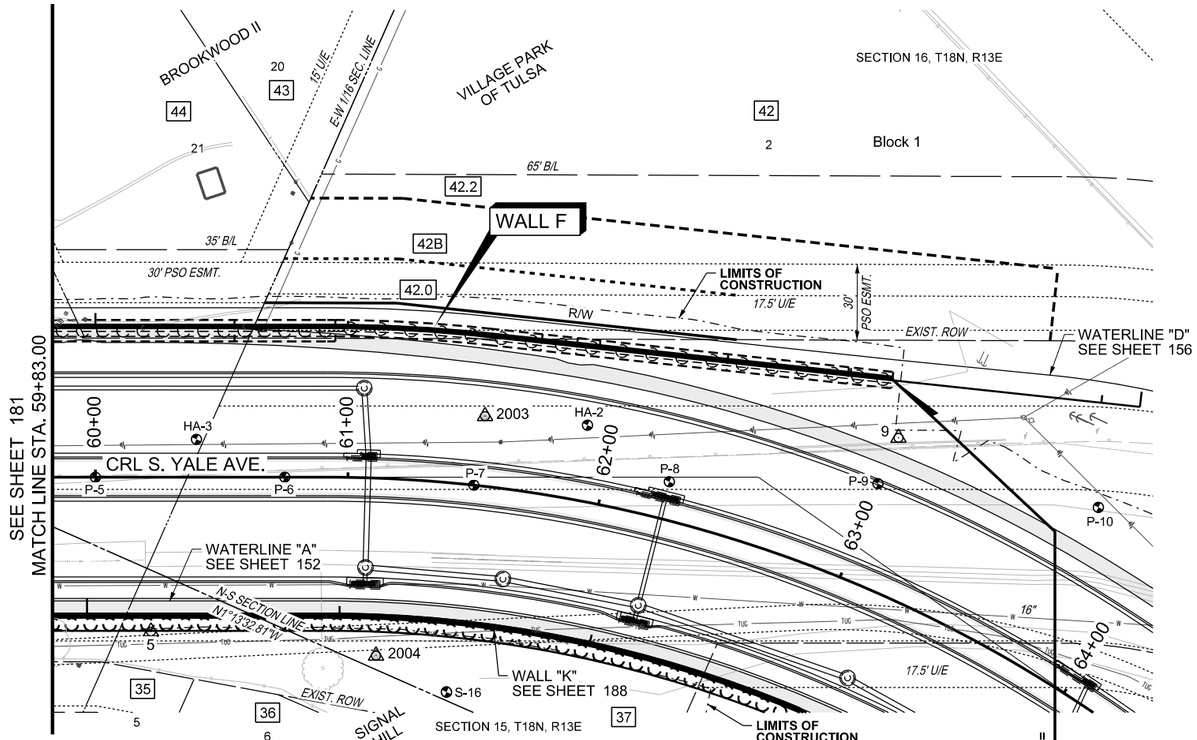
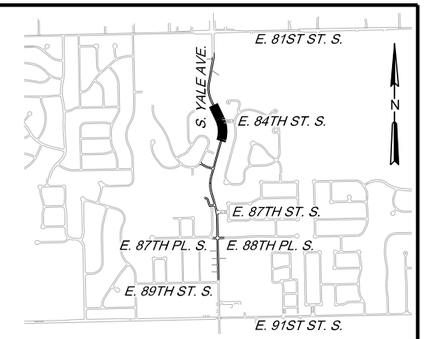


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

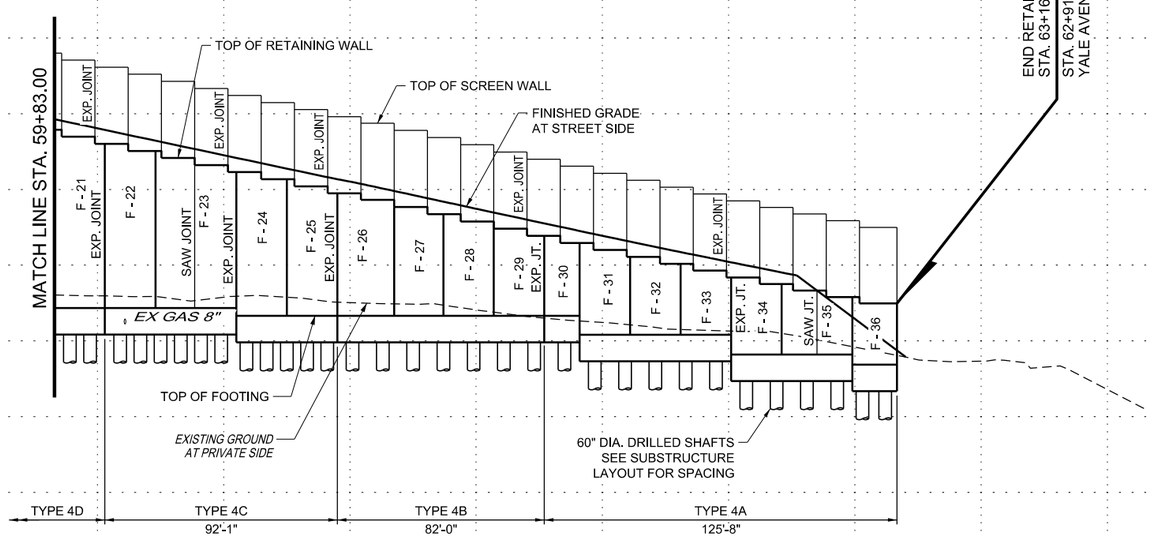
- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176 .

BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 60+46.51, 47.29' RT.
N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'



ELEVATION - WALL F - TYPE 4

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (6)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR.	BDC	12/18
	FIELD MGR.		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_F-02.dgn

DATE: OCTOBER 2018

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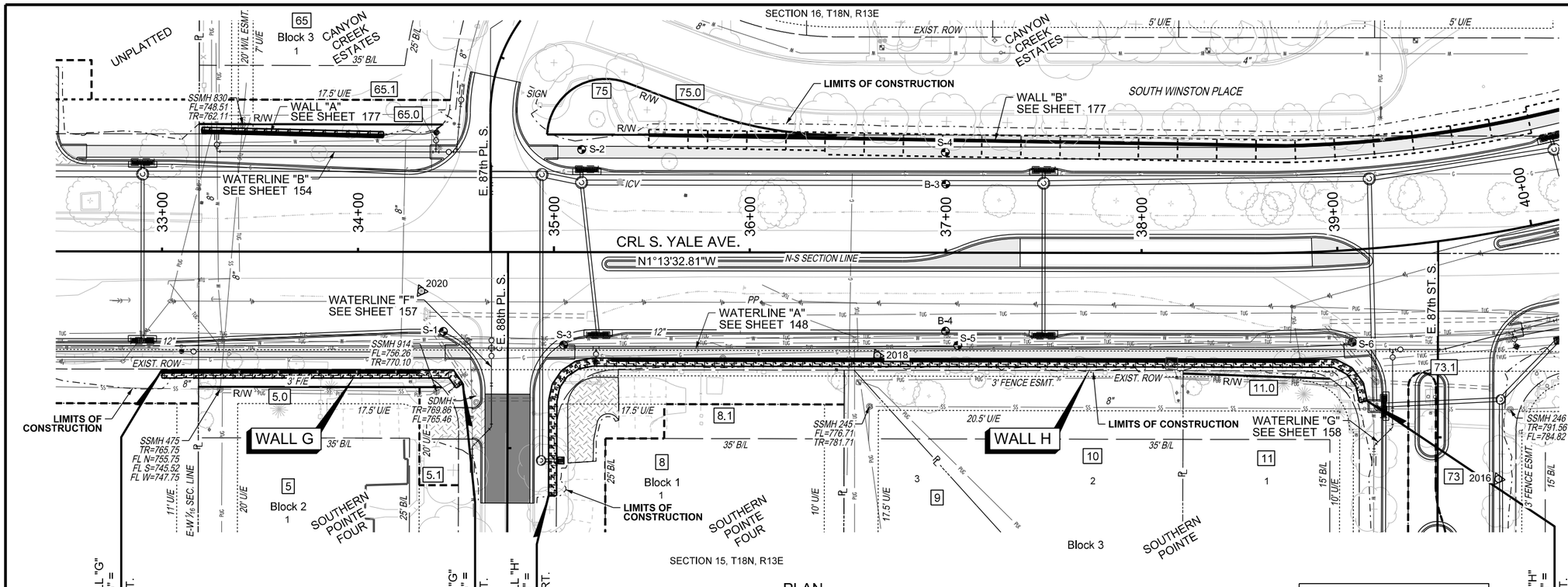
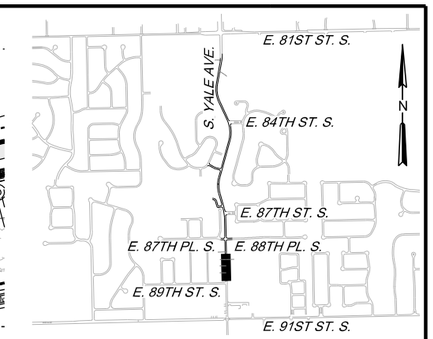


PLAN

SCALE 1" = 30'



KEYMAP

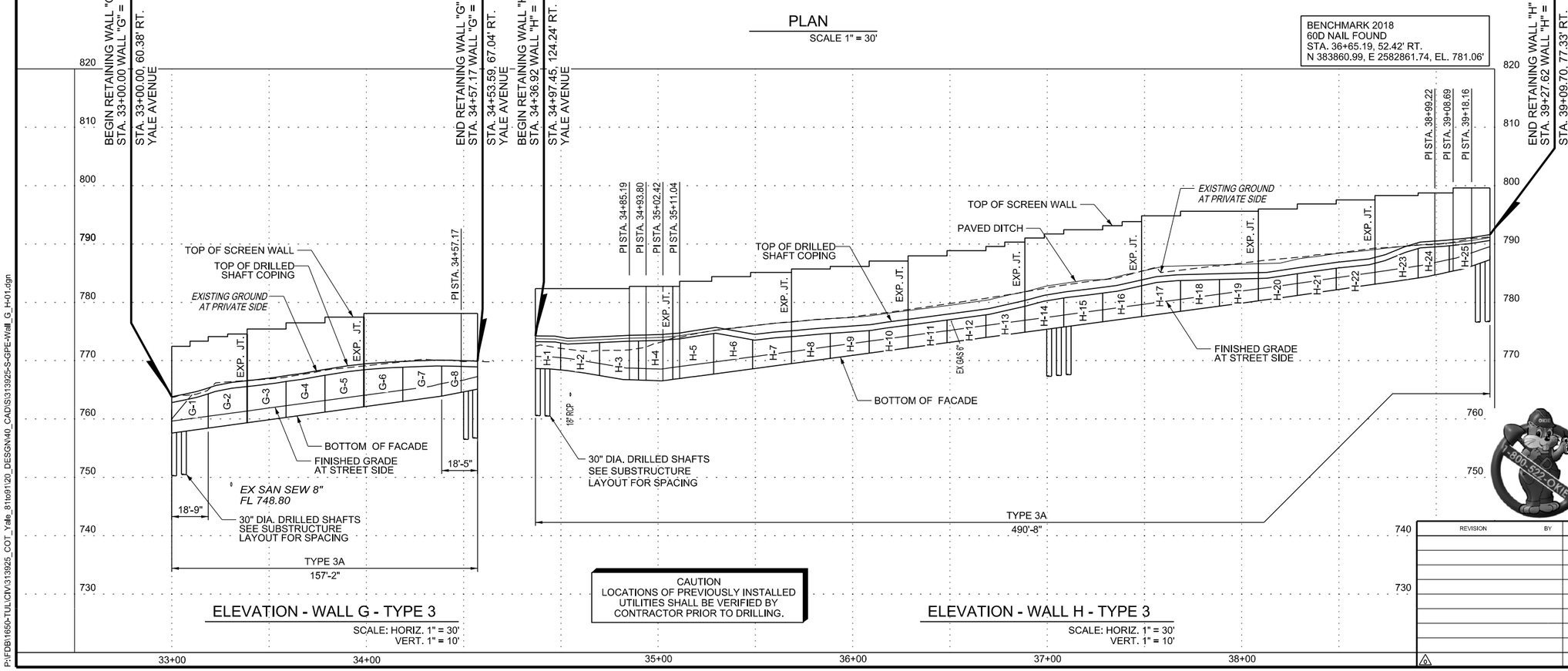
LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1'' = 30'–0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176 .

BENCHMARK 2018
60D NAIL FOUND
STA. 36+65.19, 52.42' RT.
N 383860.99, E 2582861.74, EL. 781.06'



ELEVATION - WALL G - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

CAUTION
LOCATIONS OF PREVIOUSLY INSTALLED UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DRILLING.

ELEVATION - WALL H - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (7)
WALLS "G" & "H"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 30'				APPROVED:
	DRAWN	WZB	10/18	
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1" = 30'	PROJECT MGR		10/18	
	FIELD MGR		7/20	
VERTICAL: 1" = 10'	LEAD ENGR		1/19	
	RECOMMENDED	HAL	8·20	CITY ENGINEER
	DESIGN MANAGER			

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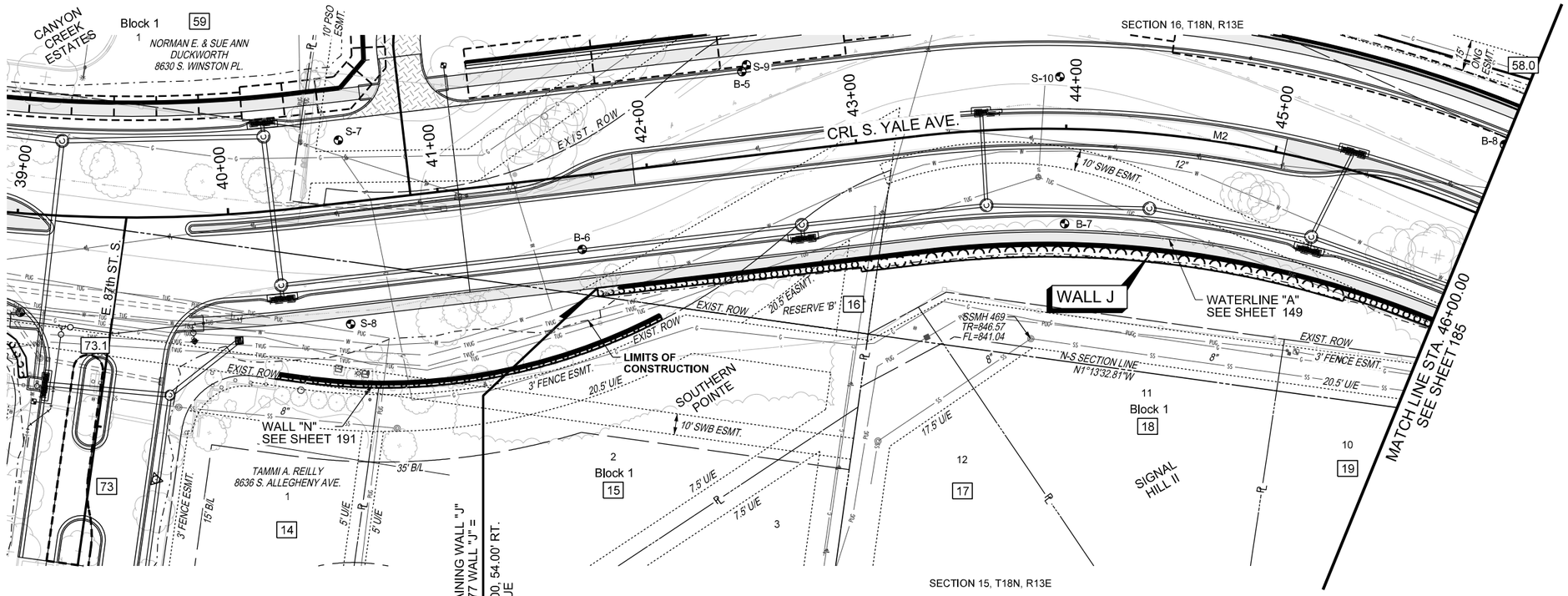
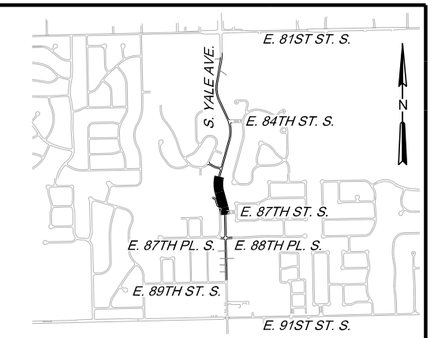


PLAN

SCALE 1" = 30'

BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'



KEYMAP

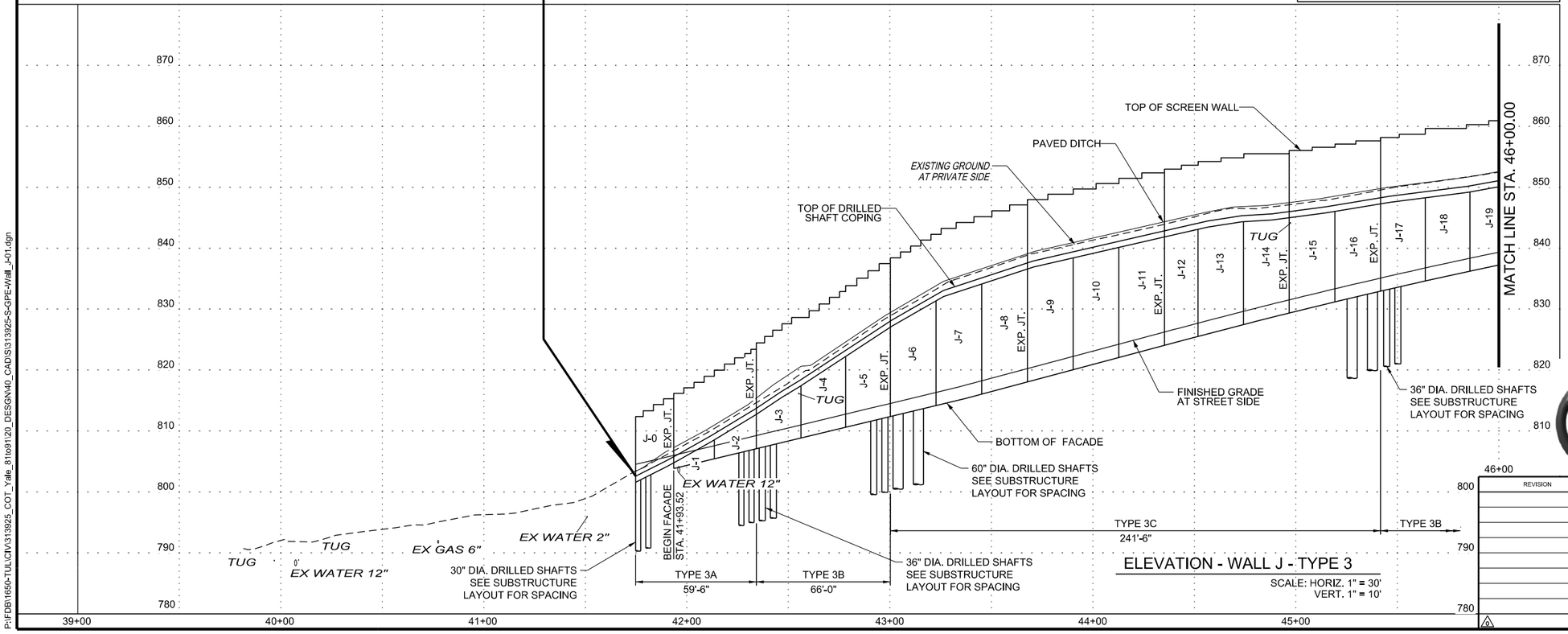
LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

30' 20' 10' 0 30'

SCALE: 1'' = 30'-0''

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.



ELEVATION - WALL J - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

REVISION	BY	DATE

GENERAL PLAN & ELEVATION (8)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= 10'	RECOMMENDED	HAL	8-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-GPE-Wall_J-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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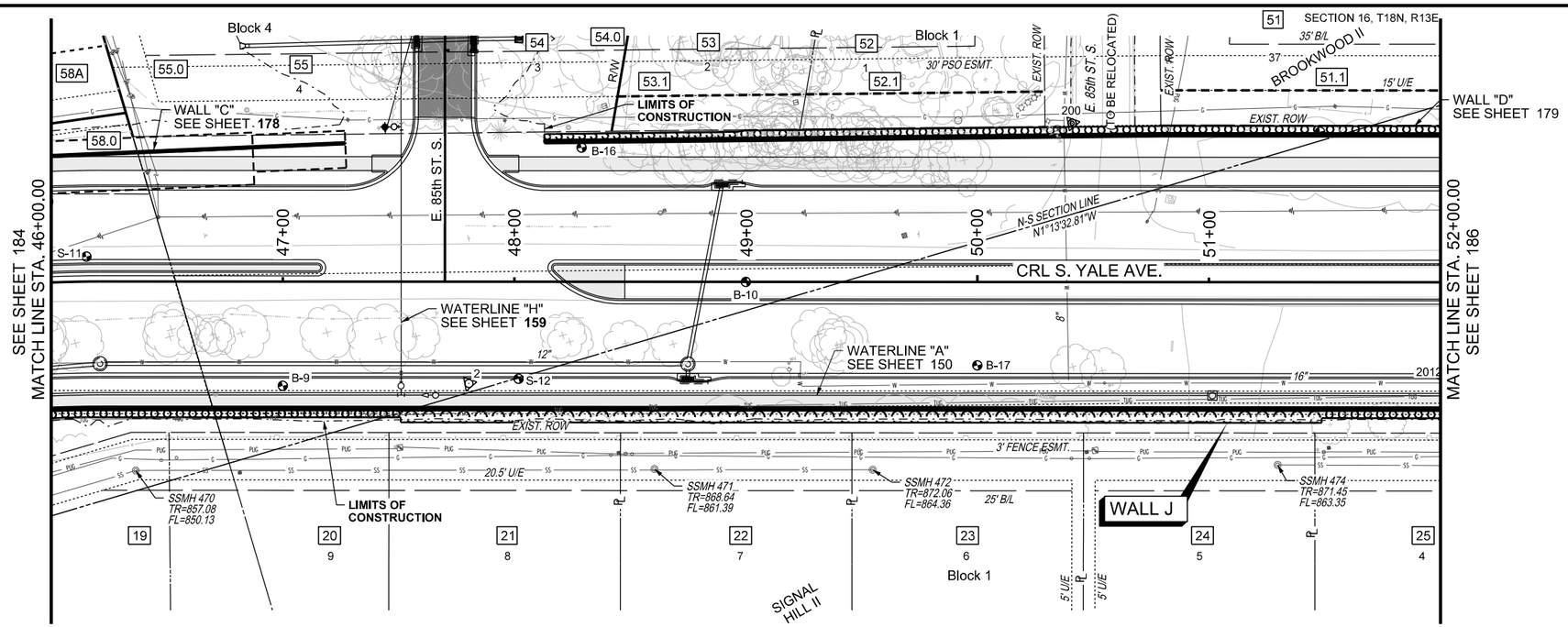
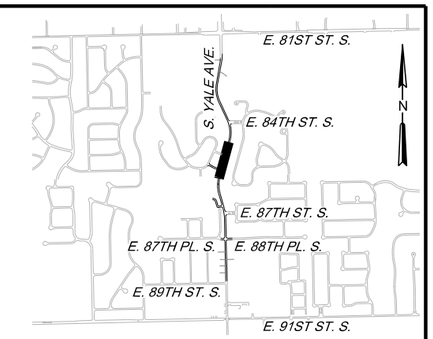


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

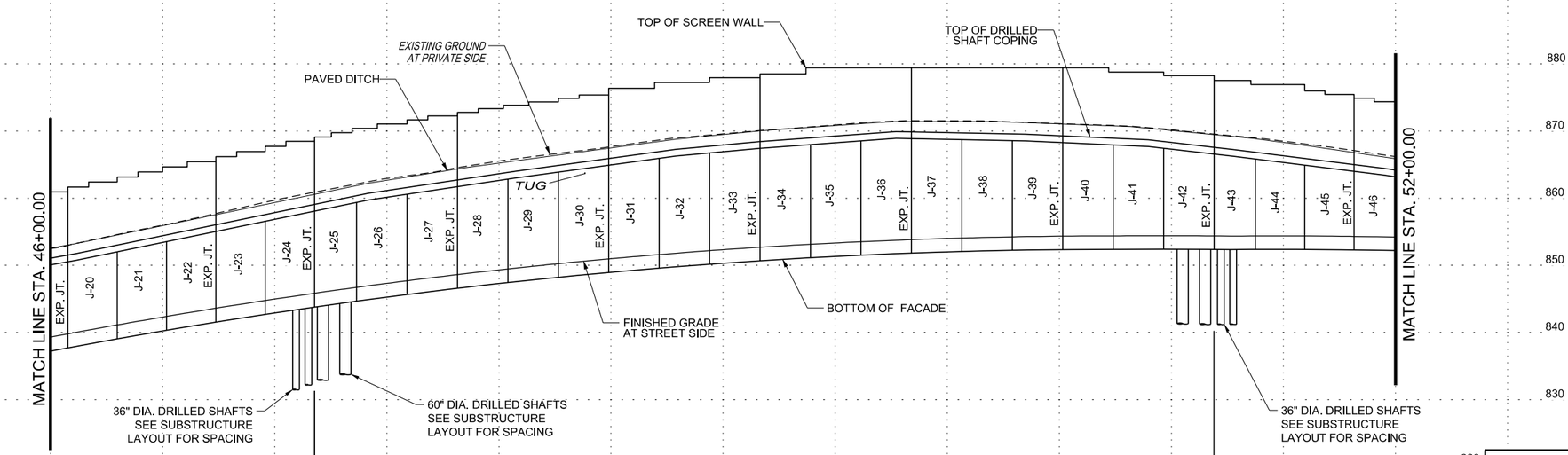
- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'

BENCHMARK 2012
60D NAIL FOUND
STA. 52+26.74, 39.27' RT.
N 385350.65, E 2582887.89, EL. 866.71'



ELEVATION - WALL J - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

46+00 47+00 48+00 49+00 50+00 51+00 52+00

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-5-2018

GENERAL PLAN & ELEVATION (9)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" = 30'	PROJECT MGR		10/18
	FIELD MGR		7/18
VERTICAL: 1" = 10'	LEAD ENGR		11/18
	RECOMMENDED DESIGN MANAGER		8-20

APPROVED: CITY ENGINEER

FILE: 313925-S-GPE-Wall_J-02.dgn
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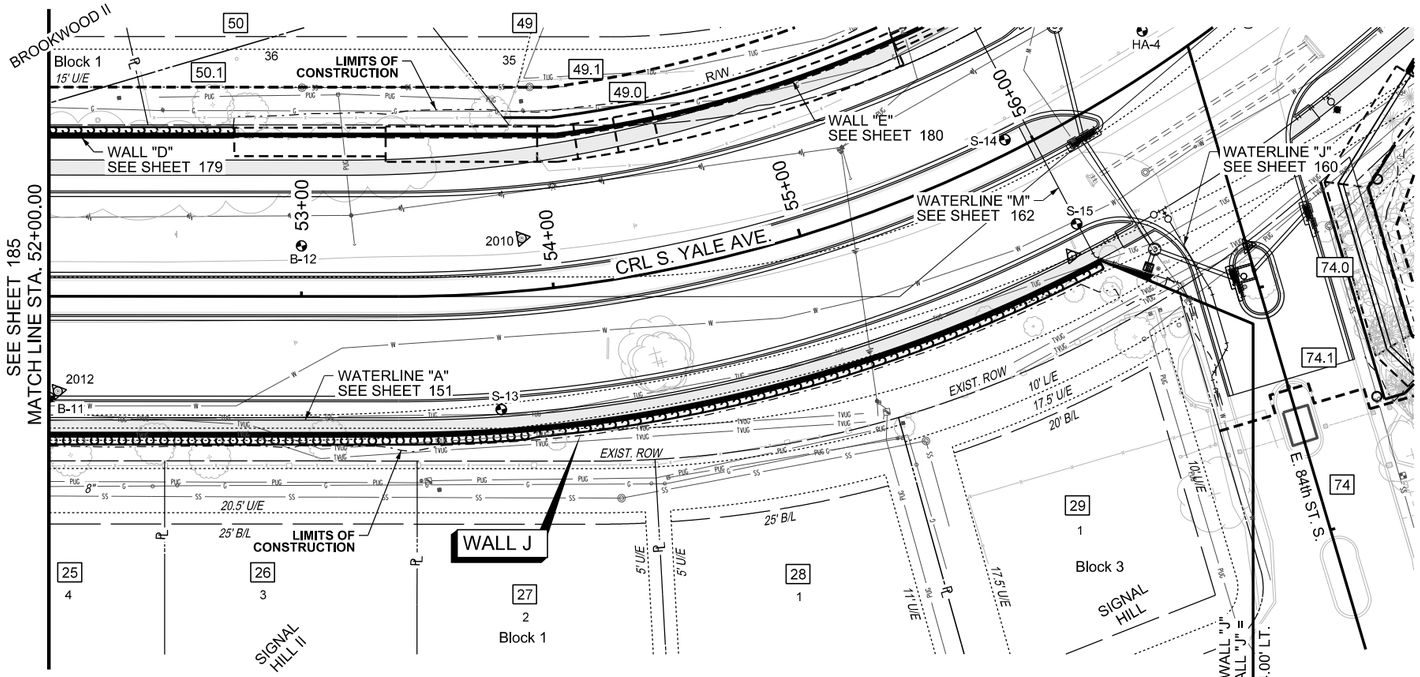
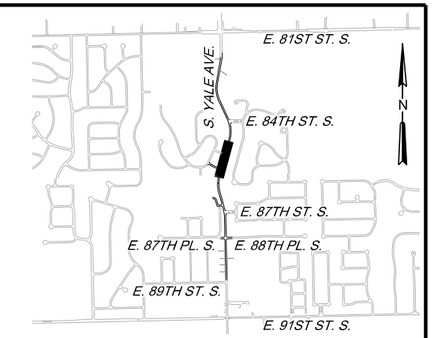


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

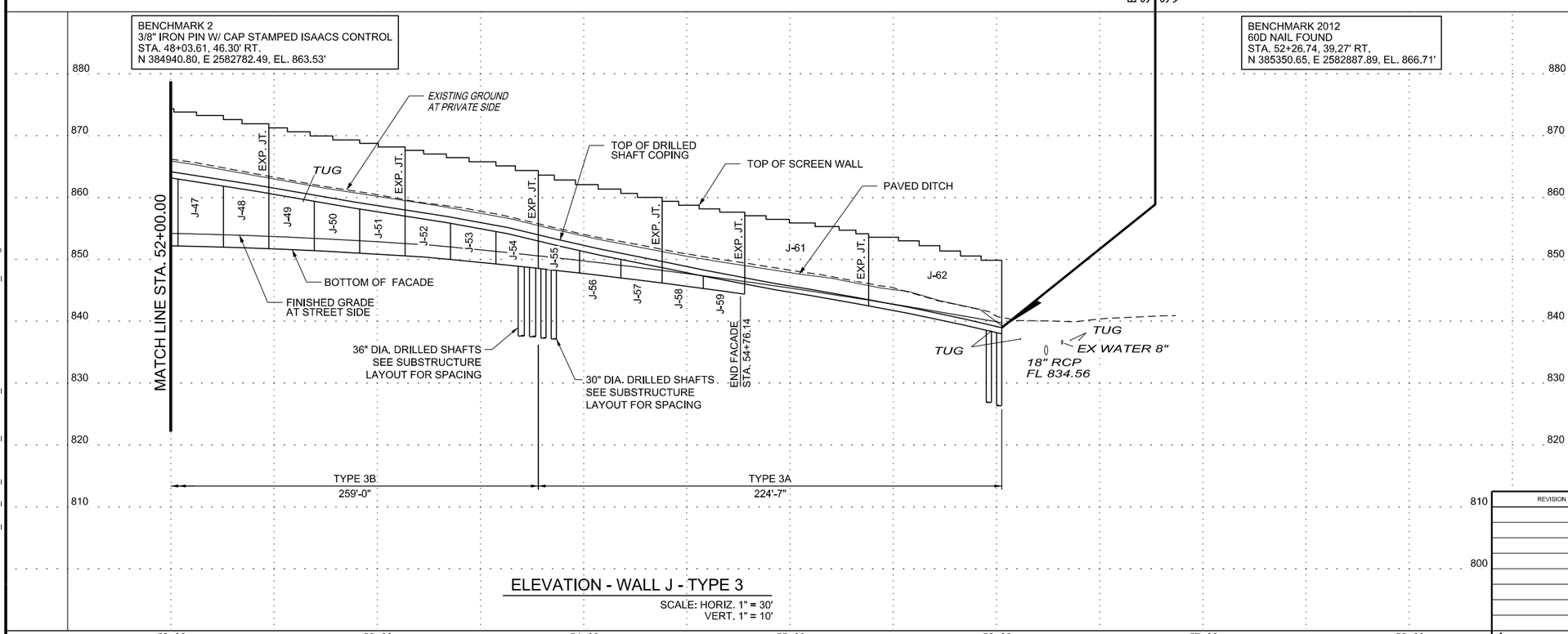
- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'

BENCHMARK 2012
60D NAIL FOUND
STA. 52+26.74, 39.27' RT.
N 385350.65, E 2582887.89, EL. 866.71'



ELEVATION - WALL J - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-31-2018

GENERAL PLAN & ELEVATION (10)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDL	10/18
	FIELD MGR	ZZW	7/20
VERTICAL: 1"= 10'	LEAD ENGR	DD	1/19
	RECOMMENDED DESIGN MANAGER	HAS	8-20

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_J-03.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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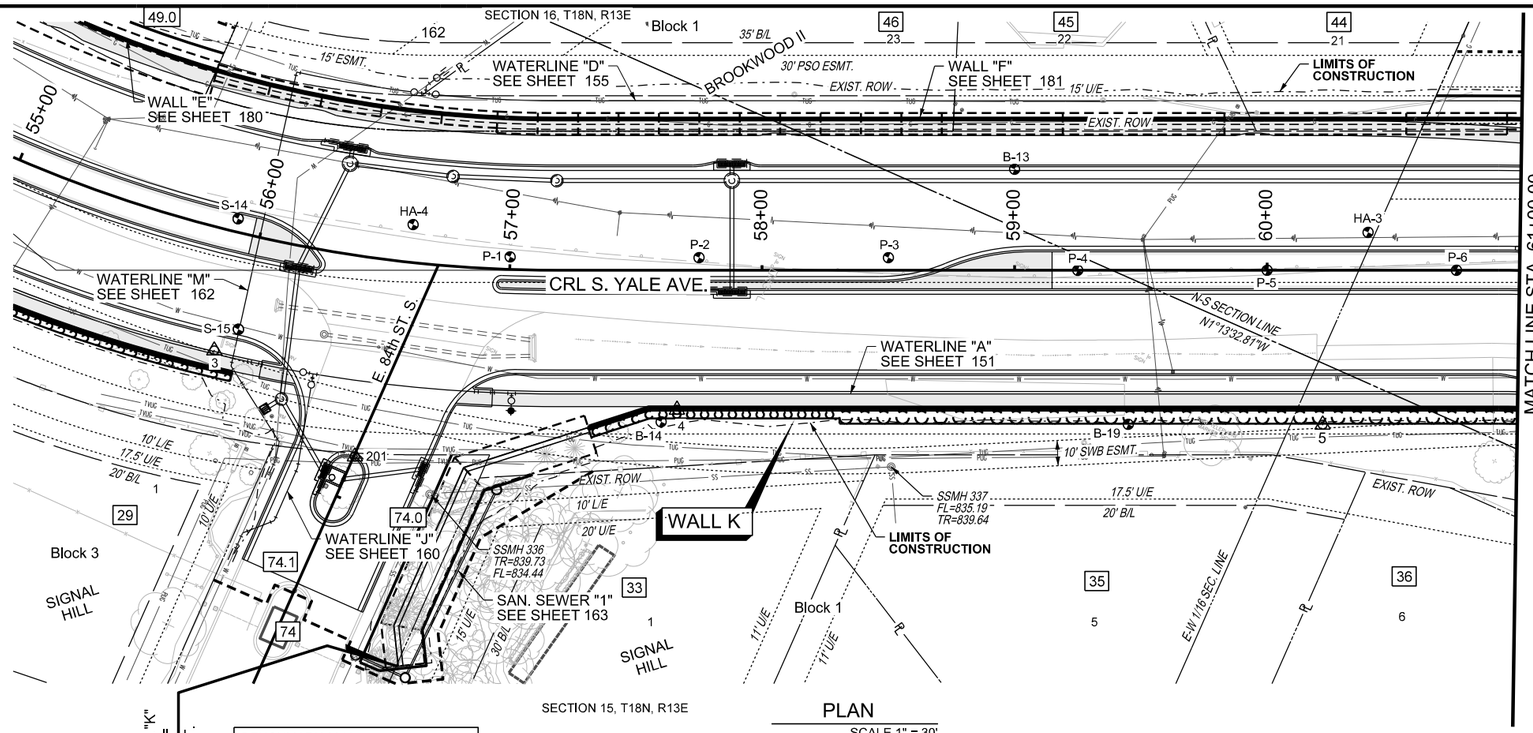
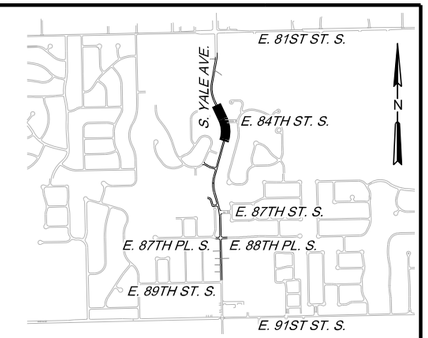


PLAN

SCALE 1" = 30'

BENCHMARK 2010
60D NAIL FOUND
STA. 54+11.82, 20.52' LT.
N 385543.87, E 2582877.71, EL. 847.78'

BENCHMARK 3
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 56+16.95, 44.56' RT.
N 385752.33, E 2582941.66, EL. 841.77'



KEYMAP

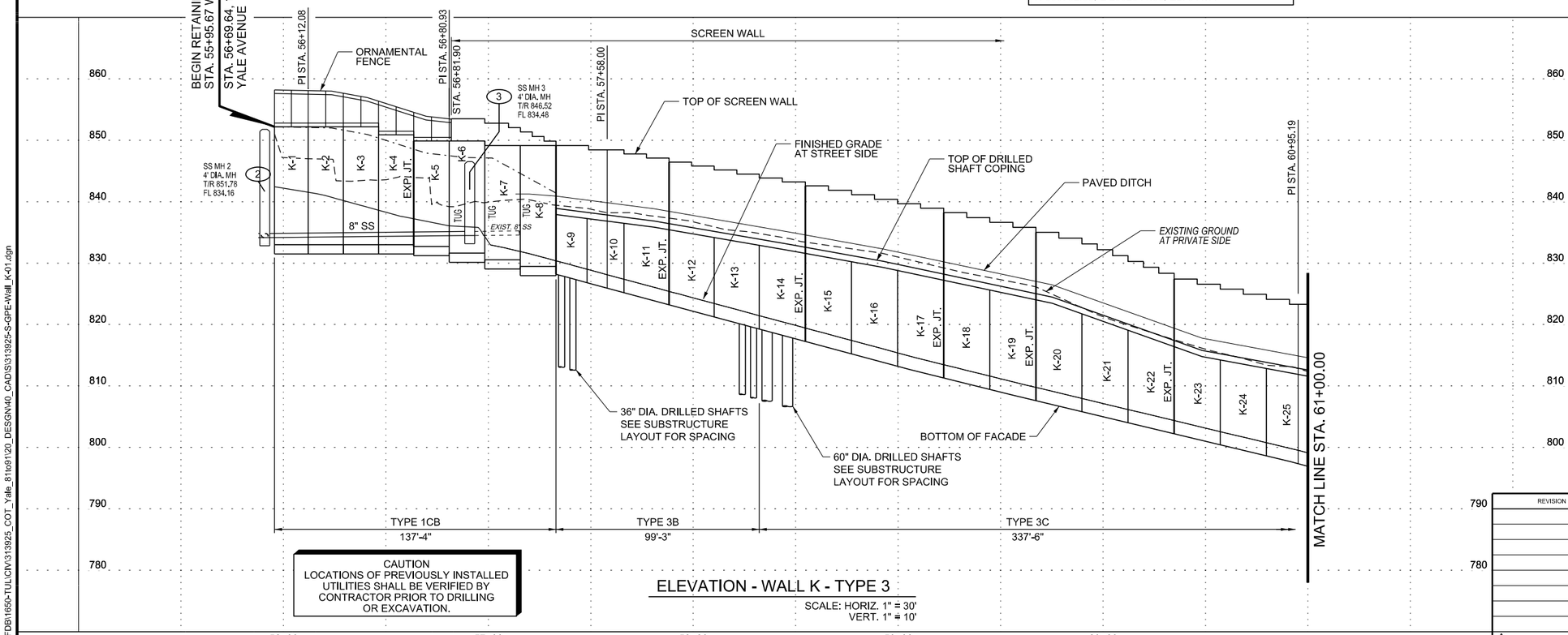
LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

30' 20' 10' 0 30'

SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.



CAUTION
LOCATIONS OF PREVIOUSLY INSTALLED UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DRILLING OR EXCAVATION.

ELEVATION - WALL K - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (11)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		10/18	
	FIELD MGR		7/20	
VERTICAL: 1"= 10'	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER		8-20	CITY ENGINEER

FILE: 313925-S-GPE-Wall_K-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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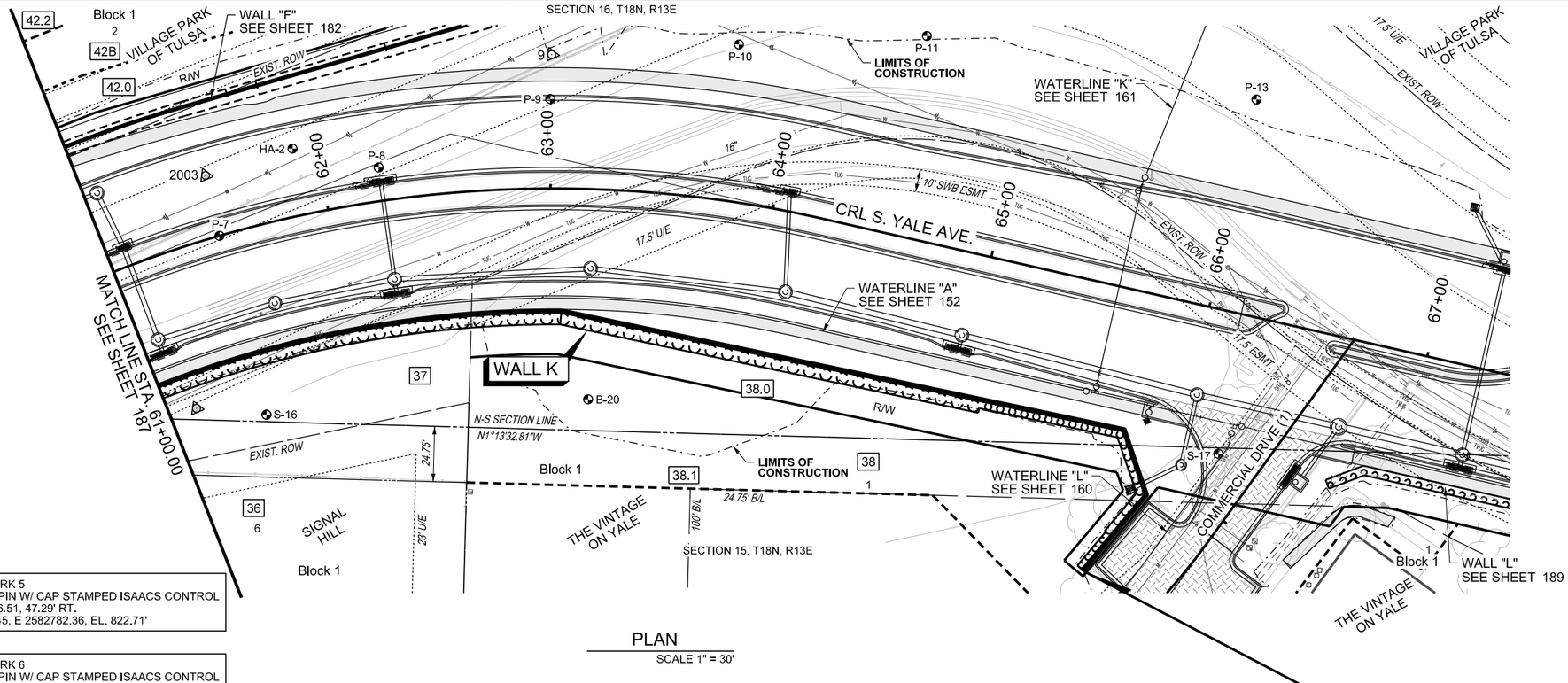
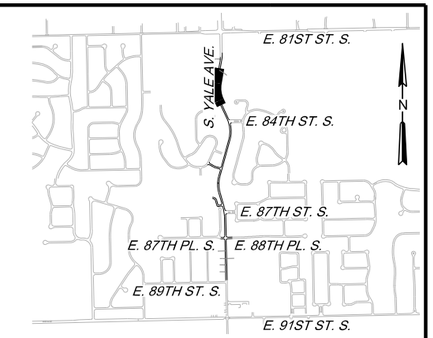


BENCHMARK 5
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 60+46.51, 47.29' RT.
N 386162.45, E 2582782.36, EL. 822.71'

BENCHMARK 6
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 65+33.70, 30.83' LT.
N 386592.01, E 2582528.10, EL. 770.60'

PLAN

SCALE 1" = 30'



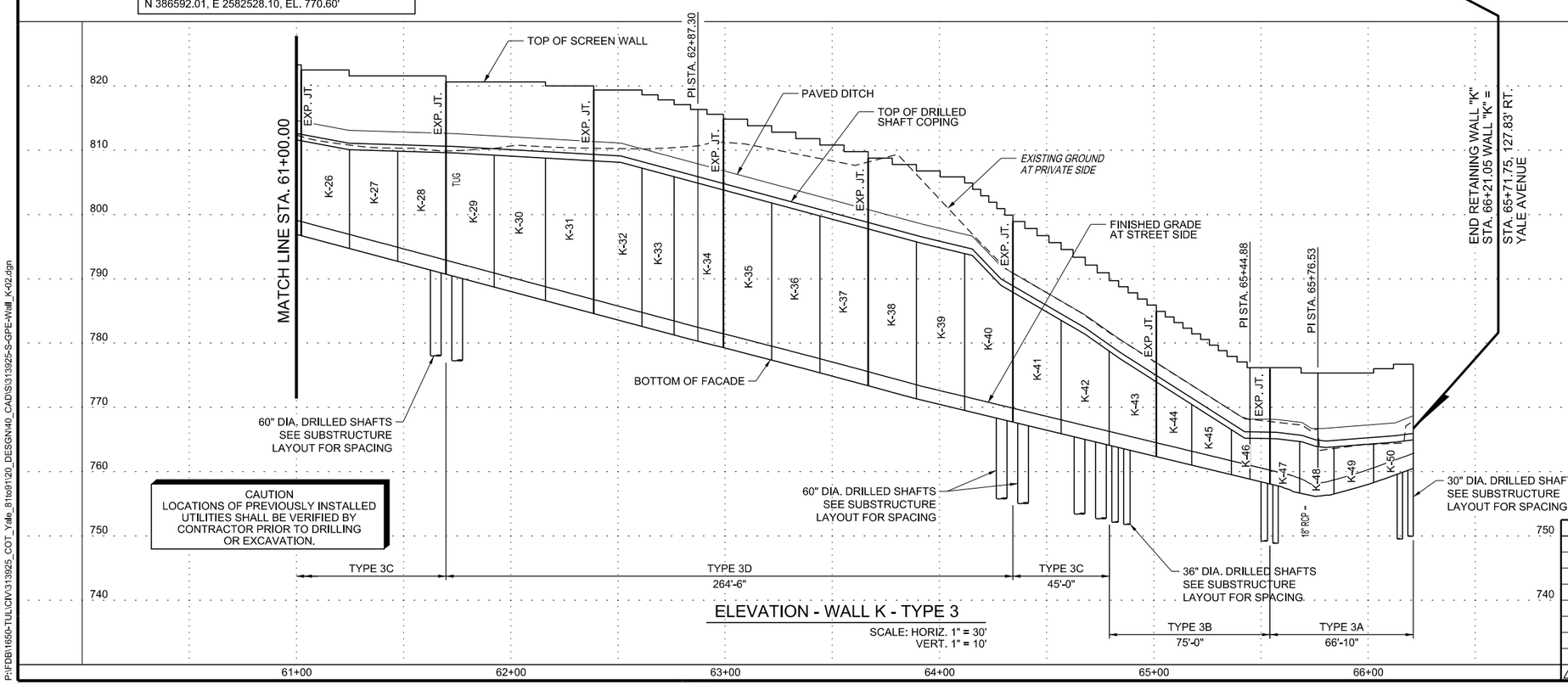
KEYMAP

LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

30' 20' 10' 0 30'
SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.



CAUTION
LOCATIONS OF PREVIOUSLY INSTALLED UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DRILLING OR EXCAVATION.

ELEVATION - WALL K - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

LICENSED PROFESSIONAL ENGINEER KAREN SKITTER JONES 28517 OKLAHOMA
10/18/2018

GENERAL PLAN & ELEVATION (12)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	WZB	10/18	
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR		10/18	
	FIELD MGR		10/18	
VERTICAL: 1"= 10'	LEAD ENGR		11/19	
	RECOMMENDED	HAS 8-20		CITY ENGINEER
	DESIGN MANAGER			

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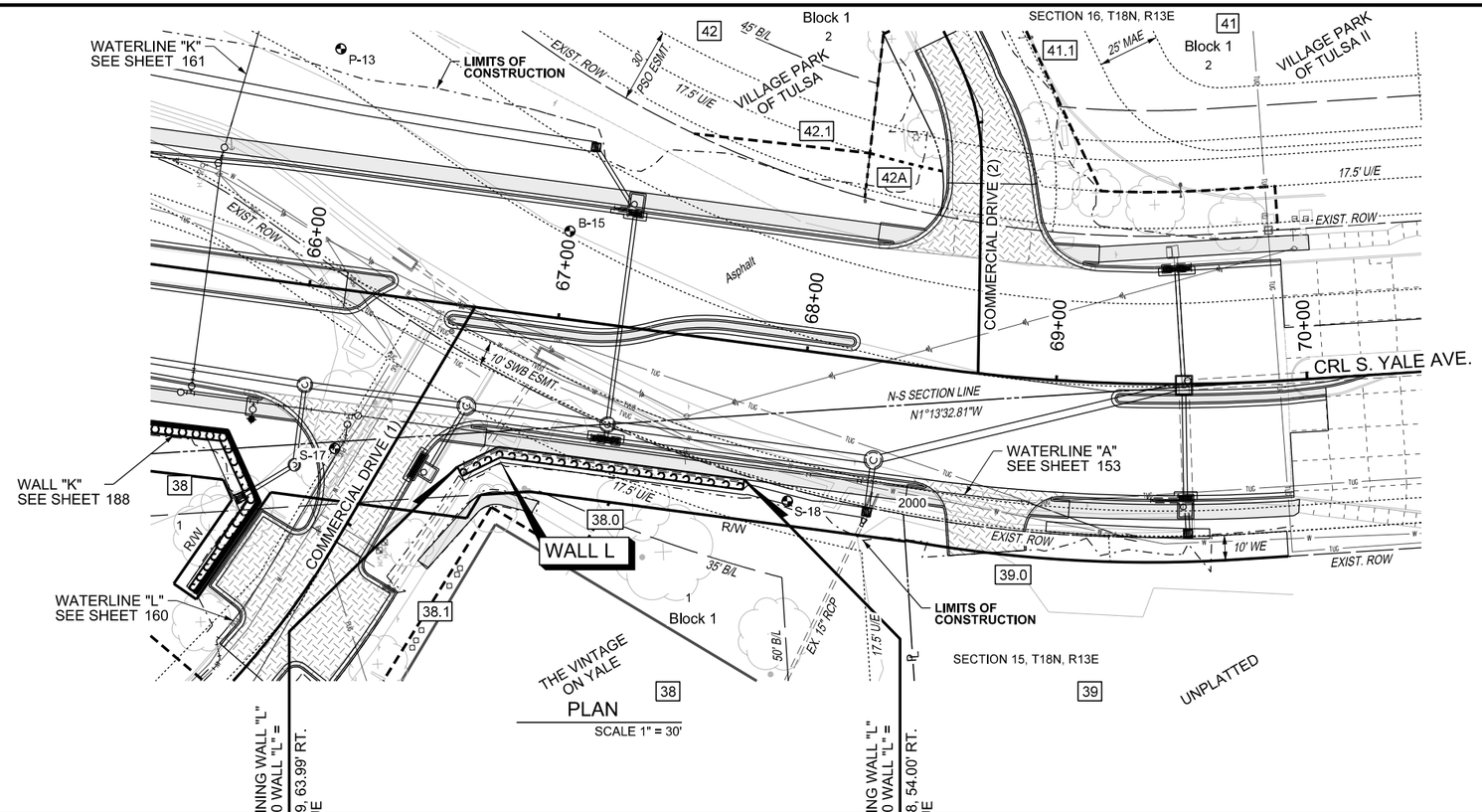
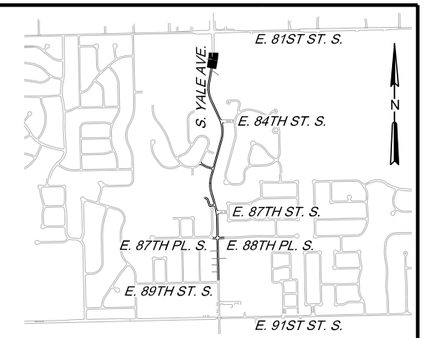


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

N

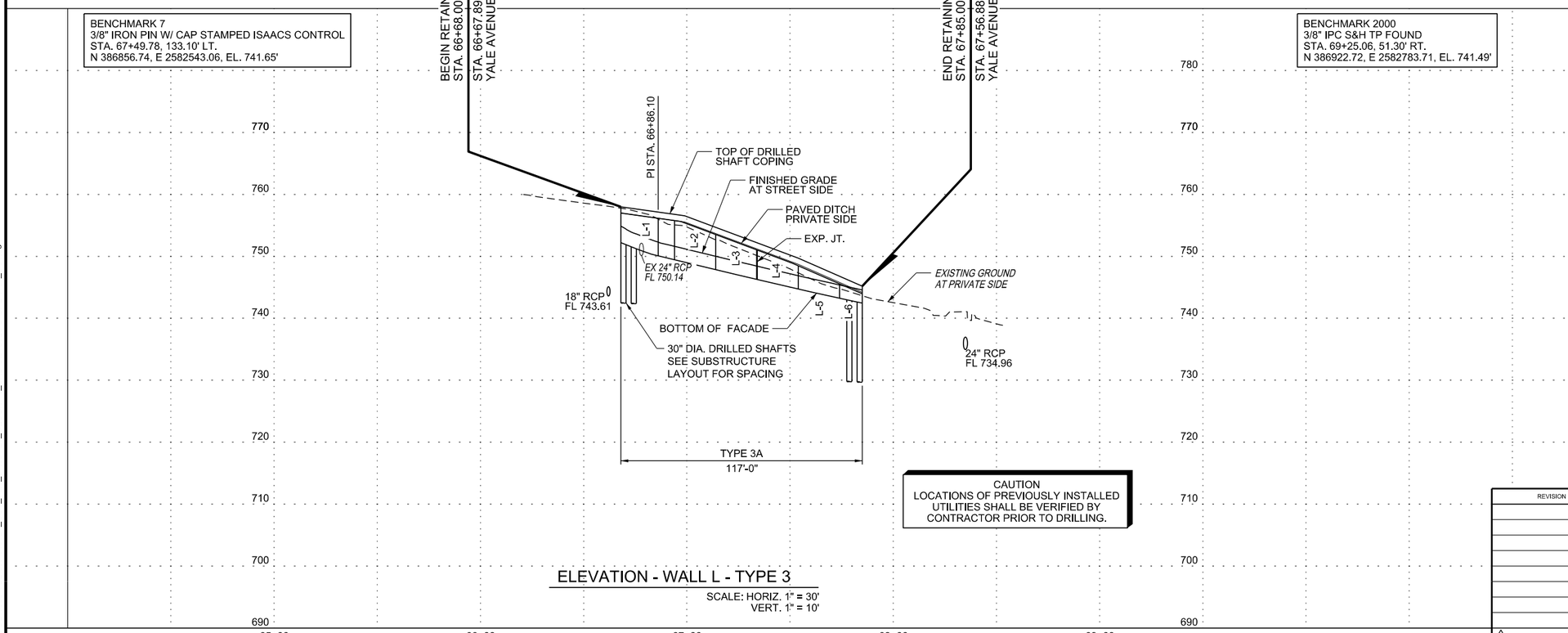
30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.

BENCHMARK 7
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 67+49.78, 133.10' LT.
N 386856.74, E 2582543.06, EL. 741.65'

BENCHMARK 2000
3/8" IPC S&H TP FOUND
STA. 69+25.06, 51.30' RT.
N 386922.72, E 2582783.71, EL. 741.49'



CAUTION
LOCATIONS OF PREVIOUSLY INSTALLED UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DRILLING.

ELEVATION - WALL L - TYPE 3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

LICENSED PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-31-2018

GENERAL PLAN & ELEVATION (13)
WALL "L"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	10/18
	FIELD MGR	FZW	7/20
	LEAD ENGR		1/19
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_L-01.dgn

DATE: OCTOBER 2018

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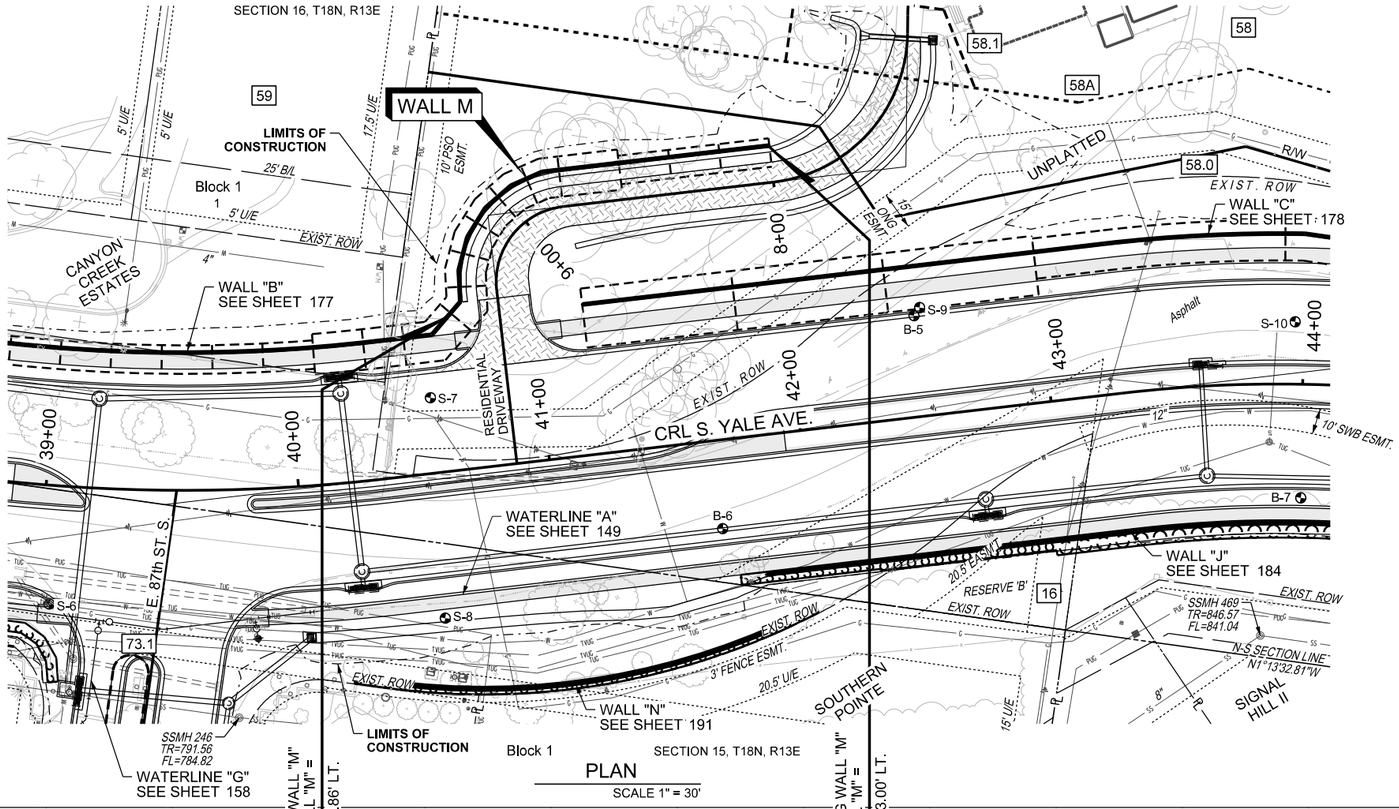
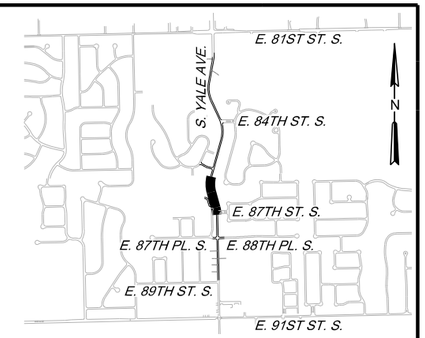


PLAN

SCALE 1" = 30'



KEYMAP

LEGEND

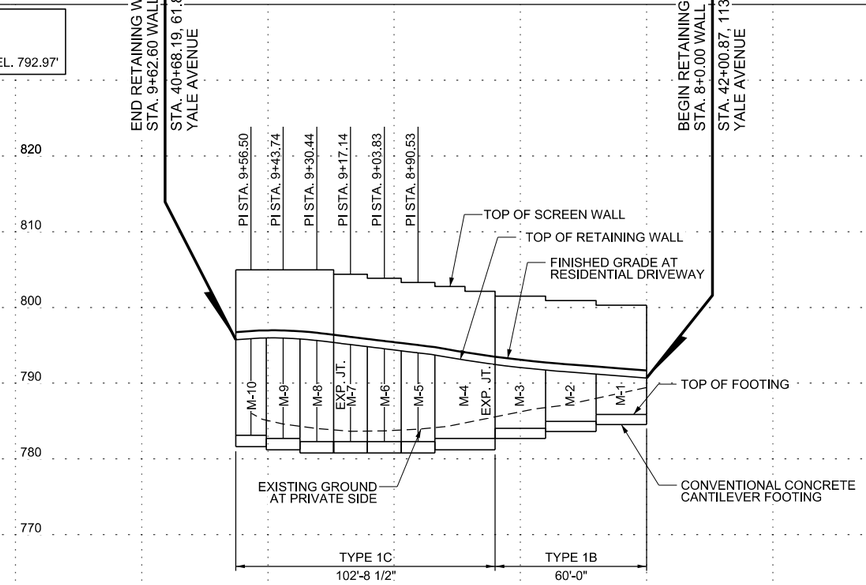
- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

SCALE: 1'' = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176 .

BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'



ELEVATION - WALL M - TYPE 1

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (14)
WALL "M"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'				APPROVED:
	DRAWN	WZB	10/18	
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BDC	12/18	
	FIELD MGR	RWL	7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"= 10'	RECOMMENDED	HAS	8-20	CITY ENGINEER
	DESIGN MANAGER			

FILE: 313925-S-GPE-Wall_M-01.dgn
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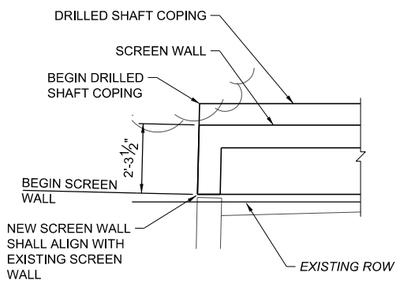
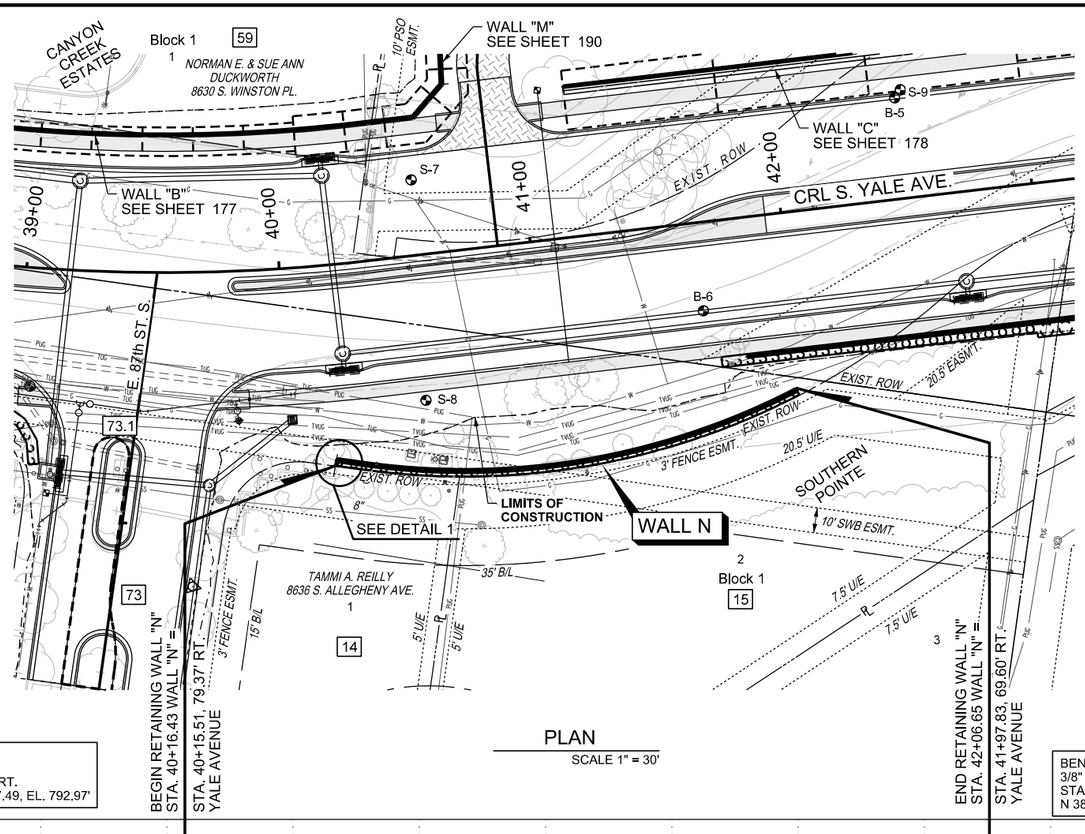


DETAIL 1

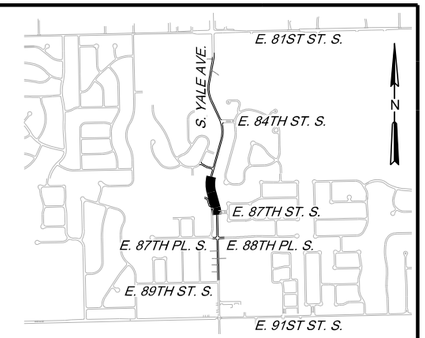


PLAN

SCALE 1" = 30'

BENCHMARK 2016
60D NAIL FOUND
STA. 39+82.37, 114.97' RT.
N 384179.44, E 2582917.49, EL. 792.97'

BENCHMARK 2
3/8" IRON PIN W/ CAP STAMPED ISAACS CONTROL
STA. 48+03.61, 46.30' RT.
N 384940.80, E 2582782.49, EL. 863.53'



KEYMAP

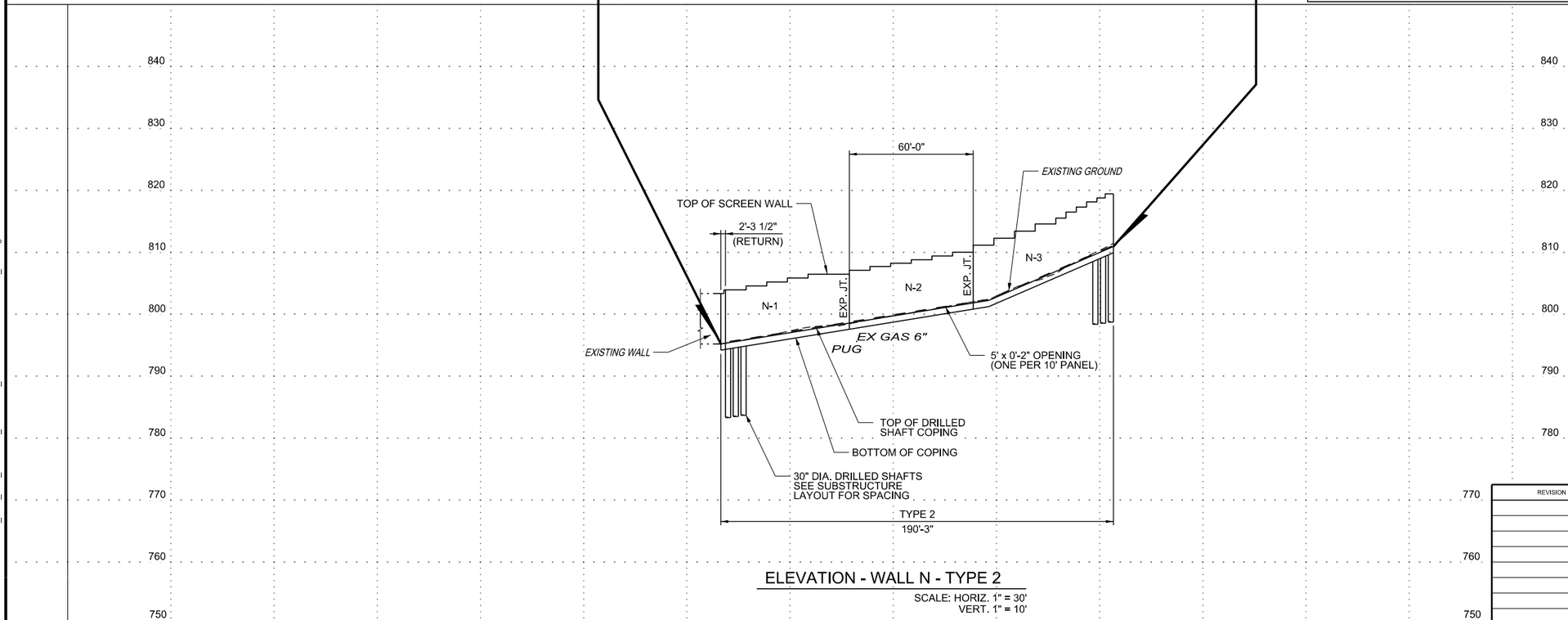
LEGEND

- RETAINING WALL
- RETAINING WALL FOOTING
- DRILLED SHAFT
- PERMANENT R/W X.0
- TEMPORARY EASEMENT/RIGHT OF ENTRY X.1
- GENERAL & UTILITY EASEMENT XA

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

FOR WALL TYPICAL SECTIONS SEE SHEETS 173 TO 176.



ELEVATION - WALL N - TYPE 2

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

GENERAL PLAN & ELEVATION (15)
WALL "N"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 30'	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= 30'	PROJECT MGR	BOC	12/18
	FIELD MGR		7/20
VERTICAL: 1"= 10'	LEAD ENGR		1/19
	RECOMMENDED	HAN	8-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-GPE-Wall_N-01.dgn

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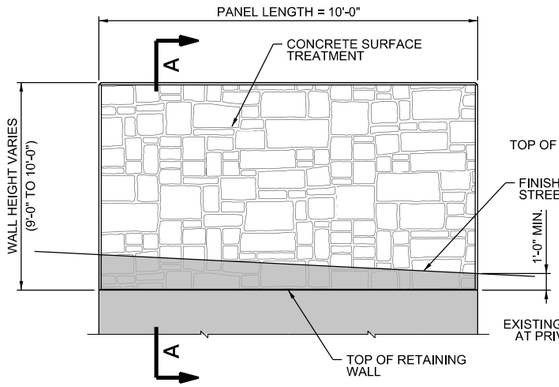
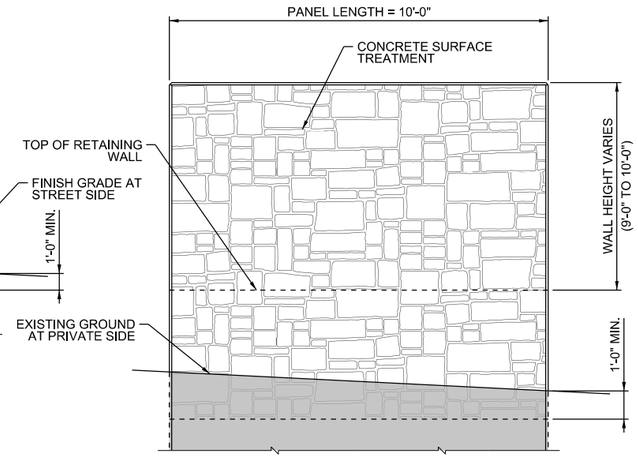


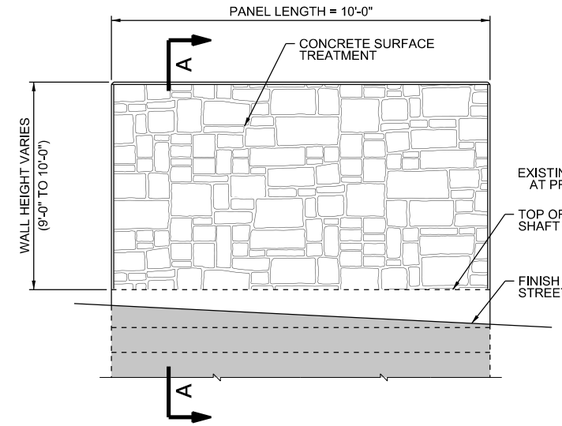
TYPICAL PANEL - YALE AVE. SIDE



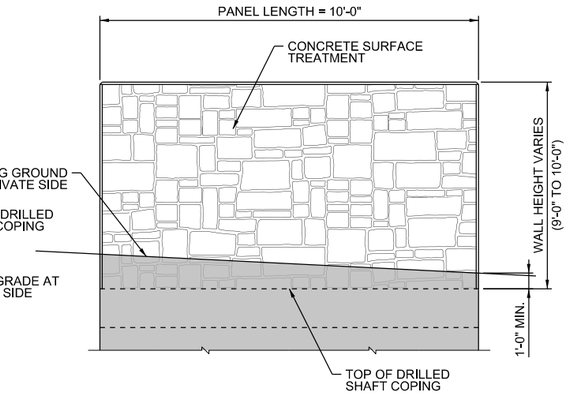
TYPICAL PANEL - PRIVATE PROPERTY

ELEVATION - TYPE 1

CONCRETE SURFACE TREATMENTS N.T.S.



TYPICAL PANEL - YALE AVE. SIDE

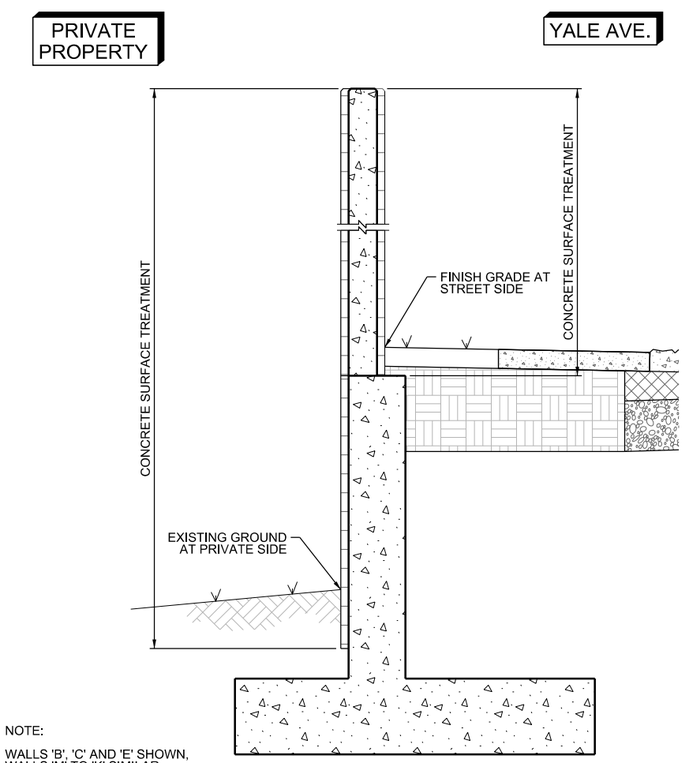


TYPICAL PANEL - PRIVATE PROPERTY

ELEVATION - TYPE 2

CONCRETE SURFACE TREATMENTS N.T.S.

SURFACE TREATMENT	VENDOR	TEXTURE	BASE COLOR	ACCENT COLORS
TEXTURED PANELS FOR: TYPE 1 & 4 CAST-IN-PLACE RETAINING WALLS TYPE 3 CAST-IN-PLACE FACADE FOR DRILLED SHAFT WALLS SCREEN WALLS	CUSTOM ROCK	MINNESOTA ASHLAR	SMOKEY BEIGE	CHARCOAL DARK WALNUT WASHED SUEDE
COPING FOR: TYPE 1 & 4 CAST-IN-PLACE RETAINING WALLS TYPE 2 & 3 CAST-IN-PLACE FACADE FOR DRILLED SHAFT WALLS	N/A	N/A	SMOKEY BEIGE	N/A
NOTE: SURFACE TREATMENT SHALL BE AS NOTED OR APPROVED EQUAL.				

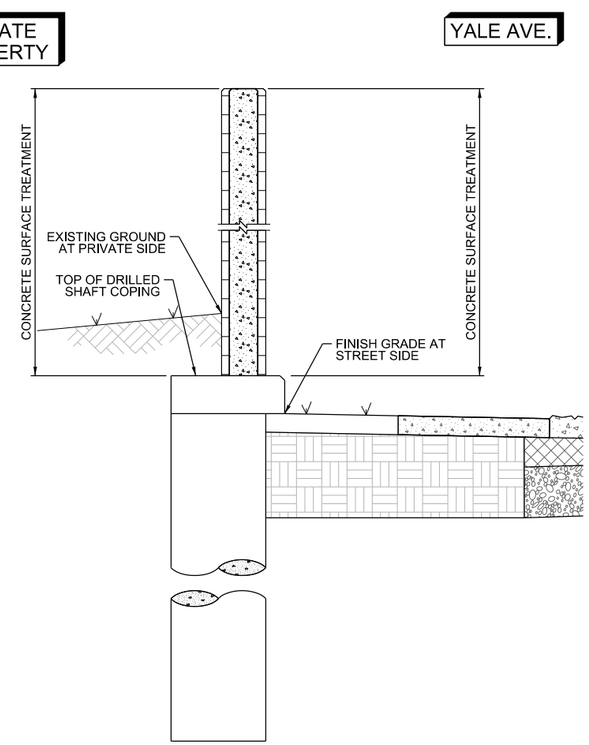


NOTE:

WALLS 'B', 'C' AND 'E' SHOWN,
WALLS 'M' TO 'K' SIMILAR.

SECTION A-A - TYPE 1

CONCRETE SURFACE TREATMENTS N.T.S.



SECTION A-A - TYPE 2

CONCRETE SURFACE TREATMENTS N.T.S.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-5-2018

WALL SURFACE TREATMENTS (1)
TYPE 1 & TYPE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	IZW	12/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	KAS	12-20

APPROVED:

CITY ENGINEER

FILE: 313925-S-Treatment-01.dgn

DATE: OCTOBER 2018

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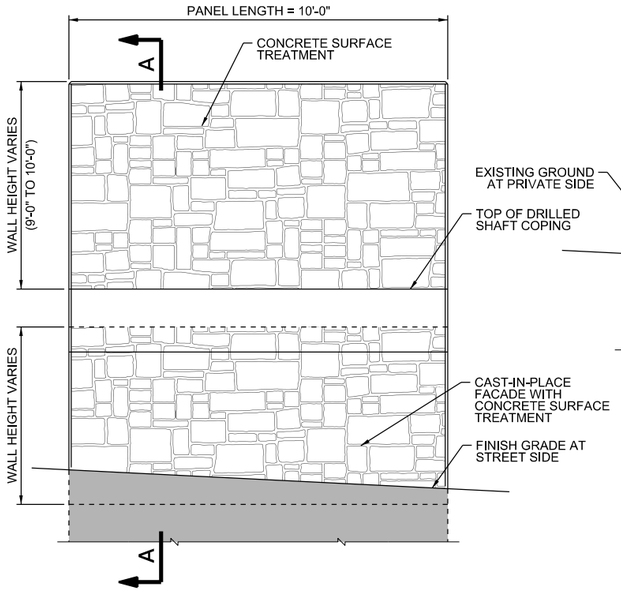
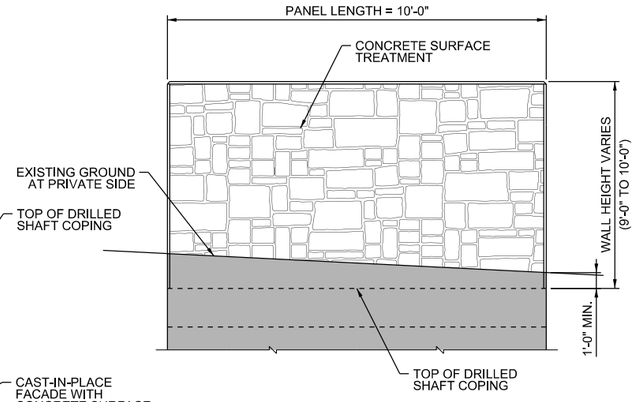


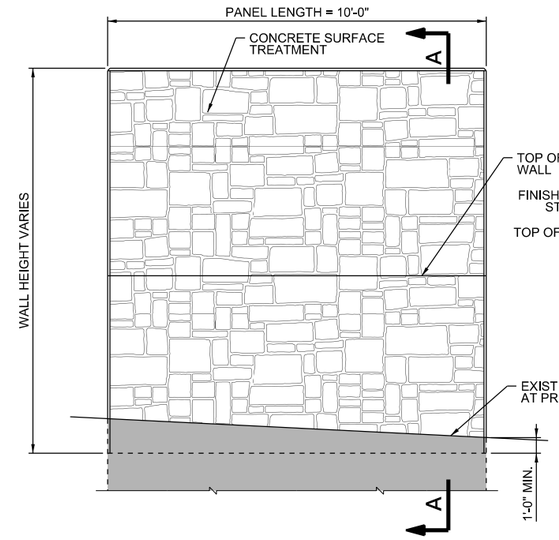
TYPICAL PANEL - YALE AVE. SIDE



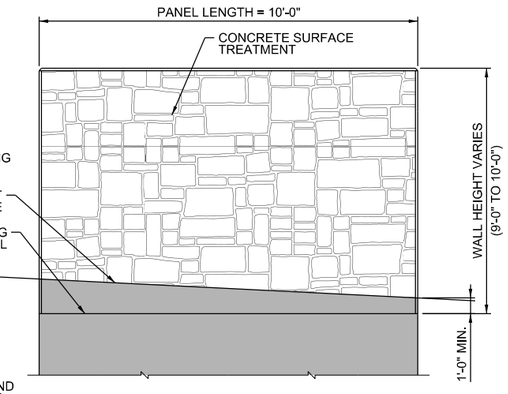
TYPICAL PANEL - PRIVATE PROPERTY

ELEVATION - TYPE 3

DRILLED SHAFT RETAINING WALL N.T.S.



TYPICAL PANEL - PRIVATE PROPERTY

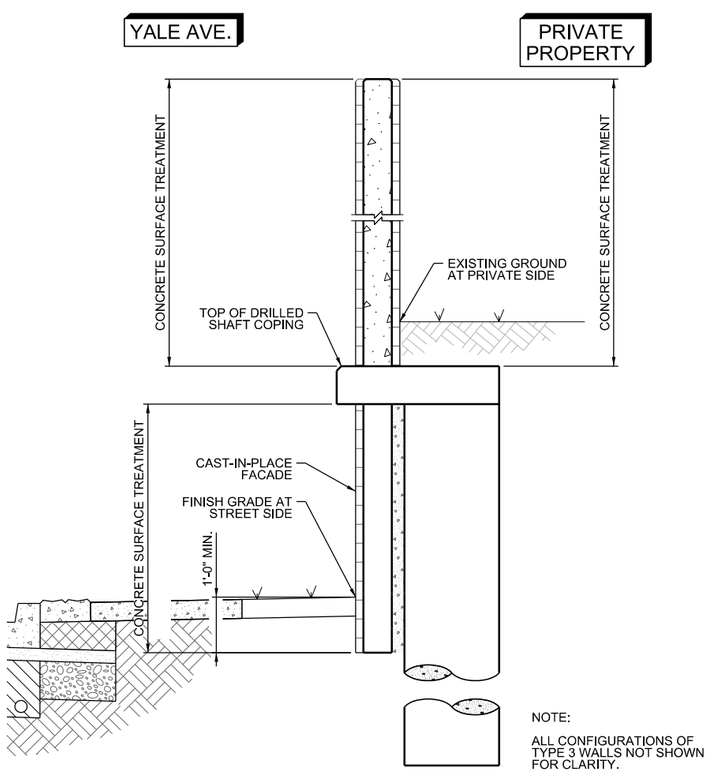


TYPICAL PANEL - YALE AVE. SIDE

ELEVATION - TYPE 4

SLOPE STABILIZATION WALL N.T.S.

SURFACE TREATMENT	VENDOR	TEXTURE	BASE COLOR	ACCENT COLORS
TEXTURED PANELS FOR: TYPE 1 & 4 CAST-IN-PLACE RETAINING WALLS TYPE 3 CAST-IN-PLACE FACADE FOR DRILLED SHAFT WALLS SCREEN WALLS	CUSTOM ROCK	MINNESOTA ASHLAR	SMOKEY BEIGE	CHARCOAL DARK WALNUT WASHED SUEDE
COPING FOR: TYPE 1 & 4 CAST-IN-PLACE RETAINING WALLS TYPE 2 & 3 CAST-IN-PLACE FACADE FOR DRILLED SHAFT WALLS	N/A	N/A	SMOKEY BEIGE	N/A
NOTE: SURFACE TREATMENT SHALL BE AS NOTED OR APPROVED EQUAL.				

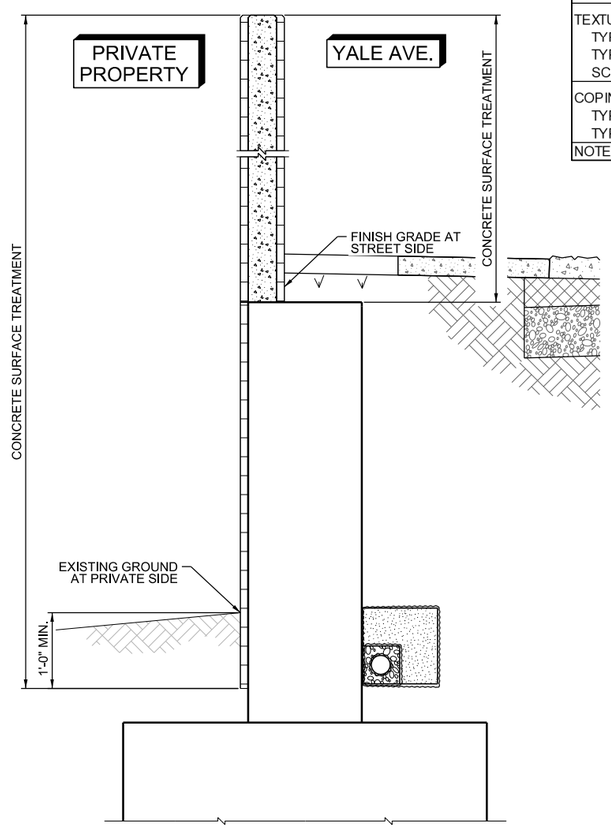


NOTE:

ALL CONFIGURATIONS OF TYPE 3 WALLS NOT SHOWN FOR CLARITY.

SECTION A-A - TYPE 3

DRILLED SHAFT RETAINING WALL N.T.S.



SECTION A-A - TYPE 4

SLOPE STABILIZATION WALL N.T.S.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-31-18

WALL SURFACE TREATMENTS (2)
TYPE 3 & TYPE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	10/20
	FIELD MGR		12/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	HAS	12-20

APPROVED:

CITY ENGINEER

FILE: 313925-S-Treatment-02.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 193 OF 334 SHEETS

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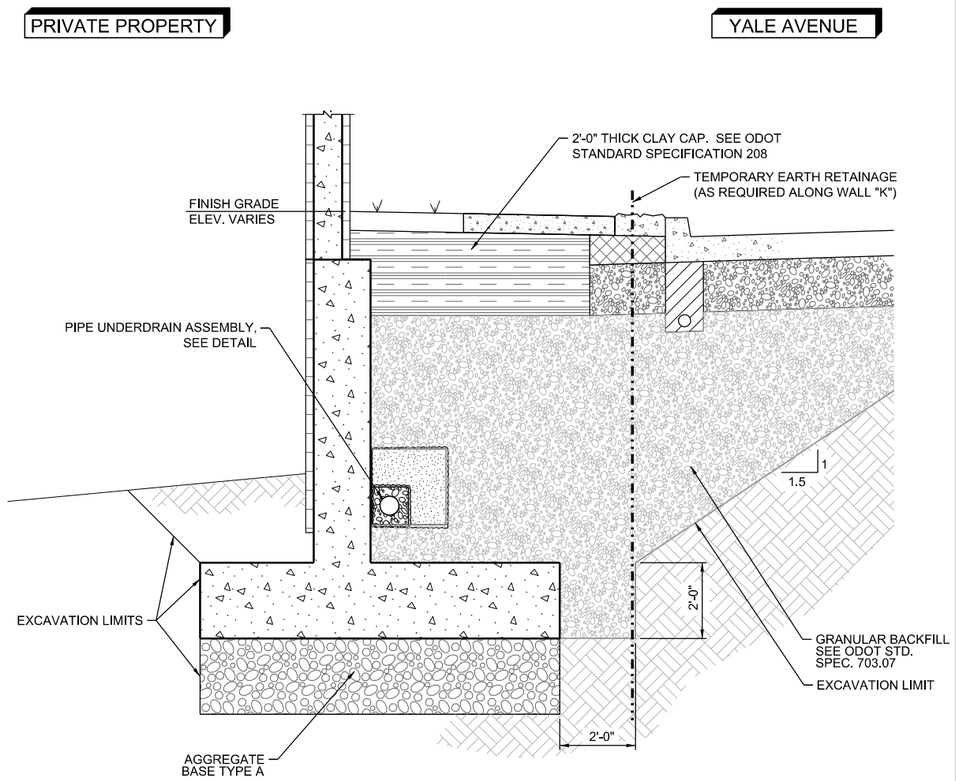
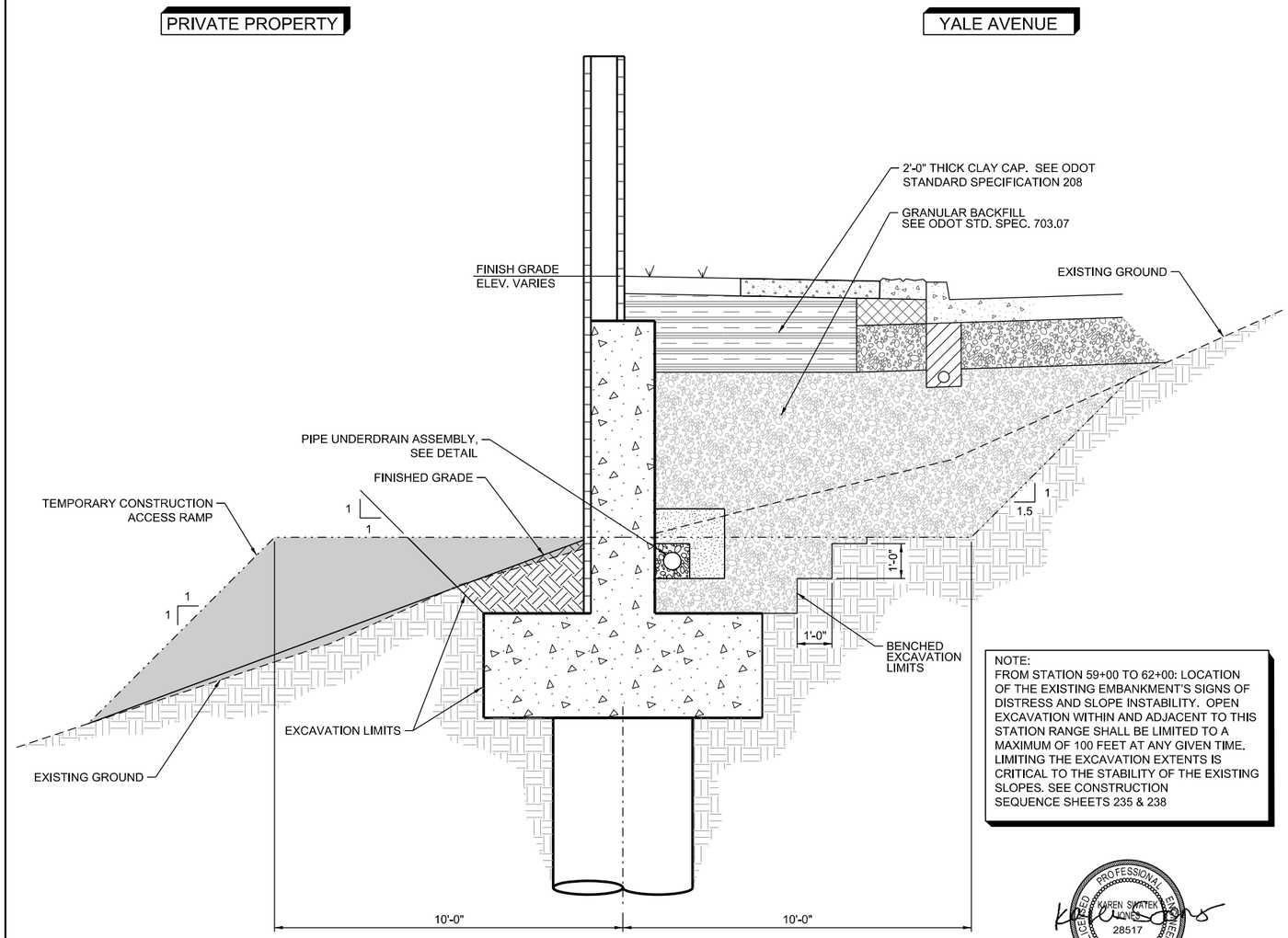


EXCAVATION DIAGRAM - TYPE 1

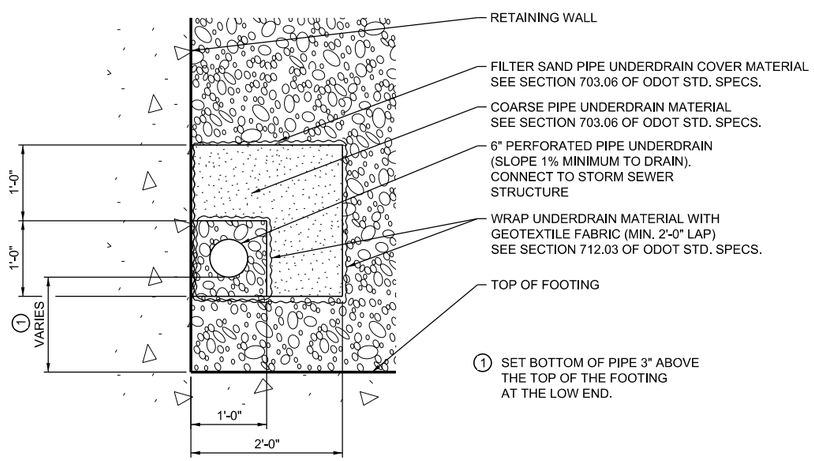
SCALE: ½" = 1'-0"



EXCAVATION AND BACKFILL TYPICAL SECTION - TYPE 4

SCALE: ½" = 1'-0"

NOTE:
FROM STATION 59+00 TO 62+00: LOCATION OF THE EXISTING EMBANKMENT'S SIGNS OF DISTRESS AND SLOPE INSTABILITY. OPEN EXCAVATION WITHIN AND ADJACENT TO THIS STATION RANGE SHALL BE LIMITED TO A MAXIMUM OF 100 FEET AT ANY GIVEN TIME. LIMITING THE EXCAVATION EXTENTS IS CRITICAL TO THE STABILITY OF THE EXISTING SLOPES. SEE CONSTRUCTION SEQUENCE SHEETS 235 & 238



1 SET BOTTOM OF PIPE 3" ABOVE THE TOP OF THE FOOTING AT THE LOW END.

PIPE UNDERDRAIN ASSEMBLY - TYPE 1 AND TYPE 4 WALLS

SCALE: NONE
(SEE ODOT STD. PUD-3)

KAREN SWATEK JONES
PROFESSIONAL ENGINEER
LICENSED
28517
OKLAHOMA
10-19-2018

WALL EXCAVATION DETAILS (1)
TYPE 1 & TYPE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"=	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"=	PROJECT MGR	BDC	12/18
	FIELD MGR	ZWL	7/20
	LEAD ENGR		1/19
VERTICAL: 1"=	RECOMMENDED DESIGN MANAGER	HAS	8-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Excavation-01.dgn
DATE: OCTOBER 2018
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SHEET 194 OF 334 SHEETS

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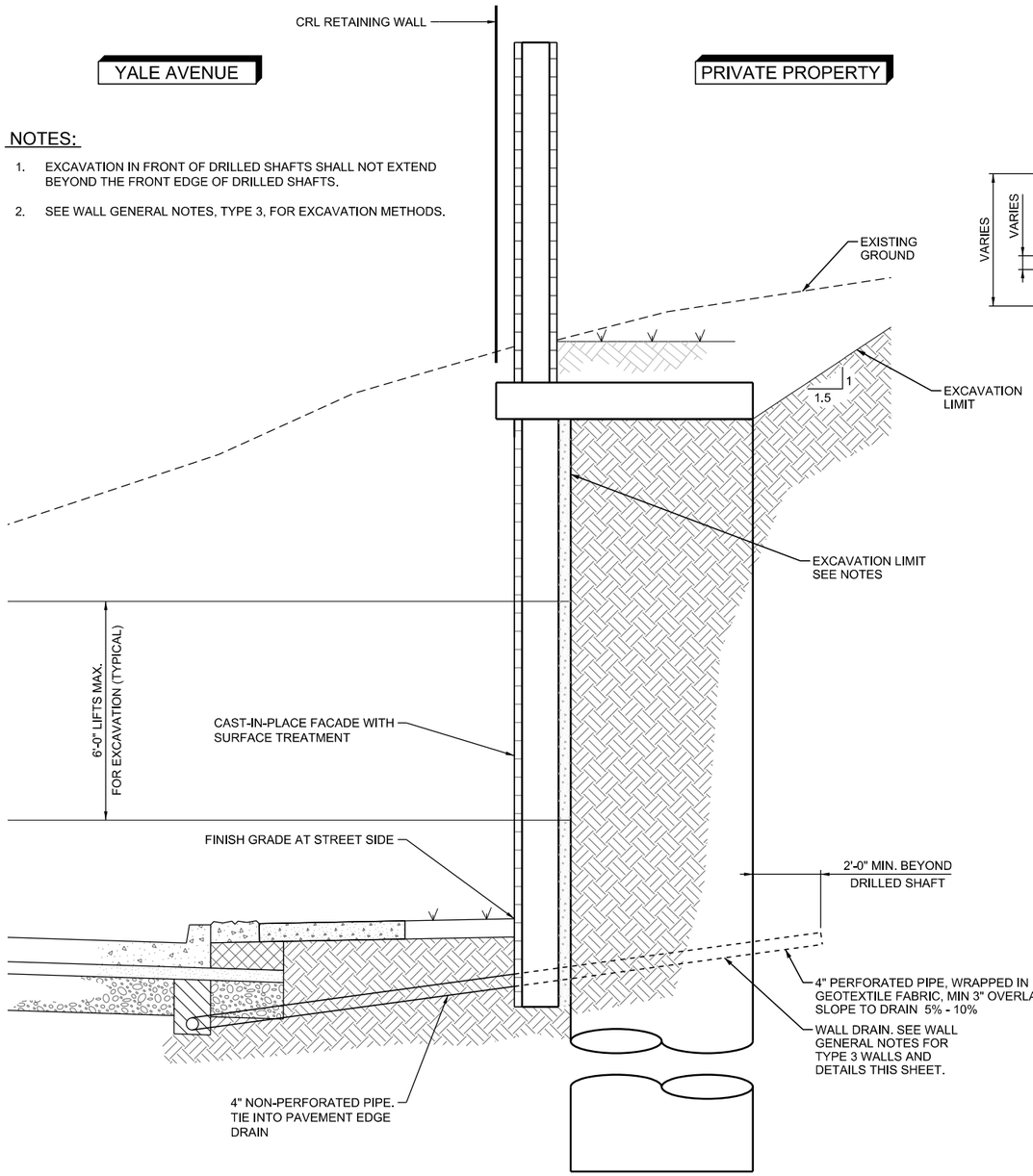
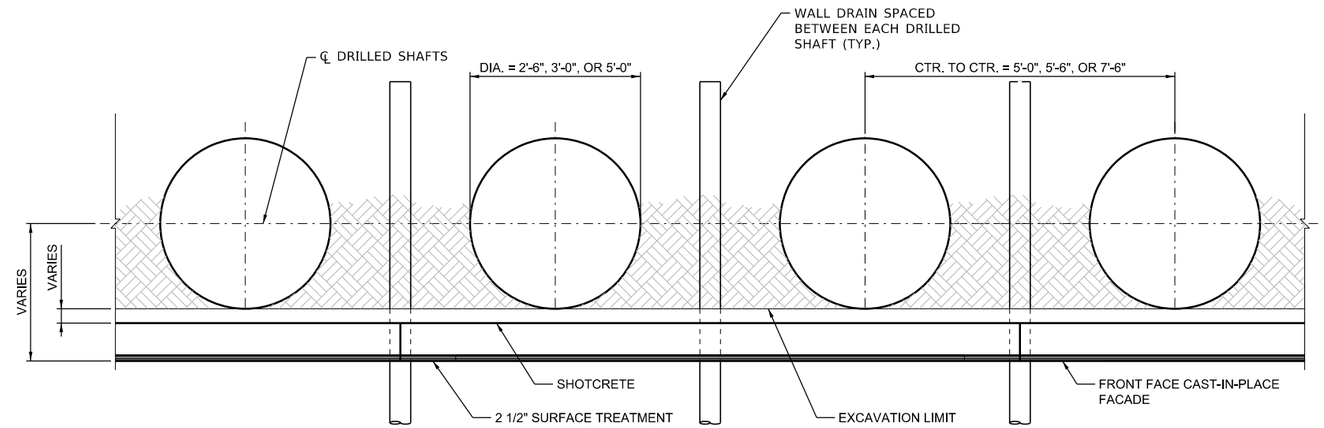
NOTES:

1. EXCAVATION IN FRONT OF DRILLED SHAFTS SHALL NOT EXTEND BEYOND THE FRONT EDGE OF DRILLED SHAFTS.
2. SEE WALL GENERAL NOTES, TYPE 3, FOR EXCAVATION METHODS.



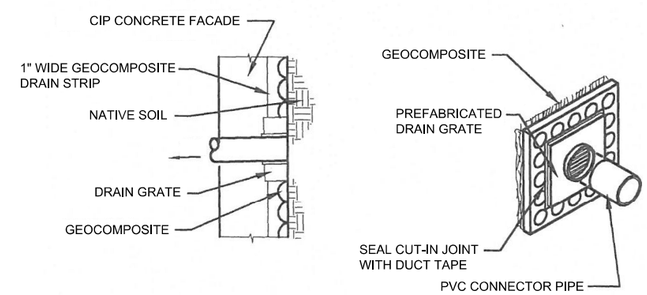
TYPE 3 - EXCAVATION DIAGRAM

SCALE: ½" = 1'-0"



TYPICAL PLAN - SHAFT WALLS

N.T.S.



SECTIONAL VIEW

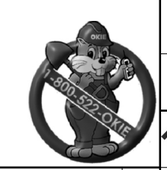
ISOMETRIC VIEW

DRAIN GRATE DETAILS

N.T.S.

NOTES:
1. DRAINS AND GEOCOMPOSITE DRAIN STRIP SHALL BE PLACED BETWEEN EACH DRILLED SHAFT.
2. GEOCOMPOSITE DRAIN STRIP SHALL EXTEND THE FULL HEIGHT OF FACADE, PLUS 4" BELOW FACADE.

EXCAVATION OF SOIL SHALL NOT OCCUR UNTIL CONCRETE FOR DRILLED SHAFTS HAS ATTAINED A STRENGTH OF 3,000 PSI.



WALL EXCAVATION DETAILS (2)
TYPE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

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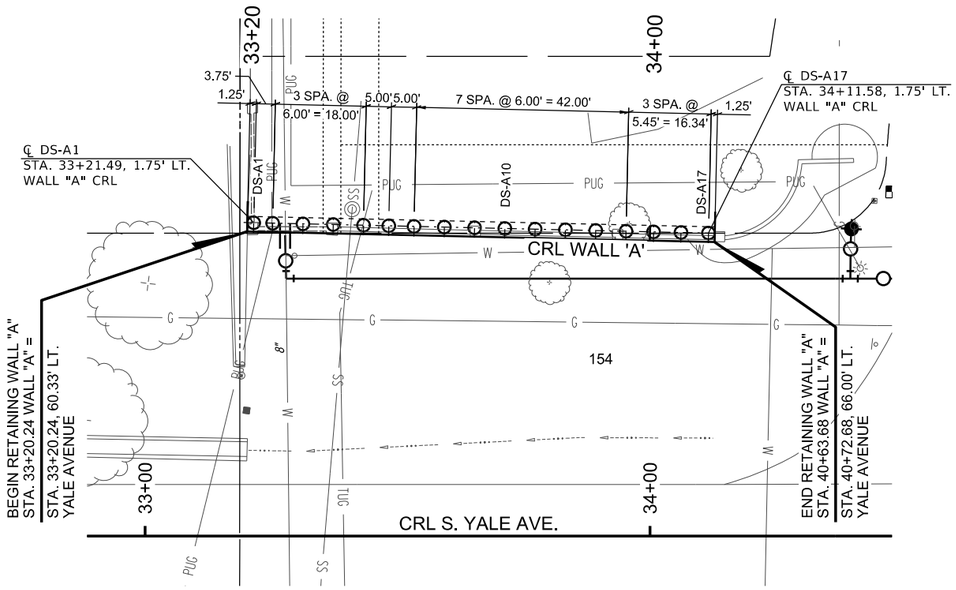
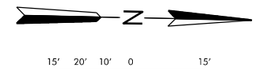
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"=	PROJECT MGR	BDC	12/18	
	FIELD MGR	RWM	7/20	
	LEAD ENGR		1/19	
VERTICAL: 1"=	RECOMMENDED DESIGN MANAGER	HAS	8-20	CITY ENGINEER
FILE: 313925-S-Excavation-02.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 195 OF 334 SHEETS



SUBSTRUCTURE LAYOUT - WALL "A"

SCALE 1" = 15'



FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170 .

DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-A1	383514.9552	2582754.6481	DS-A11	383570.7051	2582754.7195
DS-A2	383518.7052	2582754.6529	DS-A12	383576.7051	2582754.7272
DS-A3	383524.7051	2582754.6606	DS-A13	383582.7051	2582754.7349
DS-A4	383530.7051	2582754.6683	DS-A14	383588.7051	2582754.7426
DS-A5	383536.7051	2582754.6760	DS-A15	383594.1505	2582754.7495
DS-A6	383541.7051	2582754.6824	DS-A16	383599.5959	2582754.7565
DS-A7	383546.7051	2582754.6888	DS-A17	383605.0413	2582754.7635
DS-A8	383552.7051	2582754.6964			
DS-A9	383558.7051	2582754.7041			
DS-A10	383564.7051	2582754.7118			

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10 Dec 2018

SUBSTRUCTURE LAYOUT (1)
WALL "A"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
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REVISION	BY	DATE

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	SURVEY	RDL	10/18	
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	FIELD MGR	CWM	7/20	
VERTICAL: 1"= NA	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER	HAJ	8-20	CITY ENGINEER
FILE: 313925-S-Sub_Layout-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 196 OF 334 SHEETS

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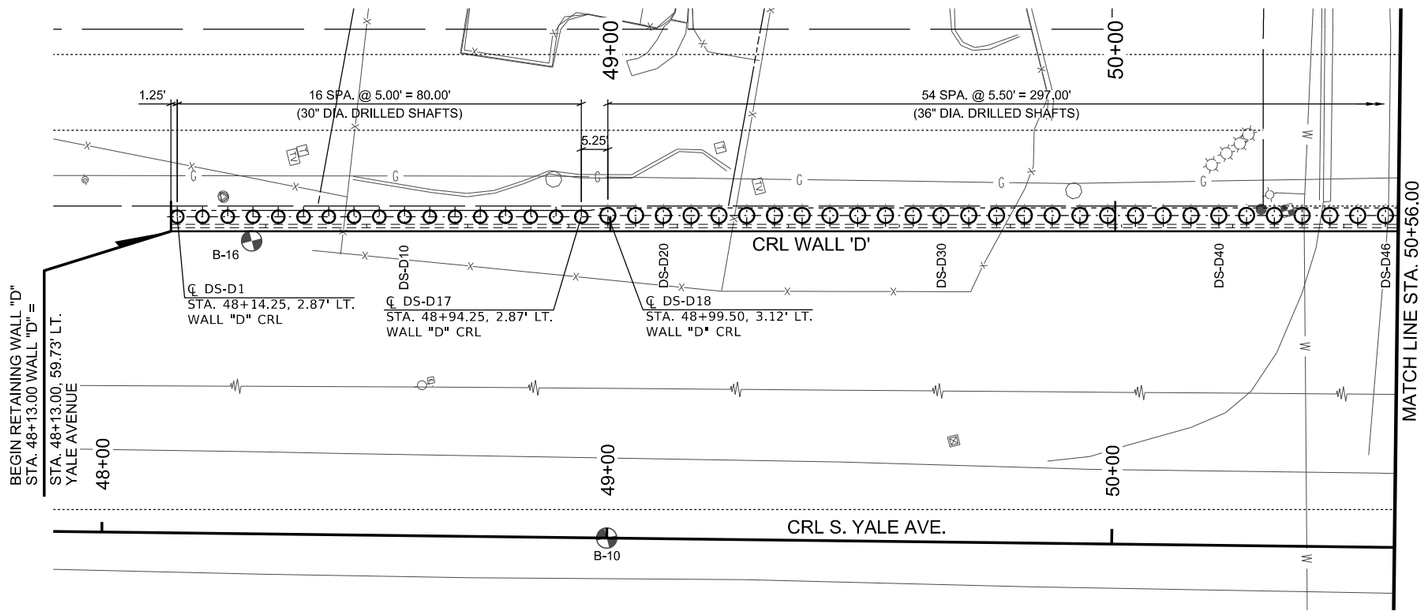
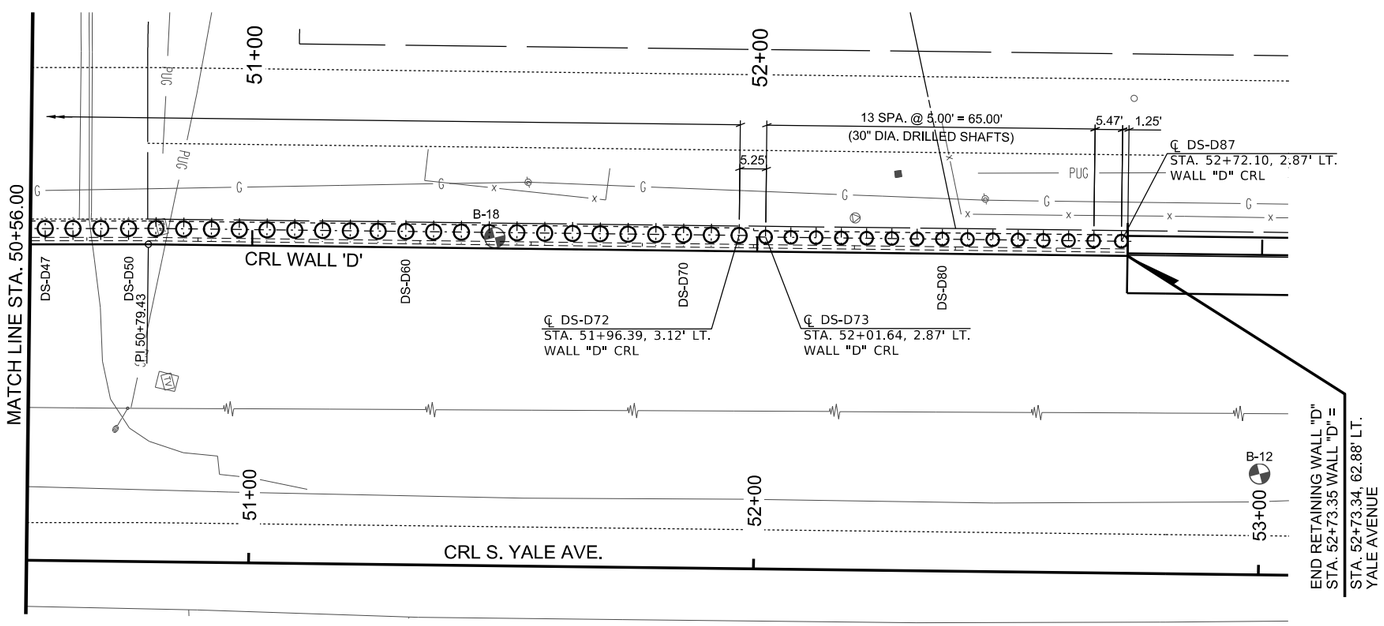


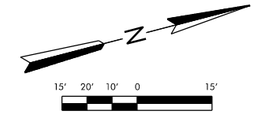
SUBSTRUCTURE LAYOUT - WALL "D"

SCALE 1" = 15'



SUBSTRUCTURE LAYOUT - WALL "D"

SCALE 1" = 15'



DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-D1	385001.4885	2582688.6132	DS-D46	385233.0789	2582748.6675
DS-D2	385006.3271	2582689.8733	DS-D47	385238.4014	2582750.0536
DS-D3	385011.1657	2582691.1334	DS-D48	385243.7239	2582751.4397
DS-D4	385016.0044	2582692.3935	DS-D49	385249.0463	2582752.8258
DS-D5	385020.8430	2582693.6536	DS-D50	385254.3688	2582754.2119
DS-D6	385025.6816	2582694.9138	DS-D51	385259.6184	2582755.5973
DS-D7	385030.5202	2582696.1739	DS-D52	385264.9241	2582757.0462
DS-D8	385035.3588	2582697.4340	DS-D53	385270.2298	2582758.4951
DS-D9	385040.1974	2582698.6941	DS-D54	385275.5355	2582759.9440
DS-D10	385045.0360	2582699.9542	DS-D55	385280.8413	2582761.3929
DS-D11	385049.8746	2582701.2143	DS-D56	385286.1470	2582762.8418
DS-D12	385054.7132	2582702.4744	DS-D57	385291.4527	2582764.2907
DS-D13	385059.5518	2582703.7345	DS-D58	385296.7584	2582765.7396
DS-D14	385064.3904	2582704.9946	DS-D59	385302.0641	2582767.1886
DS-D15	385069.2290	2582706.2547	DS-D60	385307.3699	2582768.6375
DS-D16	385074.0676	2582707.5148	DS-D61	385312.6756	2582770.0864
DS-D17	385078.9063	2582708.7749	DS-D62	385317.9813	2582771.5353
DS-D18	385084.0498	2582709.8561	DS-D63	385323.2870	2582772.9842
DS-D19	385089.3723	2582711.2422	DS-D64	385328.5927	2582774.4331
DS-D20	385094.6947	2582712.6284	DS-D65	385333.8984	2582775.8820
DS-D21	385100.0172	2582714.0145	DS-D66	385339.2042	2582777.3309
DS-D22	385105.3397	2582715.4006	DS-D67	385344.5099	2582778.7798
DS-D23	385110.6621	2582716.7867	DS-D68	385349.8156	2582780.2287
DS-D24	385115.9846	2582718.1728	DS-D69	385355.1213	2582781.6777
DS-D25	385121.3071	2582719.5590	DS-D70	385360.4270	2582783.1266
DS-D26	385126.6296	2582720.9451	DS-D71	385365.7328	2582784.5755
DS-D27	385131.9520	2582722.3312	DS-D72	385371.0385	2582786.0244
DS-D28	385137.2745	2582723.7173	DS-D73	385376.0326	2582787.6474
DS-D29	385142.5970	2582725.1034	DS-D74	385380.8560	2582788.9646
DS-D30	385147.9194	2582726.4896	DS-D75	385385.6794	2582790.2817
DS-D31	385153.2419	2582727.8757	DS-D76	385390.5028	2582791.5989
DS-D32	385158.5644	2582729.2618	DS-D77	385395.3261	2582792.9161
DS-D33	385163.8868	2582730.6479	DS-D78	385400.1495	2582794.2333
DS-D34	385169.2093	2582732.0340	DS-D79	385404.9729	2582795.5505
DS-D35	385174.5318	2582733.4202	DS-D80	385409.7963	2582796.8677
DS-D36	385179.8542	2582734.8063	DS-D81	385414.6197	2582798.1849
DS-D37	385185.1767	2582736.1924	DS-D82	385419.4431	2582799.5021
DS-D38	385190.4992	2582737.5785	DS-D83	385424.2664	2582800.8193
DS-D39	385195.8216	2582738.9646	DS-D84	385429.0898	2582802.1365
DS-D40	385201.1441	2582740.3507	DS-D85	385433.9132	2582803.4537
DS-D41	385206.4666	2582741.7369	DS-D86	385438.7366	2582804.7708
DS-D42	385211.7891	2582743.1230	DS-D87	385444.0103	2582806.2110
DS-D43	385217.1115	2582744.5091			
DS-D44	385222.4340	2582745.8952			
DS-D45	385227.7565	2582747.2813			

FOR WALL GEOMETRIC DATA
SEE SHEETS 168 TO 170.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-19-18

SUBSTRUCTURE LAYOUT (2)
WALL "D"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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Tulsa, OK 74103-3513
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REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDE	10/18
	FIELD MGR	ZEM	7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED DESIGN MANAGER	HAJ	8-20

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CITY ENGINEER

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SHEET 197 OF 334 SHEETS

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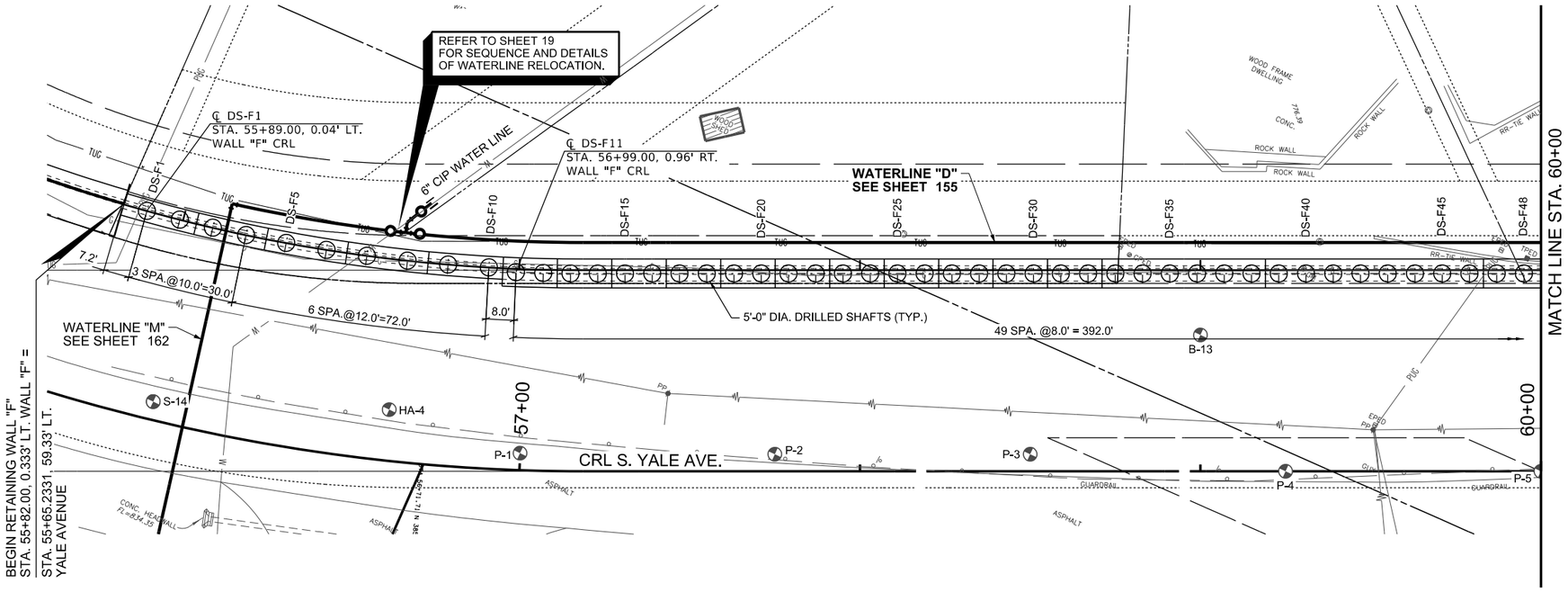
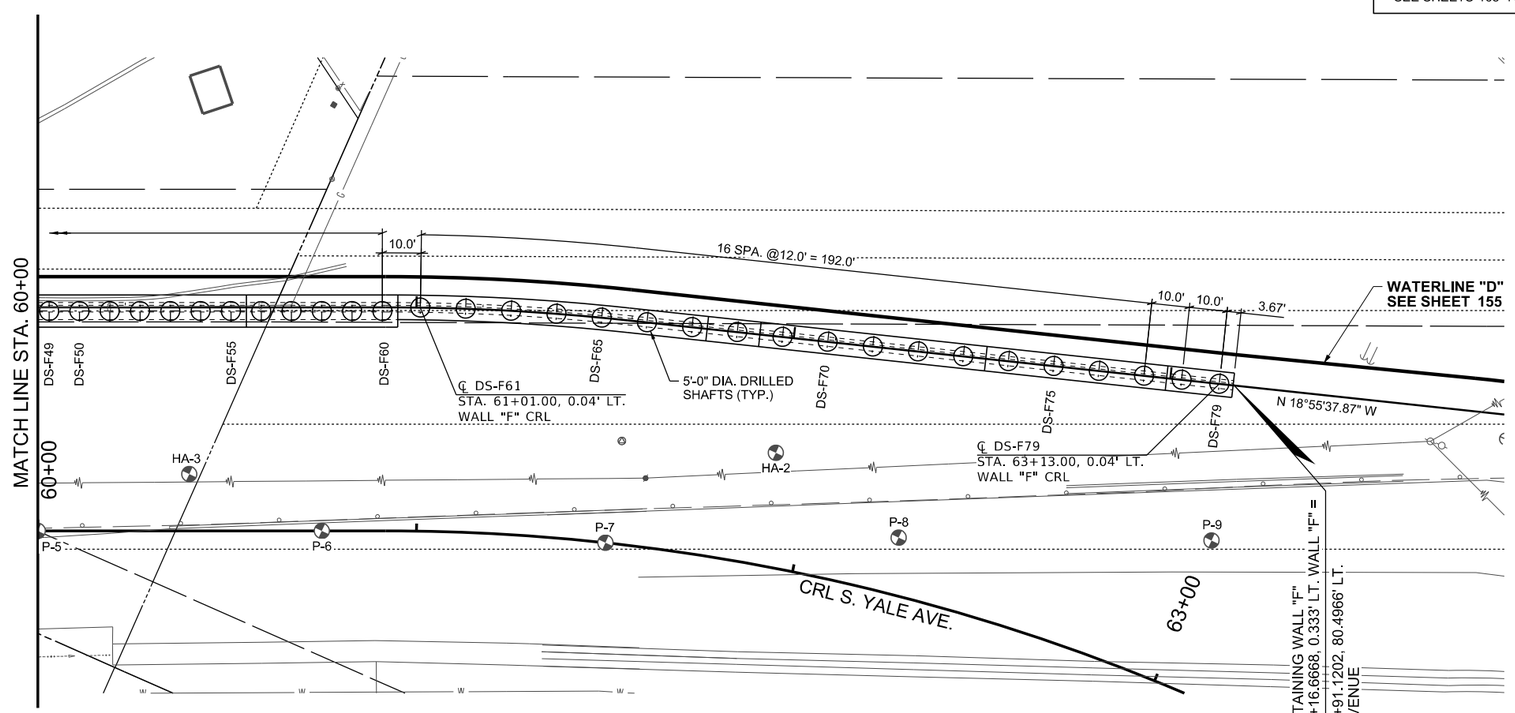


FOR WALL GEOMETRIC DATA
SEE SHEETS 168 TO 170.



SUBSTRUCTURE LAYOUT - WALL "F"

SCALE 1" = 20'

DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-F1	385713.3652	2582840.4363	DS-F41	386036.7760	2582709.5073
DS-F2	385723.2059	2582838.6646	DS-F42	386044.0230	2582706.1189
DS-F3	385733.0077	2582836.6887	DS-F43	386051.2700	2582702.7304
DS-F4	385742.7671	2582834.5093	DS-F44	386058.5169	2582699.3420
DS-F5	385754.4145	2582831.6271	DS-F45	386065.7639	2582695.9535
DS-F6	385765.9863	2582828.4553	DS-F46	386073.0108	2582692.5651
DS-F7	385777.4754	2582824.9959	DS-F47	386080.2578	2582689.1766
DS-F8	385788.8746	2582821.2509	DS-F48	386087.5048	2582685.7882
DS-F9	385800.1769	2582817.2227	DS-F49	386094.7517	2582682.3998
DS-F10	385811.3752	2582812.9138	DS-F50	386101.9987	2582679.0113
DS-F11	385819.1856	2582810.8090	DS-F51	386109.2457	2582675.6229
DS-F12	385826.5338	2582807.6525	DS-F52	386116.4926	2582672.2344
DS-F13	385833.8485	2582804.3739	DS-F53	386123.7396	2582668.8460
DS-F14	385841.1081	2582800.9953	DS-F54	386130.9865	2582665.4575
DS-F15	385848.3550	2582797.6068	DS-F55	386138.2335	2582662.0691
DS-F16	385855.6020	2582794.2184	DS-F56	386145.4805	2582658.6806
DS-F17	385862.8490	2582790.8299	DS-F57	386152.7274	2582655.2922
DS-F18	385870.0959	2582787.4415	DS-F58	386159.9744	2582651.9038
DS-F19	385877.3429	2582784.0531	DS-F59	386167.2213	2582648.5153
DS-F20	385884.5898	2582780.6646	DS-F60	386174.4683	2582645.1269
DS-F21	385891.8368	2582777.2762	DS-F61	386183.1331	2582640.0481
DS-F22	385899.0838	2582773.8877	DS-F62	386194.1289	2582635.2411
DS-F23	385906.3307	2582770.4993	DS-F63	386205.2187	2582630.6552
DS-F24	385913.5777	2582767.1108	DS-F64	386216.3983	2582626.2925
DS-F25	385920.8247	2582763.7224	DS-F65	386227.6629	2582622.1546
DS-F26	385928.0716	2582760.3340	DS-F66	386239.0012	2582618.2234
DS-F27	385935.3186	2582756.9455	DS-F67	386250.3524	2582614.3310
DS-F28	385942.5655	2582753.5571	DS-F68	386261.7035	2582610.4386
DS-F29	385949.8125	2582750.1686	DS-F69	386273.0547	2582606.5462
DS-F30	385957.0595	2582746.7802	DS-F70	386284.4059	2582602.6538
DS-F31	385964.3064	2582743.3917	DS-F71	386295.7571	2582598.7615
DS-F32	385971.5534	2582740.0033	DS-F72	386307.1082	2582594.8691
DS-F33	385978.8003	2582736.6148	DS-F73	386318.4594	2582590.9767
DS-F34	385986.0473	2582733.2264	DS-F74	386329.8106	2582587.0843
DS-F35	385993.2943	2582729.8380	DS-F75	386341.1618	2582583.1919
DS-F36	386000.5412	2582726.4495	DS-F76	386352.5130	2582579.2995
DS-F37	386007.7882	2582723.0611	DS-F77	386363.8641	2582575.4071
DS-F38	386015.0352	2582719.6726	DS-F78	386373.3235	2582572.1634
DS-F39	386022.2821	2582716.2842	DS-F79	386382.7828	2582568.9198
DS-F40	386029.5291	2582712.8957			

N

20' 15' 10' 5' 0 20'

SCALE: 1" = 20'-0"

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-26-2018

SUBSTRUCTURE LAYOUT (3)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 20'				APPROVED:
	DRAWN	WZB	10/18	
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"=N/A	PROJECT MGR	BDC	12/18	
	FIELD MGR	ZWL	2/20	
	LEAD ENGR		11/19	
VERTICAL: 1"=N/A	RECOMMENDED	HAS 8-20		
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-S-Sub_Layout-03.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 198 OF 334 SHEETS

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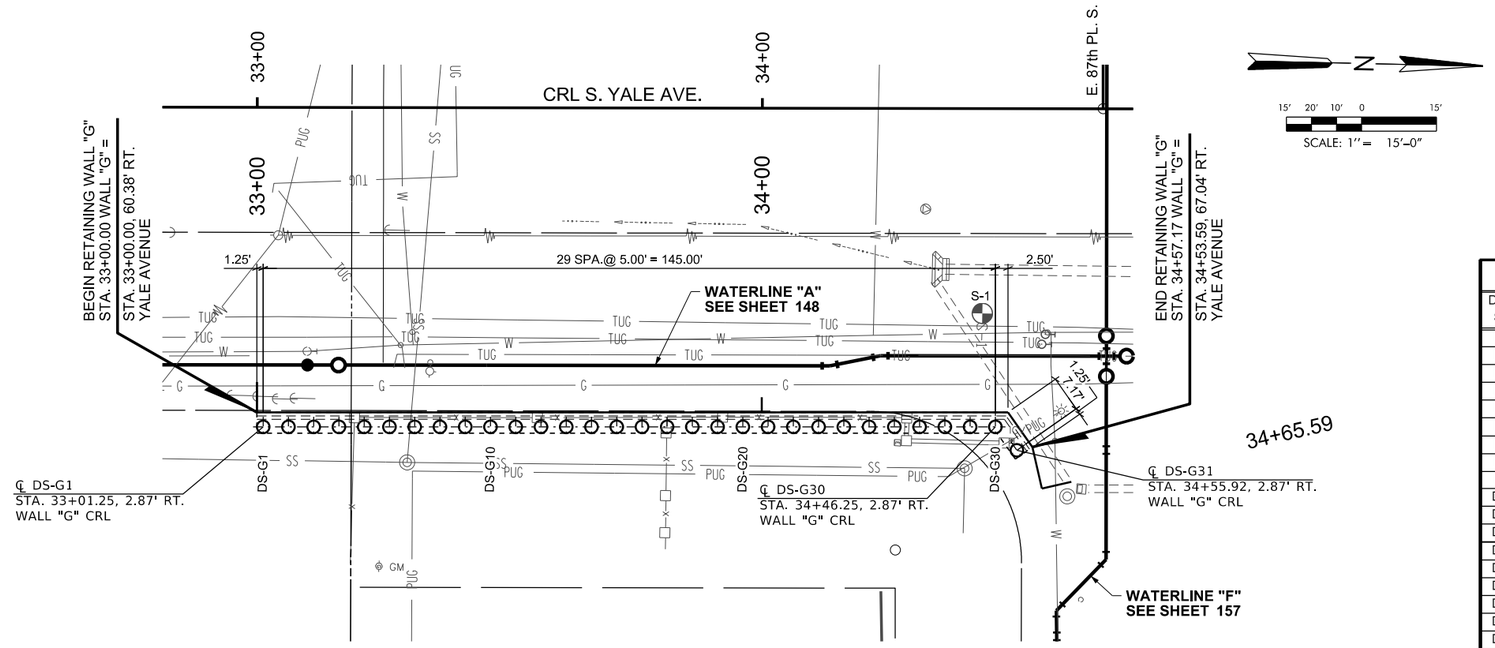

SUBSTRUCTURE LAYOUT - WALL "G"

SCALE 1" = 15'

DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-G1	383497.3663	2582880.3577	DS-G21	383597.3399	2582878.0608
DS-G2	383502.3650	2582880.2429	DS-G22	383602.3386	2582877.9460
DS-G3	383507.3637	2582880.1280	DS-G23	383607.3373	2582877.8311
DS-G4	383512.3624	2582880.0132	DS-G24	383612.3360	2582877.7163
DS-G5	383517.3610	2582879.8983	DS-G25	383617.3347	2582877.6015
DS-G6	383522.3597	2582879.7835	DS-G26	383622.3333	2582877.4866
DS-G7	383527.3584	2582879.6687	DS-G27	383627.3320	2582877.3718
DS-G8	383532.3571	2582879.5538	DS-G28	383632.3307	2582877.2569
DS-G9	383537.3558	2582879.4390	DS-G29	383637.3294	2582877.1421
DS-G10	383542.3545	2582879.3241	DS-G30	383642.3281	2582877.0272
DS-G11	383547.3531	2582879.2093	DS-G31	383646.6880	2582881.5778
DS-G12	383552.3518	2582879.0944			
DS-G13	383557.3505	2582878.9796			
DS-G14	383562.3492	2582878.8647			
DS-G15	383567.3479	2582878.7499			
DS-G16	383572.3465	2582878.6351			
DS-G17	383577.3452	2582878.5202			
DS-G18	383582.3439	2582878.4054			
DS-G19	383587.3426	2582878.2905			
DS-G20	383592.3413	2582878.1757			

LICENSED PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-31-2018

FOR WALL GEOMETRIC DATA
SEE SHEETS 168 TO 170.

SUBSTRUCTURE LAYOUT (4)
WALL "G"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	RDL	12/18
FIELD MGR	ZTM	7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	8-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Sub_Layout-04.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 199 OF 334 SHEETS

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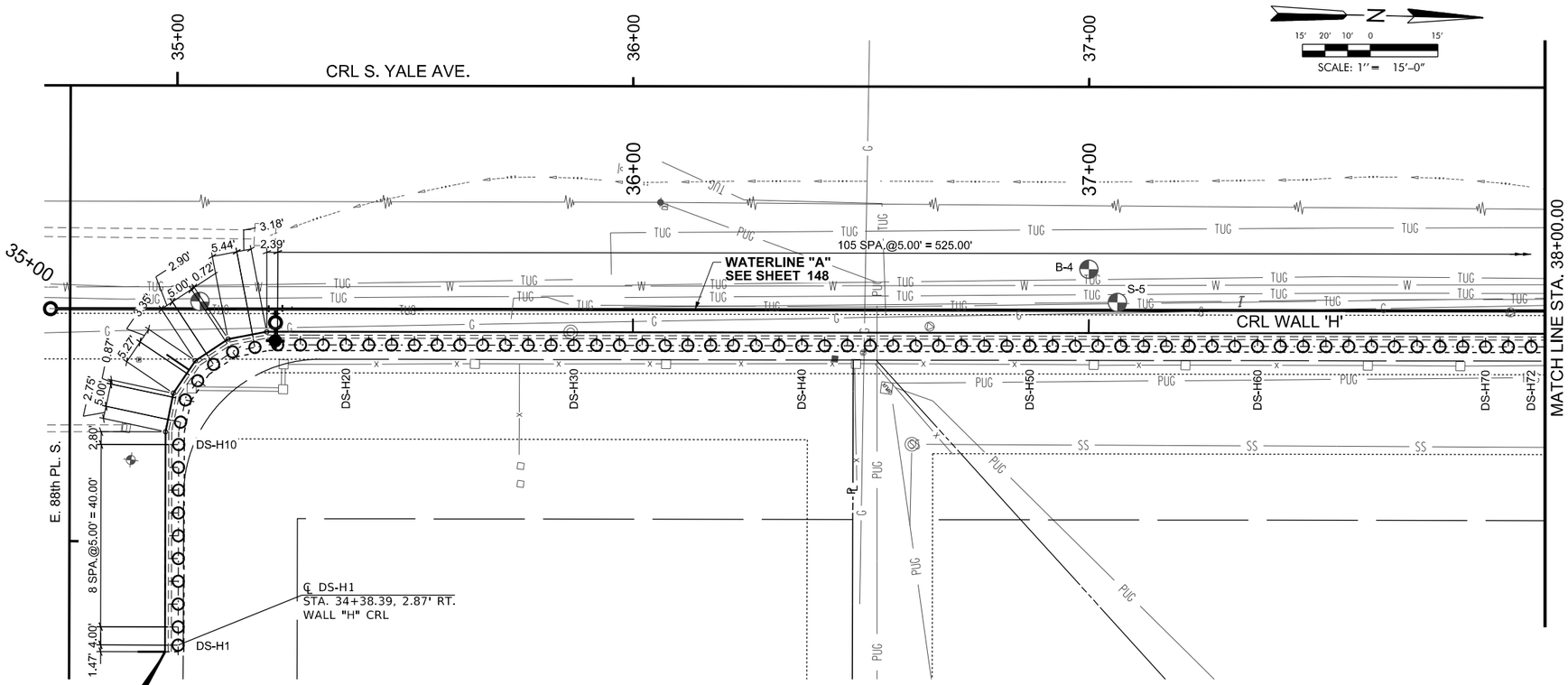
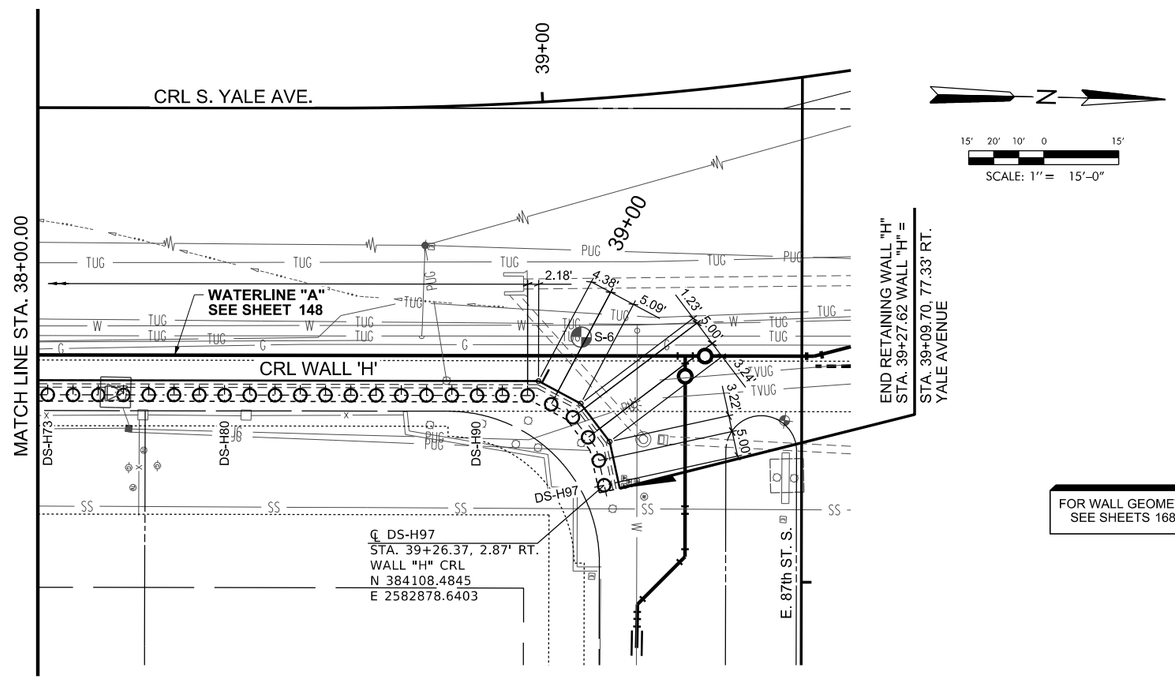


SUBSTRUCTURE LAYOUT - WALL "H"

SCALE 1" = 15'



SUBSTRUCTURE LAYOUT - WALL "H"

SCALE 1" = 15'

FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170.

DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-H1	383697.6537	2582935.6070	DS-H50	383882.9353	2582865.7247
DS-H2	383697.5727	2582931.6078	DS-H51	383887.9342	2582865.6177
DS-H3	383697.4716	2582926.6088	DS-H52	383892.9330	2582865.5108
DS-H4	383697.3705	2582921.6098	DS-H53	383897.9319	2582865.4038
DS-H5	383697.2693	2582916.6108	DS-H54	383902.9307	2582865.2968
DS-H6	383697.1682	2582911.6119	DS-H55	383907.9296	2582865.1899
DS-H7	383697.0670	2582906.6129	DS-H56	383912.9284	2582865.0829
DS-H8	383696.9659	2582901.6139	DS-H57	383917.9273	2582864.9759
DS-H9	383696.8647	2582896.6149	DS-H58	383922.9262	2582864.8690
DS-H10	383696.7636	2582891.6160	DS-H59	383927.9250	2582864.7620
DS-H11	383697.0852	2582886.6974	DS-H60	383932.9239	2582864.6551
DS-H12	383698.0193	2582881.7854	DS-H61	383937.9227	2582864.5481
DS-H13	383700.6162	2582877.5133	DS-H62	383942.9216	2582864.4411
DS-H14	383704.0265	2582873.8568	DS-H63	383947.9204	2582864.3342
DS-H15	383708.1382	2582871.0117	DS-H64	383952.9193	2582864.2272
DS-H16	383713.0149	2582869.9088	DS-H65	383957.9181	2582864.1203
DS-H17	383717.9731	2582869.2544	DS-H66	383962.9170	2582864.0133
DS-H18	383722.9719	2582869.1474	DS-H67	383967.9159	2582863.9063
DS-H19	383727.9708	2582869.0405	DS-H68	383972.9147	2582863.7994
DS-H20	383732.9696	2582868.9335	DS-H69	383977.9136	2582863.6924
DS-H21	383737.9685	2582868.8266	DS-H70	383982.9124	2582863.5854
DS-H22	383742.9673	2582868.7196	DS-H71	383987.9113	2582863.4785
DS-H23	383747.9662	2582868.6126	DS-H72	383992.9101	2582863.3715
DS-H24	383752.9651	2582868.5057	DS-H73	383997.9090	2582863.2646
DS-H25	383757.9639	2582868.3987	DS-H74	384002.9078	2582863.1576
DS-H26	383762.9628	2582868.2917	DS-H75	384007.9067	2582863.0506
DS-H27	383767.9616	2582868.1848	DS-H76	384012.9056	2582862.9437
DS-H28	383772.9605	2582868.0778	DS-H77	384017.9044	2582862.8367
DS-H29	383777.9593	2582867.9709	DS-H78	384022.9033	2582862.7298
DS-H30	383782.9582	2582867.8639	DS-H79	384027.9021	2582862.6228
DS-H31	383787.9570	2582867.7569	DS-H80	384032.9010	2582862.5158
DS-H32	383792.9559	2582867.6500	DS-H81	384037.8998	2582862.4089
DS-H33	383797.9548	2582867.5430	DS-H82	384042.8987	2582862.3019
DS-H34	383802.9536	2582867.4361	DS-H83	384047.8976	2582862.1950
DS-H35	383807.9525	2582867.3291	DS-H84	384052.8964	2582862.0880
DS-H36	383812.9513	2582867.2221	DS-H85	384057.8953	2582861.9810
DS-H37	383817.9502	2582867.1152	DS-H86	384062.8941	2582861.8741
DS-H38	383822.9490	2582867.0082	DS-H87	384067.8930	2582861.7671
DS-H39	383827.9479	2582866.9012	DS-H88	384072.8918	2582861.6601
DS-H40	383832.9468	2582866.7943	DS-H89	384077.8907	2582861.5532
DS-H41	383837.9456	2582866.6873	DS-H90	384082.8895	2582861.4462
DS-H42	383842.9445	2582866.5804	DS-H91	384087.8884	2582861.3393
DS-H43	383847.9433	2582866.4734	DS-H92	384092.8873	2582861.2323
DS-H44	383852.9422	2582866.3664	DS-H93	384097.6210	2582862.8467
DS-H45	383857.9410	2582866.2595	DS-H94	384101.9711	2582865.3140
DS-H46	383862.9399	2582866.1525	DS-H95	384105.0805	2582869.2296
DS-H47	383867.9387	2582866.0456	DS-H96	384107.3083	2582873.7806
DS-H48	383872.9376	2582865.9386	DS-H97	384108.4845	2582878.6403
DS-H49	383877.9365	2582865.8316			

LICENSED PROFESSIONAL ENGINEER KAREN WATERS JONES 28517 OKLAHOMA

7-18-2017

SUBSTRUCTURE LAYOUT (5)
WALL "H"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA

PROFILE SCALE: HORIZONTAL: 1"= NA; VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		12/18
FIELD MGR		7/20
LEAD ENGR		9/19
RECOMMENDED DESIGN MANAGER	HAS	9·20

APPROVED: CITY ENGINEER

FILE: 313925-S-Sub_Layout-05.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 200 OF 334 SHEETS

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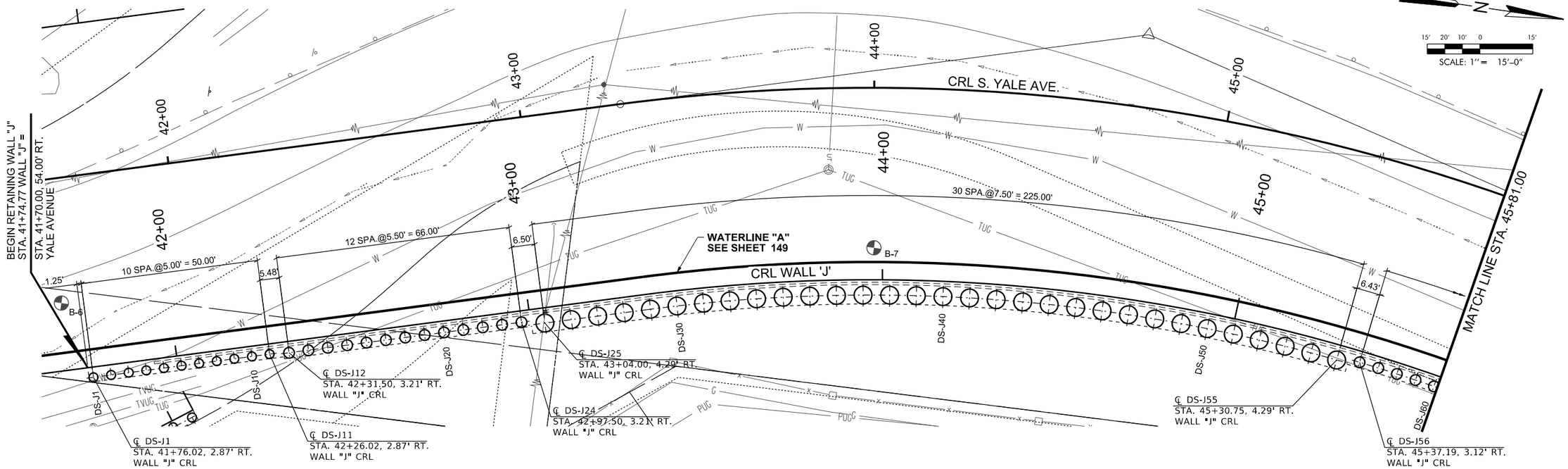
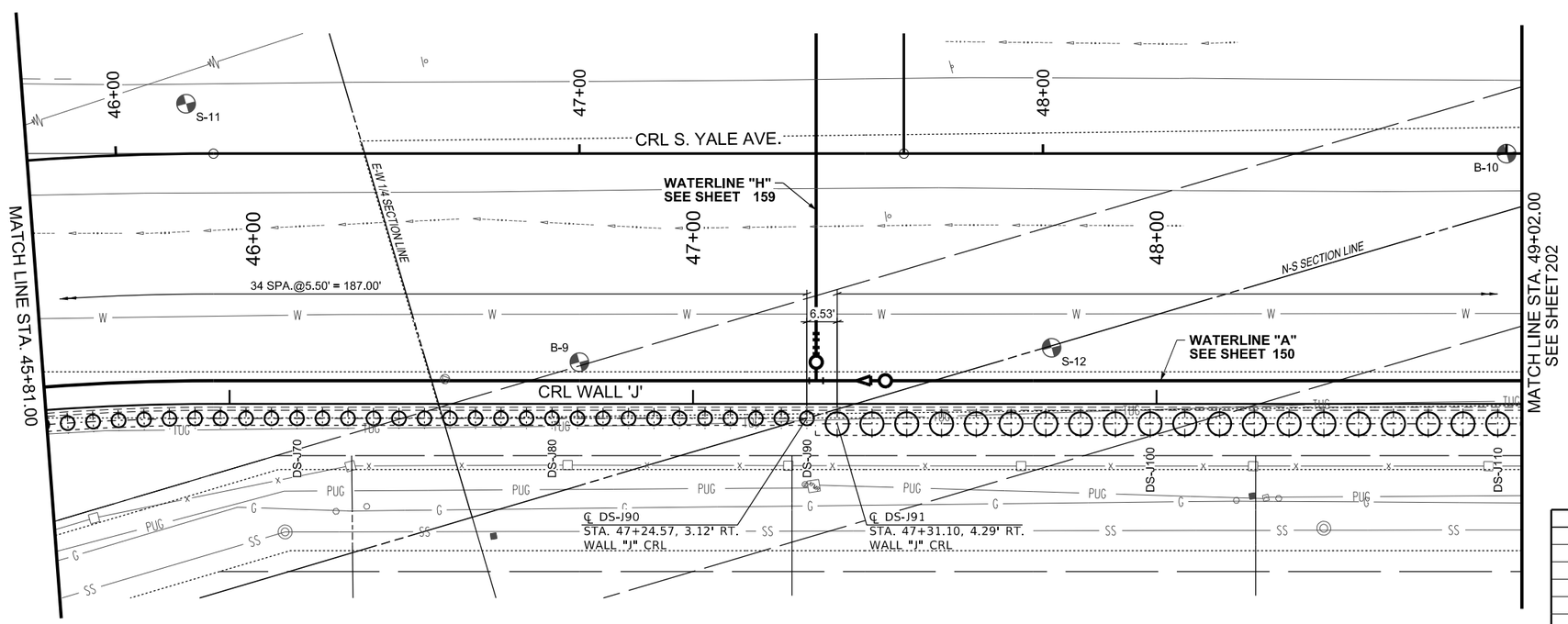


SUBSTRUCTURE LAYOUT - WALL "J"

SCALE 1" = 15'



SUBSTRUCTURE LAYOUT - WALL "J"

SCALE 1" = 15'

FOR DRILLED SHAFT LOCATION SCHEDULE SEE SHEET 203 .

FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170 .

SCALE: 1" = 15'-0"

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-19-2018

SUBSTRUCTURE LAYOUT (6)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600
a Haskell Company

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS	9-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Sub_Layout-06.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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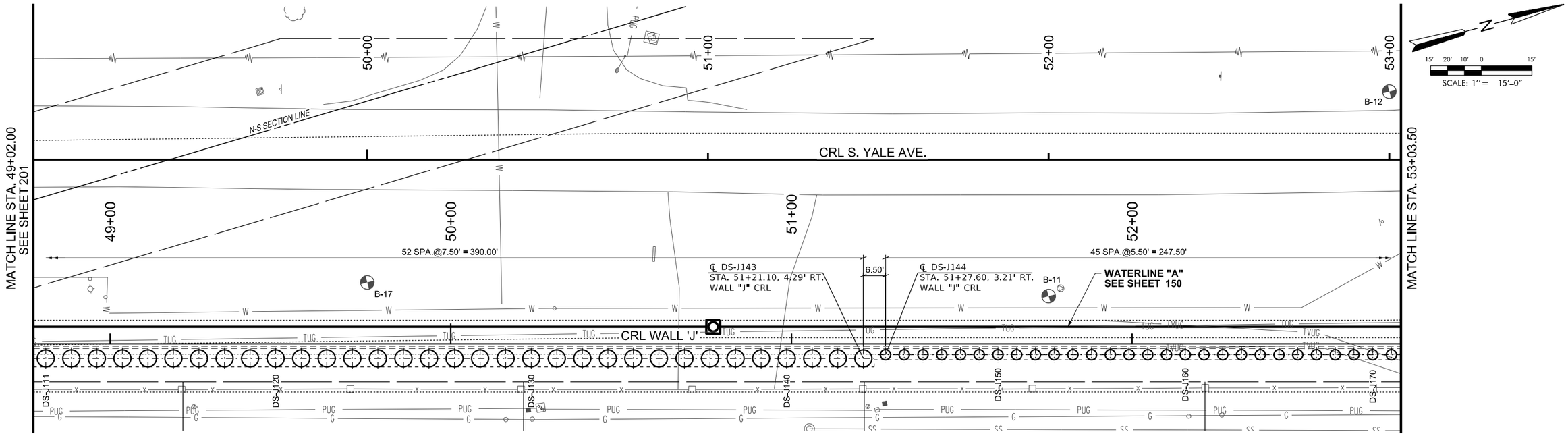
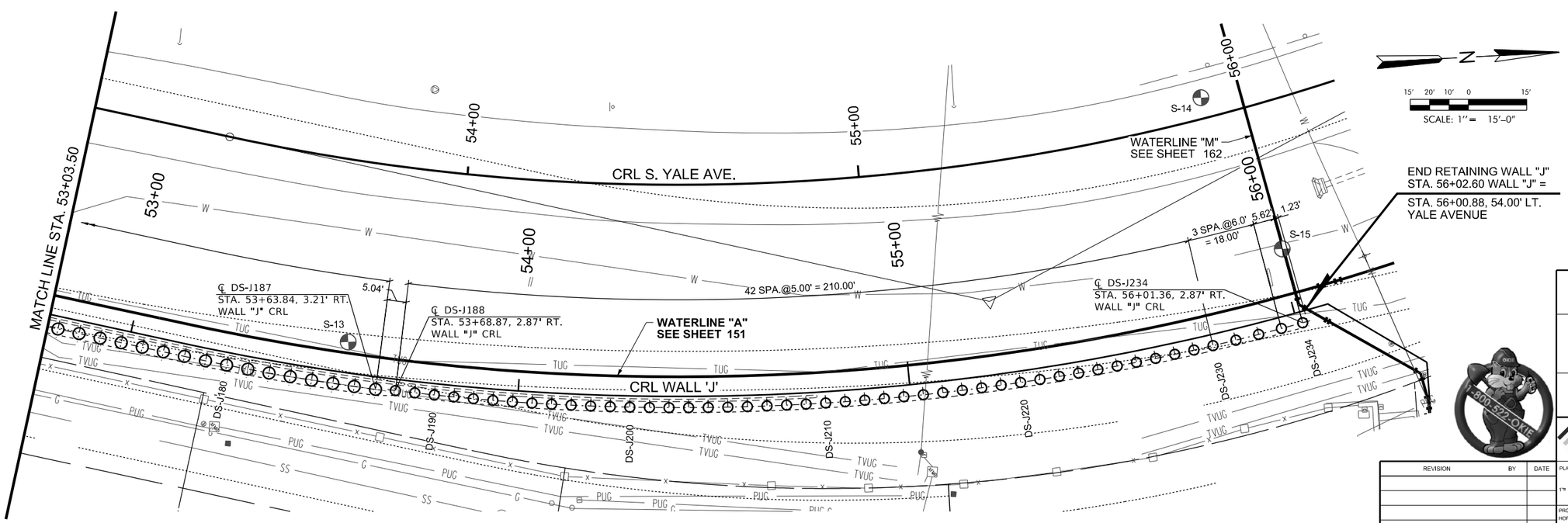


SUBSTRUCTURE LAYOUT - WALL "J"

SCALE 1" = 15'



SUBSTRUCTURE LAYOUT - WALL "J"

SCALE 1" = 15'

FOR DRILLED SHAFT LOCATION SCHEDULE SEE SHEET 203 .

FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170 .

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-5-2018

SUBSTRUCTURE LAYOUT (7)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		2/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS 9.20	
	DESIGN MANAGER		CITY ENGINEER

APPROVED:

FILE: 313925-S-Sub_Layout-07.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-J1	384373.8238	2582796.8936	DS-J51	384689.5688	2582738.4959	DS-J101	384985.4492	2582809.5718	DS-J151	385333.0180	2582903.3645	DS-J201	385594.0591	2582961.8266
DS-J2	384378.6352	2582795.5332	DS-J52	384697.0468	2582739.0705	DS-J102	384992.6842	2582811.5476	DS-J152	385338.3237	2582904.8134	DS-J202	385599.0497	2582962.1325
DS-J3	384383.4466	2582794.1728	DS-J53	384704.5149	2582739.7615	DS-J103	384999.9193	2582813.5233	DS-J153	385343.6294	2582906.2623	DS-J203	385604.0426	2582962.3965
DS-J4	384388.2579	2582792.8124	DS-J54	384711.9713	2582740.5687	DS-J104	385007.1544	2582815.4991	DS-J154	385348.9352	2582907.7112	DS-J204	385609.0376	2582962.6188
DS-J5	384393.0693	2582791.4520	DS-J55	384719.4143	2582741.4919	DS-J105	385014.3894	2582817.4749	DS-J155	385354.2409	2582909.1602	DS-J205	385614.0343	2582962.7992
DS-J6	384397.8807	2582790.0916	DS-J56	384725.9085	2582741.2148	DS-J106	385021.6245	2582819.4507	DS-J156	385359.5466	2582910.6091	DS-J206	385619.0323	2582962.9377
DS-J7	384402.6921	2582788.7312	DS-J57	384731.3466	2582742.0374	DS-J107	385028.8596	2582821.4265	DS-J157	385364.8523	2582912.0580	DS-J207	385624.0313	2582963.0344
DS-J8	384407.5034	2582787.3708	DS-J58	384736.7749	2582742.9220	DS-J108	385036.0947	2582823.4023	DS-J158	385370.1580	2582913.5069	DS-J208	385629.0309	2582963.0891
DS-J9	384412.3148	2582786.0104	DS-J59	384742.1927	2582743.8683	DS-J109	385043.3297	2582825.3781	DS-J159	385375.4637	2582914.9558	DS-J209	385634.0308	2582963.1020
DS-J10	384417.1262	2582784.6499	DS-J60	384747.5995	2582744.8763	DS-J110	385050.5648	2582827.3539	DS-J160	385380.7695	2582916.4047	DS-J210	385639.0307	2582963.0731
DS-J11	384421.9375	2582783.2895	DS-J61	384752.9944	2582745.9457	DS-J111	385057.7999	2582829.3296	DS-J161	385386.0752	2582917.8536	DS-J211	385644.0301	2582963.0022
DS-J12	384427.3041	2582782.1186	DS-J62	384758.3767	2582747.0766	DS-J112	385065.0349	2582831.3054	DS-J162	385391.3809	2582919.3025	DS-J212	385649.0288	2582962.8894
DS-J13	384432.5966	2582780.6221	DS-J63	384763.7458	2582748.2687	DS-J113	385072.2700	2582833.2812	DS-J163	385396.6866	2582920.7514	DS-J213	385654.0263	2582962.7348
DS-J14	384437.8891	2582779.1257	DS-J64	384769.1011	2582749.5218	DS-J114	385079.5051	2582835.2570	DS-J164	385401.9923	2582922.2004	DS-J214	385659.0224	2582962.5384
DS-J15	384443.1816	2582777.6292	DS-J65	384774.4416	2582750.8359	DS-J115	385086.7402	2582837.2328	DS-J165	385407.2981	2582923.6493	DS-J215	385664.0167	2582962.3000
DS-J16	384448.4741	2582776.1327	DS-J66	384779.7669	2582752.2107	DS-J116	385093.9752	2582839.2086	DS-J166	385412.6038	2582925.0982	DS-J216	385669.0087	2582962.0199
DS-J17	384453.7666	2582774.6363	DS-J67	384785.0769	2582753.6438	DS-J117	385101.2103	2582841.1844	DS-J167	385417.9095	2582926.5471	DS-J217	385673.9983	2582961.6979
DS-J18	384459.0591	2582773.1398	DS-J68	384790.3826	2582755.0927	DS-J118	385108.4454	2582843.1602	DS-J168	385423.2152	2582927.9960	DS-J218	385678.9850	2582961.3342
DS-J19	384464.3516	2582771.6434	DS-J69	384795.6884	2582756.5416	DS-J119	385115.6805	2582845.1359	DS-J169	385428.5209	2582929.4449	DS-J219	385683.9685	2582960.9287
DS-J20	384469.6441	2582770.1469	DS-J70	384800.9941	2582757.9905	DS-J120	385122.9155	2582847.1117	DS-J170	385433.8267	2582930.8938	DS-J220	385688.9483	2582960.4815
DS-J21	384474.9367	2582768.6505	DS-J71	384806.2998	2582759.4394	DS-J121	385130.1506	2582849.0875	DS-J171	385439.1324	2582932.3427	DS-J221	385693.9243	2582959.9926
DS-J22	384480.2292	2582767.1540	DS-J72	384811.6055	2582760.8883	DS-J122	385137.3857	2582851.0633	DS-J172	385444.4381	2582933.7916	DS-J222	385698.8960	2582959.4620
DS-J23	384485.5217	2582765.6576	DS-J73	384816.9112	2582762.3372	DS-J123	385144.6207	2582853.0391	DS-J173	385449.7438	2582935.2406	DS-J223	385703.8631	2582958.8897
DS-J24	384490.8142	2582764.1611	DS-J74	384822.2170	2582763.7862	DS-J124	385151.8558	2582855.0149	DS-J174	385455.0495	2582936.6895	DS-J224	385708.8252	2582958.2759
DS-J25	384497.3637	2582763.4351	DS-J75	384827.5227	2582765.2351	DS-J125	385159.0909	2582856.9907	DS-J175	385460.3553	2582938.1384	DS-J225	385713.7820	2582957.6206
DS-J26	384504.5808	2582761.3945	DS-J76	384832.8284	2582766.6840	DS-J126	385166.3260	2582858.9665	DS-J176	385465.6610	2582939.5873	DS-J226	385718.7331	2582956.9237
DS-J27	384511.7978	2582759.3538	DS-J77	384838.1341	2582768.1329	DS-J127	385173.5610	2582860.9422	DS-J177	385470.9667	2582941.0362	DS-J227	385723.6783	2582956.1854
DS-J28	384519.0149	2582757.3132	DS-J78	384843.4398	2582769.5818	DS-J128	385180.7961	2582862.9180	DS-J178	385476.2726	2582942.4849	DS-J228	385728.6170	2582955.4057
DS-J29	384526.2319	2582755.2726	DS-J79	384848.7456	2582771.0307	DS-J129	385188.0312	2582864.8938	DS-J179	385481.5869	2582943.9047	DS-J229	385733.5491	2582954.5847
DS-J30	384533.4687	2582753.3031	DS-J80	384854.0513	2582772.4796	DS-J130	385195.2662	2582866.8696	DS-J180	385486.9141	2582945.2754	DS-J230	385738.4741	2582953.7224
DS-J31	384540.7350	2582751.4456	DS-J81	384859.3570	2582773.9285	DS-J131	385202.5013	2582868.8454	DS-J181	385492.2538	2582946.5971	DS-J231	385744.3744	2582952.6331
DS-J32	384548.0294	2582749.7014	DS-J82	384864.6627	2582775.3774	DS-J132	385209.7364	2582870.8212	DS-J182	385497.6053	2582947.8695	DS-J232	385750.2635	2582951.4846
DS-J33	384555.3501	2582748.0711	DS-J83	384869.9684	2582776.8264	DS-J133	385216.9715	2582872.7970	DS-J183	385502.9684	2582949.0925	DS-J233	385756.1407	2582950.2770
DS-J34	384562.6952	2582746.5549	DS-J84	384875.2741	2582778.2753	DS-J134	385224.2065	2582874.7728	DS-J184	385508.3425	2582950.2661	DS-J234	385761.6327	2582949.0927
DS-J35	384570.0630	2582745.1532	DS-J85	384880.5799	2582779.7242	DS-J135	385231.4416	2582876.7486	DS-J185	385513.7272	2582951.3902			
DS-J36	384577.4518	2582743.8664	DS-J86	384885.8856	2582781.1731	DS-J136	385238.6767	2582878.7243	DS-J186	385519.1220	2582952.4646			
DS-J37	384584.8598	2582742.6949	DS-J87	384891.1913	2582782.6220	DS-J137	385245.9117	2582880.7001	DS-J187	385524.5265	2582953.4892			
DS-J38	384592.2850	2582741.6388	DS-J88	384896.4970	2582784.0709	DS-J138	385253.1468	2582882.6759	DS-J188	385529.5579	2582954.0585			
DS-J39	384599.7258	2582740.6984	DS-J89	384901.8027	2582785.5198	DS-J139	385260.3819	2582884.6517	DS-J189	385534.4857	2582954.9050			
DS-J40	384607.1804	2582739.8740	DS-J90	384907.1085	2582786.9687	DS-J140	385267.6170	2582886.6275	DS-J190	385539.4204	2582955.7102			
DS-J41	384614.6469	2582739.1657	DS-J91	384913.0984	2582789.8139	DS-J141	385274.8520	2582888.6033	DS-J191	385544.3616	2582956.4740			
DS-J42	384622.1235	2582738.5738	DS-J92	384920.3335	2582791.7897	DS-J142	385282.0871	2582890.5791	DS-J192	385549.3091	2582957.1963			
DS-J43	384629.6084	2582738.0984	DS-J93	384927.5686	2582793.7655	DS-J143	385289.3222	2582892.5549	DS-J193	385554.2625	2582957.8773			
DS-J44	384637.0998	2582737.7395	DS-J94	384934.8037	2582795.7413	DS-J144	385295.8780	2582893.2221	DS-J194	385559.2213	2582958.5167			
DS-J45	384644.5959	2582737.4974	DS-J95	384942.0387	2582797.7170	DS-J145	385301.1837	2582894.6710	DS-J195	385564.1854	2582959.1145			
DS-J46	384652.0948	2582737.3719	DS-J96	384949.2738	2582799.6928	DS-J146	385306.4894	2582896.1200	DS-J196	385569.1543	2582959.6707			
DS-J47	384659.5948	2582737.3633	DS-J97	384956.5089	2582801.6686	DS-J147	385311.7951	2582897.5689	DS-J197	385574.1277	2582960.1853			
DS-J48	384667.0940	2582737.4714	DS-J98	384963.7439	2582803.6444	DS-J148	385317.1008	2582899.0178	DS-J198	385579.1052	2582960.6582			
DS-J49	384674.5906	2582737.6962	DS-J99	384970.9790	2582805.6202	DS-J149	385322.4066	2582900.4667	DS-J199	385584.0865	2582961.0894			
DS-J50	384682.0828	2582738.0377	DS-J100	384978.2141	2582807.5960	DS-J150	385327.7123	2582901.9156	DS-J200	385589.0713	2582961.4789			

SUBSTRUCTURE LAYOUT - WALL "J"

SCALE 1" = 15'

KAREN SWATEK JONES
28517
LICENSED PROFESSIONAL ENGINEER

SUBSTRUCTURE LAYOUT (8)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	9-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Sub_Layout-08.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
SHEET 203 OF 334 SHEETS

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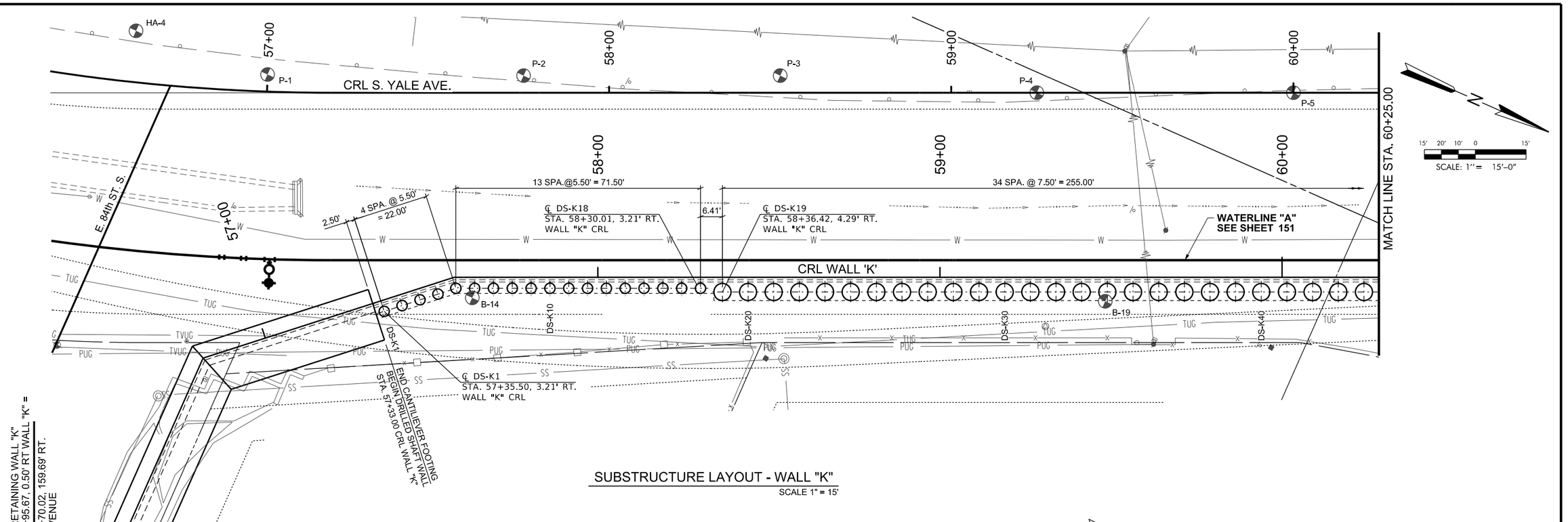

FOR DRILLED SHAFT LOCATION SCHEDULE SEE SHEET 205 .

FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170 .

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-31-2018

SUBSTRUCTURE LAYOUT (9)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" NA	PROJECT MGR		10/18
	FIELD MGR		10/20
VERTICAL: 1" NA	LEAD ENGR		10/18
	RECOMMENDED DESIGN MANAGER		9-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Sub_Layout-09.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 204 OF 334 SHEETS

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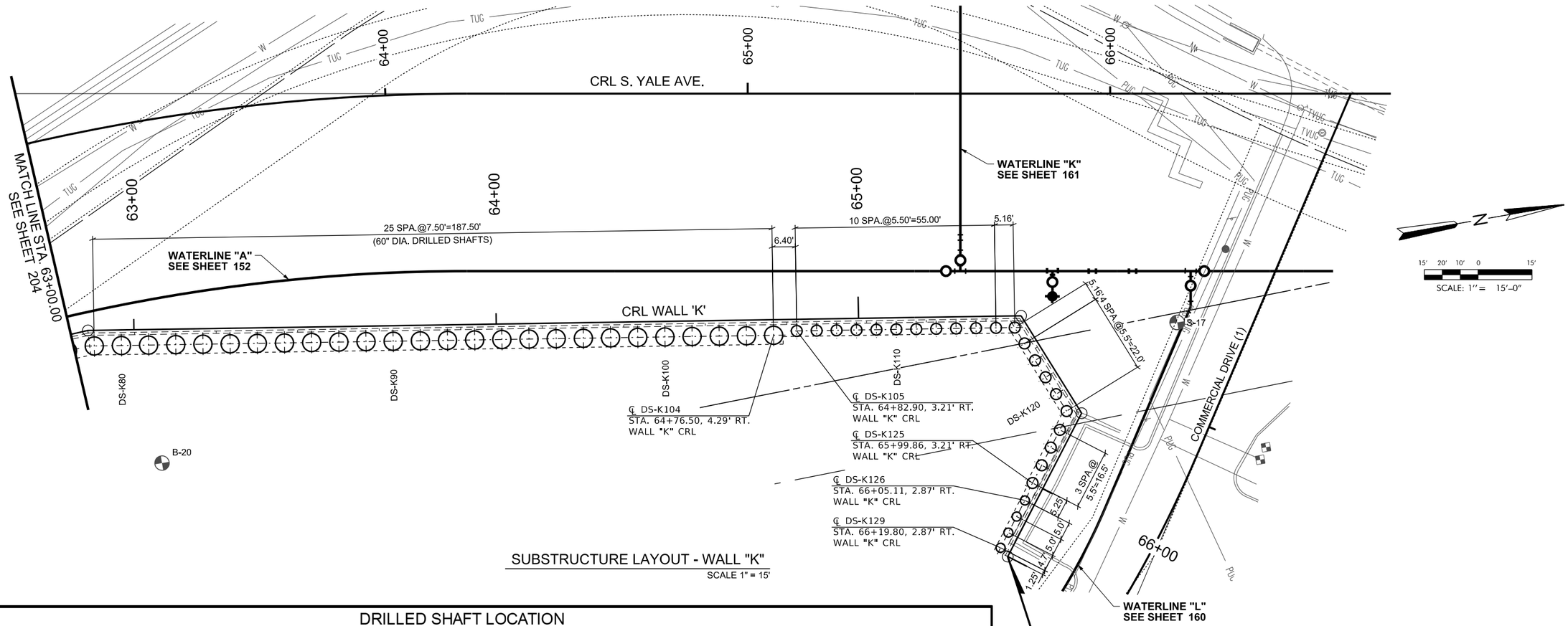

SUBSTRUCTURE LAYOUT - WALL "K"

SCALE 1" = 15'

DRILLED SHAFT LOCATION

DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-K1	385902.9816	2582906.7359	DS-K31	386071.6572	2582821.6197	DS-K61	386276.7512	2582729.3426	DS-K91	386497.9935	2582719.7087	DS-K121	386670.2386	2582769.8735
DS-K2	385907.0098	2582902.9910	DS-K32	386078.4512	2582818.4430	DS-K62	386283.8871	2582727.0343	DS-K92	386505.3986	2582720.8981	DS-K122	386667.5182	2582774.6537
DS-K3	385911.0379	2582899.2462	DS-K33	386085.2452	2582815.2663	DS-K63	386291.0581	2582724.8373	DS-K93	386512.8037	2582722.0875	DS-K123	386664.1886	2582779.0314
DS-K4	385915.0661	2582895.5013	DS-K34	386092.0392	2582812.0897	DS-K64	386298.2624	2582722.7522	DS-K94	386520.2088	2582723.2769	DS-K124	386660.8591	2582783.4090
DS-K5	385919.0942	2582891.7565	DS-K35	386098.8333	2582808.9130	DS-K65	386305.4984	2582720.7796	DS-K95	386527.6139	2582724.4663	DS-K125	386657.5295	2582787.7867
DS-K6	385924.0768	2582889.4275	DS-K36	386105.6273	2582805.7363	DS-K66	386312.7641	2582718.9198	DS-K96	386535.0190	2582725.6557	DS-K126	386654.8166	2582792.1672
DS-K7	385929.0591	2582887.0980	DS-K37	386112.4213	2582802.5597	DS-K67	386320.0580	2582717.1734	DS-K97	386542.4241	2582726.8450	DS-K127	386651.5897	2582796.1469
DS-K8	385934.0414	2582884.7684	DS-K38	386119.2153	2582799.3830	DS-K68	386327.3781	2582715.5408	DS-K98	386549.8292	2582728.0344	DS-K128	386648.5629	2582800.1266
DS-K9	385939.0237	2582882.4388	DS-K39	386126.0094	2582796.2063	DS-K69	386334.7228	2582714.0223	DS-K99	386557.2342	2582729.2238	DS-K129	386645.7202	2582803.8641
DS-K10	385944.0060	2582880.1093	DS-K40	386132.8034	2582793.0297	DS-K70	386342.0902	2582712.6184	DS-K100	386564.6393	2582730.4132			
DS-K11	385948.9882	2582877.7797	DS-K41	386139.5974	2582789.8530	DS-K71	386349.4786	2582711.3293	DS-K101	386572.0444	2582731.6026			
DS-K12	385953.9705	2582875.4502	DS-K42	386146.3915	2582786.6763	DS-K72	386356.8862	2582710.1555	DS-K102	386579.4495	2582732.7920			
DS-K13	385958.9528	2582873.1206	DS-K43	386153.1855	2582783.4997	DS-K73	386364.3111	2582709.0971	DS-K103	386586.8546	2582733.9814			
DS-K14	385963.9351	2582870.7911	DS-K44	386159.9795	2582780.3230	DS-K74	386371.7516	2582708.1544	DS-K104	386594.2597	2582735.1707			
DS-K15	385968.9174	2582868.4615	DS-K45	386166.7735	2582777.1463	DS-K75	386379.2059	2582707.3277	DS-K105	386600.7470	2582735.1155			
DS-K16	385973.8997	2582866.1320	DS-K46	386173.5676	2582773.9697	DS-K76	386386.6722	2582706.6171	DS-K106	386606.1774	2582735.9877			
DS-K17	385978.8820	2582863.8024	DS-K47	386180.3616	2582770.7930	DS-K77	386394.1486	2582706.0229	DS-K107	386611.6078	2582736.8599			
DS-K18	385983.8643	2582861.4729	DS-K48	386187.1556	2582767.6163	DS-K78	386401.6334	2582705.5451	DS-K108	386617.0382	2582737.7321			
DS-K19	385990.1288	2582859.7396	DS-K49	386193.9496	2582764.4397	DS-K79	386409.1324	2582705.4361	DS-K109	386622.4686	2582738.6044			
DS-K20	385996.9229	2582856.5630	DS-K50	386200.7437	2582761.2630	DS-K80	386416.5375	2582706.6255	DS-K110	386627.8990	2582739.4766			
DS-K21	386003.7169	2582853.3863	DS-K51	386207.5377	2582758.0863	DS-K81	386423.9426	2582707.8149	DS-K111	386633.3294	2582740.3488			
DS-K22	386010.5109	2582850.2096	DS-K52	386214.3317	2582754.9097	DS-K82	386431.3477	2582709.0042	DS-K112	386638.7598	2582741.2210			
DS-K23	386017.3049	2582847.0330	DS-K53	386221.1257	2582751.7330	DS-K83	386438.7528	2582710.1936	DS-K113	386644.1902	2582742.0932			
DS-K24	386024.0990	2582843.8563	DS-K54	386227.9259	2582748.5694	DS-K84	386446.1579	2582711.3830	DS-K114	386649.6206	2582742.9654			
DS-K25	386030.8930	2582840.6796	DS-K55	386234.7684	2582745.4985	DS-K85	386453.5630	2582712.5724	DS-K115	386655.0510	2582743.8377			
DS-K26	386037.6870	2582837.5030	DS-K56	386241.6578	2582742.5346	DS-K86	386460.9681	2582713.7618	DS-K116	386660.1661	2582744.6592			
DS-K27	386044.4811	2582834.3263	DS-K57	386248.5926	2582739.6783	DS-K87	386468.3732	2582714.9512	DS-K117	386662.0650	2582749.4482			
DS-K28	386051.2751	2582831.1497	DS-K58	386255.5711	2582736.9303	DS-K88	386475.7783	2582716.1406	DS-K118	386664.1084	2582754.5546			
DS-K29	386058.0691	2582827.9730	DS-K59	386262.5914	2582734.2912	DS-K89	386483.1833	2582717.3299	DS-K119	386666.1518	2582759.6609			
DS-K30	386064.8631	2582824.7963	DS-K60	386269.6520	2582731.7618	DS-K90	386490.5884	2582718.5193	DS-K120	386668.1952	2582764.7672			

FOR WALL GEOMETRIC DATA SEE SHEETS 168 TO 170 .

PROFESSIONAL ENGINEER — LICENSED — KAREN SWATEK JONES — 28517 — OKLAHOMA — 10-9-2018

SUBSTRUCTURE LAYOUT (10)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18
	FIELD MGR		7/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED	HAS	9.20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Sub_Layout-10.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 205 OF 334 SHEETS

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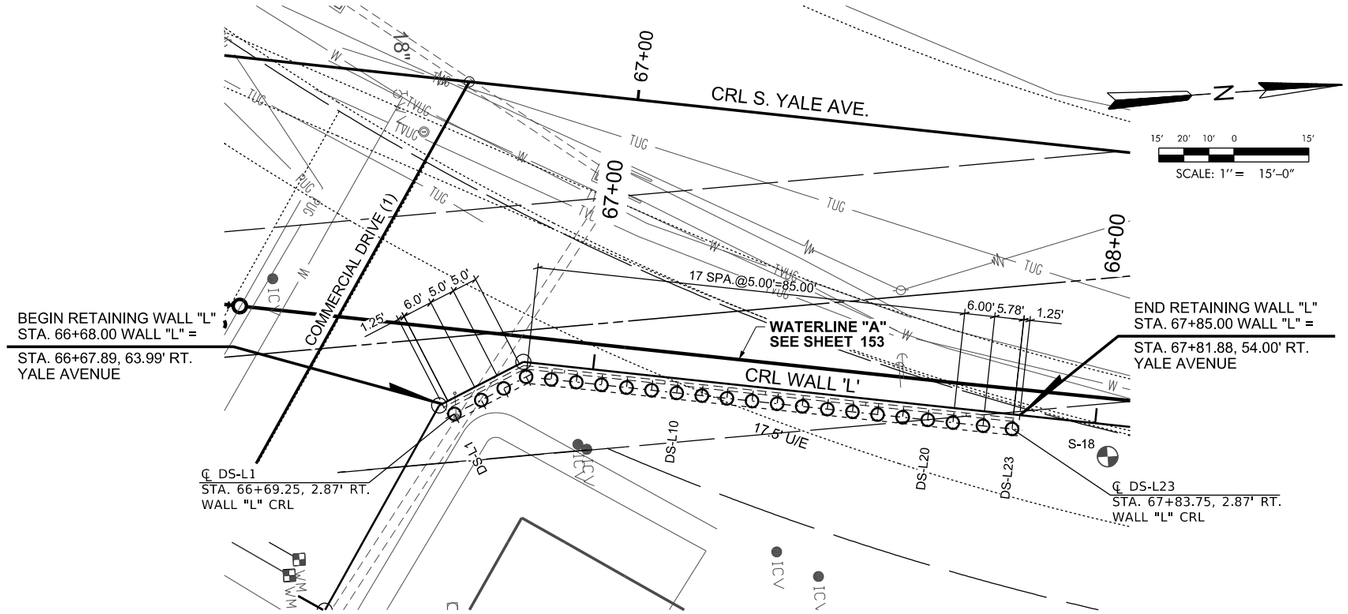
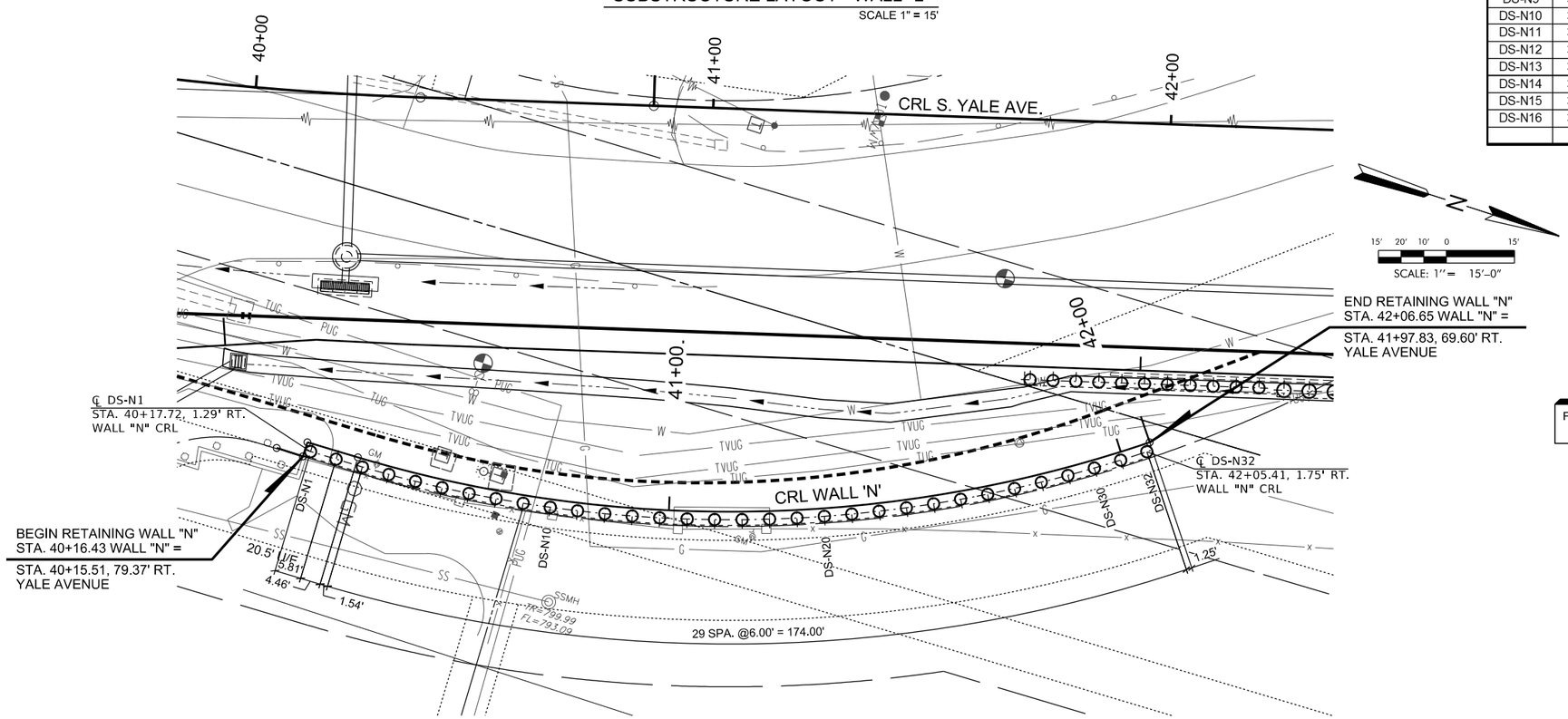


SUBSTRUCTURE LAYOUT - WALL "L"
SCALE 1" = 15'

DRILLED SHAFT LOCATION - WALL "L"					
DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-L1	386755.3241	2582762.6069	DS-L13	386814.3022	2582764.0738
DS-L2	386760.8165	2582760.2223	DS-L14	386819.2258	2582764.9442
DS-L3	386765.4029	2582758.2311	DS-L15	386824.1495	2582765.8146
DS-L4	386769.9893	2582756.2399	DS-L16	386829.0731	2582766.6851
DS-L5	386774.9129	2582757.1103	DS-L17	386833.9968	2582767.5555
DS-L6	386779.8366	2582757.9808	DS-L18	386838.9204	2582768.4259
DS-L7	386784.7602	2582758.8512	DS-L19	386843.8441	2582769.2964
DS-L8	386789.6839	2582759.7216	DS-L20	386848.7677	2582770.1668
DS-L9	386794.6075	2582760.5921	DS-L21	386853.6914	2582771.0372
DS-L10	386799.5312	2582761.4625	DS-L22	386859.5998	2582772.0817
DS-L11	386804.4549	2582762.3329	DS-L23	386865.2936	2582773.0883
DS-L12	386809.3785	2582763.2033			

DRILLED SHAFT LOCATION - WALL "N"					
DRILLED SHAFT	NORTH (FEET)	EAST (FEET)	DRILLED SHAFT	NORTH (FEET)	EAST (FEET)
DS-N1	384229.0466	2582859.9442	DS-N17	384323.2903	2582845.2395
DS-N2	384234.8518	2582859.8200	DS-N18	384328.9651	2582843.2913
DS-N3	384240.8478	2582859.6876	DS-N19	384334.5979	2582841.2247
DS-N4	384246.8436	2582859.4642	DS-N20	384340.1861	2582839.0404
DS-N5	384252.8333	2582859.1151	DS-N21	384345.7272	2582836.7396
DS-N6	384258.8144	2582858.6406	DS-N22	384351.2190	2582834.3230
DS-N7	384264.7842	2582858.0408	DS-N23	384356.6588	2582831.7920
DS-N8	384270.7402	2582857.3161	DS-N24	384362.0445	2582829.1474
DS-N9	384276.6796	2582856.4667	DS-N25	384367.3735	2582826.3906
DS-N10	384282.6000	2582855.4929	DS-N26	384372.6436	2582823.5227
DS-N11	384288.4986	2582854.3954	DS-N27	384377.8524	2582820.5450
DS-N12	384294.3730	2582853.1744	DS-N28	384382.9977	2582817.4587
DS-N13	384300.2204	2582851.8306	DS-N29	384388.0771	2582814.2653
DS-N14	384306.0385	2582850.3645	DS-N30	384393.0886	2582810.9662
DS-N15	384311.8245	2582848.7768	DS-N31	384398.0297	2582807.5627
DS-N16	384317.5759	2582847.0682	DS-N32	384402.8985	2582804.0564



SUBSTRUCTURE LAYOUT - WALL "N"
SCALE 1" = 15'

FOR WALL GEOMETRIC DATA
SEE SHEETS 168 TO 170.

PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-19-2018

SUBSTRUCTURE LAYOUT (11)
WALL "L" AND WALL "N"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1" NA	PROJECT MGR	BDC	12/18
	FIELD MGR		7/20
VERTICAL: 1" NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER	HRS	9.20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Sub_Layout-11.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 206 OF 334 SHEETS

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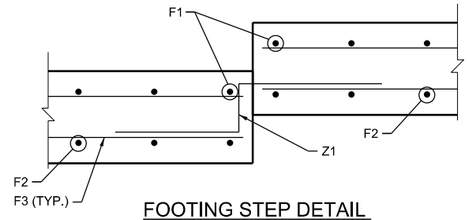
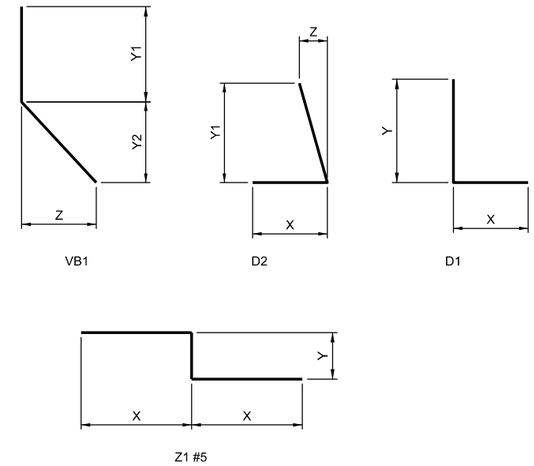
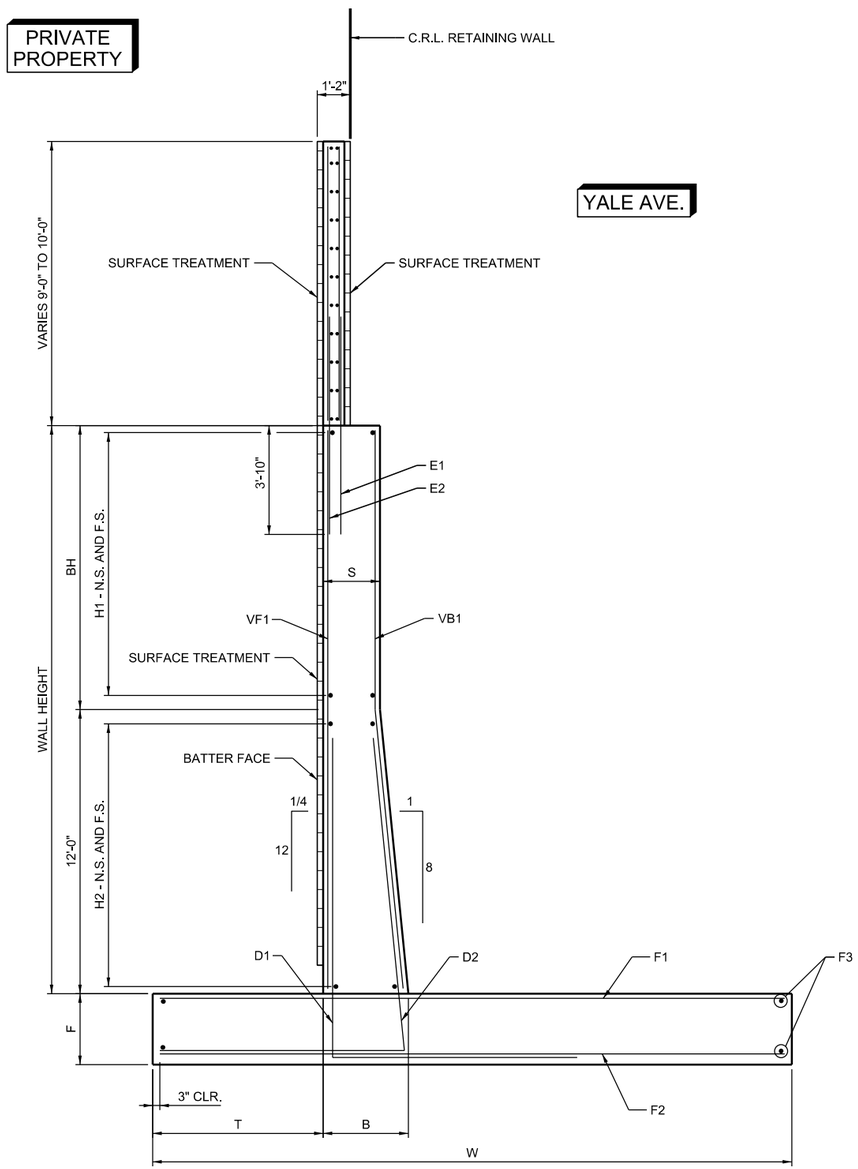


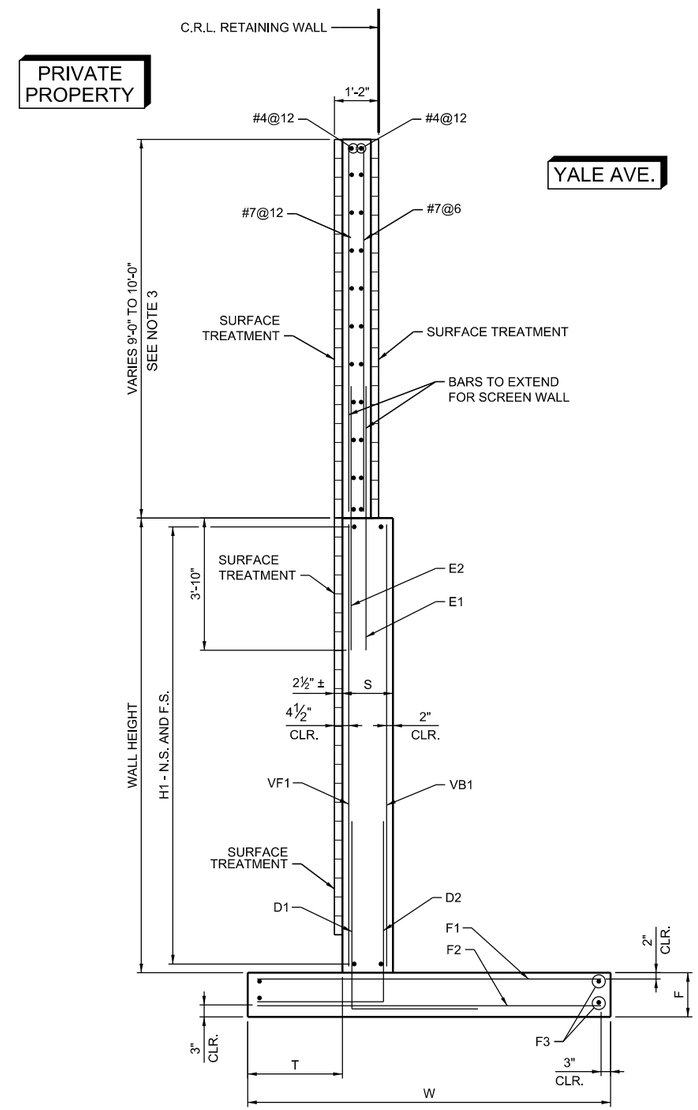
FOOTING STEP DETAIL
SCALE: NONE



BAR BEND DIAGRAMS
(SEE REINFORCING SCHEDULES FOR DIMENSIONS)



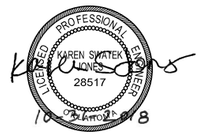
TYPE 1D (WALL C) - TYPICAL SECTION
CONVENTIONAL CONCRETE CANTILEVER FOOTING N.T.S.



TYPE 1 (WALLS B, C, E, K AND M) - TYPICAL SECTION
CONVENTIONAL CONCRETE CANTILEVER FOOTING N.T.S.

NOTES:

1. THE 1'-2" DIMENSION FOR THE SCREENWALL INCLUDES A 2 1/2" FORMLINER ON BOTH FACES OF THE SCREEN WALL. THE CONTRACTOR SHALL ADJUST THE DIMENSION BASED ON FINAL DEPTH OF FORMLINER. THE CORE THICKNESS OF THE SCREEN WALL SHALL BE 9" AND CLEARANCES FOR REINFORCING WALL SHALL BE BASED ON A 9" WIDE WALL.
2. THE CRL AND WALL LOCATION ARE BASED ON A 2 1/2" FORMLINER. IF AN ALTERNATE FORMLINER DEPTH IS USED, THE CRL AND ALL WALL AND FOOTING DIMENSIONS SHALL BE RETAINED. THE CONTRACTOR SHALL ADJUST THE OFFSET OF THE WALL DUE TO THE FORMLINER.
3. WALL K HAS 6'-0" TALL ORNAMENTAL FENCE ON TOP OF RETAINING WALL.



REINFORCEMENT DETAILS (1)
TYPE 1

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

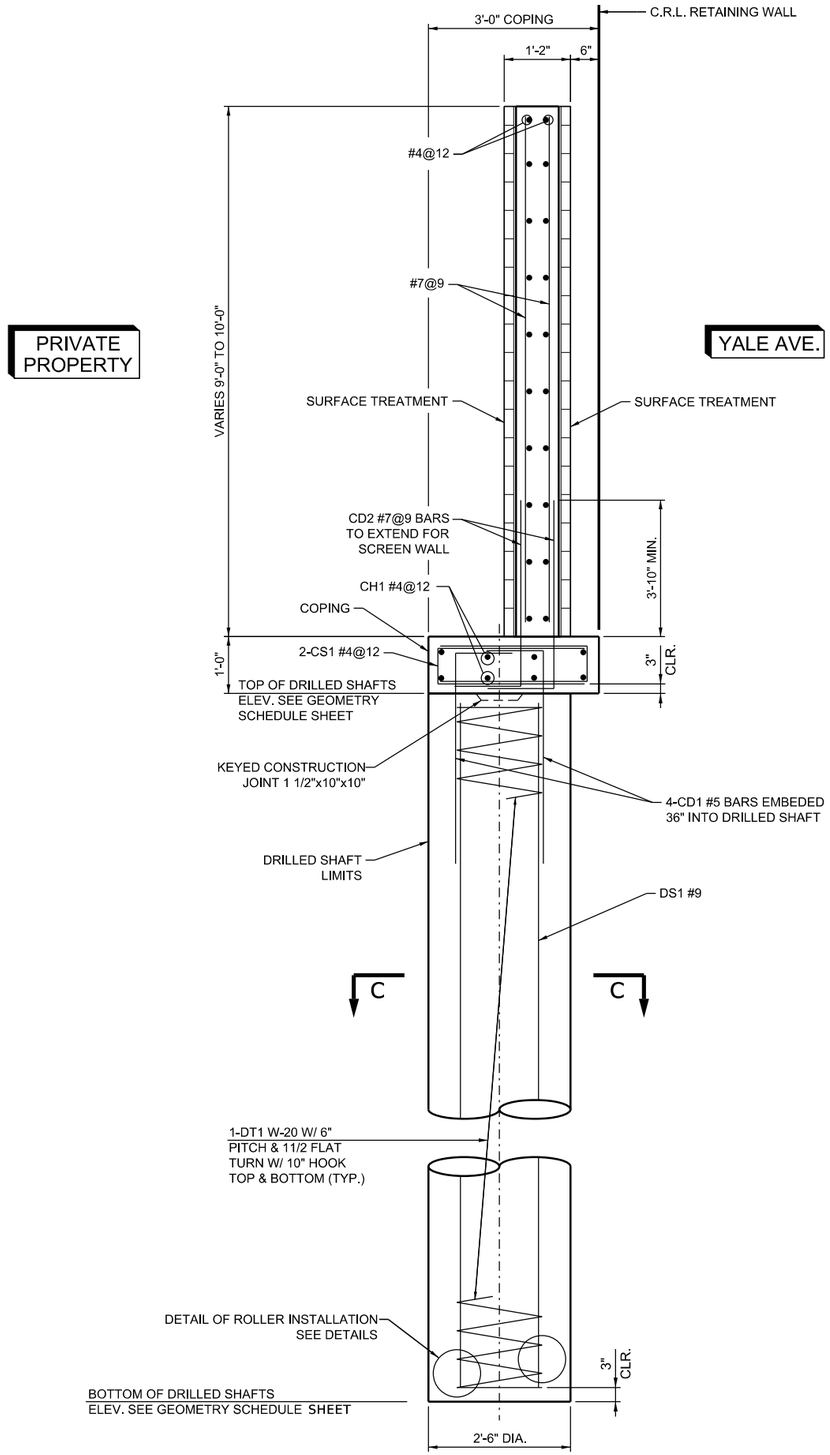
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

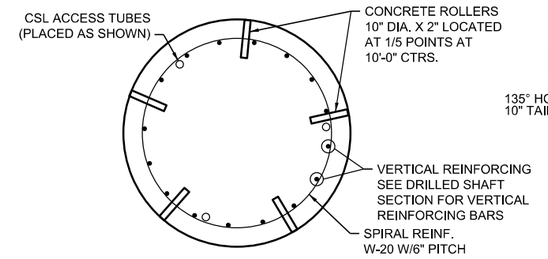
PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18	
	FIELD MGR		7/20	
VERTICAL: 1"= NA	LEAD ENGR		1/19	
	RECOMMENDED DESIGN MANAGER		9/20	CITY ENGINEER

FILE: 313925-S-Reinf_Details-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 207 OF 334 SHEETS

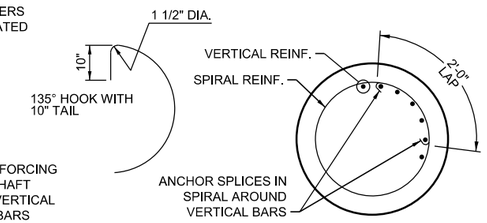


TYPE 2 (WALLS A AND N) - TYPICAL SECTION

SCREEN WALL ON DRILLED SHAFT N.T.S.

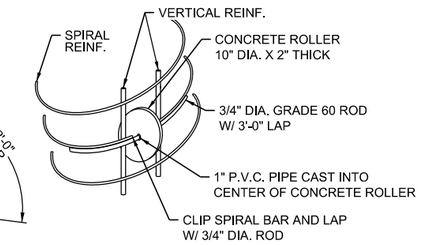


DETAIL OF DRILLED SHAFT ROLLER PLACEMENT



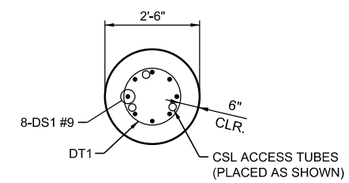
SPIRAL SPLICE

NOTE:
SPIRAL BARS SHALL CONFORM TO AASHTO M32. SPIRAL BAR LENGTH INCLUDE LAPS.



DETAIL OF DRILLED SHAFT ROLLER INSTALLATION

NOTE:
CONCRETE USED IN CONCRETE ROLLERS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I.. SLAB BOLSTERS, HIGH CHAIRS AND PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.

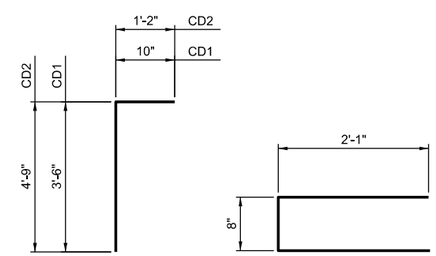


DESIGN 2 SECTION C-C

SCALE: ½" = 1'-0"

NOTES:

1. THE 1'-2" DIMENSION FOR THE SCREENWALL INCLUDES A 2 1/2" FORMLINER ON BOTH FACES OF THE SCREEN WALL. THE CONTRACTOR SHALL ADJUST THE DIMENSION BASED ON FINAL DEPTH OF FORMLINER. THE CORE THICKNESS OF THE SCREEN WALL SHALL BE 9" AND CLEARANCES FOR REINFORCING WALL SHALL BE BASED ON A 9" WIDE WALL.
2. ALL CLEARANCES TO REINFORCING ARE 2" UNLESS NOTED OTHERWISE.



CD1 #5 X 4'-4"
CD2 #7 X 5'-11"

CS1 #4 X 4'-10"

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-31-2018

REINFORCEMENT DETAILS (2)
TYPE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED DESIGN MANAGER		9.20

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Details-02.dgn
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SHEET 208 OF 334 SHEETS

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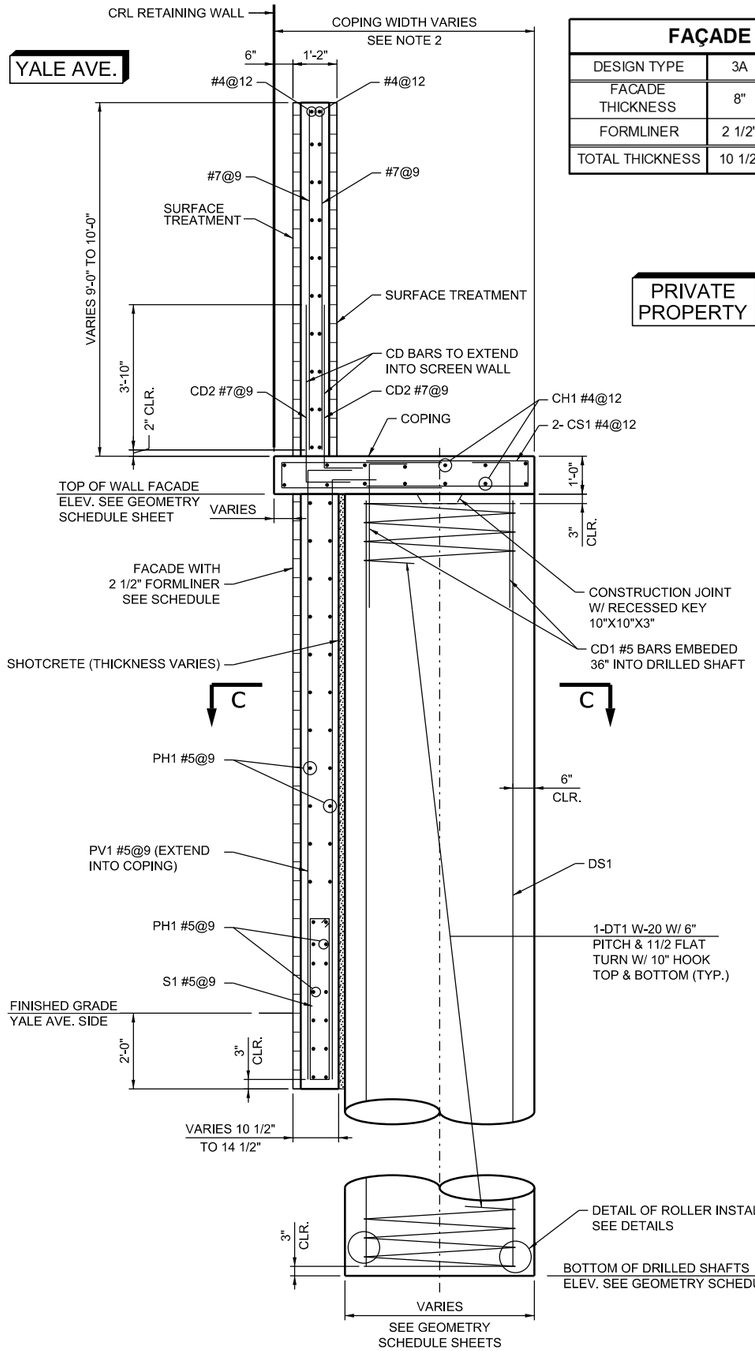
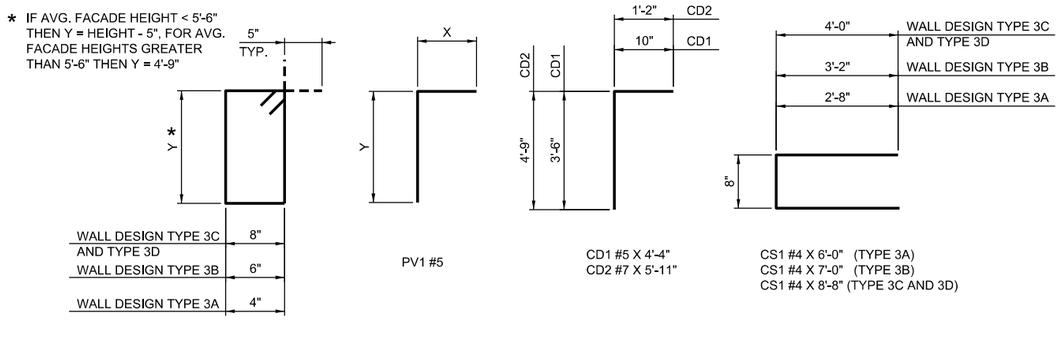


TYPE 3 (WALL D, G, H, J, K AND L) - TYPICAL SECTION

DRILLED SHAFT RETAINING WALLS N.T.S.

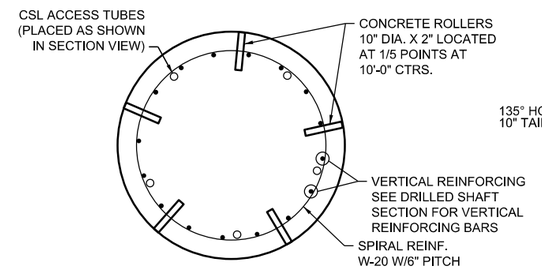
PRIVATE PROPERTY

FAÇADE SCHEDULE				
DESIGN TYPE	3A	3B	3C	3D
FACADE THICKNESS	8"	10"	12"	12"
FORMLINER	2 1/2"	2 1/2"	2 1/2"	2 1/2"
TOTAL THICKNESS	10 1/2"	12 1/2"	14 1/2"	14 1/2"

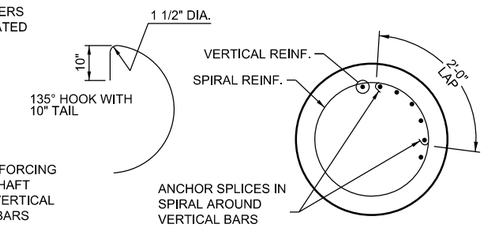


BAR BEND DIAGRAMS

(SEE REINFORCING SCHEDULES FOR DIMENSIONS NOT NOTED)

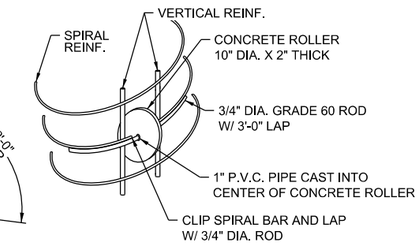


DETAIL OF DRILLED SHAFT ROLLER PLACEMENT



SPIRAL SPLICE

NOTE:
SPIRAL BARS SHALL CONFORM TO AASHTO M32. SPIRAL BAR LENGTH INCLUDE LAPS.

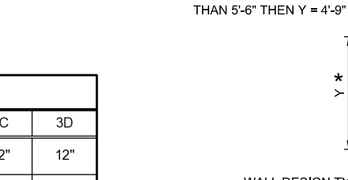


DETAIL OF DRILLED SHAFT ROLLER INSTALLATION

NOTE:
CONCRETE USED IN CONCRETE ROLLERS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I.. SLAB BOLSTERS, HIGH CHAIRS AND PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.

NOTES:

1. THE 1'-2" DIMENSION FOR THE SCREENWALL INCLUDES A 2 1/2" FORMLINER ON BOTH FACES OF THE SCREEN WALL. THE CONTRACTOR SHALL ADJUST THE DIMENSION BASED ON FINAL DEPTH OF FORMLINER. THE CORE THICKNESS OF THE SCREEN WALL SHALL BE 9" AND CLEARANCES FOR REINFORCING WALL SHALL BE BASED ON A 9" WIDE WALL.
2. COPING WIDTH BASED ON DESIGN TYPE 3A, 3B, 3C, OR 3D MINIMUM REQUIRED DIMENSIONS FOR ALL COMPONENTS SHOWN. SEE GEOMETRY SCHEDULES.
3. ALL CLEARANCES TO REINFORCING ARE 2" UNLESS NOTED OTHERWISE.

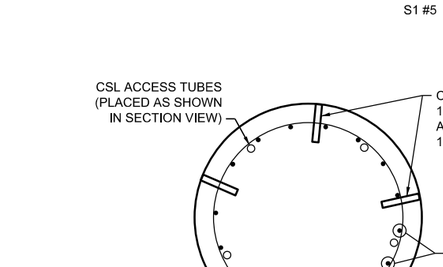


DESIGN 3A SECTION C-C

SCALE: ½" = 1'-0"

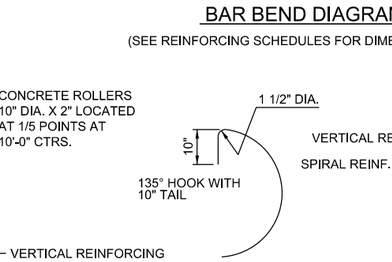
DESIGN 3B SECTION C-C

SCALE: ½" = 1'-0"



DESIGN 3C SECTION C-C

SCALE: ½" = 1'-0"



DESIGN 3D SECTION C-C

SCALE: ½" = 1'-0"

REINFORCEMENT DETAILS (3)
TYPE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/20
	FIELD MGR		12/20
	LEAD ENGR		11/20
VERTICAL: 1"= NA	RECOMMENDED	HPS	12-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Reinf_Details-03.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 209 OF 334 SHEETS

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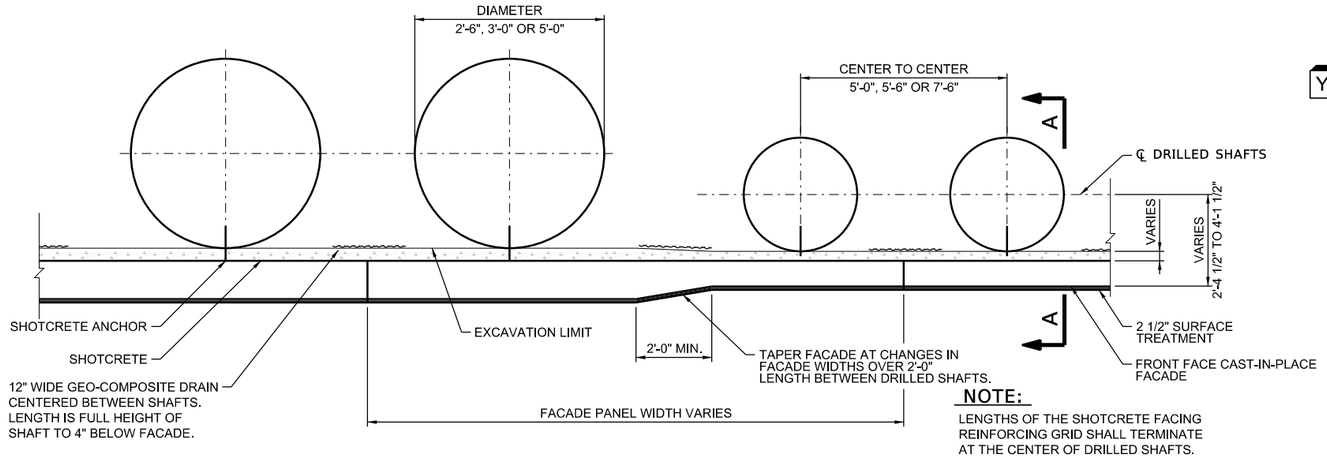
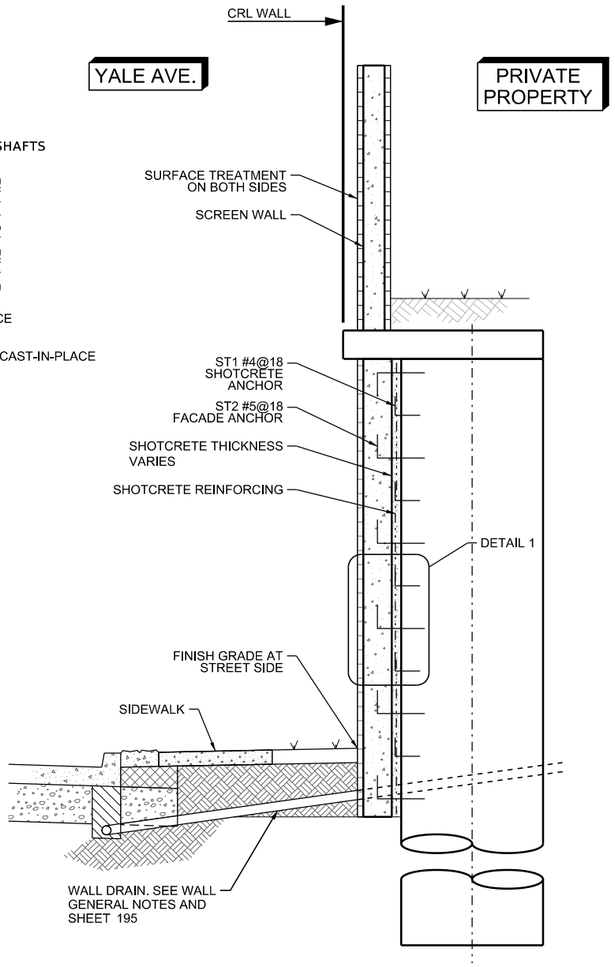


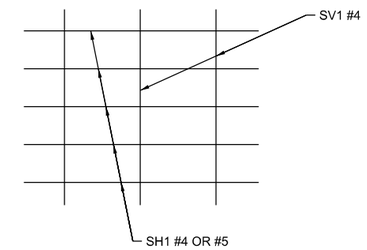
NOTE:
LENGTHS OF THE SHOTCRETE FACING REINFORCING GRID SHALL TERMINATE AT THE CENTER OF DRILLED SHAFTS.

TYPE 3 (WALLS D, G, H, J, K AND L) - TYPICAL PLAN
DRILLED SHAFT RETAINING WALLS — N.T.S.

TYPE 3 (WALLS D, G, H, J, K AND L) - TYPICAL ELEVATION
DRILLED SHAFT RETAINING WALLS — N.T.S.



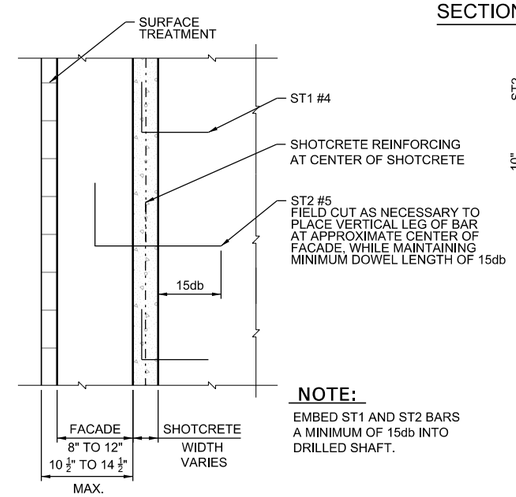
SECTION A-A
N.T.S.



SHOTCRETE FACING REINFORCING GRID
N.T.S.

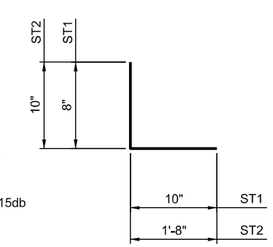
SHOTCRETE FACING SCHEDULE
GRADE 60 REINFORCING

DESIGN TYPE	3A	3B	3C	3D	WALL D
SHOTCRETE THICKNESS	3"	4"	5"	5"	3"
SH1 BAR	#4@6	#4@5	#5@5	#5@5	#4@5
SV1 BAR	#4@9	#4@12	#4@12	#4@12	#4@9

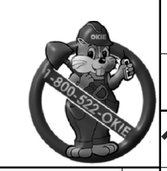


NOTE:
EMBED ST1 AND ST2 BARS A MINIMUM OF 15db INTO DRILLED SHAFT.

DETAIL 1
N.T.S.



ST1 #4 X 1'-6"
ST2 #5 X 2'-6"



REINFORCEMENT DETAILS (4)
TYPE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

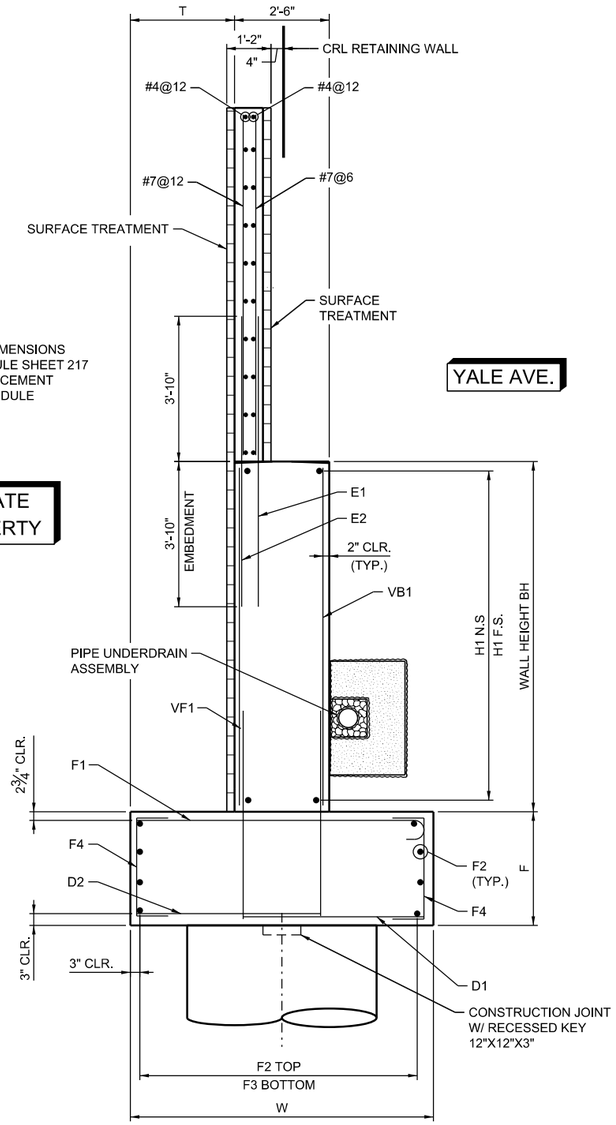
BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		11/20
	FIELD MGR		11/20
	LEAD ENGR		11/20
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HJS	12-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Reinf_Details-04.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 210 OF 334 SHEETS



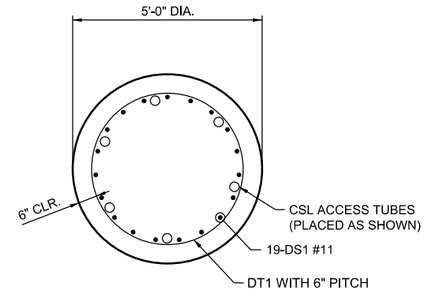
NOTE:
FOR RETAINING WALL DIMENSIONS
SEE GEOMETRY SCHEDULE SHEET 217
AND FOR WALL REINFORCEMENT
SEE REINFORCING SCHEDULE
SHEETS 225 TO 227

YALE AVE.

PRIVATE PROPERTY

TYPE 4 (WALL F) - TYPICAL SECTION

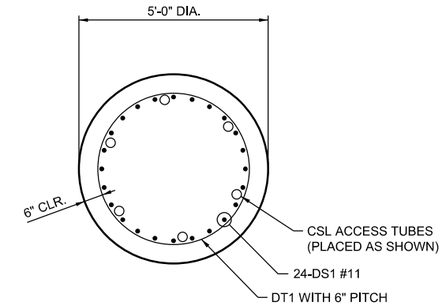
SLOPE STABILIZATION WALL - PANELS 1-5 AND 26-36 N.T.S.



DESIGN 4A DRILLED SHAFT

SCALE: ½" = 1'-0"

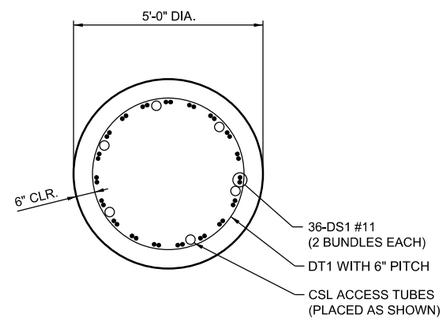
PANELS F-30 TO F-36



DESIGN 4B DRILLED SHAFT

SCALE: ½" = 1'-0"

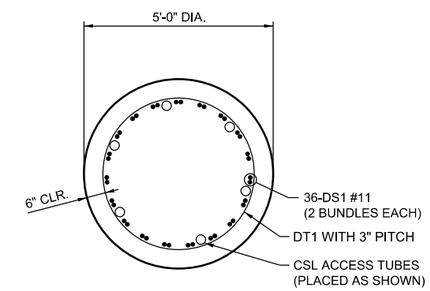
PANELS F-1 TO F-5
AND F-26 TO F-29



DESIGN 4C DRILLED SHAFT

SCALE: ½" = 1'-0"

PANELS F-6 TO F-13
AND F-22 TO F-25

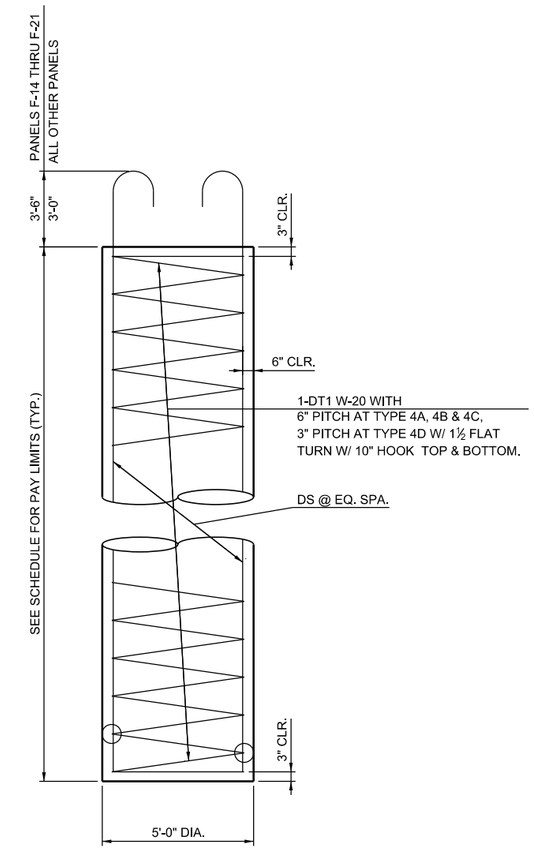


DESIGN 4D DRILLED SHAFT

SCALE: ½" = 1'-0"

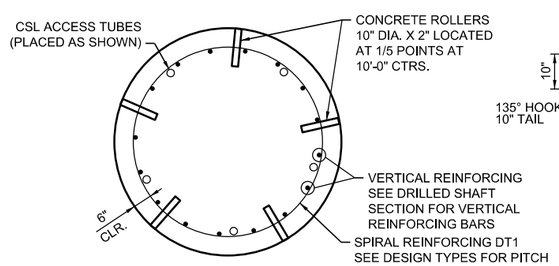
PANELS F-14 TO F-21

NOTE:
DESIGN 4D DRILLED SHAFTS SPIRAL
BARS ARE AT A 3" PITCH.



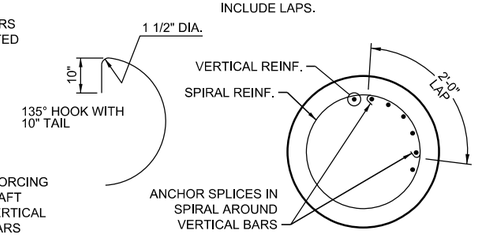
TYPICAL DRILLED SHAFT

SCALE: ½" = 1'-0"

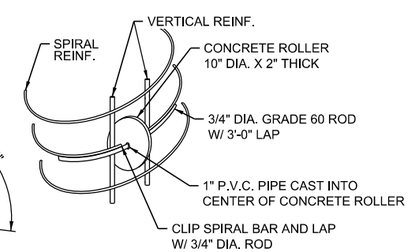


DETAIL OF DRILLED SHAFT ROLLER PLACEMENT

NOTE:
SPIRAL BARS SHALL CONFORM TO
AASHTO M32. SPIRAL BAR LENGTH
INCLUDE LAPS.



SPIRAL SPLICE



DETAIL OF DRILLED SHAFT ROLLER INSTALLATION

NOTE:
CONCRETE USED IN CONCRETE ROLLERS SHALL
HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH
OF 4000 P.S.I.. SLAB BOLSTERS, HIGH CHAIRS AND
PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED
FOR THE CONCRETE ROLLERS.

REINFORCEMENT DETAILS (5)
TYPE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= N/A	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= N/A	PROJECT MGR		10/18
	FIELD MGR		7/20
VERTICAL: 1"= N/A	LEAD ENGR		10/18
	RECOMMENDED DESIGN MANAGER		9-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Reinf_Details-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 211 OF 334 SHEETS

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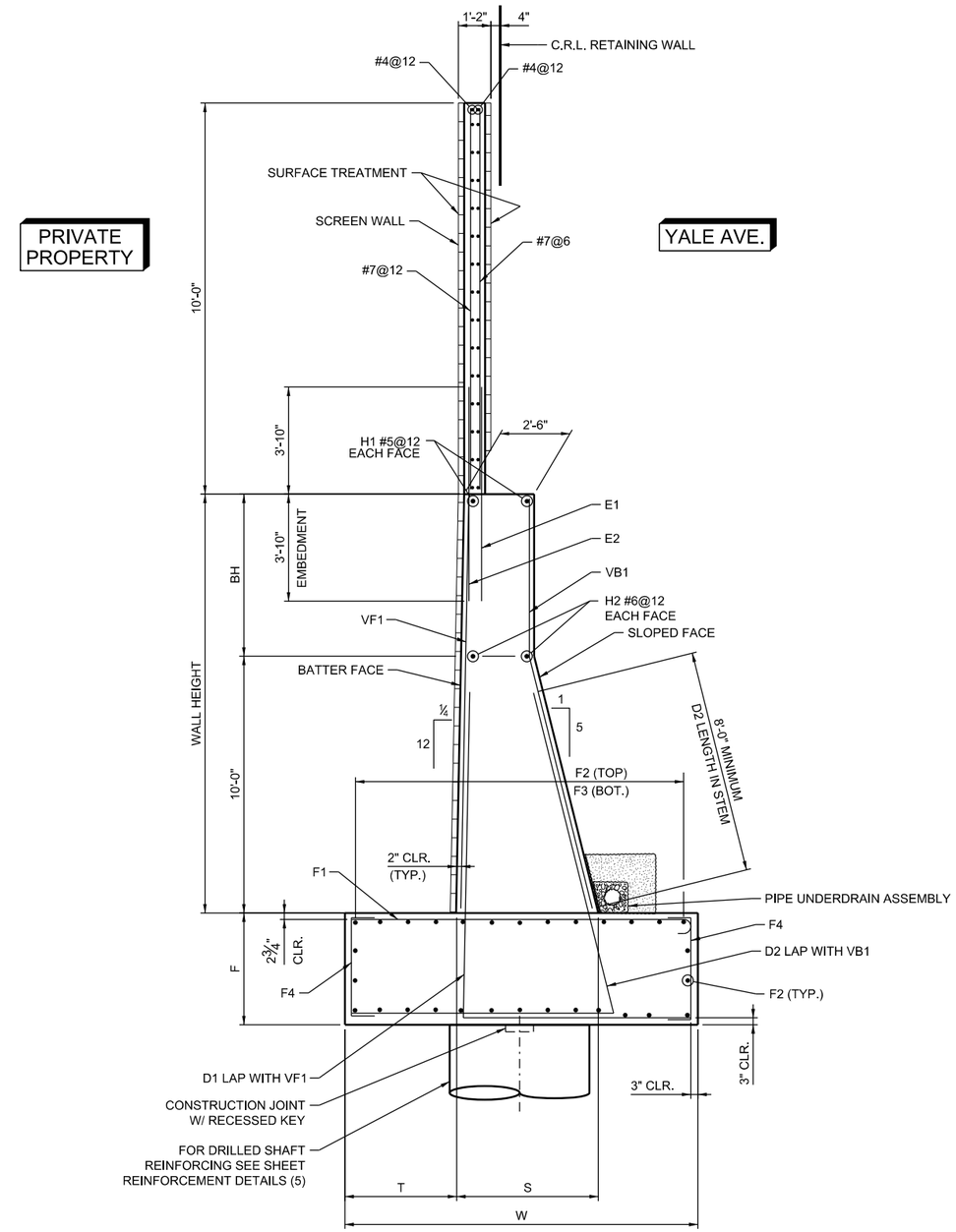

TYPE 4 (WALL F) - TYPICAL SECTION

SLOPE STABILIZATION WALL - PANELS F-6 THRU F-25 N.T.S.

NOTES:

1. THE 1'-2" DIMENSION FOR THE SCREENWALL INCLUDES A 2 1/2" FORMLINER ON BOTH FACES OF THE SCREEN WALL. THE CONTRACTOR SHALL ADJUST THE DIMENSION BASED ON FINAL DEPTH OF FORMLINER. THE CORE THICKNESS OF THE SCREEN WALL SHALL BE 9" AND CLEARANCES FOR REINFORCING WALL SHALL BE BASED ON A 9" WIDE WALL.
2. THE CRL AND WALL LOCATION ARE BASED ON A 2 1/2" FORMLINER. IF AN ALTERNATE FORMLINER DEPTH IS USED, THE CRL AND ALL WALL AND FOOTING DIMENSIONS SHALL BE RETAINED. THE CONTRACTOR SHALL ADJUST THE OFFSET OF THE WALL DUE TO THE FORMLINER.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-22-2018

REINFORCEMENT DETAILS (6)
TYPE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= N/A	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"=N/A	PROJECT MGR	BDC	10/18
	FIELD MGR	TCW	2/20
VERTICAL: 1"=N/A	LEAD ENGR		1/19
	RECOMMENDED	HKS	9-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Reinf_Details-06.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 212 OF 334 SHEETS

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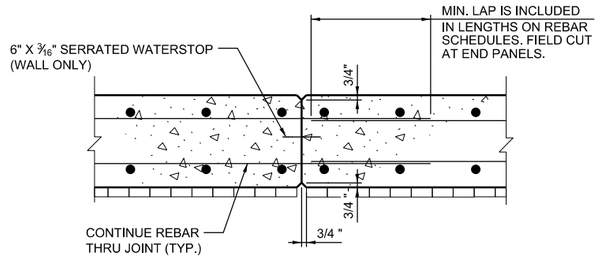
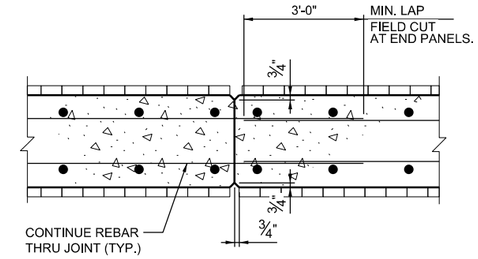
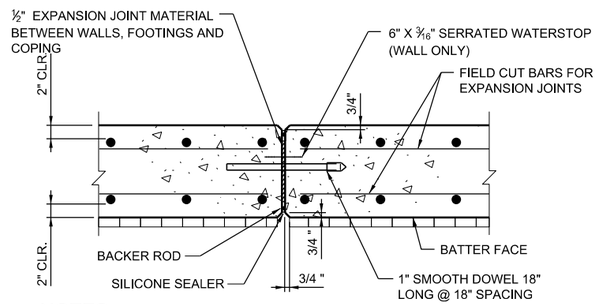


TYPICAL CONSTRUCTION JOINT
RETAINING WALL
SCALE: NONE



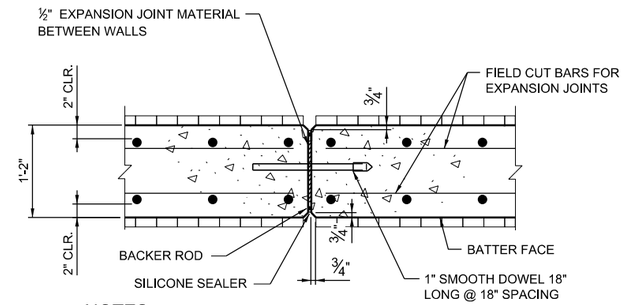
TYPICAL CONSTRUCTION JOINT
SCREEN WALL
SCALE: NONE



NOTES:

1. SEE ODOT STD LECS-4 FOR SEALED EXPANSION JOINT DETAIL DOWEL DETAILS, DIMENSIONS AND NOTES, EXCEPT AS SHOWN OTHERWISE. BACKER ROD & SEALER TYP. BOTH SIDES OF WALL AND TOP SIDE OF FOOTING.
2. DOWEL,WATERSTOP,EXPANSION JOINT MATERIAL,BACKER ROD,SEALER,WATERLINE WALL PENETRATION SEAL, AND ALL COST OF LABOR, MATERIALS, TOOLS, AND OTHER INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID FOR CLASS A CONCRETE.
3. WHERE A SAWCUT LINE IS DESIGNATED, THE USE OF A CONSTRUCTION JOINT IS PERMITTED IF THE CONTRACTOR PREFERS OR FINDS IT NECESSARY.

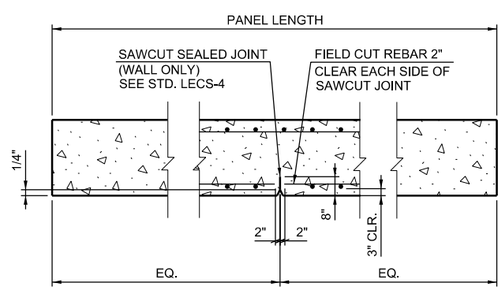
TYPICAL EXPANSION JOINT
RETAINING WALL
SEE GP&E FOR LOCATIONS
SCALE: NONE



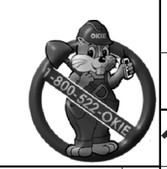
NOTES:

1. SEE ODOT STD LECS-4 FOR SEALED EXPANSION JOINT DETAIL DOWEL DETAILS, DIMENSIONS AND NOTES, EXCEPT AS SHOWN OTHERWISE. BACKER ROD & SEALER TYP. BOTH SIDES OF WALL.
2. DOWEL, EXPANSION JOINT MATERIAL, BACKER ROD, SEALER, AND ALL COST OF LABOR, MATERIALS, TOOLS, AND OTHER INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID FOR CLASS A CONCRETE.

TYPICAL EXPANSION JOINT
SCREEN WALL
SEE GP&E FOR LOCATIONS
SCALE: NONE



SAWCUT DETAIL - WALL F
SEE GP&E FOR LOCATIONS
SCALE: NONE



REINFORCEMENT DETAILS (7)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		11/18	
	FIELD MGR		8/20	
VERTICAL: 1"= NA	LEAD ENGR		11/19	
	RECOMMENDED DESIGN MANAGER		9-20	CITY ENGINEER
FILE: 313925-S-Reinf_Details-07.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 213 OF 334 SHEETS

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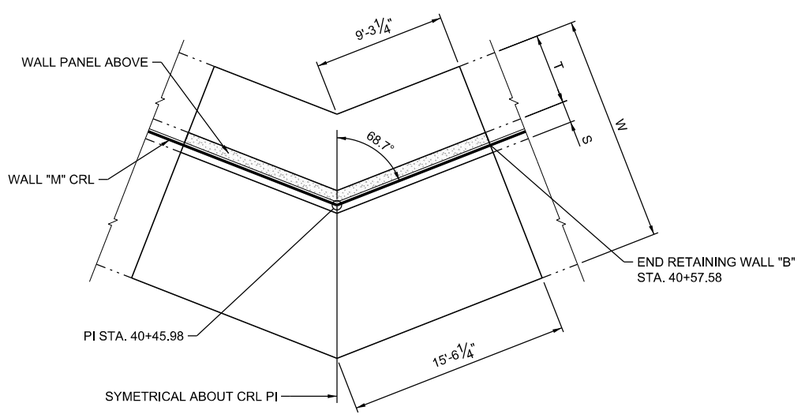
GEOMETRY SCHEDULE - WALL "A"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS: TOP ELEVATION AVG. (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	COPING: TOP OF COPING DWN STA. (FT)	TOP OF COPING UP STA. (FT)		QUANTITIES: COPING VOLUME (CY)	COPING REBAR (LB)
A-1	2A	60.00	761.19	737.19	11	2.5	24	264	760.62	763.76		6.7	2680
A-2	2A	32.59	763.62	739.62	6	2.5	24	144	763.76	765.47		3.7	1460
					TOTAL DRILLED SHAFT (LF)			408			TOTALS	10.4	4140

GEOMETRY SCHEDULE - WALL "B"

DESIGN	PANEL	DIMENSIONS: PANEL LENGTH (FT)	BOTTOM FOOTING (FT)	TOP FOOTING (FT)	TOP ELEV. DWN. STA (FT)	TOP ELEV. UP STA (FT)	WALL HEIGHT: DWN STA (FT)	UP STA (FT)	AVG. (FT)	FOOTING: W (FT)	T (FT)	F (FT)	S (FT)	QUANTITIES: TOTAL WALL VOLUME (CY)	STEM AREA (SY)	REBAR (LB)	EPOXY REBAR (LB)
1A	B-1	20.00	766.49	767.66	769.73	770.62	2.07	2.96	2.52	9.25	2.50	1.17	1.00	10.3	6	1920	980
1A	B-2	10.00	766.49	767.66	770.62	771.07	2.96	3.41	3.19	9.25	2.50	1.17	1.00	5.5	4	970	510
1A	B-3	20.00	766.83	768.16	771.07	771.96	2.91	3.80	3.36	11.33	2.50	1.33	1.33	15.1	8	2140	980
1A	B-4	20.00	767.25	768.58	771.96	772.85	3.38	4.27	3.82	11.33	2.50	1.33	1.33	15.6	9	2150	980
1A	B-5	20.00	767.71	769.04	772.85	773.74	3.81	4.70	4.26	11.33	2.50	1.33	1.33	16.1	10	2080	980
1B	B-6	20.00	768.13	769.46	773.74	774.63	4.28	5.17	4.72	11.33	2.50	1.33	1.33	16.6	11	3130	980
1B	B-7	20.00	768.85	770.18	774.63	775.52	4.45	5.34	4.90	11.33	2.50	1.33	1.33	16.8	11	3170	980
1B	B-8	20.00	769.77	771.10	775.52	776.41	4.42	5.31	4.86	11.33	2.50	1.33	1.33	16.8	11	3020	980
1B	B-9	20.00	770.59	771.92	776.41	777.30	4.49	5.38	4.94	11.33	2.50	1.33	1.33	16.9	11	3170	980
1B	B-10	20.00	771.51	772.84	777.30	778.19	4.46	5.35	4.90	11.33	2.50	1.33	1.33	16.8	11	3170	980
1B	B-11	20.00	772.43	773.76	778.19	779.07	4.43	5.31	4.87	11.33	2.50	1.33	1.33	16.8	11	3020	980
1B	B-12	20.00	773.34	774.67	779.07	779.96	4.40	5.29	4.85	11.33	2.50	1.33	1.33	16.8	11	3130	980
1B	B-13	20.00	774.15	775.48	779.96	780.85	4.48	5.37	4.93	11.33	2.50	1.33	1.33	16.9	11	3170	980
1B	B-14	20.00	775.07	776.40	780.85	781.76	4.45	5.36	4.91	11.33	2.50	1.33	1.33	16.8	11	3050	980
1B	B-15	20.00	775.87	777.20	781.76	782.70	4.56	5.50	5.03	11.33	2.50	1.33	1.33	17.0	12	3180	980
1B	B-16	20.00	776.66	777.99	782.70	783.67	4.71	5.68	5.19	11.33	2.50	1.33	1.33	17.2	12	3190	980
1B	B-17	20.00	777.48	778.81	783.67	784.76	4.86	5.95	5.41	11.33	2.50	1.33	1.33	17.4	13	3080	980
1B	B-18	20.00	778.38	779.71	784.76	785.90	5.05	6.19	5.62	11.33	2.50	1.33	1.33	17.6	13	3210	980
1B	B-19	20.00	779.29	780.62	785.90	787.08	5.28	6.46	5.87	11.33	2.50	1.33	1.33	17.9	14	3260	980
1B	B-20	20.00	780.21	781.54	787.08	788.30	5.54	6.76	6.15	11.33	2.50	1.33	1.33	18.2	14	3150	980
1B	B-21	20.00	780.46	781.96	788.30	789.57	6.34	7.61	6.97	11.33	2.50	1.50	1.50	21.5	16	3370	980
1B	B-22	20.00	781.37	782.87	789.57	790.87	6.70	8.00	7.35	11.33	2.50	1.50	1.50	21.9	17	3380	980
1B	B-23	20.00	781.37	782.87	790.87	792.22	8.00	9.35	8.68	11.33	2.50	1.50	1.50	23.6	20	3390	980
1C	B-24	20.00	781.54	783.04	792.22	793.61	9.18	10.57	9.88	16.00	5.00	1.50	1.50	30.3	22	6160	980
1C	B-25	16.16	782.29	783.79	793.61	794.70	9.82	10.91	10.37	16.00	5.00	1.50	1.50	25.0	19	4910	790
1C	B-26	23.04	782.97	784.47	794.70	796.48	10.23	12.01	11.12	16.00	5.00	1.50	1.50	36.7	29	7040	1120
													TOTALS	478.1	337	84610	24960



WALL PANEL B-26 FOOTING

WALL "A" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
107.32	41.7	6490

WALL "B" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
536.58	208.7	32410

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10-26-2018

GEOMETRY SCHEDULES (1)
WALLS "A" & "B"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDE	10/18
FIELD MGR	ZCM	7/20
LEAD ENGR	DD	1/19
RECOMMENDED DESIGN MANAGER	HAS	9-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Geo_Sched-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 214 OF 334 SHEETS

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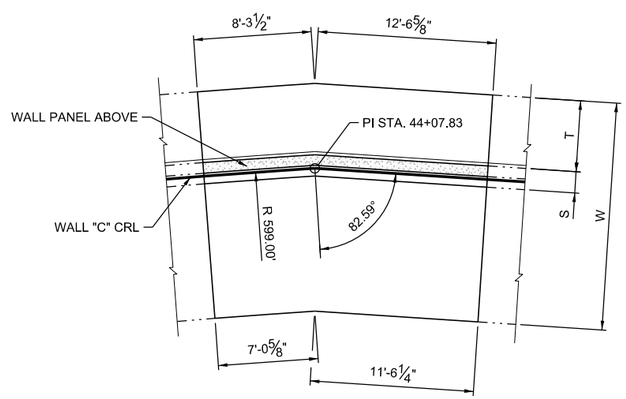
GEOMETRY SCHEDULE - WALL "C"

DESIGN	PANEL	DIMENSIONS					WALL HEIGHT				FOOTING					QUANTITIES			
		PANEL LENGTH (FT)	BOTTOM FOOTING (FT)	TOP FOOTING (FT)	TOP ELEV. DWN. STA (FT)	TOP ELEV. UP STA (FT)	DWN STA (FT)	UP STA (FT)	AVG. (FT)	BH (AVG.) (FT)	W (FT)	T (FT)	F (FT)	S (FT)	B (FT)	TOTAL WALL VOLUME (CY)	STEM AREA (SY)	REBAR (LB)	EPOXY REBAR (LB)
1D	C-1	20.00	783.55	786.55	799.87	801.40	13.32	14.85	14.09	2.09	23.50	6.00	3.00	2.00	3.50	82.0	32	12330	980
1D	C-2	20.00	785.25	788.25	801.40	803.08	13.15	14.83	13.99	1.99	23.50	6.00	3.00	2.00	3.50	81.8	32	12320	980
1D	C-3	20.00	787.37	790.37	803.08	804.82	12.71	14.45	13.58	1.58	23.50	6.00	3.00	2.00	3.50	81.2	31	12250	980
1D	C-4	20.00	789.38	792.38	804.82	806.60	12.44	14.22	13.33	1.33	23.50	6.00	3.00	2.00	3.50	80.7	30	11820	980
1D	C-5	20.00	789.38	792.38	806.60	808.39	14.22	16.01	15.12	3.12	23.50	6.00	3.00	2.00	3.50	83.7	34	12570	980
1D	C-6	20.00	791.97	794.97	808.39	810.18	13.42	15.21	14.31	2.31	23.50	6.00	3.00	2.00	3.50	82.4	32	12010	980
1D	C-7	20.00	794.21	797.21	810.18	811.98	12.97	14.77	13.87	1.87	23.50	6.00	3.00	2.00	3.50	81.6	31	12290	980
1D	C-8	20.00	795.50	798.50	811.98	813.77	13.48	15.27	14.38	2.38	23.50	6.00	3.00	2.00	3.50	82.5	32	12440	980
1D	C-9	20.00	798.08	801.08	813.77	815.57	12.69	14.49	13.59	1.59	23.50	6.00	3.00	2.00	3.50	81.2	31	11860	980
1C	C-10	10.00	801.44	802.94	815.57	816.46	12.63	13.52	13.08	-	16.00	5.00	1.50	1.50	-	17.2	15	2950	510
1C	C-11	20.00	802.52	804.02	816.46	818.26	12.44	14.24	13.34	-	16.00	5.00	1.50	1.50	-	34.7	30	5620	980
1C	C-12	10.00	803.60	805.10	818.26	819.07	13.16	13.97	13.57	-	16.00	5.00	1.50	1.50	-	17.5	16	2780	510
1C	C-13	20.00	805.60	807.10	819.07	820.52	11.97	13.42	12.70	-	16.00	5.00	1.50	1.50	-	33.9	29	5570	980
1C	C-14	20.00	806.69	808.19	820.52	821.96	12.33	13.77	13.05	-	16.00	5.00	1.50	1.50	-	34.3	29	5600	980
1C	C-15	20.00	807.77	809.27	821.96	823.40	12.69	14.13	13.41	-	16.00	5.00	1.50	1.50	-	34.8	30	5440	980
1C	C-16	20.00	809.77	811.27	823.40	824.82	12.13	13.55	12.84	-	16.00	5.00	1.50	1.50	-	34.1	29	5580	980
1C	C-17	20.00	810.85	812.35	824.82	826.22	12.47	13.87	13.17	-	16.00	5.00	1.50	1.50	-	34.5	30	5610	980
1C	C-18	20.00	811.94	813.44	826.22	827.64	12.78	14.20	13.49	-	16.00	5.00	1.50	1.50	-	34.9	30	5450	980
1D	C-19	20.00	810.44	813.44	827.64	829.07	14.20	15.63	14.92	2.91	23.50	6.00	3.00	2.00	3.50	83.3	34	12460	980
1D	C-20	20.00	810.44	813.44	829.07	830.49	15.63	17.05	16.34	4.34	23.50	6.00	3.00	2.00	3.50	85.7	37	12760	980
1D	C-21	20.00	811.03	814.03	830.49	831.87	16.46	17.84	17.15	5.15	23.50	6.00	3.00	2.00	3.50	87.0	39	12550	980
1D	C-22	20.00	811.03	814.03	831.87	833.22	17.84	19.19	18.52	6.52	23.50	6.00	3.00	2.00	3.50	89.2	42	13190	980
1D	C-23	20.00	811.03	814.03	833.22	834.53	19.19	20.50	19.85	7.85	23.50	6.00	3.00	2.00	3.50	91.4	45	13460	980
1D	C-24	20.00	811.45	814.45	834.53	835.81	20.08	21.36	20.72	8.72	23.50	6.00	3.00	2.00	3.50	92.8	47	13270	980
1D	C-25	20.00	812.18	815.18	835.81	837.06	20.63	21.88	21.26	9.26	23.50	6.00	3.00	2.00	3.50	93.7	48	13770	980
1D	C-26	20.00	813.68	816.68	837.06	838.27	20.38	21.59	20.99	8.99	23.50	6.00	3.00	2.00	3.50	93.3	47	13710	980
1D	C-27	20.00	815.18	818.18	838.27	839.46	20.09	21.28	20.69	8.69	23.50	6.00	3.00	2.00	3.50	92.8	46	13250	980
1D	C-28	20.00	817.93	820.93	839.46	840.49	18.53	19.56	19.05	7.05	23.50	6.00	3.00	2.00	3.50	90.1	43	13350	980
1D	C-29	20.00	820.52	823.52	840.49	841.54	16.97	18.02	17.50	5.50	23.50	6.00	3.00	2.00	3.50	87.6	39	13020	980
1D	C-30	20.00	823.10	826.10	841.54	842.54	15.44	16.44	15.94	3.94	23.50	6.00	3.00	2.00	3.50	85.0	36	12310	980
1C	C 31	17.43	827.18	828.68	842.54	843.36	13.86	14.68	14.27	-	16.00	5.00	1.50	1.50	-	31.3	28	5070	870
1C	C-32	20.00	828.68	830.18	843.36	844.27	13.18	14.09	13.64	-	16.00	5.00	1.50	1.50	-	35.1	31	5660	980
1C	C-33	20.00	829.77	831.27	844.27	845.11	13.00	13.84	13.42	-	16.00	5.00	1.50	1.50	-	34.8	30	5440	980
															TOTALS	2186.1	1115	327760	31290



WALL PANEL C-16 FOOTING

WALL "C" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
665.82	258.9	40210

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

LICENSED PROFESSIONAL ENGINEER KAREN SKITTEK JONES 28517 OKLAHOMA
10-18-2018

GEOMETRY SCHEDULES (2)
WALL "C"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED	HAS	9-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

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GEOMETRY SCHEDULE - WALL "D"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	FAÇADE TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING COPING WIDTH (FT)	QUANTITIES FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
D-1	3A	18.75	852.22	835.22	4	2.5	17	68	851.46	852.97	847.11	847.74	4.35	5.23	4.79	4.13	3.10	2.9	920	900
D-2	3A	20.00	853.82	835.82	4	2.5	18	72	852.97	854.66	847.74	848.38	5.23	6.28	5.76	4.13	4.00	3.1	1080	940
D-3	3A	20.00	855.54	832.54	4	2.5	23	92	854.66	856.41	848.38	849.00	6.28	7.41	6.84	4.13	4.70	3.1	1180	930
D-4	3A	20.00	857.12	833.12	4	2.5	24	96	856.41	857.82	849.00	849.60	7.41	8.22	7.82	4.13	5.40	3.1	1340	940
D-5	3B	21.50	858.45	828.45	4	3.0	30	120	857.82	859.08	849.60	850.18	8.22	8.90	8.56	4.63	7.40	3.7	1240	1080
D-6	3B	22.00	859.56	828.56	4	3.0	31	124	859.08	860.03	850.18	850.70	8.90	9.33	9.12	4.63	8.10	3.8	1310	1090
D-7	3B	22.00	860.77	829.77	4	3.0	31	124	860.03	861.51	850.70	851.16	9.33	10.35	9.84	4.63	8.70	3.8	1440	1110
D-8	3B	22.00	862.27	830.27	4	3.0	32	128	861.51	863.02	851.16	851.55	10.35	11.47	10.91	4.63	9.70	3.8	1550	1110
D-9	3B	22.00	863.76	829.76	4	3.0	34	136	863.02	864.49	851.55	851.88	11.47	12.61	12.04	4.63	10.70	3.8	1620	1090
D-10	3B	22.00	865.00	831.00	4	3.0	34	136	864.49	865.51	851.88	852.15	12.61	13.36	12.99	4.63	11.50	3.8	1830	1110
D-11	3B	22.00	865.77	830.77	4	3.0	35	140	865.51	866.02	852.15	852.35	13.36	13.67	13.52	4.63	12.00	3.8	1940	1110
D-12	3B	22.00	866.03	831.03	4	3.0	35	140	866.02	866.04	852.35	852.48	13.67	13.56	13.62	4.63	12.10	3.8	1830	1090
D-13	3B	22.00	865.81	830.81	4	3.0	35	140	866.04	865.58	852.48	852.55	13.56	13.03	13.30	4.63	11.80	3.8	1890	1110
D-14	3B	22.00	865.10	831.10	4	3.0	34	136	865.58	864.61	852.55	852.55	13.03	12.06	12.55	4.63	11.10	3.8	1780	1110
D-15	3B	22.00	864.04	831.04	4	3.0	33	132	864.61	863.46	852.55	852.48	12.06	10.98	11.52	4.63	10.20	3.8	1570	1090
D-16	3B	22.00	862.72	830.72	4	3.0	32	128	863.46	861.98	852.48	852.35	10.98	9.63	10.31	4.63	9.10	3.8	1500	1110
D-17	3B	22.00	861.17	831.17	4	3.0	30	120	861.98	860.36	852.35	852.16	9.63	8.20	8.92	4.63	7.90	3.8	1270	1110
D-18	3B	22.00	859.43	830.43	4	3.0	29	116	860.36	858.49	852.16	851.90	8.20	6.59	7.40	4.63	6.60	3.8	1050	1090
D-19	3A	20.00	857.45	839.45	4	2.5	18	72	858.49	856.40	851.90	851.60	6.59	4.80	5.69	4.13	3.90	3.1	1080	940
D-20	3A	20.00	855.36	839.36	4	2.5	16	64	856.40	854.31	851.60	851.26	4.80	3.05	3.92	4.13	2.70	3.1	810	940
D-21	3A	20.00	853.21	838.21	4	2.5	15	60	854.31	852.11	851.26	850.86	3.05	1.25	2.15	4.13	1.50	3.1	440	930
D-22	3A	14.11	851.33	839.33	4	2.5	12	48	--	--	--	--	--	--	--	4.13	--	2.2	--	670
					TOTAL DRILLED SHAFT (LF)			2392								TOTALS	162.2	76.8	28670	22600

GEOMETRY SCHEDULE - WALL "E"

DESIGN	PANEL	DIMENSIONS PANEL LENGTH (FT)	BOTTOM FOOTING (FT)	TOP FOOTING (FT)	TOP ELEV. DWN. STA (FT)	TOP ELEV. UP STA (FT)	WALL HEIGHT DWN STA (FT)	UP STA (FT)	AVG. (FT)	FOOTING W (FT)	T (FT)	F (FT)	S (FT)	QUANTITIES TOTAL WALL VOLUME (CY)	STEM AREA (SY)	GR 60 REBAR (LB)	EPOXY REBAR (LB)
1B	E-1	20.00	841.60	842.93	851.56	851.07	8.63	8.14	8.39	11.33	2.50	1.33	1.33	20.8	19	2490	980
1B	E-2	20.00	840.68	842.01	851.07	850.52	9.06	8.51	8.79	11.33	2.50	1.33	1.33	21.3	20	2510	980
1B	E-3	20.00	840.02	841.35	850.52	849.92	9.17	8.57	8.87	11.33	2.50	1.33	1.33	21.4	20	2380	980
1CA	E-4	20.00	838.09	839.59	849.92	849.20	10.33	9.61	9.97	14.00	3.00	1.50	1.50	28.2	23	4770	980
1CA	E-5	20.00	837.01	838.51	849.20	848.37	10.69	9.86	10.28	14.00	3.00	1.50	1.50	28.6	23	4830	980
1CA	E-6	20.00	835.93	837.43	848.37	847.46	10.94	10.03	10.49	14.00	3.00	1.50	1.50	28.9	24	4690	980
1CA	E-7	14.90	833.92	835.42	847.46	846.76	12.04	11.34	11.69	14.00	3.00	1.50	1.50	22.7	20	3810	740
1CA	E-8	15.96	832.84	834.34	846.76	845.97	12.42	11.63	12.03	14.00	3.00	1.50	1.50	24.6	22	4110	790
1CA	E-9	15.96	831.76	833.26	845.97	845.15	12.71	11.89	12.30	14.00	3.00	1.50	1.50	24.9	22	3950	790
1CA	E-10	20.00	830.17	831.67	845.15	844.05	13.48	12.38	12.93	14.00	3.00	1.50	1.50	32.0	29	5190	980
1CA	E-11	20.00	829.09	830.59	844.05	842.89	13.46	12.30	12.88	14.00	3.00	1.50	1.50	31.9	29	5180	980
1CA	E-12	20.00	828.01	829.51	842.89	841.66	13.38	12.15	12.77	14.00	3.00	1.50	1.50	31.8	29	4990	980
1CA	E-13	20.00	826.21	827.71	841.66	840.36	13.95	12.65	13.30	14.00	3.00	1.50	1.50	32.4	30	5220	980
1CA	E-14	20.00	825.12	826.62	840.36	839.00	13.74	12.38	13.06	14.00	3.00	1.50	1.50	32.1	30	5020	980
													TOTALS	381.6	340	59140	13100

NOTE:

DIMENSIONS AND REINFORCING FOR COPING ARE LOCATED ON REINFORCEMENT DETAILS (3) SHEET 186.

WALL "D" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
488.63	190.0	29510

WALL "E" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
276.40	107.5	16700

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA 10-23-18

GEOMETRY SCHEDULES (3)
WALLS "D" & "E"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18	APPROVED:
DESIGNED	KSJ	10/18	
SURVEY	RDL	10/18	
PROJECT MGR	BOC	12/18	
FIELD MGR	ZCW	7/20	
LEAD ENGR	DW	1/19	
RECOMMENDED DESIGN MANAGER	HW	9.20	CITY ENGINEER

FILE: 313925-S-Geo_Sched-03.dgn
DATE: OCTOBER 2018
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GEOMETRY - WALL "F"

PANEL	DESIGN	DIMENSIONS																		QUANTITIES				
							WALL HEIGHT					GRADE BEAM				DRILLED SHAFTS								
		PANEL LENGTH (FT)	BOTTOM GRADE BEAM (FT)	TOP GRADE BEAM (FT)	TOP ELEV. BEGIN (FT)	TOP ELEV. END (FT)	BEGIN (FT)	END (FT)	SLOPE (1:X)	AVG. (FT)	BH (FT)	W (FT)	T (FT)	F (FT)	S (FT)	DIAMETER (FT)	SHAFTS PER PANEL	LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	STEM VOLUME (CY)	GRADE BEAM VOLUME (CY)	GR 60 STEM REBAR (LB)	EPOXY STEM REBAR (LB)	GRADE BEAM REBAR (LB)
F-1	4B	22.00	820.64	824.14	837.87	836.91	13.73	12.77		13.25	13.25	6.50	2.00	3.50	2.50	5.00	2	30	60	29.3	18.6	2240	1070	3250
F-2	4B	21.00	817.80	821.30	836.43	835.47	15.13	14.17		14.65	14.65	6.50	2.00	3.50	2.50	5.00	2	30	60	30.9	17.7	2600	1020	3540
F-3	4B	24.00	814.96	818.46	835.47	833.49	17.01	15.03		16.02	16.02	6.50	2.00	3.50	2.50	5.00	2	30	60	38.6	20.3	2600	1160	3540
F-4	4B	24.00	812.35	815.85	833.49	831.41	17.64	15.56		16.60	16.60	6.50	2.00	3.50	2.50	5.00	2	30	60	40.0	20.3	3010	1160	3540
F-5	4B	22.00	809.51	813.01	831.41	830.34	18.40	17.33		17.87	17.87	8.50	2.00	3.50	2.50	5.00	2	30	60	39.5	24.3	3610	1070	3510
F-6	4C	16.00	806.33	810.33	830.34	828.14	20.01	17.81	5.00	18.91	8.91	8.50	2.00	4.00	4.50	5.00	2	30	60	30.4	20.2	2300	790	2960
F-7	4C	16.00	803.74	807.74	828.14	827.05	20.40	19.31	5.00	19.86	9.85	8.50	2.00	4.00	4.50	5.00	2	30	60	31.9	20.2	2750	790	2960
F-8	4C	16.00	802.20	806.20	827.05	826.02	20.85	19.82	5.00	20.34	10.34	8.50	2.00	4.00	4.50	5.00	2	30	60	32.7	20.2	2830	790	2960
F-9	4C	16.00	800.74	804.74	826.02	824.97	21.28	20.23	5.00	20.76	10.76	8.50	2.00	4.00	4.50	5.00	2	30	60	33.4	20.2	2480	790	2960
F-10	4C	16.00	799.29	803.29	824.97	823.92	21.68	20.63	5.00	21.16	11.16	8.50	2.00	4.00	4.50	5.00	2	30	60	34.0	20.2	2900	790	2960
F-11	4C	16.00	797.84	801.84	823.92	821.81	22.08	19.97	5.00	21.03	11.03	8.50	2.00	4.00	4.50	5.00	2	30	60	33.8	20.2	2910	790	3190
F-12	4C	16.00	795.87	799.87	821.81	820.76	21.94	20.89	5.00	21.42	11.42	8.50	2.00	4.00	4.50	5.00	2	30	60	34.4	20.2	2650	790	3190
F-13	4C	16.00	793.04	797.04	820.76	819.71	23.72	22.67	5.00	23.20	13.20	8.50	2.00	4.00	4.50	5.00	2	30	60	37.3	20.2	3030	790	3190
F-14	4D	16.00	790.56	794.56	819.71	818.65	25.15	24.09	5.00	24.62	14.62	8.50	2.00	4.00	4.50	5.00	2	30	60	39.6	20.2	4500	790	4390
F-15	4D	16.00	788.19	792.19	818.65	816.56	26.46	24.37	5.00	25.42	15.42	8.50	2.00	4.00	4.50	5.00	2	30	60	40.8	20.2	4620	790	4390
F-16	4D	16.00	786.61	790.61	816.56	815.54	25.95	24.93	5.00	25.44	15.44	8.50	2.00	4.00	4.50	5.00	2	30	60	40.9	20.2	4210	790	4390
F-17	4D	24.00	784.33	788.33	815.54	813.50	27.21	25.17	5.00	26.19	16.19	8.50	2.00	4.00	4.50	5.00	3	30	90	63.1	30.3	6700	1160	6620
F-18	4D	24.00	784.33	788.33	813.50	812.54	25.17	24.21	5.00	24.69	14.69	8.50	2.00	4.00	4.50	5.00	3	30	90	59.5	30.3	6080	1160	6520
F-19	4D	32.00	781.11	785.11	812.54	809.73	27.43	24.62	5.00	26.03	16.03	8.50	2.00	4.00	4.50	5.00	4	30	120	83.6	40.3	8680	1540	8750
F-20	4D	32.00	781.11	785.11	809.73	807.87	24.62	22.76	5.00	23.69	13.69	8.50	2.00	4.00	4.50	5.00	4	30	120	76.1	40.3	7710	1540	8650
F-21	4D	19.89	780.34	784.34	807.87	806.01	23.53	21.67	5.00	22.60	12.60	8.50	2.00	4.00	4.50	5.00	2	30	60	45.1	25.1	3380	980	4060
F-22	4C	20.11	780.34	784.34	806.01	805.07	21.67	20.73	5.00	21.20	11.20	8.50	2.00	4.00	4.50	5.00	3	30	90	42.8	25.4	3380	980	3790
F-23	4C	32.00	780.34	784.34	805.07	802.27	20.73	17.93	5.00	19.33	9.33	8.50	2.00	4.00	4.50	5.00	4	30	120	62.1	40.3	4590	1540	5840
F-24	4C	20.00	779.31	783.31	802.27	801.33	18.96	18.02	5.00	18.49	8.49	8.50	2.00	4.00	4.50	5.00	3	30	90	37.1	25.2	2920	980	3780
F-25	4C	20.00	779.31	783.31	801.33	799.48	18.02	16.17	5.00	17.10	7.09	8.50	2.00	4.00	4.50	5.00	2	30	60	34.3	25.2	2500	980	3780
F-26	4B	22.50	779.81	783.31	799.48	798.61	16.17	15.30		15.74	15.74	6.50	2.00	3.50	2.50	5.00	2	30	60	35.6	19.0	2470	1100	3330
F-27	4B	19.50	779.81	783.31	798.61	796.71	15.30	13.40		14.35	14.35	6.50	2.00	3.50	2.50	5.00	2	30	60	28.1	16.5	1990	960	2980
F-28	4B	20.00	779.81	783.31	796.71	795.76	13.40	12.45		12.93	12.93	6.50	2.00	3.50	2.50	5.00	2	30	60	26.0	16.9	1790	980	3040
F-29	4B	20.00	779.81	783.31	795.76	793.86	12.45	10.55		11.50	11.50	6.50	2.00	3.50	2.50	5.00	1	30	30	23.1	16.9	1550	980	3040
F-30	4A	14.00	779.81	783.31	793.86	792.92	10.55	9.61		10.08	10.08	6.50	2.00	3.50	2.50	5.00	1	30	30	14.2	11.8	1000	690	1170
F-31	4A	20.00	777.29	780.79	792.92	791.07	12.13	10.28		11.21	11.21	6.50	2.00	3.50	2.50	5.00	2	30	60	22.5	16.9	1590	980	1740
F-32	4A	20.00	777.29	780.79	791.07	790.15	10.28	9.36		9.82	9.82	6.50	2.00	3.50	2.50	5.00	1	30	30	19.8	16.9	1370	980	1740
F-33	4A	20.00	777.29	780.79	790.15	788.36	9.36	7.57		8.47	8.47	6.50	2.00	3.50	2.50	5.00	2	30	60	17.0	16.9	1140	980	1660
F-34	4A	20.00	774.68	778.18	788.36	787.49	10.18	9.31		9.74	9.74	6.50	2.00	3.50	2.50	5.00	2	30	60	19.6	16.9	1360	980	1740
F-35	4A	28.00	774.68	778.18	787.49	785.76	9.31	7.58		8.44	8.44	6.50	2.00	3.50	2.50	5.00	2	30	60	23.8	23.6	1800	1350	2310
F-36	4A	17.67	773.35	776.85	785.76	784.92	8.91	8.07		8.49	8.49	6.50	2.00	3.50	2.50	5.00	2	30	60	15.1	14.9	1010	870	1470
																		TOTALS	2370	1316.0	793	112250	35880	130930

NOTES:

1. FOR DRILLED SHAFT DESIGN TYPES, SEE SHEET 211 .
2. PLAN QUANTITY FOR WALL "F" BASED ON 30' MINIMUM DRILLED SHAFT LENGTH. INDIVIDUAL DRILLED SHAFTS MAY BE REQUIRED TO BE EXTENDED BEYOND THE 30' PLAN LENGTH AS NECESSARY TO EMBED A MINIMUM 10' INTO SHALE BEDROCK.

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10/18/2018

WALL "F" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
823.45	320.2	56450

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

GEOMETRY SCHEDULES (4)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	12/18
	FIELD MGR	ZMM	9/20
	LEAD ENGR		1/19
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER		9-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Geo_Sched-04.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 217 OF 334 SHEETS

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GEOMETRY SCHEDULE - WALL "G"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	FAÇADE TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING COPING WIDTH (FT)	QUANTITIES FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
G-1	3A	18.75	763.57	733.57	4	2.5	30	120	762.80	764.33	757.60	758.45	5.20	5.88	5.54	4.13	3.60	2.9	1020	480
G-2	3A	20.00	764.95	732.95	4	2.5	32	128	764.33	765.56	758.45	759.36	5.88	6.20	6.04	4.13	4.20	3.1	1090	500
G-3	3A	20.00	766.00	734.00	4	2.5	32	128	765.56	766.43	759.36	760.28	6.20	6.15	6.17	4.13	4.20	3.1	1150	510
G-4	3A	20.00	766.97	734.97	4	2.5	32	128	766.43	767.50	760.28	761.19	6.15	6.31	6.23	4.13	4.30	3.1	1150	510
G-5	3A	20.00	767.98	735.98	4	2.5	32	128	767.50	768.45	761.19	762.10	6.31	6.35	6.33	4.13	4.30	3.1	1110	500
G-6	3A	20.00	768.67	736.67	4	2.5	32	128	768.45	768.88	762.10	763.02	6.35	5.86	6.11	4.13	4.20	3.1	1150	510
G-7	3A	20.00	768.99	738.99	4	2.5	30	120	768.88	769.09	763.02	763.93	5.86	5.16	5.51	4.13	3.80	3.1	1060	510
G-8	3A	18.42	769.01	740.01	3	2.5	29	87	769.09	768.93	763.93	765.11	5.16	3.82	4.49	4.13	2.90	2.9	780	460
							TOTAL DRILLED SHAFT (LF)	967							TOTALS		31.5	24.4	8510	3980

GEOMETRY SCHEDULE - WALL "H"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	FAÇADE TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING COPING WIDTH (FT)	QUANTITIES FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
H-1	3A	13.41	773.15	744.15	3	2.5	29	87	773.25	773.04	768.65	768.42	4.60	4.62	4.61	4.13	2.10	2.1	640	350
H-2	3A	20.00	773.07	743.07	4	2.5	30	120	773.04	773.10	768.42	767.44	4.62	5.66	5.14	4.13	3.50	3.1	1000	510
H-3	3A	20.00	773.24	739.24	4	2.5	34	136	773.10	773.38	767.44	766.68	5.66	6.70	6.18	4.13	4.20	3.1	1150	510
H-4	3A	17.00	773.52	738.52	3	2.5	35	105	773.38	773.65	766.68	766.79	6.70	6.86	6.78	4.13	4.00	2.7	1000	430
H-5	3A	21.00	774.15	739.15	4	2.5	35	140	773.65	774.64	766.79	767.71	6.86	6.93	6.89	4.13	5.00	3.3	1310	540
H-6	3A	20.00	774.11	744.11	4	2.5	30	120	774.64	773.57	767.71	768.60	6.93	4.97	5.95	4.13	4.10	3.1	1090	510
H-7	3A	20.00	773.85	744.85	4	2.5	29	116	773.57	774.13	768.60	769.50	4.97	4.63	4.80	4.13	3.30	3.1	920	500
H-8	3A	20.00	774.41	745.41	4	2.5	29	116	774.13	774.68	769.50	770.40	4.63	4.28	4.45	4.13	3.10	3.1	870	510
H-9	3A	20.00	774.93	745.93	4	2.5	29	116	774.68	775.17	770.40	771.29	4.28	3.88	4.08	4.13	2.80	3.1	830	510
H-10	3A	20.00	775.63	747.63	4	2.5	28	112	775.17	776.08	771.29	772.19	3.88	3.89	3.88	4.13	2.70	3.1	770	500
H-11	3A	20.00	776.52	748.52	4	2.5	28	112	776.08	776.96	772.19	773.08	3.89	3.88	3.88	4.13	2.70	3.1	810	510
H-12	3A	20.00	777.41	749.41	4	2.5	28	112	776.96	777.86	773.08	773.98	3.88	3.88	3.88	4.13	2.70	3.1	810	510
H-13	3A	20.00	778.59	749.59	4	2.5	29	116	777.86	779.32	773.98	774.88	3.88	4.44	4.16	4.13	2.90	3.1	800	500
H-14	3A	20.00	780.03	751.03	4	2.5	29	116	779.32	780.74	774.88	775.77	4.44	4.97	4.71	4.13	3.20	3.1	950	510
H-15	3A	20.00	781.16	752.16	4	2.5	29	116	780.74	781.58	775.77	776.67	4.97	4.91	4.94	4.13	3.40	3.1	970	510
H-16	3A	20.00	782.21	752.21	4	2.5	30	120	781.58	782.83	776.67	777.56	4.91	5.27	5.09	4.13	3.50	3.1	950	500
H-17	3A	20.00	783.28	753.28	4	2.5	30	120	782.83	783.73	777.56	778.46	5.27	5.27	5.27	4.13	3.60	3.1	1060	510
H-18	3A	20.00	783.82	754.82	4	2.5	29	116	783.73	783.91	778.46	779.36	5.27	4.55	4.91	4.13	3.40	3.1	970	510
H-19	3A	20.00	784.01	755.01	4	2.5	29	116	783.91	784.10	779.36	780.25	4.55	3.85	4.20	4.13	2.90	3.1	810	500
H-20	3A	20.00	784.51	756.51	4	2.5	28	112	784.10	784.91	780.25	781.18	3.85	3.73	3.79	4.13	2.60	3.1	800	510
H-21	3A	20.00	785.38	757.38	4	2.5	28	112	784.91	785.85	781.18	782.14	3.73	3.71	3.72	4.13	2.60	3.1	740	510
H-22	3A	20.00	786.28	758.28	4	2.5	28	112	785.85	786.70	782.14	783.11	3.71	3.59	3.65	4.13	2.50	3.1	710	500
H-23	3A	20.00	787.96	758.96	4	2.5	29	116	786.70	789.22	783.11	784.17	3.59	5.05	4.32	4.13	3.00	3.1	860	510
H-24	3A	16.20	789.45	760.45	3	2.5	29	87	789.22	789.68	784.17	785.21	5.05	4.47	4.76	4.13	2.70	2.6	780	420
H-25	3A	21.00	790.14	762.14	4	2.5	28	112	789.68	790.60	785.21	787.28	4.47	3.32	3.89	4.13	2.80	3.3	830	530
							TOTAL DRILLED SHAFT (LF)	2863						TOTALS			79.3	76.0	22430	12410

WALL "G" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
121.31	47.2	7330

WALL "H" - SCREEN WALL QUANTITES

CURB WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
75.33	29.3	4550

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-31-2018

GEOMETRY SCHEDULES (5)
WALLS "G" & "H"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	PJP	12/20
FIELD MGR		12/20
LEAD ENGR		11/20
RECOMMENDED DESIGN MANAGER	HPS	12-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Geo_Sched-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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GEOMETRY SCHEDULE - WALL "J"

			DRILLED SHAFTS							FAÇADE							COPING	QUANTITIES			
PANEL	DESIGN TYPE	PANEL LENGTH (FT)	TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING WIDTH (FT)	FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
J-0	3A	18.75	803.19	794.19	4	2.5	9	36	--	--	--	--	--	--	--	4.13	--	2.9	--	890
J-1	3A	20.00	806.66	794.66	4	2.5	12	48	804.77	808.55	803.83	805.43	0.94	3.12	2.03	4.13	1.40	3.1	460	940
J-2	3A	20.75	810.65	796.65	4	2.5	14	56	808.55	812.74	805.43	807.09	3.12	5.65	4.38	4.13	3.10	3.2	860	970
J-3	3B	22.00	815.08	789.08	4	3.0	26	104	812.74	817.41	807.09	808.85	5.65	8.56	7.10	4.71	6.30	3.9	1380	1110
J-4	3B	22.00	819.76	789.76	4	3.0	30	120	817.41	822.11	808.85	810.06	8.56	12.05	10.30	4.71	9.10	3.9	1780	1110
J-5	3B	22.00	824.57	791.57	4	3.0	33	132	822.11	827.03	810.06	812.37	12.05	14.66	13.35	4.71	11.80	3.9	2070	1090
J-6	3C	22.50	829.19	788.19	3	5.0	41	123	827.03	831.35	812.37	814.17	14.66	17.18	15.92	6.79	16.60	5.7	2610	1260
J-7	3C	22.50	832.74	789.74	3	5.0	43	129	831.35	834.13	814.17	816.05	17.18	18.08	17.63	6.79	18.40	5.7	2830	1260
J-8	3C	22.50	835.36	791.36	3	5.0	44	132	834.13	836.59	816.05	818.05	18.08	18.54	18.31	6.79	19.10	5.7	2780	1240
J-9	3C	22.50	837.50	793.50	3	5.0	44	132	836.59	838.41	818.05	820.05	18.54	18.36	18.45	6.79	19.30	5.7	2930	1260
J-10	3C	22.50	839.27	795.27	3	5.0	44	132	838.41	840.12	820.05	822.05	18.36	18.07	18.22	6.79	19.00	5.7	2910	1260
J-11	3C	22.50	840.98	797.98	3	5.0	43	129	840.12	841.84	822.05	824.05	18.07	17.79	17.93	6.79	18.70	5.7	2710	1240
J-12	3C	16.50	842.47	799.47	2	5.0	43	86	841.84	843.10	824.05	825.52	17.79	17.58	17.69	6.79	13.60	4.2	2120	940
J-13	3C	22.50	843.72	800.72	3	5.0	43	129	843.10	844.34	825.52	827.47	17.58	16.87	17.23	6.79	18.00	5.7	2750	1260
J-14	3C	22.50	844.67	802.67	3	5.0	42	126	844.34	845.00	827.47	829.36	16.87	15.64	16.26	6.79	17.00	5.7	2500	1240
J-15	3C	22.50	845.52	804.52	3	5.0	41	123	845.00	846.04	829.36	831.13	15.64	14.91	15.28	6.79	16.00	5.7	2520	1260
J-16	3C	22.50	846.61	806.61	3	5.0	40	120	846.04	847.17	831.13	832.81	14.91	14.36	14.64	6.79	15.30	5.7	2310	1240
J-17	3B	22.00	847.68	814.68	4	3.0	33	132	847.17	848.19	832.81	834.49	14.36	13.70	14.03	4.71	12.40	3.9	2270	1110
J-18	3B	22.00	848.67	815.67	4	3.0	33	132	848.19	849.14	834.49	836.10	13.70	13.04	13.37	4.71	11.90	3.9	2180	1110
J-19	3B	22.00	849.79	817.79	4	3.0	32	128	849.14	850.43	836.10	837.60	13.04	12.83	12.93	4.71	11.50	3.9	2050	1090
J-20	3B	22.00	851.16	819.16	4	3.0	32	128	850.43	851.89	837.60	838.95	12.83	12.94	12.88	4.71	11.40	3.9	2150	1110
J-21	3B	22.00	852.65	820.65	4	3.0	32	128	851.89	853.41	838.95	840.23	12.94	13.18	13.06	4.71	11.60	3.9	2160	1110
J-22	3B	22.00	854.17	821.17	4	3.0	33	132	853.41	854.93	840.23	841.45	13.18	13.48	13.33	4.71	11.80	3.9	2070	1090
J-23	3B	22.00	855.69	822.69	4	3.0	33	132	854.93	856.44	841.45	842.61	13.48	13.83	13.66	4.71	12.10	3.9	2250	1110
J-24	3B	22.00	857.20	824.20	4	3.0	33	132	856.44	857.96	842.61	843.71	13.83	14.25	14.04	4.71	12.40	3.9	2160	1090
J-25	3C	18.75	858.60	818.60	3	5.0	40	120	857.96	859.23	843.71	844.58	14.25	14.65	14.45	6.79	12.60	4.8	2030	1060
J-26	3C	22.50	859.86	819.86	3	5.0	40	120	859.23	860.49	844.58	845.58	14.65	14.91	14.78	6.79	15.40	5.7	2430	1260
J-27	3C	22.50	861.05	820.05	3	5.0	41	123	860.49	861.61	845.58	846.51	14.91	15.10	15.01	6.79	15.70	5.7	2380	1240
J-28	3C	22.50	862.17	821.17	3	5.0	41	123	861.61	862.73	846.51	847.36	15.10	15.37	15.24	6.79	15.90	5.7	2510	1260
J-29	3C	22.50	863.26	822.26	3	5.0	41	123	862.73	863.78	847.36	848.15	15.37	15.63	15.50	6.79	16.20	5.7	2530	1260
J-30	3C	22.50	864.30	823.30	3	5.0	41	123	863.78	864.81	848.15	848.88	15.63	15.93	15.78	6.79	16.50	5.7	2470	1240
J-31	3C	22.50	865.33	823.33	3	5.0	42	126	864.81	865.84	848.88	849.53	15.93	16.31	16.12	6.79	16.80	5.7	2620	1260
J-32	3C	22.50	866.26	824.26	3	5.0	42	126	865.84	866.67	849.53	850.12	16.31	16.55	16.43	6.79	17.20	5.7	2640	1260
J-33	3C	22.50	867.02	825.02	3	5.0	42	126	866.67	867.36	850.12	850.64	16.55	16.72	16.64	6.79	17.40	5.7	2580	1240
J-34	3C	22.50	867.64	825.64	3	5.0	42	126	867.36	867.92	850.64	851.10	16.72	16.82	16.77	6.79	17.50	5.7	2720	1260
J-35	3C	22.50	868.20	826.20	3	5.0	42	126	867.92	868.48	851.10	851.48	16.82	17.00	16.91	6.79	17.70	5.7	2730	1260
J-36	3C	22.50	868.68	825.68	3	5.0	43	129	868.48	868.88	851.48	851.79	17.00	17.09	17.05	6.79	17.80	5.7	2600	1240
J-37	3C	22.50	868.81	826.81	3	5.0	42	126	868.88	868.73	851.79	852.04	17.09	16.69	16.89	6.79	17.60	5.7	2720	1260
J-38	3C	22.50	868.65	826.65	3	5.0	42	126	868.73	868.57	852.04	852.22	16.69	16.35	16.52	6.79	17.30	5.7	2700	1260
J-39	3C	22.50	868.44	826.44	3	5.0	42	126	868.57	868.30	852.22	852.33	16.35	15.97	16.16	6.79	16.90	5.7	2500	1240
J-40	3C	22.50	868.13	827.13	3	5.0	41	123	868.30	867.95	852.33	852.37	15.97	15.58	15.78	6.79	16.50	5.7	2600	1260
J-41	3C	22.50	867.73	826.73	3	5.0	41	123	867.95	867.50	852.37	852.41	15.58	15.09	15.34	6.79	16.00	5.7	2520	1260
J-42	3C	22.50	867.07	827.07	3	5.0	40	120	867.50	866.64	852.41	852.37	15.09	14.27	14.68	6.79	15.30	5.7	2310	1240
J-43	3B	18.50	866.27	833.27	3	3.0	33	99	866.64	865.90	852.37	852.37	14.27	13.53	13.90	4.71	10.40	3.3	1910	930
J-44	3B	22.00	865.45	833.45	4	3.0	32	128	865.90	864.99	852.37	852.37	13.53	12.62	13.08	4.71	11.60	3.9	2160	1110
J-45	3B	22.00	864.54	833.54	4	3.0	31	124	864.99	864.08	852.37	852.31	12.62	11.77	12.20	4.71	10.80	3.9	1950	1090
J-46	3B	22.00	863.59	832.59	4	3.0	31	124	864.08	863.09	852.31	852.18	11.77	10.91	11.34	4.71	10.10	3.9	1950	1110
J-47	3B	22.00	862.52	832.52	4	3.0	30	120	863.09	861.94	852.18	851.99	10.91	9.95	10.43	4.71	9.30	3.9	1790	1110
J-48	3B	22.00	861.35	832.35	4	3.0	29	116	861.94	860.76	851.99	851.74	9.95	9.02	9.49	4.71	8.40	3.9	1600	1090
J-49	3B	22.00	860.13	832.13	4	3.0	28	112	860.76	859.50	851.74	851.42	9.02	8.08	8.55	4.71	7.60	3.9	1570	1110
J-50	3B	22.00	858.87	831.87	4	3.0	27	108	859.50	858.23	851.42	851.04	8.08	7.19	7.64	4.71	6.80	3.9	1460	1110
J-51	3B	22.00	857.66	831.66	4	3.0	26	104	858.23	857.08	851.04	850.58	7.19	6.50	6.85	4.71	6.10	3.9	1300	1090
J-52	3B	22.00	856.51	831.51	4	3.0	25	100	857.08	855.94	850.58	850.04	6.50	5.90	6.20	4.71	5.50	3.9	1270	1110
J-53	3B	22.00	855.28	830.28	4	3.0	25	100	855.94	854.61	850.04	849.32	5.90	5.29	5.60	4.71	5.00	3.9	1180	1110
J-54	3B	20.50	853.87	829.87	4	3.0	24	96	854.61	853.12	849.32	848.61	5.29	4.51	4.90	4.71	4.10	3.6	960	1020
J-55	3A	20.00	852.35	838.35	4	2.5	14	56	853.12	851.57	848.61	847.84	4.51	3.73	4.12	4.13	2.80	3.1	830	940
J-56	3A	20.00	850.85	837.85	4	2.5	13	52	851.57	850.13	847.84	847.08	3.73	3.05	3.39	4.13	2.40	3.1	710	940
J-57	3A	20.00	849.46	837.46	4	2.5	12	48	850.13	848.79	847.08	846.25	3.05	2.54	2.79	4.13	1.90	3.1	570	930
J-58	3A	20.00	848.10	836.10	4	2.5	12	48	848.79	847.41	846.25	845.38	2.54	2.03	2.28	4.13	1.60	3.1	530	940
J-59	3A	20.00	846.78	835.78	4	2.5	11	44	847.41	846.14	845.38	844.46	2.03	1.68	1.85	4.13	1.30	3.1	420	930
J-60	3A	60.00	844.24	835.24	12	2.5	9	108	--	--	--	--	--	--	--	4.13	--	9.2	0	2840
J-61	3A	64.54	840.22	831.22	13	2.5	9	117	--	--	--	--	--	--	--	4.13	--	9.9	0	2110
					TOTAL DRILLED SHAFT (LF)			6940								TOTALS	719.8	295.5	120560	73370

WALL "J" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
1582.39	615.4	95570

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

PROFESSIONAL ENGINEER
KAREN SWATEK JONES
28517
OKLAHOMA
10-31-2018

GEOMETRY SCHEDULES (6)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR			
	FIELD MGR		12/20	
	LEAD ENGR		11/20	
VERTICAL: 1"= NA	RECOMMENDED HAS 12.20 DESIGN MANAGER			CITY ENGINEER
FILE: 313925-S-Geo_Sched-06.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 219 OF 334 SHEETS

GEOMETRY SCHEDULE - WALL "K"

DESIGN	PANEL	DIMENSIONS												QUANTITIES			
							WALL HEIGHT			FOOTING							
		PANEL LENGTH (FT)	BOTTOM FOOTING (FT)	TOP FOOTING (FT)	TOP ELEV. DWN. STA (FT)	TOP ELEV. UP STA (FT)	DWN STA (FT)	UP STA (FT)	AVG. (FT)	W (FT)	T (FT)	F (FT)	S (FT)	TOTAL WALL VOLUME (CY)	STEM AREA (SY)	GR 60 REBAR (LB)	EPOXY REBAR (LB)
1CB	K-1	16.41	831.17	833.00	852.20	852.20	19.20	19.20	19.20	15.50	5.00	1.83	1.83	41.1	36	8610	820
1CB	K-2	17.17	831.17	833.00	852.20	852.20	19.20	19.20	19.20	15.50	5.00	1.83	1.83	43.0	37	8860	840
1CB	K-3	17.17	831.17	833.00	852.20	852.20	19.20	19.20	19.20	15.50	5.00	1.83	1.83	43.0	37	8860	840
1CB	K-4	17.17	831.17	833.00	850.87	850.87	17.87	17.87	17.87	15.50	5.00	1.83	1.83	41.3	35	8460	840
1CB	K-5	17.33	830.87	832.70	849.87	849.87	17.17	17.17	17.17	15.50	5.00	1.83	1.83	40.8	34	8560	830
1CB	K-6	17.33	829.79	831.62	849.87	849.87	18.25	18.25	18.25	15.50	5.00	1.83	1.83	42.2	36	8730	830
1CB	K-7	17.33	828.70	830.53	849.12	849.12	18.59	18.59	18.59	15.50	5.00	1.83	1.83	42.6	36	8810	830
1CB	K-8	17.33	827.62	829.45	849.12	849.12	19.67	19.67	19.67	15.50	5.00	1.83	1.83	44.1	38	8770	830
												TOTALS		338.1	289	69660	6660

GEOMETRY SCHEDULE - WALL "K"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS						FAÇADE							COPING	QUANTITES			
			TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING WIDTH (FT)	FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
K-9	3B	15.22	837.56	808.56	3	3.0	29	87	837.90	837.22	828.19	826.74	9.71	10.48	10.10	4.71	6.20	2.7	1290	790
K-10	3B	18.00	836.85	806.85	3	3.0	30	90	837.22	836.48	826.74	825.18	10.48	11.30	10.89	4.71	7.90	3.2	1600	920
K-11	3B	22.00	835.96	804.96	4	3.0	31	124	836.48	835.43	825.18	823.21	11.30	12.22	11.76	4.71	10.40	3.9	1930	1090
K-12	3B	22.00	834.80	802.80	4	3.0	32	128	835.43	834.16	823.21	821.23	12.22	12.93	12.57	4.71	11.10	3.9	2130	1110
K-13	3B	22.00	833.53	800.53	4	3.0	33	132	834.16	832.89	821.23	819.26	12.93	13.63	13.28	4.71	11.80	3.9	2220	1110
K-14	3C	22.50	832.23	793.23	3	5.0	39	117	832.89	831.57	819.26	817.24	13.63	14.33	13.98	6.79	14.60	5.7	2260	1240
K-15	3C	22.50	830.90	790.90	3	5.0	40	120	831.57	830.22	817.24	815.22	14.33	15.00	14.67	6.79	15.30	5.7	2480	1260
K-16	3C	22.50	829.51	788.51	3	5.0	41	123	830.22	828.80	815.22	813.21	15.00	15.59	15.30	6.79	16.00	5.7	2570	1260
K-17	3C	22.50	828.01	787.01	3	5.0	41	123	828.80	827.21	813.21	811.30	15.59	15.91	15.75	6.79	16.50	5.7	2470	1240
K-18	3C	22.50	826.42	784.42	3	5.0	42	126	827.21	825.62	811.30	809.44	15.91	16.18	16.05	6.79	16.80	5.7	2670	1260
K-19	3C	22.50	824.83	782.83	3	5.0	42	126	825.62	824.03	809.44	807.61	16.18	16.42	16.30	6.79	17.00	5.7	2550	1240
K-20	3C	22.50	822.89	780.89	3	5.0	42	126	824.03	821.74	807.61	805.81	16.42	15.93	16.18	6.79	16.90	5.7	2680	1260
K-21	3C	22.50	820.41	779.41	3	5.0	41	123	821.74	819.07	805.81	804.01	15.93	15.06	15.50	6.79	16.20	5.7	2580	1260
K-22	3C	22.50	817.74	777.74	3	5.0	40	120	819.07	816.40	804.01	802.21	15.06	14.19	14.63	6.79	15.30	5.7	2350	1240
K-23	3C	22.50	815.32	775.32	3	5.0	40	120	816.40	814.24	802.21	800.41	14.19	13.83	14.01	6.79	14.60	5.7	2380	1260
K-24	3C	22.50	813.55	773.55	3	5.0	40	120	814.24	812.85	800.41	798.61	13.83	14.24	14.04	6.79	14.70	5.7	2380	1260
K-25	3C	22.50	812.16	772.16	3	5.0	40	120	812.85	811.46	798.61	796.72	14.24	14.74	14.49	6.79	15.10	5.7	2340	1240
K-26	3C	22.50	810.77	769.77	3	5.0	41	123	811.46	810.08	796.72	794.72	14.74	15.36	15.05	6.79	15.70	5.7	2550	1260
K-27	3C	22.50	809.97	767.97	3	5.0	42	126	810.08	809.85	794.72	792.72	15.36	17.13	16.25	6.79	17.00	5.7	2680	1260
K-28	3C	22.50	809.74	765.74	3	5.0	44	132	809.85	809.62	792.72	790.72	17.13	18.90	18.02	6.79	18.80	5.7	2800	1240
K-29	3D	22.50	809.43	763.43	3	5.0	46	138	809.62	809.23	790.72	788.72	18.90	20.51	19.71	6.79	20.60	5.7	3170	1260
K-30	3D	24.00	809.00	761.00	3	5.0	48	144	809.23	808.77	788.72	786.58	20.51	22.19	21.35	6.79	23.80	6.1	3590	1340
K-31	3D	22.50	808.56	759.56	3	5.0	49	147	808.77	808.35	786.58	784.58	22.19	23.77	22.98	6.79	24.00	5.7	3400	1240
K-32	3D	22.50	807.79	756.79	3	5.0	51	153	808.35	807.23	784.58	782.58	23.77	24.65	24.21	6.79	25.30	5.7	3770	1260
K-33	3D	15.00	806.56	755.56	3	5.0	51	153	807.23	805.88	782.58	781.25	24.65	24.63	24.64	6.79	17.20	3.8	2610	860
K-34	3D	23.00	804.85	753.85	3	5.0	51	153	805.88	803.82	781.25	779.28	24.63	24.54	24.59	6.79	26.20	5.8	3630	1240
K-35	3D	22.50	802.83	751.83	3	5.0	51	153	803.82	801.83	779.28	777.35	24.54	24.48	24.51	6.79	25.60	5.7	3790	1260
K-36	3D	22.50	800.82	749.82	3	5.0	51	153	801.83	799.80	777.35	775.37	24.48	24.43	24.46	6.79	25.50	5.7	3780	1260
K-37	3D	22.50	798.79	747.79	3	5.0	51	153	799.80	797.77	775.37	773.36	24.43	24.41	24.42	6.79	25.50	5.7	3590	1240
K-38	3D	22.50	791.75	745.75	3	5.0	46	138	797.77	785.73	773.36	771.34	24.41	14.39	19.40	6.79	20.30	5.7	3090	1260
K-39	3D	22.50	789.83	743.83	3	5.0	46	138	785.73	793.92	771.34	769.53	14.39	24.39	19.39	6.79	20.20	5.7	3090	1260
K-40	3D	22.50	790.91	741.91	3	5.0	49	147	793.92	787.90	769.53	767.72	24.39	20.18	22.29	6.79	23.30	5.7	3310	1240
K-41	3C	22.50	785.72	741.72	3	5.0	44	132	787.90	783.54	767.72	765.92	20.18	17.62	18.90	6.79	19.70	5.7	3060	1260
K-42	3C	22.50	781.13	739.13	3	5.0	42	126	783.54	778.72	765.92	764.11	17.62	14.61	16.12	6.79	16.80	5.7	2670	1260
K-43	3B	22.00	776.34	744.34	4	3.0	32	128	778.72	773.95	764.11	762.67	14.61	11.28	12.95	4.71	11.50	3.9	2090	1090
K-44	3B	16.50	772.20	742.20	3	3.0	30	90	773.95	770.44	762.67	761.02	11.28	9.42	10.35	4.71	6.90	2.9	1410	850
K-45	3B	18.50	768.70	740.70	3	3.0	28	84	770.44	766.95	761.02	759.69	9.42	7.26	8.34	4.71	6.20	3.3	1350	930
K-46	3B	18.00	766.05	740.05	3	3.0	26	78	766.95	765.15	759.69	758.20	7.26	6.95	7.10	4.71	5.20	3.2	1130	910
K-47	3A	13.83	764.91	744.91	3	2.5	20	60	765.15	764.67	758.20	756.63	6.95	8.04	7.49	4.13	3.60	2.2	940	670
K-48	3A	16.00	764.24	744.24	1	2.5	20	20	764.67	763.80	756.63	756.40	8.04	7.40	7.72	4.13	4.20	2.5	1130	770
K-49	3A	18.50	764.07	745.07	4	2.5	19	76	763.80	764.33	756.40	758.30	7.40	6.03	6.72	4.13	4.30	2.9	1140	880
K-50	3A	18.50	764.64	749.64	4	2.5	15	60	764.33	764.95	758.30	760.50	6.03	4.45	5.24	4.13	3.30	2.9	930	870
					TOTAL DRILLED SHAFT (LF)			5030								TOTALS	647.1	205.3	103580	48010

WALL "K" - SCREEN WALL QUANTITES

SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
1050.39	408.5	63440

NOTES:

1. SCREW WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA 10-19-18

GEOMETRY SCHEDULES (7)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/18
	FIELD MGR		12/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	HB	12-20

APPROVED:
CITY ENGINEER

FILE: 313925-S-Geo_Sched-07.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 220 OF 334 SHEETS

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GEOMETRY SCHEDULE - WALL "L"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS: TOP ELEVATION (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	AVG. LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	FAÇADE: TOP FAÇADE DWN STA. (FT)	TOP FAÇADE UP STA. (FT)	BOT. FAÇADE DWN STA. (FT)	BOT. FAÇADE UP STA. (FT)	FACADE HT. DWN STA. (FT)	FACADE HT. UP STA. (FT)	AVG. HT. (FT)	COPING: COPING WIDTH (FT)	QUANTITIES: FAÇADE VOLUME (CY)	COPING VOLUME (CY)	FAÇADE REBAR (LB)	COPING REBAR (LB)
L-1	3A	26.00	756.37	741.37	5	2.5	15	75	756.98	755.76	752.21	749.46	4.77	6.30	5.53	4.13	4.90	4.0	1390	1220
L-2	3A	20.00	754.63	739.63	4	2.5	15	60	755.76	753.50	749.46	747.86	6.30	5.64	5.97	4.13	4.10	3.1	1080	940
L-3	3A	20.00	752.26	737.26	4	2.5	15	60	753.50	751.01	747.86	746.27	5.64	4.74	5.19	4.13	3.60	3.1	940	930
L-4	3A	20.00	749.74	735.74	4	2.5	14	56	751.01	748.46	746.27	744.73	4.74	3.73	4.24	4.13	2.90	3.1	820	940
L-5	3A	20.00	747.01	734.01	4	2.5	13	52	748.46	745.55	744.73	743.25	3.73	2.30	3.01	4.13	2.10	3.1	650	940
L-6	3A	10.57	744.75	733.75	2	2.5	11	22	745.55	743.95	743.25	742.45	2.30	1.50	1.90	4.13	0.70	1.7	230	520
					TOTAL DRILLED SHAFT (LF)			325								TOTALS	18.3	18.1	5110	5490

GEOMETRY SCHEDULE - WALL "M"

DESIGN	PANEL	DIMENSIONS: PANEL LENGTH (FT)	BOTTOM FOOTING (FT)	TOP FOOTING (FT)	TOP ELEV. DWN. STA (FT)	TOP ELEV. UP STA (FT)	WALL HEIGHT: DWN STA (FT)	UP STA (FT)	AVG. (FT)	FOOTING: W (FT)	T (FT)	F (FT)	S (FT)	QUANTITIES: TOTAL WALL VOLUME (CY)	STEM AREA (SY)	REBAR (LB)	EPOXY REBAR (LB)
1B	M-1	20.00	784.54	785.87	790.67	791.19	4.80	5.32	5.06	11.33	2.50	1.33	1.33	17.0	12	2220	980
1B	M-2	20.00	783.62	784.95	791.19	791.73	6.24	6.78	6.51	11.33	2.50	1.33	1.33	18.7	15	2360	980
1B	M-3	20.00	782.70	784.03	791.73	792.47	7.70	8.44	8.07	11.33	2.50	1.33	1.33	20.5	18	2340	980
1C	M-4	23.87	781.37	782.70	792.47	793.71	9.77	11.01	10.39	11.33	5.00	1.33	1.33	27.6	28	5140	1160
1C	M-5	13.36	780.78	782.28	793.71	794.28	11.43	12.00	11.72	16.00	5.00	1.50	1.50	21.8	18	3790	670
1C	M-6	13.36	780.78	782.28	794.28	794.82	12.00	12.54	12.27	16.00	5.00	1.50	1.50	22.3	19	3840	670
1C	M-7	13.36	780.78	782.28	794.82	795.36	12.54	13.08	12.81	16.00	5.00	1.50	1.50	22.8	20	3650	670
1C	M-8	13.36	780.78	782.28	795.36	795.85	13.08	13.57	13.33	16.00	5.00	1.50	1.50	23.2	20	3880	670
1C	M-9	13.36	781.20	782.70	795.85	795.97	13.15	13.27	13.21	16.00	5.00	1.50	1.50	23.1	20	3850	670
1C	M-10	12.04	781.62	783.12	795.97	795.72	12.85	12.60	12.73	16.00	5.00	1.50	1.50	20.4	18	3250	600
													TOTALS	217.4	188	34320	8050

GEOMETRY SCHEDULE - WALL "N"

PANEL	DESIGN TYPE	PANEL LENGTH (FT)	DRILLED SHAFTS: TOP ELEVATION AVG. (FT)	BOTTOM ELEVATION	SHAFTS PER PANEL	DIAMETER (FT)	LENGTH PER SHAFT (FT)	LENGTH PER PANEL (FT)	COPING: TOP OF COPING DWN STA. (FT)	TOP OF COPING UP STA. (FT)		QUANTITIES: COPING VOLUME (CY)	COPING REBAR (LB)
N-1	2A	62.29	795.89	771.89	10	2.5	24	240	795.20	798.58		7.0	2780
N-2	2A	60.00	799.21	775.21	10	2.5	24	240	798.58	801.83		6.7	2680
N-3	2A	67.96	805.38	781.38	12	2.5	24	288	801.83	810.92		7.6	3010
					TOTAL DRILLED SHAFT (LF)			768			TOTALS	21.3	8470

WALL "M" - SCREEN WALL QUANTITES

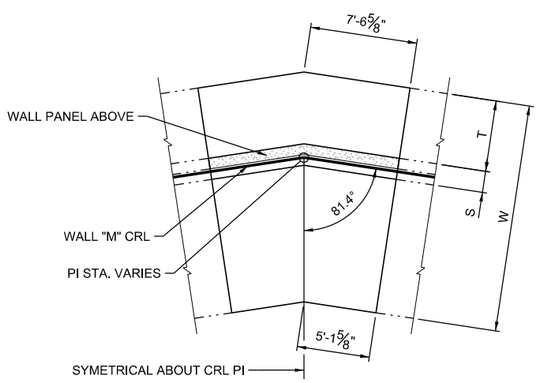
SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
168.43	65.5	10180

WALL "N" - SCREEN WALL QUANTITES

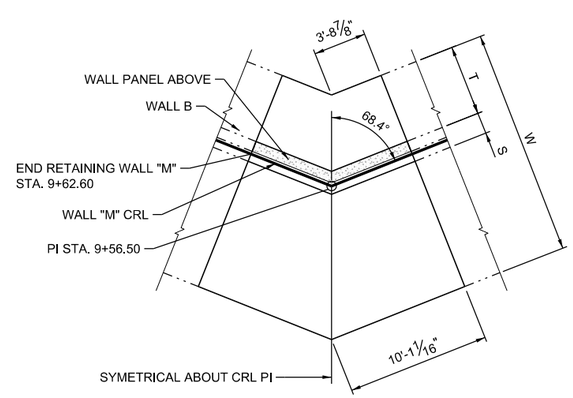
SCREEN WALL AREA (SY)	CLASS AA CONCRETE (CY)	EPOXY REINFORCING (LBS)
191.04	74.3	11540

NOTES:

1. SCREEN WALL REINFORCING POUNDAGE DOES NOT INCLUDE LAP LENGTHS BETWEEN PANELS AT CONSTRUCTION JOINTS.
2. QUANTITIES FOR SCREEN WALLS ARE ESTIMATES, AND ARE INCLUDED IN THE SUMMARY TABLE ON SHEET 17



WALL PANELS M-5 TO M9 FOOTING



WALL PANEL M-10 FOOTING

GEOMETRY SCHEDULES (8)
WALLS "L", "M" AND "N"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		2/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED DESIGN MANAGER		9-20

APPROVED: CITY ENGINEER

FILE: 313925-S-Geo_Sched-08.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 221 OF 334 SHEETS

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REINFORCING SCHEDULE - WALL "A"

PANEL DIMENSIONS			DRILLED SHAFT BARS						COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#7@9")	
			DS1			CD1 #5		DT1						
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	EPOXY COATED		EPOXY COATED		EPOXY COATED	
									QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
A-1	2A	60.00	# 9	8	23'-6"	4	4'-4"	236'-10"	8	59'-8"	122	4'-10"	162	5'-11"
A-2	2A	32.59	# 9	8	23'-6"	4	4'-4"	236'-10"	8	32'-3"	68	4'-10"	88	5'-11"

REINFORCING SCHEDULE - WALL "B"

PANEL DIMENSIONS			F1 BARS				F2 BARS				F3 BARS @ 12" SPA			Z1 BARS #5 @ 12" SPA					D1 BARS (LAP WITH VF1 BARS)					
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	QTY.	SPA. (IN)	X	Y	LEN.	SIZE	QTY.	SPA. (IN)	X	Y	LEN.
B-1	1A	20.00	# 5	21	12	8'-9"	# 5	21	12	8'-9"	# 4	20	19'-8"	10	12	3'-4"	0'-0"	6'-8"	# 5	21	12	1'-8"	3'-3"	4'-11"
B-2	1A	10.00	# 5	11	12	8'-9"	# 5	11	12	8'-9"	# 4	20	9'-8"	-	-	-	-	-	# 5	11	12	1'-8"	3'-11"	5'-7"
B-3	1A	20.00	# 5	21	12	10'-10"	# 5	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-5"	7'-1"	# 5	21	12	2'-0"	4'-3"	6'-3"
B-4	1A	20.00	# 5	21	12	10'-10"	# 5	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-6"	7'-2"	# 5	21	12	2'-0"	4'-9"	6'-9"
B-5	1A	20.00	# 5	21	12	10'-10"	# 5	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 5	21	12	2'-0"	5'-2"	7'-2"
B-6	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-9"	7'-5"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-7	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-8	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	1'-10"	3'-0"	4'-10"
B-9	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-10	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-11	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	1'-10"	3'-0"	4'-10"
B-12	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-10"	7'-6"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-13	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-14	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	1'-10"	3'-0"	4'-10"
B-15	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-9"	7'-5"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-16	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-10"	7'-6"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-17	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	1'-10"	3'-0"	4'-10"
B-18	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-19	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	1'-10"	3'-0"	4'-10"
B-20	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	1'-10"	3'-0"	4'-10"
B-21	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-11"	7'-7"	# 4	21	12	2'-0"	3'-2"	5'-2"
B-22	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	12	12	3'-4"	0'-0"	6'-8"	# 4	21	12	2'-0"	3'-2"	5'-2"
B-23	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	# 4	24	19'-8"	-	-	-	-	-	# 4	21	12	2'-0"	3'-2"	5'-2"
B-24	1C	20.00	# 7	41	6	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	12	3'-4"	0'-9"	7'-5"	# 4	21	12	2'-0"	3'-2"	5'-2"
B-25	1C	16.16	# 7	33	6	15'-6"	# 7	33	6	15'-6"	# 4	34	15'-10"	-	-	-	-	-	# 4	17	12	2'-0"	3'-2"	5'-2"
B-26	1C	23.04	# 7	47	6	15'-6"	# 7	47	6	15'-6"	# 4	34	22'-8"	-	-	-	-	-	# 4	24	12	2'-0"	3'-2"	5'-2"

REINFORCING SCHEDULE - WALL "B" CONT'D.

PANEL	D2 BARS (LAP WITH VB1 BARS)						H1 BARS #4 @ 12" SPA			VF1 BARS @ 12" SPA			VB1 BARS				E1 BARS #7@6		E2 BARS #7@12	
	SIZE	QTY.	SPA. (IN)	X	Y	LEN.	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	SPACING (IN)	LEN. (AVG.)	EPOXY BARS		EPOXY BARS	
																	QTY.	LEN.	QTY.	LEN.
B-1	# 5	21	12	1'-8"	3'-3"	-	# 4	8	22'-5"	-	-	-	-	-	-	-	41	7'-8"	21	7'-8"
B-2	# 5	11	12	1'-8"	3'-11"	-	# 4	10	9'-8"	-	-	-	-	-	-	-	21	7'-8"	11	7'-8"
B-3	# 5	21	12	2'-0"	4'-3"	-	# 4	10	22'-5"	-	-	-	-	-	-	-	41	7'-8"	21	7'-8"
B-4	# 5	21	12	2'-0"	4'-9"	-	# 4	10	22'-5"	-	-	-	-	-	-	-	41	7'-8"	21	7'-8"
B-5	# 5	21	12	2'-0"	5'-2"	-	# 4	12	19'-8"	-	-	-	-	-	-	-	41	7'-8"	21	7'-8"
B-6	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	12	22'-5"	# 4	21	4'-5"	# 7	21	12	4'-5"	41	7'-8"	21	7'-8"
B-7	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-8	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	12	19'-8"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-9	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-8"	# 7	21	12	4'-8"	41	7'-8"	21	7'-8"
B-10	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-11	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	12	19'-8"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-12	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	12	22'-5"	# 4	21	4'-6"	# 7	21	12	4'-6"	41	7'-8"	21	7'-8"
B-13	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-14	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	19'-8"	# 4	21	4'-7"	# 7	21	12	4'-7"	41	7'-8"	21	7'-8"
B-15	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-9"	# 7	21	12	4'-9"	41	7'-8"	21	7'-8"
B-16	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	4'-11"	# 7	21	12	4'-11"	41	7'-8"	21	7'-8"
B-17	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	19'-8"	# 4	21	5'-1"	# 7	21	12	5'-1"	41	7'-8"	21	7'-8"
B-18	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	14	22'-5"	# 4	21	5'-4"	# 7	21	12	5'-4"	41	7'-8"	21	7'-8"
B-19	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	16	22'-5"	# 4	21	5'-7"	# 7	21	12	5'-7"	41	7'-8"	21	7'-8"
B-20	# 7	21	12	2'-4"	5'-0"	7'-4"	# 4	16	19'-8"	# 4	21	5'-10"	# 7	21	12	5'-10"	41	7'-8"	21	7'-8"
B-21	# 7	21	12	2'-6"	5'-2"	7'-8"	# 4	18	22'-5"	# 4	21	6'-8"	# 7	21	12	6'-8"	41	7'-8"	21	7'-8"
B-22	# 7	21	12	2'-6"	5'-2"	7'-8"	# 4	18	22'-5"	# 4	21	7'-0"	# 7	21	12	7'-0"	41	7'-8"	21	7'-8"
B-23	# 7	21	12	2'-6"	5'-2"	7'-8"	# 4	22	19'-8"	# 4	21	8'-4"	# 7	21	12	8'-4"	41	7'-8"	21	7'-8"
B-24	# 7	41	6	2'-6"	5'-2"	7'-8"	# 4	24	22'-5"	# 4	21	9'-7"	# 7	41	6	9'-7"	41	7'-8"	21	7'-8"
B-25	# 7	33	6	2'-6"	5'-2"	7'-8"	# 4	24	18'-7"	# 4	17	10'-1"	# 7	33	6	10'-1"	33	7'-8"	17	7'-8"
B-26	# 7	47	6	2'-6"	5'-2"	7'-8"	# 4	26	22'-8"	# 4	24	10'-10"	# 7	47	6	10'-10"	47	7'-8"	24	7'-8"

NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA 10-26-2018

REINFORCING SCHEDULES (1)
WALLS "A" & "B"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	BOC	10/18
FIELD MGR	ZCM	7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER		9.20

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Sched-01.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
SHEET 222 OF 334 SHEETS

1/5/2021 3:31:43 PM P:\FDB\1650-TUL\CIV\313925_COT_Yale_81to91\20_DESGN\40_CAD\S\313925-S-Reinf_Sched-01.dgn

1/5/2021

3:32:16 PM

P:\FDB\1650-TUL\CIV\313925_COT_Yale_81to91\20_DESGN\40_CADD\S\313925-S-Reinf_Sched-02.dgn

REINFORCING SCHEDULE - WALL "C"

PANEL DIMENSIONS			F1 BARS @ 6" SPA			F2 BARS				F3 BARS @ 12" SPA			Z1 BARS #5 @ 12" SPA				D1 BARS (LAP WITH VF1 BARS)				
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	QTY.	X	Y	LEN.	SIZE	QTY.	X	Y	LEN.
C-1	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	1'-8"	8'-4"	# 6	21	4'-4"	5'-8"	10'-0"
C-2	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-1"	8'-9"	# 6	21	4'-4"	5'-8"	10'-0"
C-3	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-0"	8'-8"	# 6	21	4'-4"	5'-8"	10'-0"
C-4	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-5	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-7"	9'-3"	# 6	21	4'-4"	5'-8"	10'-0"
C-6	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-7	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	1'-3"	7'-11"	# 6	21	4'-4"	5'-8"	10'-0"
C-8	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-7"	9'-3"	# 6	21	4'-4"	5'-8"	10'-0"
C-9	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-10	1C	10.00	# 7	21	15'-6"	# 7	21	6	15'-6"	# 4	34	9'-8"	17	3'-4"	1'-1"	7'-9"	# 4	11	2'-0"	3'-2"	5'-2"
C-11	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-12	1C	10.00	# 7	21	15'-6"	# 7	21	6	15'-6"	# 4	34	9'-8"	-	-	-	-	# 4	11	2'-0"	3'-2"	5'-2"
C-13	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-14	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-15	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"
C-16	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-17	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-18	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"
C-19	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	0'-0"	6'-8"	# 6	21	4'-4"	5'-8"	10'-0"
C-20	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	0'-7"	7'-3"	# 6	21	4'-4"	5'-8"	10'-0"
C-21	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-22	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	0'-0"	6'-8"	# 6	21	4'-4"	5'-8"	10'-0"
C-23	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	0'-5"	7'-1"	# 6	21	4'-4"	5'-8"	10'-0"
C-24	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-25	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	1'-6"	8'-2"	# 6	21	4'-4"	5'-8"	10'-0"
C-26	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	1'-6"	8'-2"	# 6	21	4'-4"	5'-8"	10'-0"
C-27	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-28	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-7"	9'-3"	# 6	21	4'-4"	5'-8"	10'-0"
C-29	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	24	3'-4"	2'-7"	9'-3"	# 6	21	4'-4"	5'-8"	10'-0"
C-30	1D	20.00	# 9	41	23'-0"	# 9	21	12	23'-0"	# 6	48	19'-8"	-	-	-	-	# 6	21	4'-4"	5'-8"	10'-0"
C-31	1C	17.43	# 7	36	15'-6"	# 7	36	6	15'-6"	# 4	34	17'-1"	17	3'-4"	1'-6"	8'-2"	# 4	19	2'-0"	3'-2"	5'-2"
C-32	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	17	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
C-33	1C	20.00	# 7	41	15'-6"	# 7	41	6	15'-6"	# 4	34	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"

REINFORCING SCHEDULE - WALL "C" CONT'D.

PANEL	D2 BARS (LAP WITH VB1 BARS)						H1 BARS #4 @ 12" SPA		H2 BARS #6 @ 12" SPA		VF1 BARS @ 12" SPA			VB1 BARS @ 6" SPA						E1 BARS #7@6		E2 BARS #7@12	
	SIZE	QTY.	X	Y	Z	LEN. (AVG.)	QTY.	AVG. LEN.	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	Y1 (AVG.)	Y2	Z	LEN. (AVG.)	EPOXY BARS QTY.	EPOXY BARS LEN.	EPOXY BARS QTY.	EPOXY BARS LEN.
C-1	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	22'-5"	26	23'-10"	# 6	21	13'-9"	# 9	41	1'-11"	11'-10"	1'-6"	13'-10"	41	7'-8"	21	7'-8"
C-2	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	22'-5"	26	23'-10"	# 6	21	13'-8"	# 9	41	1'-10"	11'-10"	1'-6"	13'-9"	41	7'-8"	21	7'-8"
C-3	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	22'-5"	26	23'-10"	# 6	21	13'-3"	# 9	41	1'-5"	11'-10"	1'-6"	13'-4"	41	7'-8"	21	7'-8"
C-4	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	19'-8"	26	19'-8"	# 6	21	13'-0"	# 9	41	1'-2"	11'-10"	1'-6"	13'-1"	41	7'-8"	21	7'-8"
C-5	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	8	22'-5"	26	23'-10"	# 6	21	14'-10"	# 9	41	3'-0"	11'-10"	1'-6"	14'-11"	41	7'-8"	21	7'-8"
C-6	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	8	19'-8"	26	19'-8"	# 6	21	14'-0"	# 9	41	2'-2"	11'-10"	1'-6"	14'-1"	41	7'-8"	21	7'-8"
C-7	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	22'-5"	26	23'-10"	# 6	21	13'-7"	# 9	41	1'-9"	11'-10"	1'-6"	13'-8"	41	7'-8"	21	7'-8"
C-8	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	8	22'-5"	26	23'-10"	# 6	21	14'-1"	# 9	41	2'-3"	11'-10"	1'-6"	14'-2"	41	7'-8"	21	7'-8"
C-9	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	6	19'-8"	26	19'-8"	# 6	21	13'-3"	# 9	41	1'-5"	11'-10"	1'-6"	13'-4"	41	7'-8"	21	7'-8"
C-10	# 7	21	2'-6"	5'-2"	0'-0"	7'-8"	30	12'-5"	-	12'-5"	# 4	11	12'-9"	# 7	21	12'-9"	-	-	12'-9"	21	7'-8"	11	7'-8"
C-11	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	13'-0"	# 7	41	13'-0"	-	-	13'-0"	41	7'-8"	21	7'-8"
C-12	# 7	21	2'-6"	5'-2"	0'-0"	7'-8"	30	9'-8"	-	9'-8"	# 4	11	13'-3"	# 7	21	13'-3"	-	-	13'-3"	21	7'-8"	11	7'-8"
C-13	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	12'-5"	# 7	41	12'-5"	-	-	12'-5"	41	7'-8"	21	7'-8"
C-14	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	12'-9"	# 7	41	12'-9"	-	-	12'-9"	41	7'-8"	21	7'-8"
C-15	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	19'-8"	-	19'-8"	# 4	21	13'-1"	# 7	41	13'-1"	-	-	13'-1"	41	7'-8"	21	7'-8"
C-16	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	12'-7"	# 7	41	12'-7"	-	-	12'-7"	41	7'-8"	21	7'-8"
C-17	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	12'-10"	# 7	41	12'-10"	-	-	12'-10"	41	7'-8"	21	7'-8"
C-18	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	19'-8"	-	19'-8"	# 4	21	13'-2"	# 7	41	13'-2"	-	-	13'-2"	41	7'-8"	21	7'-8"
C-19	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	8	22'-5"	26	23'-10"	# 6	21	14'-7"	# 9	41	2'-9"	11'-10"	1'-6"	14'-8"	41	7'-8"	21	7'-8"
C-20	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	10	22'-5"	26	23'-10"	# 6	21	16'-1"	# 9	41	4'-3"	11'-10"	1'-6"	16'-2"	41	7'-8"	21	7'-8"
C-21	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	12	19'-8"	26	19'-8"	# 6	21	16'-10"	# 9	41	5'-0"	11'-10"	1'-6"	16'-11"	41	7'-8"	21	7'-8"
C-22	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	16	22'-5"	26	23'-10"	# 6	21	18'-2"	# 9	41	6'-4"	11'-10"	1'-6"	18'-3"	41	7'-8"	21	7'-8"
C-23	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	18	22'-5"	26	23'-10"	# 6	21	19'-6"	# 9	41	7'-8"	11'-10"	1'-6"	19'-7"	41	7'-8"	21	7'-8"
C-24	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	20	19'-8"	26	19'-8"	# 6	21	20'-5"	# 9	41	8'-7"	11'-10"	1'-6"	20'-6"	41	7'-8"	21	7'-8"
C-25	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	20	22'-5"	26	23'-10"	# 6	21	21'-0"	# 9	41	9'-2"	11'-10"	1'-6"	21'-1"	41	7'-8"	21	7'-8"
C-26	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	20	22'-5"	26	23'-10"	# 6	21	20'-8"	# 9	41	8'-10"	11'-10"	1'-6"	20'-9"	41	7'-8"	21	7'-8"
C-27	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	20	19'-8"	26	19'-8"	# 6	21	20'-4"	# 9	41	8'-6"	11'-10"	1'-6"	20'-5"	41	7'-8"	21	7'-8"
C-28	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	16	22'-5"	26	23'-10"	# 6	21	18'-9"	# 9	41	6'-11"	11'-10"	1'-6"	18'-10"	41	7'-8"	21	7'-8"
C-29	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	12	22'-5"	26	23'-10"	# 6	21	17'-2"	# 9	41	5'-4"	11'-10"	1'-6"	17'-3"	41	7'-8"	21	7'-8"
C-30	# 9	41	5'-3"	9'-1"	1'-1"	15'-5"	10	19'-8"	26	19'-8"	# 6	21	15'-7"	# 9	41	3'-9"	11'-10"	1'-6"	15'-8"	41	7'-8"	21	7'-8"
C-31	# 7	36	2'-6"	5'-2"	0'-0"	7'-8"	32	19'-10"	-	19'-10"	# 4	19	13'-11"	# 7	36	13'-11"	-	-	13'-11"	36	7'-8"	19	7'-8"
C-32	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	-	22'-5"	# 4	21	13'-4"	# 7	41	13'-4"	-	-	13'-4"	41	7'-8"	21	7'-8"
C-33	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	19'-8"	-	19'-8"	# 4	21	13'-1"	# 7	41	13'-1"	-	-	13'-1"	41	7'-8"	21	7'-8"

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-5-2018

REINFORCING SCHEDULES (2)
WALL "C"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		12/18
FIELD MGR		7/20
LEAD ENGR		1/7
RECOMMENDED: DESIGN MANAGER		9.20

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Sched-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 223 OF 334 SHEETS

REINFORCING SCHEDULE - WALL "D"

PANEL DIMENSIONS			DRILLED SHAFT BARS						FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#7@9")	
			DS1			CD1 #5		DT1														
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	EPOXY COATED				EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED	
									QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
D-1	3A	18.75	# 9	8	16'-6"	4	4'-4"	170'-6"	52	0'-10"	5'-1"	6'-0"	26	10'-3"	14	21'-2"	8	20'-8"	40	6'-0"	52	5'-11"
D-2	3A	20.00	# 9	8	17'-6"	4	4'-4"	179'-12"	54	0'-10"	6'-1"	7'-0"	27	11'-0"	16	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
D-3	3A	20.00	# 9	8	22'-6"	4	4'-4"	227'-5"	54	0'-10"	7'-2"	8'-0"	27	11'-0"	20	19'-8"	8	19'-8"	42	6'-0"	54	5'-11"
D-4	3A	20.00	# 9	8	23'-6"	4	4'-4"	236'-10"	54	0'-10"	8'-2"	9'-0"	27	11'-0"	22	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
D-5	3B	21.50	# 10	22	29'-6"	4	4'-4"	394'-5"	58	0'-10"	4'-2"	5'-0"	29	11'-0"	24	23'-11"	10	23'-5"	46	7'-0"	58	5'-11"
D-6	3B	22.00	# 10	22	30'-6"	4	4'-4"	407'-0"	60	0'-10"	4'-8"	6'-0"	30	11'-0"	26	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
D-7	3B	22.00	# 10	22	30'-6"	4	4'-4"	407'-0"	60	0'-10"	5'-5"	6'-0"	30	11'-0"	28	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-8	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	6'-6"	7'-0"	30	11'-0"	30	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-9	3B	22.00	# 10	22	33'-6"	4	4'-4"	444'-10"	60	0'-10"	7'-7"	8'-0"	30	11'-0"	34	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
D-10	3B	22.00	# 10	22	33'-6"	4	4'-4"	444'-10"	60	0'-10"	8'-7"	9'-0"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-11	3B	22.00	# 10	22	34'-6"	4	4'-4"	457'-5"	60	0'-10"	9'-1"	10'-0"	30	11'-0"	38	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-12	3B	22.00	# 10	22	34'-6"	4	4'-4"	457'-5"	60	0'-10"	9'-2"	10'-0"	30	11'-0"	38	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
D-13	3B	22.00	# 10	22	34'-6"	4	4'-4"	457'-5"	60	0'-10"	8'-11"	10'-0"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-14	3B	22.00	# 10	22	33'-6"	4	4'-4"	444'-10"	60	0'-10"	8'-2"	9'-0"	30	11'-0"	34	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-15	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	7'-1"	8'-0"	30	11'-0"	32	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
D-16	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	5'-11"	7'-0"	30	11'-0"	28	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-17	3B	22.00	# 10	22	29'-6"	4	4'-4"	394'-5"	60	0'-10"	4'-6"	5'-0"	30	11'-0"	24	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
D-18	3B	22.00	# 10	22	28'-6"	4	4'-4"	381'-9"	60	0'-10"	3'-0"	4'-0"	30	11'-0"	20	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
D-19	3A	20.00	# 9	8	17'-6"	4	4'-4"	179'-12"	54	0'-10"	6'-0"	7'-0"	27	11'-0"	16	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
D-20	3A	20.00	# 9	8	15'-6"	4	4'-4"	161'-0"	54	0'-10"	4'-3"	5'-0"	27	8'-6"	12	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
D-21	3A	20.00	# 9	8	14'-6"	4	4'-4"	151'-7"	54	0'-10"	2'-6"	3'-0"	27	5'-0"	6	19'-8"	8	19'-8"	42	6'-0"	54	5'-11"
D-22	3A	14.11	# 9	8	11'-6"	4	4'-4"	123'-2"	--	--	--	--	--	--	--	--	8	13'-9"	32	6'-0"	38	5'-11"

REINFORCING SCHEDULE - WALL "E"

PANEL DIMENSIONS			F1 BARS				F2 BARS @ 12" SPA			F3 BARS @ 12" SPA			Z1 BARS #5 @ 12" SPA				D1 BARS (LAP WITH VF1 BARS)				
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	QTY.	X	Y	LEN.	SIZE	QTY.	X	Y	LEN.
E-1	1B	20.00	# 7	21	12	10'-10"	# 7	21	10'-10"	# 4	24	19'-8"	12	3'-4"	0'-11"	7'-7"	# 4	21	1'-10"	3'-0"	4'-10"
E-2	1B	20.00	# 7	21	12	10'-10"	# 7	21	10'-10"	# 4	24	19'-8"	12	3'-4"	0'-8"	7'-4"	# 4	21	1'-10"	3'-0"	4'-10"
E-3	1B	20.00	# 7	21	12	10'-10"	# 7	21	10'-10"	# 4	24	19'-8"	-	-	-	-	# 4	21	1'-10"	3'-0"	4'-10"
E-4	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	15	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
E-5	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	15	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
E-6	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"
E-7	1CA	14.90	# 7	31	6	13'-6"	# 7	31	13'-6"	# 4	30	14'-7"	15	3'-4"	1'-1"	7'-9"	# 4	16	2'-0"	3'-2"	5'-2"
E-8	1CA	15.96	# 7	33	6	13'-6"	# 7	33	13'-6"	# 4	30	15'-8"	15	3'-4"	1'-1"	7'-9"	# 4	17	2'-0"	3'-2"	5'-2"
E-9	1CA	15.96	# 7	33	6	13'-6"	# 7	33	13'-6"	# 4	30	15'-8"	-	-	-	-	# 4	17	2'-0"	3'-2"	5'-2"
E-10	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	15	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
E-11	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	15	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
E-12	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"
E-13	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	15	3'-4"	1'-1"	7'-9"	# 4	21	2'-0"	3'-2"	5'-2"
E-14	1CA	20.00	# 7	41	6	13'-6"	# 7	41	13'-6"	# 4	30	19'-8"	-	-	-	-	# 4	21	2'-0"	3'-2"	5'-2"

REINFORCING SCHEDULE - WALL "E" CONT'D.

PANEL	D2 BARS (LAP WITH VB1 BARS)						H1 BARS #4 @ 12" SPA		VF1 BARS @ 12" SPA			VB1 BARS @ 6" SPA				E1 BARS #7@6		E2 BARS #7@12	
	SIZE	QTY.	X	Y	Z	LEN. (AVG.)	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	SPACING (IN)	AVG. Y1	EPOXY BARS		EPOXY BARS	
																QTY.	LEN.	QTY.	LEN.
E-1	# 7	21	2'-4"	5'-0"	0'-0"	7'-4"	20	22'-5"	# 4	21	8'-1"	# 7	21	12	8'-1"	41	7'-8"	21	7'-8"
E-2	# 7	21	2'-4"	5'-0"	0'-0"	7'-4"	20	22'-5"	# 4	21	8'-6"	# 7	21	12	8'-6"	41	7'-8"	21	7'-8"
E-3	# 7	21	2'-4"	5'-0"	0'-0"	7'-4"	20	19'-8"	# 4	21	8'-7"	# 7	21	12	8'-7"	41	7'-8"	21	7'-8"
E-4	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	22	22'-5"	# 4	21	9'-8"	# 7	41	6	9'-8"	41	7'-8"	21	7'-8"
E-5	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	24	22'-5"	# 4	21	9'-11"	# 7	41	6	9'-11"	41	7'-8"	21	7'-8"
E-6	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	24	19'-8"	# 4	21	10'-2"	# 7	41	6	10'-2"	41	7'-8"	21	7'-8"
E-7	# 7	31	2'-6"	5'-2"	0'-0"	7'-8"	26	17'-4"	# 4	16	11'-4"	# 7	31	6	11'-4"	31	7'-8"	16	7'-8"
E-8	# 7	33	2'-6"	5'-2"	0'-0"	7'-8"	28	18'-5"	# 4	17	11'-9"	# 7	33	6	11'-9"	33	7'-8"	17	7'-8"
E-9	# 7	33	2'-6"	5'-2"	0'-0"	7'-8"	28	15'-8"	# 4	17	12'-0"	# 7	33	6	12'-0"	33	7'-8"	17	7'-8"
E-10	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	# 4	21	12'-8"	# 7	41	6	12'-8"	41	7'-8"	21	7'-8"
E-11	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	# 4	21	12'-7"	# 7	41	6	12'-7"	41	7'-8"	21	7'-8"
E-12	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	19'-8"	# 4	21	12'-6"	# 7	41	6	12'-6"	41	7'-8"	21	7'-8"
E-13	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	22'-5"	# 4	21	13'-0"	# 7	41	6	13'-0"	41	7'-8"	21	7'-8"
E-14	# 7	41	2'-6"	5'-2"	0'-0"	7'-8"	30	19'-8"	# 4	21	12'-9"	# 7	41	6	12'-9"	41	7'-8"	21	7'-8"

NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10-31-2018

REINFORCING SCHEDULES (3)
WALLS "D" & "E"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	DJP	12/20
	FIELD MGR		12/20
	LEAD ENGR		11/20
VERTICAL: 1"= NA	RECOMMENDED		12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-S-Reinf_Sched-03.dgn

DATE: OCTOBER 2018

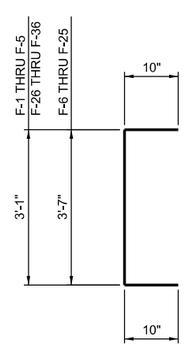
ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 224 OF 334 SHEETS

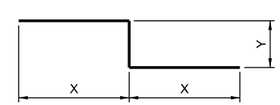
1/5/2021 3:32:47 PM P:\FDB11650-TULCIV\313925_COT_Yale_81to91\20_DESGN\40_CAD\S\313925-S-Reinf_Sched-03.dgn

REINFORCING SCHEDULE - WALL "F"

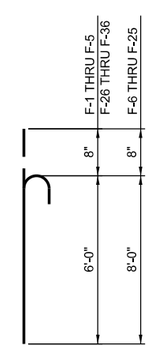
PANEL DIMENSIONS			F1				F2				F3				F4 BARS (#5 @ 12)		Z1 (LAP WITH F2)						Z2 (LAP WITH F3)					
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	LEN.	SIZE	QTY.	SPA. (IN)	LEN.	SIZE	QTY.	SPA. (IN)	LEN.	QTY.	LEN.	SIZE	QTY.	SPA. (IN)	X	Y	LEN.	SIZE	QTY.	SPA. (IN)	X	Y	LEN.
F-1	4B	22.00	#6	23	12	6'-8"	#6	11	12	21'-8"	#6	7	12	21'-8"	23	4'-9"	#6	7	12	3'-5"	5'-8"	12'-6"	#6	7	12	2'-6"	5'-8"	10'-8"
F-2	4B	21.00	#6	22	12	6'-8"	#6	11	12	20'-8"	#6	7	12	20'-8"	22	4'-9"	#6	7	12	3'-5"	5'-5"	12'-3"	#6	7	12	2'-6"	5'-5"	10'-5"
F-3	4B	24.00	#6	25	12	6'-8"	#6	11	12	23'-8"	#6	7	12	23'-8"	25	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-4	4B	24.00	#6	25	12	6'-8"	#6	11	12	23'-8"	#6	7	12	23'-8"	25	4'-9"	#6	9	12	3'-5"	2'-10"	9'-8"	#6	9	12	2'-6"	2'-10"	7'-10"
F-5	4B	22.00	#6	23	12	8'-8"	#6	13	12	21'-8"	#6	9	12	21'-8"	23	4'-9"	-	-	-	-	-	-	#6	9	12	2'-6"	3'-2"	8'-2"
F-6	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	13	12	3'-5"	2'-7"	9'-5"	-	-	-	-	-	-
F-7	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	1'-6"	8'-4"	#6	9	12	2'-6"	1'-6"	6'-6"
F-8	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	1'-6"	8'-4"	#6	9	12	2'-6"	1'-6"	6'-6"
F-9	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	-	-	-	-	-	-	#6	-	-	-	-	-
F-10	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	1'-5"	8'-3"	#6	9	12	2'-6"	1'-5"	6'-5"
F-11	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	2'-0"	8'-10"	#6	9	12	2'-6"	2'-0"	7'-0"
F-12	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	13	12	3'-5"	2'-10"	9'-8"	-	-	-	-	-	-
F-13	4C	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	-	-	-	-	-	-	#6	9	12	2'-6"	2'-6"	7'-6"
F-14	4D	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	2'-4"	9'-2"	#6	9	12	2'-6"	2'-4"	7'-4"
F-15	4D	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	#6	9	12	3'-5"	1'-7"	8'-5"	#6	9	12	2'-6"	1'-7"	6'-7"
F-16	4D	16.00	#6	17	12	8'-8"	#6	13	12	15'-8"	#6	9	12	15'-8"	17	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-17	4D	24.00	#6	25	12	8'-8"	#6	13	12	27'-1"	#6	9	12	26'-2"	25	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-18	4D	24.00	#6	25	12	8'-8"	#6	13	12	23'-8"	#6	9	12	23'-8"	25	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-19	4D	32.00	#6	33	12	8'-8"	#6	13	12	35'-1"	#6	9	12	34'-2"	33	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-20	4D	32.00	#6	33	12	8'-8"	#6	13	12	31'-8"	#6	9	12	31'-8"	33	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-21	4D	19.89	#6	21	12	8'-8"	#6	13	12	23'-0"	#6	9	12	22'-1"	21	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-22	4C	20.11	#6	21	12	8'-8"	#6	13	12	23'-2"	#6	9	12	22'-3"	21	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-23	4C	32.00	#6	33	12	8'-8"	#6	13	12	31'-8"	#6	9	12	31'-8"	33	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-24	4C	20.00	#6	21	12	8'-8"	#6	13	12	23'-1"	#6	9	12	22'-2"	21	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-25	4C	20.00	#6	21	12	8'-8"	#6	13	12	23'-1"	#6	9	12	22'-2"	21	5'-3"	-	-	-	-	-	-	-	-	-	-	-	-
F-26	4B	22.50	#6	24	12	6'-8"	#6	11	12	22'-2"	#6	7	12	22'-2"	24	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-27	4B	19.50	#6	21	12	6'-8"	#6	11	12	22'-7"	#6	7	12	21'-8"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-28	4B	20.00	#6	21	12	6'-8"	#6	11	12	23'-1"	#6	7	12	22'-2"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-29	4B	20.00	#6	21	12	6'-8"	#6	11	12	23'-1"	#6	7	12	22'-2"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-30	4A	14.00	#6	15	12	6'-8"	#6	11	12	13'-8"	#6	7	12	13'-8"	15	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-31	4A	20.00	#6	21	12	6'-8"	#6	11	12	23'-1"	#6	7	12	22'-2"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-32	4A	20.00	#6	21	12	6'-8"	#6	11	12	23'-1"	#6	7	12	22'-2"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-33	4A	20.00	#6	21	12	6'-8"	#6	11	12	19'-8"	#6	7	12	19'-8"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-34	4A	20.00	#6	21	12	6'-8"	#6	11	12	23'-1"	#6	7	12	22'-2"	21	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-
F-35	4A	28.00	#6	29	12	6'-8"	#6	11	12	27'-8"	#6	7	12	27'-8"	29	4'-9"	#6	7	12	3'-5"	1'-4"	8'-2"	-	7	12	2'-6"	1'-4"	6'-4"
F-36	4A	17.67	#6	19	12	6'-8"	#6	11	12	17'-4"	#6	7	12	17'-4"	19	4'-9"	-	-	-	-	-	-	-	-	-	-	-	-



F4 #5



Z1 #6
Z2 #6



F1 #6

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA
10/5/2018

REINFORCING SCHEDULES (4)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE: HORIZONTAL: 1"= NA	PROJECT MGR	BJC	10/18	
	FIELD MGR	Z.T.W.	7/20	
VERTICAL: 1"= NA	LEAD ENGR	DJ	1/19	
	RECOMMENDED DESIGN MANAGER	HBS	9-20	CITY ENGINEER
FILE: 313925-S-Reinf_Sched-04.dgn			DATE: OCTOBER 2018	
ATLAS PAGE NO.: 882, 883, 1005, 1006			SHEET 225 OF 334 SHEETS	

1/5/2021
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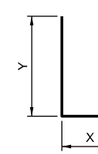
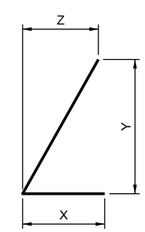
REINFORCING SCHEDULE - WALL "F", (cont.)

PANEL DIMENSIONS			D1 BARS (LAP WITH VF1 BARS)						D2 BARS (LAP WITH VB1 BARS)							H1 BARS (#5 @ 12)		H2 BARS				VF1 BARS						E1 BARS (#7 @ 6) EPOXY COATED REINFORCING		E2 BARS (#7 @ 12) EPOXY COATED REINFORCING	
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	X	Y	LEN.	SIZE	QTY.	SPA. (IN)	X	Y	Z	LEN.	QTY.	LEN.	SIZE	SPACING (IN)	QTY.	LEN.	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	LEN. VAR. BEGIN	LEN. VAR. END	QTY.	LEN.	QTY.	LEN.
F-1	4B	22.00	#6	23	12	4'-0"	5'-8"	9'-8"	#9	45	6	4'-1"	9'-7"	-	13'-8"	26	24'-5"	-	-	-	-	#6	23	12	12'-11"	13'-5"	12'-5"	45	7'-8"	23	7'-8"
F-2	4B	21.00	#6	22	12	4'-0"	5'-8"	9'-8"	#9	43	6	4'-1"	9'-7"	-	13'-8"	30	23'-5"	-	-	-	-	#6	22	12	14'-4"	14'-10"	13'-10"	43	7'-8"	22	7'-8"
F-3	4B	24.00	#6	25	12	4'-0"	5'-8"	9'-8"	#9	49	6	4'-1"	9'-7"	-	13'-8"	34	23'-8"	-	-	-	-	#6	25	12	15'-8"	16'-8"	14'-8"	49	7'-8"	25	7'-8"
F-4	4B	24.00	#6	25	12	4'-0"	5'-8"	9'-8"	#9	49	6	4'-1"	9'-7"	-	13'-8"	34	26'-5"	-	-	-	-	#6	25	12	16'-4"	17'-4"	15'-3"	49	7'-8"	25	7'-8"
F-5	4B	22.00	#6	23	12	6'-0"	5'-8"	11'-8"	#9	45	6	4'-1"	9'-7"	-	13'-8"	36	21'-8"	-	-	-	-	#6	23	12	17'-7"	18'-1"	17'-0"	45	7'-8"	23	7'-8"
F-6	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	10'-0"	2'-0"	17'-0"	20	18'-5"	#6	12	22	15'-8"	#6	17	12	18'-7"	19'-8"	17'-6"	33	7'-8"	17	7'-8"
F-7	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	10'-0"	2'-0"	17'-0"	22	18'-5"	#6	12	22	19'-1"	#6	17	12	19'-7"	20'-1"	19'-0"	33	7'-8"	17	7'-8"
F-8	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	10'-0"	2'-0"	17'-0"	24	18'-5"	#6	12	22	19'-1"	#6	17	12	20'-0"	20'-6"	19'-6"	33	7'-8"	17	7'-8"
F-9	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	10'-0"	2'-0"	17'-0"	24	15'-8"	#6	12	22	15'-8"	#6	17	12	20'-5"	20'-11"	19'-11"	33	7'-8"	17	7'-8"
F-10	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	10'-0"	2'-0"	17'-0"	24	18'-5"	#6	12	22	19'-1"	#6	17	12	20'-10"	21'-4"	20'-4"	33	7'-8"	17	7'-8"
F-11	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	11'-11"	2'-5"	19'-0"	24	18'-5"	#6	12	22	19'-1"	#6	17	12	20'-9"	21'-9"	19'-8"	33	7'-8"	17	7'-8"
F-12	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	11'-11"	2'-5"	19'-0"	26	18'-5"	#6	12	22	15'-8"	#6	17	12	21'-1"	21'-7"	20'-7"	33	7'-8"	17	7'-8"
F-13	4C	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#9	33	6	6'-10"	11'-11"	2'-5"	19'-0"	30	15'-8"	#6	12	22	19'-1"	#6	17	12	22'-11"	23'-5"	22'-4"	33	7'-8"	17	7'-8"
F-14	4D	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#11	33	6	6'-10"	11'-11"	2'-5"	19'-0"	32	18'-5"	#6	12	22	19'-1"	#6	17	12	24'-4"	24'-10"	23'-9"	33	7'-8"	17	7'-8"
F-15	4D	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#11	33	6	6'-10"	11'-11"	2'-5"	19'-0"	34	18'-5"	#6	12	22	19'-1"	#6	17	12	25'-1"	26'-2"	24'-0"	33	7'-8"	17	7'-8"
F-16	4D	16.00	#6	17	12	6'-0"	6'-2"	12'-2"	#11	33	6	6'-10"	11'-11"	2'-5"	19'-0"	34	15'-8"	#6	12	22	15'-8"	#6	17	12	25'-1"	25'-7"	24'-7"	33	7'-8"	17	7'-8"
F-17	4D	24.00	#6	25	12	6'-0"	6'-2"	12'-2"	#11	49	6	6'-10"	11'-11"	2'-5"	19'-0"	36	26'-5"	#6	12	22	27'-1"	#6	25	12	25'-11"	26'-11"	24'-10"	49	7'-8"	25	7'-8"
F-18	4D	24.00	#6	25	12	6'-0"	6'-2"	12'-2"	#11	49	6	6'-10"	11'-11"	2'-5"	19'-0"	32	23'-8"	#6	12	22	23'-8"	#6	25	12	24'-5"	24'-10"	23'-11"	49	7'-8"	25	7'-8"
F-19	4D	32.00	#6	33	12	6'-0"	6'-2"	12'-2"	#11	65	6	6'-10"	11'-11"	2'-5"	19'-0"	34	34'-5"	#6	12	22	35'-1"	#6	33	12	25'-8"	27'-1"	24'-3"	65	7'-8"	33	7'-8"
F-20	4D	32.00	#6	33	12	6'-0"	6'-2"	12'-2"	#11	65	6	6'-10"	11'-11"	2'-5"	19'-0"	30	31'-8"	#6	12	22	31'-8"	#6	33	12	23'-4"	24'-3"	22'-5"	65	7'-8"	33	7'-8"
F-21	4D	19.89	#6	21	12	6'-0"	6'-2"	12'-2"	#9	41	6	6'-10"	11'-11"	2'-5"	19'-0"	28	19'-7"	#6	12	22	19'-7"	#6	21	12	22'-3"	23'-2"	21'-4"	41	7'-8"	21	7'-8"
F-22	4C	20.11	#6	21	12	6'-0"	6'-2"	12'-2"	#9	41	6	6'-10"	10'-0"	2'-0"	17'-0"	26	22'-6"	#6	12	22	23'-2"	#6	21	12	20'-11"	21'-4"	20'-5"	41	7'-8"	21	7'-8"
F-23	4C	32.00	#6	33	12	6'-0"	6'-2"	12'-2"	#9	65	6	6'-10"	10'-0"	2'-0"	17'-0"	22	31'-8"	#6	12	22	31'-8"	#6	33	12	19'-0"	20'-5"	17'-7"	65	7'-8"	33	7'-8"
F-24	4C	20.00	#6	21	12	6'-0"	6'-2"	12'-2"	#9	41	6	6'-10"	10'-0"	2'-0"	17'-0"	20	22'-5"	#6	12	22	23'-1"	#6	21	12	18'-2"	18'-8"	17'-8"	41	7'-8"	21	7'-8"
F-25	4C	20.00	#6	21	12	6'-0"	6'-2"	12'-2"	#9	41	6	6'-10"	10'-0"	2'-0"	17'-0"	16	19'-8"	#6	12	22	19'-8"	#6	21	12	16'-9"	17'-8"	15'-10"	41	7'-8"	21	7'-8"
F-26	4B	22.50	#6	24	12	4'-0"	5'-8"	9'-8"	#9	46	6	4'-1"	9'-7"	-	13'-8"	32	24'-11"	-	-	-	-	#6	24	12	15'-5"	15'-10"	15'-0"	46	7'-8"	24	7'-8"
F-27	4B	19.50	#6	21	12	4'-0"	5'-8"	9'-8"	#9	40	6	4'-1"	9'-7"	-	13'-8"	30	21'-11"	-	-	-	-	#6	21	12	14'-1"	15'-0"	13'-1"	40	7'-8"	21	7'-8"
F-28	4B	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#9	41	6	4'-1"	9'-7"	-	13'-8"	26	22'-5"	-	-	-	-	#6	21	12	12'-7"	13'-1"	12'-1"	41	7'-8"	21	7'-8"
F-29	4B	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#9	41	6	4'-1"	9'-7"	-	13'-8"	24	19'-8"	-	-	-	-	#6	21	12	11'-2"	12'-1"	10'-3"	41	7'-8"	21	7'-8"
F-30	4A	14.00	#6	15	12	4'-0"	5'-8"	9'-8"	#6	29	6	4'-1"	5'-9"	-	9'-10"	20	16'-5"	-	-	-	-	#6	15	12	9'-9"	10'-3"	9'-3"	29	7'-8"	15	7'-8"
F-31	4A	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#6	41	6	4'-1"	5'-9"	-	9'-10"	24	22'-5"	-	-	-	-	#6	21	12	10'-11"	11'-10"	9'-11"	41	7'-8"	21	7'-8"
F-32	4A	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#6	41	6	4'-1"	5'-9"	-	9'-10"	20	22'-5"	-	-	-	-	#6	21	12	9'-6"	9'-11"	9'-0"	41	7'-8"	21	7'-8"
F-33	4A	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#6	41	6	4'-1"	5'-9"	-	9'-10"	18	19'-8"	-	-	-	-	#6	21	12	8'-2"	9'-0"	7'-3"	41	7'-8"	21	7'-8"
F-34	4A	20.00	#6	21	12	4'-0"	5'-8"	9'-8"	#6	41	6	4'-1"	5'-9"	-	9'-10"	20	22'-5"	-	-	-	-	#6	21	12	9'-5"	9'-10"	9'-0"	41	7'-8"	21	7'-8"
F-35	4A	28.00	#6	29	12	4'-0"	5'-8"	9'-8"	#6	57	6	4'-1"	5'-9"	-	9'-10"	18	30'-5"	-	-	-	-	#6	29	12	8'-2"	9'-0"	7'-3"	57	7'-8"	29	7'-8"
F-36	4A	17.67	#6	19	12	4'-0"	5'-8"	9'-8"	#6	36	6	4'-1"	5'-9"	-	9'-10"	18	17'-4"	-	-	-	-	#6	19	12	8'-2"	8'-7"	7'-9"	36	7'-8"	19	7'-8"



D1 #6



D2 #9

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA

10/31/18

REINFORCING SCHEDULES (5)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		12/18
FIELD MGR		7/20
LEAD ENGR		1/19
RECOMMENDED DESIGN MANAGER		9.20

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Sched-05.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 226 OF 334 SHEETS

1/5/2021 3:33:56 PM
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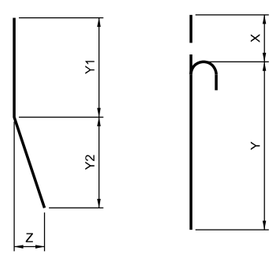
REINFORCING SCHEDULE - WALL "F", (cont.)

PANEL DIMENSIONS			VB1 BARS (LAP WITH D2 BARS)											DRILLED SHAFT BARS DS1 BARS					DT1	DRILLED SHAFT TYPE
												LEN. VAR.								
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	Y1 (AVG.)	Y2	Z	LEN. (AVG.)	Y1 BEGIN	Y1 END	BEGIN	END	SIZE	QTY. PER SHAFT	X (HOOK LEN.)	Y	LEN.	SPIRAL PER SHAFT	
F-1	4B	22.00	#6	45	6	13'-1"	-	-	13'-1"	13'-7"	12'-7"	13'-7"	12'-7"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-2	4B	21.00	#6	43	6	14'-6"	-	-	14'-6"	15'-0"	14'-0"	15'-0"	14'-0"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-3	4B	24.00	#6	49	6	15'-10"	-	-	15'-10"	16'-10"	14'-10"	16'-10"	14'-10"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-4	4B	24.00	#6	49	6	16'-6"	-	-	16'-6"	17'-6"	15'-5"	17'-6"	15'-5"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-5	4B	22.00	#7	45	6	17'-9"	4'-10"	-	22'-7"	18'-3"	17'-2"	23'-1"	22'-0"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-6	4C	16.00	#7	33	6	8'-9"	4'-10"	1'-0"	13'-8"	9'-10"	7'-8"	14'-9"	12'-7"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-7	4C	16.00	#7	33	6	9'-9"	4'-10"	1'-0"	14'-8"	10'-3"	9'-2"	15'-2"	14'-1"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-8	4C	16.00	#7	33	6	10'-2"	4'-10"	1'-0"	15'-1"	10'-8"	9'-8"	15'-7"	14'-7"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-9	4C	16.00	#7	33	6	10'-7"	4'-10"	1'-0"	15'-6"	11'-1"	10'-1"	16'-0"	15'-0"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-10	4C	16.00	#7	33	6	11'-0"	4'-10"	1'-0"	15'-11"	11'-6"	10'-6"	16'-5"	15'-5"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-11	4C	16.00	#7	33	6	10'-11"	4'-10"	1'-0"	15'-10"	11'-11"	9'-10"	16'-10"	14'-9"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-12	4C	16.00	#7	33	6	11'-3"	4'-10"	1'-0"	16'-2"	11'-9"	10'-9"	16'-8"	15'-8"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-13	4C	16.00	#7	33	6	13'-1"	4'-10"	1'-0"	18'-0"	13'-7"	12'-6"	18'-6"	17'-5"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-14	4D	16.00	#9	33	6	14'-6"	6'-9"	1'-4"	21'-5"	15'-0"	13'-11"	21'-11"	20'-10"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-15	4D	16.00	#9	33	6	15'-3"	6'-9"	1'-4"	22'-2"	16'-4"	14'-2"	23'-3"	21'-1"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-16	4D	16.00	#9	33	6	15'-3"	6'-9"	1'-4"	22'-2"	15'-9"	14'-9"	22'-8"	21'-8"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-17	4D	24.00	#9	49	6	16'-1"	6'-9"	1'-4"	23'-0"	17'-1"	15'-0"	24'-0"	21'-11"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-18	4D	24.00	#9	49	6	14'-7"	6'-9"	1'-4"	21'-6"	15'-0"	14'-1"	21'-11"	21'-0"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-19	4D	32.00	#9	65	6	15'-10"	6'-9"	1'-4"	22'-9"	17'-3"	14'-5"	24'-2"	21'-4"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-20	4D	32.00	#9	65	6	13'-6"	6'-9"	1'-4"	20'-5"	14'-5"	12'-7"	21'-4"	19'-6"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-21	4D	19.89	#7	41	6	12'-5"	4'-10"	1'-0"	17'-4"	13'-4"	11'-6"	18'-3"	16'-5"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4D
F-22	4C	20.11	#7	41	6	11'-1"	4'-10"	1'-0"	16'-0"	11'-6"	10'-7"	16'-5"	15'-6"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-23	4C	32.00	#7	65	6	9'-2"	4'-10"	1'-0"	14'-1"	10'-7"	7'-9"	15'-6"	12'-8"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-24	4C	20.00	#7	41	6	8'-4"	4'-10"	1'-0"	13'-3"	8'-10"	7'-10"	13'-9"	12'-9"	#11	36	1'-7"	33'-6"	35'-1"	785'-1"	4C
F-25	4C	20.00	#7	41	6	6'-11"	4'-10"	1'-0"	11'-10"	7'-10"	6'-0"	12'-9"	10'-11"	#11	36	1'-7"	33'-0"	34'-7"	785'-1"	4C
F-26	4B	22.50	#6	46	6	15'-7"	-	-	15'-7"	16'-0"	15'-2"	16'-0"	15'-2"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-27	4B	19.50	#6	40	6	14'-3"	-	-	14'-3"	15'-2"	13'-3"	15'-2"	13'-3"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-28	4B	20.00	#6	41	6	12'-9"	-	-	12'-9"	13'-3"	12'-3"	13'-3"	12'-3"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-29	4B	20.00	#6	41	6	11'-4"	-	-	11'-4"	12'-3"	10'-5"	12'-3"	10'-5"	#11	24	1'-7"	33'-0"	34'-7"	785'-1"	4B
F-30	4A	14.00	#6	29	6	9'-11"	-	-	9'-11"	10'-5"	9'-5"	10'-5"	9'-5"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-31	4A	20.00	#6	41	6	11'-1"	-	-	11'-1"	12'-0"	10'-1"	12'-0"	10'-1"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-32	4A	20.00	#6	41	6	9'-8"	-	-	9'-8"	10'-1"	9'-2"	10'-1"	9'-2"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-33	4A	20.00	#6	41	6	8'-4"	-	-	8'-4"	9'-2"	7'-5"	9'-2"	7'-5"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-34	4A	20.00	#6	41	6	9'-7"	-	-	9'-7"	10'-0"	9'-2"	10'-0"	9'-2"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-35	4A	28.00	#6	57	6	8'-4"	-	-	8'-4"	9'-2"	7'-5"	9'-2"	7'-5"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A
F-36	4A	17.67	#6	36	6	8'-4"	-	-	8'-4"	8'-9"	7'-11"	8'-9"	7'-11"	#11	19	1'-7"	33'-0"	34'-7"	785'-1"	4A



VB1 #7 DS1

NOTES:

1. BAR LENGTHS ARE AVERAGE HEIGHTS OF THE STEPPED RETAINING WALLS. SEE GP&E AND WALL GEOMETRY SHEET TO DETERMINE FINAL LENGTHS AND QUANTITIES.
2. THE DRILLED SHAFT BARS ARE FOR INFORMATION PURPOSES ONLY. THE BARS NOTED ARE NOT INCLUDED IN THE QUANTITIES, BUT SHALL BE INCLUDED IN THE PRICE BID FOR L.F. OF DRILLED SHAFTS. SEE PAY ITEM NOTE 211.
3. FOR DRILLED SHAFTS TYPE 4C AND 4D BUNDLED BARS SHOULD BE TIED, WIRED OR OTHERWISE FASTENED TO ENSURE THAT THEY REMAIN IN THEIR RELATIVE POSITION.
4. INDIVIDUAL BARS IN A BUNDLE SHALL BE TERMINATED AT DIFFERENT POINTS WITH AT LEAST A 40 BAR DIAMETER STAGGER.

REINFORCING SCHEDULES (6)
WALL "F"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18	APPROVED:
	DESIGNED	KSJ	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18	
	FIELD MGR		9/20	
VERTICAL: 1"= NA	LEAD ENGR		9/19	
	RECOMMENDED DESIGN MANAGER		9.20	CITY ENGINEER
FILE: 313925-S-Reinf_Sched-06.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 227 OF 334 SHEETS

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REINFORCING SCHEDULE - WALL "G"

PANEL DIMENSIONS			DRILLED SHAFT BARS						FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#5@9")	
			DS1			CD1 #5		DT1														
PANEL	DESIGN	PANEL LENGTH (FT.)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
G-1	3A	18.75	# 9	8	29'-6"	4	4'-4"	297'-5"	52	0'-10"	5'-10"	6'-8"	26	11'-0"	16	21'-2"	8	20'-8"	38	6'-0"	52	3'-11"
G-2	3A	20.00	# 9	8	31'-6"	4	4'-4"	316'-4"	54	0'-10"	6'-4"	7'-2"	27	11'-0"	18	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
G-3	3A	20.00	# 9	8	31'-6"	4	4'-4"	316'-4"	54	0'-10"	6'-6"	7'-4"	27	11'-0"	18	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
G-4	3A	20.00	# 9	8	31'-6"	4	4'-4"	316'-4"	54	0'-10"	6'-7"	7'-5"	27	11'-0"	18	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
G-5	3A	20.00	# 9	8	31'-6"	4	4'-4"	316'-4"	54	0'-10"	6'-8"	7'-6"	27	11'-0"	18	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
G-6	3A	20.00	# 9	8	31'-6"	4	4'-4"	316'-4"	54	0'-10"	6'-5"	7'-3"	27	11'-0"	18	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
G-7	3A	20.00	# 9	8	29'-6"	4	4'-4"	297'-5"	54	0'-10"	5'-10"	6'-8"	27	11'-0"	16	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
G-8	3A	18.42	# 9	8	28'-6"	4	4'-4"	287'-11"	50	0'-10"	4'-10"	5'-8"	25	9'-8"	12	18'-1"	8	18'-1"	38	6'-0"	50	3'-11"

REINFORCING SCHEDULE - WALL "H"

PANEL DIMENSIONS			DRILLED SHAFT BARS						FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#5@9")	
			DS1			CD1 #5		DT1														
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
H-1	3A	13.41	# 9	8	28'-6"	4	4'-4"	287'-11"	36	0'-10"	4'-11"	5'-9"	18	9'-11"	14	15'-10"	8	15'-4"	28	6'-0"	36	3'-11"
H-2	3A	20.00	# 9	8	29'-6"	4	4'-4"	297'-5"	54	0'-10"	5'-6"	6'-4"	27	10'-11"	14	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-3	3A	20.00	# 9	8	33'-6"	4	4'-4"	335'-4"	54	0'-10"	6'-6"	7'-4"	27	11'-0"	18	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-4	3A	17.00	# 9	8	34'-6"	4	4'-4"	344'-9"	46	0'-10"	7'-1"	7'-11"	23	11'-0"	20	16'-8"	8	16'-8"	36	6'-0"	46	3'-11"
H-5	3A	21.00	# 9	8	34'-6"	4	4'-4"	344'-9"	58	0'-10"	7'-3"	8'-1"	29	11'-0"	20	23'-5"	8	22'-11"	44	6'-0"	58	3'-11"
H-6	3A	20.00	# 9	8	29'-6"	4	4'-4"	297'-5"	54	0'-10"	6'-3"	7'-1"	27	11'-0"	16	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-7	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	5'-2"	5'-12"	27	10'-3"	14	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-8	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	4'-9"	5'-7"	27	9'-7"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-9	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	4'-5"	5'-3"	27	8'-10"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-10	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	4'-3"	5'-1"	27	8'-5"	12	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-11	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	4'-3"	5'-1"	27	8'-5"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-12	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	4'-3"	5'-1"	27	8'-5"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-13	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	4'-6"	5'-4"	27	8'-12"	12	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-14	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	5'-0"	5'-10"	27	10'-1"	14	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-15	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	5'-3"	6'-1"	27	10'-7"	14	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-16	3A	20.00	# 9	8	29'-6"	4	4'-4"	297'-5"	54	0'-10"	5'-5"	6'-3"	27	10'-10"	14	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-17	3A	20.00	# 9	8	29'-6"	4	4'-4"	297'-5"	54	0'-10"	5'-7"	6'-5"	27	11'-2"	16	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-18	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	5'-3"	6'-1"	27	10'-6"	14	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-19	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	4'-6"	5'-4"	27	9'-1"	12	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-20	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	4'-1"	4'-11"	27	8'-3"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-21	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	4'-1"	4'-11"	27	8'-1"	10	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-22	3A	20.00	# 9	8	27'-6"	4	4'-4"	278'-5"	54	0'-10"	3'-12"	4'-10"	27	7'-12"	10	19'-8"	8	19'-8"	42	6'-0"	54	3'-11"
H-23	3A	20.00	# 9	8	28'-6"	4	4'-4"	287'-11"	54	0'-10"	4'-8"	5'-6"	27	9'-4"	12	22'-5"	8	21'-11"	42	6'-0"	54	3'-11"
H-24	3A	16.20	# 9	8	28'-6"	4	4'-4"	287'-11"	44	0'-10"	5'-1"	5'-11"	22	10'-2"	14	18'-7"	8	18'-1"	34	6'-0"	44	3'-11"
H-25	3A	21.00	# 9	8	27'-6"	4	4'-4"	278'-5"	58	0'-10"	4'-3"	5'-1"	29	8'-5"	12	20'-8"	8	20'-8"	44	6'-0"	58	3'-11"

NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA 10-24-2018

REINFORCING SCHEDULES (7)
WALLS "G" & "H"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1" = NA
PROFILE SCALE: HORIZONTAL: 1" = NA; VERTICAL: 1" = NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	RDP	12/20
FIELD MGR	ZWH	12/20
LEAD ENGR		11/20
RECOMMENDED DESIGN MANAGER	KAJ	12/20

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Sched-07.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 228 OF 334 SHEETS

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REINFORCING SCHEDULE - WALL "J"

PANEL DIMENSIONS			DRILLED SHAFT BARS						FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#7@9")	
			DS1			CD1 #5		DT1	EPOXY COATED				EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED	
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
J-0	3A	18.75	# 9	8	8'-6"	4	4'-4"	94'-8"	--	--	--	--	--	--	--	--	8	18'-5"	40	6'-0"	52	5'-11"
J-1	3A	20.00	# 9	8	11'-6"	4	4'-4"	123'-2"	54	0'-10"	2'-4"	3'-2"	27	4'-9"	6	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
J-2	3A	20.75	# 9	8	13'-6"	4	4'-4"	142'-1"	56	0'-10"	4'-9"	5'-7"	28	9'-5"	12	20'-5"	8	20'-5"	44	6'-0"	56	5'-11"
J-3	3B	22.00	# 10	22	25'-6"	4	4'-4"	344'-0"	60	0'-10"	7'-5"	8'-3"	30	11'-0"	20	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-4	3B	22.00	# 10	22	29'-6"	4	4'-4"	394'-5"	60	0'-10"	10'-8"	11'-6"	30	11'-0"	28	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-5	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	13'-8"	14'-6"	30	11'-0"	36	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-6	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	16'-3"	17'-1"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-7	3C	22.50	# 11	20	42'-6"	8	4'-4"	1110'-4"	62	0'-10"	18'-0"	18'-10"	31	11'-0"	48	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-8	3C	22.50	# 11	20	43'-6"	8	4'-4"	1135'-6"	62	0'-10"	18'-8"	19'-6"	31	11'-0"	50	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-9	3C	22.50	# 11	20	43'-6"	8	4'-4"	1135'-6"	62	0'-10"	18'-9"	19'-7"	31	11'-0"	50	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-10	3C	22.50	# 11	20	43'-6"	8	4'-4"	1135'-6"	62	0'-10"	18'-7"	19'-5"	31	11'-0"	50	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-11	3C	22.50	# 11	20	42'-6"	8	4'-4"	1110'-4"	62	0'-10"	18'-3"	19'-1"	31	11'-0"	48	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-12	3C	16.50	# 11	20	42'-6"	8	4'-4"	1110'-4"	46	0'-10"	18'-0"	18'-10"	23	11'-0"	48	18'-11"	14	18'-5"	36	8'-8"	46	5'-11"
J-13	3C	22.50	# 11	20	42'-6"	8	4'-4"	1110'-4"	62	0'-10"	17'-7"	18'-5"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-14	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-7"	17'-5"	31	11'-0"	44	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-15	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-7"	16'-5"	31	11'-0"	42	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-16	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	15'-0"	15'-10"	31	11'-0"	40	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-17	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	14'-4"	15'-2"	30	11'-0"	38	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-18	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	13'-8"	14'-6"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-19	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	13'-3"	14'-1"	30	11'-0"	36	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-20	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	13'-3"	14'-1"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-21	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	13'-5"	14'-3"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-22	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	13'-8"	14'-6"	30	11'-0"	36	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-23	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	14'-0"	14'-10"	30	11'-0"	38	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-24	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	14'-4"	15'-2"	30	11'-0"	38	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-25	3C	18.75	# 11	20	39'-6"	8	4'-4"	1034'-11"	52	0'-10"	14'-9"	15'-7"	26	11'-0"	40	21'-2"	14	20'-8"	40	8'-8"	52	5'-11"
J-26	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	15'-1"	15'-11"	31	11'-0"	40	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-27	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-4"	16'-2"	31	11'-0"	42	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-28	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-7"	16'-5"	31	11'-0"	42	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-29	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-10"	16'-8"	31	11'-0"	42	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-30	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	16'-1"	16'-11"	31	11'-0"	44	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-31	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-5"	17'-3"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-32	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-9"	17'-7"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-33	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	17'-0"	17'-10"	31	11'-0"	46	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-34	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	17'-1"	17'-11"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-35	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	17'-3"	18'-1"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-36	3C	22.50	# 11	20	42'-6"	8	4'-4"	1110'-4"	62	0'-10"	17'-5"	18'-3"	31	11'-0"	46	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-37	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	17'-3"	18'-1"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-38	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-10"	17'-8"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-39	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-6"	17'-4"	31	11'-0"	44	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-40	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	16'-1"	16'-11"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-41	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-8"	16'-6"	31	11'-0"	42	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
J-42	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	15'-0"	15'-10"	31	11'-0"	40	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
J-43	3B	18.50	# 10	22	32'-6"	4	4'-4"	432'-3"	50	0'-10"	14'-3"	15'-1"	25	11'-0"	38	20'-11"	10	20'-5"	40	7'-0"	50	5'-11"
J-44	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	13'-5"	14'-3"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-45	3B	22.00	# 10	22	30'-6"	4	4'-4"	407'-0"	60	0'-10"	12'-6"	13'-4"	30	11'-0"	34	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-46	3B	22.00	# 10	22	30'-6"	4	4'-4"	407'-0"	60	0'-10"	11'-8"	12'-6"	30	11'-0"	32	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-47	3B	22.00	# 10	22	29'-6"	4	4'-4"	394'-5"	60	0'-10"	10'-9"	11'-7"	30	11'-0"	28	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-48	3B	22.00	# 10	22	28'-6"	4	4'-4"	381'-9"	60	0'-10"	9'-10"	10'-8"	30	11'-0"	26	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-49	3B	22.00	# 10	22	27'-6"	4	4'-4"	369'-2"	60	0'-10"	8'-11"	9'-9"	30	11'-0"	24	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-50	3B	22.00	# 10	22	26'-6"	4	4'-4"	356'-7"	60	0'-10"	8'-0"	8'-10"	30	11'-0"	22	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-51	3B	22.00	# 10	22	25'-6"	4	4'-4"	343'-12"	60	0'-10"	7'-2"	8'-0"	30	11'-0"	20	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
J-52	3B	22.00	# 10	22	24'-6"	4	4'-4"	327'-8"	60	0'-10"	6'-6"	7'-4"	30	11'-0"	18	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-53	3B	22.00	# 10	22	24'-6"	4	4'-4"	327'-8"	60	0'-10"	5'-11"	6'-9"	30	11'-0"	16	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
J-54	3B	20.50	# 10	22	23'-6"	4	4'-4"	315'-1"	56	0'-10"	5'-3"	6'-1"	28	10'-6"	14	20'-2"	10	20'-2"	44	7'-0"	56	5'-11"
J-55	3A	20.00	# 9	8	13'-6"	4	4'-4"	142'-1"	54	0'-10"	4'-5"	5'-3"	27	8'-11"	12	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
J-56	3A	20.00	# 9	8	12'-6"	4	4'-4"	132'-7"	54	0'-10"	3'-9"	4'-7"	27	7'-5"	10	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
J-57	3A	20.00	# 9	8	11'-6"	4	4'-4"	123'-2"	54	0'-10"	3'-2"	4'-0"	27	6'-3"	8	19'-8"	8	19'-8"	42	6'-0"	54	5'-11"
J-58	3A	20.00	# 9	8	11'-6"	4	4'-4"	123'-2"	54	0'-10"	2'-7"	3'-5"	27	5'-3"	8	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
J-59	3A	20.00	# 9	8	10'-6"	4	4'-4"	113'-8"	54	0'-10"	2'-2"	3'-0"	27	4'-5"	6	19'-8"	8	19'-8"	42	6'-0"	54	5'-11"
J-60	3A	60.00	# 9	8	8'-6"	4	4'-4"	94'-8"	--	--	--	--	--	--	--	--	8	59'-8"	122	6'-0"	162	5'-11"
J-61	3A	64.54	# 9	8	8'-6"	4	4'-4"	94'-8"	--	--	--	--	--	--	--	--	8	64'-3"	132	6'-0"	174	5'-11"

NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".

KAREN SWATEK JONES
PROFESSIONAL ENGINEER
LICENSED
28517
OKLAHOMA
10-21-2018

REINFORCING SCHEDULES (8)
WALL "J"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

1-800-522-OKIE

REVISION	BY	DATE

PLAN SCALE: 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR	PJP	12/20
FIELD MGR		12/20
LEAD ENGR		11/20
RECOMMENDED	HAS	12-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Reinf_Sched-08.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
SHEET 229 OF 334 SHEETS

REINFORCING SCHEDULE - WALL "K"

PANEL DIMENSIONS			F1 BARS @ 6" SPA			F2 BARS @ 6" SPA			F3 BARS @ 12" SPA			Z1 BARS #5 @ 12" SPA				D1 BARS (LAP WITH VF1 BARS)				
PANEL	DESIGN	PANEL LENGTH (FT.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	QTY.	X	Y	LEN.	SIZE	QTY.	X	Y	LEN.
K-1	1CB	16.41	# 9	34	15'-0"	# 9	34	15'-0"	# 5	34	16'-1"	17	3'-4"	0'-0"	6'-8"	# 5	18	2'-6"	3'-11"	6'-5"
K-2	1CB	17.17	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	16'-10"	17	3'-4"	0'-0"	6'-8"	# 5	18	2'-6"	3'-11"	6'-5"
K-3	1CB	17.17	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	16'-10"	17	3'-4"	0'-0"	6'-8"	# 5	18	2'-6"	3'-11"	6'-5"
K-4	1CB	17.17	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	16'-10"	-	-	-	-	# 5	18	2'-6"	3'-11"	6'-5"
K-5	1CB	17.33	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	17'-0'	17	3'-4"	1'-1"	7'-9"	# 5	18	2'-6"	3'-11"	6'-5"
K-6	1CB	17.33	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	17'-0'	17	3'-4"	1'-1"	7'-9"	# 5	18	2'-6"	3'-11"	6'-5"
K-7	1CB	17.33	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	17'-0'	17	3'-4"	1'-1"	7'-9"	# 5	18	2'-6"	3'-11"	6'-5"
K-8	1CB	17.33	# 9	35	15'-0"	# 9	35	15'-0"	# 5	34	17'-0'	-	-	-	-	# 5	18	2'-6"	3'-11"	6'-5"

REINFORCING SCHEDULE - WALL "K" CONT'D.

PANEL	D2 BARS (LAP WITH VB1 BARS)						H1 BARS #4 @ 12" SPA		VF1 BARS @ 12" SPA			VB1 BARS @ 6" SPA						E1 BARS #7@6		E2 BARS #7@12	
	SIZE	QTY.	X	Y	Z	LEN. (AVG.)	QTY.	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	Y1 (AVG.)	Y2	Z	LEN. (AVG.)	EPOXY BARS QTY.	EPOXY BARS LEN.	EPOXY BARS QTY.	EPOXY BARS LEN.
K-1	# 9	34	3'-3"	7'-11"	0'-0"	11'-2"	40	18'-10"	# 5	18	18'-10"	# 9	34	18'-10"	-	-	18'-10"	34	7'-8"	18	7'-8"
K-2	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	40	19'-7"	# 5	18	18'-10"	# 9	35	18'-10"	-	-	18'-10"	35	7'-8"	18	7'-8"
K-3	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	40	19'-7"	# 5	18	18'-10"	# 9	35	18'-10"	-	-	18'-10"	35	7'-8"	18	7'-8"
K-4	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	38	16'-10"	# 5	18	17'-6"	# 9	35	17'-6"	-	-	17'-6"	35	7'-8"	18	7'-8"
K-5	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	36	19'-9"	# 5	18	16'-10"	# 9	35	16'-10"	-	-	16'-10"	35	7'-8"	18	7'-8"
K-6	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	38	19'-9"	# 5	18	17'-11"	# 9	35	17'-11"	-	-	17'-11"	35	7'-8"	18	7'-8"
K-7	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	40	19'-9"	# 5	18	18'-3"	# 9	35	18'-3"	-	-	18'-3"	35	7'-8"	18	7'-8"
K-8	# 9	35	3'-3"	7'-11"	0'-0"	11'-2"	42	17'-0"	# 5	18	19'-4"	# 9	35	19'-4"	-	-	19'-4"	35	7'-8"	18	7'-8"

REINFORCING SCHEDULE - WALL "K"

PANEL DIMENSIONS			DRILLED SHAFT BARS DS1			CD1 #5		DT1	FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2- #4 U Bars @ 12"		COPING CD2 (#7@9")	
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	EPOXY COATED				EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED	
									QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
K-9	3B	15.22	# 10	22	28'-6"	4	4'-4"	381'-9"	42	0'-10"	10'-5"	11'-3"	21	11'-0"	30	17'-8"	10	17'-2"	34	7'-0"	42	5'-11"
K-10	3B	18.00	# 10	22	29'-6"	4	4'-4"	394'-5"	50	0'-10"	11'-3"	12'-1"	25	11'-0"	32	20'-5"	10	19'-11"	38	7'-0"	50	5'-11"
K-11	3B	22.00	# 10	22	30'-6"	4	4'-4"	407'-0"	60	0'-10"	12'-1"	12'-11"	30	11'-0"	34	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
K-12	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	12'-11"	13'-9"	30	11'-0"	36	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
K-13	3B	22.00	# 10	22	32'-6"	4	4'-4"	432'-3"	60	0'-10"	13'-7"	14'-5"	30	11'-0"	38	24'-5"	10	23'-11"	46	7'-0"	60	5'-11"
K-14	3C	22.50	# 11	20	38'-6"	8	4'-4"	1009'-9"	62	0'-10"	14'-4"	15'-2"	31	11'-0"	40	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-15	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	15'-0"	15'-10"	31	11'-0"	42	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-16	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-8"	16'-6"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-17	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	16'-1"	16'-11"	31	11'-0"	44	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-18	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-5"	17'-3"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-19	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-8"	17'-6"	31	11'-0"	46	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-20	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-6"	17'-4"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-21	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-10"	16'-8"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-22	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	14'-11"	15'-9"	31	11'-0"	42	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-23	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	14'-4"	15'-2"	31	11'-0"	40	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-24	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	14'-4"	15'-2"	31	11'-0"	40	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-25	3C	22.50	# 11	20	39'-6"	8	4'-4"	1034'-11"	62	0'-10"	14'-10"	15'-8"	31	11'-0"	42	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-26	3C	22.50	# 11	20	40'-6"	8	4'-4"	1060'-1"	62	0'-10"	15'-5"	16'-3"	31	11'-0"	44	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-27	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-7"	17'-5"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-28	3C	22.50	# 11	20	43'-6"	8	4'-4"	1135'-6"	62	0'-10"	18'-4"	19'-2"	31	11'-0"	52	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-29	3D	22.50	# 11	36	45'-6"	8	4'-4"	1185'-10"	62	0'-10"	20'-0"	20'-10"	31	11'-0"	56	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-30	3D	24.00	# 11	36	47'-6"	8	4'-4"	1236'-1"	66	0'-10"	21'-8"	22'-6"	33	11'-0"	60	26'-5"	14	25'-11"	50	8'-8"	66	5'-11"
K-31	3D	22.50	# 11	36	48'-6"	8	4'-4"	1261'-3"	62	0'-10"	23'-4"	24'-2"	31	11'-0"	64	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-32	3D	22.50	# 11	36	50'-6"	8	4'-4"	1315'-3"	62	0'-10"	24'-7"	25'-5"	31	11'-0"	68	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-33	3D	15.00	# 11	36	50'-6"	8	4'-4"	1315'-3"	42	0'-10"	25'-0"	25'-10"	21	11'-0"	68	17'-5"	14	16'-11"	32	8'-8"	42	5'-11"
K-34	3D	23.00	# 11	36	50'-6"	8	4'-4"	1315'-3"	62	0'-10"	24'-11"	25'-9"	31	11'-0"	68	22'-8"	14	22'-8"	48	8'-8"	62	5'-11"
K-35	3D	22.50	# 11	36	50'-6"	8	4'-4"	1315'-3"	62	0'-10"	24'-10"	25'-8"	31	11'-0"	68	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-36	3D	22.50	# 11	36	50'-6"	8	4'-4"	1315'-3"	62	0'-10"	24'-9"	25'-7"	31	11'-0"	68	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-37	3D	22.50	# 11	36	50'-6"	8	4'-4"	1315'-3"	62	0'-10"	24'-9"	25'-7"	31	11'-0"	68	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-38	3D	22.50	# 11	36	45'-6"	8	4'-4"	1185'-10"	62	0'-10"	19'-9"	20'-7"	31	11'-0"	54	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-39	3D	22.50	# 11	36	45'-6"	8	4'-4"	1185'-10"	62	0'-10"	19'-9"	20'-7"	31	11'-0"	54	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-40	3D	22.50	# 11	36	48'-6"	8	4'-4"	1261'-3"	62	0'-10"	22'-7"	23'-5"	31	11'-0"	62	22'-2"	14	22'-2"	48	8'-8"	62	5'-11"
K-41	3C	22.50	# 11	20	43'-6"	8	4'-4"	1135'-6"	62	0'-10"	19'-3"	20'-1"	31	11'-0"	54	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-42	3C	22.50	# 11	20	41'-6"	8	4'-4"	1085'-2"	62	0'-10"	16'-5"	17'-3"	31	11'-0"	46	24'-11"	14	24'-5"	48	8'-8"	62	5'-11"
K-43	3B	22.00	# 10	22	31'-6"	4	4'-4"	419'-7"	60	0'-10"	13'-3"	14'-1"	30	11'-0"	38	21'-8"	10	21'-8"	46	7'-0"	60	5'-11"
K-44	3B	16.50	# 10	22	29'-6"	4	4'-4"	394'-5"	46	0'-10"	10'-8"	11'-6"	23	11'-0"	30	18'-11"	10	18'-5"	36	7'-0"	46	5'-11"
K-45	3B	18.50	# 10	22	27'-6"	4	4'-4"	369'-2"	50	0'-10"	8'-8"	9'-6"	25	11'-0"	26	20'-11"	10	20'-5"	40	7'-0"	50	5'-11"
K-46	3B	18.00	# 10	22	25'-6"	4	4'-4"	343'-12"	50	0'-10"	7'-5"	8'-3"	25	11'-0"	22	17'-8"	10	17'-8"	38	7'-0"	50	5'-11"
K-47	3A	13.83	# 9	8	19'-6"	4	4'-4"	198'-11"	38	0'-10"	7'-10"	8'-8"	19	11'-0"	22	16'-3"	8	15'-9"	30	6'-0"	38	5'-11"
K-48	3A	16.00	# 9	8	19'-6"	4	4'-4"	198'-11"	44	0'-10"	8'-1"	8'-11"	22	11'-0"	24	18'-5"	8	17'-11"	34	6'-0"	44	5'-11"
K-49	3A	18.50	# 9	8	18'-6"	4	4'-4"	189'-6"	50	0'-10"	7'-1"	7'-11"	25	11'-0"	20	20'-11"	8	20'-5"	40	6'-0"	50	5'-11"
K-50	3A	18.50	# 9	8	14'-6"	4	4'-4"	151'-7"	50	0'-10"	5'-7"	6'-5"	25	11'-0"	16	18'-2"	8	18'-2"	40	6'-0"	50	5'-11"

NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".

LICENSED PROFESSIONAL ENGINEER KAREN SWATEK JONES 28517 OKLAHOMA 10-18-18

REINFORCING SCHEDULES (9)
WALL "K"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	WZB	10/18
DESIGNED	KSJ	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		10/18
LEAD ENGR		10/18
RECOMMENDED DESIGN MANAGER		10/18

APPROVED: CITY ENGINEER

FILE: 313925-S-Reinf_Sched-09.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 230 OF 334 SHEETS

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REINFORCING SCHEDULE - WALL "L"

PANEL DIMENSIONS			DRILLED SHAFT BARS						FAÇADE PV1 (#5 @ 9")				FAÇADE STIRRUP S1 (#5@ 9")		FAÇADE PH1 (#5 @ 9")		COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#7@9")	
			DS1			CD1 #5		DT1														
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	EPOXY COATED				EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED		EPOXY COATED	
									QTY.	X	Y	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
L-1	3A	26.00	# 9	8	14'-6"	4	4'-4"	151'-7"	70	0'-10"	5'-10"	7'-0"	35	11'-0"	16	28'-5"	8	27'-11"	54	6'-0"	70	5'-11"
L-2	3A	20.00	# 9	8	14'-6"	4	4'-4"	151'-7"	54	0'-10"	6'-4"	7'-0"	27	11'-0"	16	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
L-3	3A	20.00	# 9	8	14'-6"	4	4'-4"	151'-7"	54	0'-10"	5'-6"	6'-0"	27	11'-1"	14	19'-8"	8	19'-8"	42	6'-0"	54	5'-11"
L-4	3A	20.00	# 9	8	13'-6"	4	4'-4"	142'-1"	54	0'-10"	4'-7"	5'-0"	27	9'-2"	12	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
L-5	3A	20.00	# 9	8	12'-6"	4	4'-4"	132'-7"	54	0'-10"	3'-4"	4'-0"	27	6'-8"	10	22'-5"	8	21'-11"	42	6'-0"	54	5'-11"
L-6	3A	10.57	# 9	8	10'-6"	4	4'-4"	113'-8"	30	0'-10"	2'-3"	3'-0"	15	4'-6"	6	10'-3"	8	10'-3"	24	6'-0"	30	5'-11"

REINFORCING SCHEDULE - WALL "M"

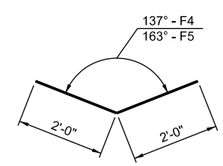
PANEL DIMENSIONS			F1 BARS				F2 BARS				F3 BARS #4 @ 12" SPA		F4 BARS #4 @ 12" SPA		F5 BARS #4 @ 12" SPA		Z1 BARS #5 @ 12" SPA				D1 BARS (LAP WITH VF1 BARS)				
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	SIZE	QTY.	SPA. (IN)	LEN. (AVG.)	QTY.	LEN. (AVG.)	QTY.	LEN.	QTY.	LEN.	QTY.	X	Y	LEN.	SIZE	QTY.	X	Y	LEN.
M-1	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	24	22'-5"	36	4'-0"	-	-	12	3'-4"	0'-11"	7'-7"	# 4	21	1'-10"	3'-0"	4'-10"
M-2	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	24	22'-5"	-	-	40	4'-0"	12	3'-4"	0'-11"	7'-7"	# 4	21	1'-10"	3'-0"	4'-10"
M-3	1B	20.00	# 7	21	12	10'-10"	# 7	21	12	10'-10"	24	19'-8"	-	-	44	4'-0"	-	-	-	-	# 4	21	1'-10"	3'-0"	4'-10"
M-4	1C	23.87	# 7	49	6	10'-10"	# 7	49	6	10'-10"	24	26'-3"	-	-	48	4'-0"	17	3'-4"	0'-5"	7'-1"	# 4	25	1'-10"	3'-0"	4'-10"
M-5	1C	13.36	# 7	28	6	15'-6"	# 7	28	6	15'-6"	34	15'-9"	-	-	60	4'-0"	17	3'-4"	0'-0"	6'-8"	# 4	15	2'-0"	3'-2"	5'-2"
M-6	1C	13.36	# 7	28	6	15'-6"	# 7	28	6	15'-6"	34	15'-9"	-	-	62	4'-0"	17	3'-4"	0'-0"	6'-8"	# 4	15	2'-0"	3'-2"	5'-2"
M-7	1C	13.36	# 7	28	6	15'-6"	# 7	28	6	15'-6"	34	13'-0"	-	-	62	4'-0"	-	-	-	-	# 4	15	2'-0"	3'-2"	5'-2"
M-8	1C	13.36	# 7	28	6	15'-6"	# 7	28	6	15'-6"	34	13'-0"	-	-	64	4'-0"	17	3'-4"	0'-5"	7'-1"	# 4	15	2'-0"	3'-2"	5'-2"
M-9	1C	13.36	# 7	28	6	15'-6"	# 7	28	6	15'-6"	34	13'-0"	-	-	62	4'-0"	17	3'-4"	0'-5"	7'-1"	# 4	15	2'-0"	3'-2"	5'-2"
M-10	1C	12.04	# 7	25	6	15'-6"	# 7	25	6	15'-6"	34	11'-8"	-	-	62	4'-0"	-	-	-	-	# 4	13	2'-0"	3'-2"	5'-2"

REINFORCING SCHEDULE - WALL "M" CONT'D.

PANEL	D2 BARS (LAP WITH VB1 BARS)							H1 BARS #4 @ 12" SPA			VF1 BARS @ 12" SPA			VB1 BARS							E1 BARS #7@6		E2 BARS #7@12	
	SIZE	QTY.	SPA. (IN)	X	Y	Z	LEN. (AVG.)	QTY.	SPACING (IN)	LEN. (AVG.)	SIZE	QTY.	LEN. (AVG.)	SIZE	QTY.	SPACING (IN)	Y1 (AVG.)	Y2	Z	LEN. (AVG.)	EPOXY BARS		EPOXY BARS	
																					QTY.	LEN.	QTY.	LEN.
M-1	# 7	21	12	2'-4"	5'-0"	0'-0"	7'-4"	12	12	22'-5"	# 4	21	4'-9"	# 7	21	12	4'-9"	0'-0"	0'-0"	4'-9"	41	7'-8"	21	7'-8"
M-2	# 7	21	12	2'-4"	5'-0"	0'-0"	7'-4"	16	12	22'-5"	# 4	21	6'-2"	# 7	21	12	6'-2"	0'-0"	0'-0"	6'-2"	41	7'-8"	21	7'-8"
M-3	# 7	21	12	2'-4"	5'-0"	0'-0"	7'-4"	20	12	19'-8"	# 4	21	7'-9"	# 7	21	12	7'-9"	0'-0"	0'-0"	7'-9"	41	7'-8"	21	7'-8"
M-4	# 7	49	6	2'-4"	5'-0"	0'-0"	7'-4"	24	12	26'-3"	# 4	25	10'-1"	# 7	49	6	10'-1"	0'-0"	0'-0"	10'-1"	49	7'-8"	25	7'-8"
M-5	# 7	28	6	2'-6"	5'-2"	0'-0"	7'-8"	26	12	15'-9"	# 4	15	11'-5"	# 7	28	6	11'-5"	0'-0"	0'-0"	11'-5"	28	7'-8"	15	7'-8"
M-6	# 7	28	6	2'-6"	5'-2"	0'-0"	7'-8"	28	12	15'-9"	# 4	15	11'-11"	# 7	28	6	11'-11"	0'-0"	0'-0"	11'-11"	28	7'-8"	15	7'-8"
M-7	# 7	28	6	2'-6"	5'-2"	0'-0"	7'-8"	28	12	13'-0"	# 4	15	12'-6"	# 7	28	6	12'-6"	0'-0"	0'-0"	12'-6"	28	7'-8"	15	7'-8"
M-8	# 7	28	6	2'-6"	5'-2"	0'-0"	7'-8"	30	12	15'-9"	# 4	15	13'-0"	# 7	28	6	13'-0"	0'-0"	0'-0"	13'-0"	28	7'-8"	15	7'-8"
M-9	# 7	28	6	2'-6"	5'-2"	0'-0"	7'-8"	28	12	15'-9"	# 4	15	12'-11"	# 7	28	6	12'-11"	0'-0"	0'-0"	12'-11"	28	7'-8"	15	7'-8"
M-10	# 7	25	6	2'-6"	5'-2"	0'-0"	7'-8"	28	12	11'-8"	# 4	13	12'-5"	# 7	25	6	12'-5"	0'-0"	0'-0"	12'-5"	25	7'-8"	13	7'-8"

REINFORCING SCHEDULE - WALL "N"

PANEL DIMENSIONS			DRILLED SHAFT BARS						COPING CH1 (#4@12")		COPING CS1 2 - #4 U Bars @ 12"		COPING CD2 (#7@9")	
			DS1			CD1 #5		DT1						
PANEL	DESIGN	PANEL LENGTH (FT)	SIZE	QTY. PER. SHAFT	LEN.	QTY. PER. SHAFT	LEN.	SPIRAL	EPOXY COATED		EPOXY COATED		EPOXY COATED	
									QTY.	LEN.	QTY.	LEN.	QTY.	LEN.
N-1	2A	62.29	# 9	8	23'-6"	4	4'-4"	236'-10"	8	62'-0"	128	4'-10"	168	5'-11"
N-2	2A	60	# 9	8	23'-6"	4	4'-4"	236'-10"	8	59'-8"	122	4'-10"	162	5'-11"
N-3	2A	67.96	# 9	8	23'-6"	4	4'-4"	236'-10"	8	67'-8"	138	4'-10"	182	5'-11"



NOTE:

1. DRILLED SHAFT BARS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INCLUDED IN THE PRICE BID PER L.F. OF "DRILLED SHAFTS".
2. BARS F4 AND F5 ARE HORIZONTAL BARS PLACED AT BENDS IN WALL M.

REINFORCING SCHEDULES (10)
WALLS "L" & "M"

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	WZB	10/18
	DESIGNED	KSJ	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18
	FIELD MGR		2/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED		9.20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-S-Reinf_Sched-10.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006

DATE: OCTOBER 2018

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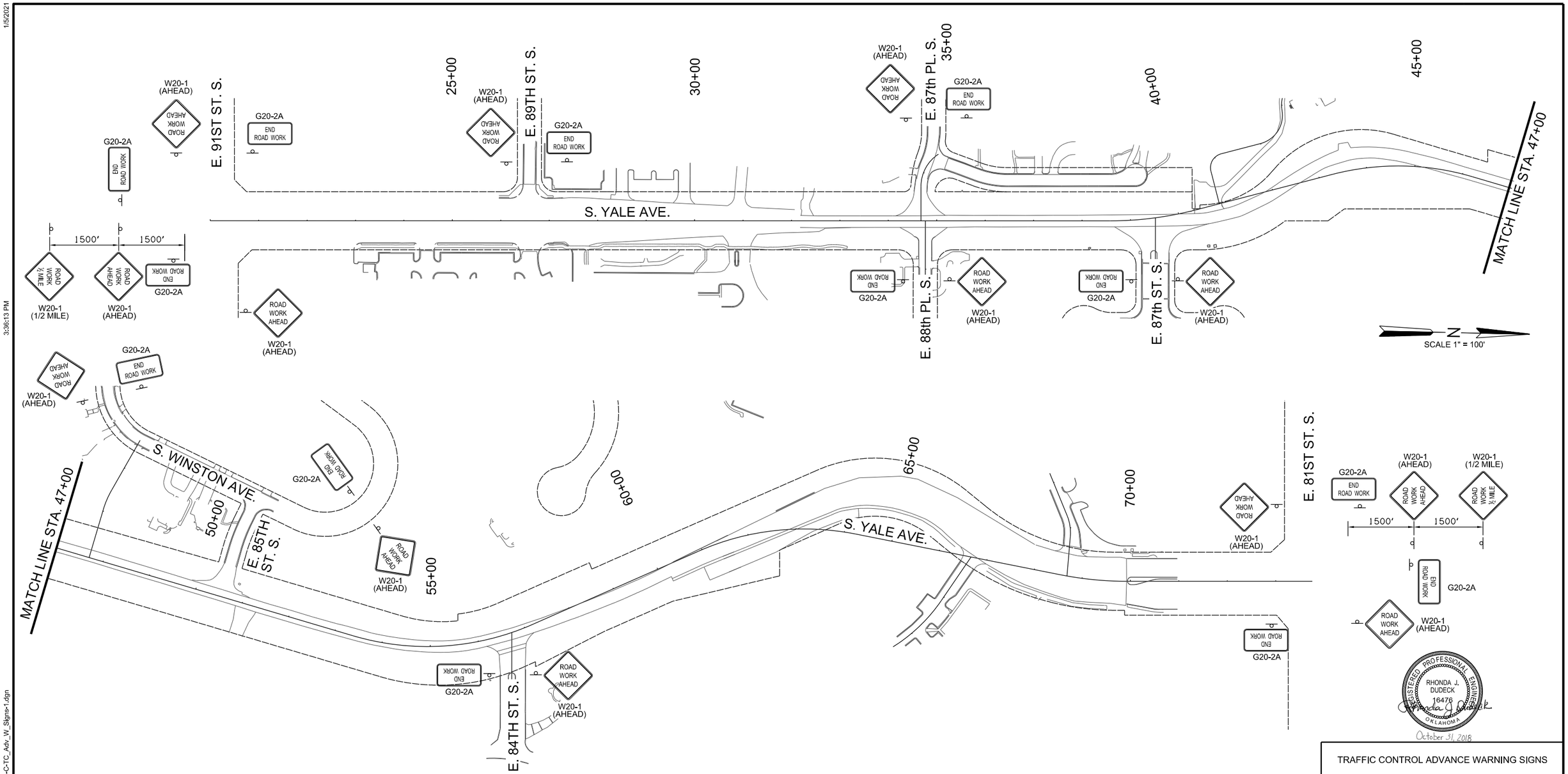

TRAFFIC CONTROL ADVANCE WARNING SIGNS

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 100'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDE	10/18	
	FIELD MGR	RDL	7/20	
VERTICAL: 1"= NA	LEAD ENGR	DW	1/19	
	RECOMMENDED DESIGN MANAGER	HM	9-20	CITY ENGINEER
FILE: 313925-C-TC_Adv_W_Signs-1.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 232 OF 334 SHEETS

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GENERAL CONSTRUCTION NOTES - PROJECT SPECIFIC

CONTRACTOR SHALL SUBMIT A CONSTRUCTION SAFETY PLAN TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK. THE SAFETY PLAN SHALL ADDRESS BUT NOT BE LIMITED TO ISSUES AS TRAFFIC CONTROL, WORK SITE SAFETY, MANHOLE VENTILATION, WORKER EQUIPMENT, FIRST AID, HYGIENE, AND OTHER RELATED TOPICS. THE CONTRACTOR SHALL BE EXPECTED TO PERFORM THE WORK IN A MANNER THAT BEST PROTECTS SAFETY OF WORKERS, INSPECTORS, BYSTANDERS, AND OTHERS WHO MAY BE IN THE VICINITY OF THE PROJECT. THE SAFETY PLAN SHALL ALSO ADDRESS THE CONTRACTOR'S PROPOSED SEQUENCE OF CONSTRUCTION AND APPROACH TO CONSTRUCTION OF THE PROJECT AND THE PROVISIONS TO PROTECT THE INTEGRITY OF THE RESIDENTIAL PROPERTIES. FAILURE TO PERFORM THE WORK AND MAINTAIN THE SITE IN A SAFE MANNER, IN THE OPINION OF THE ENGINEER, SHALL BE SUFFICIENT CAUSE TO STOP ALL WORK AND REQUIRE THE CONTRACTOR TO RESTORE THE SITE TO A SAFE CONDITION AT NO ADDITIONAL COST TO THE CITY.

CONTRACTOR SHALL GIVE SPECIAL ATTENTION TO MAINTAINING ACCESS TO RESIDENCES AND PROVIDE ADVANCE NOTICE TO HOMEOWNERS WITHIN VICINITY OF ROADWAY.

CONTRACTOR SHALL COORDINATE WITH CITY OF TULSA TRAFFIC OPERATIONS PRIOR TO START OF CONSTRUCTION.

YALE AVENUE CLOSURE SHALL BE LIMITED TO NO MORE THEN A MAXIMUM OF 7 CONSECUTIVE CALENDAR DAYS TO CONSTRUCT TEMPORARY YALE AVENUE WIDENING.

GEOTECHNICAL DESIGN REPORT, YALE AVENUE WIDENING, DATED APRIL 16, 2013 WAS PREPARED BY TERRACON CONSULTANTS, INC. THIS REPORT SUMMARIZES THE FOUNDATION DESIGN ANALYSES AND RECOMMENDATIONS REGARDING THE PROPOSED WALL"F".

GEOTECHNICAL ENGINEERING REPORT, YALE AVENUE SLOPE STUDY, DATED JANUARY 6, 2012 WAS PREPARED BY TERRACON CONSULTANTS, INC. THE PROPOSED WALL ALIGNMENT AND DESIGN RECOMMENDATIONS PRESENTED IN THE YALE AVENUE SLOPE STABILITY STUDY, DATED JANUARY 6, 2012 WERE PRELIMINARY IN NATURE AND ARE NOT APPLICABLE TO THIS PROJECT. HOWEVER, THE BORINGS, LABORATORY DATA AND SUBSURFACE STRATIGRAPHY CONTAINED IN THE YALE AVENUE SLOPE STUDY, DATED JANUARY 6, 2012 WERE USED FOR THIS PROJECT.

ANY INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT SHOULD NOT BE CONSTRUED AS REPRESENTATIVE OF ALL FIELD CONDITIONS.

THE EXISTING YALE AVENUE EMBANKMENT SHOWS SIGNS OF DISTRESS AND SLOPE INSTABILITY WEST OF YALE AVENUE BETWEEN 82ND AND 84TH STREETS, SPECIFICALLY BETWEEN STATION 59+00 AND STATION 62+00. THE JANUARY 6, 2012 TERRACON REPORT PRESENTS GEOTECHNICAL SITE CHARACTERIZATION, SLOPE STABILITY ANALYSES, AND RECOMMENDATIONS FOR REMEDIATION OF THE SLOPE PROBLEMS. FROM TERRACON'S ANALYSIS, IT APPEARS THAT THE UPPER PART OF THE EXISTING EMBANKMENT IS ONLY MARGINALLY STABLE. DUE TO STEEPNESS OF THE UPPER SLOPE, ANY CHANGE IN THE GEOMETRY OR WATER INFILTRATION WILL LIKELY RESULT IN CONTINUING CREEP OF THE SLOPE. ALTHOUGH AT THE TIME OF THE REPORT THERE WAS NO DISTINCT TOE BULGE ON THE SLOPE, THE STRAINS DUE TO THE STEEPNESS OF THE SLOPE AND POSSIBLY CHANGE IN PORE WATER PRESSURES DUE TO WATER INFILTRATION, HAVE RESULTED IN MOVEMENT OF THE UPPER SLOPES AND DEFORMATIONS OF THE PAVEMENT SURFACE. CONTRACTOR SHALL FOLLOW CONSTRUCTION SEQUENCE SPECIFIED IN THE "CONSTRUCTION SEQUENCE" AND TAKE PRECAUTIONS AS REQUIRED TO PREVENT A SLOPE FAILURE OF LARGER MAGNITUDE DURING CONSTRUCTION.

THE CONTRACTOR SHALL VISUALLY MONITOR THE PERFORMANCE OF THE EXISTING SLOPES ON A DAILY BASIS, LOOKING FOR SIGNS OF MOVEMENT (CRACKING, SLOUGHING, BULGING, ETC.) AND NOTIFY THE ENGINEER IMMEDIATELY IF SIGNS OF INSTABILITY ARE NOTED. THE CONTRACTOR SHALL ALSO BE REQUIRED TO INSTALL SURVEY POINTS AT 100 FOOT INTERVALS ALONG THE TOP OF THE SLOPE (SHOULDER OF ROADWAY) AND SURVEY THESE POINTS ON A WEEKLY BASIS TO MONITOR FOR POTENTIAL SLOPE MOVEMENTS DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY SIGNS OF SLOPE MOVEMENT ARE NOTED. MONITORING APPLIES TO, BUT IS NOT LIMITED TO STA. 59+00 TO 62+00.

CONTRACTOR SHALL DOCUMENT PRE-CONSTRUCTION SITE CONDITIONS BY MEANS OF PHOTOGRAPHS AND VIDEO TAPE WITH CITY REPRESENTATIVE BEFORE THE START OF CONSTRUCTION. DOCUMENTATION SHALL BE SUBMITTED TO THE CITY PRIOR TO CONSTRUCTION. COST SHALL BE CONSIDERED AS INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.

CONTRACTOR SHALL DOCUMENT PRE-CONSTRUCTION CONDITIONS OF THE FOLLOWING HOMES THROUGH HOUSE INSPECTIONS PRIOR TO THE START OF CONSTRUCTION. COST SHALL BE CONSIDERED AS INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.

- 8315 S. VANDALIA AVE. E
- 8405 S. WINSTON AVE. E.
- 4825 E. 84TH ST. S.
- 4905 E. 84TH ST. S.
- 5004 E. 84TH ST. S.
- 8303 S. ALLEGHENY AVE. E.
- 8304 S. ALLEGHENY AVE. E.
- 8306 S. ALLEGHENY AVE. E.
- 8307 S. ALLEGHENY AVE. E.
- 8311 S. ALLEGHENY AVE. E.
- 8315 S. ALLEGHENY AVE. E.
- 8321 S. ALLEGHENY AVE. E.
- 8322 S. ALLEGHENY AVE. E.
- 8327 S. ALLEGHENY AVE. E.
- 8328 S. ALLEGHENY AVE. E.
- 8331 S. ALLEGHENY AVE. E.
- 8402 S. ALLEGHENY AVE. E.
- 8403 S. ALLEGHENY AVE. E.
- 8408 S. ALLEGHENY AVE. E.

WATERLINE CONSTRUCTION SEQUENCE NOTES

PHASE 1

1) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 8+62.12 TO STA. 9+53.00.
BORE WATERLINE UNDER EXISTING YALE AVE.

2) INSTALL PROPOSED 8" WATERLINE "D".

3) INSTALL TEMPORARY 8" WATERLINE "M".

4) CONNECT PROPOSED 8" WATERLINE "K" TO EXISTING 16" WATERLINE AT STA. 9+53.00
EAST OF YALE AVE. CONNECTION SHALL BE LOCATED ON THE NORTH SIDE OF THE EXISTING 16" VALVE. THE CONNECTION TO THE EXISTING 16" WATERLINE SHALL BE A LIVE TAP.

5) CONNECT PROPOSED 8" WATERLINE "D" TO EXISTING 6" WATERLINE AT STA. 56+16.41
EXISTING 6" WATERLINE EAST OF CONNECTION IS TO BE ABANDONED IN PLACE.

6) CONNECT TEMPORARY 8" WATERLINE "M" TO EXISTING 8" WATERLINE AT STA. 7+67.83
EAST OF YALE AVE. ON E. 84TH ST. S.

PHASE 2

7) INSTALL PROPOSED 8" WATERLINE "F".

8) INSTALL PROPOSED 8" WATERLINE "B".

9) CONNECT PROPOSED 8" WATERLINE "F" TO EXISTING 8" WATERLINES AT
STA. 9+03.00 AND STA. 11+14.00

10) CONNECT PROPOSED 8" WATERLINE "B" TO EXISTING 8" WATERLINE AT
STA. 31+51.16.

PHASE 3

11) INSTALL PROPOSED 12" WATERLINE "A" FROM STA. 27+09.89 TO STA. 41+44.00.
INSTALL TEMPORARY BLIND FLANGE AT STA. 41+44.00.
CONNECT PROPOSED 6" WATERLINE "F" TO PROPOSED 12" WATERLINE "A"
AT STA. 34+70.55
INSTALL PROPOSED 16" WATERLINE "A" FROM STA. 55+00.00 TO STA. 69+31.34.
INSTALL TEMPORARY BLIND FLANGE AT STA. 55+00.00.

12) INSTALL PROPOSED 8" WATERLINE "G".

13) INSTALL PROPOSED 8" WATERLINE "J".

14) INSTALL PROPOSED 8" WATERLINE "L".

15) INSTALL PROPOSED 8" WATERLINE "K" FROM STA. 9+53.00 TO STA. 10+51.27.
REMOVE TEMPORARY CONNECTION TO EXISTING 16" WATERLINE INSTALLED IN PHASE 2.
CONNECT PROPOSED 8" WATERLINE "K" TO PROPOSED 16" WATERLINE "A" AT STA. 10+51.27.

16) CONNECT PROPOSED 12" WATERLINE "A" TO EXISTING 12" WATERLINE AT STA. 27+09.89.
CONNECT PROPOSED 16" WATERLINE "A" TO EXISTING 16" WATERLINE AT STA. 69+31.34.

17) CONNECT PROPOSED 6" WATERLINE "J" TO EXISTING 8" WATERLINE AT STA. 11+43.00.
CONNECT PROPOSED 6" WATERLINE "L" TO EXISTING 8" WATERLINE AT STA. 11+84.79.

18) INSTALL PROPOSED 12" AND 16" WATERLINE "A" FROM STA. 41+44.00 TO STA. 55+00.00.

19) ABANDON TEMPORARY 8" WATERLINE "M".

20) INSTALL PROPOSED 6" WATERLINE "H". BORE WATERLINE UNDER EXISTING YALE AVE.
CONNECT PROPOSED 6" WATERLINE "H" TO EXISTING 6" WATERLINE AT STA. 6+91.41.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PROJECT SPECIFIC CONSTRUCTION NOTES

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BJW	12/18
	FIELD MGR	JPM	2/20
	LEAD ENGR	DD	11/19
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HAS	9.20

APPROVED: CITY ENGINEER

FILE: 313925-C-GC_Notes-06.dgn
ATLAS PAGE NO.: 882, 883, 1005, 1006
DATE: OCTOBER 2018
SHEET 233 OF 334 SHEETS

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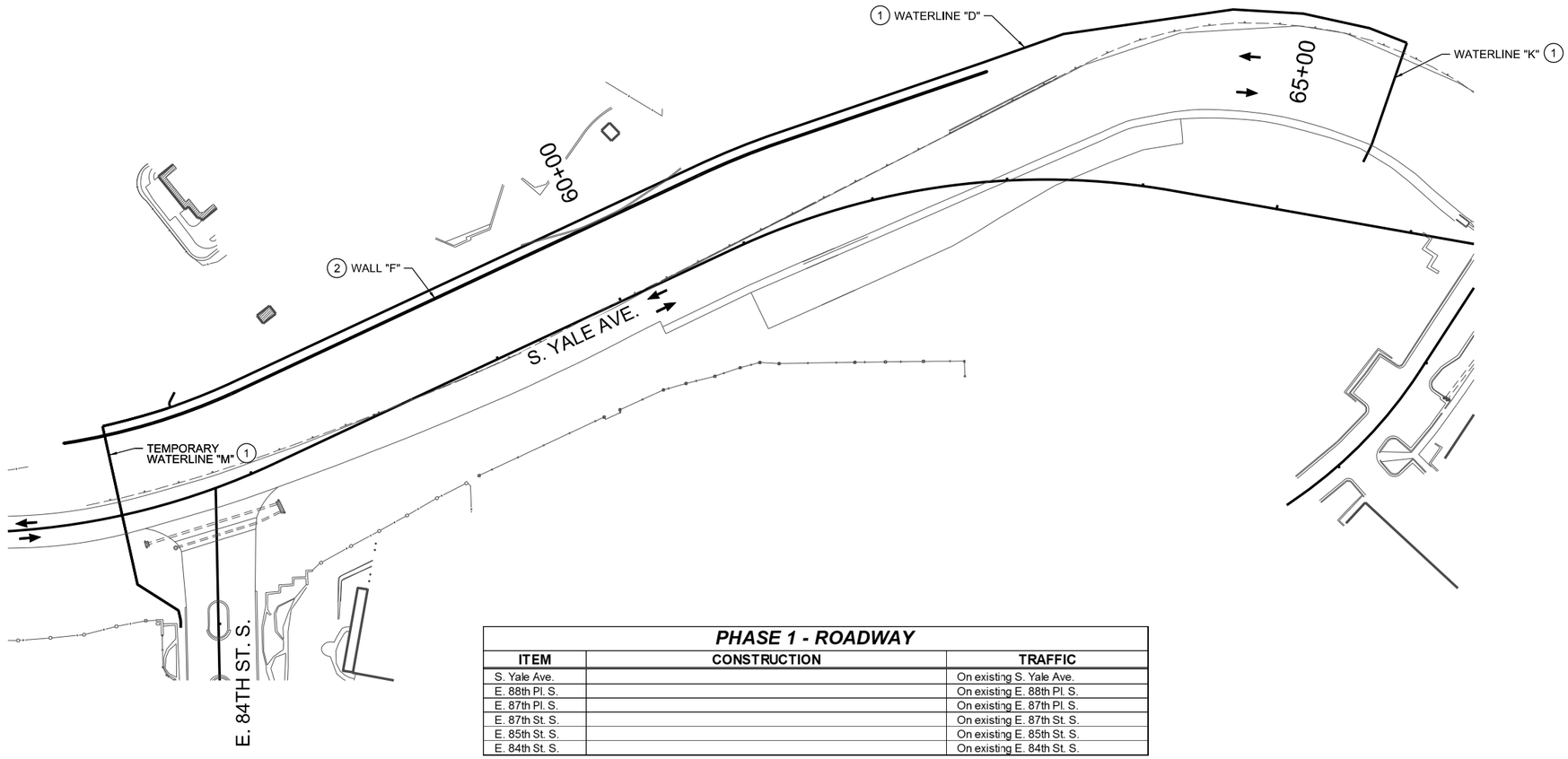
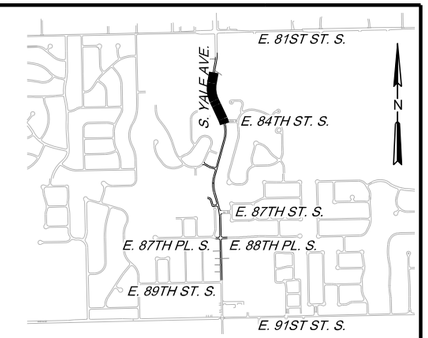


PHASE 1 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.		On existing S. Yale Ave.
E. 88th Pl. S.		On existing E. 88th Pl. S.
E. 87th Pl. S.		On existing E. 87th Pl. S.
E. 87th St. S.		On existing E. 87th St. S.
E. 85th St. S.		On existing E. 85th St. S.
E. 84th St. S.		On existing E. 84th St. S.

PHASE 1 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	
Wall B	
Wall C	
Wall D	
Wall E	
Wall F	Construct drilled shafts and grade beam
Wall G	
Wall H	
Wall J	
Wall K	
Wall L	
Wall M	
Wall N	
Waterline "A"	
Waterline "B"	
Waterline "D"	Construct
Waterline "F"	
Waterline "G"	
Waterline "H"	
Waterline "J"	
Waterline "K"	Construct Sta. STA. 8+62.12 TO STA. 9+53.00; Construct Temporary
Waterline "L"	
Temp. Waterline "M"	Construct
San. Sewer 1	



KEYMAP

- PAVING CONSTRUCTION THIS PHASE
- TEMPORARY PAVEMENT WIDENING
- COMPLETED TEMP. PAVING PREVIOUS PHASE
- COMPLETED PAVING PREVIOUS PHASE

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. WALL "F" IS TO BE COSTRUCTED IN STEPS TO AVOID FAILURE OF THE EXISTING GROUND SLOPE ADJACENT TO YALE AVE. SEE SHEET 235.

N

50' 25' 0 50'

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

CONSTRUCTION SEQUENCE (1)
PHASE 1

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED DESIGN MANAGER		9·20

APPROVED: CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_1-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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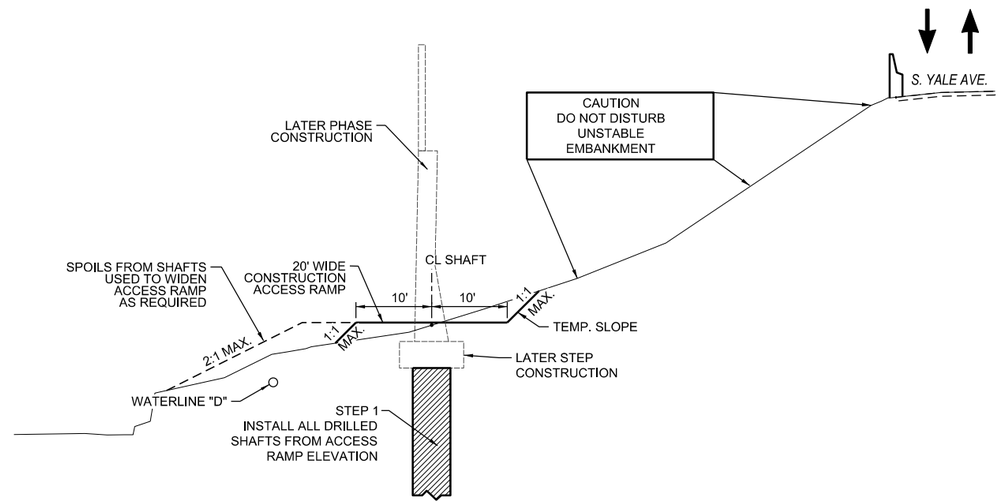
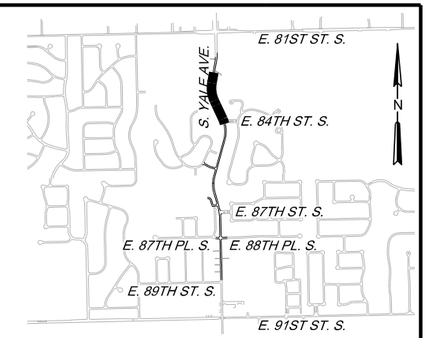
WALL "F" CONSTRUCTION SEQUENCE: STEP 1

Drilled Shafts

- Yale Avenue traffic remains on existing lanes. Existing guardrail or portable longitudinal barrier shall be in place between the traffic and work zone at all times.
- Construct Waterline "D", Temporary Waterline "M" and Waterline "K".
- Construct 20 feet wide construction access ramp, centered along the proposed shaft wall alignment. The elevation of the access ramp shall be at the existing grade elevation along the centerline of the wall.
- Construct all drilled shafts along the full length of the wall. All drilling and installation shall be from the access road elevation which is at the existing grade elevation along the centerline of the wall. Constructing the shafts first and in a timely manner is critical to the stability of the existing slopes.
- Spoils from drilling may be used to widen the access ramp on the downhill side of the shafts to allow future construction access during the grade beam and retaining wall construction.

Contractor shall follow the construction sequence specified and take precautions as required to prevent a slope failure during construction. Precautions shall include constructing the drilled shafts (Step 1) from the west side of the proposed wall system, thereby keeping equipment, materials, etc., off of the existing Yale Avenue embankment.





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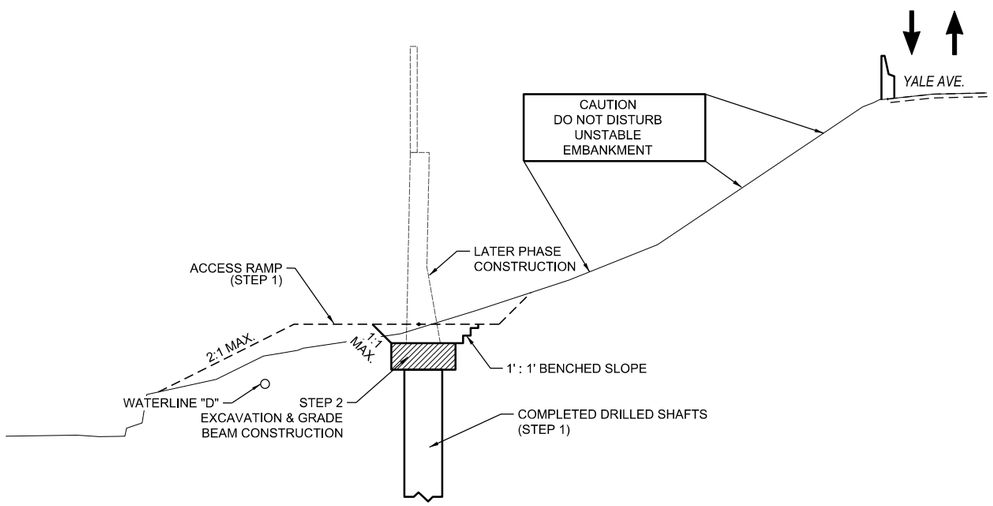
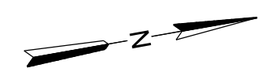


WALL "F" CONSTRUCTION SEQUENCE: STEP 2

Grade Beam

- Yale Avenue traffic remains on existing lanes. Existing guardrail or portable longitudinal barrier shall be in place between the traffic and work zone at all times.
- Access ramp shall remain at the existing grade elevation along the centerline of the wall.
- Excavate and earth form for the grade beam. Excavation limits shall not exceed that shown on the Step 2 detail.
- Station 59+00 to Station 62+00: Location of the existing embankment's signs of distress and slope instability. Open excavation within this station range shall be limited to a maximum of 100 feet at any given time. Limiting the excavation extents is critical to the stability of the existing slopes.
- Construct grade beam.
- Spoils may be used to complete the access ramp on the downhill side of the shafts to allow future construction access.

Contractor shall follow the construction sequence specified and take precautions as required to prevent a slope failure during construction. Precautions shall include constructing the grade beam (Step 2) from the west side of the proposed wall system, thereby keeping equipment, materials, etc., off of the existing Yale Avenue embankment.



REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

CONSTRUCTION SEQUENCE (2)
PHASE 1

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= NA	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BAC	10/18
	FIELD MGR	ZZW	7/20
	LEAD ENGR	DW	1/19
VERTICAL: 1"= NA	RECOMMENDED	AAS	9-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_1-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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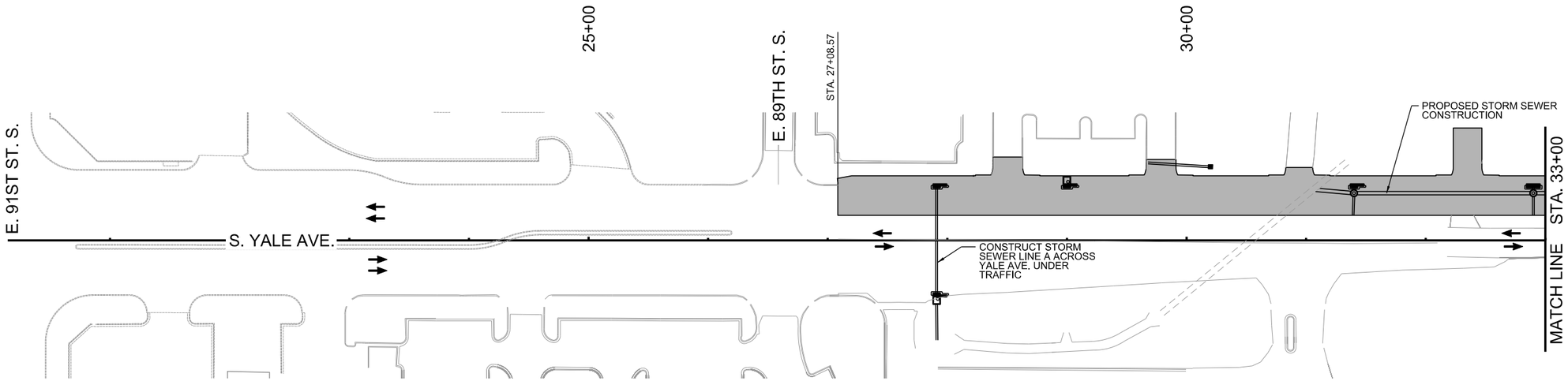

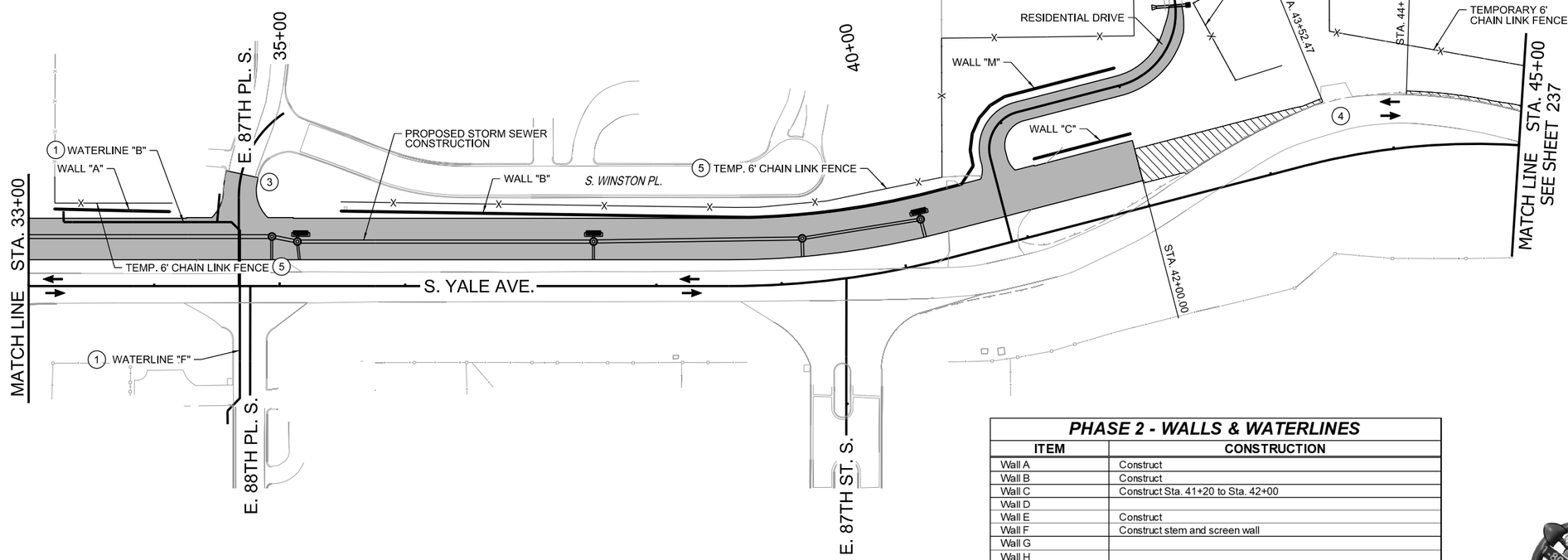

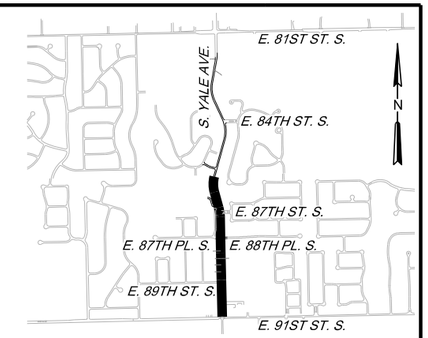

KEYMAP

- PAVING CONSTRUCTION THIS PHASE
- TEMPORARY PAVEMENT WIDENING
- COMPLETED TEMP. PAVING PREVIOUS PHASE
- COMPLETED PAVING PREVIOUS PHASE
- TEMPORARY 6' CHAIN LINK FENCE

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. WALL "F" IS TO BE CONSTRUCTED IN STEPS TO AVOID FAILURE OF THE EXISTING GROUND SLOPE ADJACENT TO YALE AVE. SEE SHEET 238 .
3. ACCESS TO ALL STREETS AND DRIVES, INCLUDING 87th PL. S. SHALL BE MAINTAINED AT ALL TIME DURING CONSTRUCTION.
4. TEMPORARY CLOSURE OF YALE AVENUE FOR CONSTRUCTION OF TEMPORARY WIDENING SHALL NOT LAST LONGER THAN 1 WEEK.
5. TEMPORARY 6' CHAIN LINK FENCE SHALL BE INSTALLED ALONG ALL PROPERTIES THAT HAVE FENCE REMOVED BY CONSTRUCTION.

N

50' 25' 0 50'

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

PHASE 2 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Construct
Wall B	Construct
Wall C	Construct Sta. 41+20 to Sta. 42+00
Wall D	
Wall E	Construct
Wall F	Construct stem and screen wall
Wall G	
Wall H	
Wall J	
Wall K	
Wall L	
Wall M	Construct
Wall N	
Waterline "A"	
Waterline "B"	Construct
Waterline "D"	Phase 1
Waterline "F"	Construct
Waterline "G"	
Waterline "H"	
Waterline "J"	
Waterline "K"	Phase 1
Waterline "L"	
Temp. Waterline "M"	Phase 1
San. Sewer 1	

PHASE 2 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct 2 outer Southbound lanes STA 27+08.57 to STA 42+00.00	On existing S. Yale Ave. Temporary closure required for the construction of the Temporary Widening adjacent to S. Yale Ave.
	Construct Temporary Widening STA 42+00.00 to STA 43+52.47 LT	
	Construct Temporary Widening STA 44+14.10 to STA 50+33.28 LT	
	Construct Temporary Widening STA 50+70.45 to STA 53+50.00 LT	
	Construct 2 outer Southbound lanes STA 53+50.00 to STA 61+70.00	
E. 88th Pl. S.		On existing E. 88th Pl. S.
E. 87th Pl. S.	Construct	On existing E. 87th Pl. S. Maintain access at all times.
E. 87th St. S.		On existing E. 87th St. S.
E. 85th St. S.		On existing E. 85th St. S.
E. 84th St. S.		On existing E. 84th St. S.

CONSTRUCTION SEQUENCE (3)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'			
	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18
	FIELD MGR		7/20
VERTICAL: 1"= NA	LEAD ENGR		11/19
	RECOMMENDED DESIGN MANAGER		9-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_2-01.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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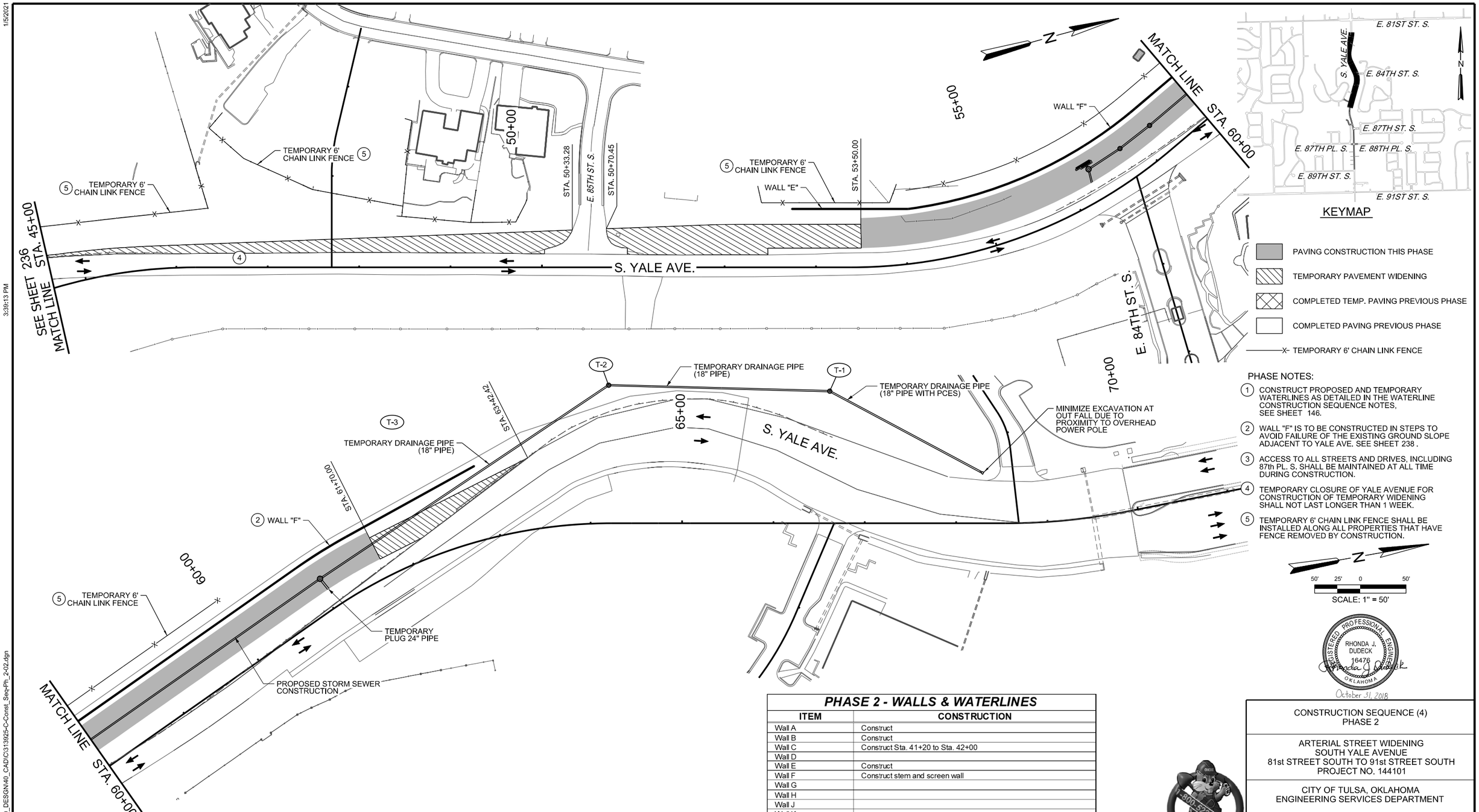

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. WALL "F" IS TO BE CONSTRUCTED IN STEPS TO AVOID FAILURE OF THE EXISTING GROUND SLOPE ADJACENT TO YALE AVE. SEE SHEET 238 .
3. ACCESS TO ALL STREETS AND DRIVES, INCLUDING 87th PL. S. SHALL BE MAINTAINED AT ALL TIME DURING CONSTRUCTION.
4. TEMPORARY CLOSURE OF YALE AVENUE FOR CONSTRUCTION OF TEMPORARY WIDENING SHALL NOT LAST LONGER THAN 1 WEEK.
5. TEMPORARY 6' CHAIN LINK FENCE SHALL BE INSTALLED ALONG ALL PROPERTIES THAT HAVE FENCE REMOVED BY CONSTRUCTION.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

PHASE 2 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct 2 outer Southbound lanes STA 27+08.57 to STA 42+00.00	On existing S. Yale Ave. Temporary closure required for the construction of the Temporary Widening adjacent to S. Yale Ave.
	Construct Temporary Widening STA 42+00.00 to STA 43+52.47 LT	
	Construct Temporary Widening STA 44+14.10 to STA 50+33.28 LT	
	Construct Temporary Widening STA 50+70.45 to STA 53+50.00 LT	
	Construct 2 outer Southbound lanes STA 53+50.00 to STA 61+70.00	
E. 88th Pl. S.		On existing E. 88th Pl. S.
E. 87th Pl. S.	Construct	On existing E. 87th Pl. S. Maintain access at all times.
E. 87th St. S.		On existing E. 87th St. S.
E. 85th St. S.		On existing E. 85th St. S.
E. 84th St. S.		On existing E. 84th St. S.

PHASE 2 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Construct
Wall B	Construct
Wall C	Construct Sta. 41+20 to Sta. 42+00
Wall D	
Wall E	Construct
Wall F	Construct stem and screen wall
Wall G	
Wall H	
Wall J	
Wall K	
Wall L	
Wall M	Construct
Wall N	
Waterline "A"	
Waterline "B"	Construct
Waterline "D"	Phase 1
Waterline "F"	Construct
Waterline "G"	
Waterline "H"	
Waterline "J"	
Waterline "K"	Phase 1
Waterline "L"	
Temp. Waterline "M"	Phase 1
San. Sewer 1	

CONSTRUCTION SEQUENCE (4)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDE	10/18	
	FIELD MGR	ZCM	7/20	
VERTICAL: 1"= NA	LEAD ENGR	DJ	11/19	
	RECOMMENDED DESIGN MANAGER	HAS	9-20	CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_2-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
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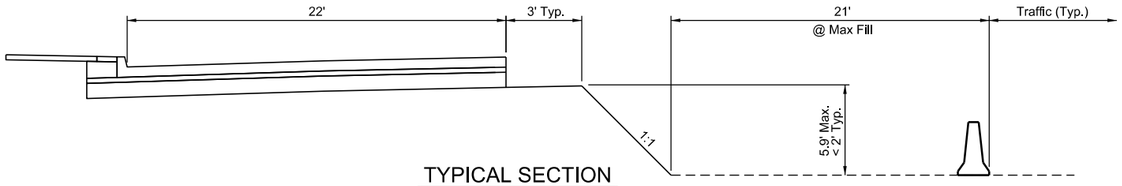
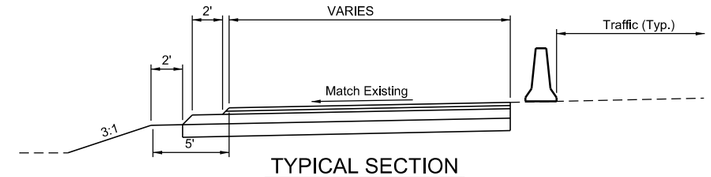
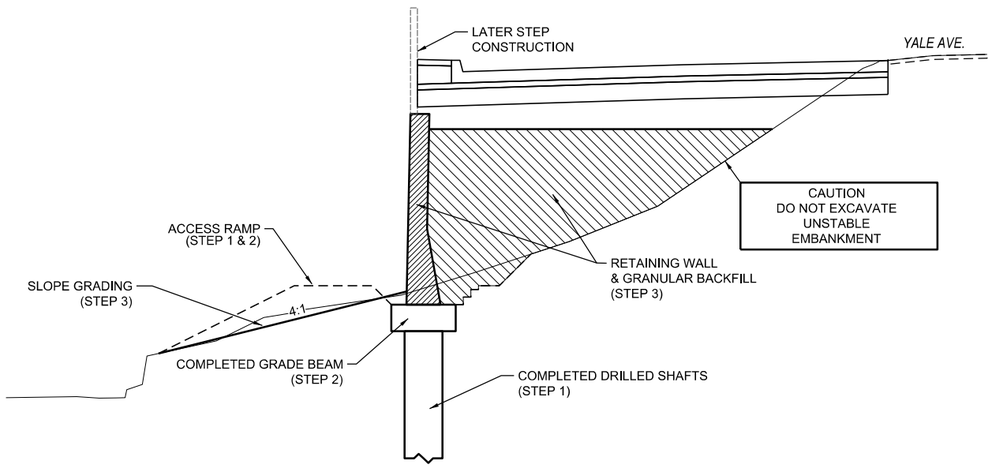


TYPICAL SECTION
STA. 53+50 TO 61+70
NTS



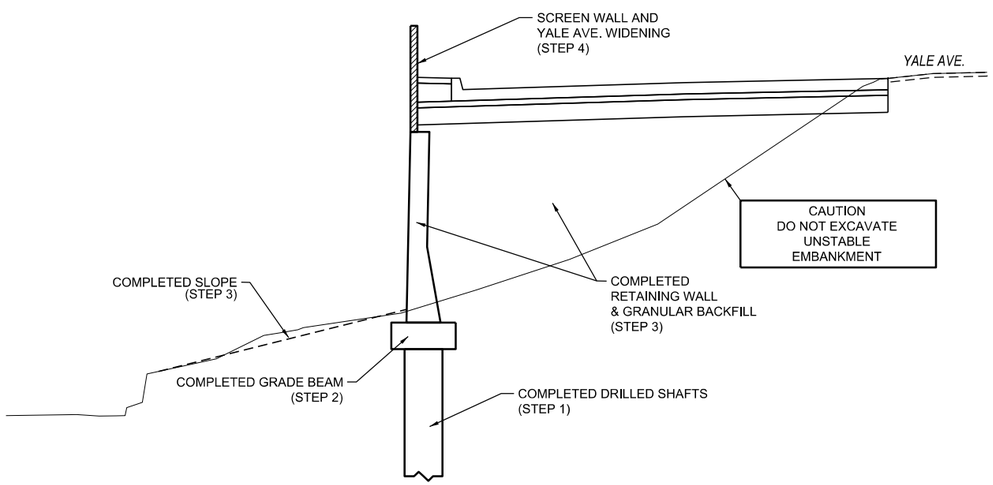
TYPICAL SECTION
STA. 42+00 TO 53+50
NTS



WALL "F" CONSTRUCTION SEQUENCE: STEP 3

Retaining Wall

- Yale Avenue traffic remains on existing lanes. Existing guardrail or portable longitudinal barrier shall be in place between the traffic and work zone at all times.
- Construct retaining wall and backfill as shown on the Step 3 detail.
- Access ramp shall remain at the existing grade elevation along the centerline of the wall.
- Excavation limits shall not exceed that shown on the Step 3 detail.
- Station 59+00 to Station 62+00: Location of the existing embankment's signs of distress and slope instability. Open excavation within and adjacent to this station range shall be limited to a maximum of 100 feet at any given time. Limiting the excavation extents is critical to the stability of the existing slopes.
- From Station 59+00 to 62+00, after a 100' section of grade beam has been constructed and concrete has reached 28-day strength Steps 3 and 4 may proceed concurrent with the remainder of Step 2 for the constructed section.
- Finalize slope grading at front face of the retaining wall, and remove access ramp.



Wall "F" CONSTRUCTION SEQUENCE: STEP 4

Screen Wall

- Yale Avenue traffic remains on existing lanes. Existing guardrail or portable longitudinal barrier shall be in place between the traffic and work zone at all times.
- Construct the Screen Wall and proposed Yale Ave. widening.

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

CONSTRUCTION SEQUENCE (5)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		10/18	
	FIELD MGR		9/20	
	LEAD ENGR		11/18	
VERTICAL: 1"= NA	RECOMMENDED		9.20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Const_Seq-Ph_2-03.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 238 OF 334 SHEETS

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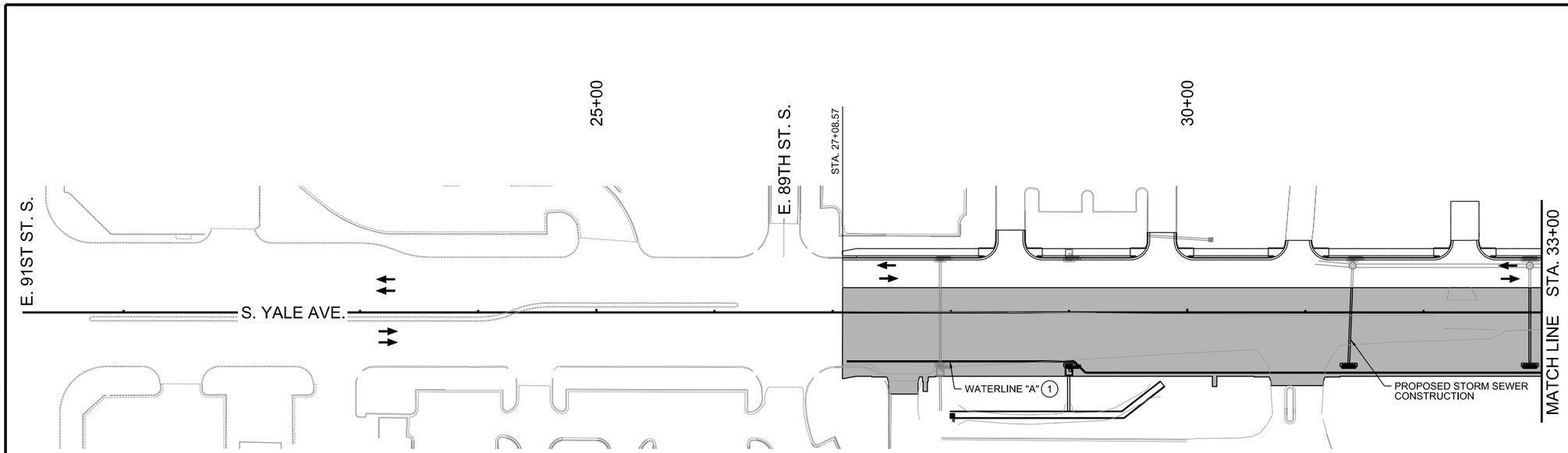

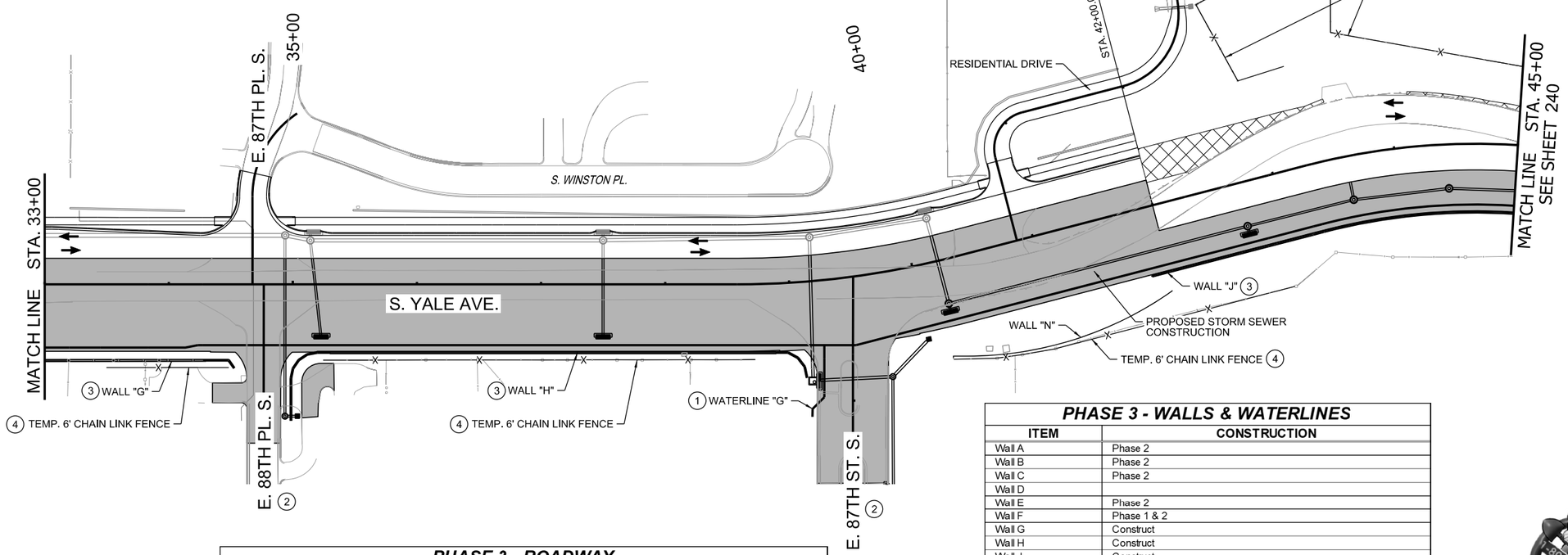

KEYMAP

- PAVING CONSTRUCTION THIS PHASE
- TEMPORARY PAVEMENT WIDENING
- COMPLETED TEMP. PAVING PREVIOUS PHASE
- COMPLETED PAVING PREVIOUS PHASE
- —X— TEMPORARY 6' CHAIN LINK FENCE

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. AT LEAST TWO OF THE FOLLOWING RESIDENTIAL STREETS SHALL REMAIN ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION: E. 88th PL., E. 87th ST. AND E. 84th ST.
3. SOIL ON THE LOW SIDE OF THE WALL SHALL BE EXCAVATED IN MAXIMUM HEIGHTS OF 6 FEET AND SHOTCRETE PLACED PRIOR TO EXCAVATING THE NEXT LIFT. THE LENGTH OF EXCAVATION PARALLEL TO THE WALL SHALL BE LIMITED TO THE AMOUNT THAT SHOTCRETE CAN BE PLACED BEFORE OPERATIONS CLOSE FOR EACH DAY. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION BE LEFT WITHOUT SHOTCRETE AT THE END OF EACH DAY.
4. TEMPORARY 6' CHAIN LINK FENCE SHALL BE INSTALLED ALONG ALL PROPERTIES THAT HAVE FENCE REMOVED BY CONSTRUCTION.

N

50' 25' 0 50'

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

PHASE 3 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct Northbound lanes, median, and inside Southbound lane STA 27+08.57 to STA 42+00.00	On proposed Southbound lanes, Temporary Widening, and existing S. Yale Ave.
	Construct 2 outer Northbound lanes STA 42+00.00 to STA 53+50.00	
	Construct Northbound lanes, median, and inside Southbound lane STA 53+50.00 to STA 61+70.00	
	Construct right half STA 61+70.00 to STA 69+92.17	
E. 88th Pl. S.	Construct	Note 1
E. 87th Pl. S.	Phase 2	On proposed E. 87th Pl. S.
E. 87th St. S.	Construct	Note 1
E. 85th St. S.		On existing E. 85th St. S.
E. 84th St. S.	Construct	Note 1

NOTE 1: AT LEAST TWO OF THE FOLLOWING RESIDENTIAL STREETS SHALL REMAIN ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION: E. 88th PL. S., E. 87th ST. S., AND E. 84th ST. S.

PHASE 3 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Phase 2
Wall B	Phase 2
Wall C	Phase 2
Wall D	
Wall E	Phase 2
Wall F	Phase 1 & 2
Wall G	Construct
Wall H	Construct
Wall J	Construct
Wall K	Construct
Wall L	Construct
Wall M	Phase 2
Wall N	Construct
Waterline "A"	Construct
Waterline "B"	Phase 2
Waterline "D"	Phase 1
Waterline "F"	Phase 2
Waterline "G"	Construct
Waterline "H"	Construct
Waterline "J"	Construct
Waterline "K"	Construct
Waterline "L"	Construct
Temp. Waterline "M"	Abandon
San. Sewer 1	Construct

CONSTRUCTION SEQUENCE (6)
PHASE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18
	FIELD MGR		2/20
VERTICAL: 1"= NA	LEAD ENGR		11/18
	RECOMMENDED		9-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_3-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

SHEET 239 OF 334 SHEETS

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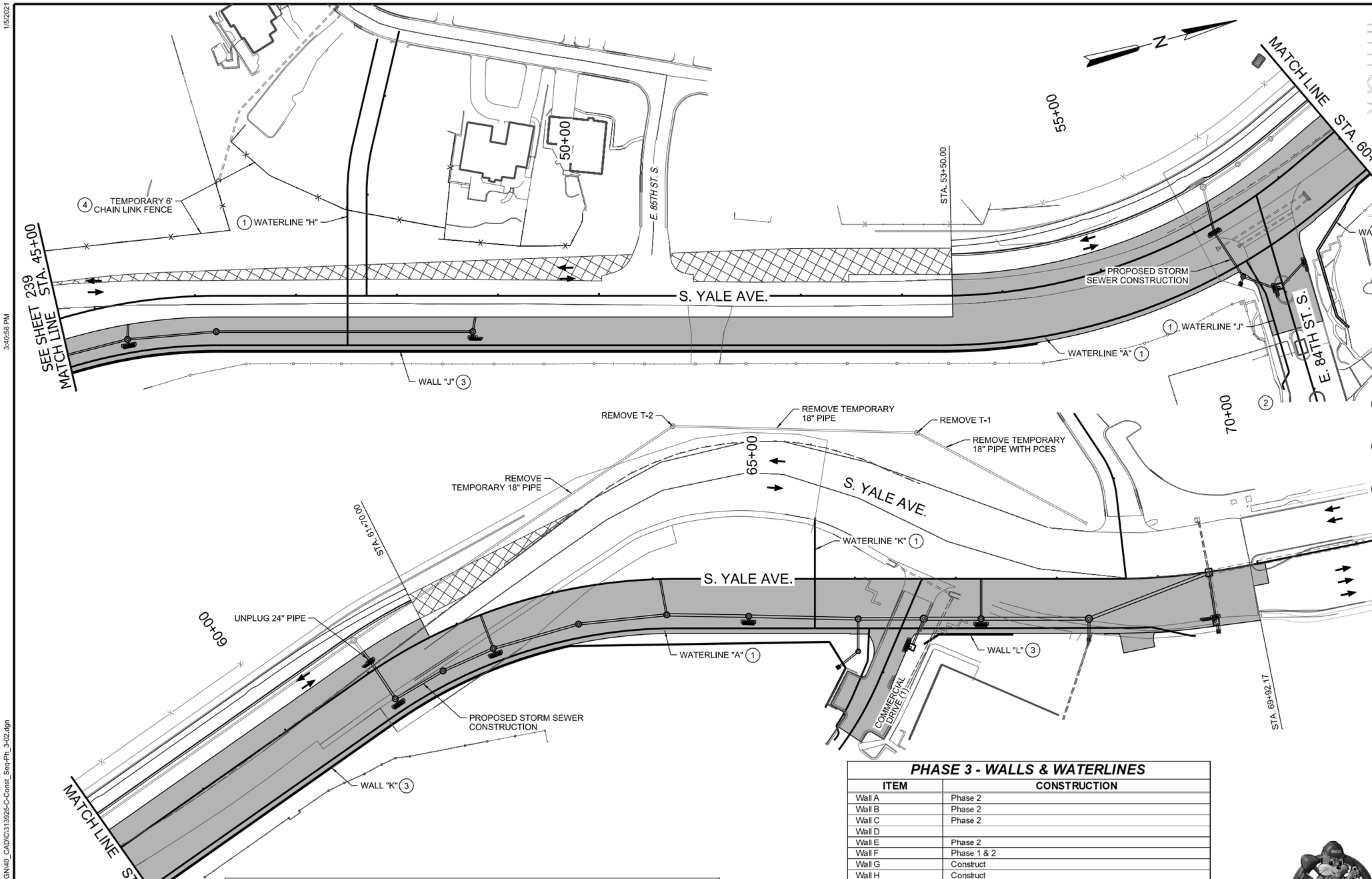

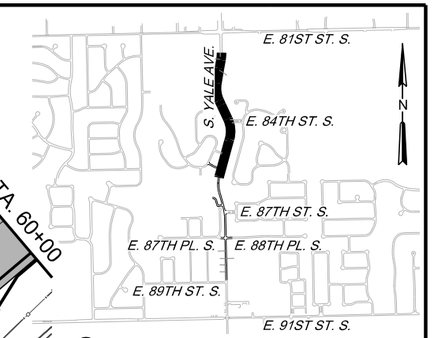

KEYMAP

- PAVING CONSTRUCTION THIS PHASE
- TEMPORARY PAVEMENT WIDENING
- COMPLETED TEMP. PAVING PREVIOUS PHASE
- COMPLETED PAVING PREVIOUS PHASE
- X- TEMPORARY 6' CHAIN LINK FENCE

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. AT LEAST TWO OF THE FOLLOWING RESIDENTIAL STREETS SHALL REMAIN ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION: E. 88th PL., E. 87th ST. AND E. 84th ST.
3. SOIL ON THE LOW SIDE OF THE WALL SHALL BE EXCAVATED IN MAXIMUM HEIGHTS OF 6 FEET AND SHOTCRETE PLACED PRIOR TO EXCAVATING THE NEXT LIFT. THE LENGTH OF EXCAVATION PARALLEL TO THE WALL SHALL BE LIMITED TO THE AMOUNT THAT SHOTCRETE CAN BE PLACED BEFORE OPERATIONS CLOSE FOR EACH DAY. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION BE LEFT WITHOUT SHOTCRETE AT THE END OF EACH DAY.

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

PHASE 3 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct Northbound lanes, median, and inside Southbound lane STA 27+08.57 to STA 42+00.00	On proposed Southbound lanes, Temporary Widening, and existing S. Yale Ave.
	Construct 2 outer Northbound lanes STA 42+00.00 to STA 53+50.00	
	Construct Northbound lanes, median, and inside Southbound lane STA 53+50.00 to STA 61+70.00	
	Construct right half STA 61+70.00 to STA 69+92.17	
E. 88th Pl. S.	Construct	Note 1
E. 87th Pl. S.	Phase 2	On proposed E. 87th Pl. S.
E. 87th St. S.	Construct	Note 1
E. 85th St. S.		On existing E. 85th St. S.
E. 84th St. S.	Construct	Note 1

NOTE 1: AT LEAST TWO OF THE FOLLOWING RESIDENTIAL STREETS SHALL REMAIN ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION: E. 88th PL. S., E. 87th ST. S., AND E. 84th ST. S.

PHASE 3 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Phase 2
Wall B	Phase 2
Wall C	Phase 2
Wall D	
Wall E	Phase 2
Wall F	Phase 1 & 2
Wall G	Construct
Wall H	Construct
Wall J	Construct
Wall K	Construct
Wall L	Construct
Wall M	Phase 2
Wall N	Construct
Waterline "A"	Construct
Waterline "B"	Phase 2
Waterline "D"	Phase 1
Waterline "F"	Phase 2
Waterline "G"	Construct
Waterline "H"	Construct
Waterline "J"	Construct
Waterline "K"	Construct
Waterline "L"	Construct
Temp. Waterline "M"	Abandon
San. Sewer 1	Construct

CONSTRUCTION SEQUENCE (7)
PHASE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR		12/18	
	FIELD MGR		7/20	
	LEAD ENGR		11/19	
VERTICAL: 1"= NA	RECOMMENDED	HAK	9.20	
	DESIGN MANAGER			CITY ENGINEER
FILE: 313925-C-Const_Seq-Ph_3-02.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 240 OF 334 SHEETS

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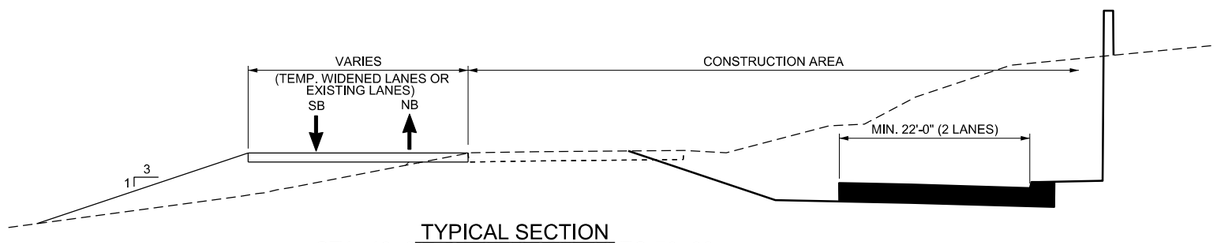


TYPICAL SECTION
STA. 42+00 TO 53+00 & 62+00 TO 70+00
NTS

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

CONSTRUCTION SEQUENCE (8)
PHASE 3

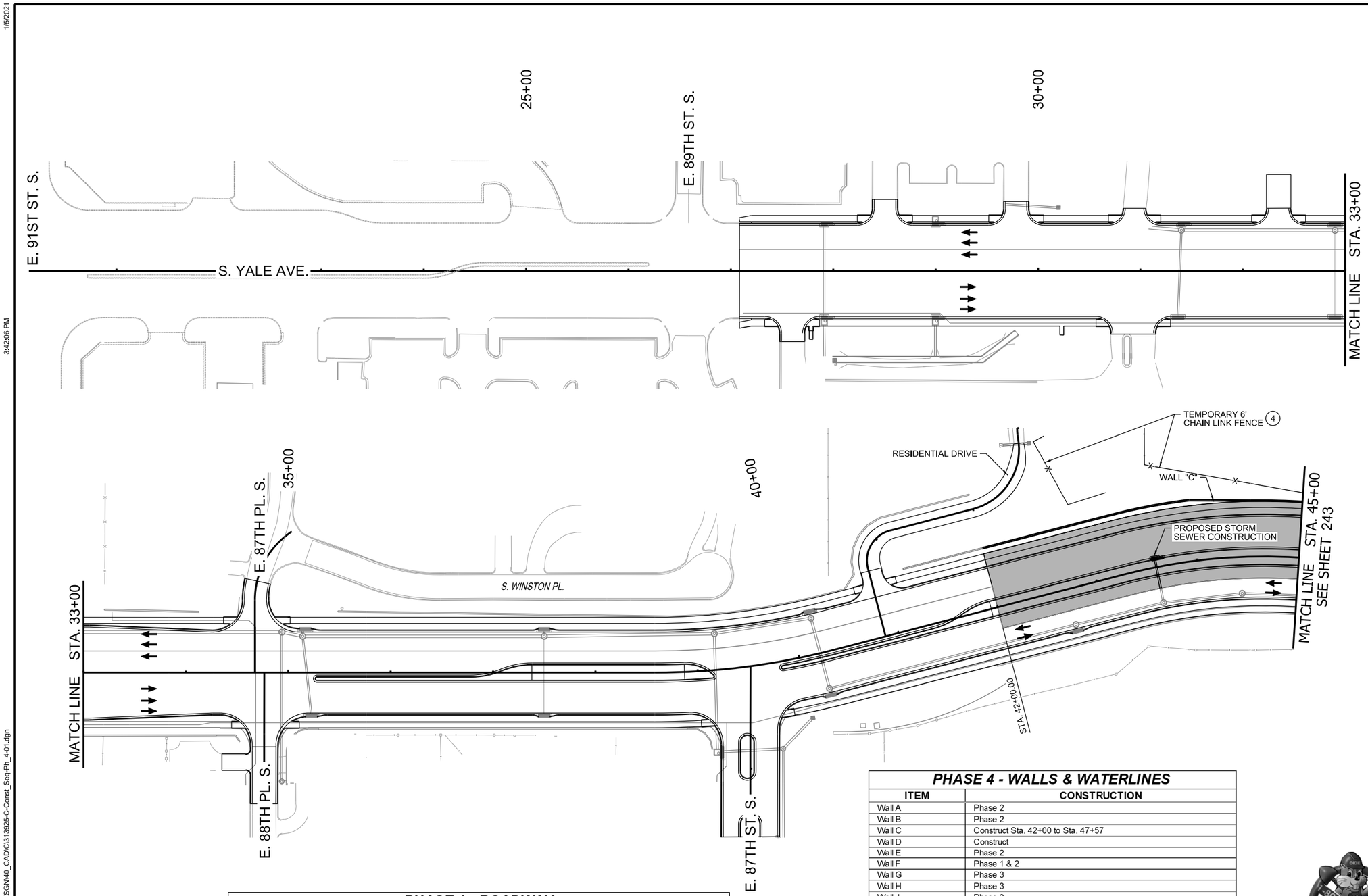
ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

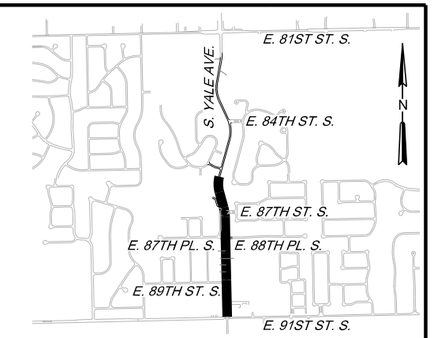
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDE	6/18	
	FIELD MGR	RDL	7/20	
VERTICAL: 1"= NA	LEAD ENGR		11/19	
	RECOMMENDED DESIGN MANAGER	HAS	9-20	CITY ENGINEER
FILE: 313925-C-Const_Seq-Ph_3-03.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 241 OF 334 SHEETS





KEYMAP

PAVING CONSTRUCTION THIS PHASE

TEMPORARY PAVEMENT WIDENING

COMPLETED TEMP. PAVING PREVIOUS PHASE

COMPLETED PAVING PREVIOUS PHASE

—X— TEMPORARY 6' CHAIN LINK FENCE

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. E. 85th ST. SHALL BE CLOSED.
3. SOIL ON THE LOW SIDE OF THE WALL SHALL BE EXCAVATED IN MAXIMUM HEIGHTS OF 6 FEET AND SHOTCRETE PLACED PRIOR TO EXCAVATING THE NEXT LIFT. THE LENGTH OF EXCAVATION PARALLEL TO THE WALL SHALL BE LIMITED TO THE AMOUNT THAT SHOTCRETE CAN BE PLACED BEFORE OPERATIONS CLOSE FOR EACH DAY. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION BE LEFT WITHOUT SHOTCRETE AT THE END OF EACH DAY.
4. TEMPORARY 6' CHAIN LINK FENCE SHALL BE INSTALLED ALONG ALL PROPERTIES THAT HAVE FENCE REMOVED BY CONSTRUCTION.

N

50' 25' 0 50'

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

PHASE 4 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct Southbound lanes, median, and inside Northbound lane STA 42+00.00 to STA 53+50.00 Construct LEFT half STA 61+70.00 to STA 69+92.17	On proposed Northbound lanes of S. Yale Ave.
E. 88th Pl. S.	Phase 3	On proposed E. 88th Pl. S.
E. 87th Pl. S.	Phase 2	On proposed E. 87th Pl. S.
E. 87th St. S.	Phase 3	On proposed E. 87th St. S.
E. 85th St. S.	Construct	E. 85th St. S closed
E. 84th St. S.	Phase 3	On proposed E. 84th St. S.

PHASE 4 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Phase 2
Wall B	Phase 2
Wall C	Construct Sta. 42+00 to Sta. 47+57
Wall D	Construct
Wall E	Phase 2
Wall F	Phase 1 & 2
Wall G	Phase 3
Wall H	Phase 3
Wall J	Phase 3
Wall K	Phase 3
Wall L	Phase 3
Wall M	Phase 2
Wall N	Phase 3
Waterline "A"	Phase 3
Waterline "B"	Phase 2 & 3
Waterline "D"	Phase 1
Waterline "F"	Phase 2
Waterline "G"	Phase 3
Waterline "H"	Phase 3
Waterline "J"	Phase 3
Waterline "K"	Phase 1 & 3
Waterline "L"	Phase 3
Temp. Waterline "M"	Phase 1 & 3
San. Sewer 1	Phase 3

CONSTRUCTION SEQUENCE (9)
PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18	APPROVED:
DESIGNED	JPP	10/18	
SURVEY	RDL	10/18	
PROJECT MGR	BDE	12/18	
FIELD MGR	ZTM	7/20	
LEAD ENGR		1/19	
RECOMMENDED	HAS	9-20	
DESIGN MANAGER			CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_4-01.dgn
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ATLAS PAGE NO.: 882, 883, 1005, 1006
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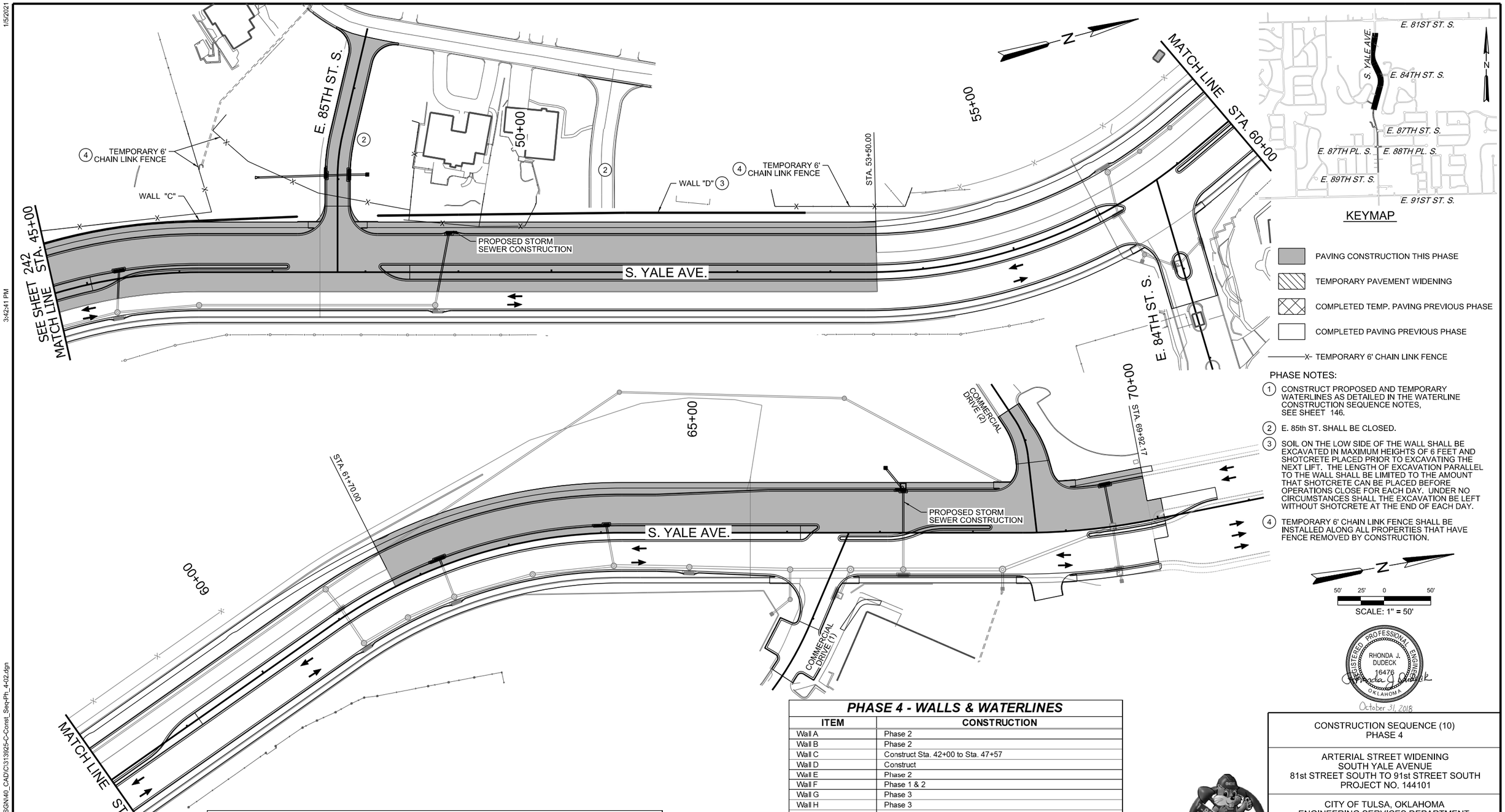

PHASE NOTES:

1. CONSTRUCT PROPOSED AND TEMPORARY WATERLINES AS DETAILED IN THE WATERLINE CONSTRUCTION SEQUENCE NOTES, SEE SHEET 146.
2. E. 85th ST. SHALL BE CLOSED.
3. SOIL ON THE LOW SIDE OF THE WALL SHALL BE EXCAVATED IN MAXIMUM HEIGHTS OF 6 FEET AND SHOTCRETE PLACED PRIOR TO EXCAVATING THE NEXT LIFT. THE LENGTH OF EXCAVATION PARALLEL TO THE WALL SHALL BE LIMITED TO THE AMOUNT THAT SHOTCRETE CAN BE PLACED BEFORE OPERATIONS CLOSE FOR EACH DAY. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION BE LEFT WITHOUT SHOTCRETE AT THE END OF EACH DAY.
4. TEMPORARY 6' CHAIN LINK FENCE SHALL BE INSTALLED ALONG ALL PROPERTIES THAT HAVE FENCE REMOVED BY CONSTRUCTION.

PHASE 4 - ROADWAY

ITEM	CONSTRUCTION	TRAFFIC
S. Yale Ave.	Construct Southbound lanes, median, and inside Northbound lane STA 42+00.00 to STA 53+50.00	On proposed Northbound lanes of S. Yale Ave.
	Construct LEFT half STA 61+70.00 to STA 69+92.17	
E. 88th Pl. S.	Phase 3	On proposed E. 88th Pl. S.
E. 87th Pl. S.	Phase 2	On proposed E. 87th Pl. S.
E. 87th St. S.	Phase 3	On proposed E. 87th St. S.
E. 85th St. S.	Construct	E. 85th St. S closed
E. 84th St. S.	Phase 3	On proposed E. 84th St. S.

PHASE 4 - WALLS & WATERLINES

ITEM	CONSTRUCTION
Wall A	Phase 2
Wall B	Phase 2
Wall C	Construct Sta. 42+00 to Sta. 47+57
Wall D	Construct
Wall E	Phase 2
Wall F	Phase 1 & 2
Wall G	Phase 3
Wall H	Phase 3
Wall J	Phase 3
Wall K	Phase 3
Wall L	Phase 3
Wall M	Phase 2
Wall N	Phase 3
Waterline "A"	Phase 3
Waterline "B"	Phase 2 & 3
Waterline "D"	Phase 1
Waterline "F"	Phase 2
Waterline "G"	Phase 3
Waterline "H"	Phase 3
Waterline "J"	Phase 3
Waterline "K"	Phase 1 & 3
Waterline "L"	Phase 3
Temp. Waterline "M"	Phase 1 & 3
San. Sewer 1	Phase 3

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

CONSTRUCTION SEQUENCE (10)
PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR		10/18
FIELD MGR		10/20
LEAD ENGR		1/19
RECOMMENDED	HAS	9-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_4-02.dgn
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SHEET 243 OF 334 SHEETS

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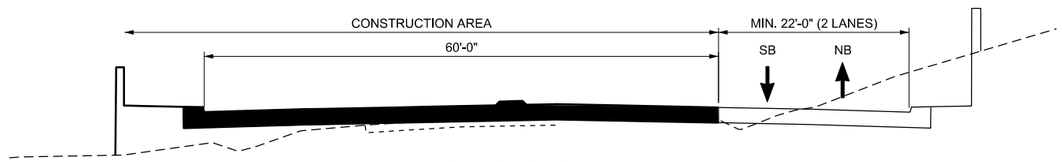

TYPICAL SECTION
STA. 42+00 TO 53+00 & 62+00 TO 70+00
NTS

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

CONSTRUCTION SEQUENCE (11)
PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	BDC	4/18
FIELD MGR	ZZM	7/20
LEAD ENGR	DN	1/19
RECOMMENDED DESIGN MANAGER	HAS	9.20

APPROVED:
CITY ENGINEER

FILE: 313925-C-Const_Seq-Ph_4-03.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 244 OF 334 SHEETS

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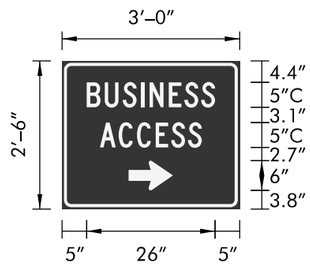
E. 91ST ST. S.



SIGN NUMBER	SP. SIGN BAS(R)
WIDTH x HGHT.	3'-0" x 2'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

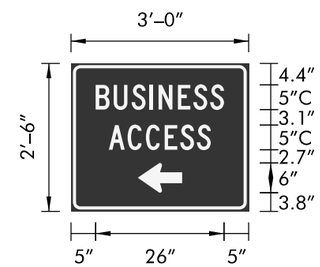
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	13.5	3.8	6	9

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
B	U	S	I	N	E	S	S										C 2000
5	8.7	12.3	16	17.8	21.7	24.8	28.2									26	5
A	C	C	E	S	S												C 2000
7.7	11.5	15.2	19	22.1	25.5											20.7	5

SIGN BAS(R)

7.5 SF



SIGN NUMBER	SP. SIGN BAS(L)
WIDTH x HGHT.	3'-0" x 2'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

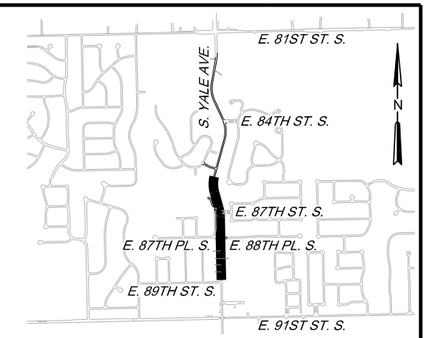
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	13.5	3.8	6	9

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
B	U	S	I	N	E	S	S										C 2000
5	8.7	12.3	16	17.8	21.7	24.8	28.2									26	5
A	C	C	E	S	S												C 2000
7.7	11.5	15.2	19	22.1	25.5											20.7	5

SIGN BAS(L)

7.5 SF



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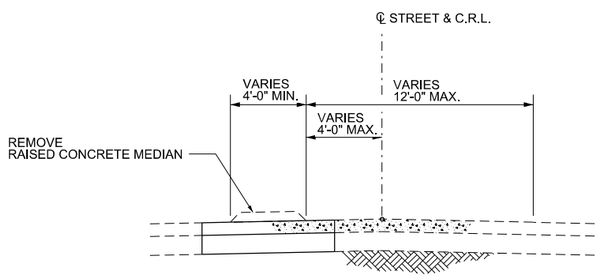

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TRAFFIC CONTROL (0)

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE			
1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	ZZM	12/20
	LEAD ENGR	DD	11/20
VERTICAL: 1"= NA	RECOMMENDED	HAJ	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Traf_Ctrl-Ph_0-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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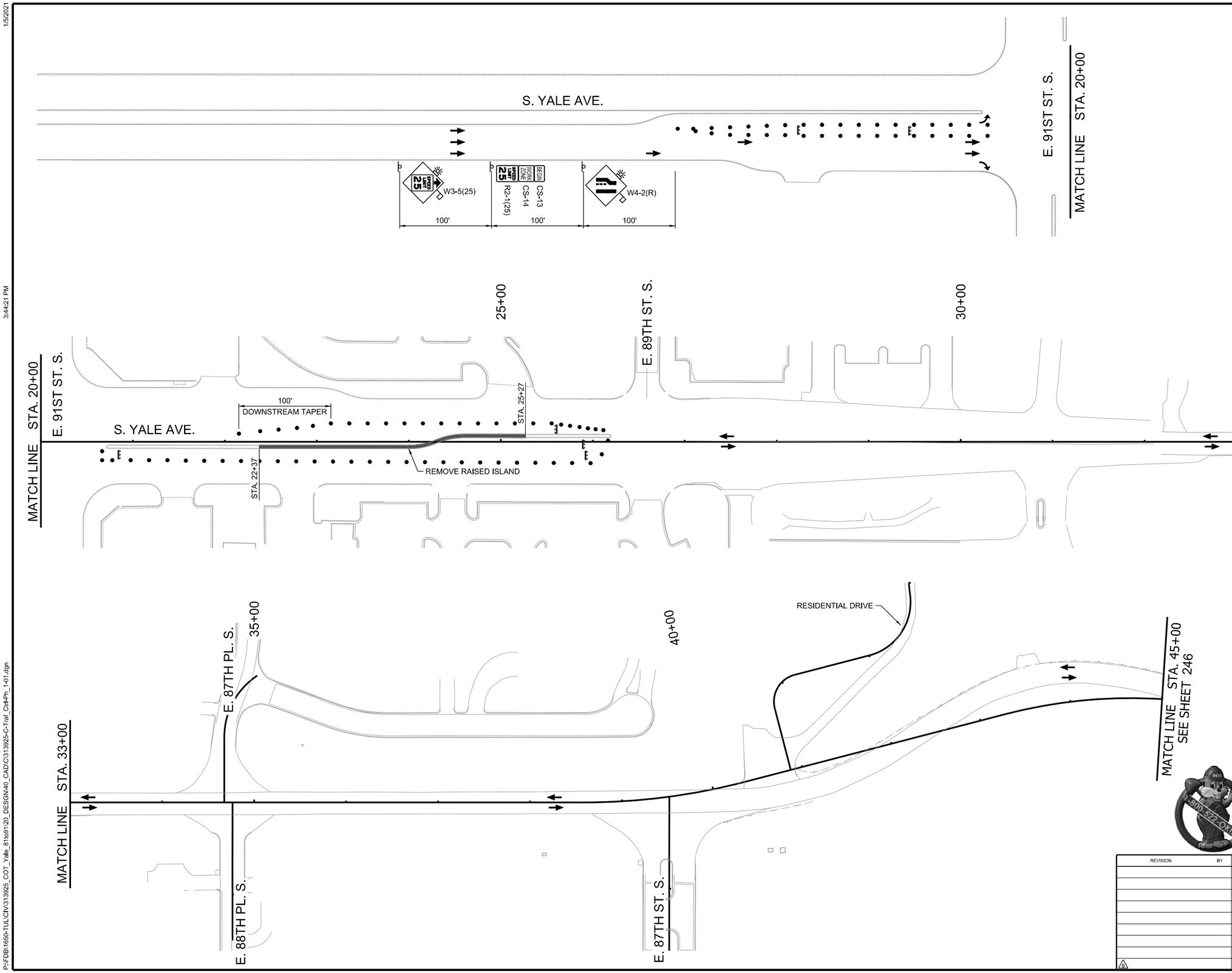

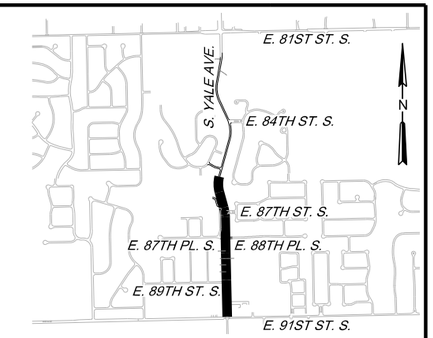

KEYMAP

PAVING CONSTRUCTION THIS PHASE

TEMPORARY PAVEMENT WIDENING

COMPLETED TEMP. PAVING PREVIOUS PHASE

COMPLETED PAVING PREVIOUS PHASE

REMOVE RAISED CONCRETE MEDIAN

LEGEND

TRAFFIC FLOW DIRECTION

SIGN

CHANNELIZING DEVICE @ 25' C/C (UNLESS OTHERWISE NOTED)

CZ IMPACT ATTENUATOR

PORTABLE LONGITUDINAL BARRIER

TYPE III BARRICADE

N

50' 25' 0 50'

SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA

October 31, 2018

TRAFFIC CONTROL (1)
PHASE 1

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE			
1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	DJP	12/20
	FIELD MGR	ZZW	12/20
VERTICAL: 1"= NA	LEAD ENGR	DJ	11/20
	RECOMMENDED	HAS	12-20
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 313925-C-Traf_Ctrl-Ph_1-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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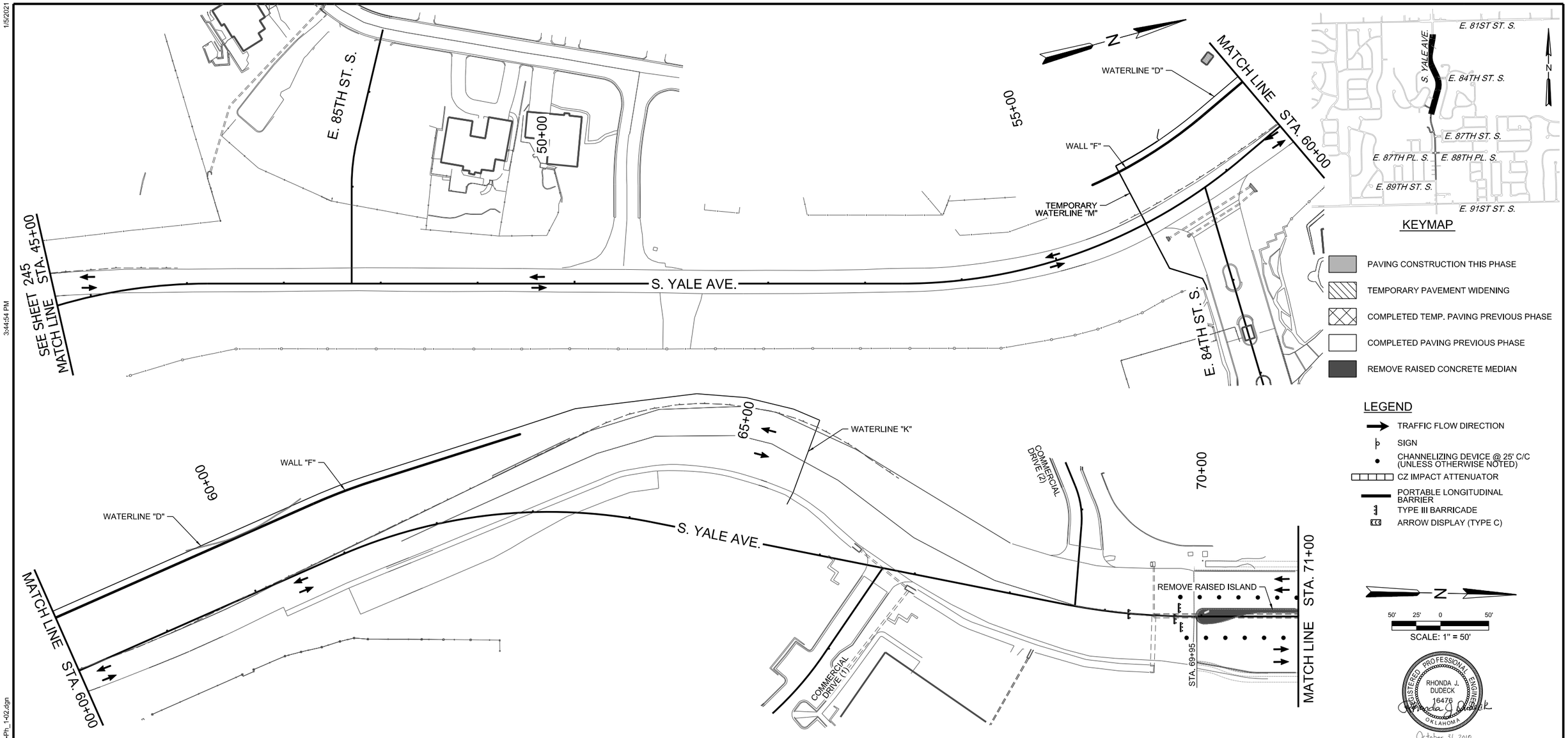

TRAFFIC CONTROL (2)
PHASE 1

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	JPP	12/20	
	FIELD MGR	RZW	12/20	
	LEAD ENGR		11/20	
VERTICAL: 1"= NA	RECOMMENDED DESIGN MANAGER	HAI	12-20	CITY ENGINEER
FILE: 313925-C-Traf_Ctrl-Ph_1-02.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 246 OF 334 SHEETS

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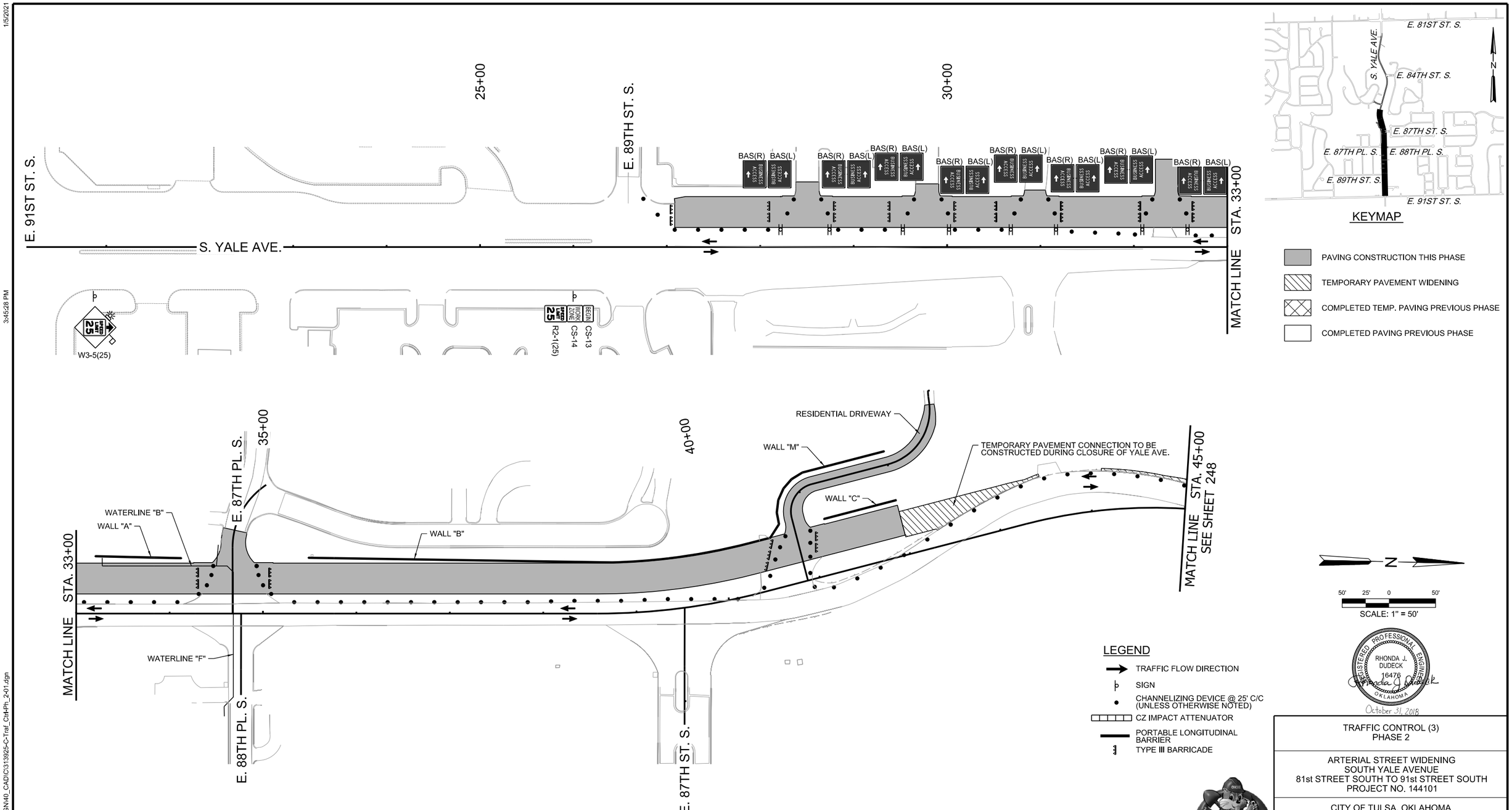

KEYMAP

PAVING CONSTRUCTION THIS PHASE

TEMPORARY PAVEMENT WIDENING

COMPLETED TEMP. PAVING PREVIOUS PHASE

COMPLETED PAVING PREVIOUS PHASE

LEGEND

- TRAFFIC FLOW DIRECTION
- SIGN
- CHANNELIZING DEVICE @ 25' C/C (UNLESS OTHERWISE NOTED)
- CZ IMPACT ATTENUATOR
- PORTABLE LONGITUDINAL BARRIER
- TYPE III BARRICADE

REGISTERED PROFESSIONAL ENGINEER RHONDA J. DUDECK 16476 OKLAHOMA

October 31, 2018

TRAFFIC CONTROL (3)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20
	FIELD MGR	ZEM	12/20
VERTICAL: 1"= NA	LEAD ENGR		11/20
	RECOMMENDED DESIGN MANAGER	HDJ	12.20

APPROVED:

CITY ENGINEER

FILE: 313925-C-Traf_Ctrl-Ph_2-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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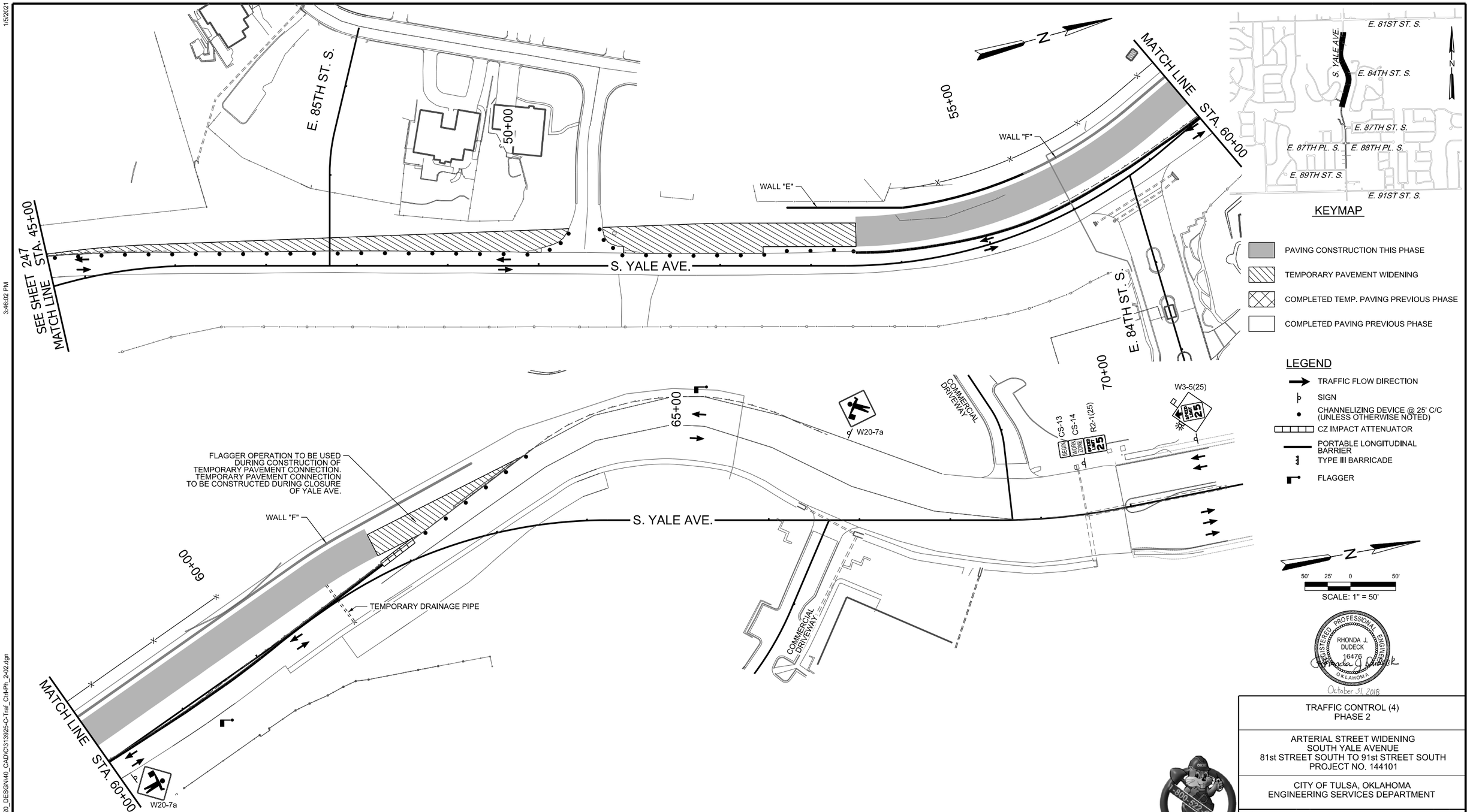

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TRAFFIC CONTROL (4)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18	APPROVED:
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20	
	FIELD MGR		12/20	
	LEAD ENGR		12/20	
VERTICAL: 1"= NA	RECOMMENDED		12.20	CITY ENGINEER
	DESIGN MANAGER			
FILE: 313925-C-Traf_Ctrl-Ph_2-02.dgn				DATE: OCTOBER 2018
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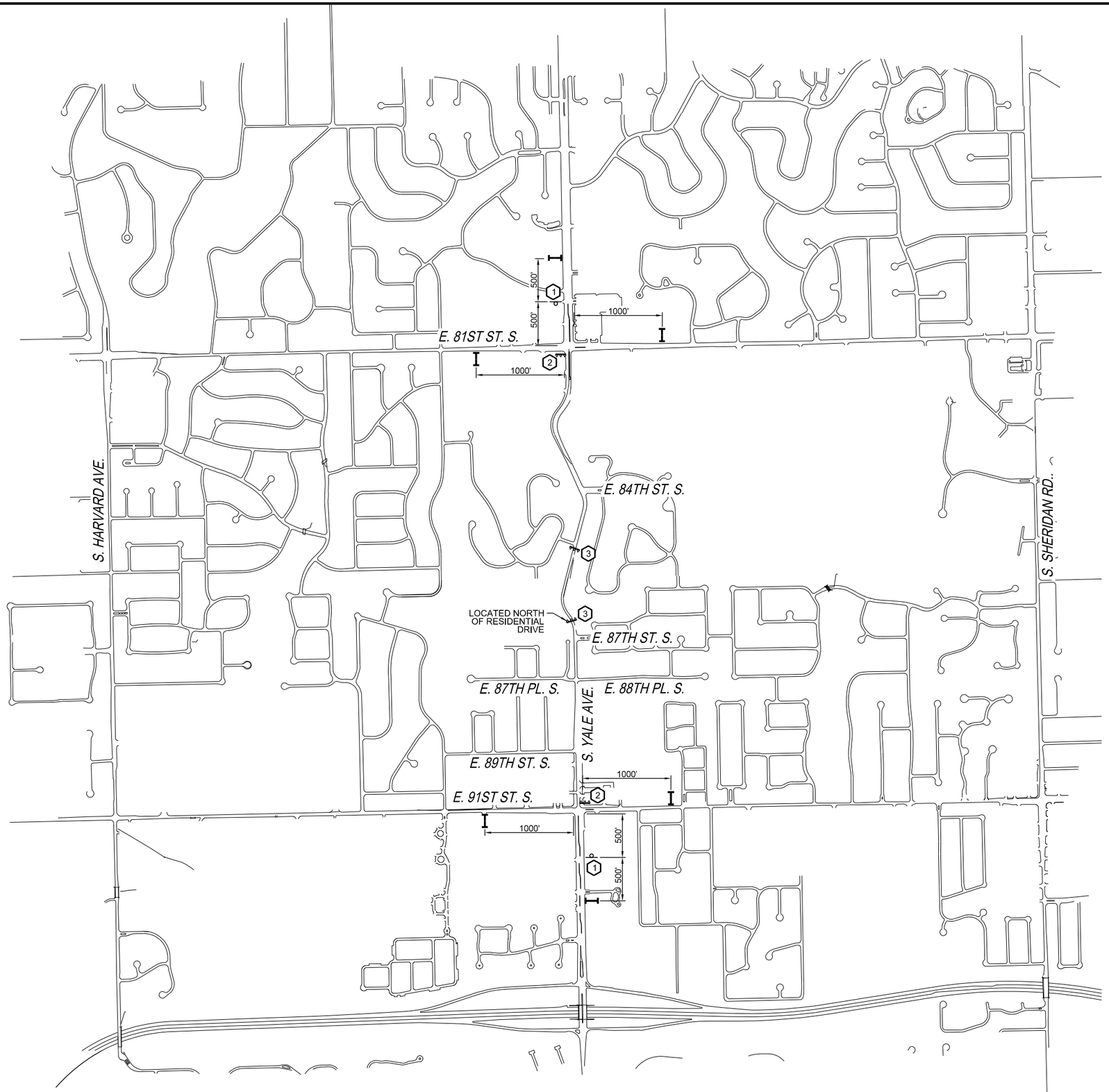

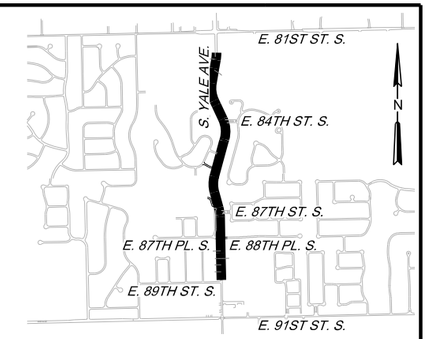

KEYMAP

LEGEND

- PORTABLE CHANGABLE MESSAGE SIGN
- SIGN
- TYPE III BARRICADE

1	ROAD CLOSED AHEAD	CW20-3
2	ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3a
3	ROAD CLOSED	R11-2

NOTE:
YALE AVE. TO REMAIN OPEN MONDAY THRU FRIDAY. WEEKEND CLOSURES ARE FOR CONSTRUCTION OF TEMPORARY PAVEMENT FROM STA. 42+00 TO STA. 50+00.

N

600' 400' 200' 0 600'
SCALE: 1" = 600'

REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TRAFFIC CONTROL (5)
PHASE 2

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	BDC	10/18
	FIELD MGR	RZW	7/20
VERTICAL: 1"= NA	LEAD ENGR		1/19
	RECOMMENDED	KAS	9-20
	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

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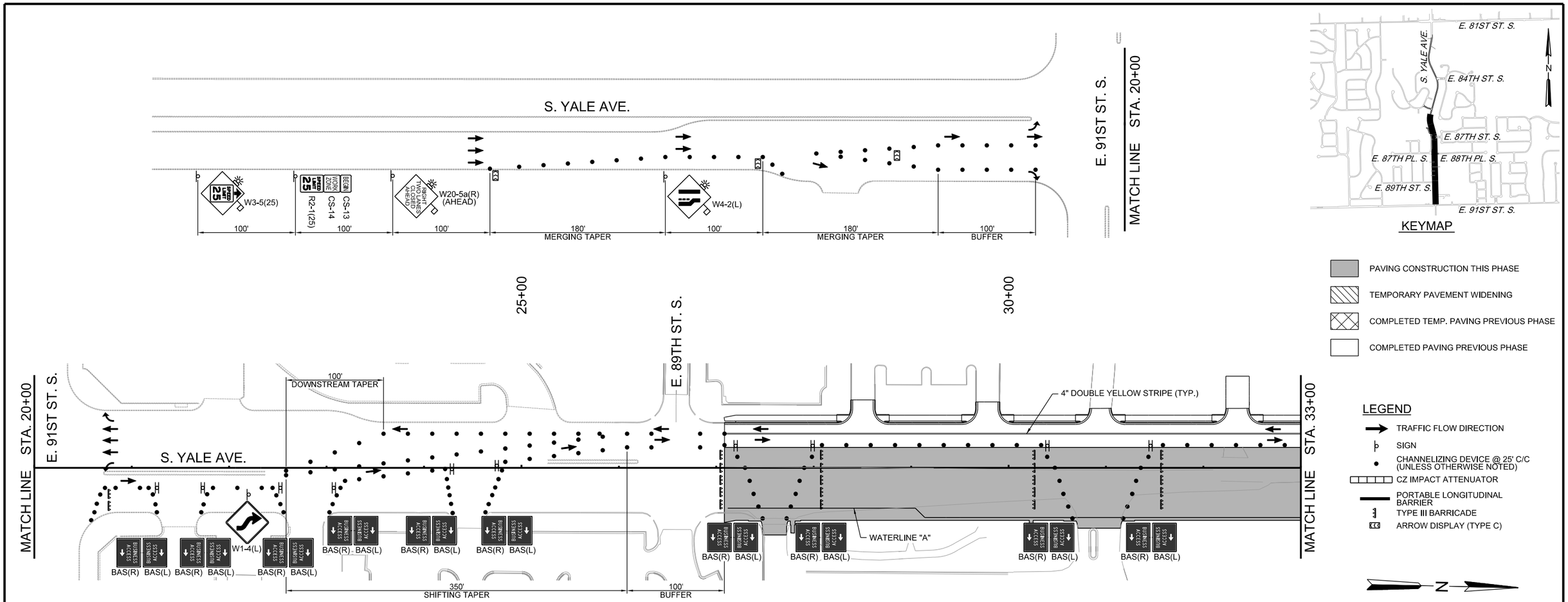


KEYMAP

PAVING CONSTRUCTION THIS PHASE

TEMPORARY PAVEMENT WIDENING

COMPLETED TEMP. PAVING PREVIOUS PHASE

COMPLETED PAVING PREVIOUS PHASE

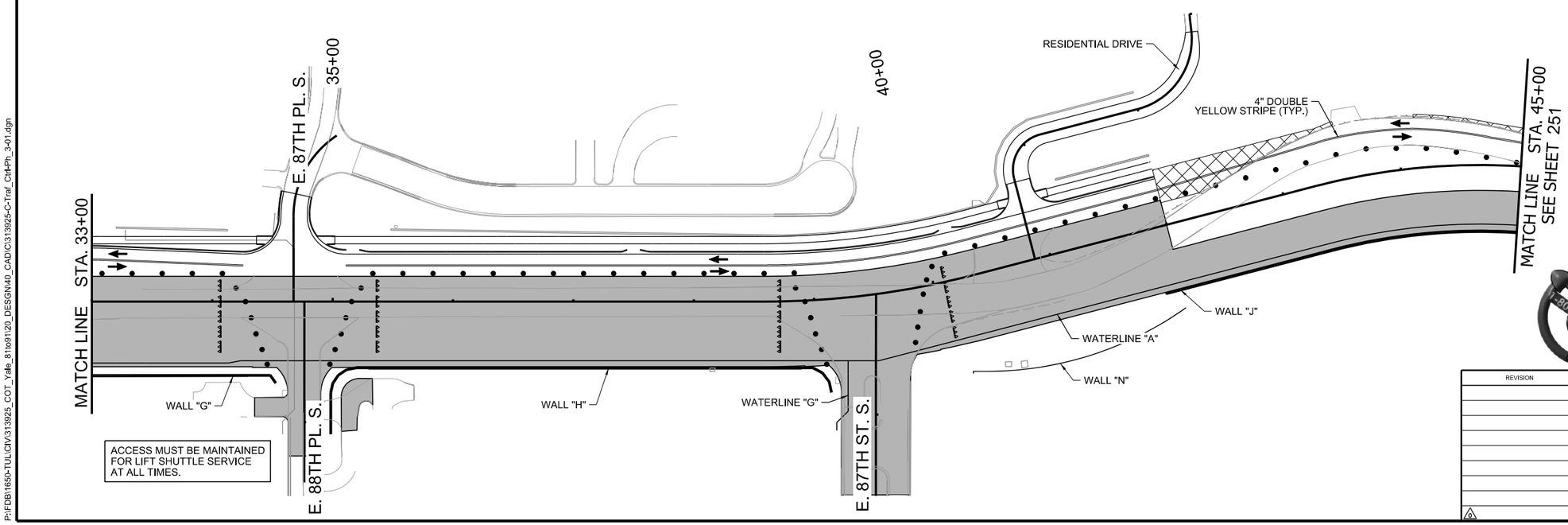
LEGEND

- TRAFFIC FLOW DIRECTION
- SIGN
- CHANNELIZING DEVICE @ 25' C/C (UNLESS OTHERWISE NOTED)
- CZ IMPACT ATTENUATOR
- PORTABLE LONGITUDINAL BARRIER
- TYPE III BARRICADE
- ARROW DISPLAY (TYPE C)

N

50' 25' 0 50'

SCALE: 1" = 50'



REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018

TRAFFIC CONTROL (6)
PHASE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'	DRAWN	PB	10/18
	DESIGNED	JPP	10/18
	SURVEY	RDL	10/18
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	RAP	12/20
	FIELD MGR	[illegible]	12/20
VERTICAL: 1"= NA	LEAD ENGR	[illegible]	12/20
	RECOMMENDED DESIGN MANAGER	[illegible]	12-20

APPROVED: CITY ENGINEER

FILE: 313925-C-Traf_Ctrl-Ph_3-01.dgn

DATE: OCTOBER 2018

ATLAS PAGE NO.: 882, 883, 1005, 1006

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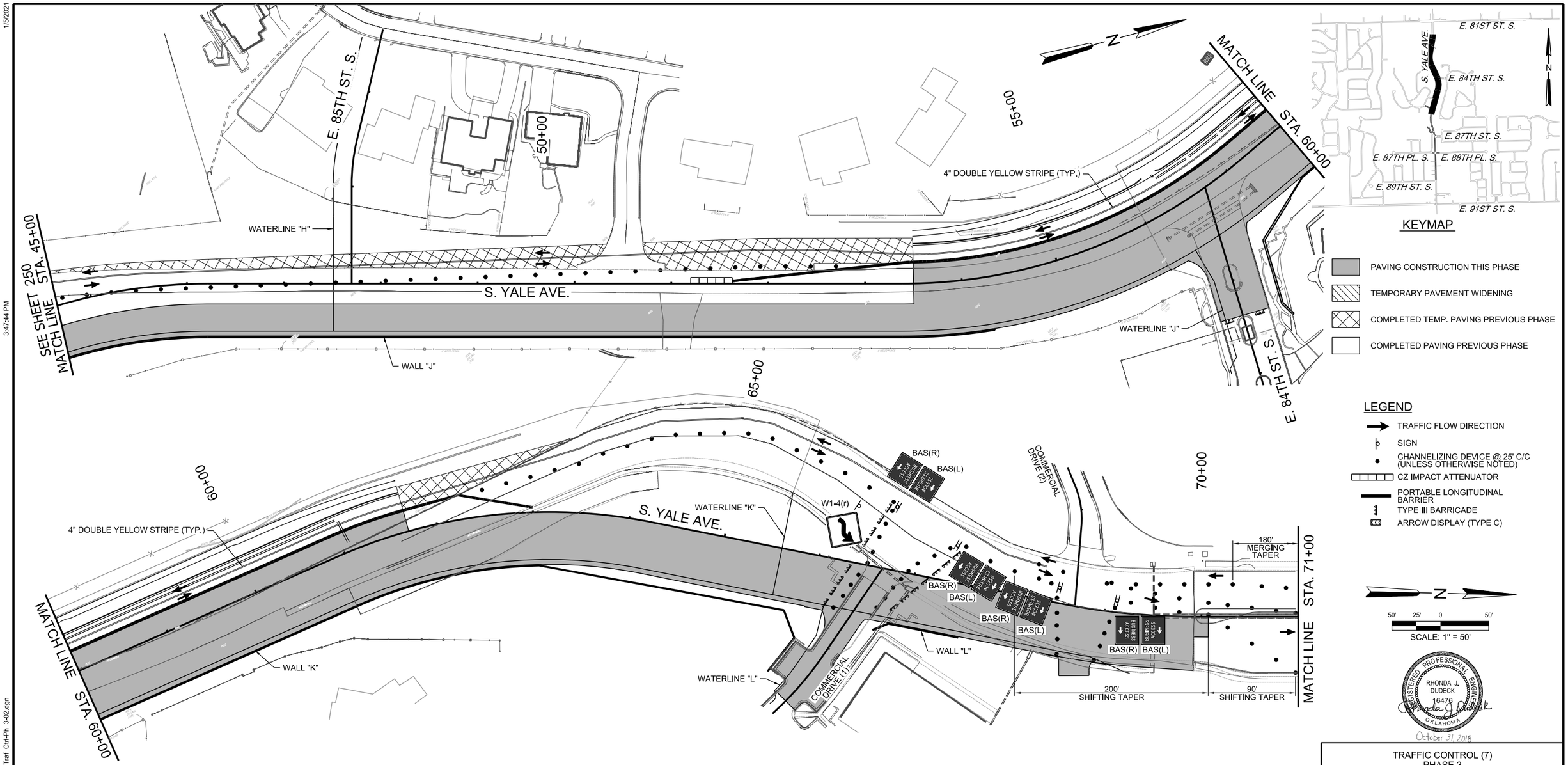
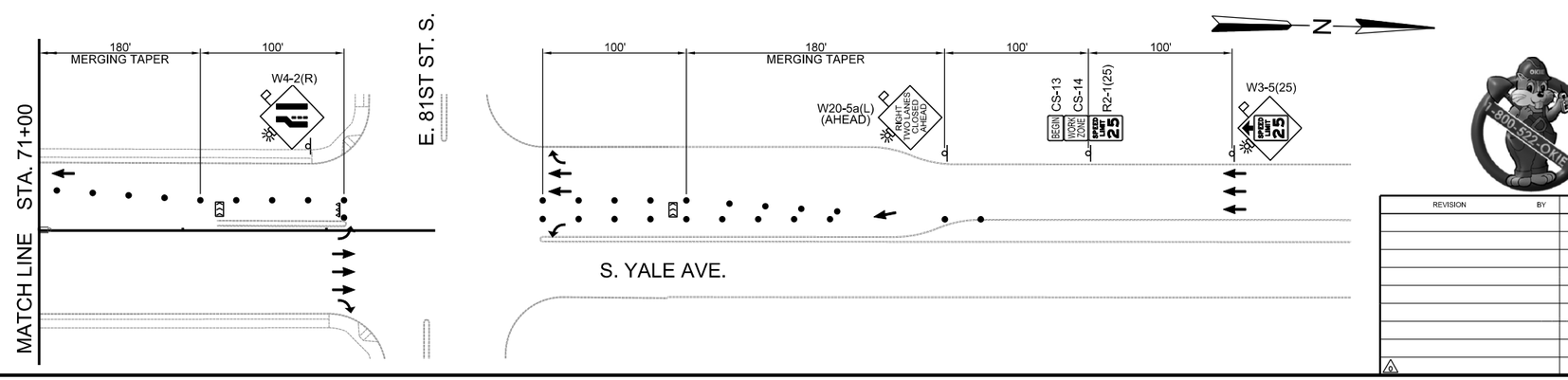


REGISTERED PROFESSIONAL ENGINEER
RHONDA J. DUDECK
16476
OKLAHOMA
October 31, 2018



TRAFFIC CONTROL (7)
PHASE 3

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'				APPROVED:
	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	JPP	12/20	
	FIELD MGR		12/20	
	LEAD ENGR		11/20	
VERTICAL: 1"= NA	RECOMMENDED		12-20	CITY ENGINEER
	DESIGN MANAGER			
FILE: 313925-C-Traf_Ctrl-Ph_3-02.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 251 OF 334 SHEETS

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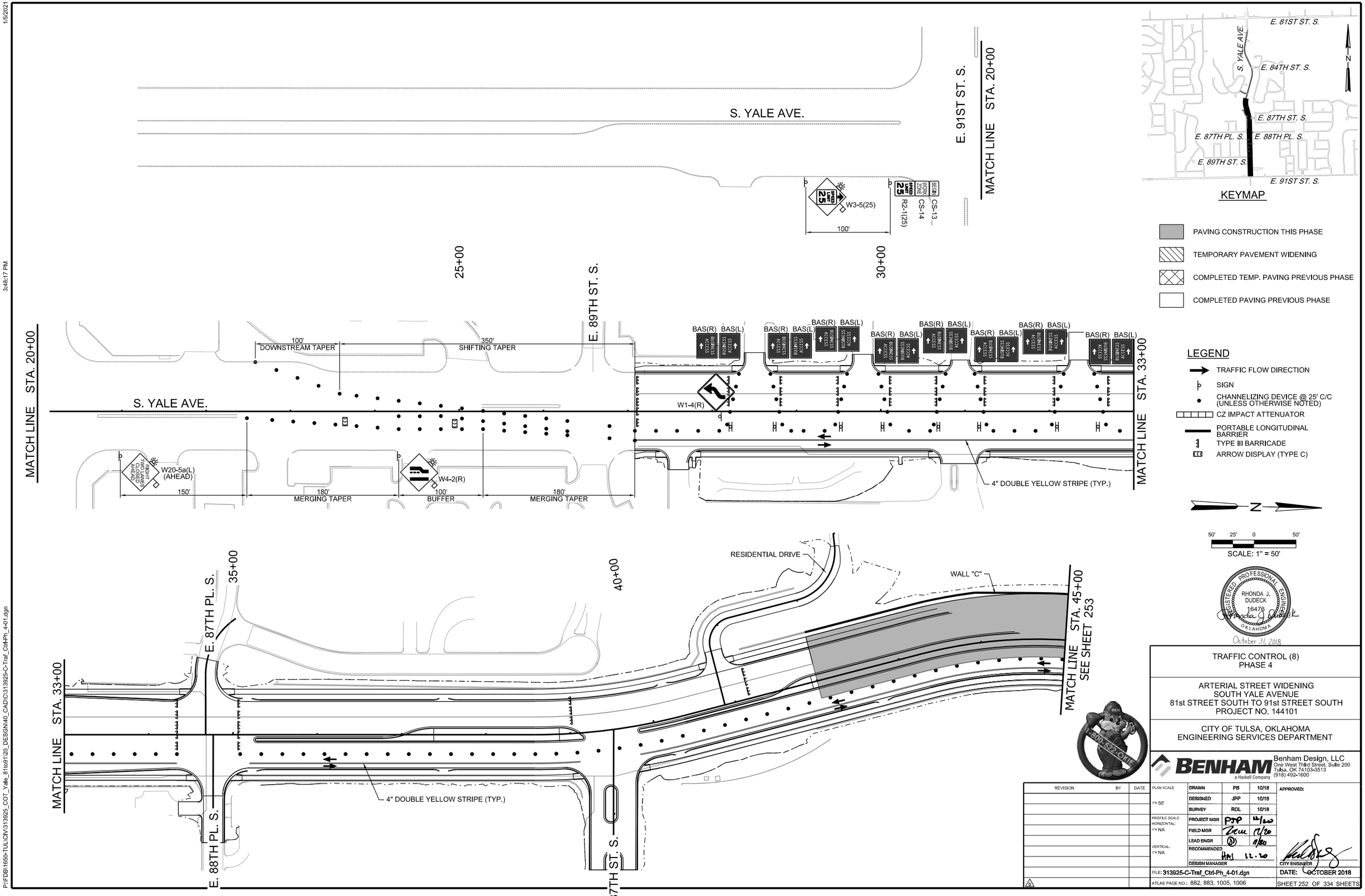

TRAFFIC CONTROL (8)
PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
a Haskell Company

Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE				APPROVED:
1"= 50'	DRAWN	PB	10/18	
	DESIGNED	JPP	10/18	
	SURVEY	RDL	10/18	
PROFILE SCALE HORIZONTAL: 1"= NA	PROJECT MGR	PJP	12/20	
	FIELD MGR		12/20	
	LEAD ENGR		12/20	
VERTICAL: 1"= NA	RECOMMENDED		12.20	CITY ENGINEER
	DESIGN MANAGER			
FILE: 313925-C-Traf_Ctrl-Ph_4-01.dgn				DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006				SHEET 252 OF 334 SHEETS

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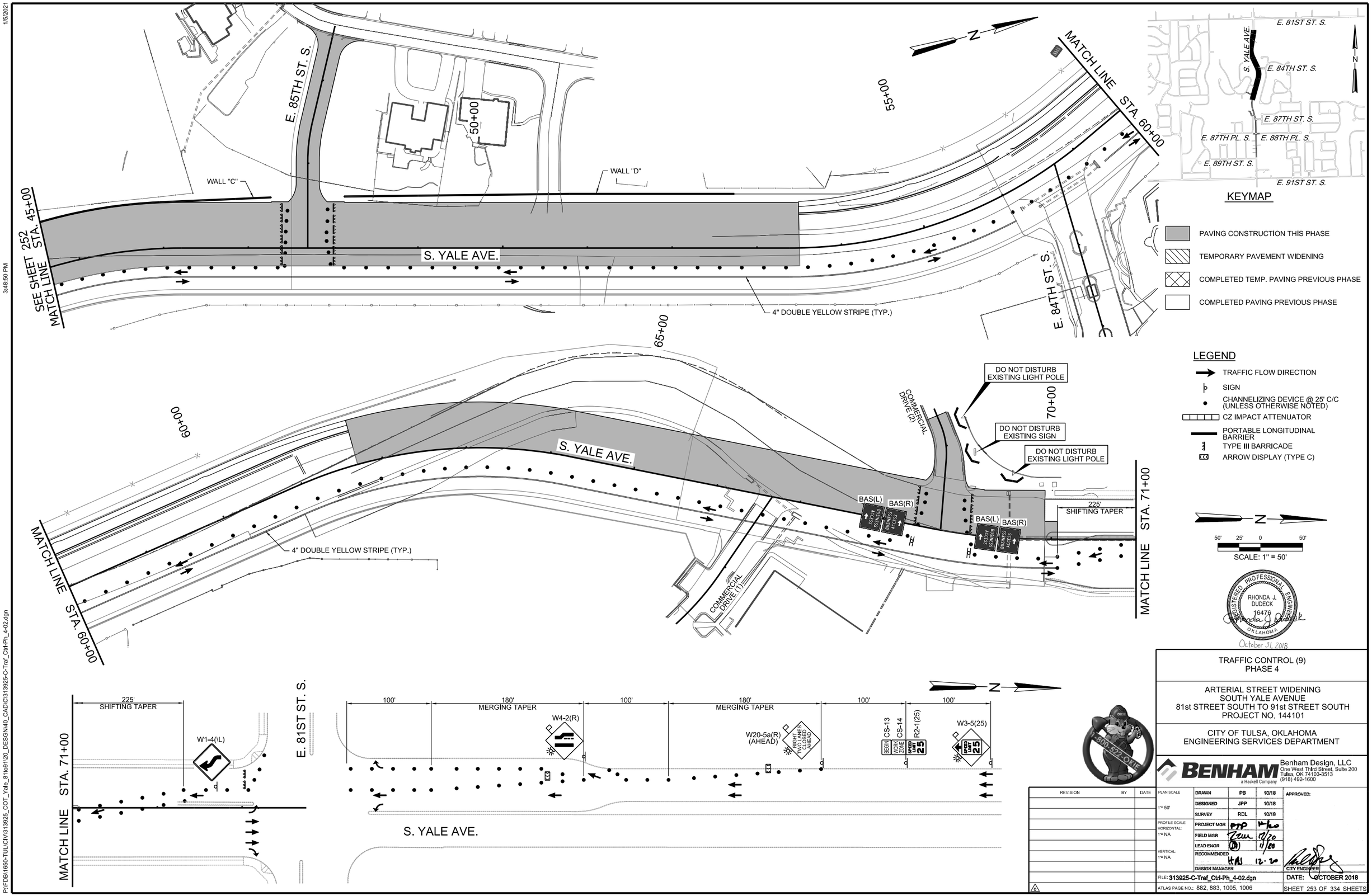

TRAFFIC CONTROL (9)
PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

REVISION	BY	DATE

PLAN SCALE 1"= 50'
PROFILE SCALE HORIZONTAL: 1"= NA
VERTICAL: 1"= NA

DRAWN	PB	10/18
DESIGNED	JPP	10/18
SURVEY	RDL	10/18
PROJECT MGR	PTP	12/20
FIELD MGR	ZZW	12/20
LEAD ENGR	DD	11/20
RECOMMENDED	HAS	12-20
DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 313925-C-Traf_Ctrl-Ph_4-02.dgn
DATE: OCTOBER 2018
ATLAS PAGE NO.: 882, 883, 1005, 1006
SHEET 253 OF 334 SHEETS

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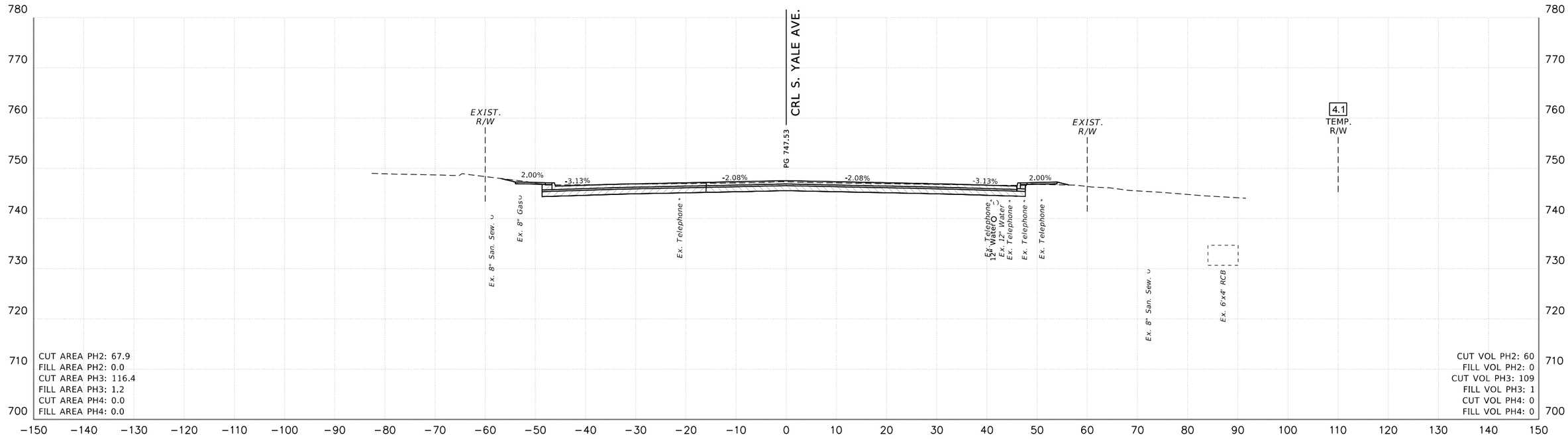

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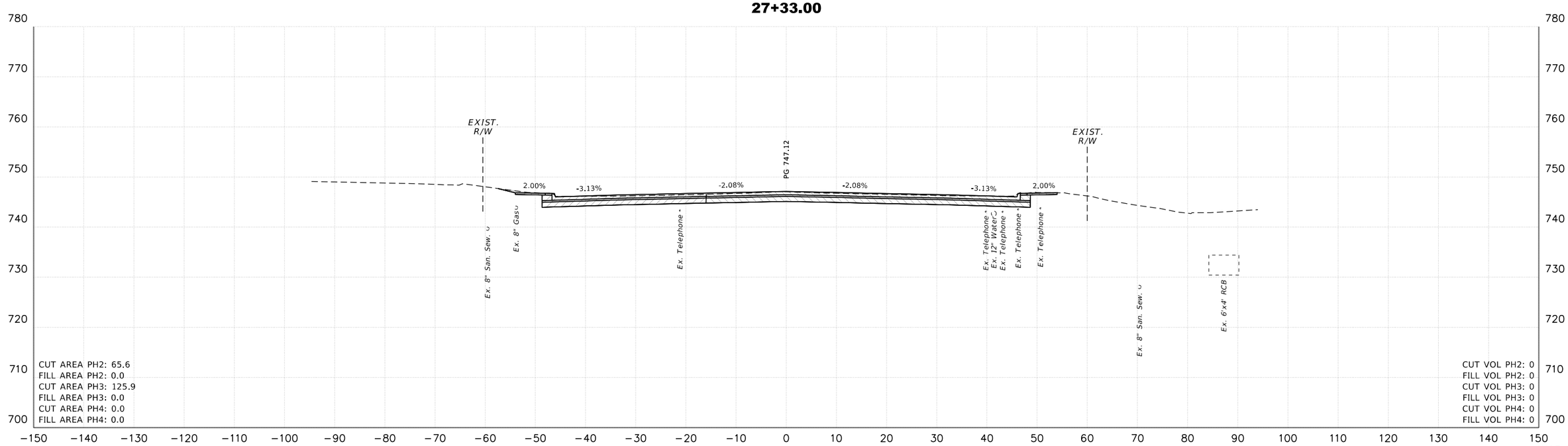

YALE AVE.

PHASE 2 PHASE 3 PHASE 4

27+08.78
BEGIN PROJECT

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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DATE: 10/31/2018 SHEET X1 OF 334 SHEETS

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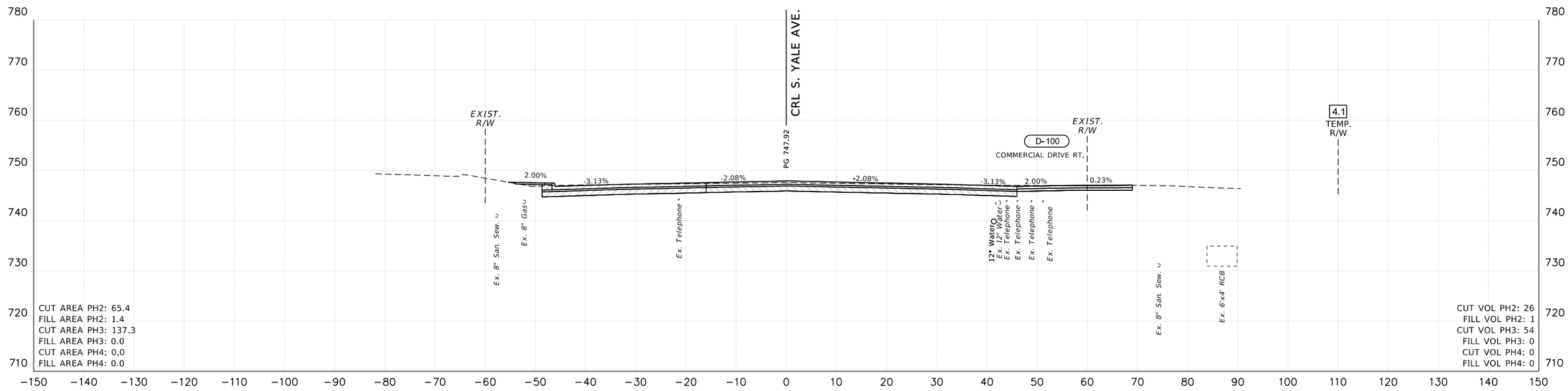

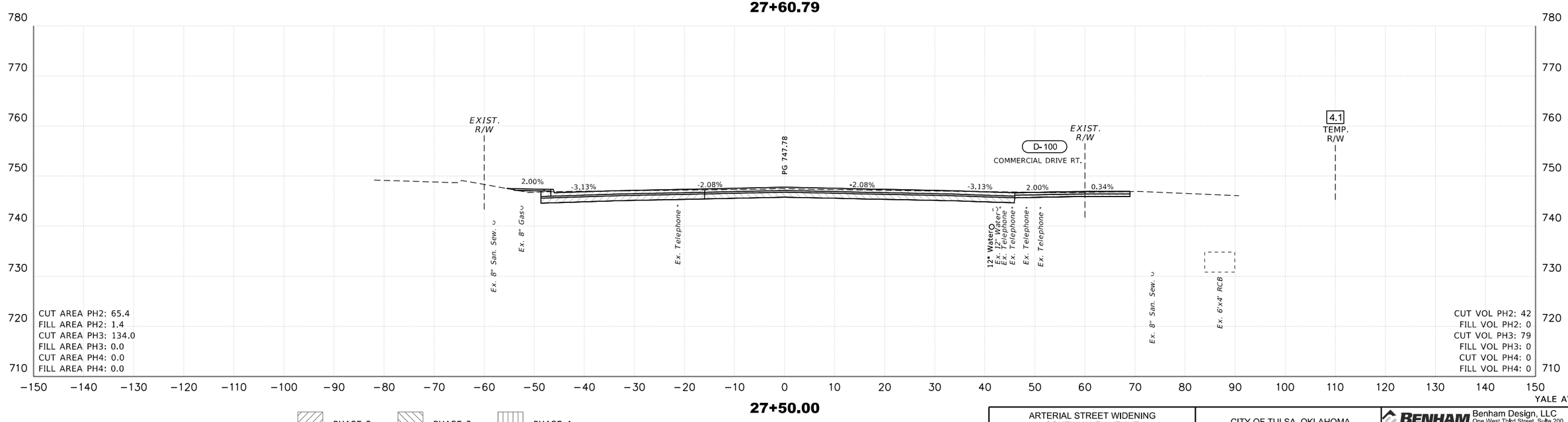

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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Tulsa, OK 74103-3513
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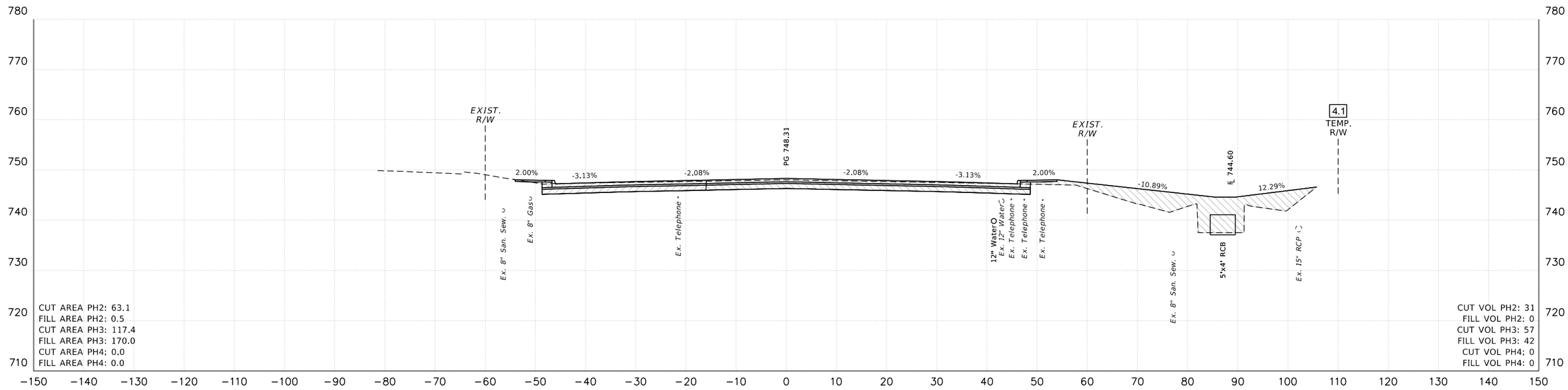

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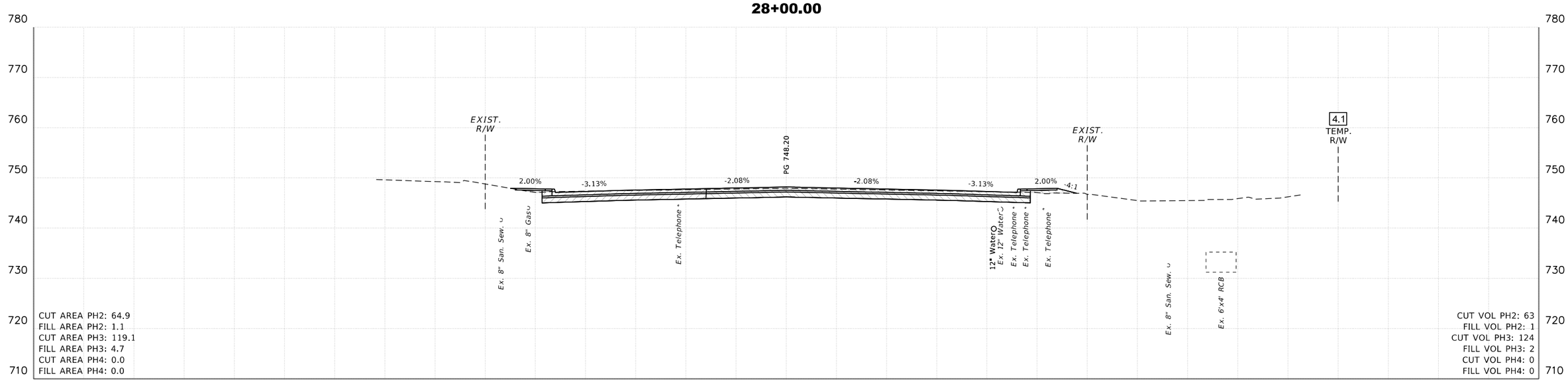

27+87.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
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81st STREET SOUTH TO 91st STREET SOUTH
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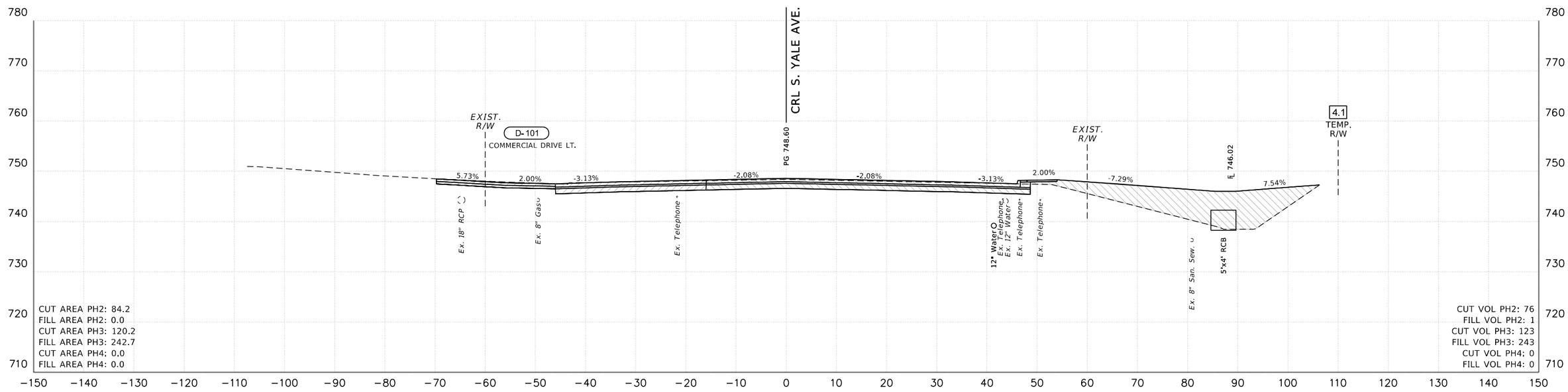

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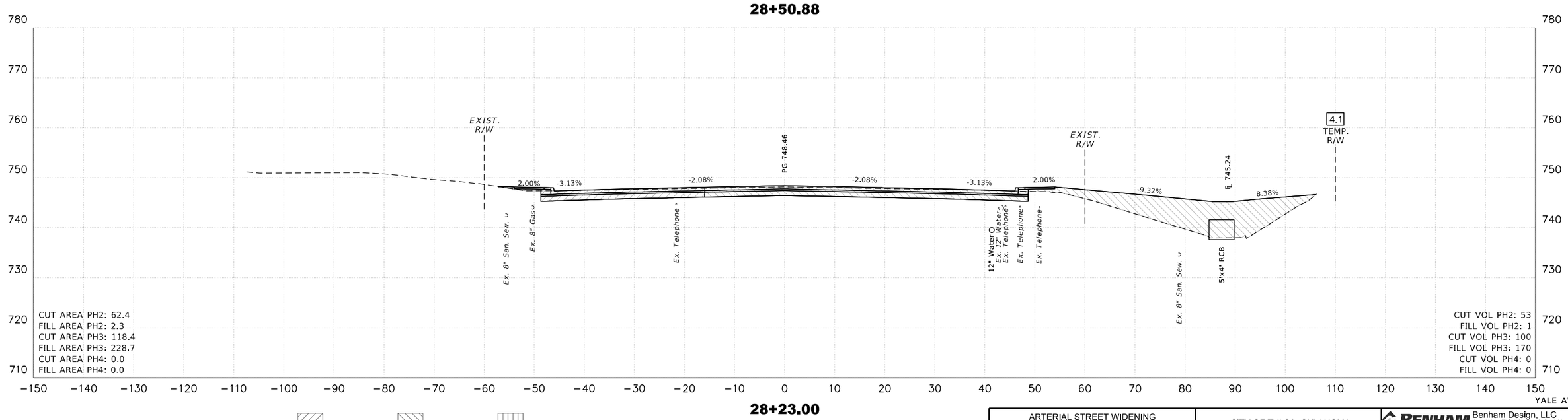

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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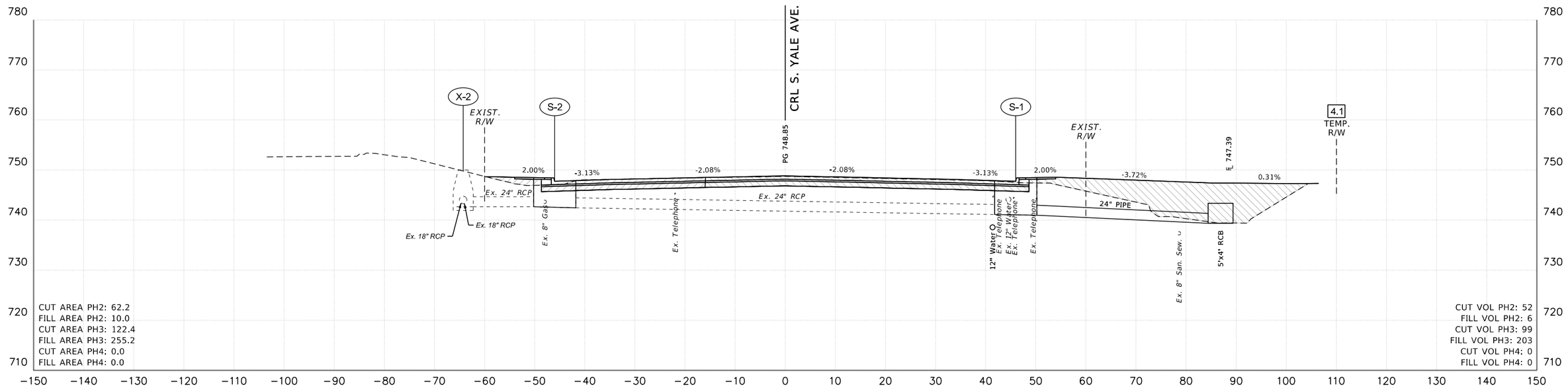
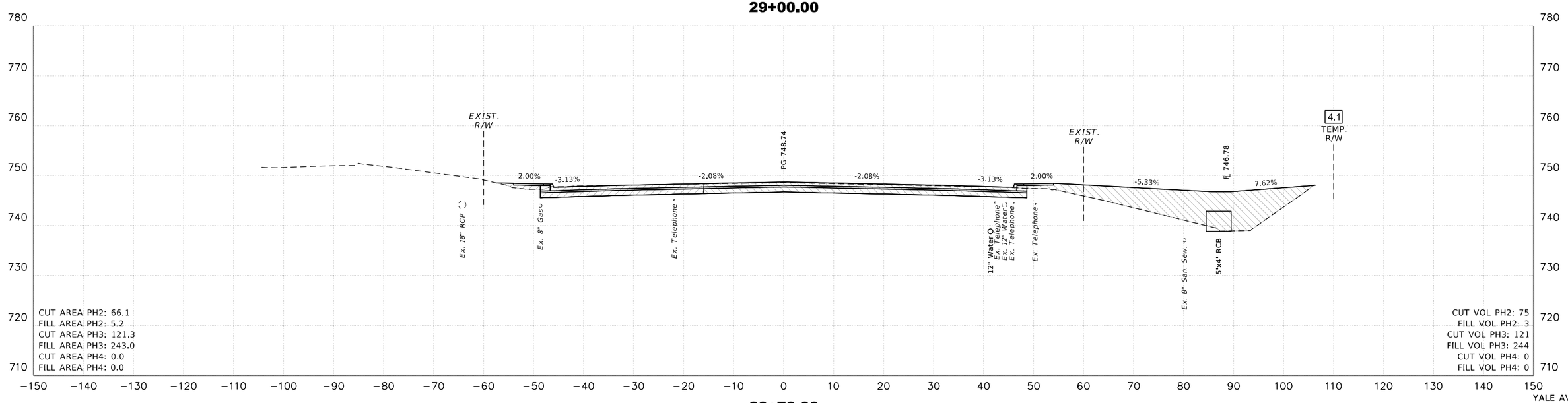


CUT AREA PH2: 62.2
FILL AREA PH2: 10.0
CUT AREA PH3: 122.4
FILL AREA PH3: 255.2
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH2: 52
FILL VOL PH2: 6
CUT VOL PH3: 99
FILL VOL PH3: 203
CUT VOL PH4: 0
FILL VOL PH4: 0

29+00.00



CUT AREA PH2: 66.1
FILL AREA PH2: 5.2
CUT AREA PH3: 121.3
FILL AREA PH3: 243.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH2: 75
FILL VOL PH2: 3
CUT VOL PH3: 121
FILL VOL PH3: 244
CUT VOL PH4: 0
FILL VOL PH4: 0

28+78.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
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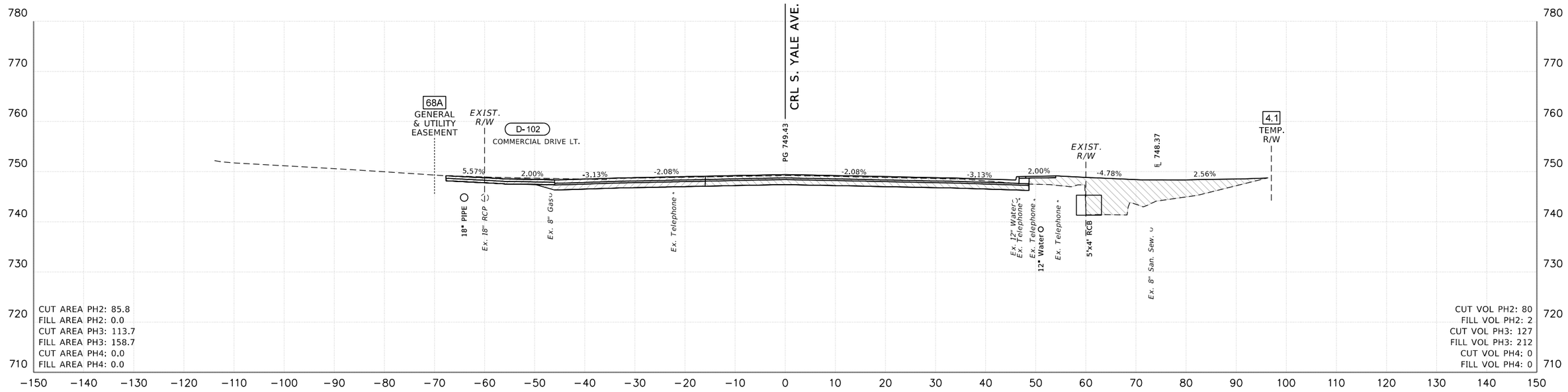

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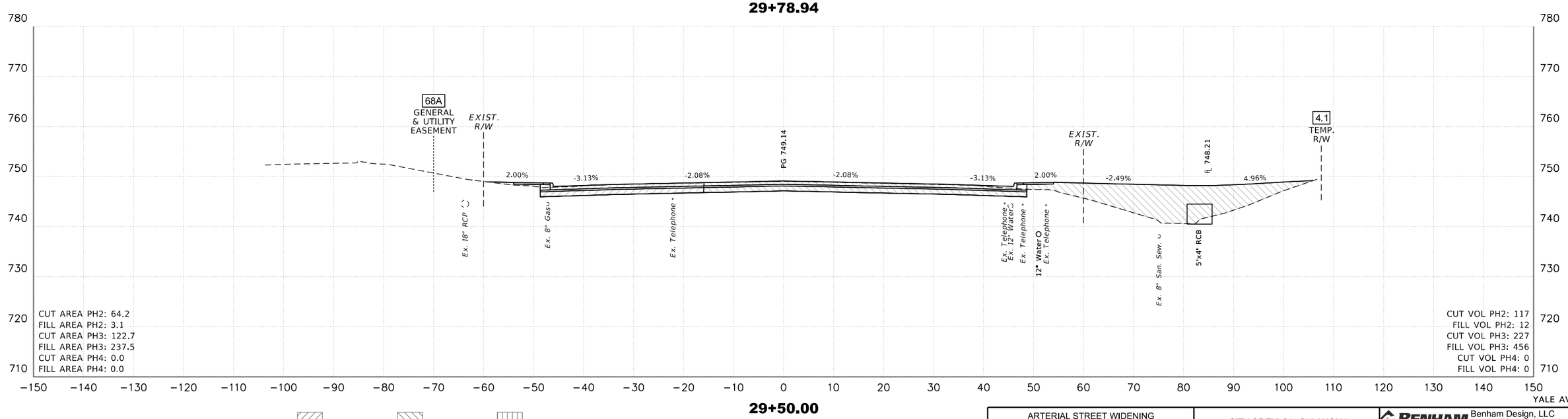

29+50.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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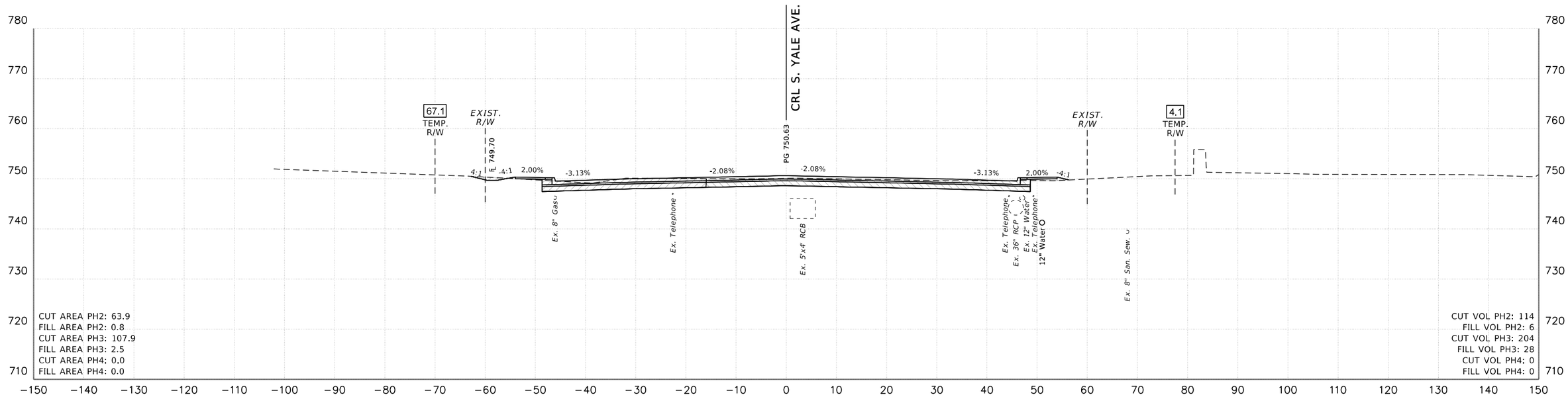

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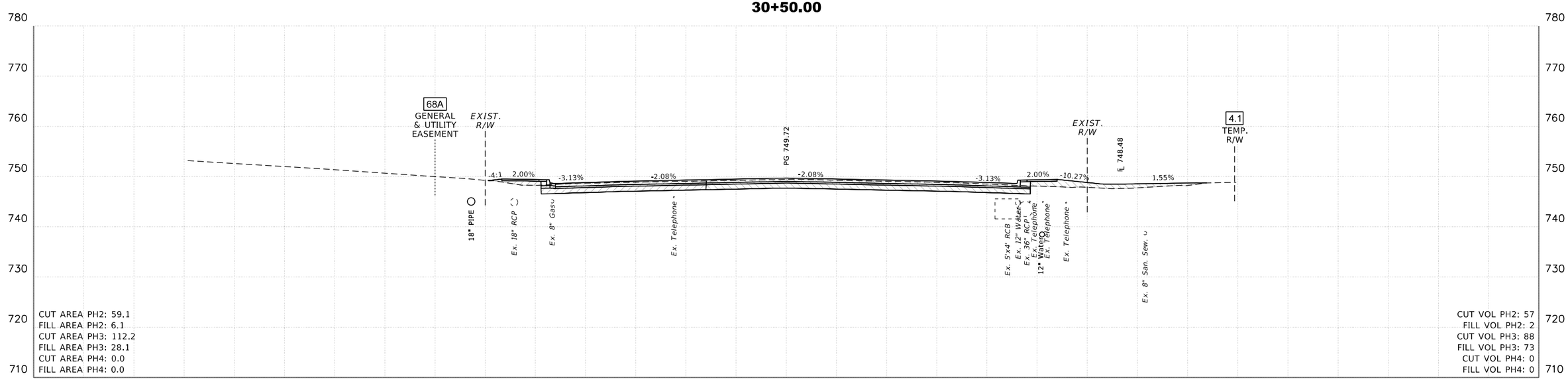

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
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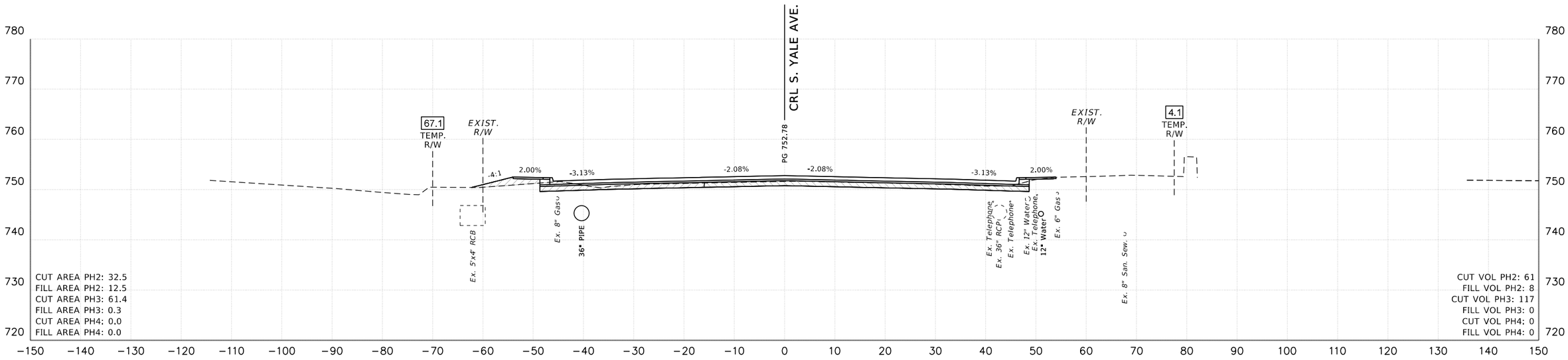

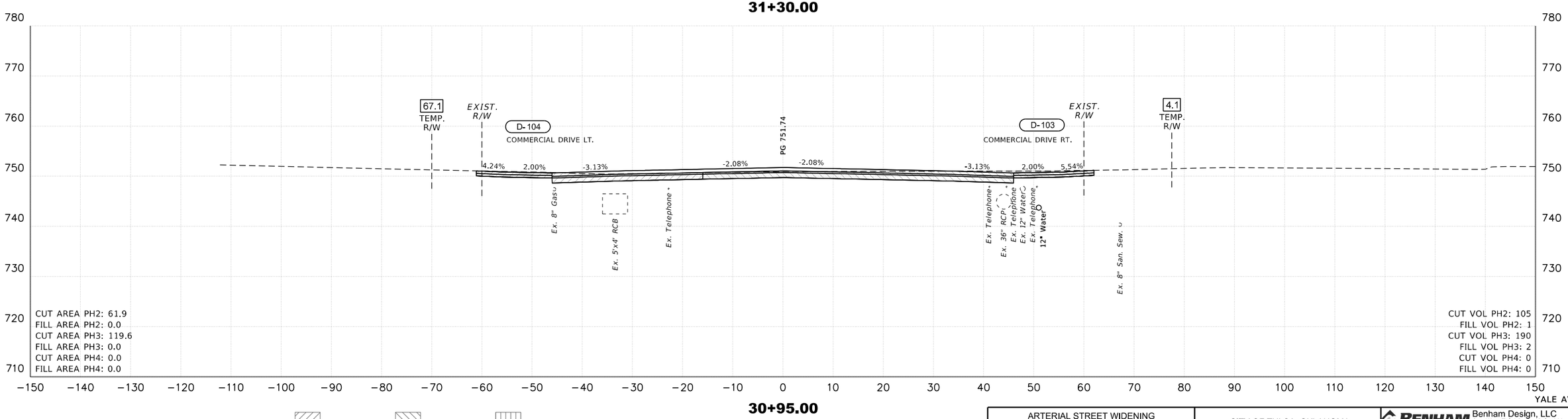

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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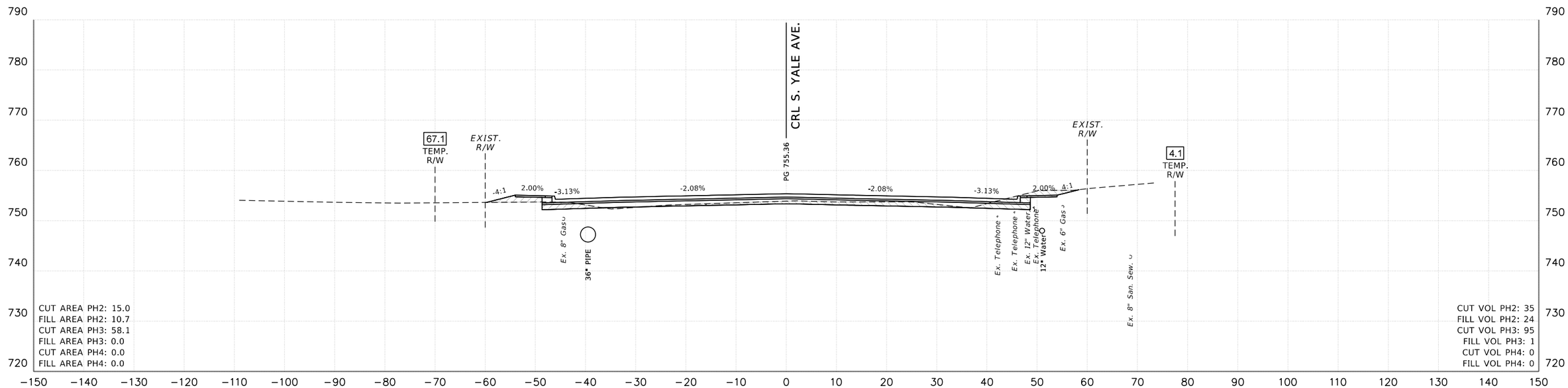

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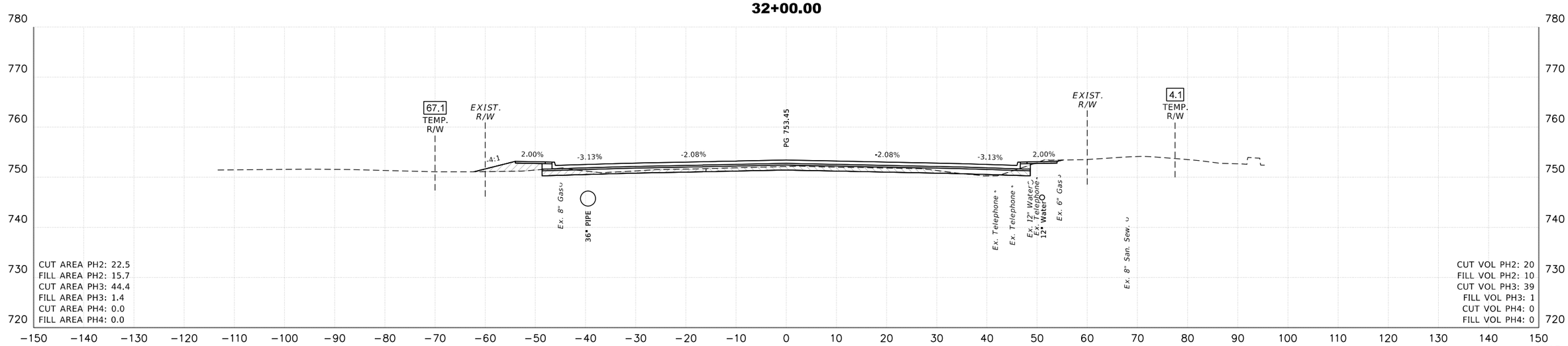

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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Tulsa, OK 74103-3513
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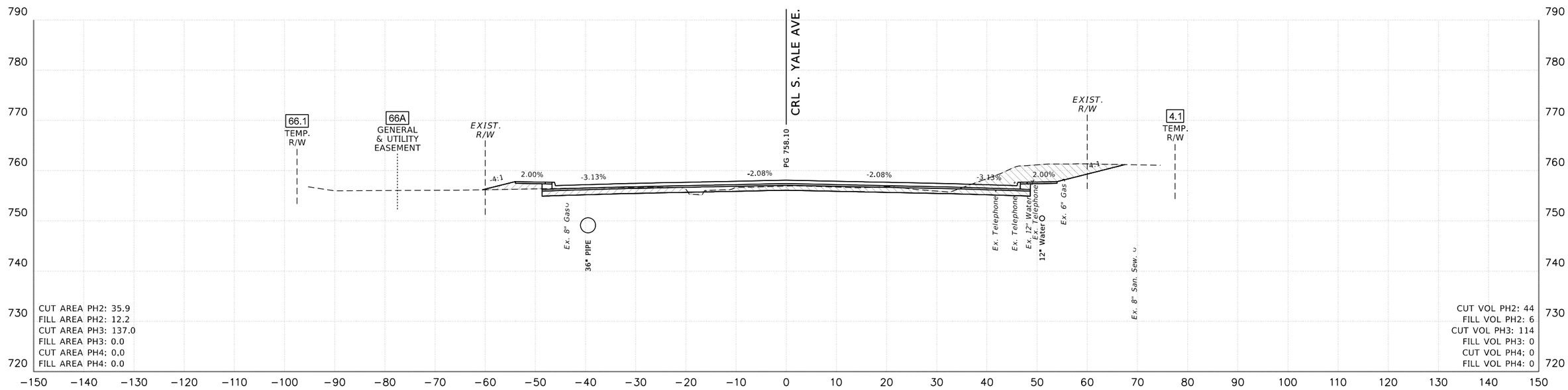

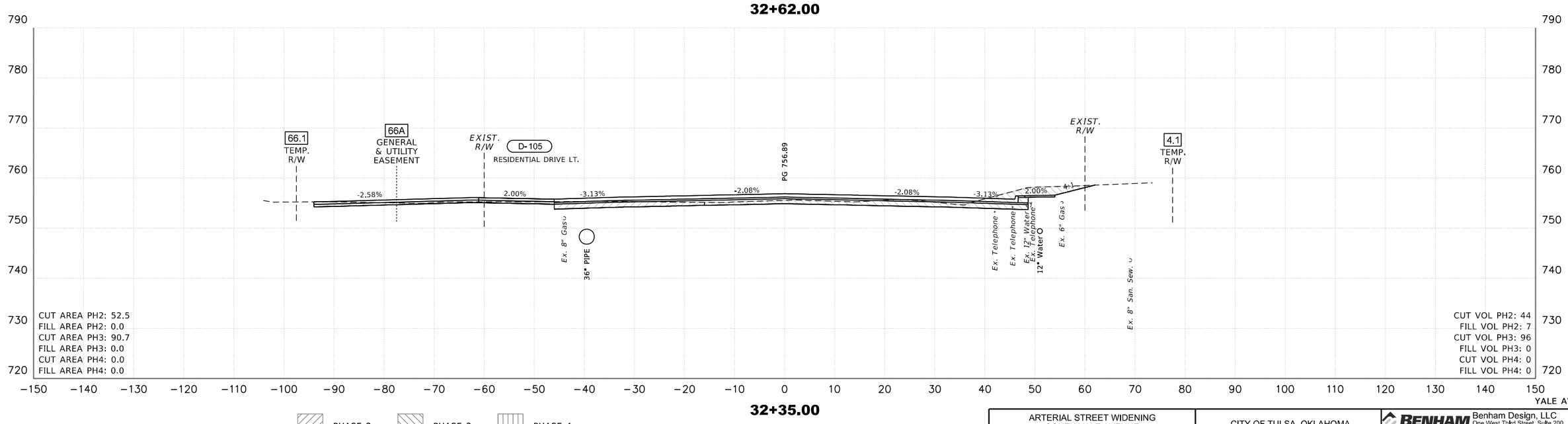

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
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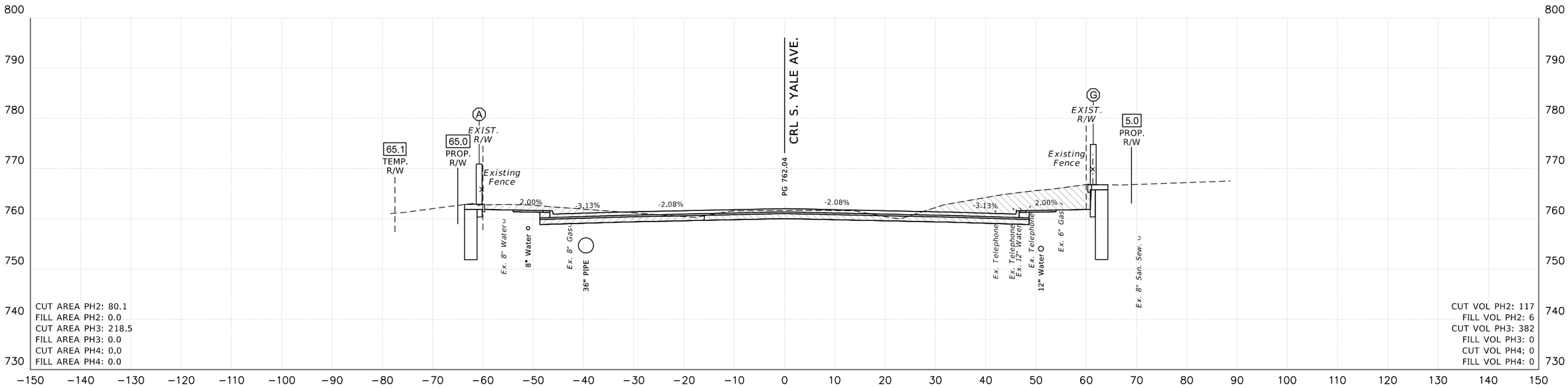

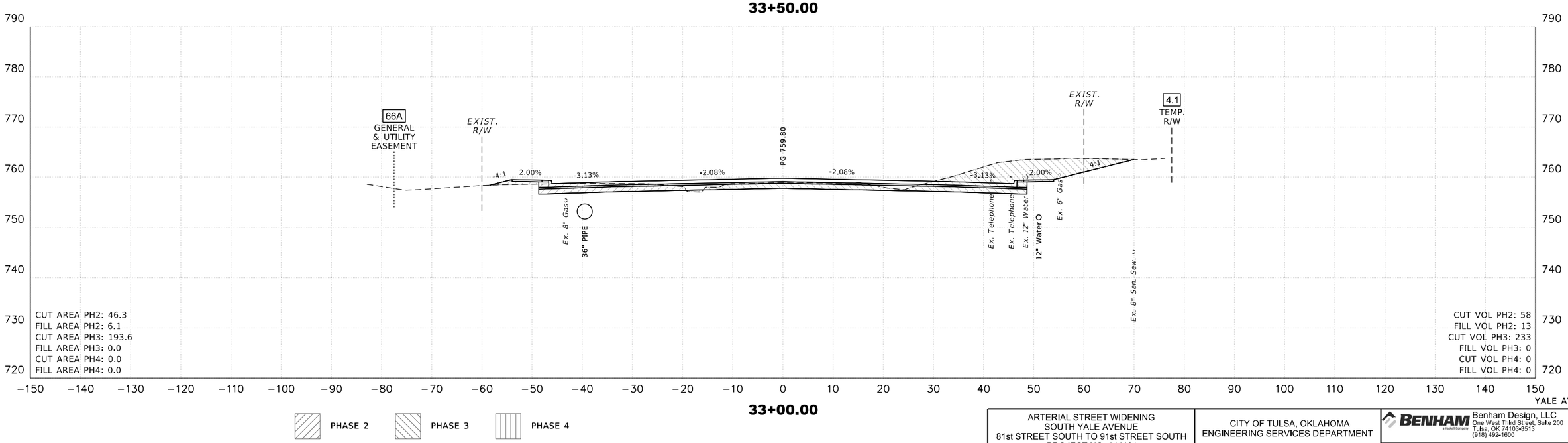

PHASE 2 PHASE 3 PHASE 4

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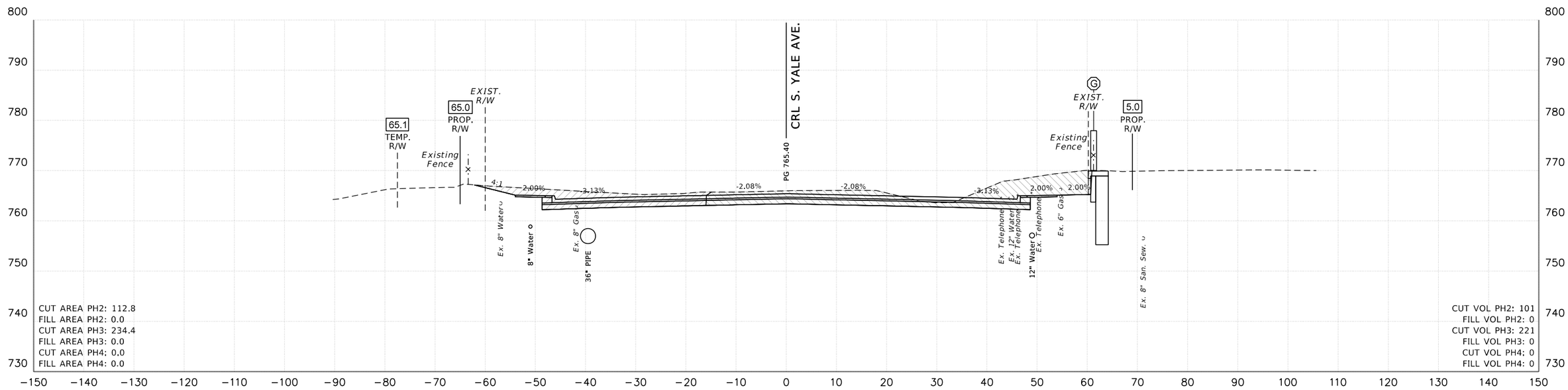

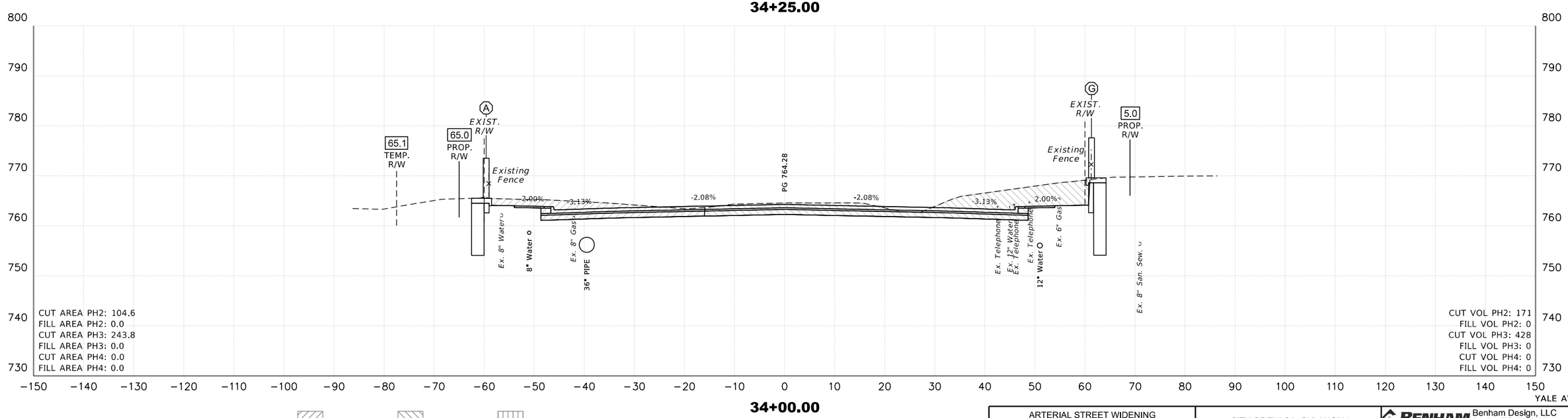

PHASE 2 PHASE 3 PHASE 4

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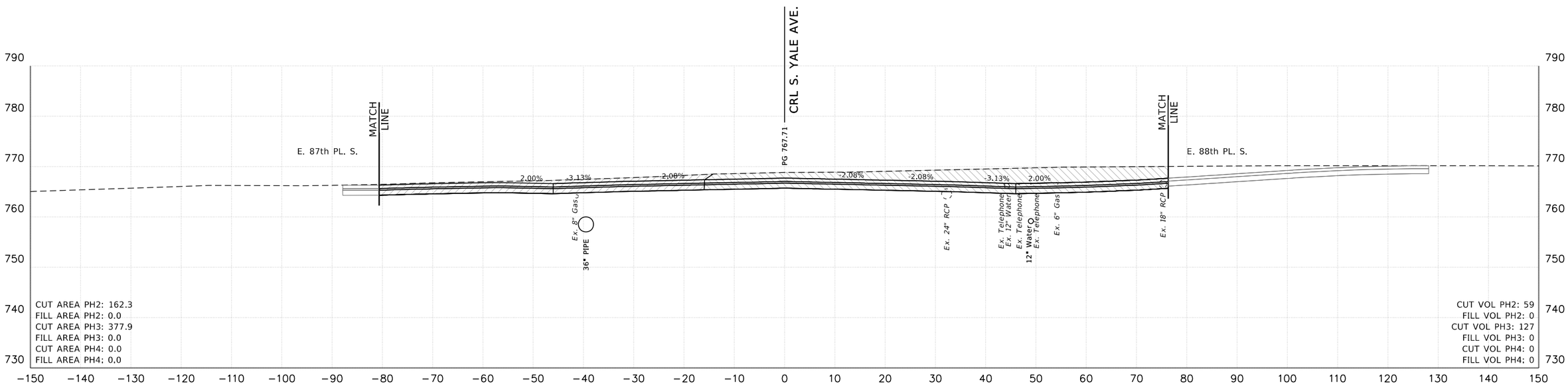

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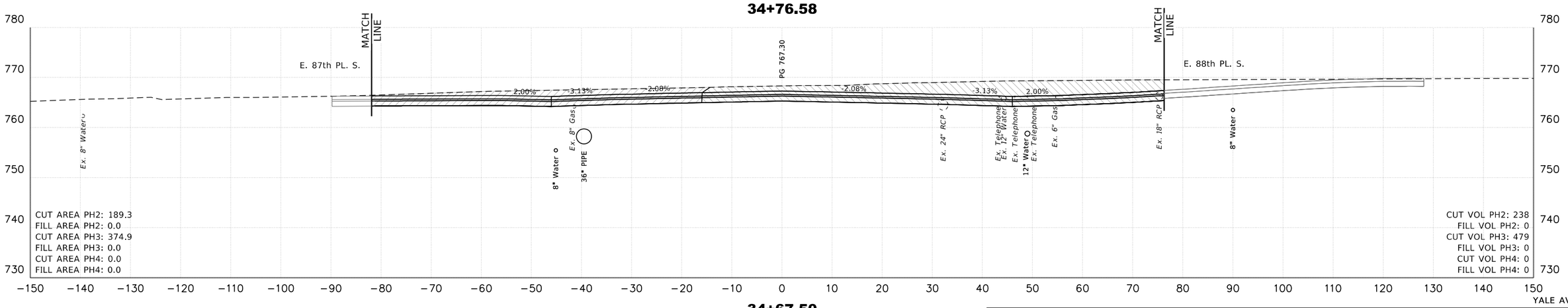

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PHASE 2 PHASE 3 PHASE 4

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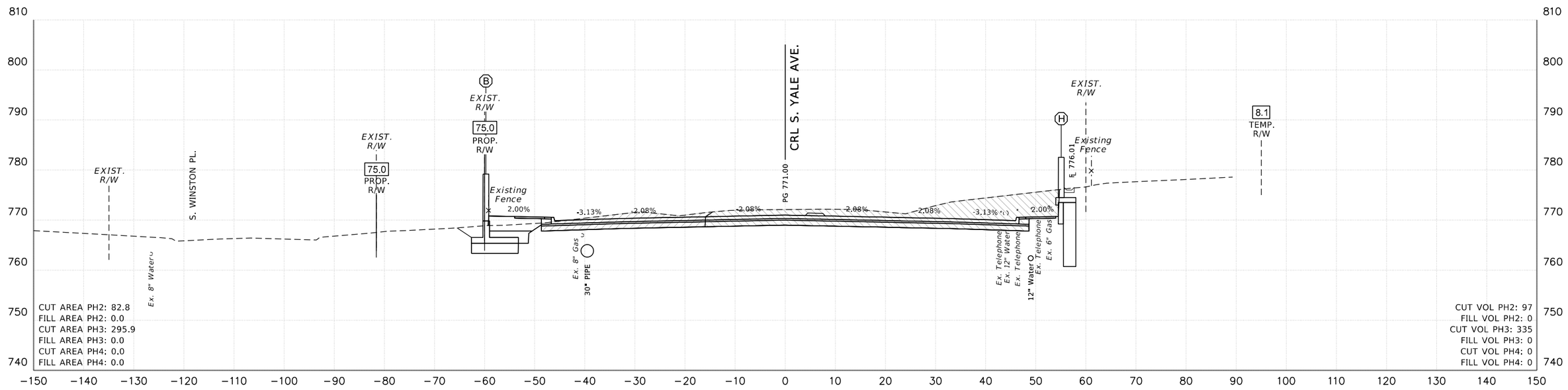

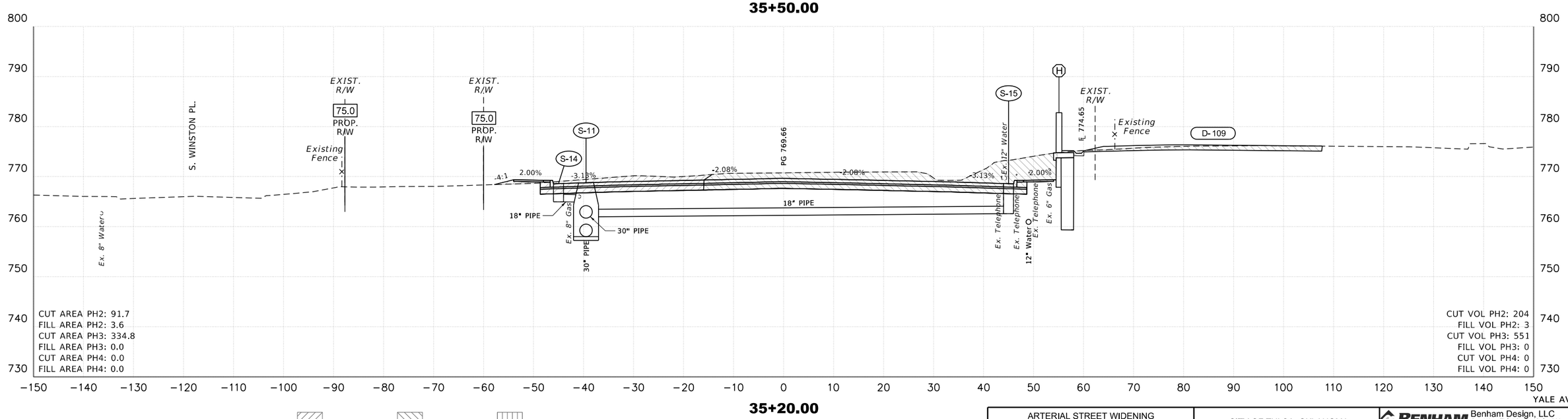

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

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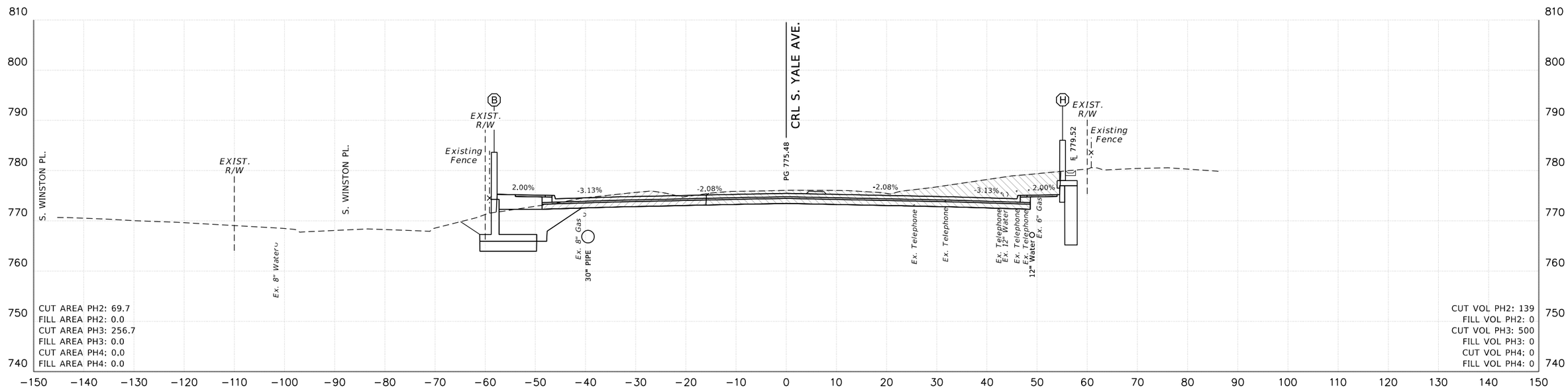

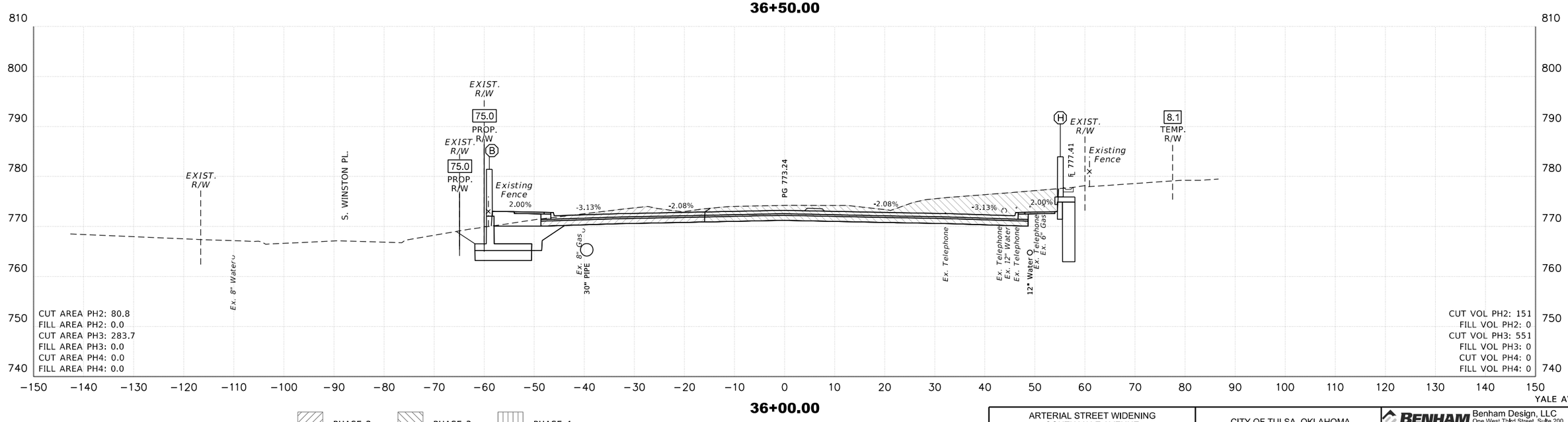

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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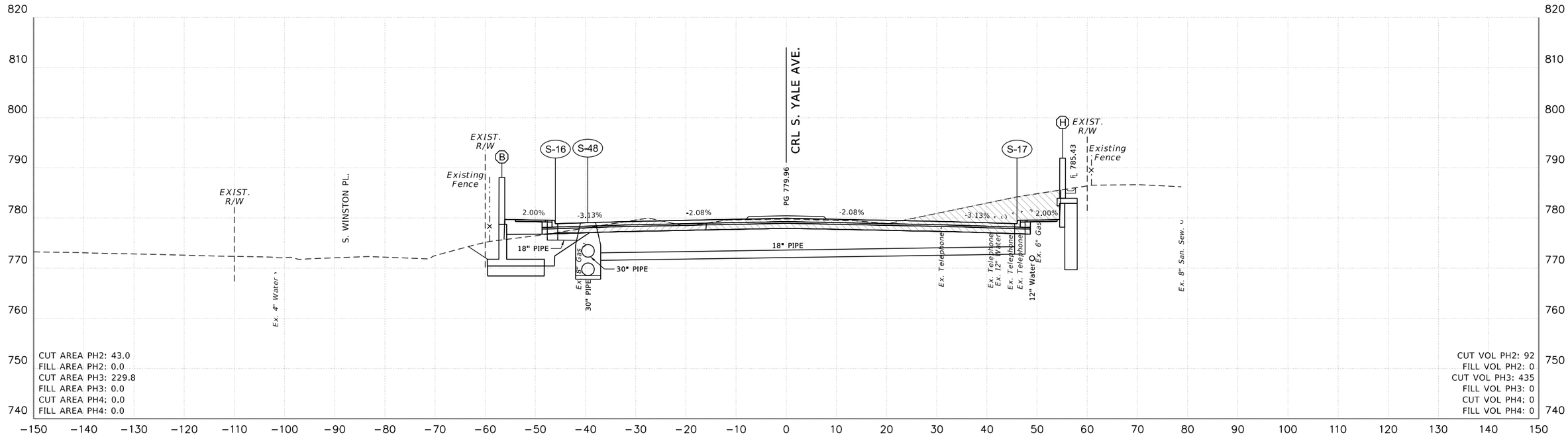

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FILL AREA PH2: 0.0
CUT AREA PH3: 229.8
FILL AREA PH3: 0.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH2: 92
FILL VOL PH2: 0
CUT VOL PH3: 435
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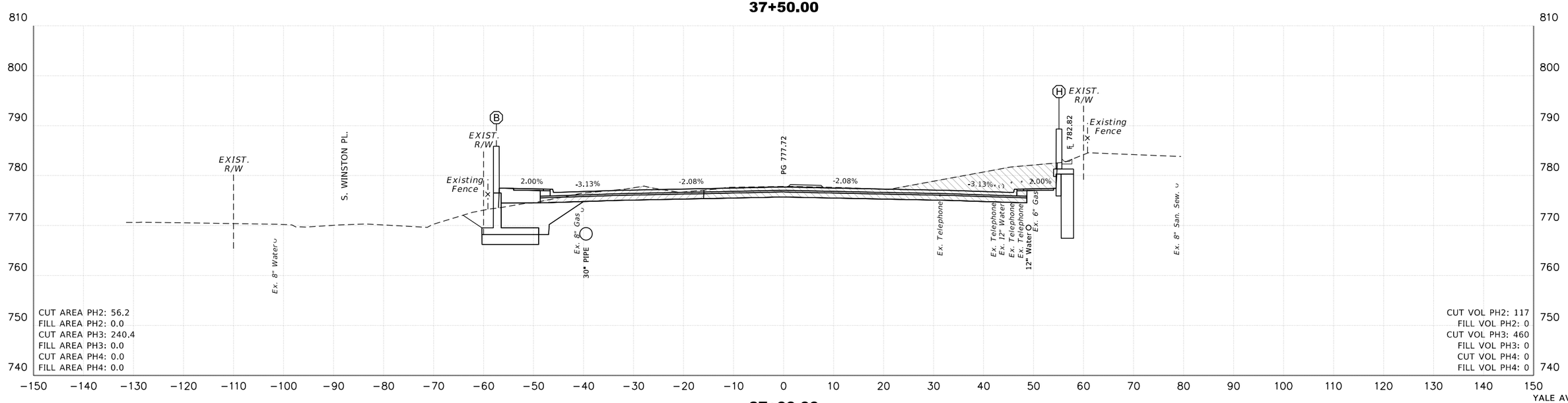
37+50.00



CUT AREA PH2: 56.2
FILL AREA PH2: 0.0
CUT AREA PH3: 240.4
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FILL AREA PH4: 0.0

CUT VOL PH2: 117
FILL VOL PH2: 0
CUT VOL PH3: 460
FILL VOL PH3: 0
CUT VOL PH4: 0
FILL VOL PH4: 0

37+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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ENGINEERING SERVICES DEPARTMENT

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Tulsa, OK 74103-3513
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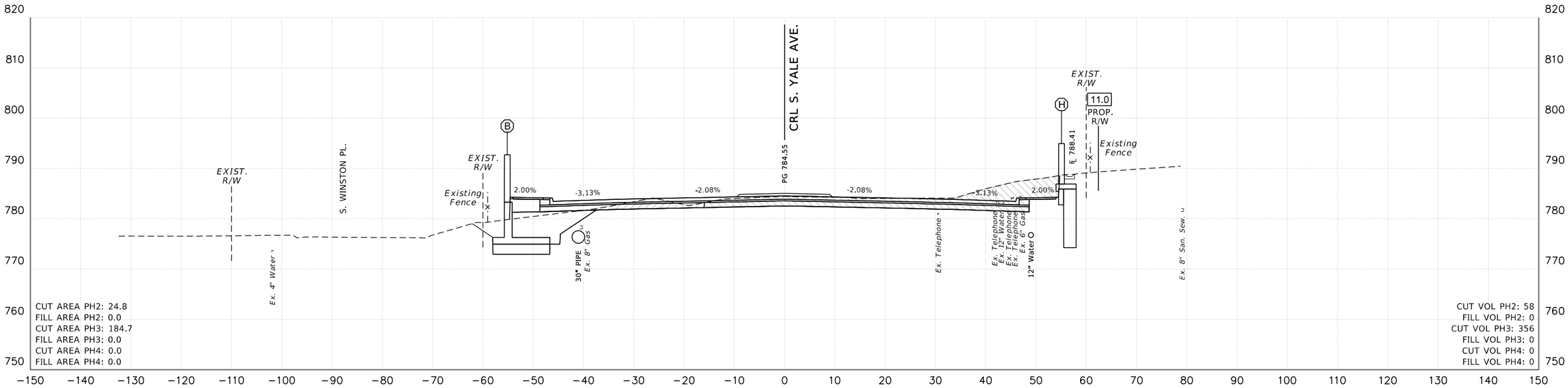

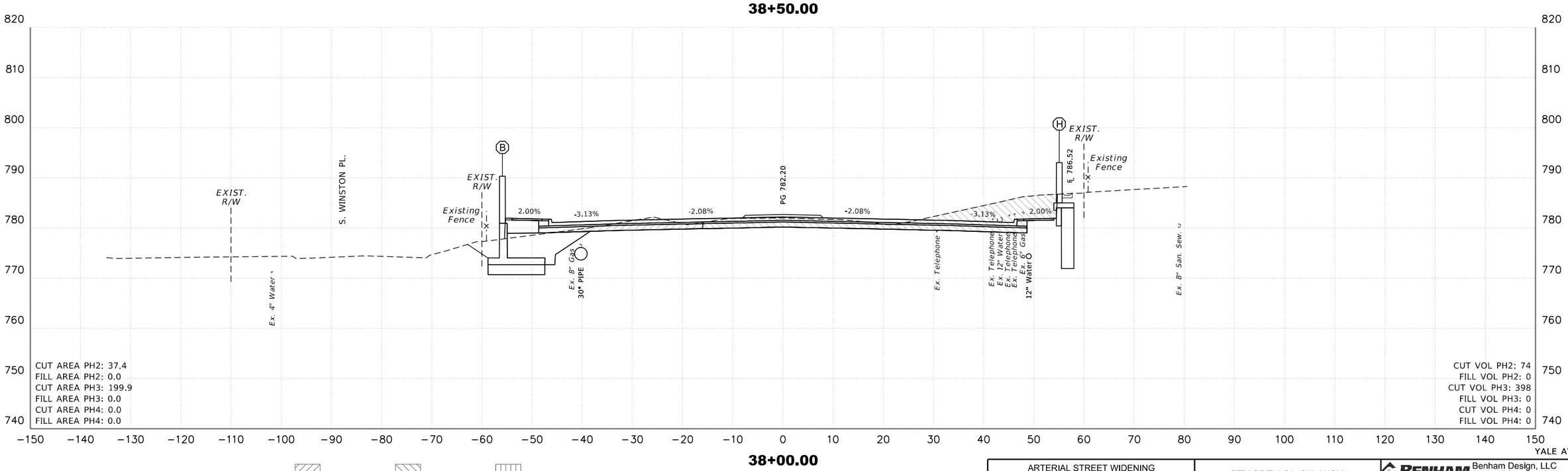

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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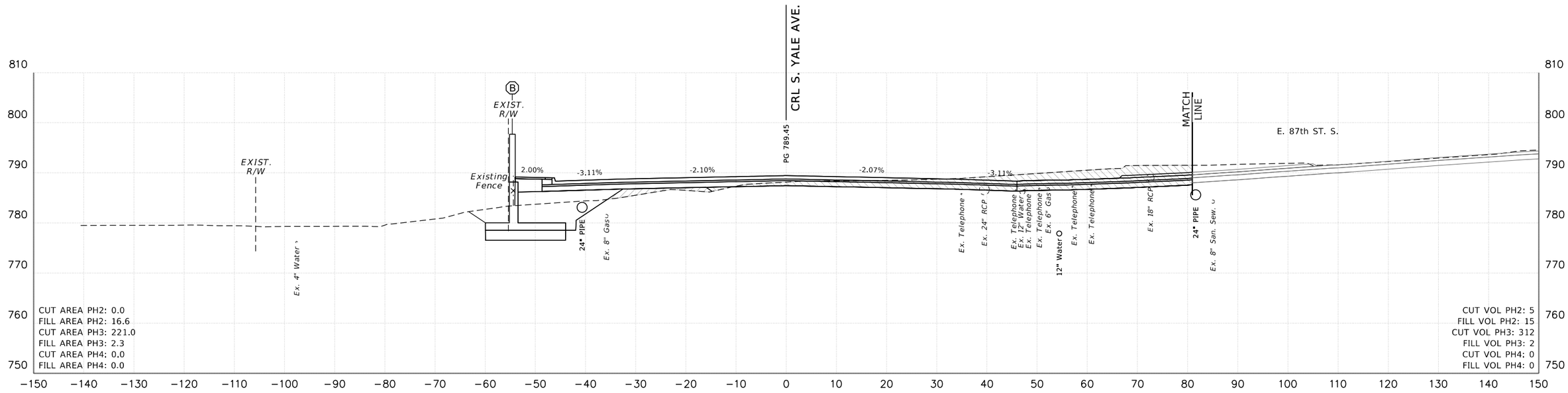

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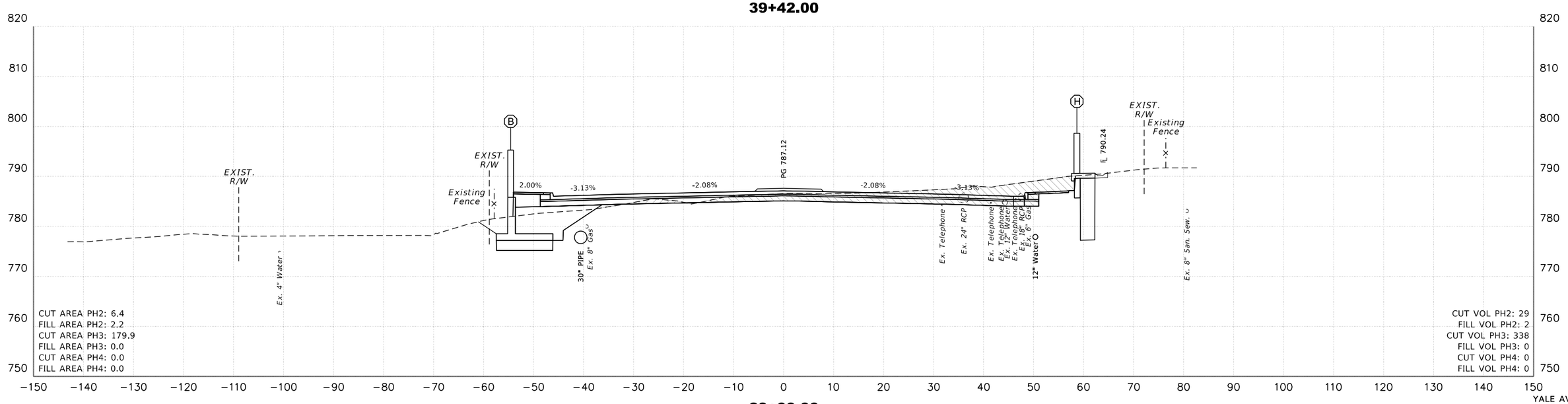

39+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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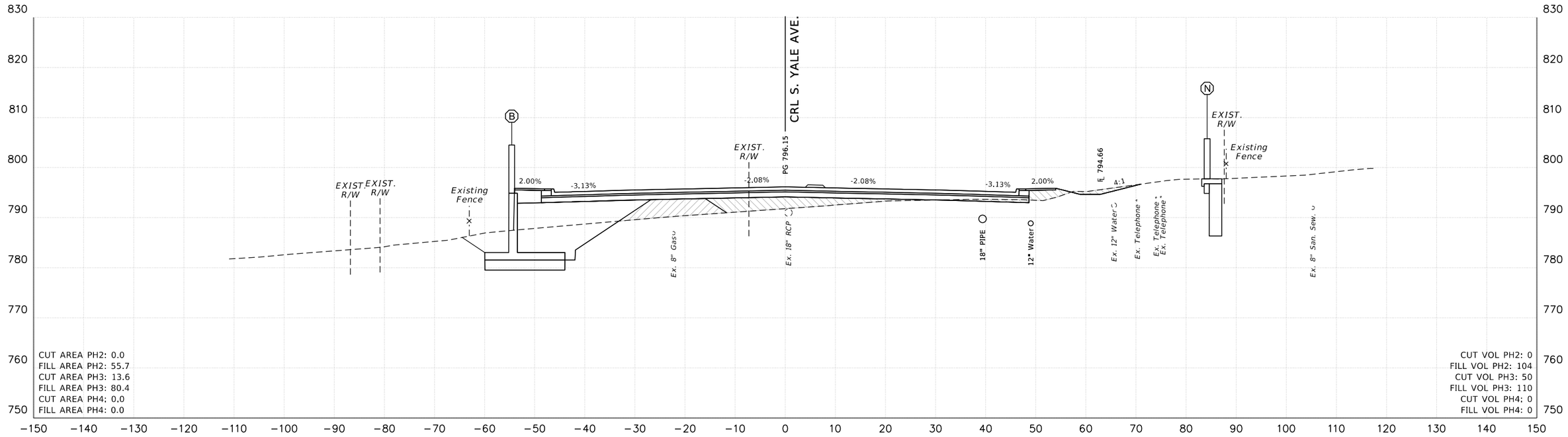

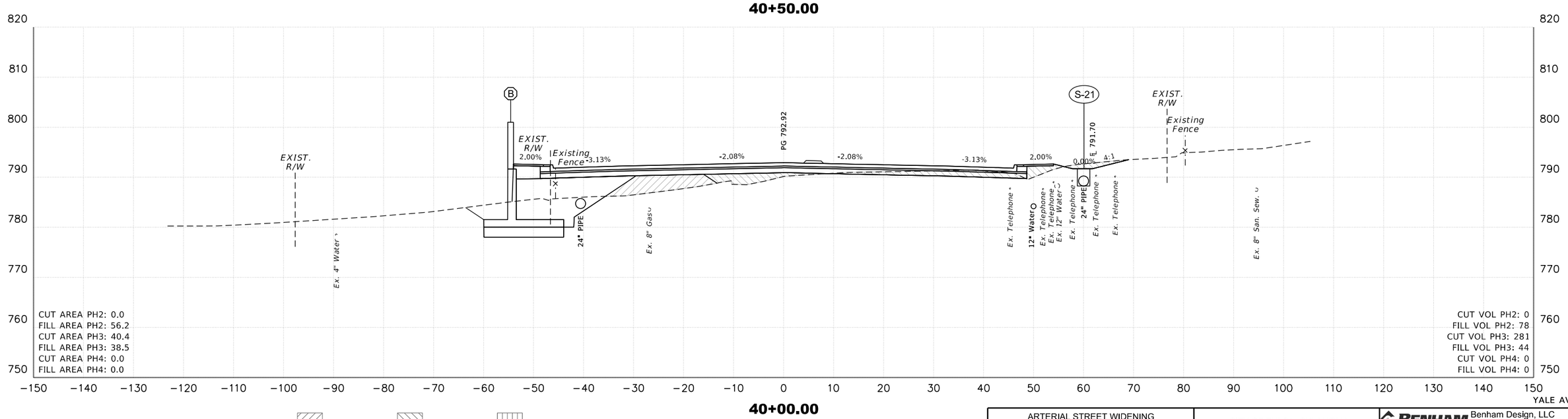

PHASE 2 PHASE 3 PHASE 4

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SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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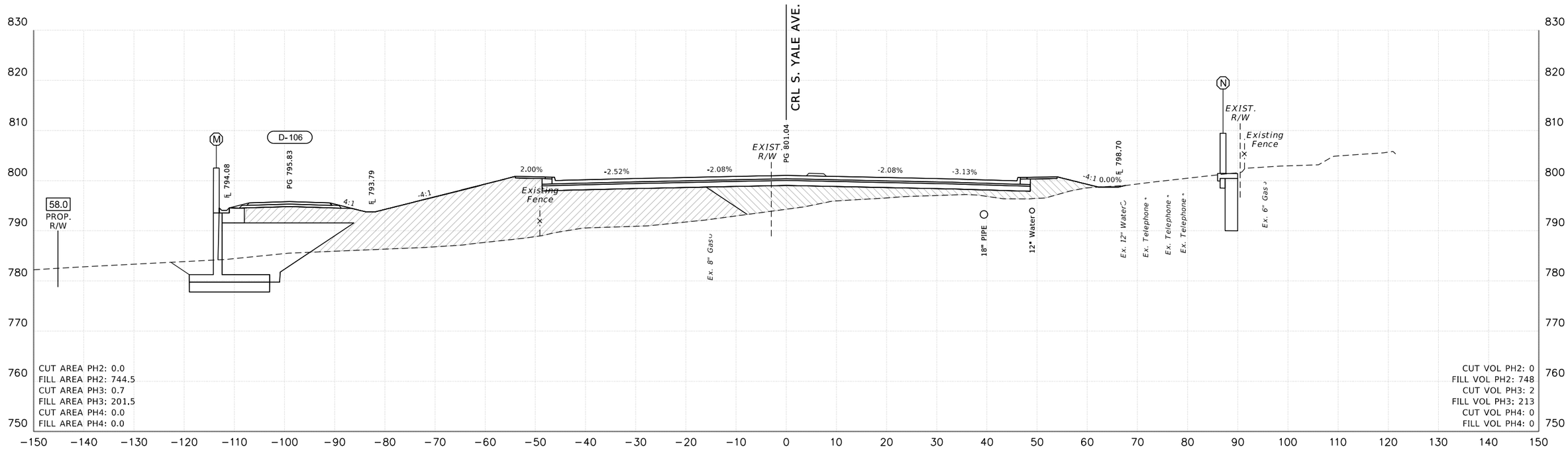

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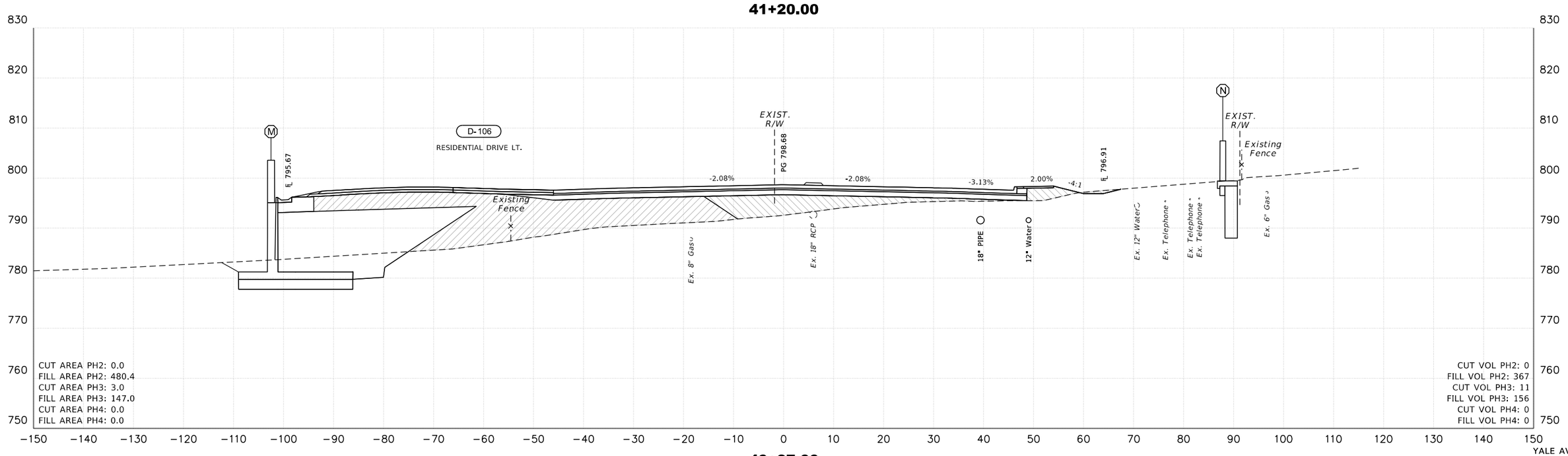

40+87.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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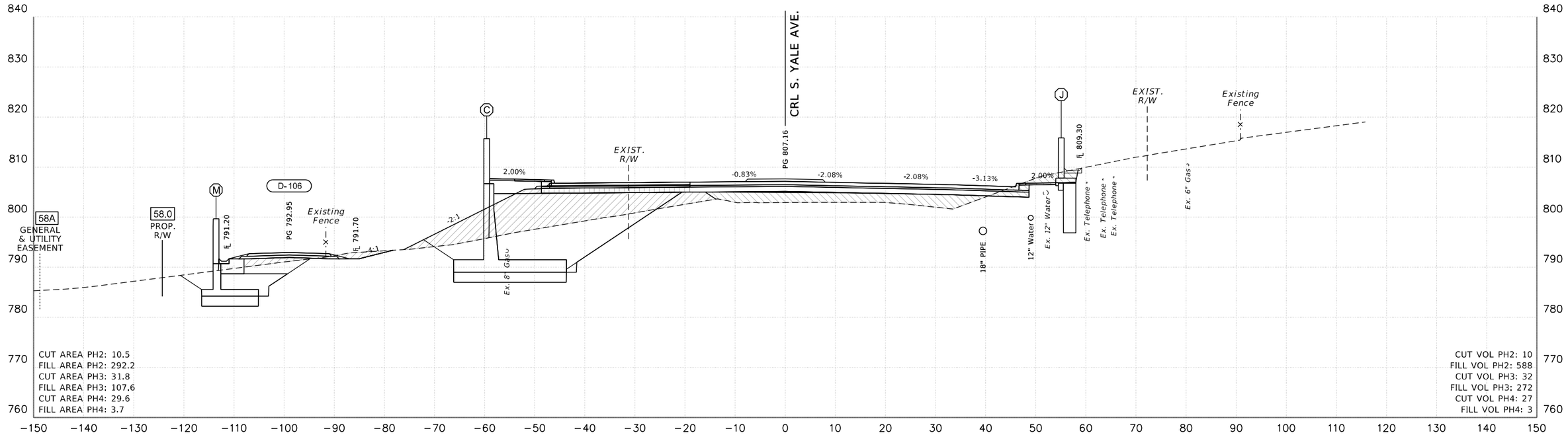

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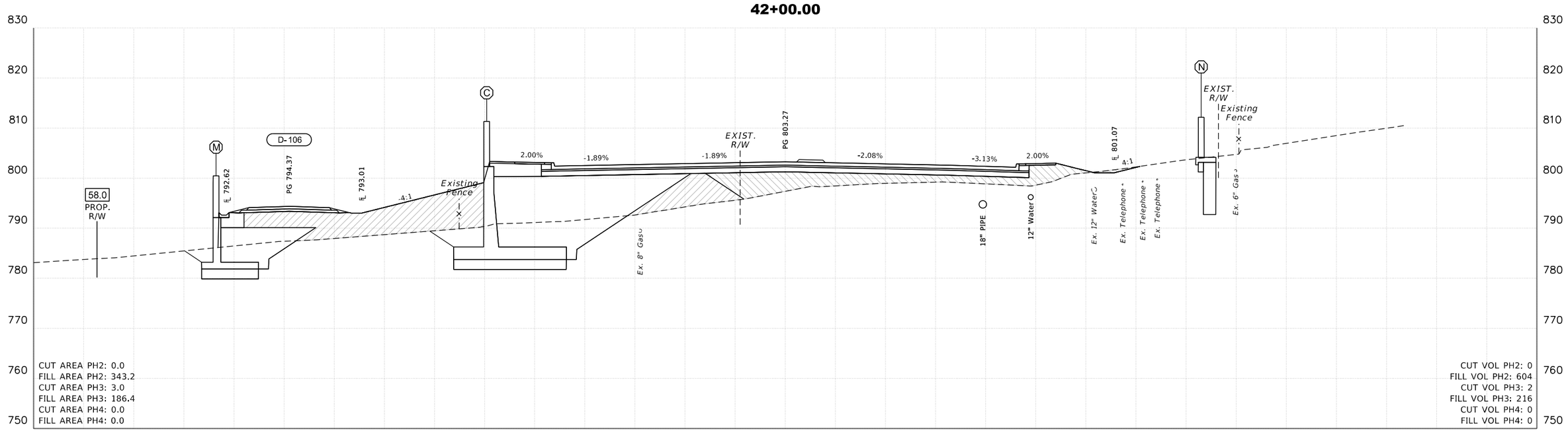

41+50.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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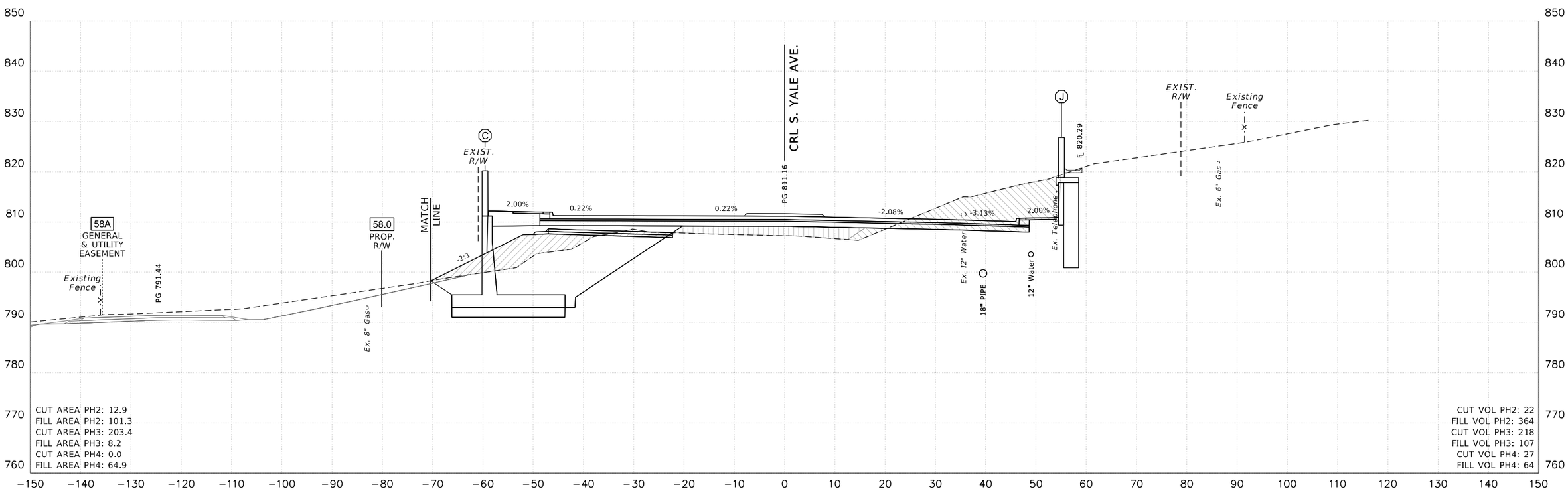

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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CITY OF TULSA, OKLAHOMA
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BENHAM a Hazlett Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
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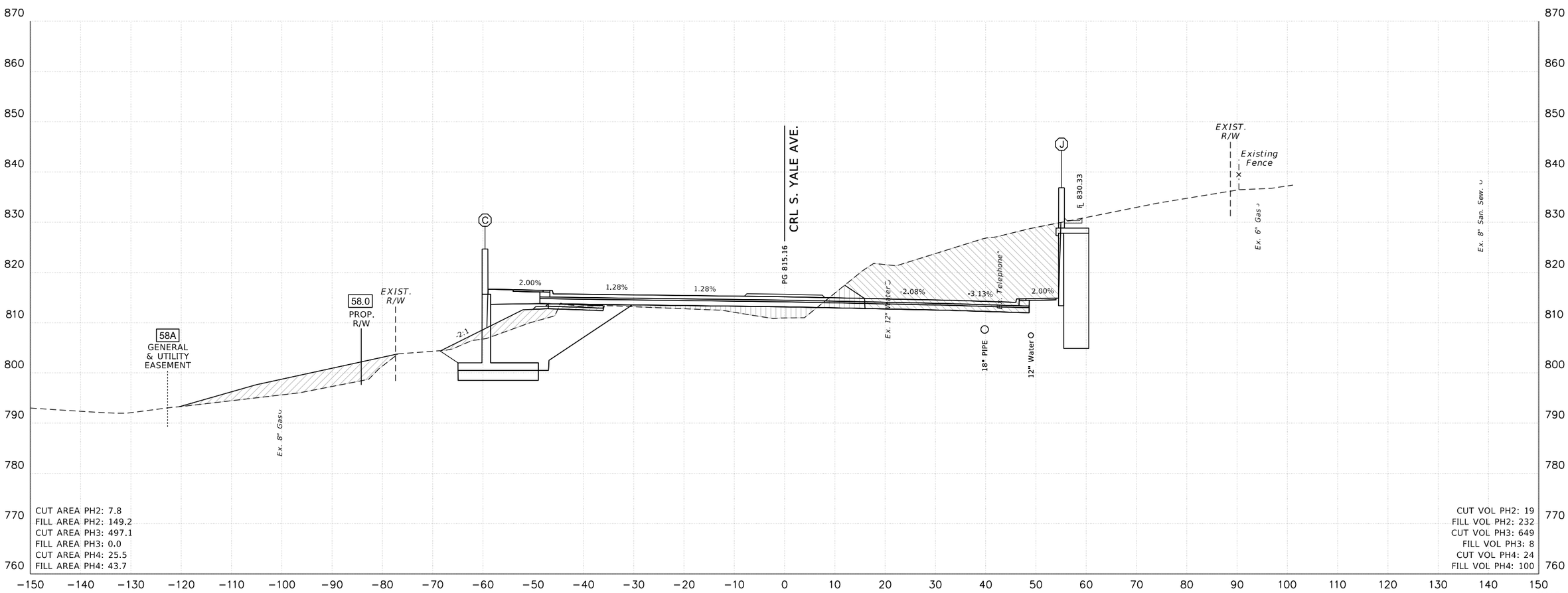

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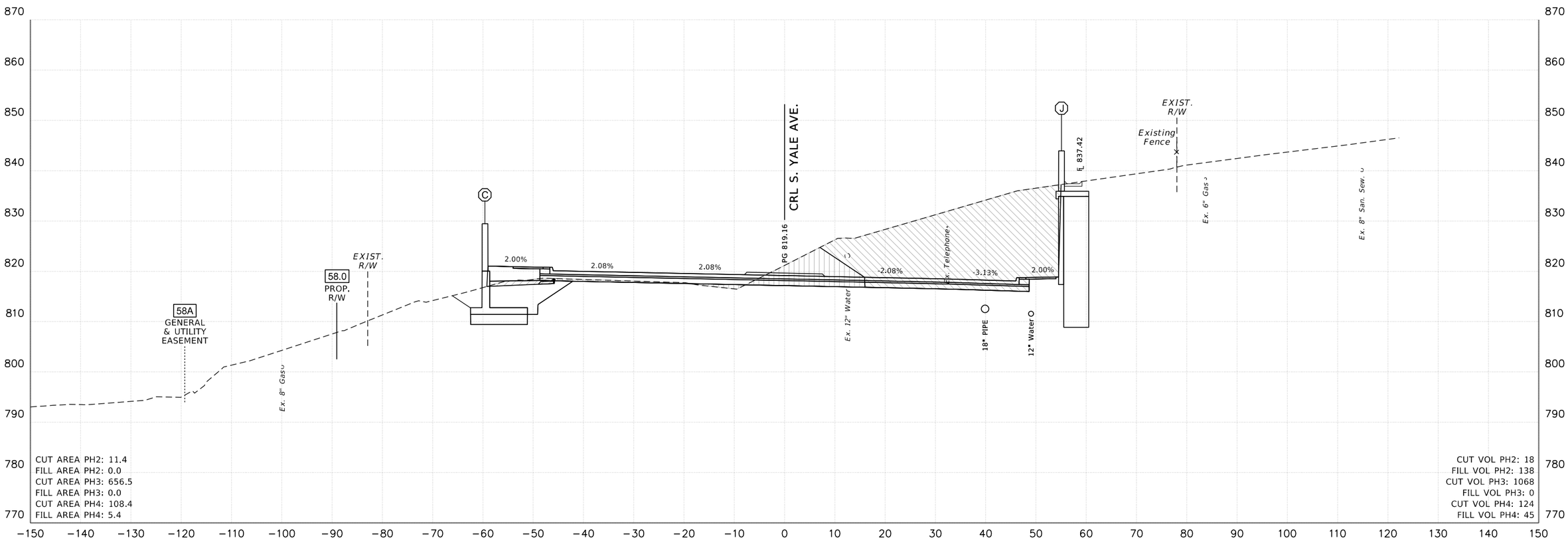

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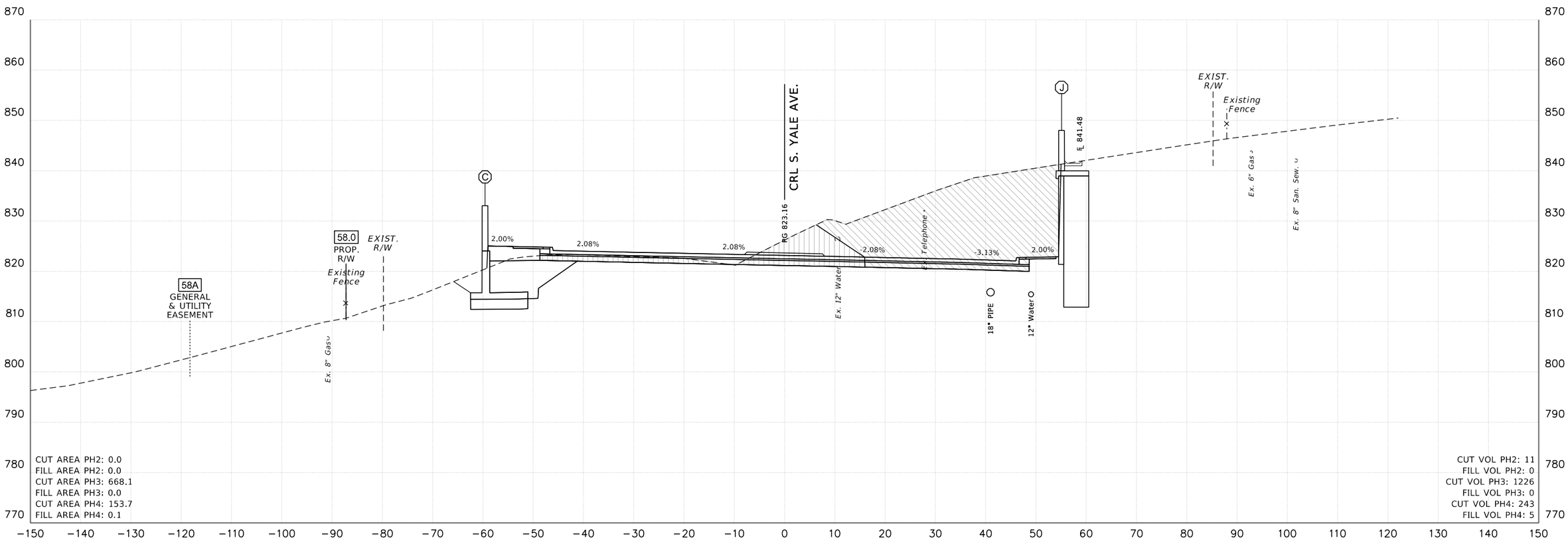

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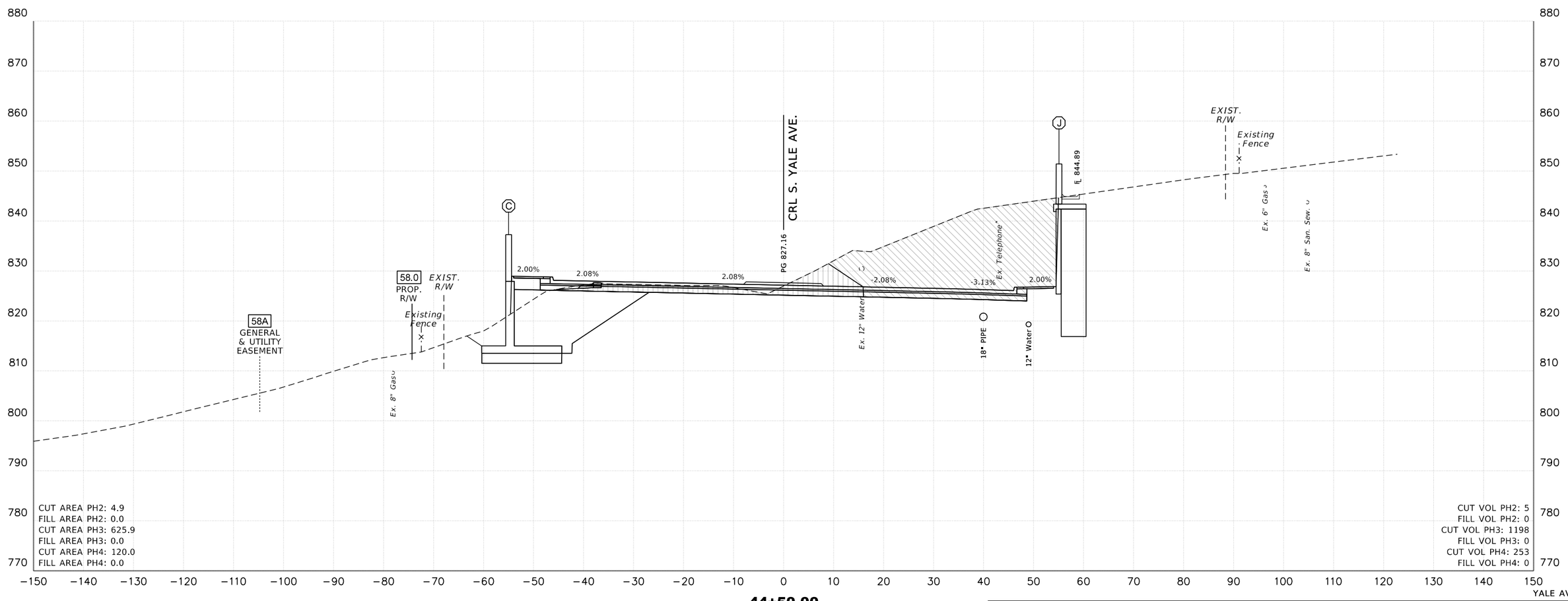

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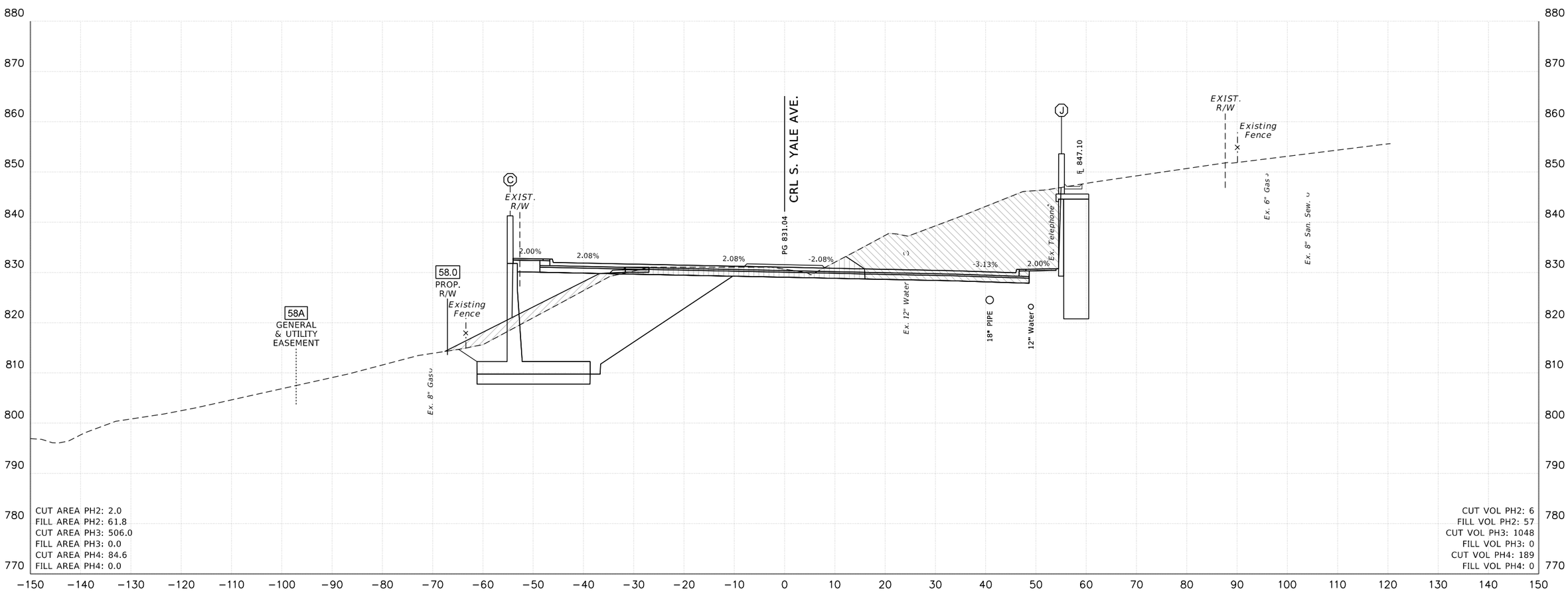

ARTERIAL STREET WIDENING SOUTH YALE AVENUE 81st STREET SOUTH TO 91st STREET SOUTH PROJECT NO. 144101	CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT	BENHAM a Hallett Company Benham Design, LLC One West Third Street, Suite 200 Tulsa, OK 74103-3513 (918) 492-1600
		DATE: 10/31/2018 — SHEET X27 OF 334 SHEETS

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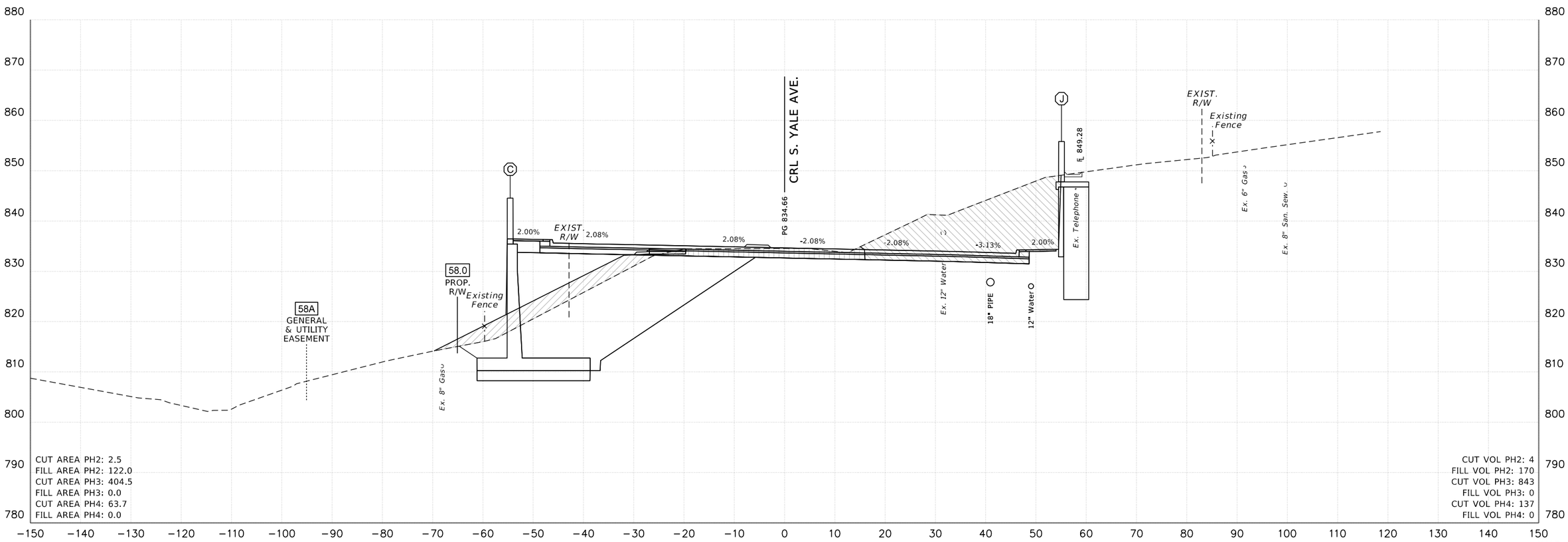

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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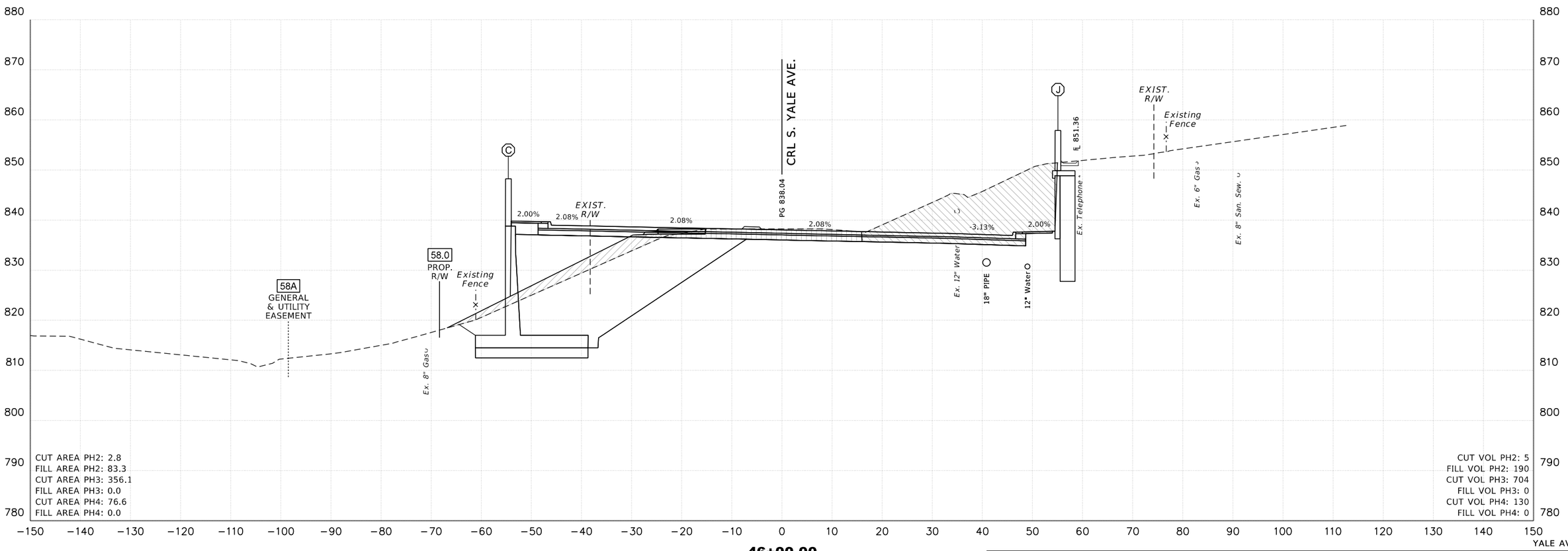

ARTERIAL STREET WIDENING SOUTH YALE AVENUE 81st STREET SOUTH TO 91st STREET SOUTH PROJECT NO. 144101	CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT	BENHAM a Haskell Company Benham Design, LLC One West Third Street, Suite 200 Tulsa, OK 74103-3513 (918) 492-1600
		DATE: 10/31/2018 — SHEET X29 OF 334 SHEETS

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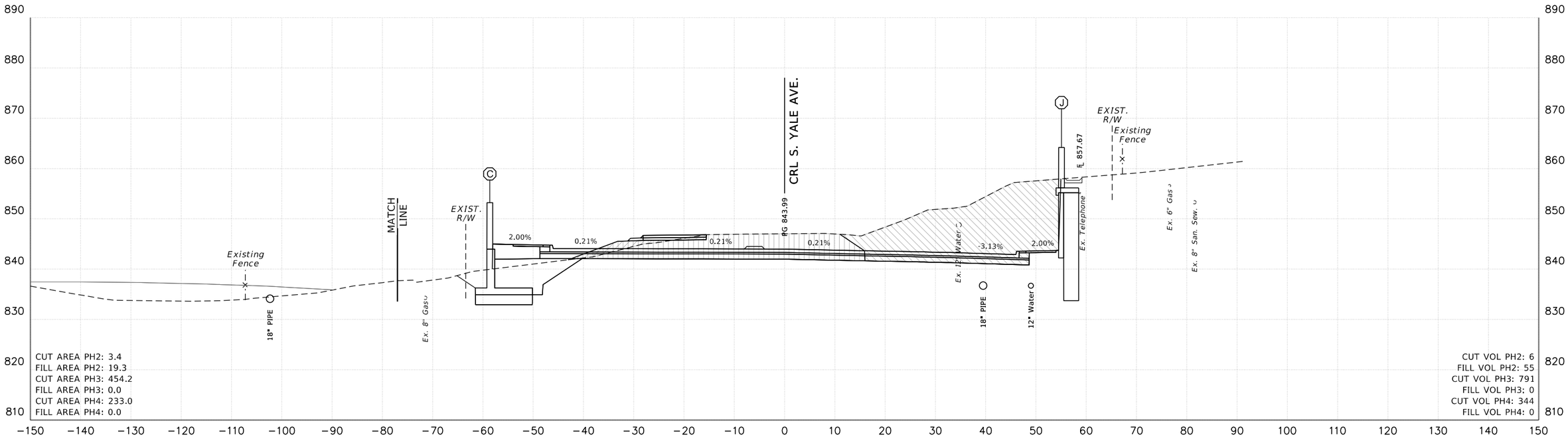

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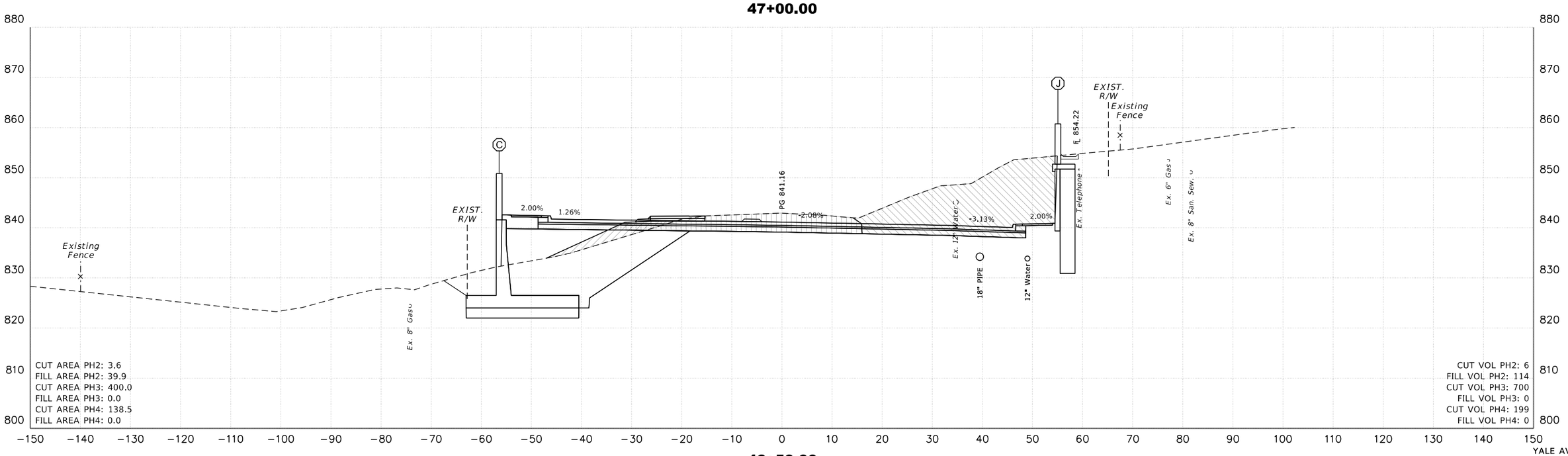

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PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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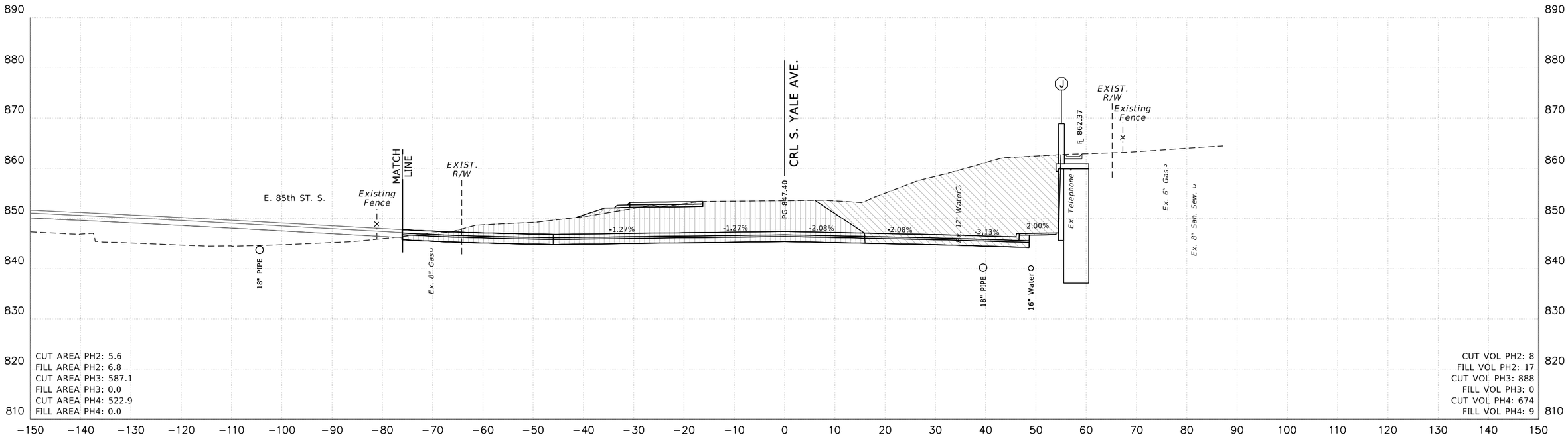

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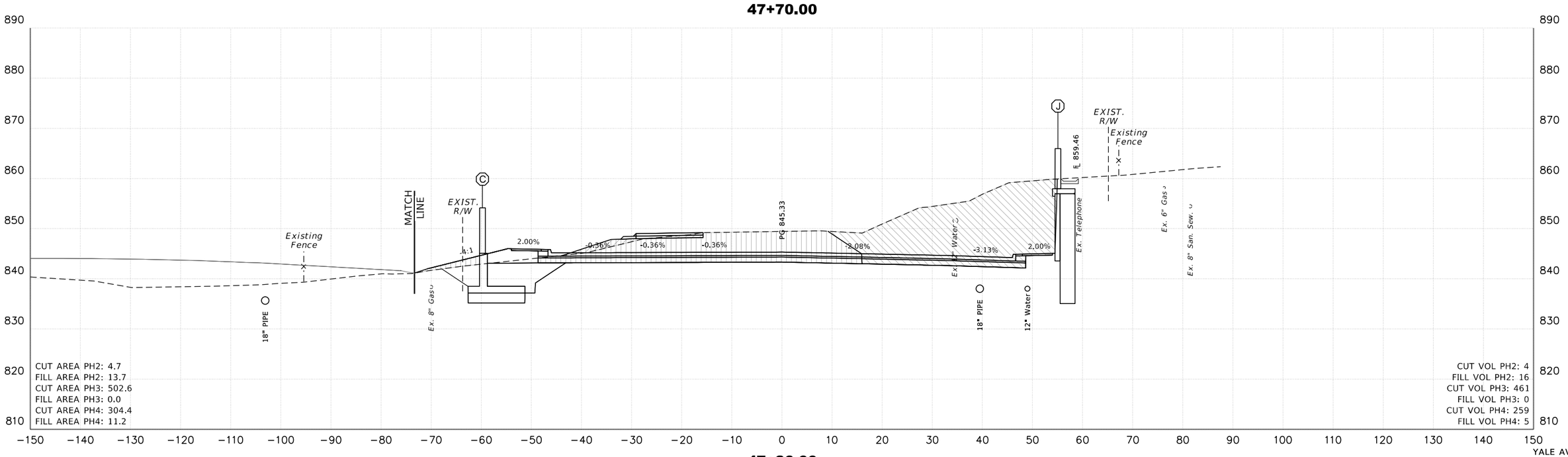

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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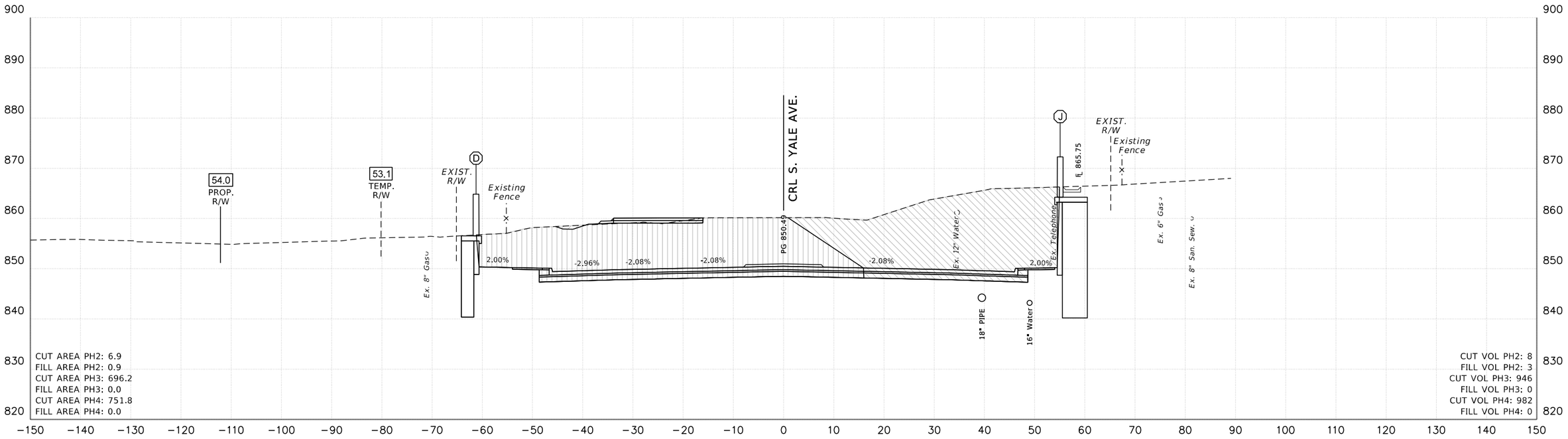

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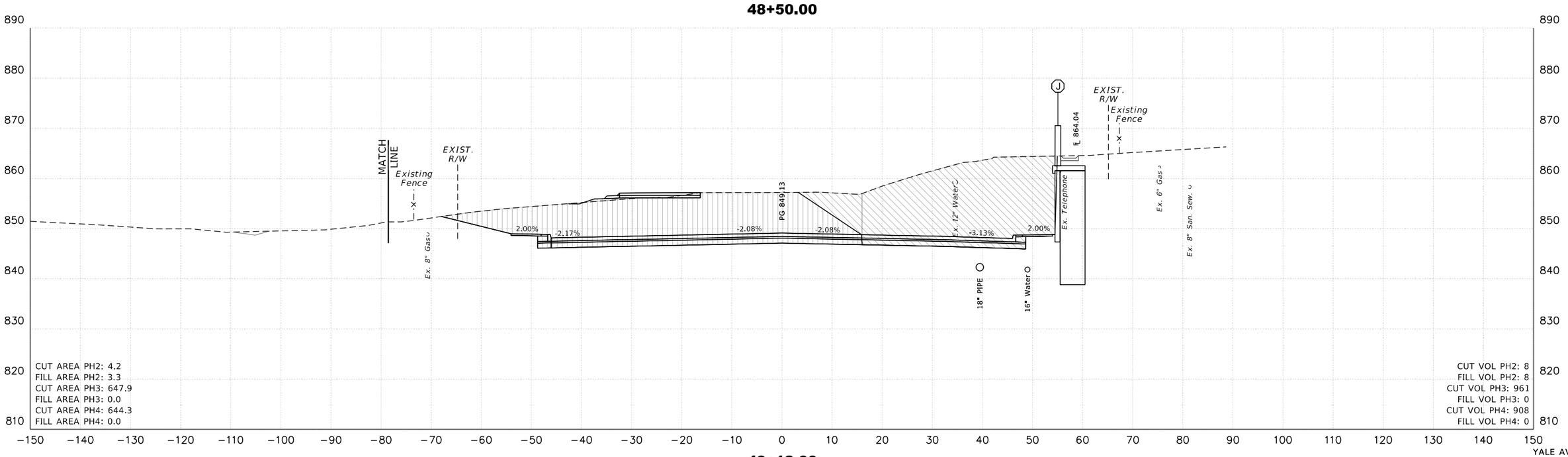

48+12.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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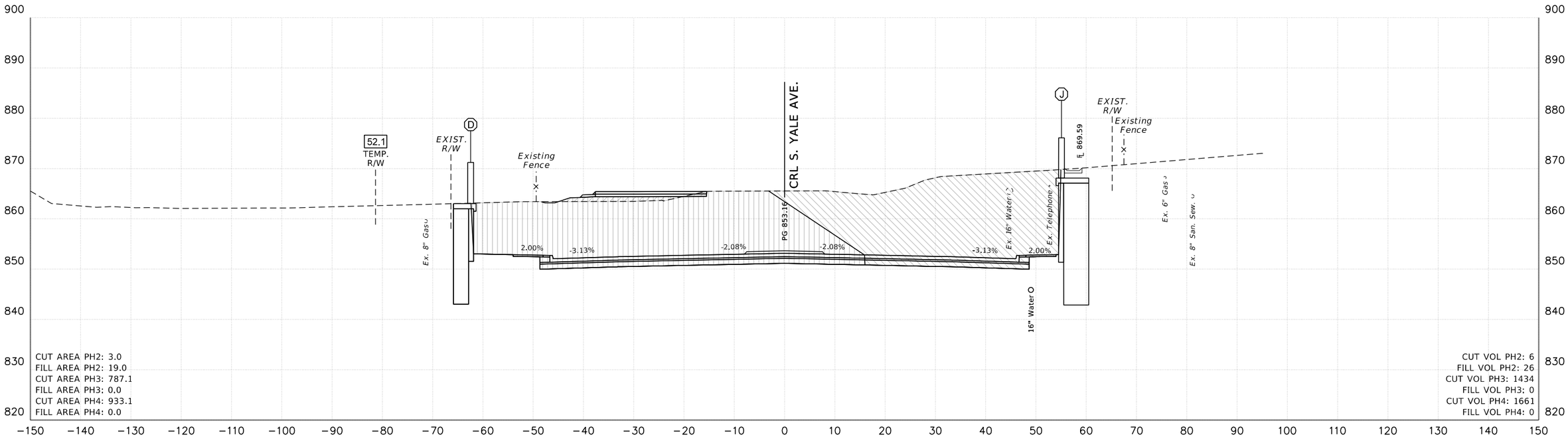

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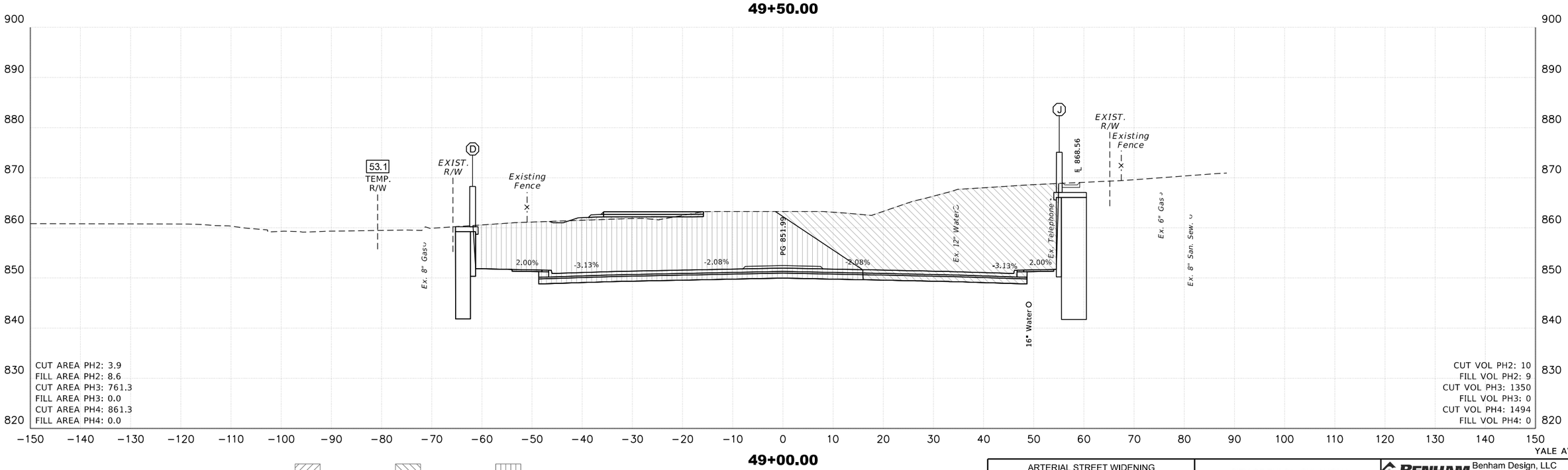

49+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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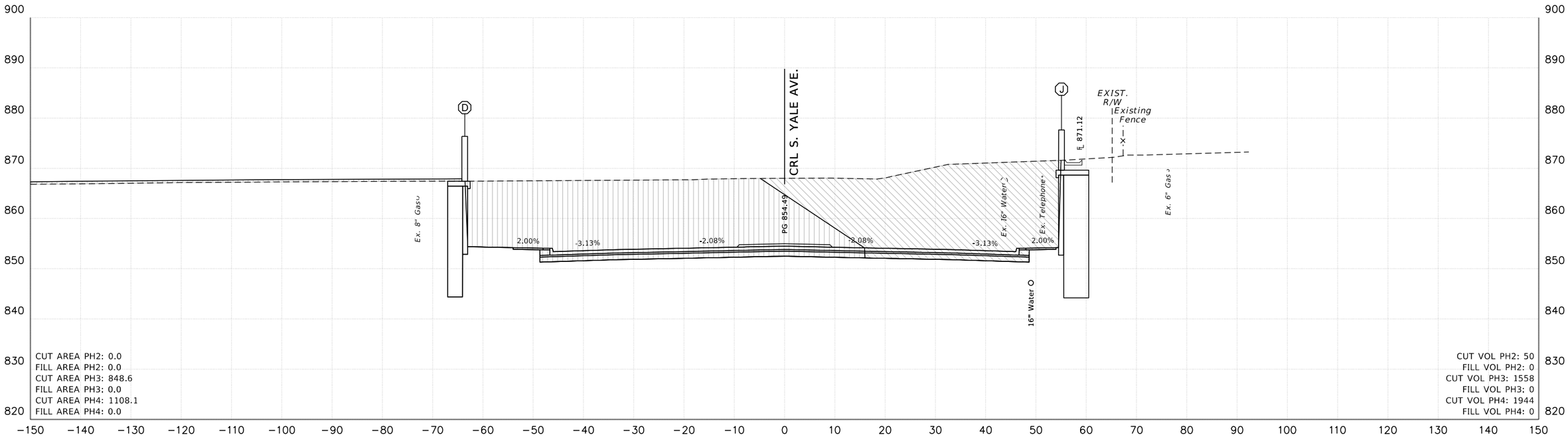

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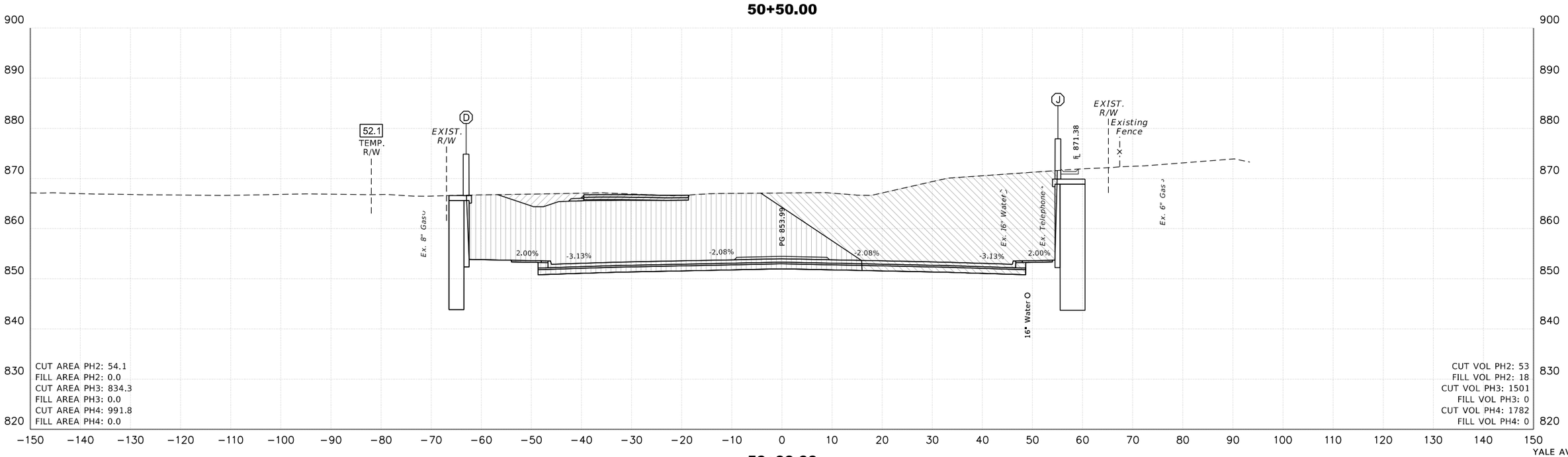

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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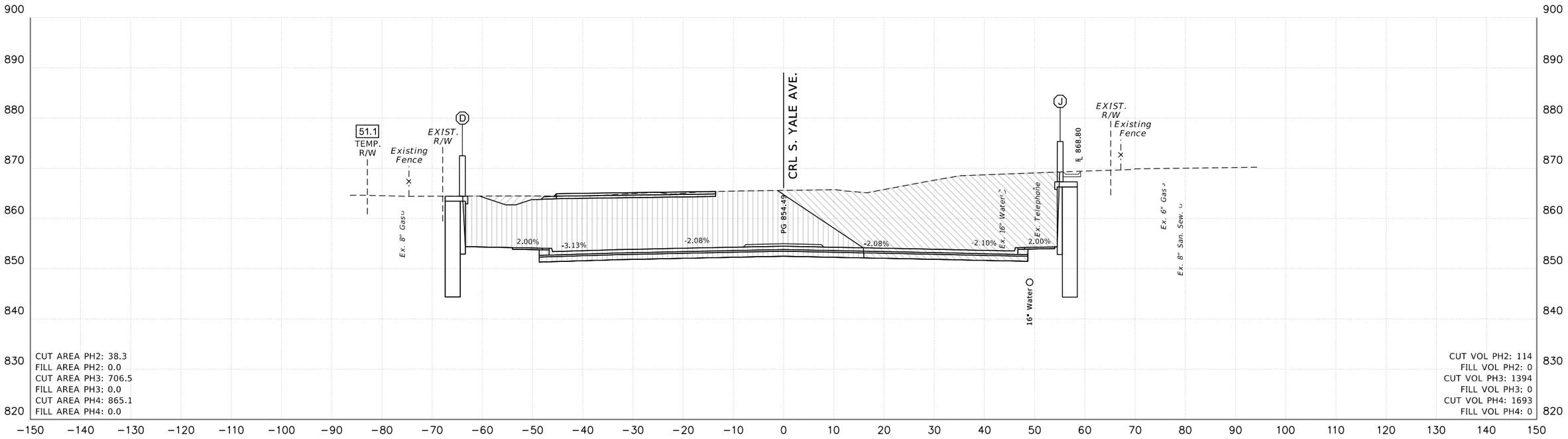

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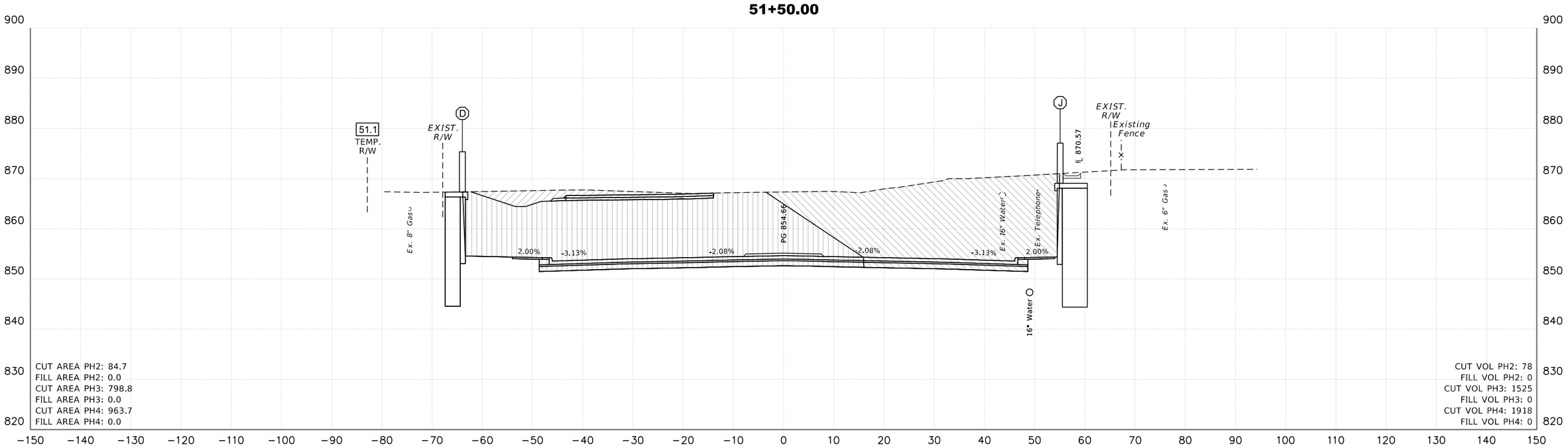

51+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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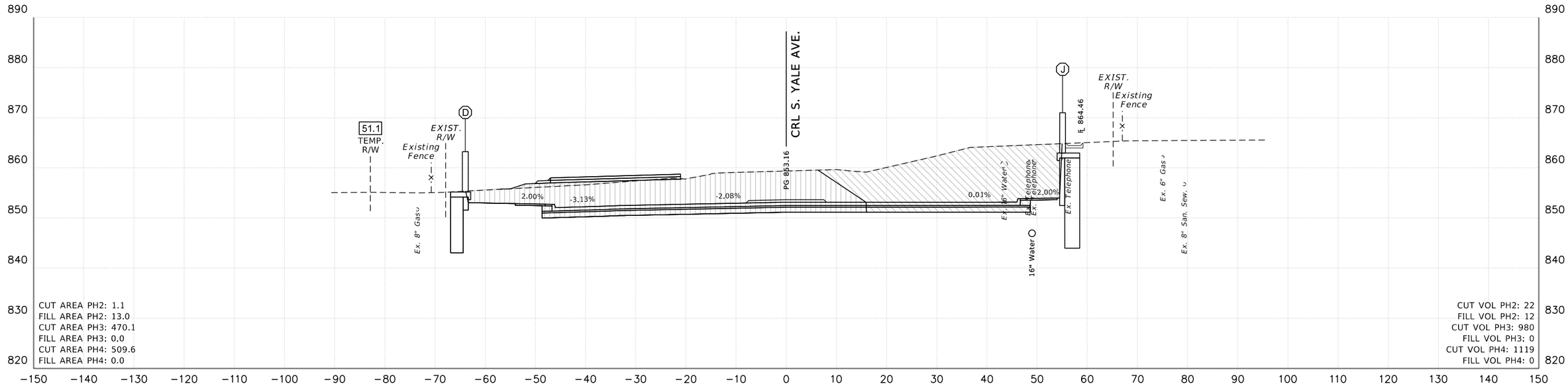
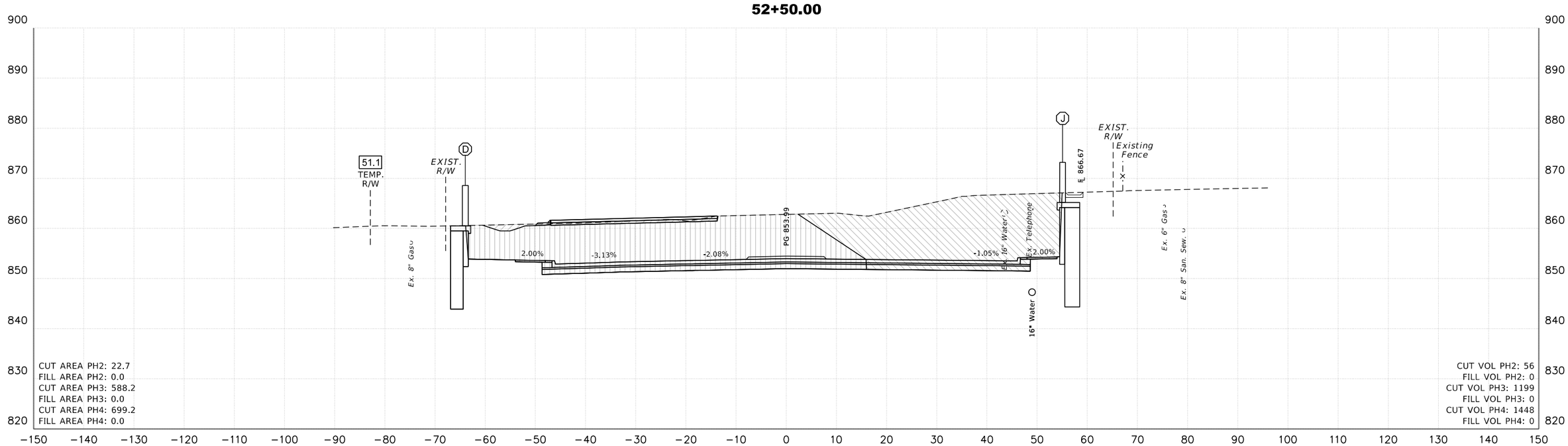


CUT AREA PH2: 1.1
FILL AREA PH2: 13.0
CUT AREA PH3: 470.1
FILL AREA PH3: 0.0
CUT AREA PH4: 509.6
FILL AREA PH4: 0.0

CUT VOL PH2: 22
FILL VOL PH2: 12
CUT VOL PH3: 980
FILL VOL PH3: 0
CUT VOL PH4: 1119
FILL VOL PH4: 0

52+50.00



CUT AREA PH2: 22.7
FILL AREA PH2: 0.0
CUT AREA PH3: 588.2
FILL AREA PH3: 0.0
CUT AREA PH4: 699.2
FILL AREA PH4: 0.0

CUT VOL PH2: 56
FILL VOL PH2: 0
CUT VOL PH3: 1199
FILL VOL PH3: 0
CUT VOL PH4: 1448
FILL VOL PH4: 0

YALE AVE.

52+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
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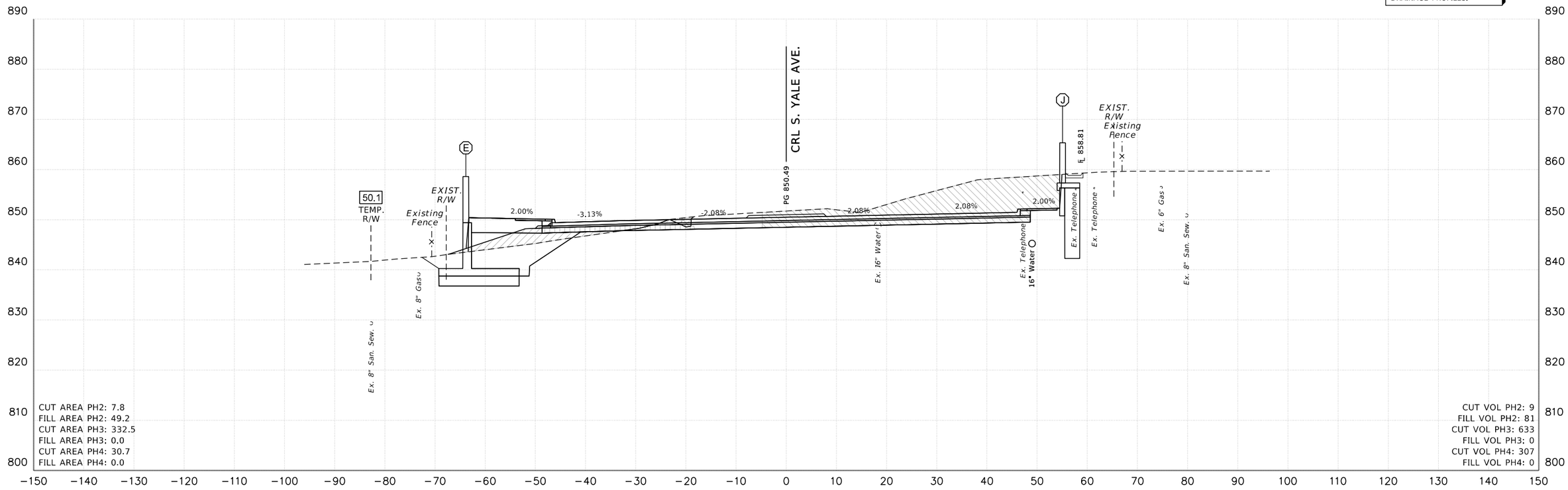

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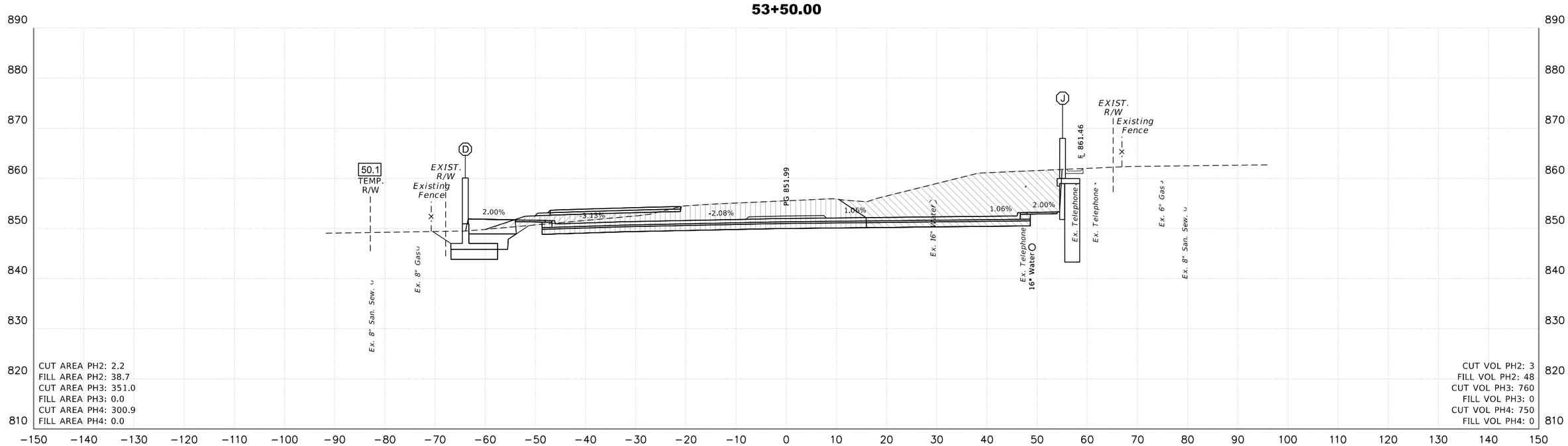

53+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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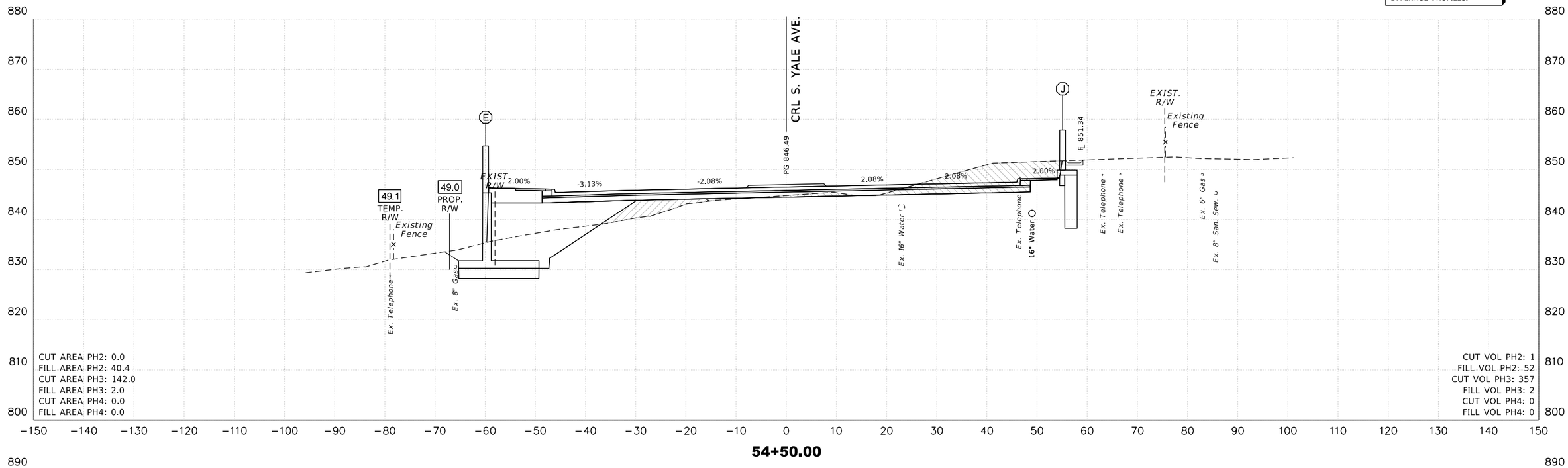

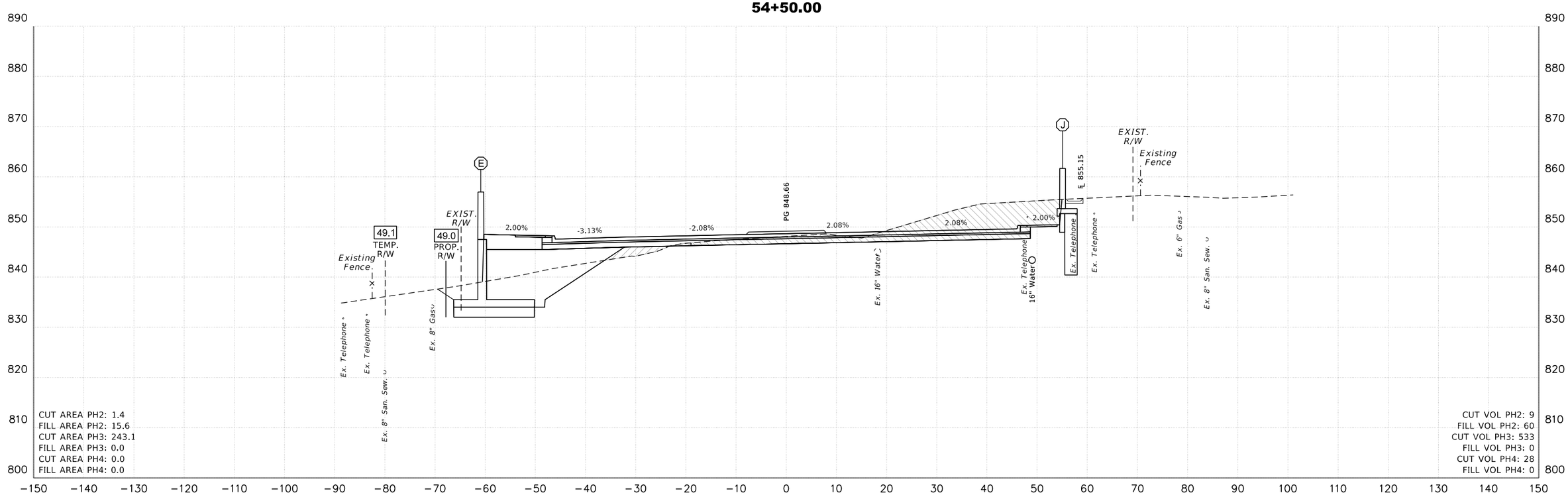

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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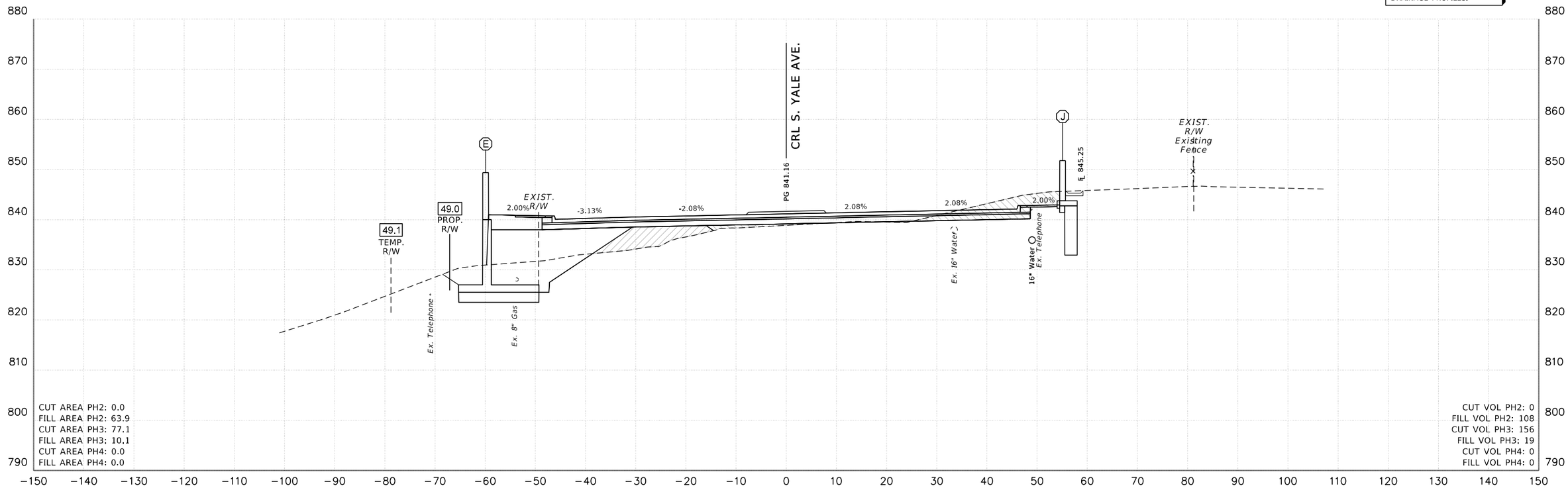

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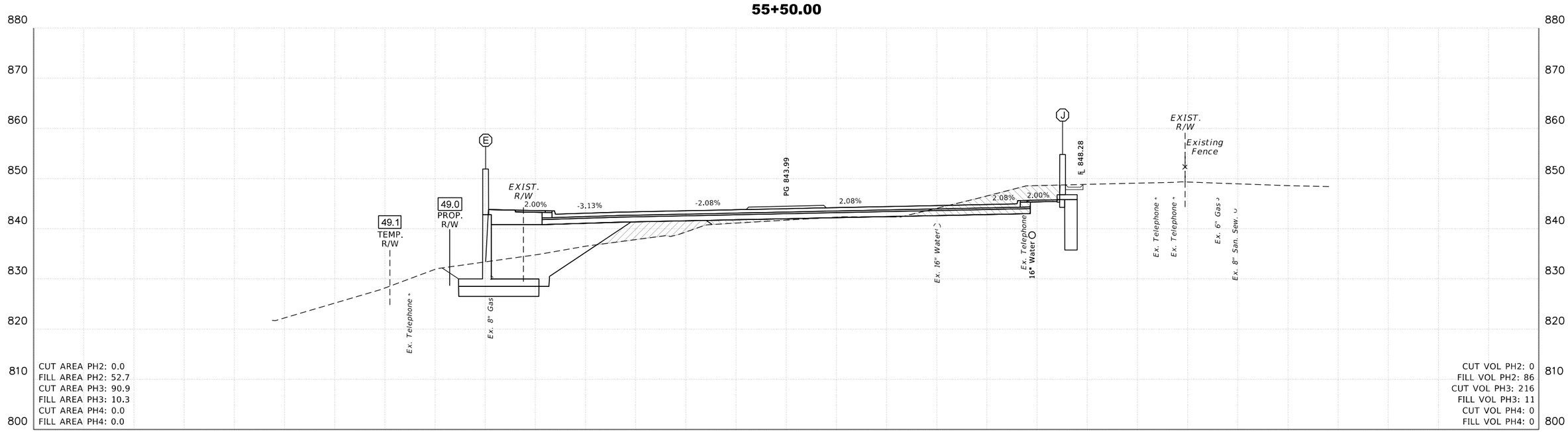

55+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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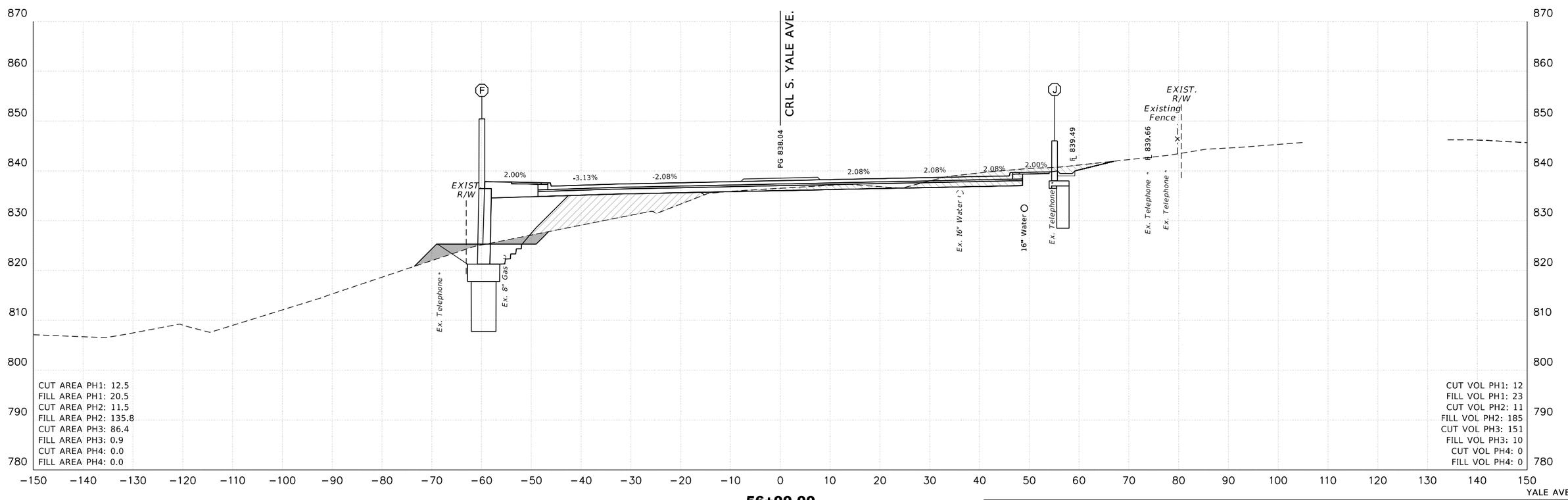

CUT AREA PH1: 12.5
FILL AREA PH1: 20.5
CUT AREA PH2: 11.5
FILL AREA PH2: 135.8
CUT AREA PH3: 86.4
FILL AREA PH3: 0.9
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 12
FILL VOL PH1: 23
CUT VOL PH2: 11
FILL VOL PH2: 185
CUT VOL PH3: 151
FILL VOL PH3: 10
CUT VOL PH4: 0
FILL VOL PH4: 0

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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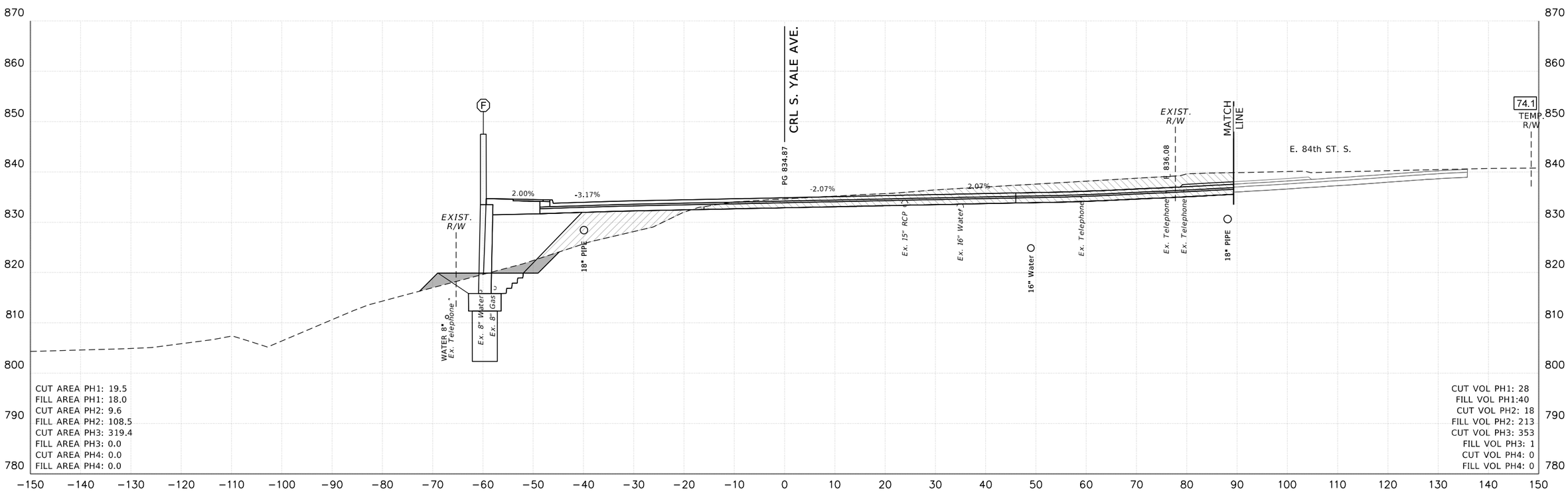

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hazlett Company
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(918) 492-1600

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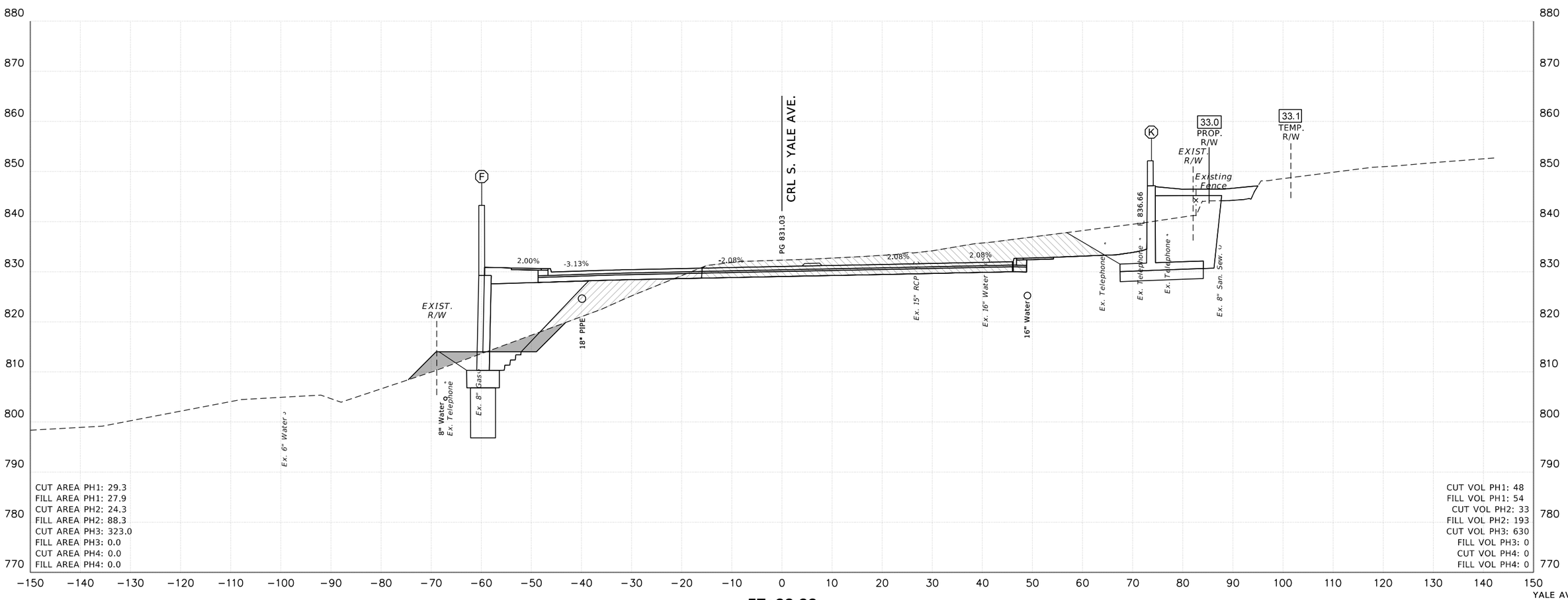

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabell Company
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Tulsa, OK 74103-3513
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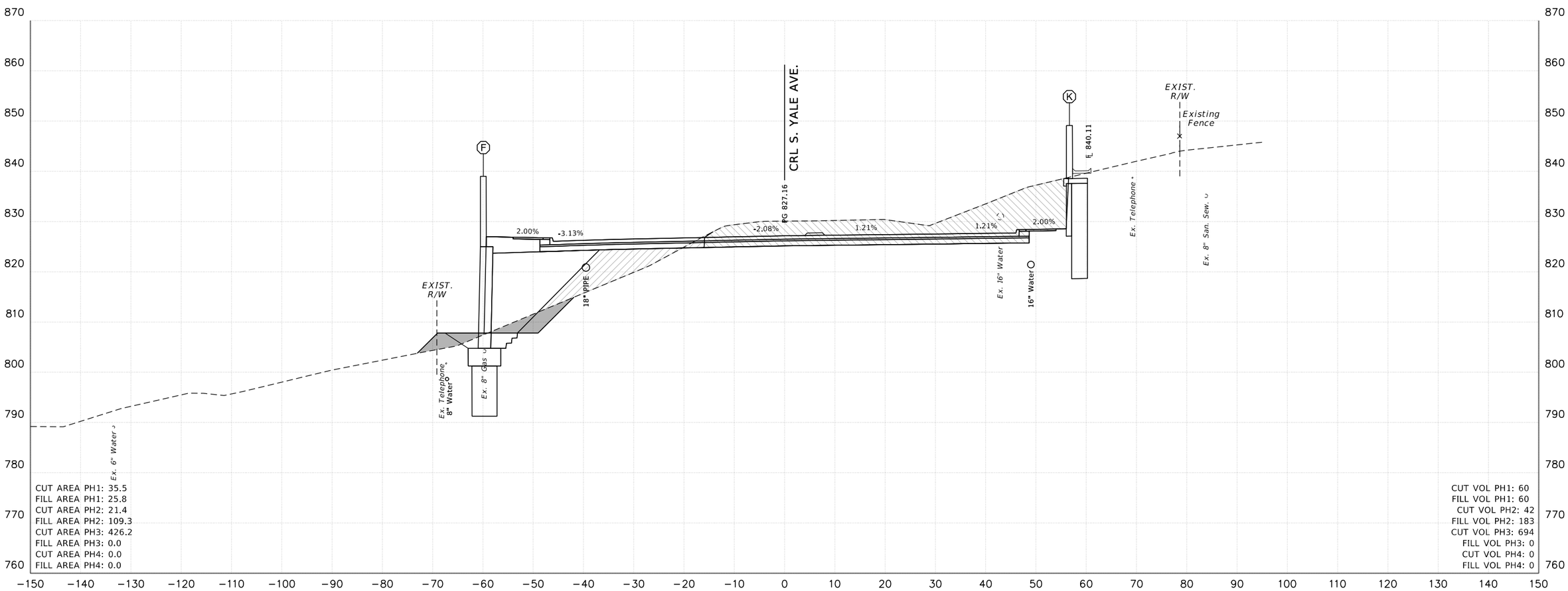

ARTERIAL STREET WIDENING
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81st STREET SOUTH TO 91st STREET SOUTH
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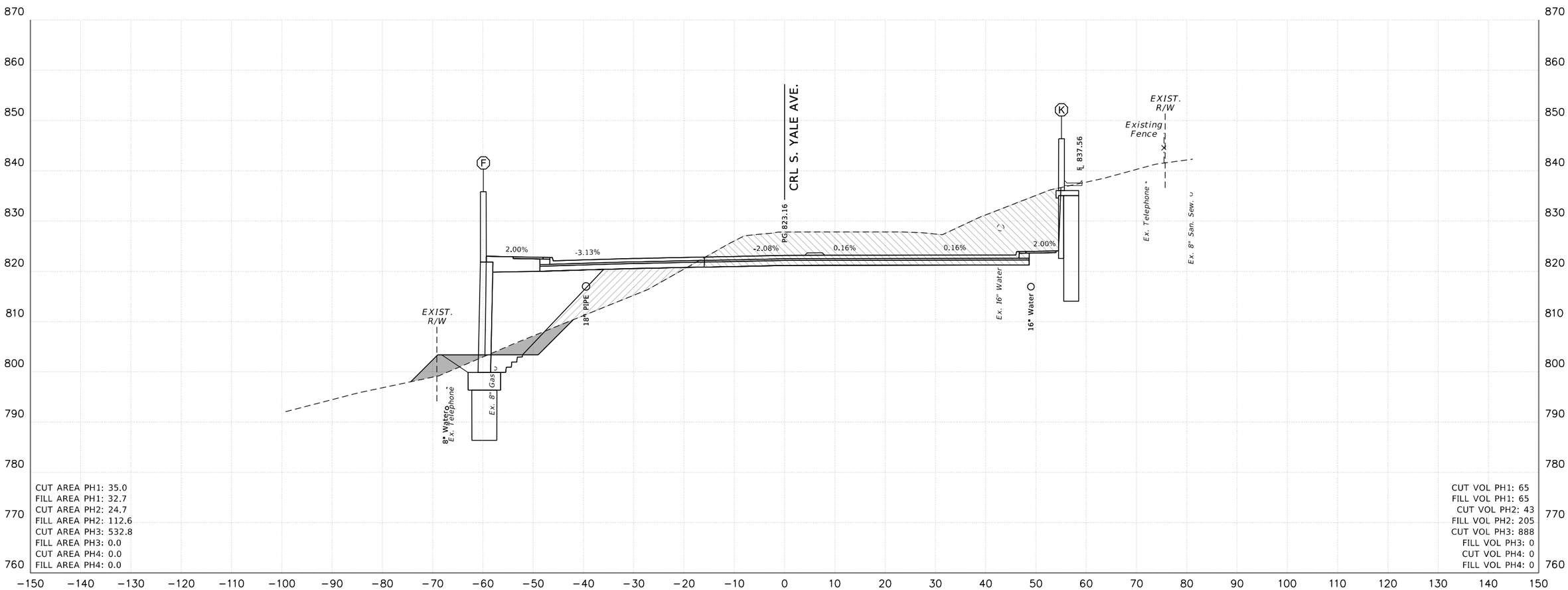

CUT AREA PH1: 35.0
FILL AREA PH1: 32.7
CUT AREA PH2: 24.7
FILL AREA PH2: 112.6
CUT AREA PH3: 532.8
FILL AREA PH3: 0.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 65
FILL VOL PH1: 65
CUT VOL PH2: 43
FILL VOL PH2: 205
CUT VOL PH3: 888
FILL VOL PH3: 0
CUT VOL PH4: 0
FILL VOL PH4: 0

PHASE 1 PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hallmark Company
Benham Design, LLC
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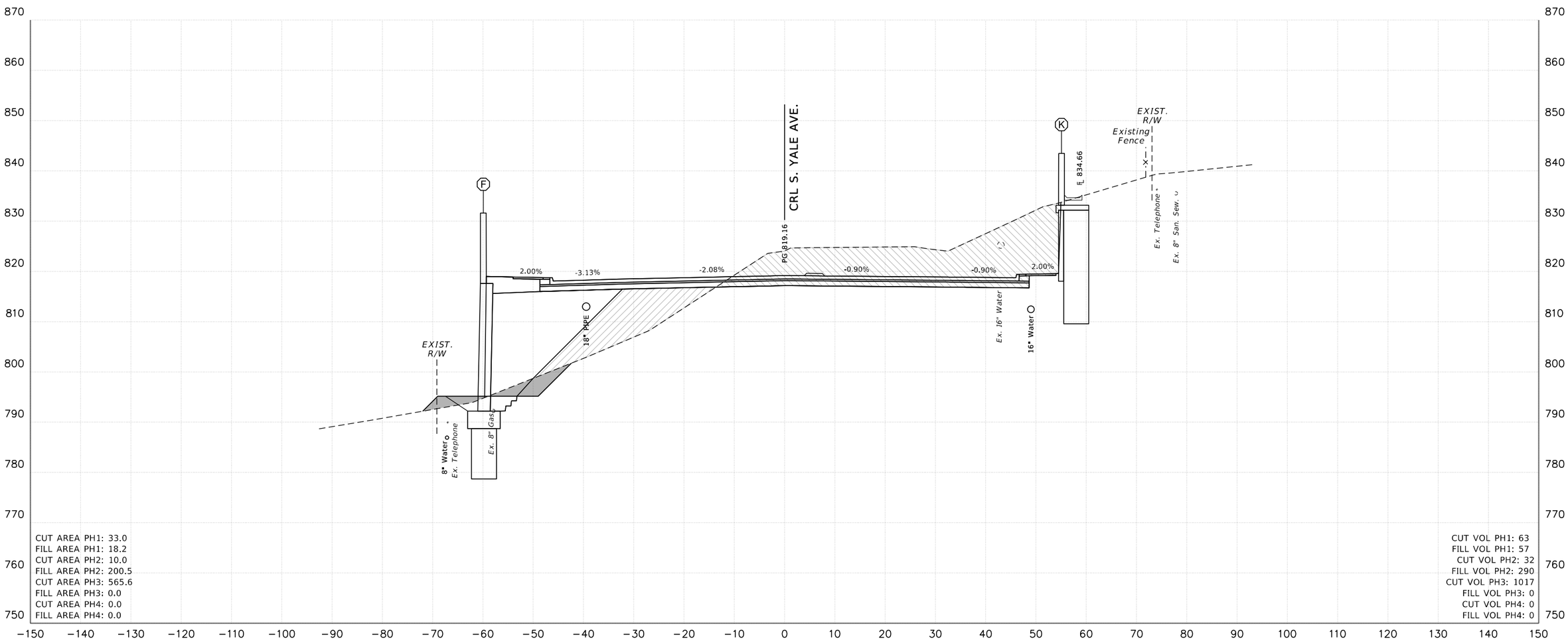

CUT AREA PH1: 33.0
FILL AREA PH1: 18.2
CUT AREA PH2: 10.0
FILL AREA PH2: 200.5
CUT AREA PH3: 565.6
FILL AREA PH3: 0.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 63
FILL VOL PH1: 57
CUT VOL PH2: 32
FILL VOL PH2: 290
CUT VOL PH3: 1017
FILL VOL PH3: 0
CUT VOL PH4: 0
FILL VOL PH4: 0

YALE AVE.

58+50.00

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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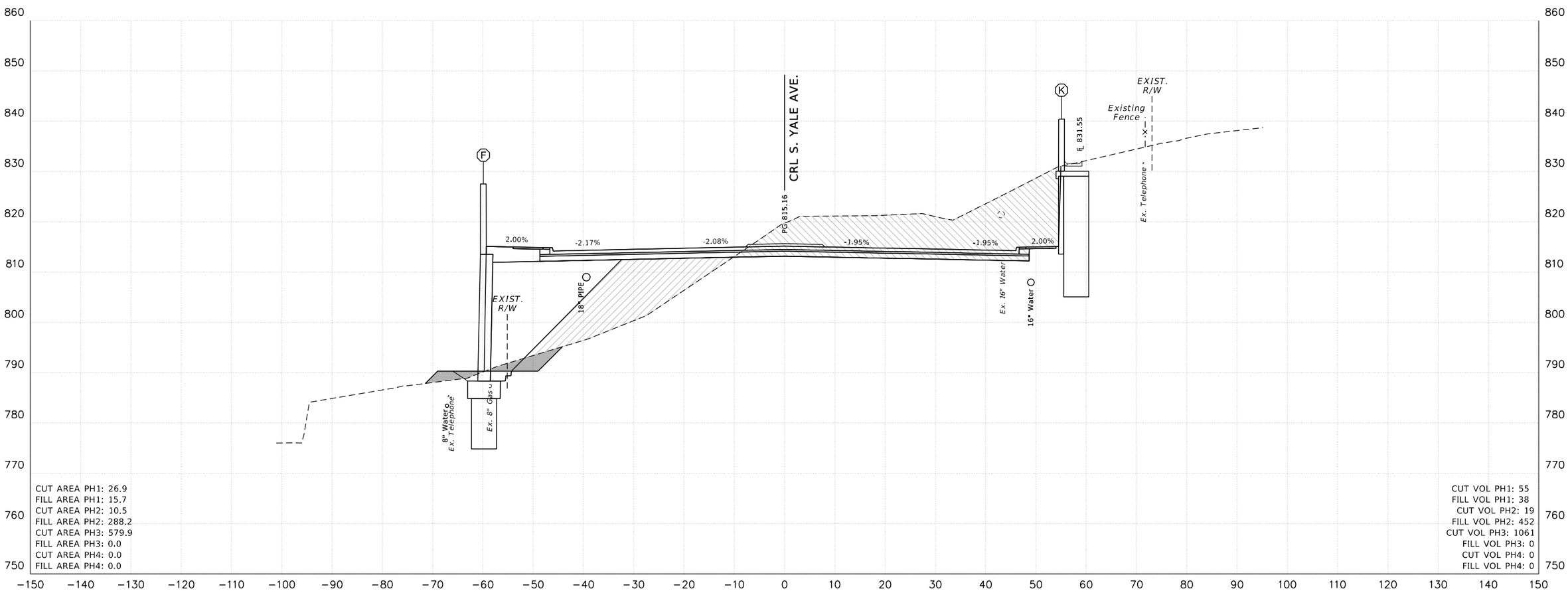

CUT AREA PH1: 26.9
FILL AREA PH1: 15.7
CUT AREA PH2: 10.5
FILL AREA PH2: 288.2
CUT AREA PH3: 579.9
FILL AREA PH3: 0.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 55
FILL VOL PH1: 38
CUT VOL PH2: 19
FILL VOL PH2: 452
CUT VOL PH3: 1061
FILL VOL PH3: 0
CUT VOL PH4: 0
FILL VOL PH4: 0

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
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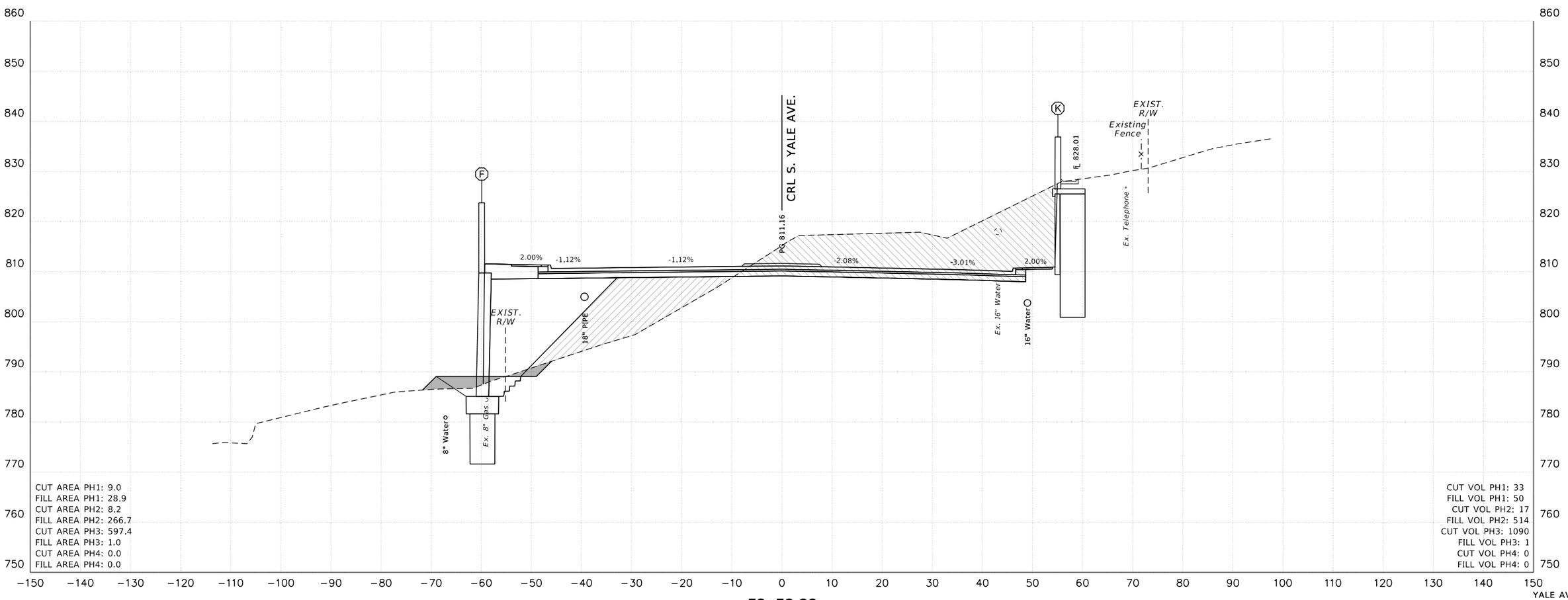

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FILL AREA PH1: 28.9
CUT AREA PH2: 8.2
FILL AREA PH2: 266.7
CUT AREA PH3: 597.4
FILL AREA PH3: 1.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 33
FILL VOL PH1: 50
CUT VOL PH2: 17
FILL VOL PH2: 514
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FILL VOL PH3: 1
CUT VOL PH4: 0
FILL VOL PH4: 0

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

SHEET X47 OF 334 SHEETS

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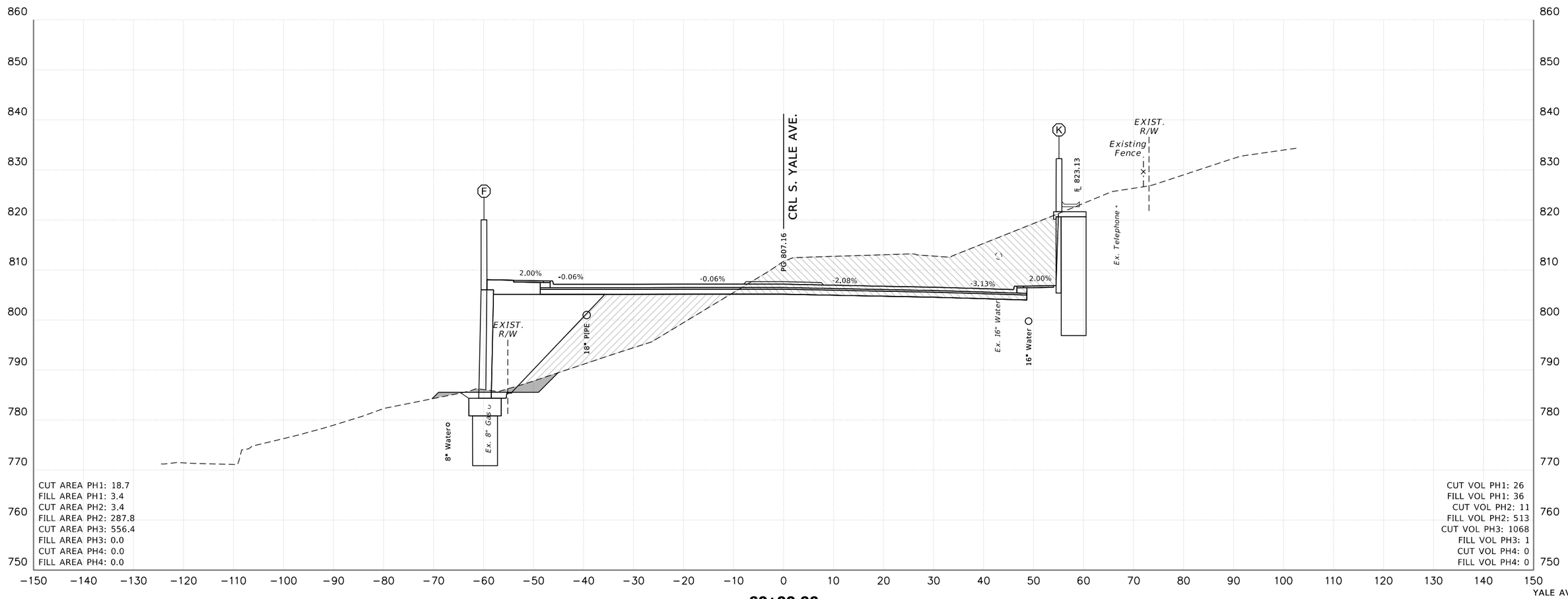

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FILL AREA PH1: 3.4
CUT AREA PH2: 3.4
FILL AREA PH2: 287.8
CUT AREA PH3: 556.4
FILL AREA PH3: 0.0
CUT AREA PH4: 0.0
FILL AREA PH4: 0.0

CUT VOL PH1: 26
FILL VOL PH1: 36
CUT VOL PH2: 11
FILL VOL PH2: 513
CUT VOL PH3: 1068
FILL VOL PH3: 1
CUT VOL PH4: 0
FILL VOL PH4: 0

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Kimley-Horn Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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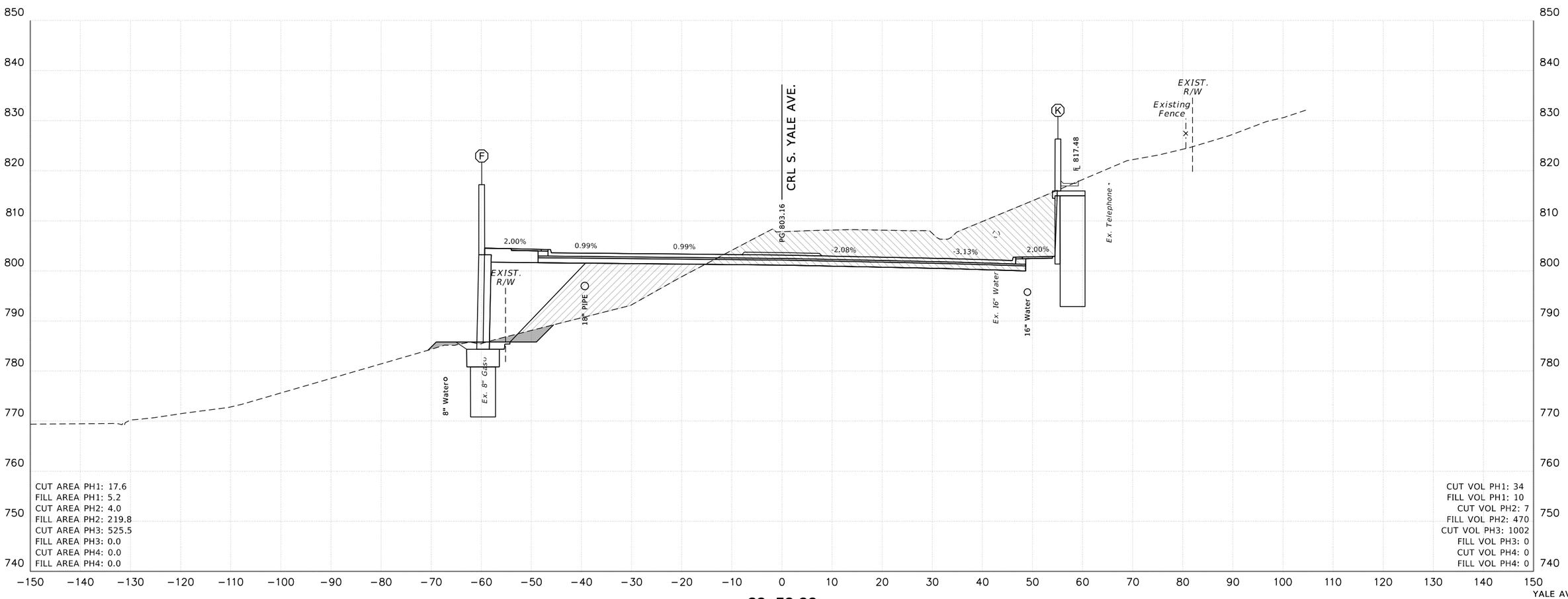

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

SHEET X49 OF 334 SHEETS

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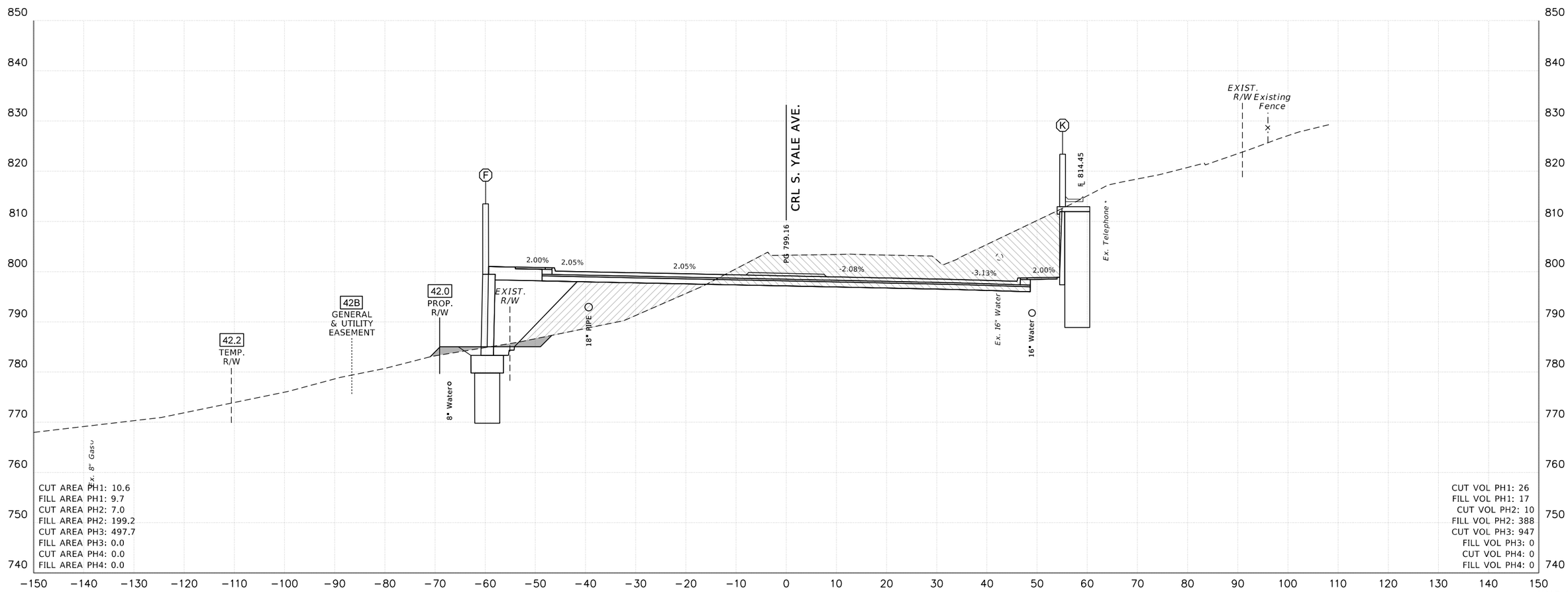

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabholz Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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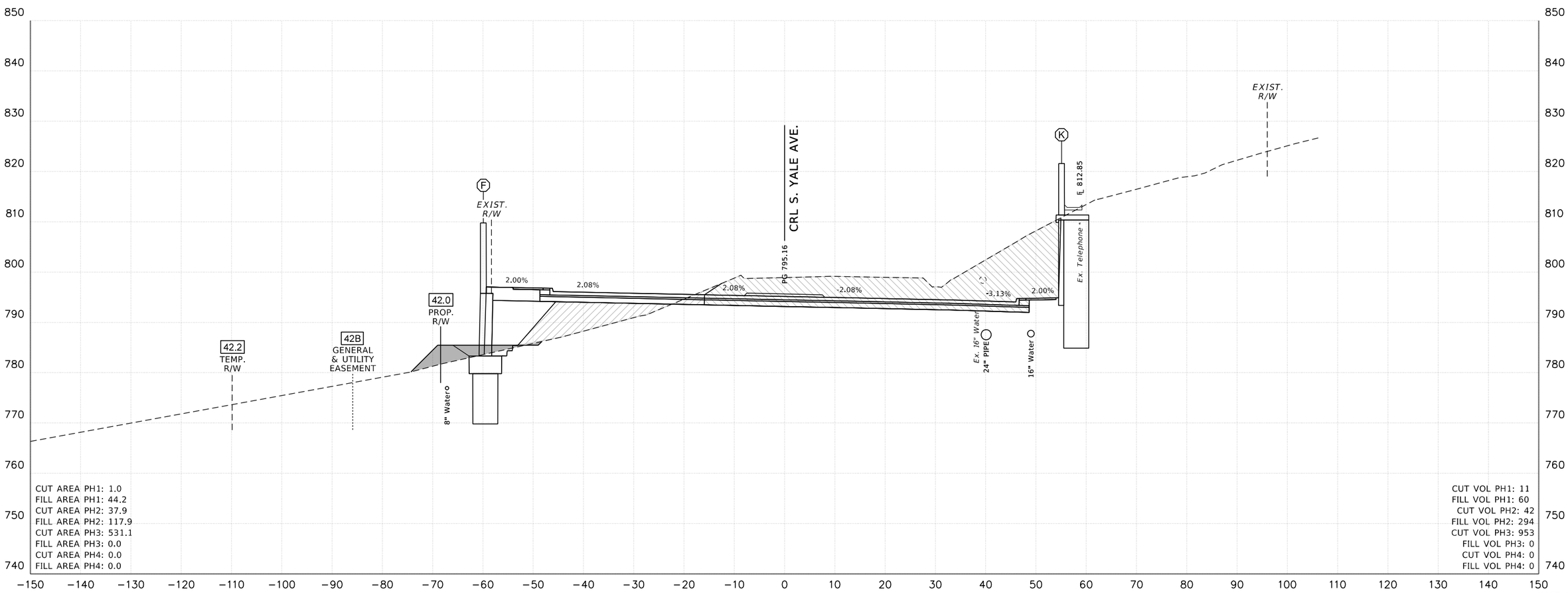

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nodali Company
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One West Third Street, Suite 200
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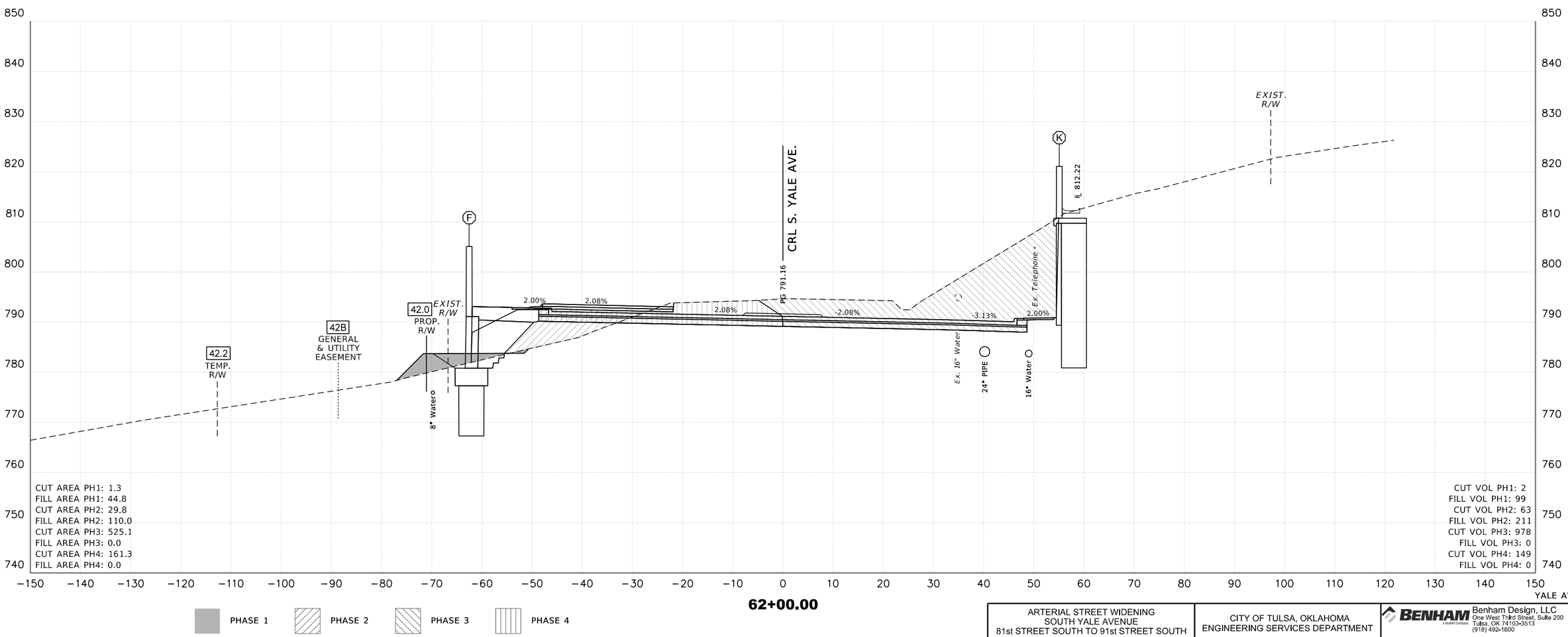

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hyatt Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

SHEET X52 OF 334 SHEETS

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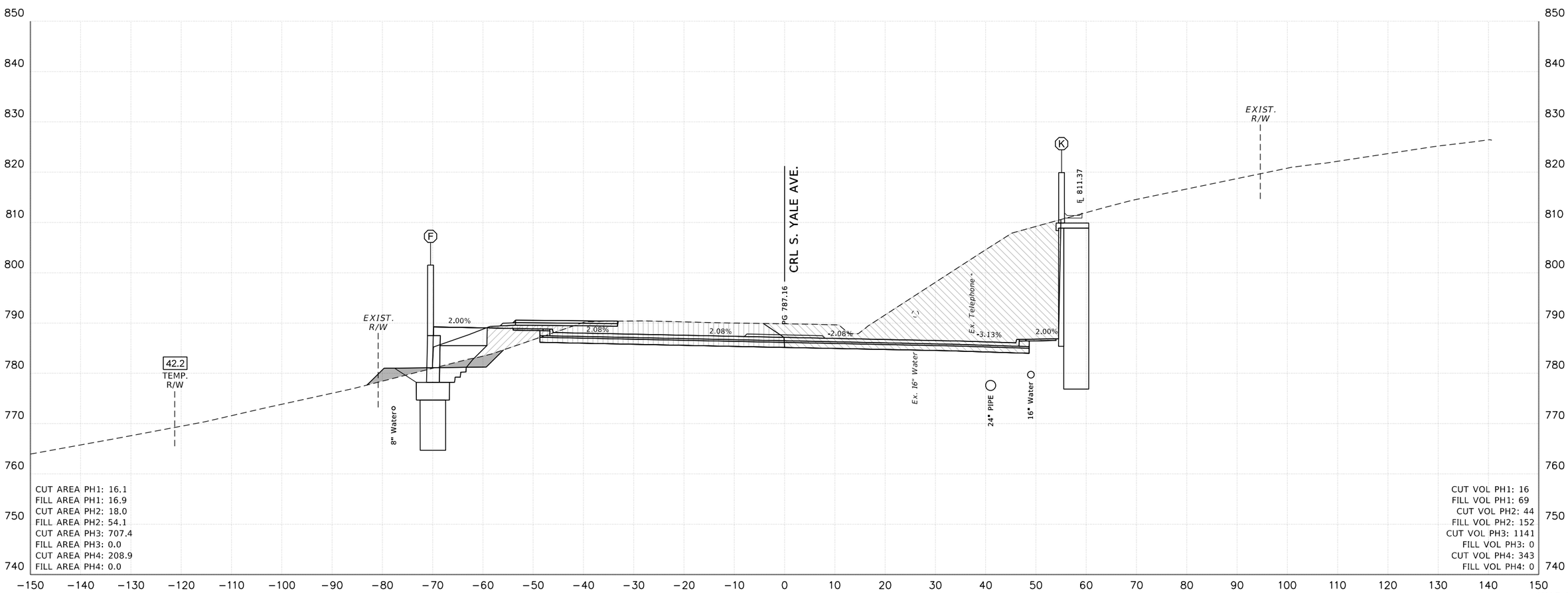

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hallett Company
Benham Design, LLC
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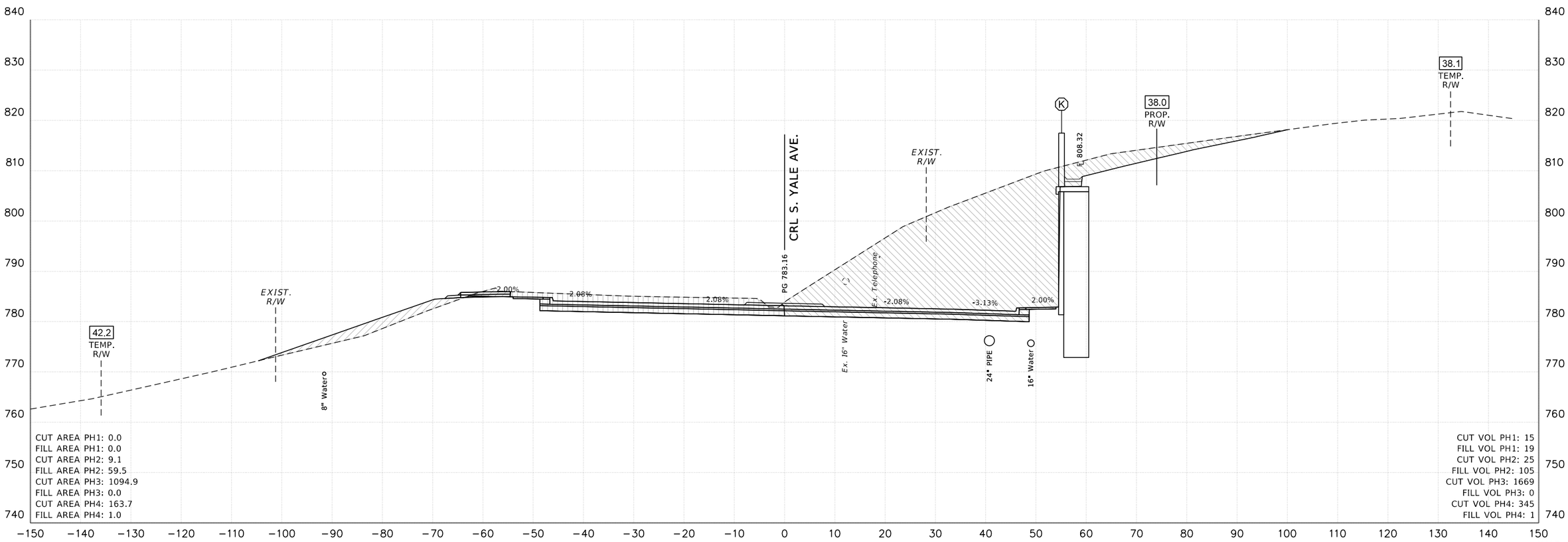

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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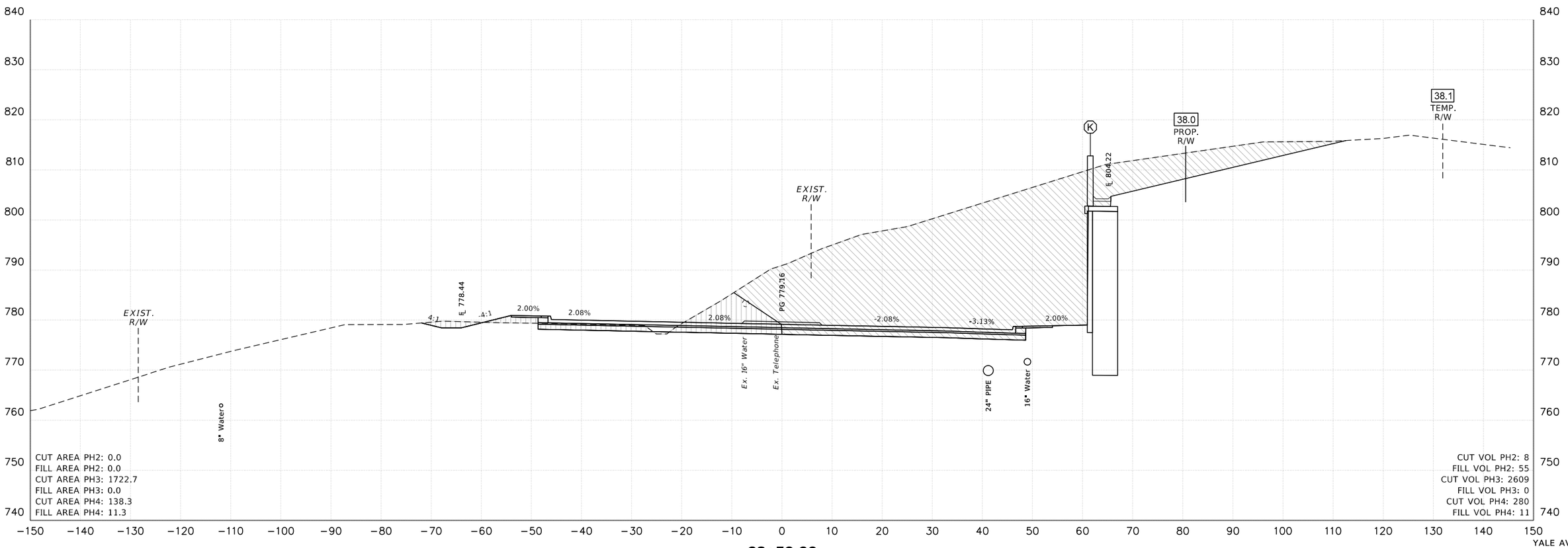

ARTERIAL STREET WIDENING SOUTH YALE AVENUE 81st STREET SOUTH TO 91st STREET SOUTH PROJECT NO. 144101	CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT	BENHAM a Hallett Company Benham Design, LLC One West Third Street, Suite 200 Tulsa, OK 74103-3513 (918) 492-1600
		DATE: 10/31/2018 — SHEET X55 OF 334 SHEETS

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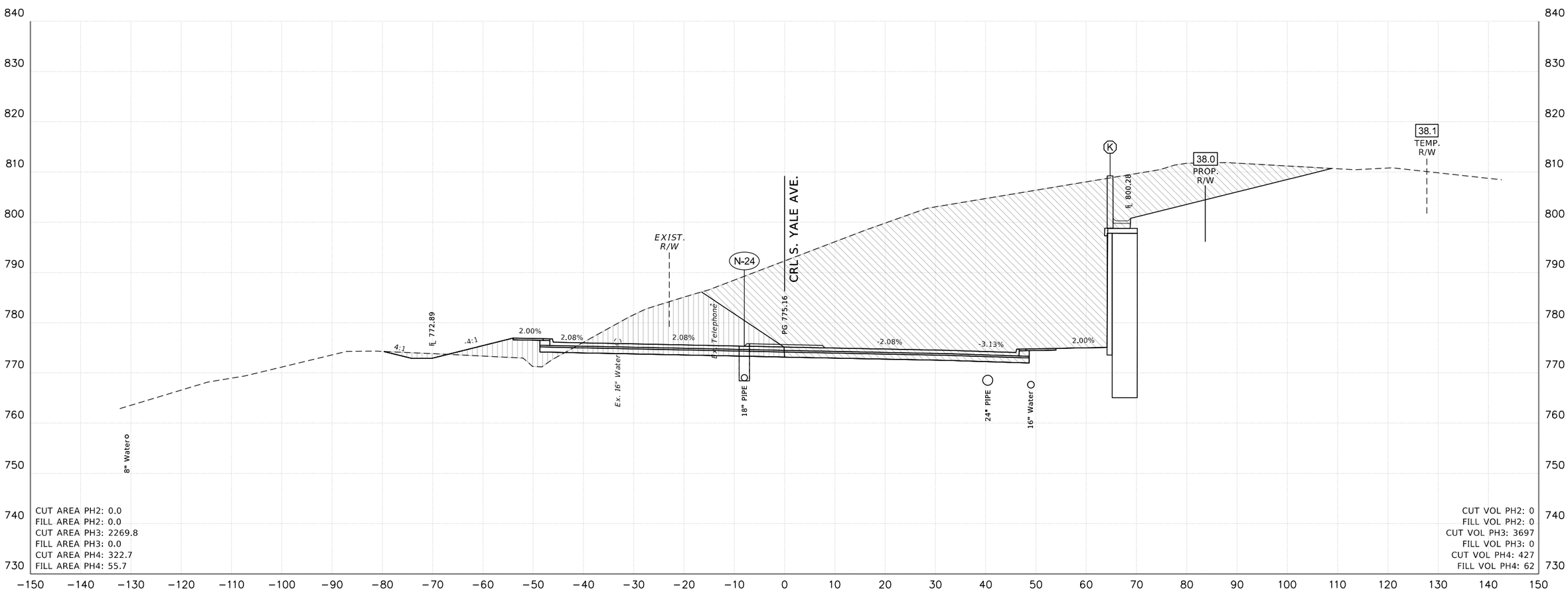

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hallett Company
Benham Design, LLC
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Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

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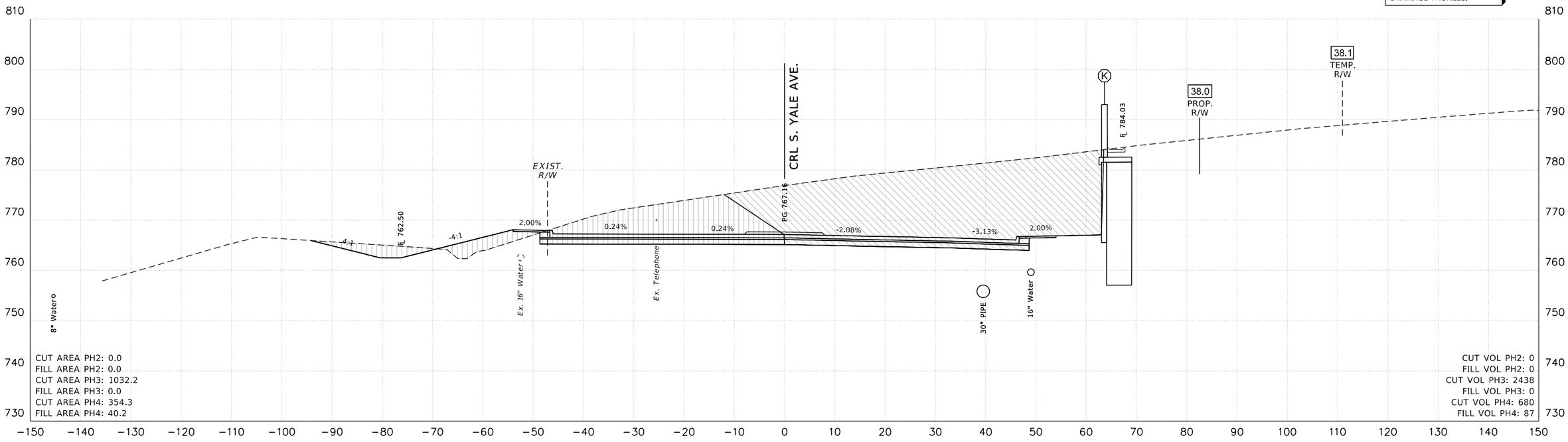

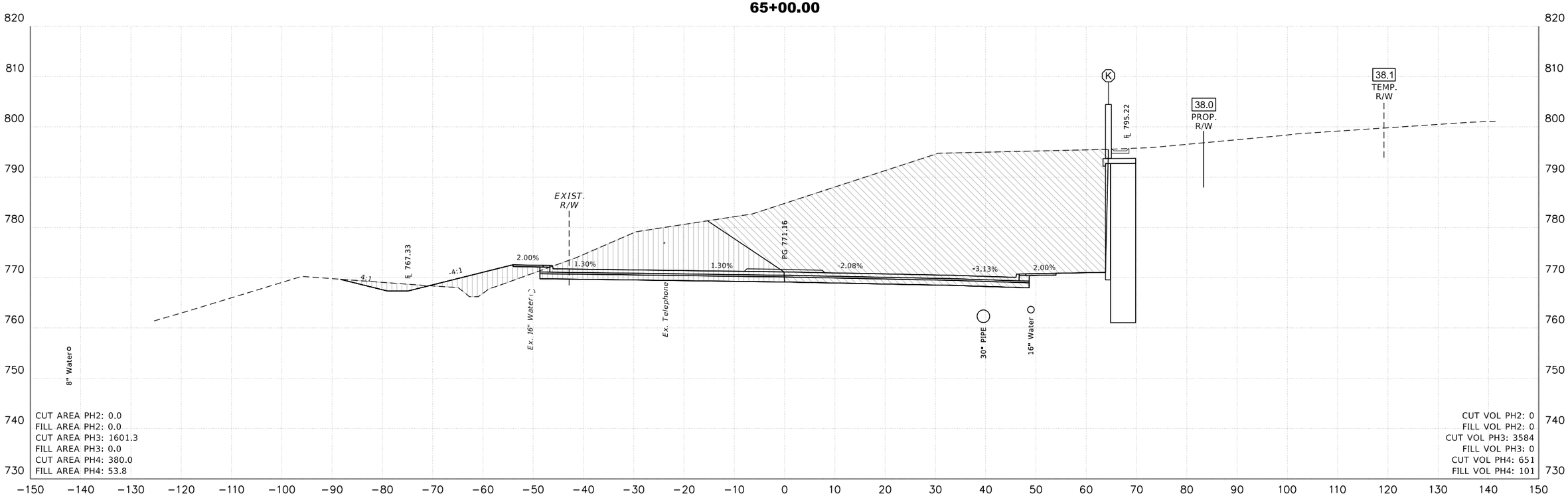

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hazlett Company
Benham Design, LLC
One West Third Street, Suite 200
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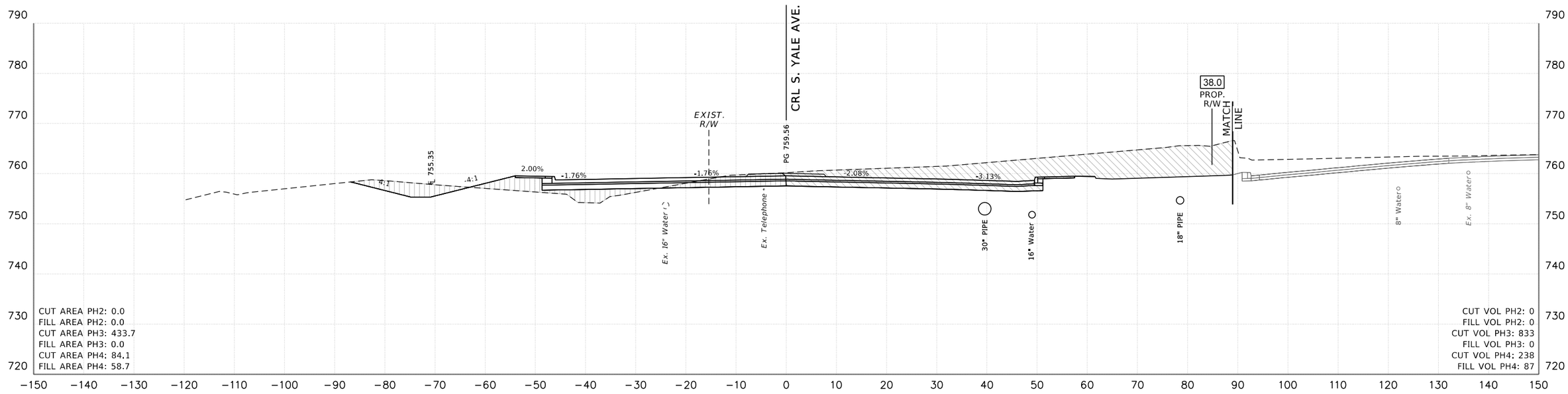

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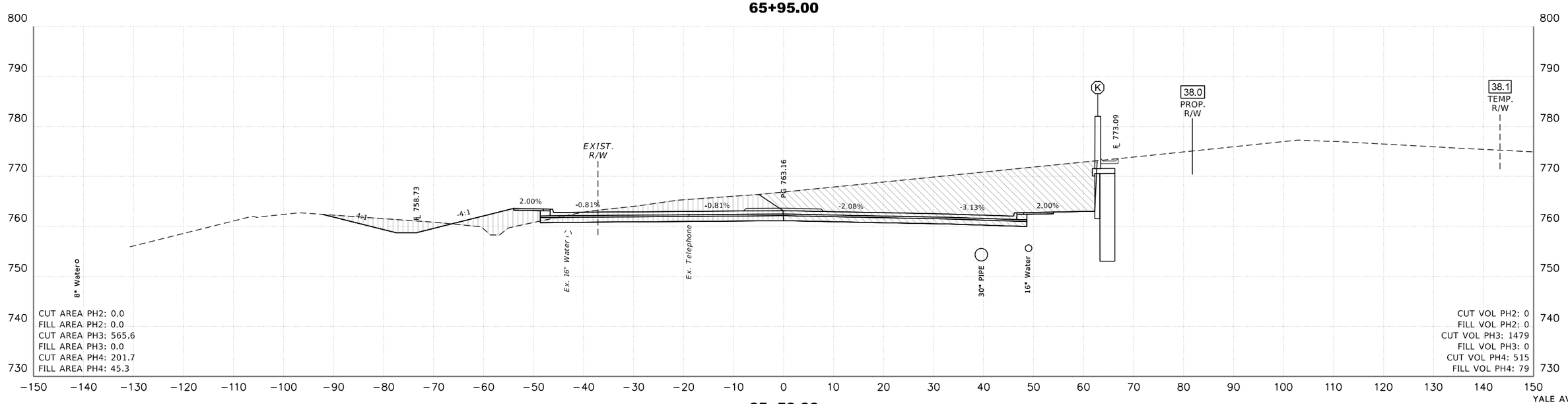

65+50.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

SHEET X58 OF 334 SHEETS

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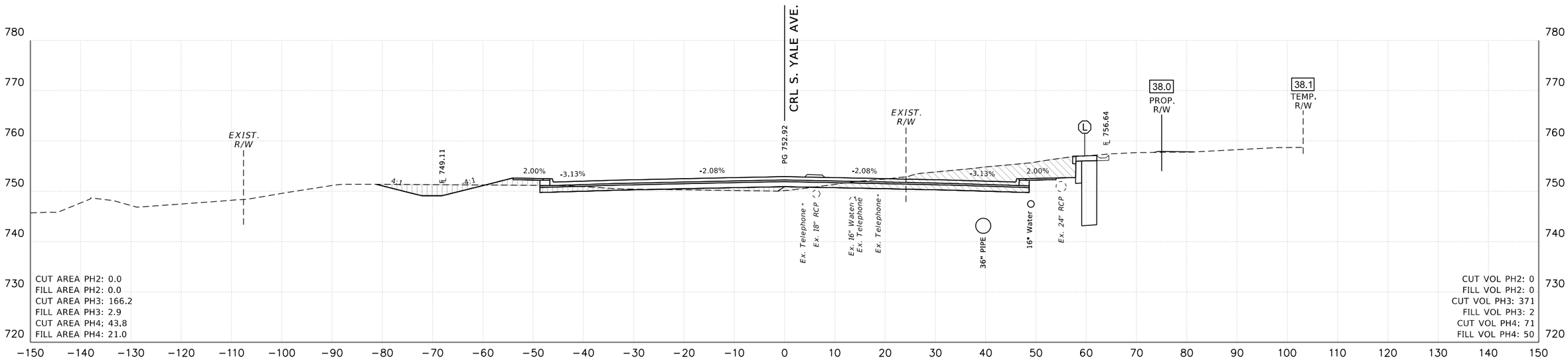

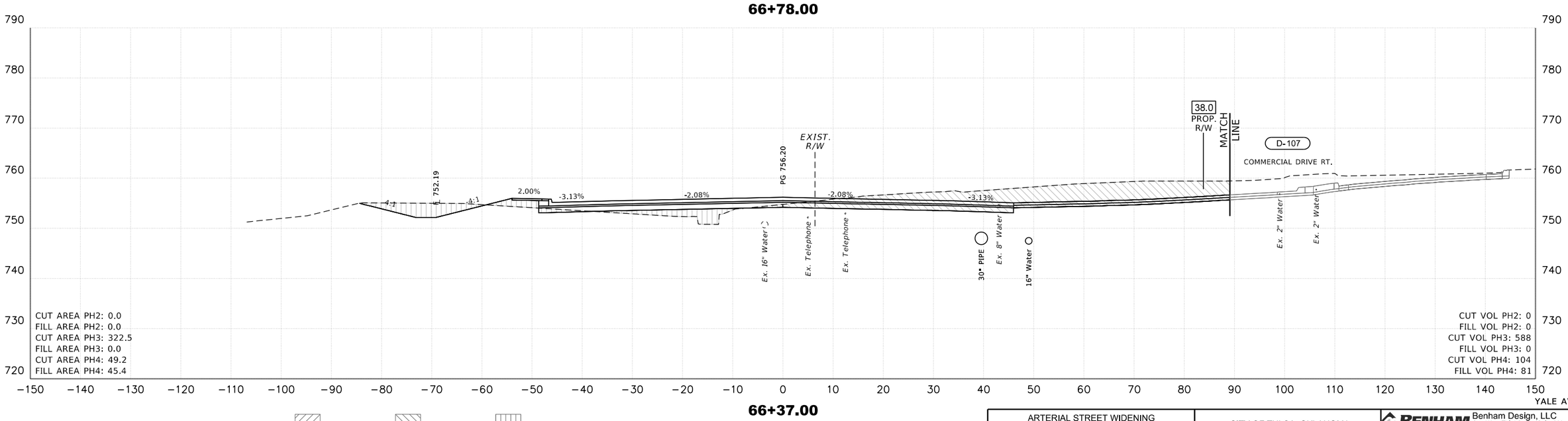

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabholz Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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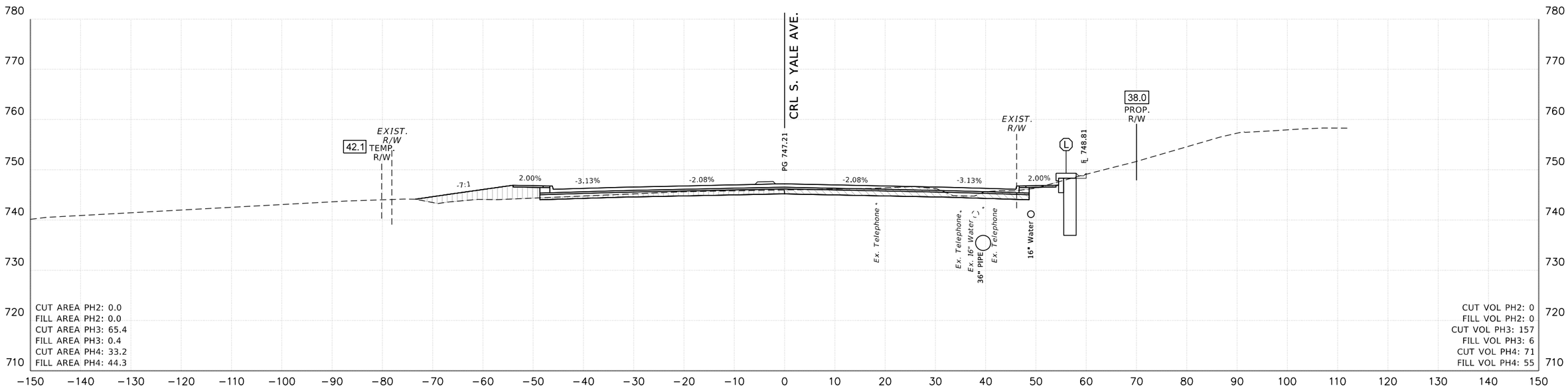

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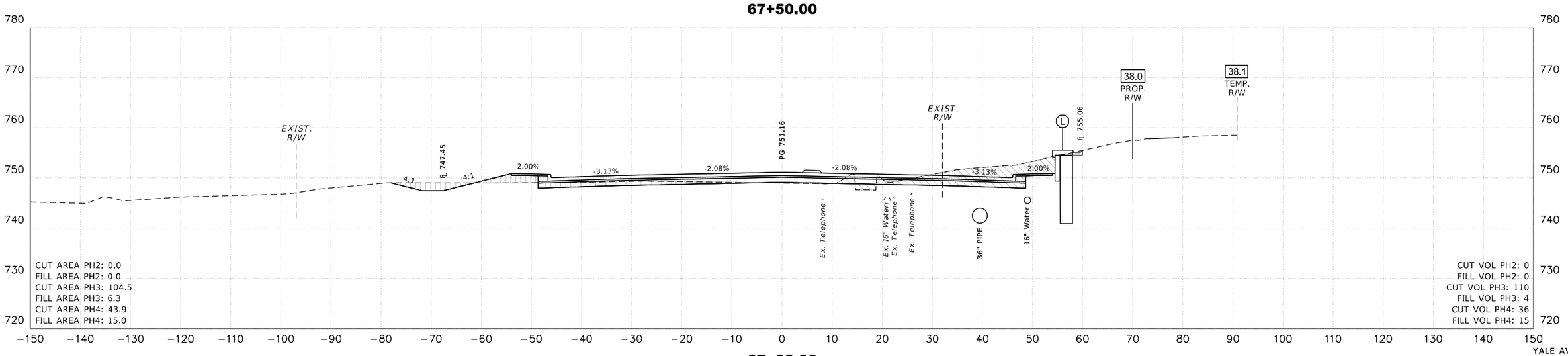

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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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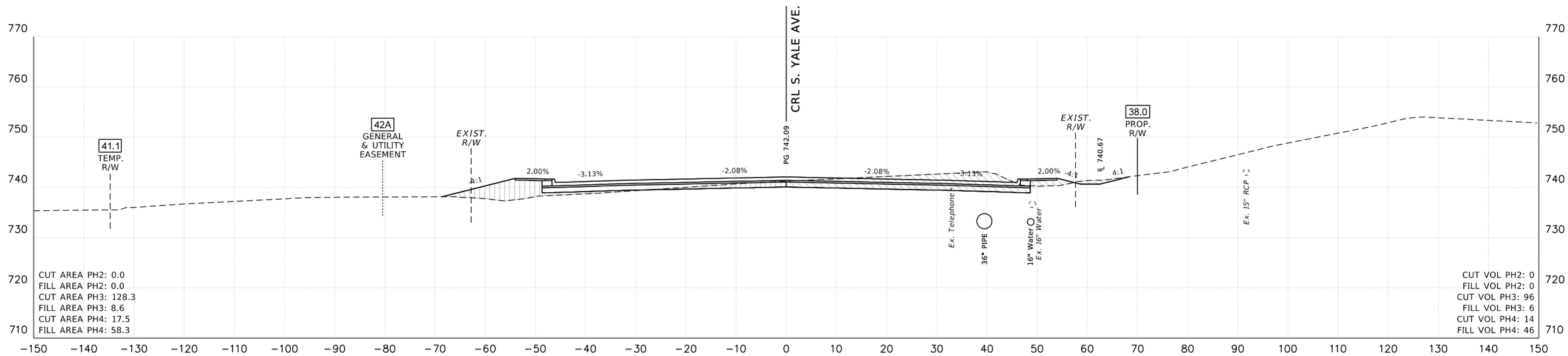

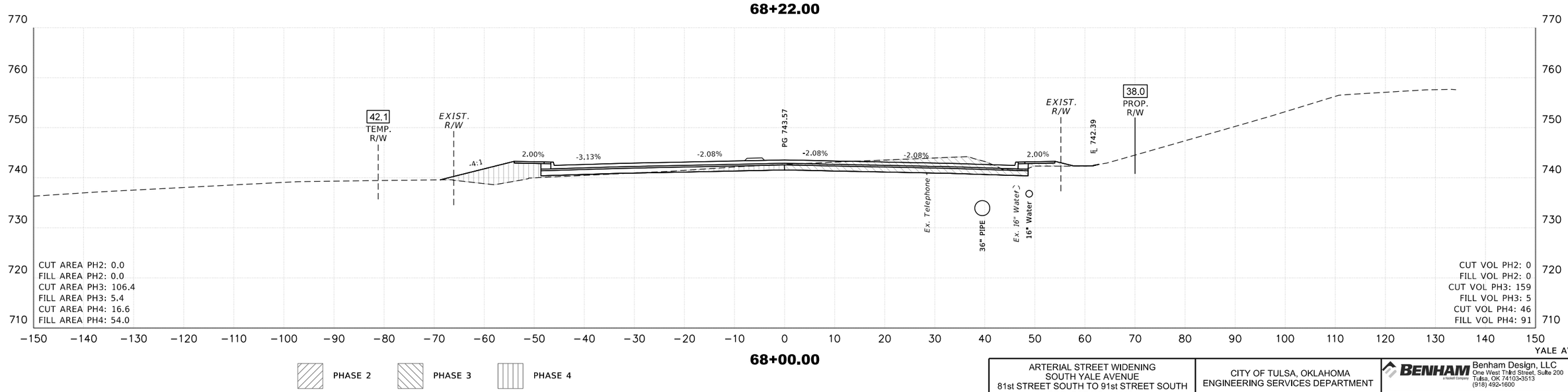

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
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CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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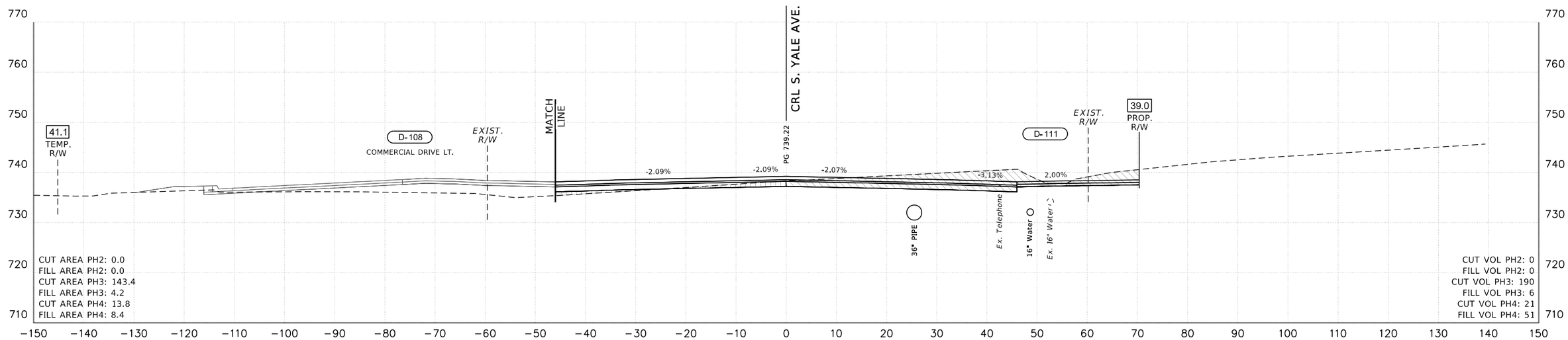
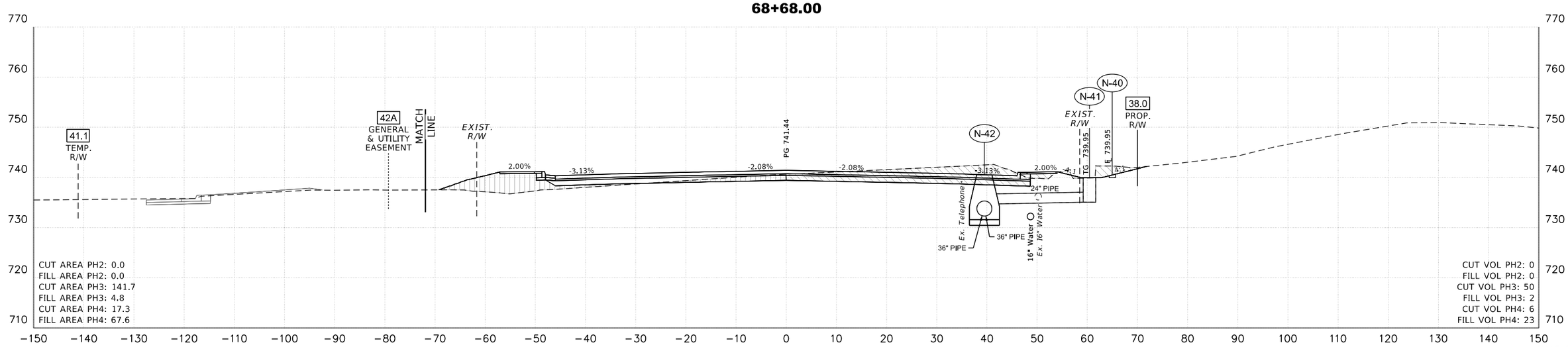


68+68.00



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PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabell Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018

SHEET X62 OF 334 SHEETS

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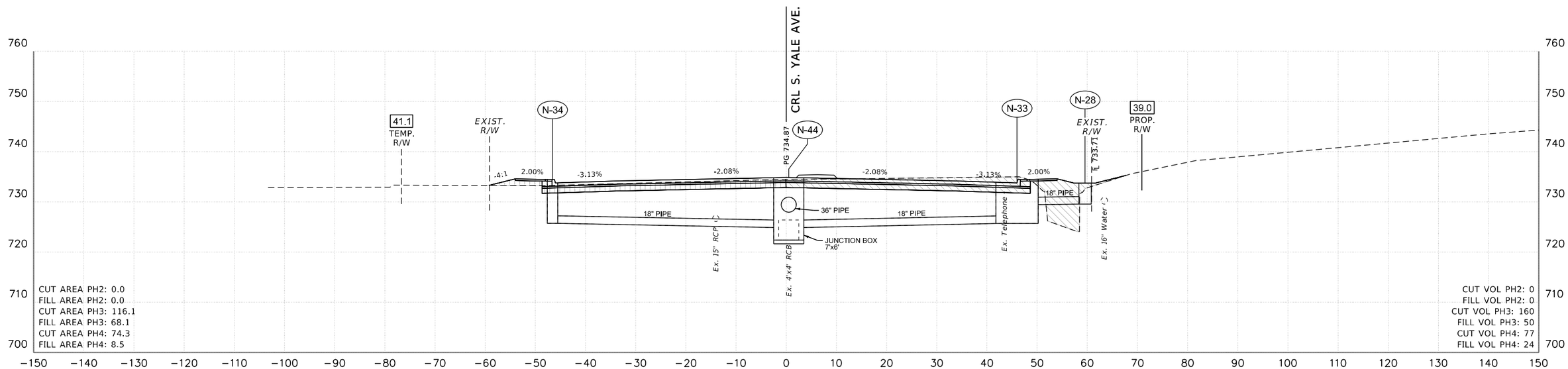

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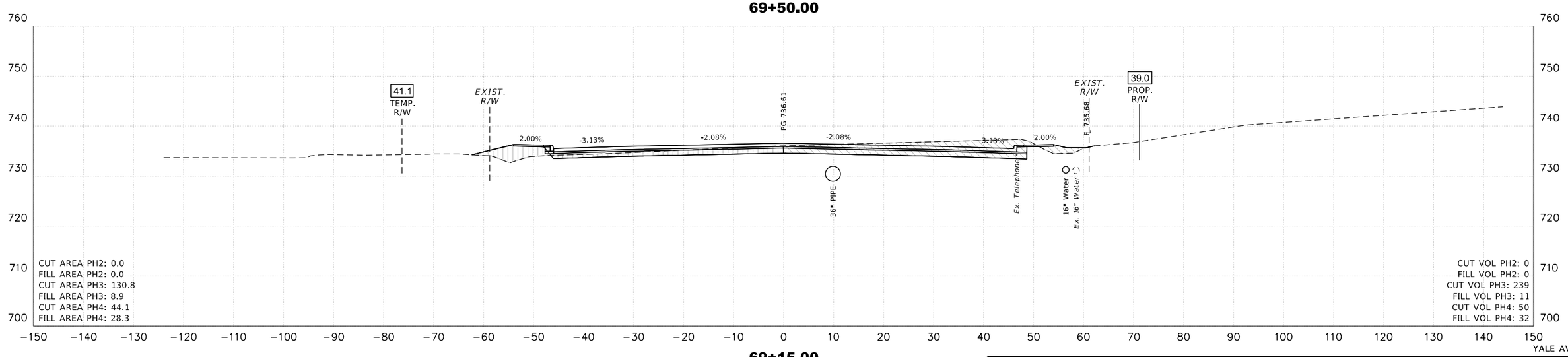

69+15.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hazlett Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
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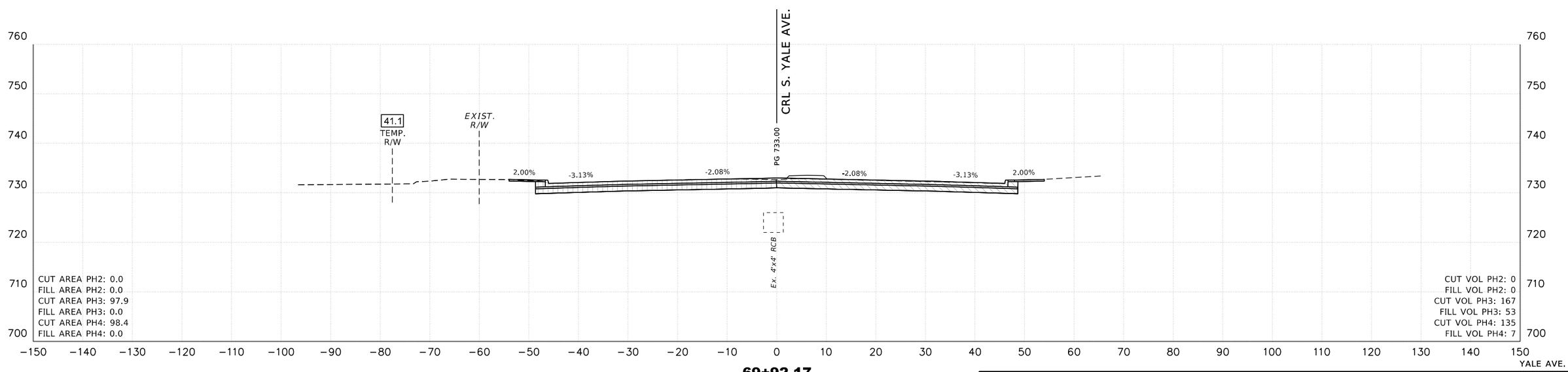

PHASE 2 PHASE 3 PHASE 4

69+92.17
END PROJECT

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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(918) 492-1600

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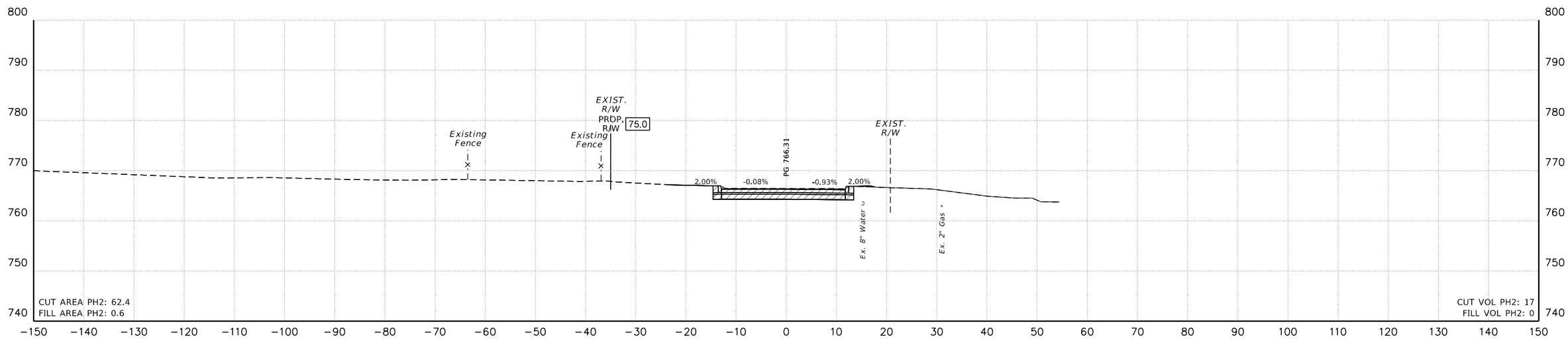

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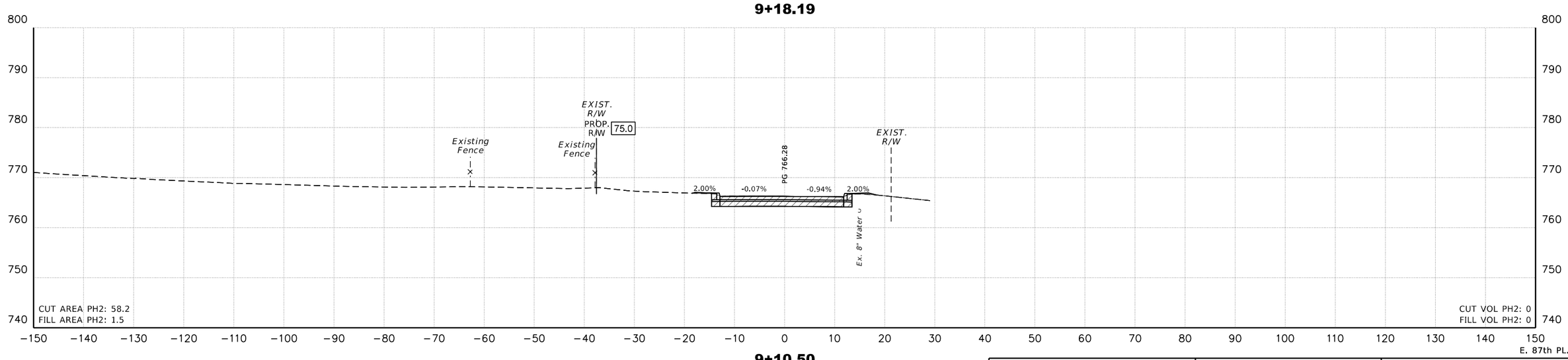

9+10.50

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nasdaq Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

DATE: 10/31/2018 SHEET X65 OF 334 SHEETS

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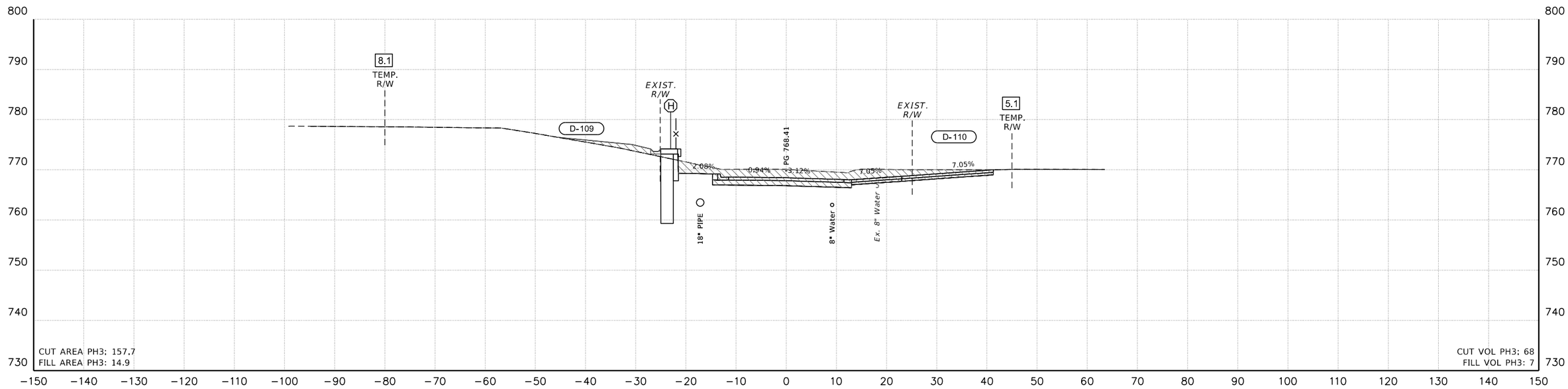
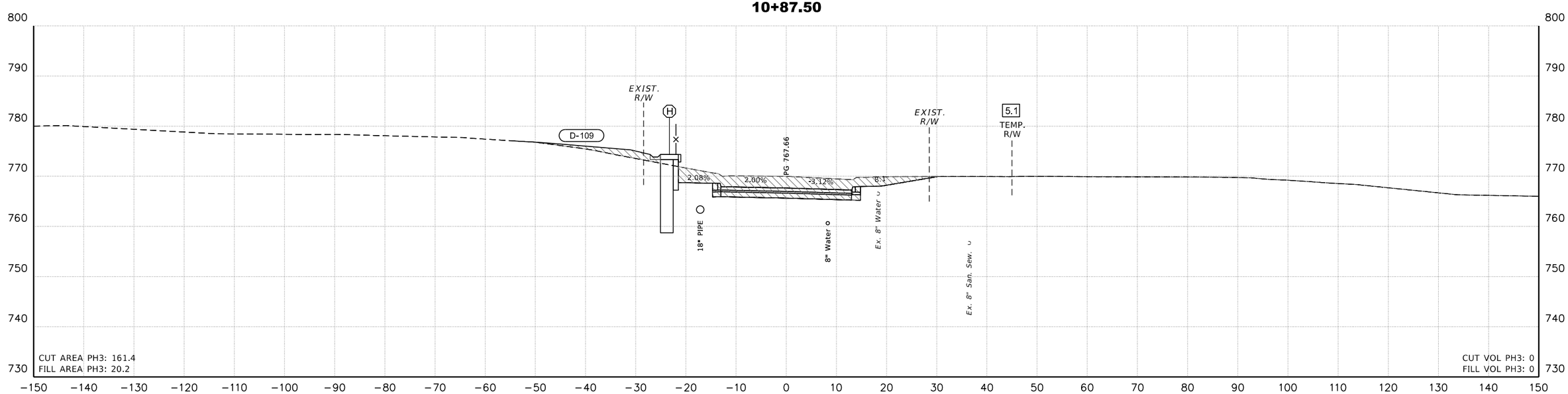


10+87.50



10+76.00

E. 88th PL. S.

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hallett Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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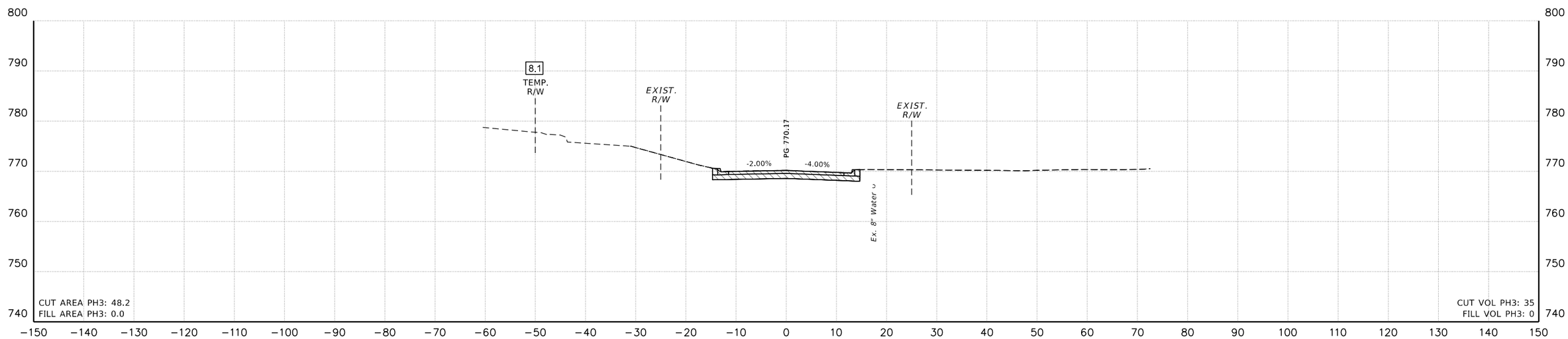
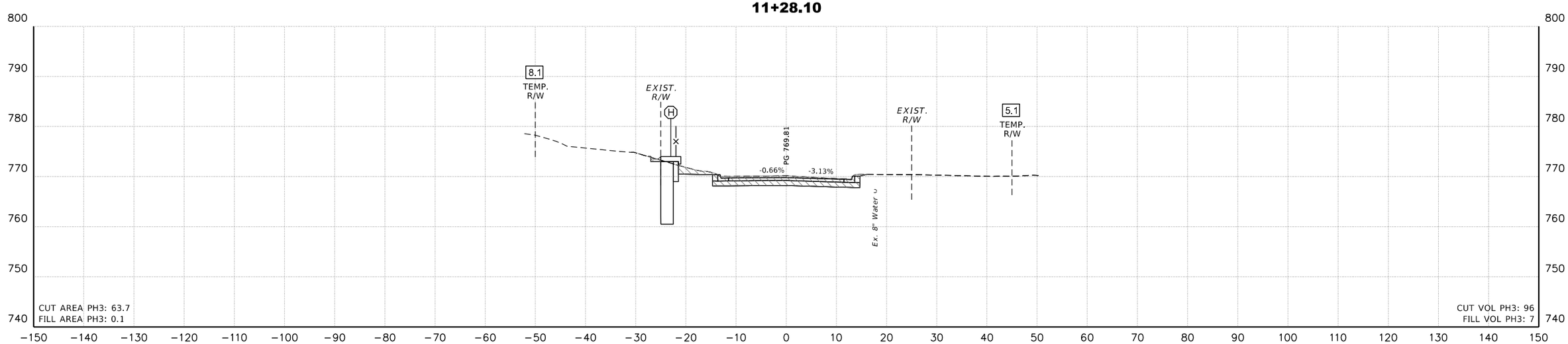


11+28.10



E. 88th PL. S.

11+11.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Haskell Company
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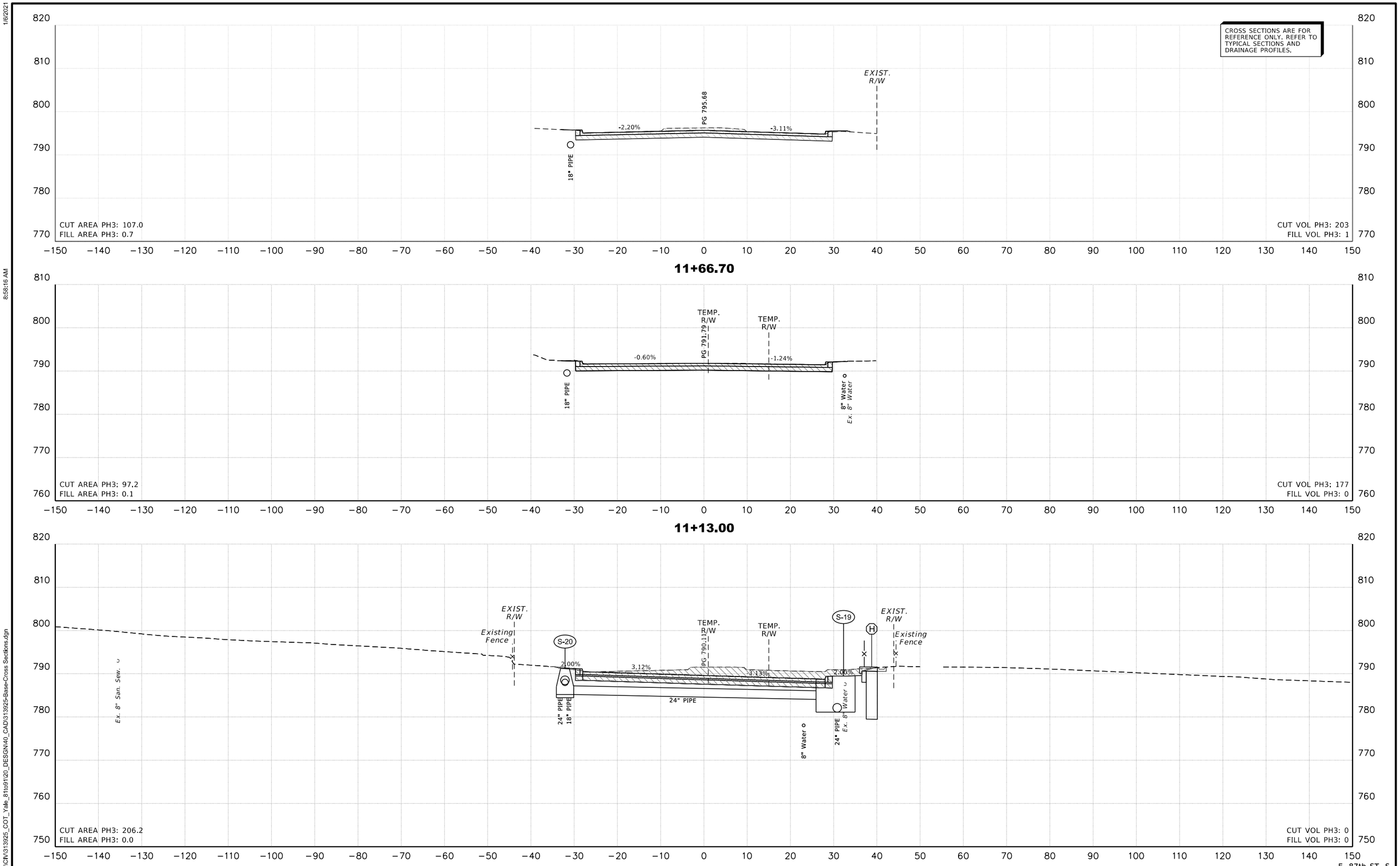

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

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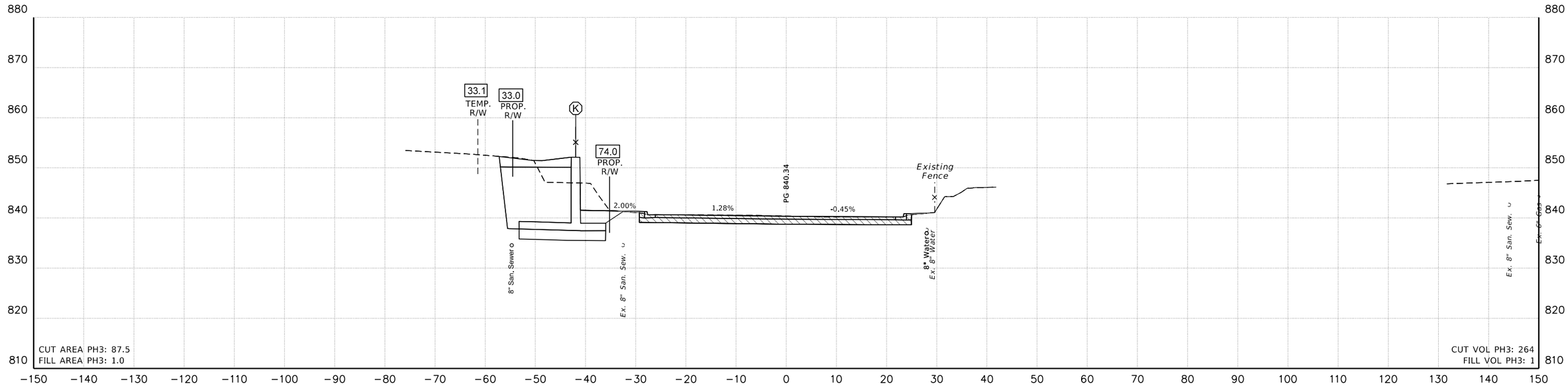
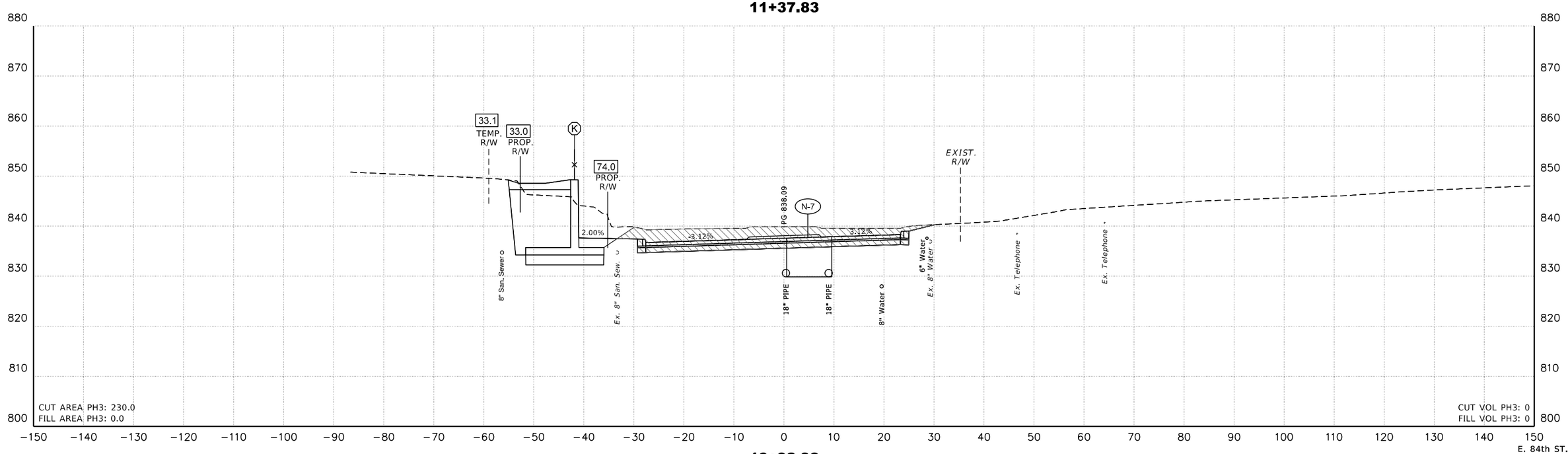


11+37.83



E. 84th ST. S.

10+92.98

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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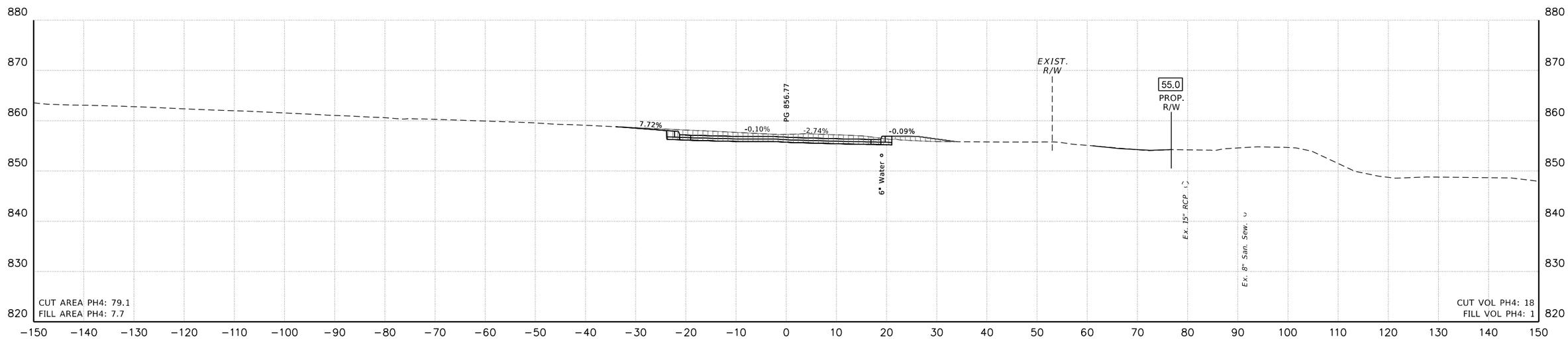
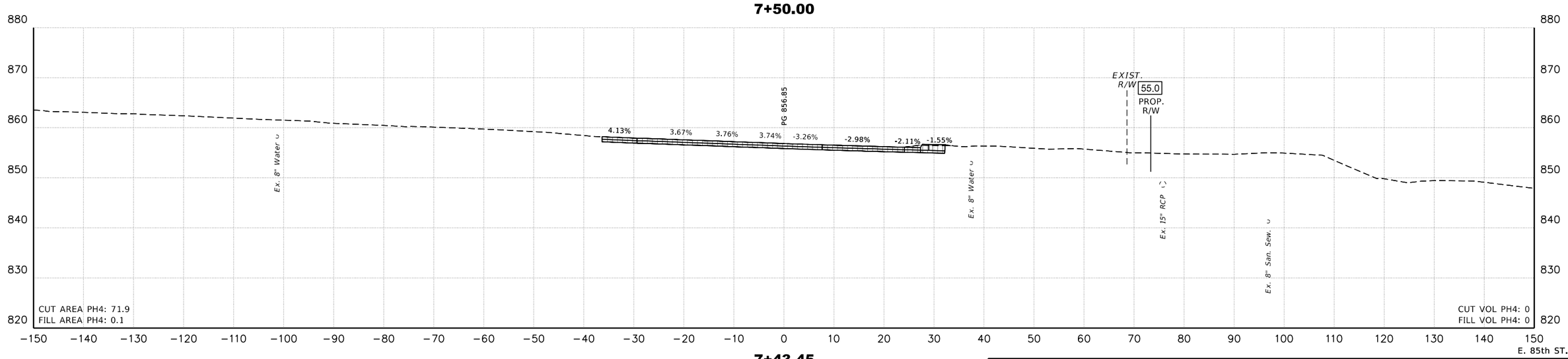


7+50.00



7+43.45

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nabholz Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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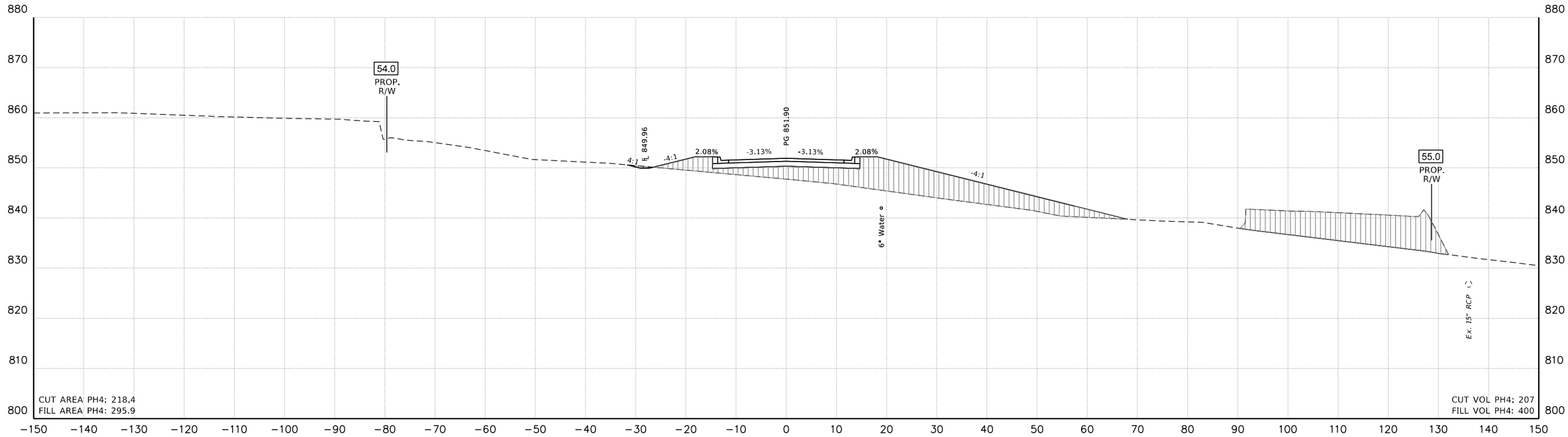
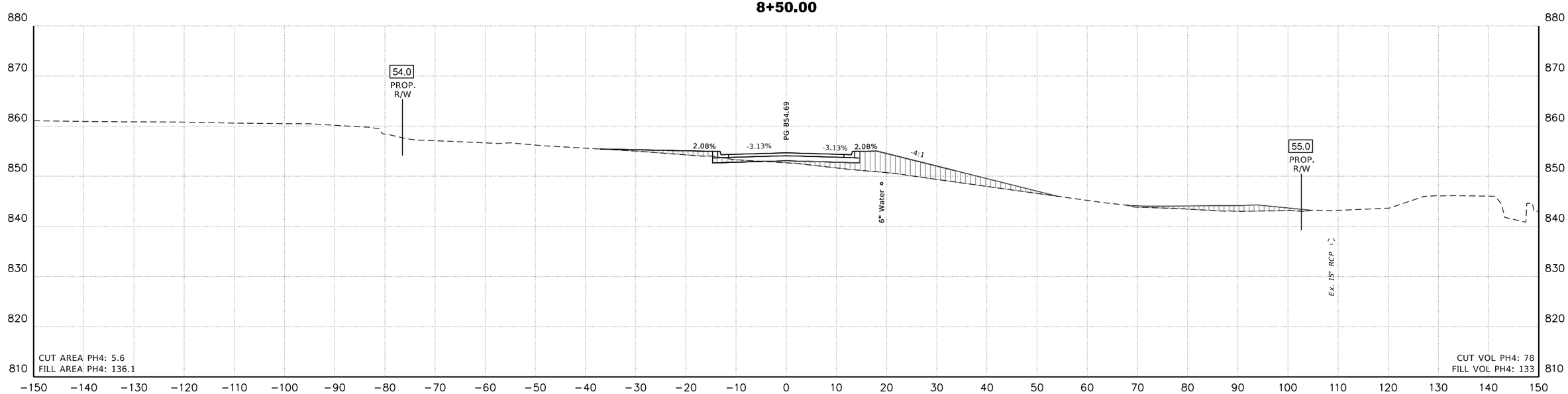


8+50.00



8+00.00

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Hallett Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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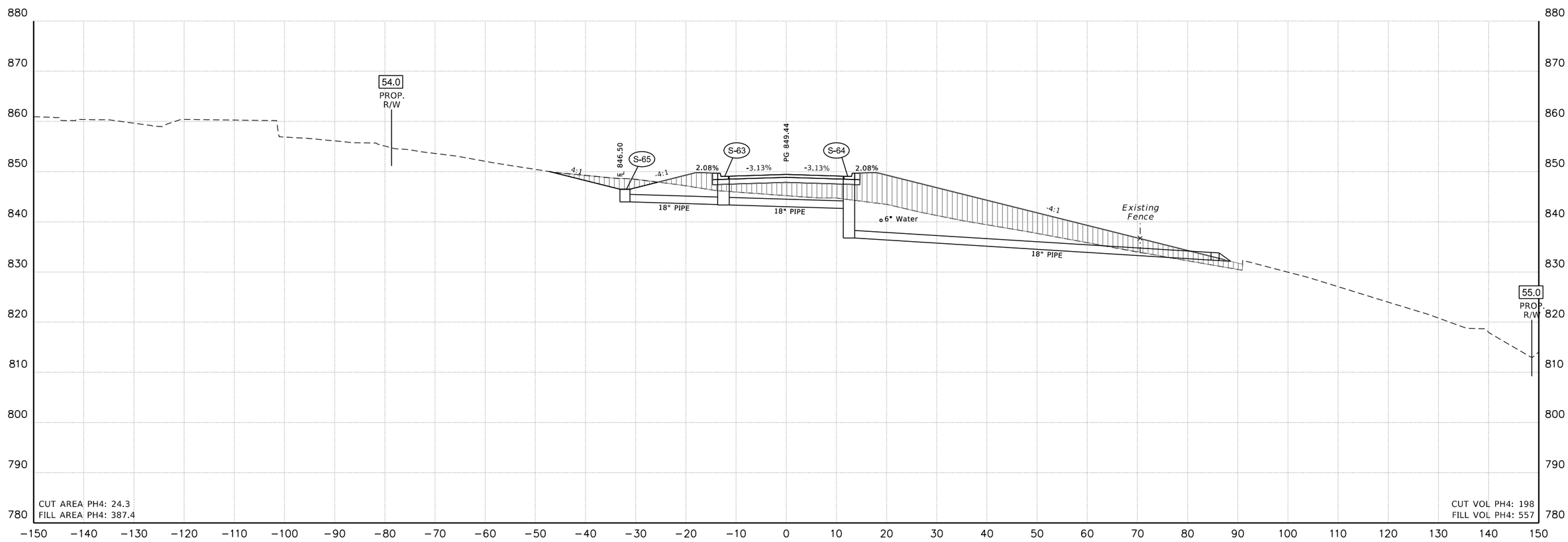

ARTERIAL STREET WIDENING SOUTH YALE AVENUE 81st STREET SOUTH TO 91st STREET SOUTH PROJECT NO. 144101	CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT	BENHAM a Hallett Company Benham Design, LLC One West Third Street, Suite 200 Tulsa, OK 74103-3513 (918) 492-1600
		DATE: 10/31/2018 — SHEET X72 OF 334 SHEETS

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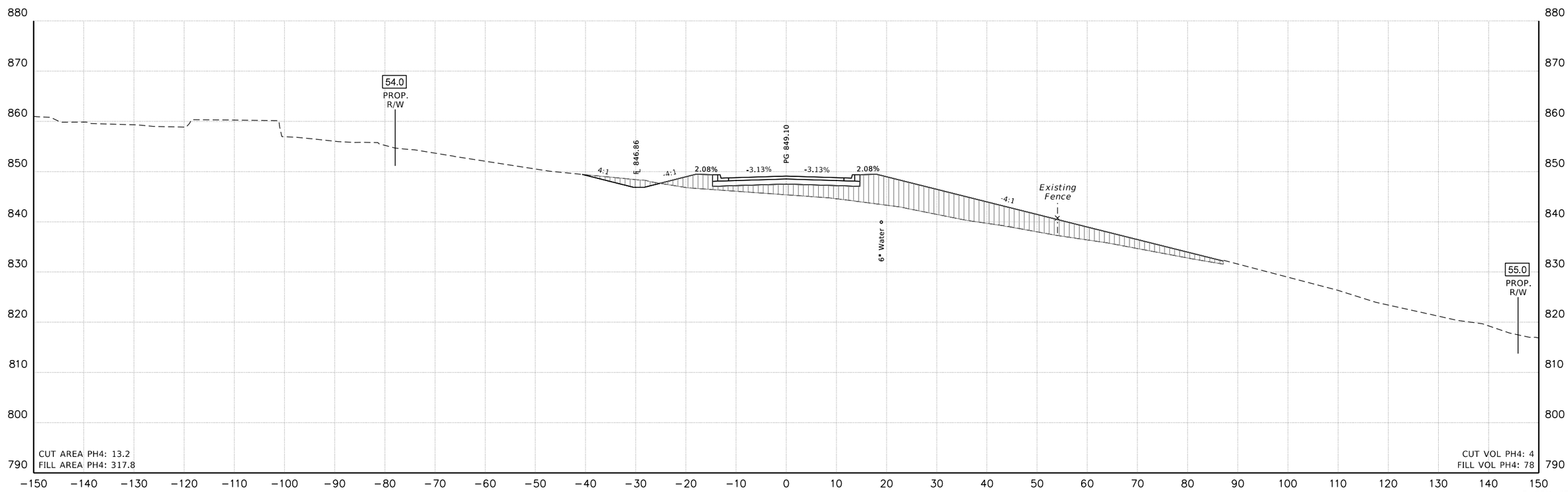

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM A Nabholz Company
Benham Design, LLC
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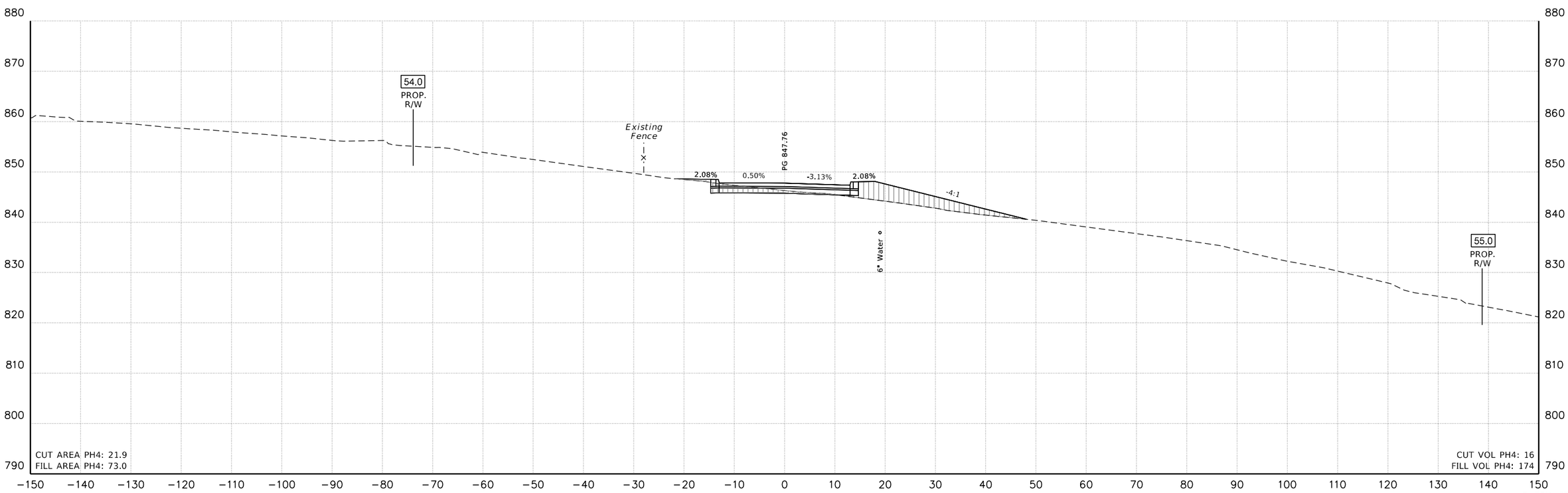

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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CITY OF TULSA, OKLAHOMA
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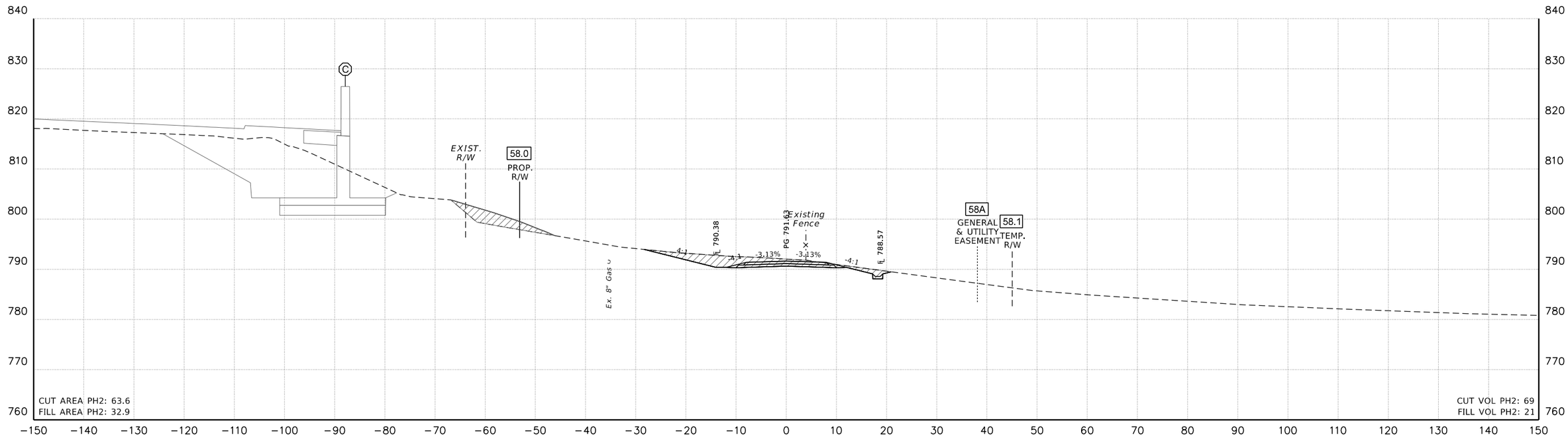
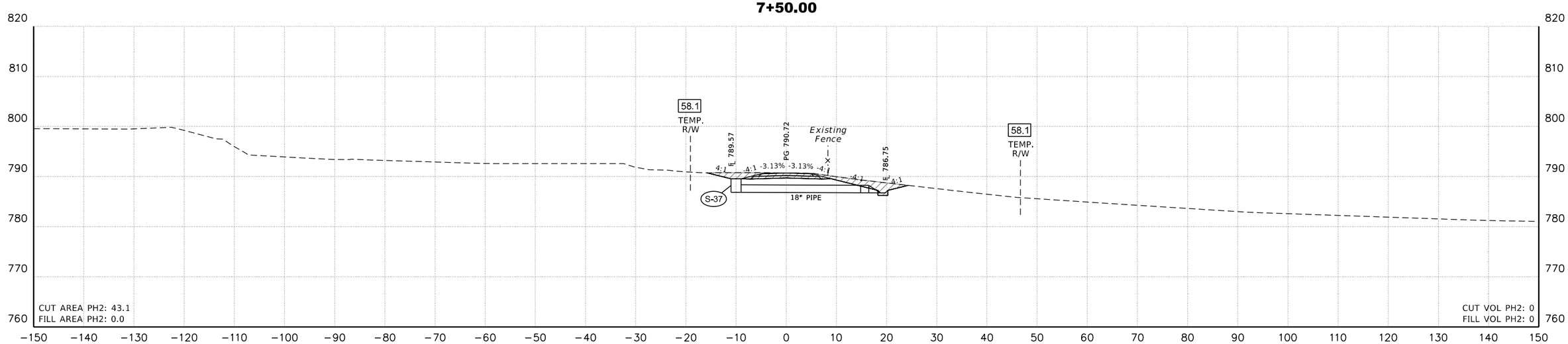


7+50.00



7+15.00

RESIDENTIAL DRIVE AT 40+87 LT

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

BENHAM a Nuhoff Company
Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
(918) 492-1600

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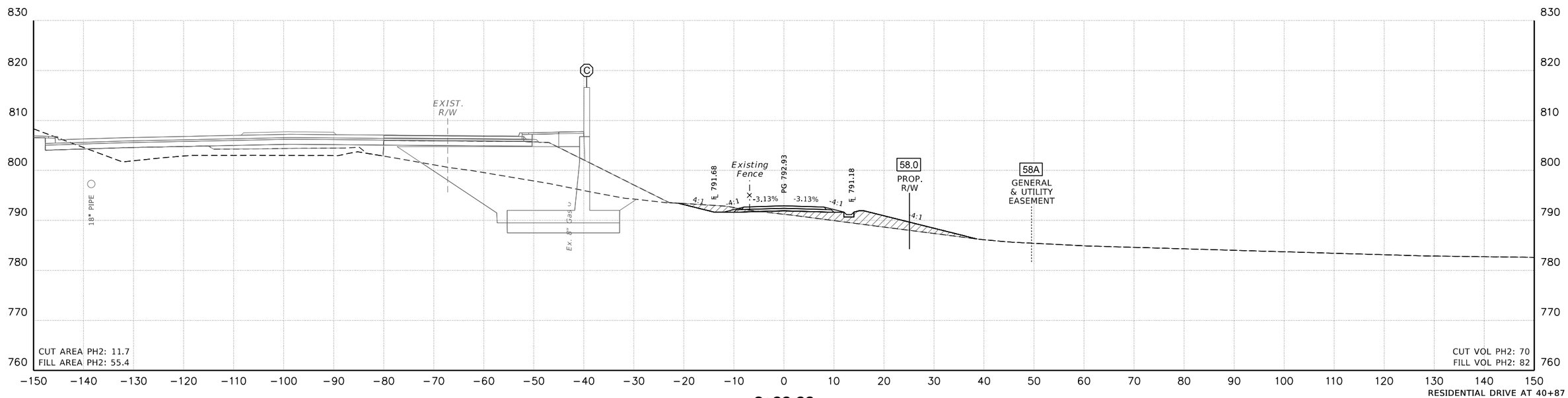

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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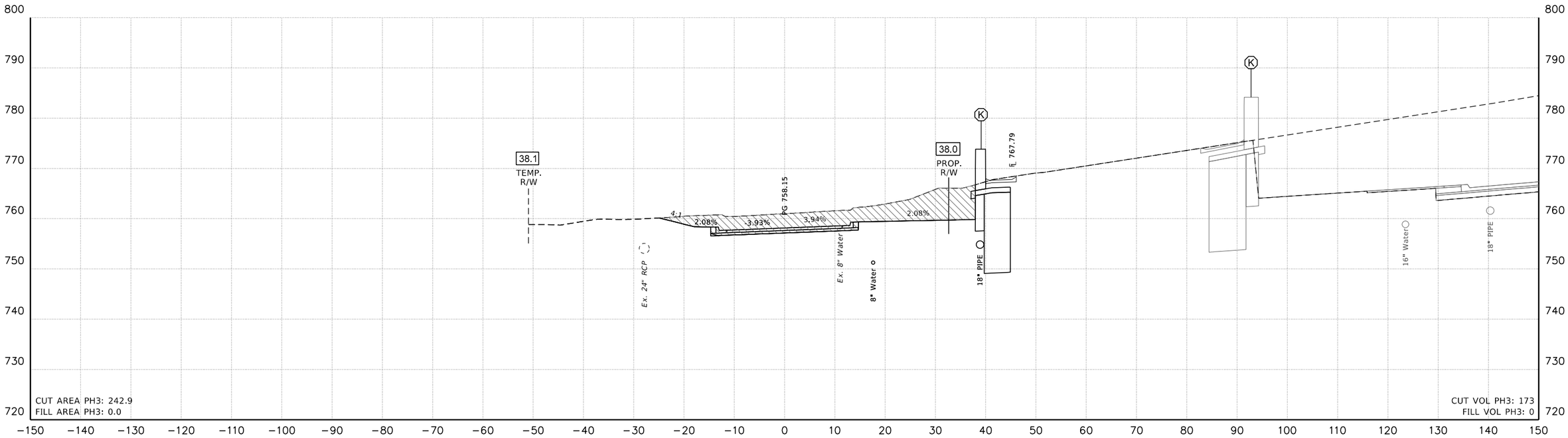
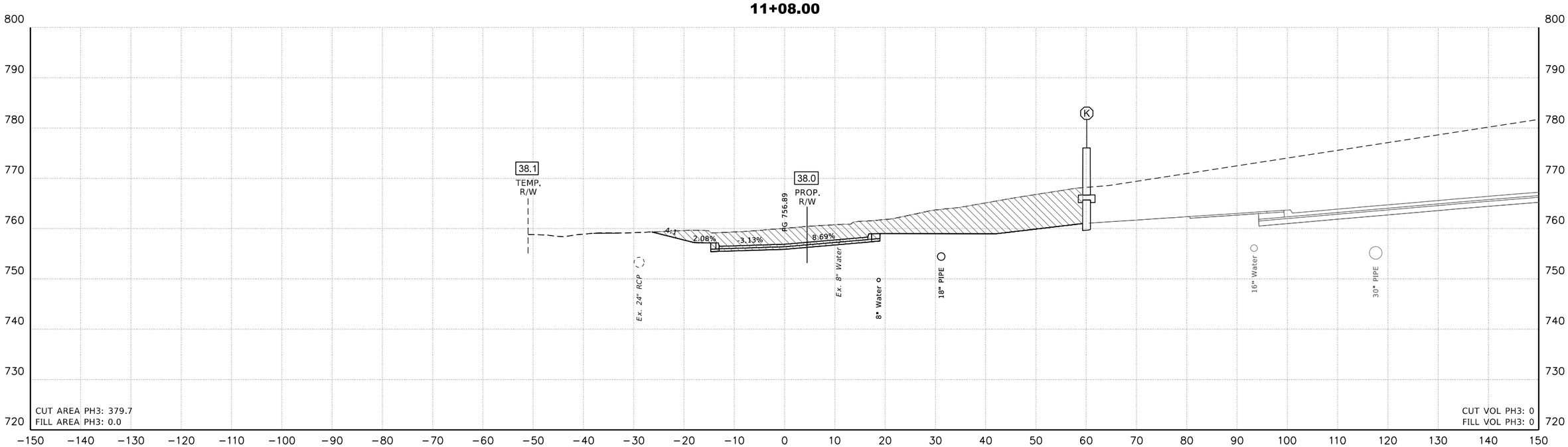


11+08.00



10+93.00

COMMERCIAL DRIVE AT 66+66.45 RT

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
81st STREET SOUTH TO 91st STREET SOUTH
PROJECT NO. 144101

CITY OF TULSA, OKLAHOMA
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Benham Design, LLC
One West Third Street, Suite 200
Tulsa, OK 74103-3513
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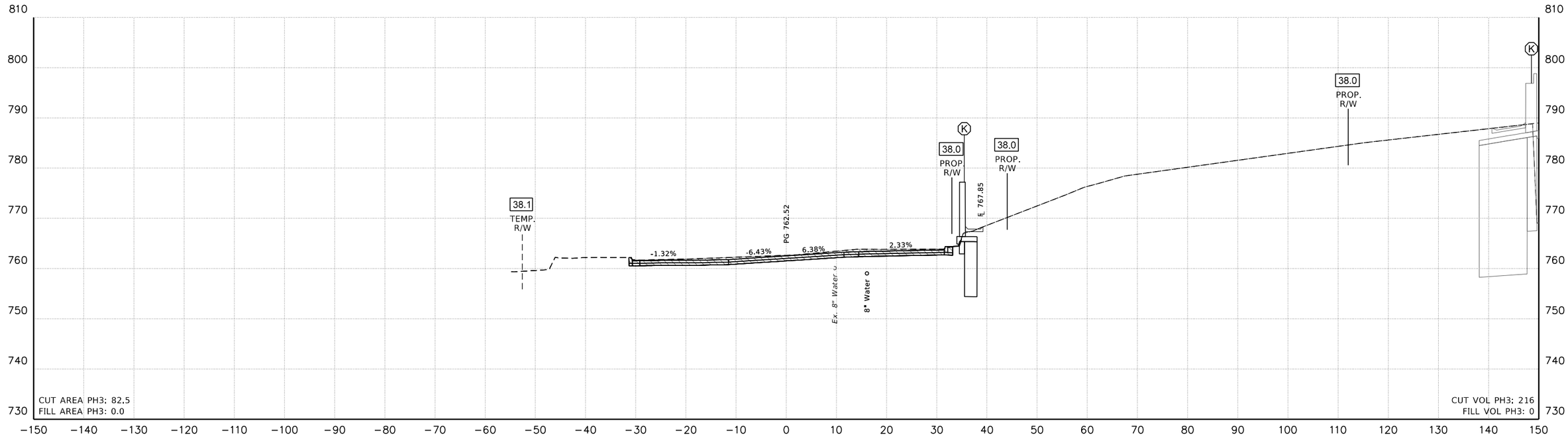
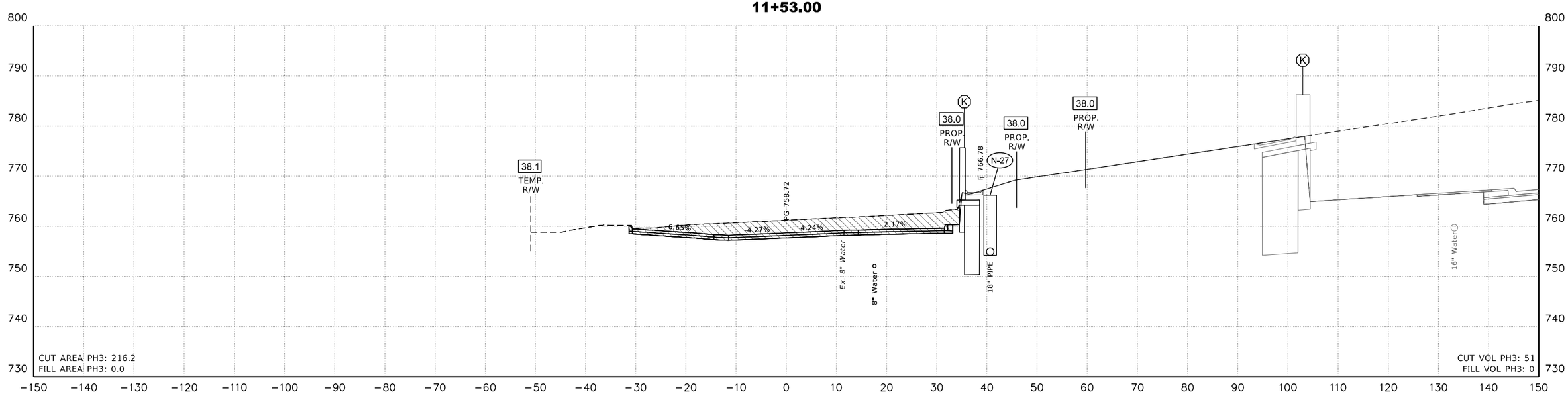


11+53.00



11+14.00

COMMERCIAL DRIVE AT 66+66.45 RT

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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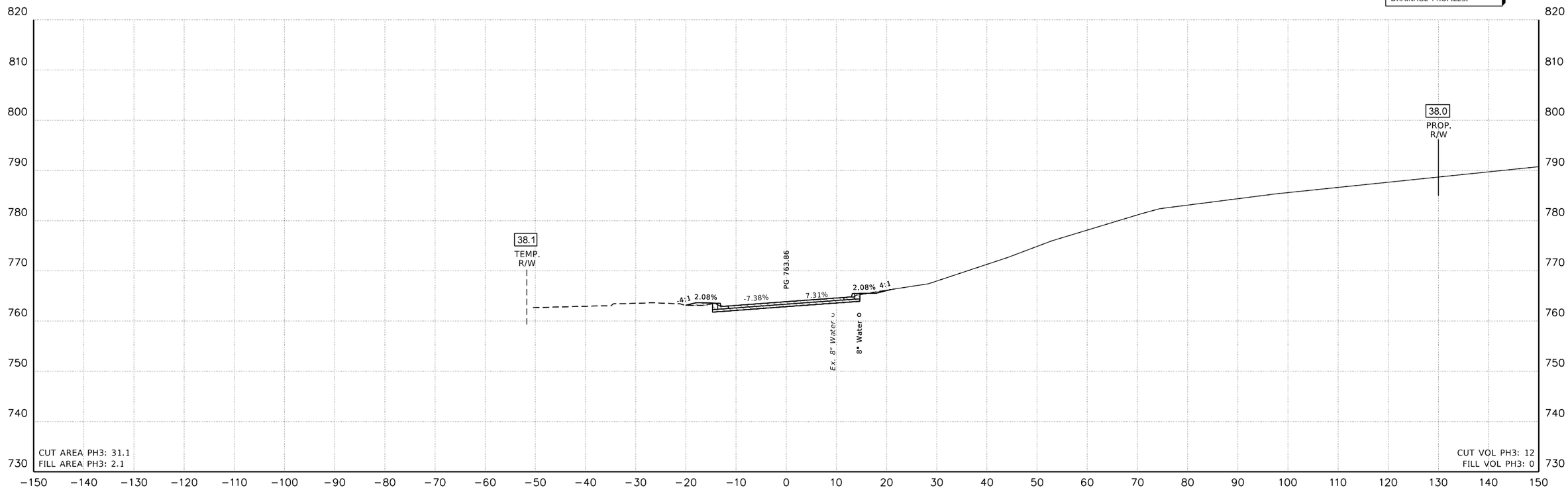

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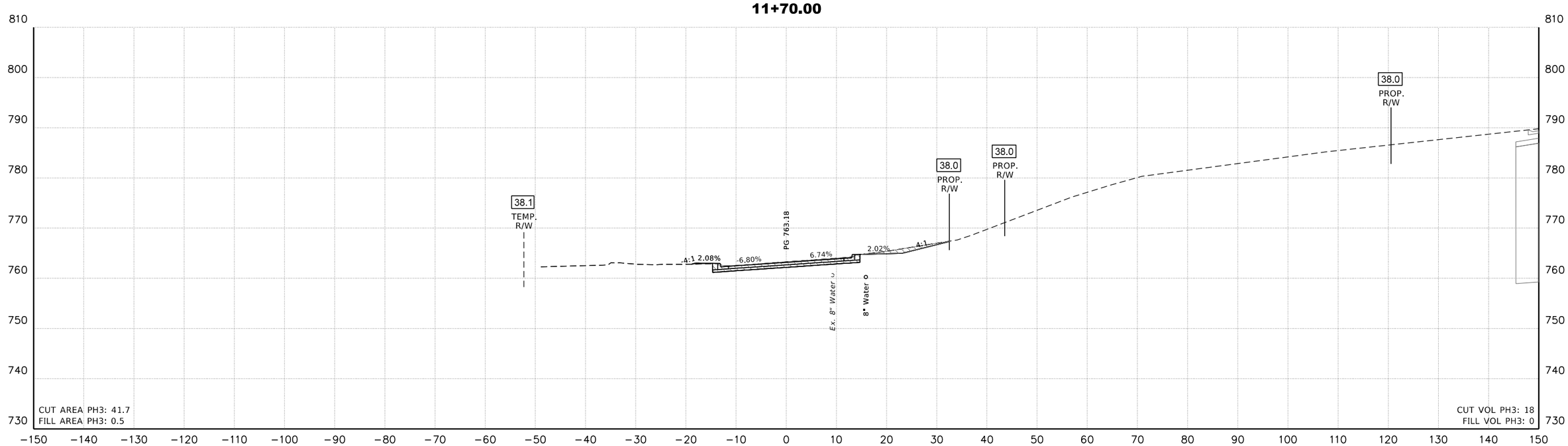

11+61.00

COMMERCIAL DRIVE AT 66+66.45 RT

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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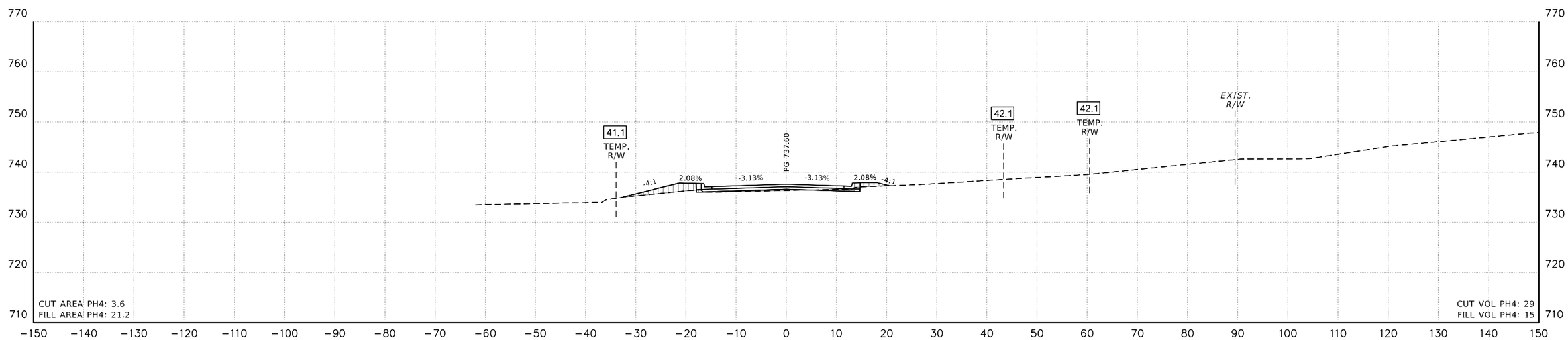

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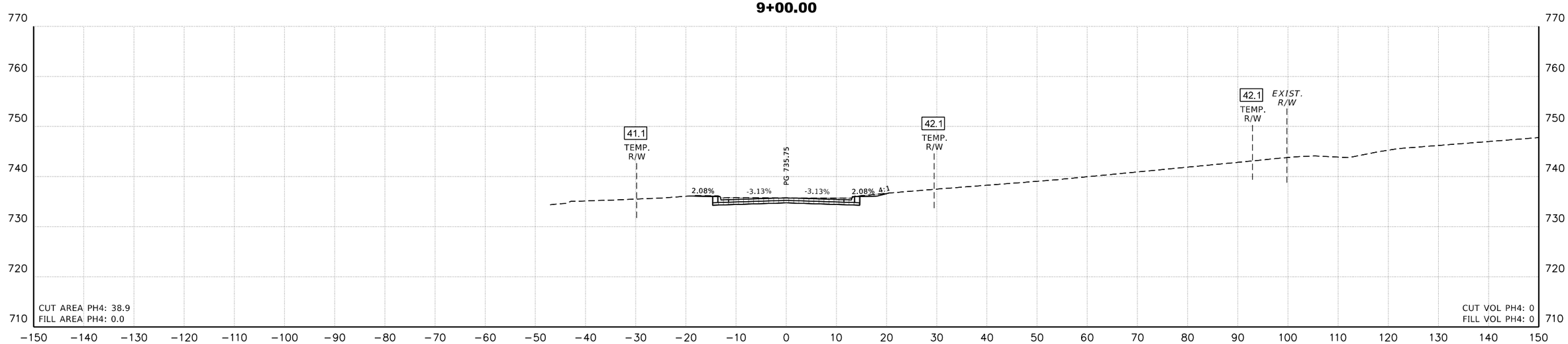

8+63.00

COMMERCIAL DRIVE AT 68+68.66 LT

PHASE 2 PHASE 3 PHASE 4

ARTERIAL STREET WIDENING
SOUTH YALE AVENUE
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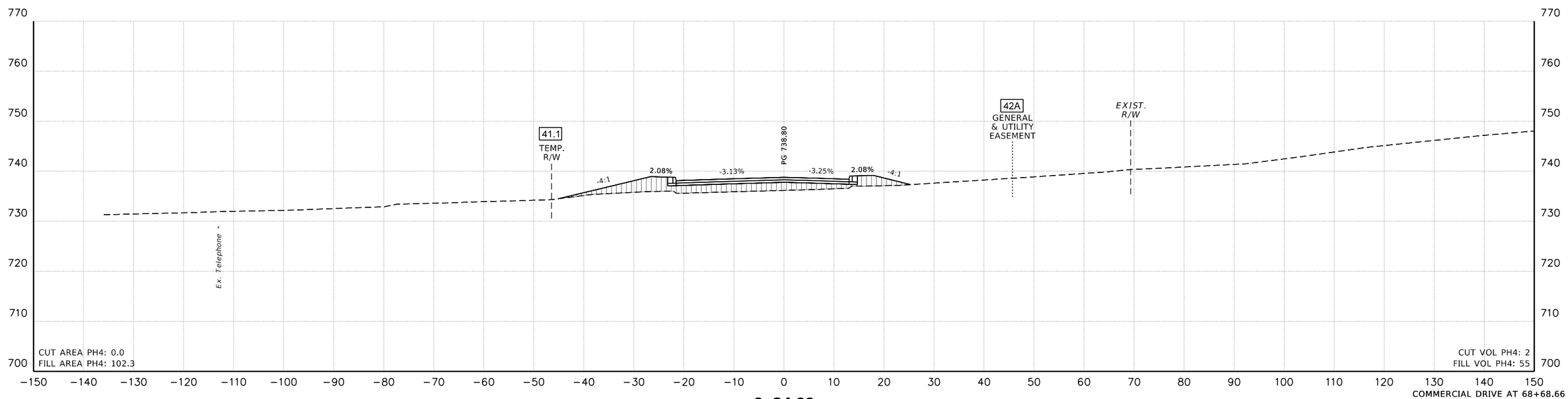

9+24.00

PHASE 2 PHASE 3 PHASE 4

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