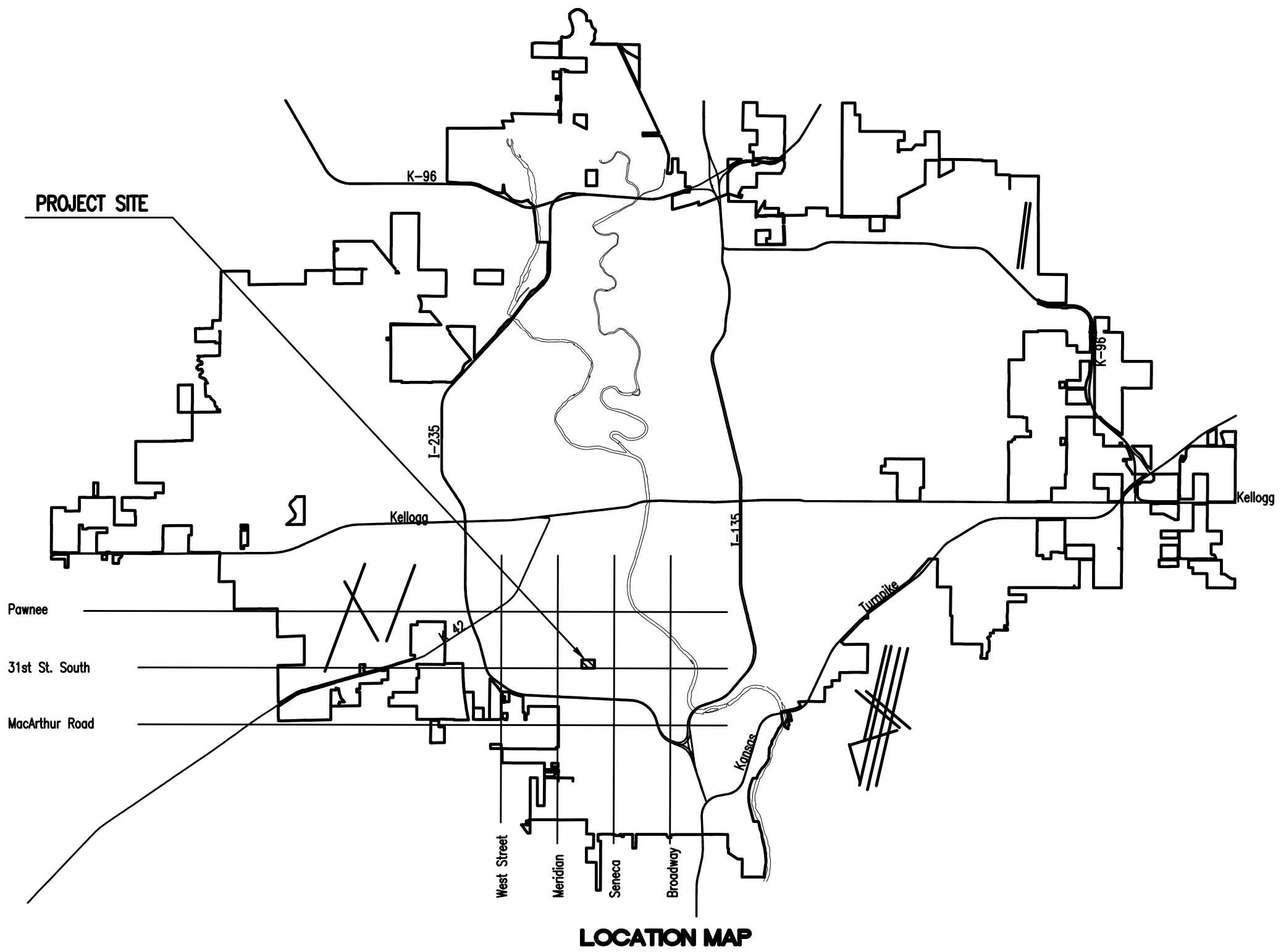


# LIFT STATION REHABILITATION

AT  
**31ST STREET SOUTH AND GLENN AVENUE**  
 IN  
**THE CITY OF WICHITA, KANSAS**  
 CITY OF WICHITA PROJECT NO. 468-85136  
 OCA NO. 620783  
 GARY JANZEN, P.E. - CITY ENGINEER



**INDEX OF SHEETS**

<b>CIVIL</b>	<b>MECHANICAL</b>
C1.1 TITLE SHEET	M0.1 MECHANICAL COVER SHEET
C1.2 KEY MAP AND GENERAL NOTES	M1.1 MECHANICAL DEMOLITION PLAN
C1.3 BUBBLE MAP	M2.1 PLUMBING FLOOR PLAN
C1.4 DEMOLITION PLAN	M2.2 HVAC FLOOR PLAN
C1.5 SITE AND PAVING PLAN	M3.1 MECHANICAL DETAILS AND SCHEDULES
C1.6 GRADING PLAN	
C1.7 JOINTING PLAN	<b>ELECTRICAL</b>
C1.8 PAVING DETAILS	E0.1 ELECTRICAL LEAD SHEET
C1.9 STANDARD DRIVE ENTRANCES	E0.2 ELECTRICAL ONE-LINE DIAGRAM
C1.10 PROPOSED LIFT STATION DETAILS	E0.3 ELECTRICAL SCHEDULES
C1.11 EXISTING LIFT STATION DETAILS	E0.4 CONTROL SCHEDULE
C1.12 SANITARY SEWER LINE NO. 1	E1.1 ELECTRICAL DETAILS
C1.13 SANITARY SEWER LINE NO. 2	E1.2 ELECTRICAL DETAILS
C1.14 MISCELLANEOUS DETAILS	E2.1 ELECTRICAL DEMOLITION PLAN
C1.15 SOIL EROSION BMPS	E3.1 ELECTRICAL SITE PLAN
C1.16 SOIL EROSION BMPS	E4.1 ELECTRICAL POWER PLAN
C1.17 SOIL EROSION BMPS	E4.2 ELECTRICAL LIGHTING PLAN
C2.01 TRAFFIC CONTROL PLAN	E4.3 ELECTRICAL POWER & LIGHTING PLAN-BASEMENT
C2.02 TRAFFIC CONTROL GENERAL NOTES	E5.1 ENLARGED ELECTRICAL PLAN
C2.03 TRAFFIC CONTROL CHANNELIZING DEVICES	E6.1 ELECTRICAL CONTROL PLAN
C2.04 TRAFFIC CONTROL CLOSURE	
<b>STRUCTURAL</b>	<b>ARCHITECTURAL</b>
S0.1 GENERAL STRUCTURAL NOTES	A1 FLOOR AND ROOF PLANS, DETAILS
S0.2 GENERAL STRUCTURAL NOTES	
S1.1 EXISTING LIFT STATION PLANS	
S1.2 EXISTING LIFT STATION PLANS	
S1.3 PROPOSED LIFT STATION PLANS AND SECTION	
S2.1 TYPICAL STRUCTURAL DETAILS	

**JUNE 2017**

PLANS PREPARED BY  
**PROFESSIONAL ENGINEERING CONSULTANTS, P.A.**  
 ENGINEERS  
 WICHITA, KANSAS



Sowed: 06-16-2017 4:23:31 PM by KIPRIS/DEKAT  
 Plot Scale: 1:1 06-27-2017 4:46:25 PM by KIPRIS/DEKAT  
 U:\Wichita-Civil\2016\60316\001\Drawings\160316-001-C1.1-TITLE

**GENERAL NOTES**

- ALL CONSTRUCTION AND MATERIALS TO COMPLY WITH CITY OF WICHITA STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- ALL ELEVATIONS SHOWN ARE NAVD 88 DATUM.
- CONTRACTOR WILL BE REQUIRED TO PROVIDE A MINIMUM ADVANCE NOTICE OF SEVENTY-TWO (72) HOURS TO UTILITY COMPANIES PRIOR TO STARTING ANY EXCAVATION AS FOLLOWS:

KANSAS ONE-CALL 687-2470 or 811

THE CONTRACTOR MUST NOTIFY THE FOLLOWING IN CASE OF AN EMERGENCY:

EMERGENCY DISPATCH	911
COX COMMUNICATIONS	800-778-9140
KANSAS GAS SERVICE	888-482-4950
WESTAR ENERGY	800-383-1183
BLACK HILLS ENERGY	800-694-8989
AT&T	800-286-8313
WICHITA WATER UTILITIES (SS AND WL)	262-6000

- THE CONTRACTOR SHALL LIMIT THE EXTENT OF TRENCH TO REMAIN OPEN OVERNIGHT AND WEEKENDS TO LESS THAN 50 FEET. ANY OPEN TRENCH SHALL BE BARRICADED/PROTECTED WITH ORANGE FENCE.
- AT LEAST 72 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470 OR 811 TO REQUEST THE LOCAL UTILITY COMPANIES MARK ANY EXISTING LINES WITHIN THE PROJECT AREA.

- UNDERGROUND UTILITY SERVICE LINES AND OVERHEAD UTILITY POLE LINES ARE TO BE ADJUSTED AS NECESSARY BY OTHERS PRIOR TO CONSTRUCTION UNLESS THE DRAWINGS SPECIFICALLY CALL FOR THEIR ADJUSTMENT BY THE CONTRACTOR OR UNLESS THE DRAWINGS SPECIFICALLY IDENTIFY A UTILITY TO BE ADJUSTED BY ITS OWNER DURING CONSTRUCTION. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE DRAWINGS, REPRESENT THE BEST INFORMATION OBTAINABLE FOR THE DESIGN. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WHICH DO NOT CONFLICT WITH PROPOSED CONSTRUCTION.

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR WILL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS. SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH STATE LAWS. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE RESTORATION".

- RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES INCLUDING ANY TREES REMOVED, TREE TRIMMINGS, AND EXCESS EXCAVATION WHICH IS TO BE WASTED SHALL BE DISPOSED OF ON SITES PROVIDED BY THE CONTRACTOR. THESE SITES SHALL ALSO BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE, AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED. ALL DISPOSAL SITES MUST BE APPROVED BY THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN WILL REQUIRE A KANSAS STATE BOARD OF AGRICULTURE PERMIT. ANY MATERIAL DUMPED IN WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORPS OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS MAY REQUIRE ARCHAEOLOGICAL INVESTIGATIONS UNLESS BURIED IN A PREVIOUSLY APPROVED DISPOSAL LOCATION.

- ALL APPROVED EXCESS EXCAVATION WHICH IS TO BE WASTED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. THE CONTRACTOR SHALL DISPOSE OF EXCESS EXCAVATION ACCORDANCE WITH GENERAL NOTE NO. 8 ABOVE.

- ALL LAWN/TURF AREAS DISTURBED BY CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE RESTORED WITH THE SAME GRASS/SOD AS EXISTING. RESTORATION OF DISTURBED AREAS SHALL INCLUDE, BUT NOT BE LIMITED TO, TOP SOIL PREPARATION, SEEDING, MULCH, AND/OR RESEEDING. ALL SEEDING/SODDING WORK SHALL BE IN ACCORDANCE WITH THE CITY OF WICHITA STANDARD SPECIFICATIONS AND THE CITY OF WICHITA ADMINISTRATIVE REGULATION NO. AR6.5 WHICH GOVERNS CLEANUP AND RESTORATION OR REPLACEMENT FOLLOWING CONSTRUCTION. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE RESTORATION".

- THE CONTRACTOR SHALL SEED ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES WITH TEMPORARY RYE GRASS. RYE GRASS SEED SHALL BE PLANTED AT A MINIMUM RATE OF SIX (6) POUNDS PER ONE THOUSAND (1,000) SQUARE FEET. THIS TEMPORARY SEEDING MAY BE OMITTED ONLY IF OTHER SEEDING IS REQUIRED IN ACCORDANCE WITH GENERAL NOTE NO. 12 ABOVE. TEMPORARY SEEDING OR PERMANENT SEEDING/SODDING SHALL BE APPLIED WITHIN 14 DAYS AFTER THE AREA HAS BEEN DISTURBED. ALL COST FOR THIS WORK SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE RESTORATION".

- THE CONTRACTOR SHALL AVOID REMOVAL OR TRIMMING OF ANY TREES OR SHRUBS WHERE POSSIBLE. WHERE THE CONTRACTOR BELIEVES THE REMOVAL OR TRIMMING IS UNAVOIDABLE, HE SHALL COORDINATE SUCH WORK WITH THE ENGINEER. COSTS FOR TREE/SHRUB REMOVAL AND TRIMMING REGARDLESS OF SIZE SHALL BE CONSIDERED SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE CLEARING".

- THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY ADJUTING THE CONSTRUCTION OF THIS PROJECT A MINIMUM OF TEN (10) DAYS ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION.

- THE CONTRACTOR SHALL NOT BURY MANHOLES THAT HAVE RIM ELEVATIONS WHICH ARE LOWER THAN EXISTING GROUND AT THE MANHOLE. THE GROUND AROUND SUCH MANHOLES AND ALONG THE SEWER ALIGNMENT SHALL BE BACKFILLED TO THE APPROXIMATE ELEVATION OF THE PROPOSED GROUND ELEVATION SHOWN ON THE PLAN/PROFILE SHEETS. THE CONTRACTOR SHALL PROVIDE DRAINAGE AWAY FROM THESE MANHOLES AND SEWER LINES BY CONSTRUCTION OF TEMPORARY DITCHES OR SLOPING THE GROUND AS REQUIRED. ALL COSTS FOR THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLED BID PRICE FOR MANHOLES OR PIPE.

- INTERURBAN TRAFFIC GENERATED OUTSIDE THE PROJECT AREA AND LOCAL BUSINESS OR RESIDENTIAL TRAFFIC GENERATED WITHIN THE PROJECT AREA ARE TO BE CARRIED THROUGH CONSTRUCTION AS FURTHER PROMULGATED BY PROJECT SPECIAL PROVISIONS. THE CONTRACTOR SHALL UTILIZE BARRICADES, SIGNS, GUARDS, AND FLAGMEN IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL COST FOR THIS WORK SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "TRAFFIC CONTROL".

- THE CONTRACTOR SHALL INSTALL AND/OR MAINTAIN EROSION CONTROL METHODS AS SPECIFIED ON THIS PLAN SHEET. THE FOLLOWING QUANTITIES ARE ESTIMATED, AND SHOULD BE CONSIDERED THE MINIMUM EFFORT REQUIRED. THE GENERAL LOCATION OF THE REQUIRED EROSION CONTROL IS ILLUSTRATED ON THE PROJECT KEY MAP. THE SANITARY SEWER CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE EROSION CONTROL SHOWN THROUGH THE COMPLETION OF THIS PROJECT. INSTALLATION OF THESE BMP'S DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF ABATING SOIL EROSION.

SILT FENCE BARRIER 190 L.F.  
INLET PROTECTION 4 EA.

- THE CONTRACTOR SHALL PROVIDE TEMPORARY 6" CHAIN LINK FENCE AROUND THE PERIMETER OF THE SITE PRIOR TO AND DURING CONSTRUCTION. ALL COST FOR THIS WORK SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE CLEARING".

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS FLOW OF SEWAGE THROUGH CONSTRUCTION. THE COST OF MAINTAINING FLOW OF SEWAGE THROUGH CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER RELATED ITEMS OF WORK.

- ALL INTERIOR SURFACES OF THE WET WELL STRUCTURE INSTALLED WITH THE PROPOSED IMPROVEMENTS SHALL HAVE SPECIALIZED INTERIOR COATING. CONTRACTOR SHALL USE AN INTERIOR COATING SYSTEM IN ACCORDANCE WITH THE CITY OF WICHITA STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS AND THIS COST SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER RELATED ITEMS OF WORK.

- WHEN REMOVING/ABANDONING SANITARY SEWER LINES AS SHOWN IN THE PLANS, THE CONTRACTOR SHALL THOROUGHLY FLUSH AND CAP OR PLUG THE END OF THE PIPES REMAINING IN PLACE PRIOR TO REMOVAL/ABANDONMENT. ALL COST FOR THE REMOVAL/ABANDON OF EXISTING SANITARY SEWER LINES AS PART OF CONSTRUCTION SHALL BE INCLUDED IN THE LUMP SUM BID FOR "SITE DEMOLITION".

- THE CONTRACTOR SHALL VISIT THE SITE WITH THE OWNER PRIOR TO DEMOLITION TO DETERMINE DEMOLITION ITEMS THAT ARE TO BE SALVAGED TO THE OWNER. SALVAGEABLE ITEMS ARE TO BE DELIVERED TO THE OWNER AT LOCATIONS DIRECTED BY THE OWNER. ALL NON-SALVAGED ITEMS ARE TO BE DISPOSED OFF SITE BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND ENVIRONMENTAL REGULATIONS.

- THE CONTRACTOR SHALL NOT START WORK ON THE PROJECT UNTIL THE PROJECT INSPECTOR IS ASSIGNED AND IS PRESENT ON THE SITE. ANY WORK DONE WITHOUT INSPECTION WILL BE REQUIRED TO BE UNCOVERED FOR INSPECTION AT THE CONTRACTORS EXPENSE.

- EACH BIDDER SHALL VISIT THE SITE OF THE PROJECT BEFORE SUBMITTING THE PROPOSAL FOR THIS WORK SO THAT HE WILL BE FULLY INFORMED OF THE EXISTING FIELD CONDITIONS AND THE OBSTACLES WHICH MIGHT BE ENCOUNTERED. UPON AWARD OF THE CONTRACT THE CONTRACTOR WILL NOT BE GRANTED ANY ADDITIONAL COMPENSATION WITH REGARDS TO TIME AND MONEY FOR CONDITIONS THAT MAY HAVE BEEN EVALUATED DURING ANY INSPECTION OF THE SITE.

- ALL COST FOR WORK ASSOCIATED WITH THE FOLLOWING ITEMS SHALL BE CONSIDERED SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "LIFT STATION":

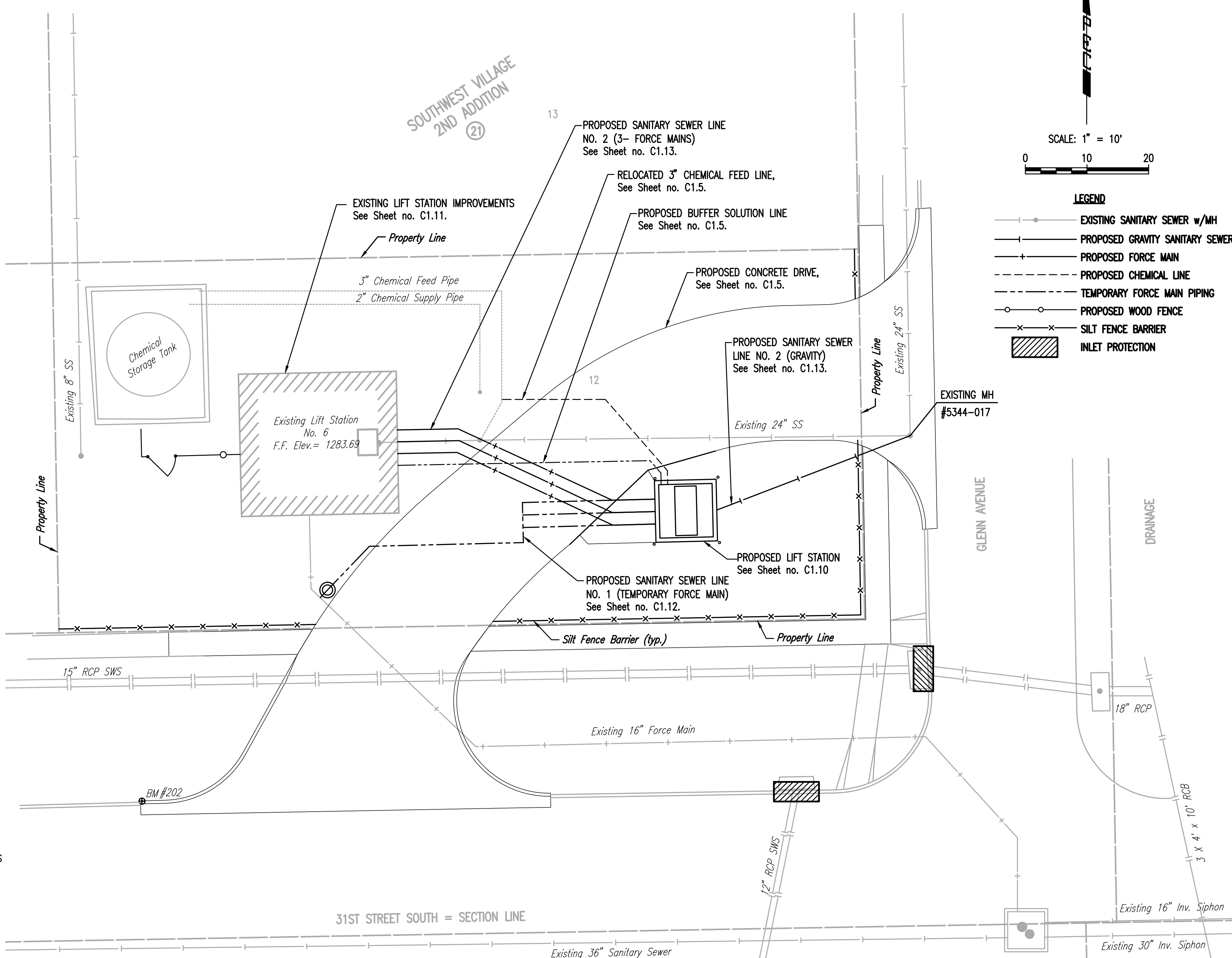
CHEMICAL FEED LINE  
BUFFER SOLUTION LINE  
MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL IMPROVEMENTS.

- CONTRACTOR SHALL COORDINATE WITH CITY STAFF WHEN COMPLETING TIE-INS TO THE PROPOSED LIFT STATION, EXISTING MH #5344-017 AND EXISTING FORCE MAIN. ALL TIE-INS SHALL BE COMPLETED DURING DAY TIME NON-PEAK HOURS.

- ANY OVER EXCAVATIONS FROM MANHOLE AND PIPE REMOVAL SHALL BE BACKFILLED WITH JETTED SAND BACKFILL PER THE CITY OF WICHITA STANDARD SPECIFICATIONS.

- ALL COSTS FOR MANHOLE OR PIPE ABANDONMENT OR REMOVAL SHALL BE INCLUDED IN THE PRICE BID FOR "MH REMOVAL". ABANDONMENT OR REMOVAL INCLUDING ANY PLUGS OR CAPS REQUIRED SHALL BE INCLUDED IN THE PRICE BID.

- WHERE THE IMPROVEMENTS CROSS EXISTING PUBLIC OR PRIVATE UTILITIES WHICH ARE NOT TO BE ADJUSTED BY OTHERS, THE CONTRACTOR SHALL PROVIDE THE MATERIAL AND MEANS TO PROTECT AND SUPPORT SAID UTILITIES DURING CONSTRUCTION TO THE SATISFACTION OF THE ENGINEER.



**LIFT STATION REHABILITATION CONSTRUCTION SEQUENCE**

**PHASE I  
CIVIL:**

- CONSTRUCT PROPOSED LIFT STATION
- INSTALL SANITARY SEWER LINE NO. 1 (TEMPORARY FORCE MAIN) AND CONNECT TO EXISTING 16" FORCE MAIN (BY-PASS SEWAGE)
- INSTALL SANITARY SEWER LINE NO. 2 (GRAVITY) FROM EXISTING SS MH TO PROPOSED LIFT STATION (BY-PASS SEWAGE)

**ELECTRICAL:**

- INSTALL NEW PUMP CONTROL PANELS AT EXISTING LIFT STATION
- WIRE SCADA SYSTEM TO NEW PUMPS AT EXISTING LIFT STATION
- RELOCATE EXISTING PUMP MOTOR STARTERS AT EXISTING LIFT STATION
- INSTALL NEW ELECTRICAL SERVICE

**PHASE II  
(FOLLOWING START UP OF NEW LIFT STATION AND PLACE INTO OPERATION)**

- REROUTE SUMP PUMP DISCHARGE LINE TO EXISTING SANITARY SEWER SYSTEM
- DRAIN, CLEAN AND INSPECT EXISTING WET WELL
- DISCONNECT AND REMOVE EXISTING PUMPS AT EXISTING LIFT STATION
- REMOVE EXISTING PUMP CONTROLS
- ABANDON/REMOVE EXISTING 24" GRAVITY SANITARY SEWER
- FILL OPENINGS AT EXISTING WET WELL (REF. STRUCTURAL)
- FILL EXISTING WET WELL (REF. STRUCTURAL)

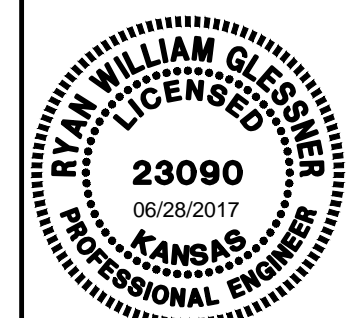
**PHASE III**

- INSTALL SANITARY SEWER LINE NO. 2 (FORCE MAINS) FROM THE PROPOSED LIFT STATION TO THE EXISTING LIFT STATION
- INSTALL NEW PIPING AND VALVES IN EXISTING WET WELL
- COMPLETE REMAINING MECHANICAL AND ELECTRICAL WORK
- DISCONNECT, CAP, AND REMOVE TEMPORARY PIPING (BY-PASS SEWAGE)

**PHASE IV**

- SITE WORK (NEW DRIVE, GRADING, ETC.)

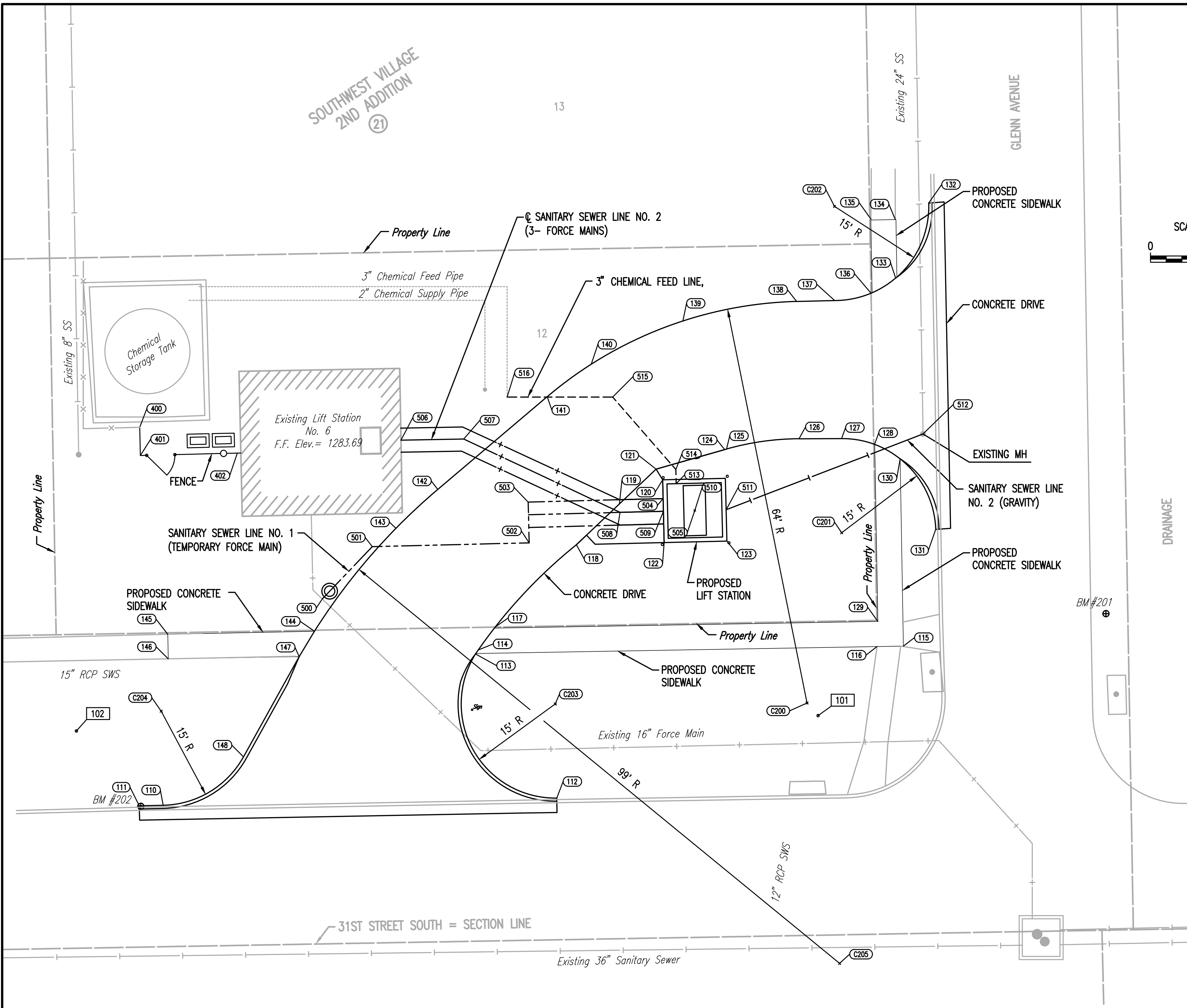
Served 06-27-2017 4:28:12 PM by: CSI  
 Plot Scale 1:1 06-27-2017 4:46:32 PM by: CATHY LUK  
 U:\Wichita-Civil\2016\160316\001\Main\Drawings\160316-001-C1.2 KEY MAP AND GENERAL NOTES



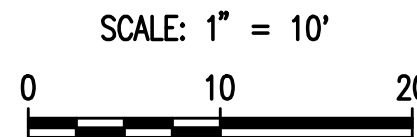
No.	Revision	By	Date
<b>LIFT STATION REHABILITATION 31ST STREET SOUTH AND GLENN AVENUE KEY MAP AND GENERAL NOTES</b>			
GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136			
<b>PEC</b> PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com			
Designed by	RWG, SAD	Job No. 35-160316-1-0042	Sht. C1.2
Drawn by	CSL, KTD	Date JUNE 2017	

SOUTHWEST VILLAGE  
2ND ADDITION  
(2)

PROPOSED DRIVE AND SIDEWALK



- LEGEND**
- EXISTING SANITARY SEWER w/MH
  - +— PROPOSED GRAVITY SANITARY SEWER
  - +— PROPOSED FORCE MAIN
  - PROPOSED CHEMICAL LINE
  - PROPOSED TEMPORARY FORCE MAIN PIPING
  - PROPOSED WOOD FENCE
  - COORDINATE LABEL



- NOTES:**
- ALL DIMENSIONS ARE TO THE BACK OF CURB AND EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
  - ADJUST MANHOLE AND VALVE COVER TOPS TO BE FLUSH WITH FINISHED GRADE.

**SANITARY SEWER LINE NO. 1  
(TEMPORARY FORCE MAIN)**

POINT	NORTHING	EASTING	STATION	DESCRIPTION
500	1,667,688.2514	1,641,766.8094	0+00.00	TEE
501	1,667,696.5600	1,641,774.7603	0+11.50	45° BEND
502	1,667,697.1684	1,641,799.7529	0+36.50	90° BEND
503	1,667,703.6665	1,641,799.5947	0+43.00	90° BEND
504	1,667,704.2184	1,641,821.0876	0+64.50	8" @ L.S.
505	1,667,702.3273	1,641,826.1352	0+69.50	L.S. CENTER

**SANITARY SEWER LINE NO. 2  
(FORCE MAIN AND GRAVITY LINES)**

POINT	NORTHING	EASTING	STATION	DESCRIPTION
506	1,667,713.5290	1,641,779.3307	0+00.00	∅ 3- 8" FM
507	1,667,713.7141	1,641,789.3290	0+10.00	∅ 22" BENDS
508	1,667,702.0196	1,641,814.2185	0+37.50	∅ 22" BENDS
509	1,667,702.1997	1,641,821.1368	0+44.42	∅ 3- 8" FM
510	1,667,702.3273	1,641,826.1352	0+49.42	L.S. CENTER
511	1,667,702.4490	1,641,831.1337	0+54.40	24" SS
512	1,667,714.5091	1,641,862.4947	0+88.0	Existing MH

**3" CHEMICAL FEED LINE**

POINT	NORTHING	EASTING
513	1,667,706.5895	1,641,823.1719
514	1,667,708.8573	1,641,823.1167
515	1,667,720.3955	1,641,813.0544
516	1,667,720.3955	1,641,796.2390

POINT	NORTHING	EASTING
110	1,667,655.3429	1,641,741.4390
111	1,667,655.2640	1,641,737.6400
112	1,667,656.5030	1,641,804.1542
113	1,667,679.4681	1,641,791.2026
114	1,667,680.0727	1,641,791.6022
115	1,667,680.7089	1,641,859.3751
116	1,667,680.6452	1,641,855.1663
117	1,667,683.7449	1,641,794.3220
118	1,667,696.8667	1,641,807.2749
119	1,667,703.3628	1,641,814.1226
120	1,667,707.2042	1,641,821.0150
121	1,667,708.9087	1,641,819.9687
122	1,667,697.2071	1,641,821.2583
123	1,667,697.4505	1,641,831.2554
124	1,667,712.0200	1,641,830.9004
125	1,667,712.1011	1,641,831.1856
126	1,667,713.7430	1,641,842.7410
127	1,667,713.7770	1,641,849.5144
128	1,667,712.8335	1,641,854.7691
129	1,667,684.6482	1,641,855.3054

POINT	NORTHING	EASTING
130	1,667,710.5313	1,641,858.8517
131	1,667,699.3098	1,641,864.5237
132	1,667,751.3084	1,641,863.3997
133	1,667,739.3546	1,641,858.1334
134	1,667,748.6820	1,641,858.0870
135	1,667,748.7511	1,641,854.2014
136	1,667,736.9471	1,641,854.2204
137	1,667,735.7756	1,641,848.4279
138	1,667,735.6203	1,641,842.3738
139	1,667,732.5111	1,641,824.2449
140	1,667,725.6305	1,641,809.6473
141	1,667,720.4590	1,641,802.6290
142	1,667,705.6697	1,641,785.1841
143	1,667,699.4721	1,641,778.5205
144	1,667,683.0937	1,641,765.5468
145	1,667,682.6013	1,641,742.1819
146	1,667,678.6815	1,641,742.2570
147	1,667,679.0310	1,641,763.1100
148	1,667,663.0619	1,641,754.2439

**PROPOSED DRIVE**

POINT	NORTHING	EASTING
C200	1,667,671.6414	1,641,844.0154
C201	1,667,698.7770	1,641,849.5331
C202	1,667,750.7756	1,641,848.4091
C203	1,667,671.5011	1,641,803.9119
C204	1,667,670.3396	1,641,741.1277
C205	1,667,630.1548	1,641,849.2037

∅R500 = RADIUS COORDINATE POINT NO.  
NOTE: COORDINATE POINTS ARE TO THE CENTER OF RADIUS.

**PROPOSED FENCE**

POINT	NORTHING	EASTING
400	1,667,715.5825	1,641,737.7014
401	1,667,711.0839	1,641,737.8142
402	1,667,711.4850	1,641,753.2513

**BENCH MARK LIST**

BM 201 - "d" CUT ON BACK OF CURB ON EAST SIDE OF WEST GLENN AVENUE, ± 13.5' WEST TO ∅ OF GLENN AVENUE, ± 50.5' SOUTH TO ∅ OF WEST 31ST STREET SOUTH.  
ELEV. = 1281.51 (NAVD 88)

BM 202 - "d" CUT ON BACK OF CURB ON WEST SIDE OF SOUTH DRIVE TO LIFT STATION #6, ± 33' EAST TO CENTER OF DRIVE, ± 49' NORTH NORTHEAST TO SOUTHWEST CORNER OF BUILDING.  
ELEV. = 1281.76 (NAVD 88)

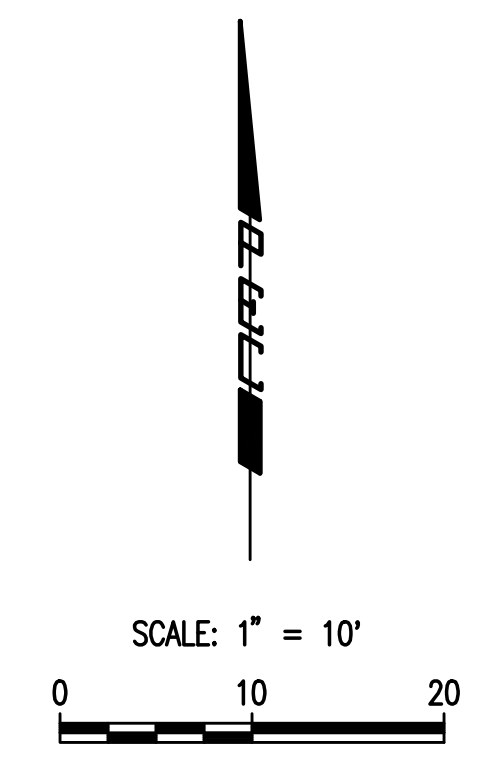
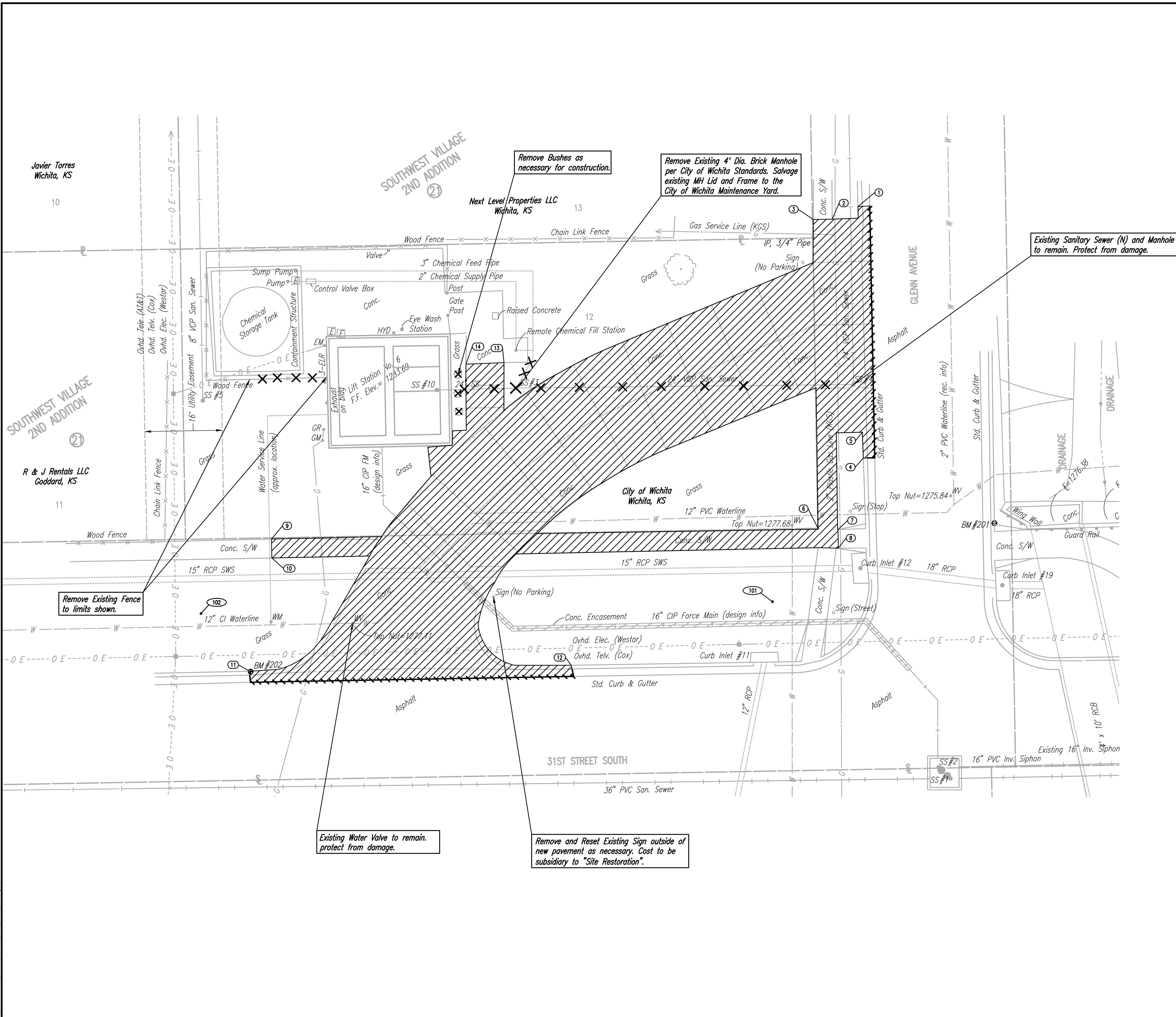
**CONTROL POINTS**

Pt No. 101  
N: 1,667,669.6280, E: 1,641,845.7650  
1/2" REBAR WITH CONTROL CAP SET ON NORTHWEST CORNER OF WEST 31ST STREET SOUTH AND SOUTH GLENN AVENUE  
1. 32.70' EAST TO ∅ 31ST STREET  
2. 34.90' SOUTH TO ∅ 31ST STREET  
3. 73.59' NORTHWEST TO SOUTHWEST BUILDING CORNER

Pt No. 102  
N: 1,667,667.1850, E: 1,641,727.6070  
1/2" REBAR WITH CONTROL CAP SET ON NORTH SIDE OF 31ST STREET  
1. 34.30' SOUTH TO ∅ OF 31ST STREET  
2. 43.45' NORTHEAST TO SOUTHWEST BUILDING CORNER  
3. 16.65' NORTHWEST TO FENCE CORNER

Sowed: 06-27-2017 4:56:43 PM by CSI  
 Plot Scale: 1" = 10'-0" (1:120)  
 U:\Wichita-Civil\2016\160316\001\Main\Drawings\160316-001-C1.3 BUBBLE MAP

No.	Revision	By	Date
<b>LIFT STATION REHABILITATION 31ST STREET SOUTH AND GLENN AVENUE BUBBLE MAP</b> GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136			
<b>PEC</b> PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com			
Designed by	RWG, SAD	Job No.	35-160316-1-0042
Drawn by	CSL, KTD	Date	JUNE 2017
			Shl. C1.3



**LEGEND**

	EXISTING CONCRETE TO BE REMOVED
	REMOVE MANHOLE
	REMOVE EXISTING PIPE
	SAW CUT
	REMOVE EXISTING FENCE

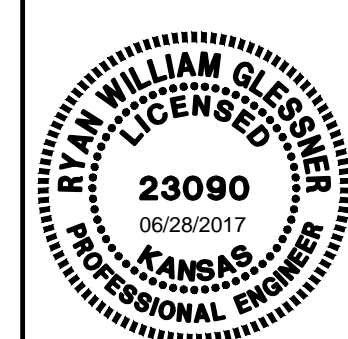

**PAVEMENT DEMOLITION LIMITS**

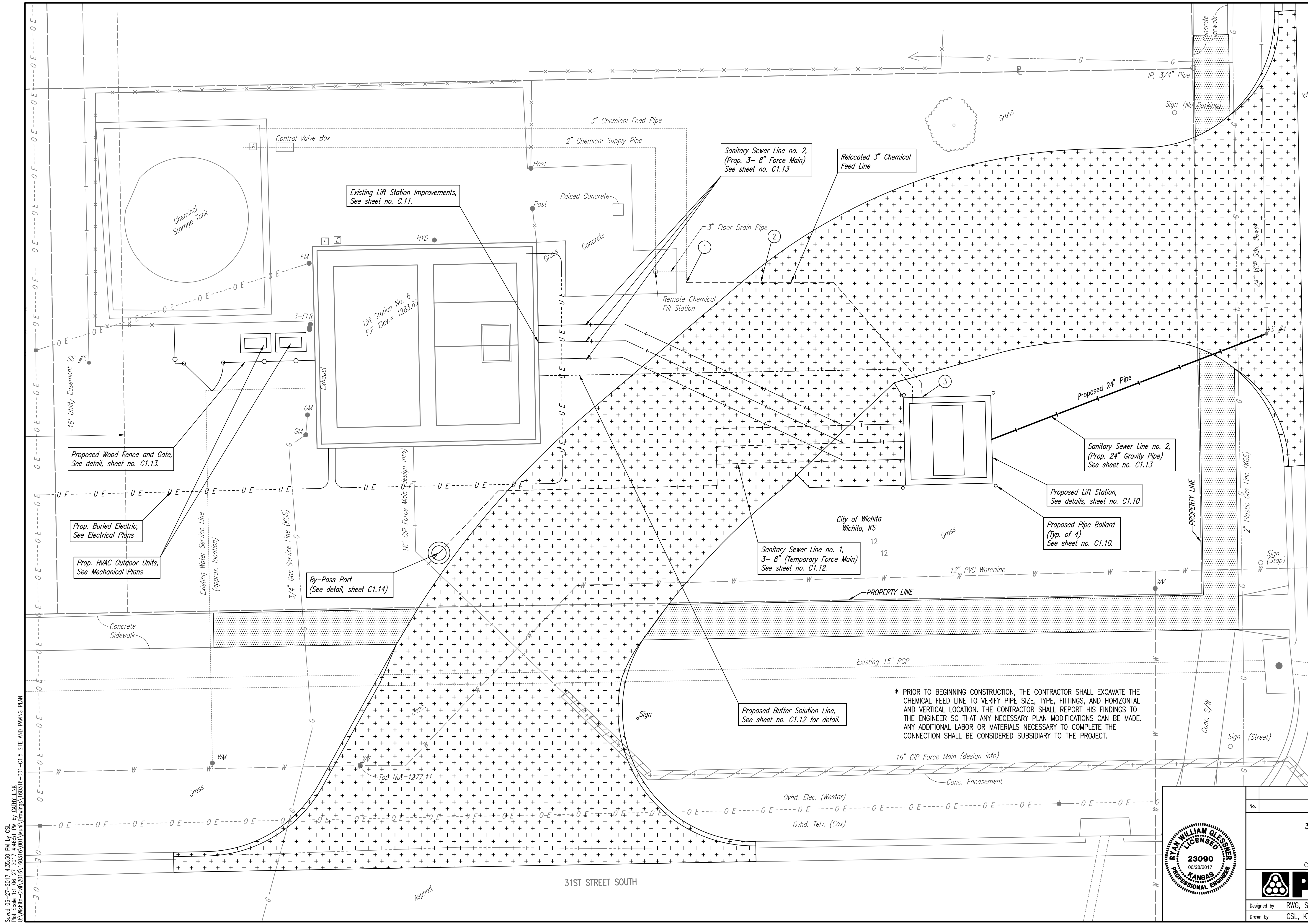
COORDINATE LIST		
POINT	NORTHING	EASTING
1	1,667,751.3100	1,641,863.4220
2	1,667,748.6820	1,641,858.0870
3	1,667,748.6135	1,641,854.1827
4	1,667,699.3098	1,641,864.5237
5	1,667,704.6750	1,641,864.3330
6	1,667,684.6210	1,641,855.2560
7	1,667,684.5499	1,641,859.3077
8	1,667,680.7190	1,641,859.3749
9	1,667,682.6013	1,641,742.1819
10	1,667,678.6815	1,641,742.2570
11	1,667,655.2640	1,641,737.6400
12	1,667,656.5030	1,641,804.1542
13	1,667,719.0310	1,641,790.2460
14	1,667,718.7243	1,641,782.3900

**DEMOLITION NOTES**

- A. AT LEAST 72 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE KANSAS ONE-CALL SYSTEM, (OR APPROPRIATE LOCAL UTILITY LOCATION SERVICE) TO REQUEST THE LOCAL UTILITY COMPANIES MARK ANY EXISTING LINES WITHIN THE PROJECT AREA.
- B. PRIOR TO BID, THE CONTRACTOR SHALL PERFORM A SITE REVIEW AND ACCOUNT FOR ANY DEMOLITION ITEMS THAT MAY HAVE BEEN INADVERTENTLY NOT SHOWN ON THIS DRAWING. ALL DEMOLITION IS SUBSIDIARY TO THE LUMP SUM BID ITEM "SITE DEMOLITION".
- C. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS TO REPAIR DAMAGE TO EXISTING UTILITY SERVICE LINES OR MAIN LINES, BUILDINGS, PAVEMENT ON OR ADJACENT TO THE SITE THAT ARE TO REMAIN IN SERVICE AND ARE NOT CALLED TO BE DEMOLISHED ON THIS PLAN, INCLUDING SERVICE LINES THAT ARE NOT SHOWN ON THE SITE SURVEY.
- D. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION PERMIT FEES, DISPOSAL FEES, ANY OTHER FEES ASSOCIATED WITH ANY DEMOLITION ITEMS.
- E. REFERENCE REFERENCE THE GEOTECHNICAL REPORT PREPARED BY PEC FIELD SERVICES, WICHITA, KANSAS. (SEPTEMBER 2016) INCLUDING ALL SUPPLEMENTAL INFORMATION PROVIDED WITH THAT REPORT FOR SOIL PREPARATION AND PAVEMENT RECOMMENDATIONS. (PEC FIELD SERVICES FILE NO.: 74-1160316-001-0147)
- F. REFERENCE ELECTRICAL, MECHANICAL, STRUCTURAL AND ARCHITECTURAL PLANS FOR ADDITIONAL DEMOLITION ITEMS.

Scaled: 06-27-2017 4:30:21 PM by CSI  
 Plot Scale: 1" = 10'-0" (2017 4:46:46 PM) by CATHY LINK  
 U:\Wichita-Civil\2016\160316\001\Drawings\160316-001-cl.14-DEMOLITION PLAN

No.	Revision	By	Date
<b>LIFT STATION REHABILITATION</b> <b>31ST STREET SOUTH AND GLENN AVENUE</b> <b>DEMOLITION PLAN</b> GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136			
			
 PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com			
Designed by	RWG, SAD	Job No.	35-160316-1-0042
Drawn by	CSL, KTD	Date	JUNE 2017
			Sht. C1.4



SCALE: 1" = 5'

**LEGEND**

- 8" REINFORCED CONCRETE DRIVE (394 S.Y.)
- 4" CONCRETE SIDEWALK (56 S.Y.)

NOTE: REFERENCE SHEET C1.8 FOR THE PAVING DETAILS.

**CHEMICAL FEED LINE**

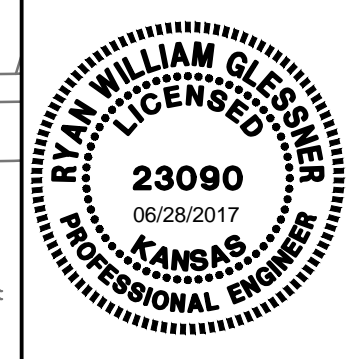
- 1 Existing 3" Pipe \*  
Remove pipe (See Demolition Plan, sheet C1.4)  
Install 1- 3" PVC 90° Bend (fittings and adaptors as necessary)
- 2 34.30- 3" PVC Pipe
- 3 Proposed Lift Station  
See sheet C1.10 for continuation.

NOTE:

1. ALL COST FOR INSTALLATION OF THE WOOD FENCE AND GATE SHALL BE SUBSIDIARY TO THE LUMP SUM PRICE BID FOR "SITE RESTORATION".
2. CHEMICAL FEED LINE SHALL GRAVITY DRAIN AND HAVE A MINIMUM SLOPE OF 1.50% AND HAVE A MINIMUM BURY DEPTH OF 24 INCHES.

\* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE CHEMICAL FEED LINE TO VERIFY PIPE SIZE, TYPE, FITTINGS, AND HORIZONTAL AND VERTICAL LOCATION. THE CONTRACTOR SHALL REPORT HIS FINDINGS TO THE ENGINEER SO THAT ANY NECESSARY PLAN MODIFICATIONS CAN BE MADE. ANY ADDITIONAL LABOR OR MATERIALS NECESSARY TO COMPLETE THE CONNECTION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT.

Scaled: 06-27-2017 4:35:50 PM by CSI  
 Plot Scale: 1" = 5'-0" (1:30) by CATHY LINK  
 U:\Wichita-Civil\2016\160316\001\Wm\Drawings\160316-001-C1.5 SITE AND PAVING PLAN



No.	Revision	By	Date

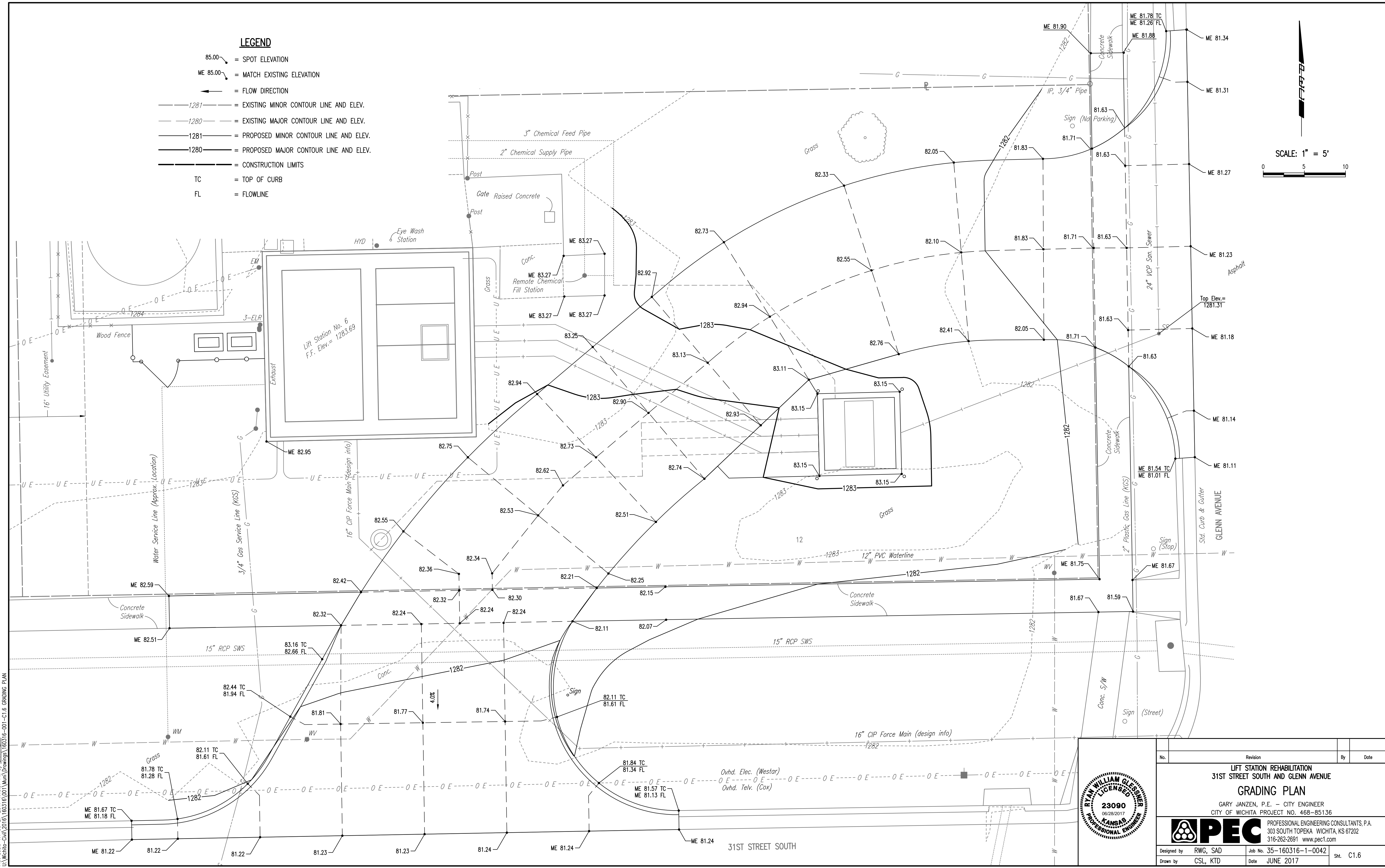
**LIFT STATION REHABILITATION  
31ST STREET SOUTH AND GLENN AVENUE  
SITE AND PAVING PLAN**

GARY JANZEN, P.E. - CITY ENGINEER  
CITY OF WICHITA PROJECT NO. 468-85136

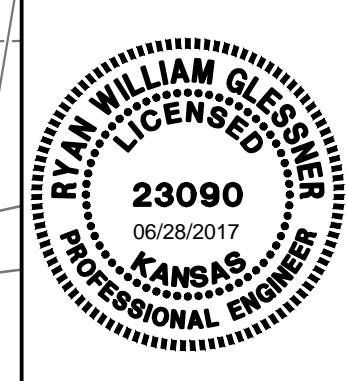
**PEC**  
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.  
303 SOUTH TOPEKA WICHITA, KS 67202  
316-262-2691 www.pec1.com

Designed by	RWG, SAD	Job No.	35-160316-1-0042	Sht.	C1.5
Drawn by	CSL, KTD	Date	JUNE 2017		

- LEGEND**
- 85.00 = SPOT ELEVATION
  - ME 85.00 = MATCH EXISTING ELEVATION
  - ← = FLOW DIRECTION
  - - - 1281 = EXISTING MINOR CONTOUR LINE AND ELEV.
  - - - 1280 = EXISTING MAJOR CONTOUR LINE AND ELEV.
  - 1281 = PROPOSED MINOR CONTOUR LINE AND ELEV.
  - 1280 = PROPOSED MAJOR CONTOUR LINE AND ELEV.
  - = CONSTRUCTION LIMITS
  - TC = TOP OF CURB
  - FL = FLOWLINE



Saved: 06-26-2017 11:03:48 AM by CSI  
 Plot Scale: 1" = 5'-27-17 4:46:57 PM  
 U:\Wichita-Civil\2016\160316\001\Wm\Drawings\160316-001-C1.6 GRADING PLAN



No.	Revision	By	Date

**LIFT STATION REHABILITATION**  
**31ST STREET SOUTH AND GLENN AVENUE**  
**GRADING PLAN**

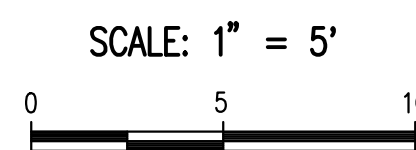
GARY JANZEN, P.E. - CITY ENGINEER  
 CITY OF WICHITA PROJECT NO. 468-85136

**PEC**  
 PROFESSIONAL ENGINEERING CONSULTANTS, P.A.  
 303 SOUTH TOPEKA WICHITA, KS 67202  
 316-262-2691 www.pec1.com

Designed by	RWG, SAD	Job No.	35-160316-1-0042	Sht.	C1.6
Drawn by	CSL, KTD	Date	JUNE 2017		

**NOTES**

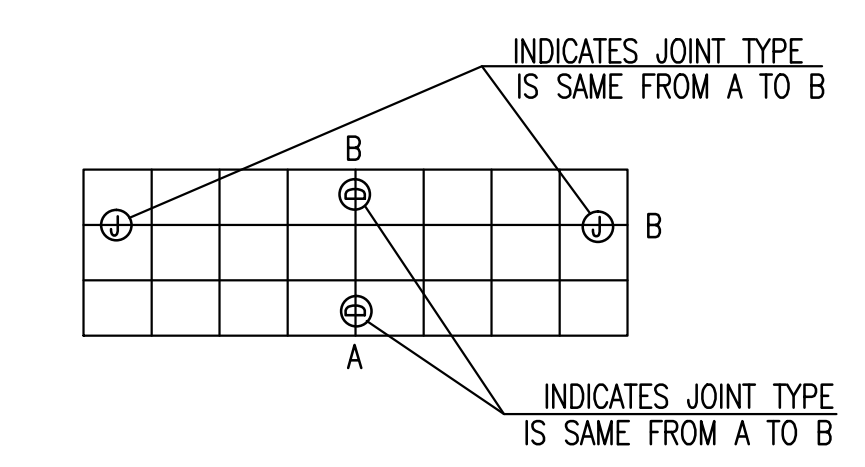
1. SEE JOINT AND JOINT SEALING DETAILS SHEET C1.8.
2. ANY ODD SHAPED PANELS CREATED BY EQUIPMENT PAD OR MH/VAULT TOP LOCATIONS SHALL BE REINFORCED WITH 6X6, W2.9XW2.9 WELDED WIRE FABRIC OR #3 REBAR AT 12" CENTERS EACH WAY. ISOLATION JOINTS SHALL BE CONSTRUCTED AT ALL STORM SEWER INLETS, EQUIPMENT PADS AND MH/VAULT TOP LOCATIONS.
3. ALL STEEL REINFORCEMENT SHALL BE ADEQUATELY SUPPORTED BY APPROVED CHAIRS.
4. DOWELED CONSTRUCTION JOINTS MAY BE SUBSTITUTED FOR TIED OR UNTIED CONTRACTION JOINTS AT END OF POUR OR EMERGENCY STOPS.
5. JOINTING LAYOUT IS BASED ON CONVENTIONAL FIXED FORM CONCRETE PAVEMENT CONSTRUCTION. ANY VARIATIONS TO JOINTING SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. CONCRETE PAVEMENT: WHERE CURB AND GUTTER IS ADJACENT TO CONCRETE PAVEMENT,
6. ALL JOINTS SHALL BE SEALED.



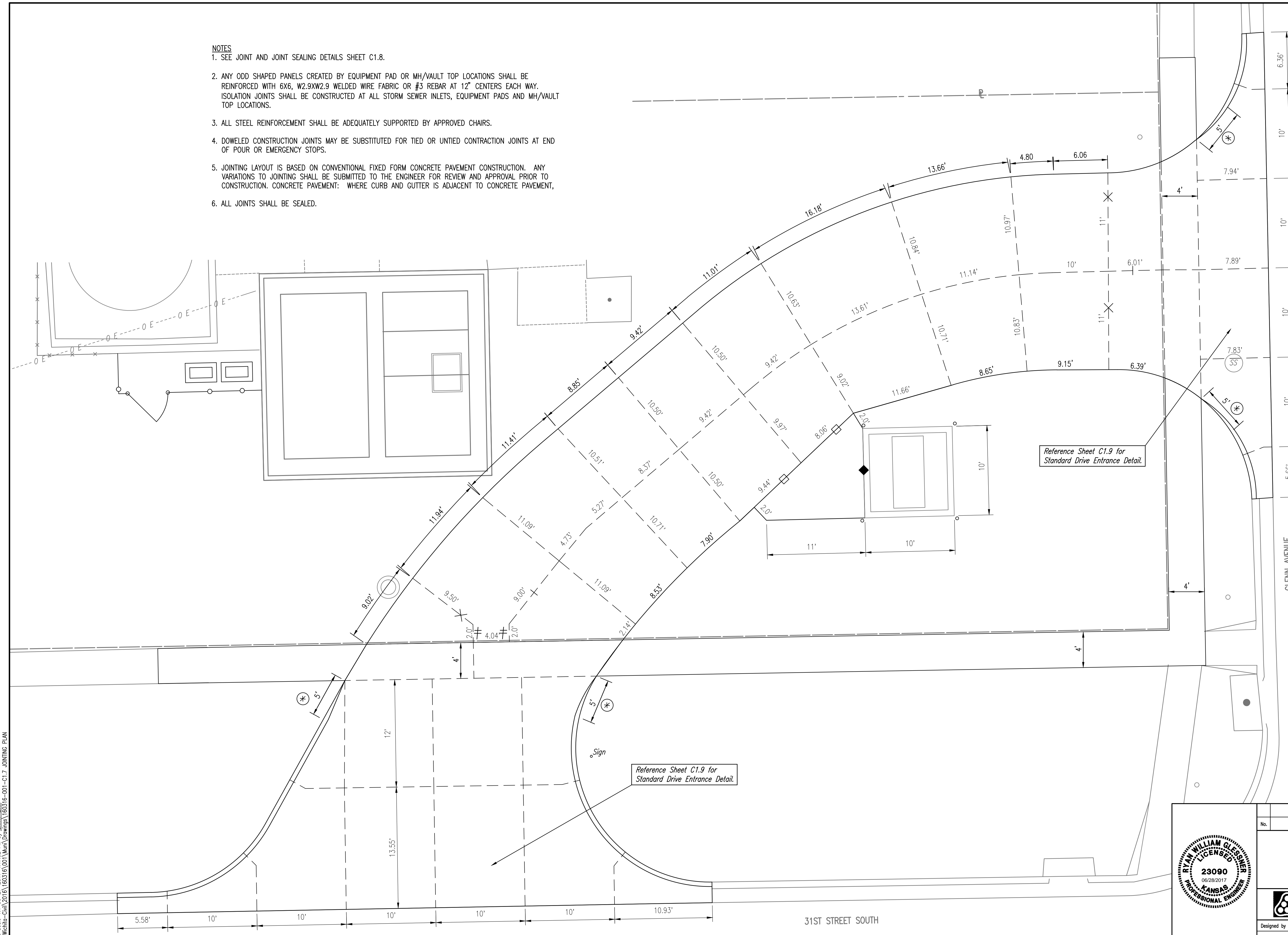
**JOINT LEGEND**

- ◆ THICKENED EDGE JOINT
- ISOLATION JOINT
- ⊕ TIED CONSTRUCTION JOINT
- DOWELED CONSTRUCTION JOINT
- UNTIED CONTRACTION JOINT
- ⊗ TIED CONTRACTION JOINT
- UNTIED LONGITUDINAL JOINT
- ⊕ TIED LONGITUDINAL JOINT
- ≠ OMIT DOWEL OR TIE BARS THROUGH THIS PORTION OF JOINT
- ⊗ 5' TRANSITION FROM FULL HEIGHT CURB TO ZERO HEIGHT CURB

ALL PANELS TO BE REINFORCED. SEE DETAIL SHEET C1.8

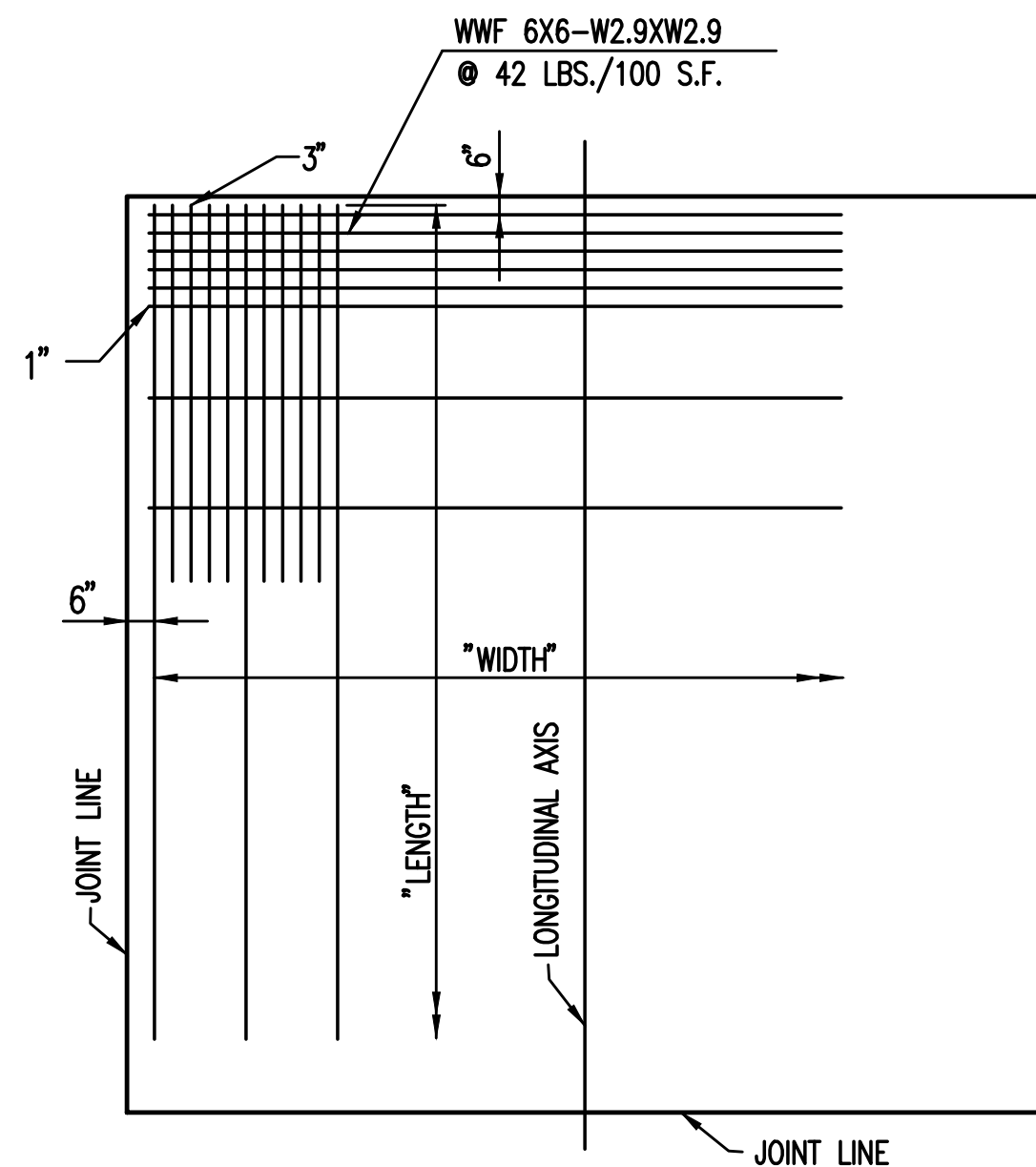


**JOINT CALL-OUT CONVENTIONS**



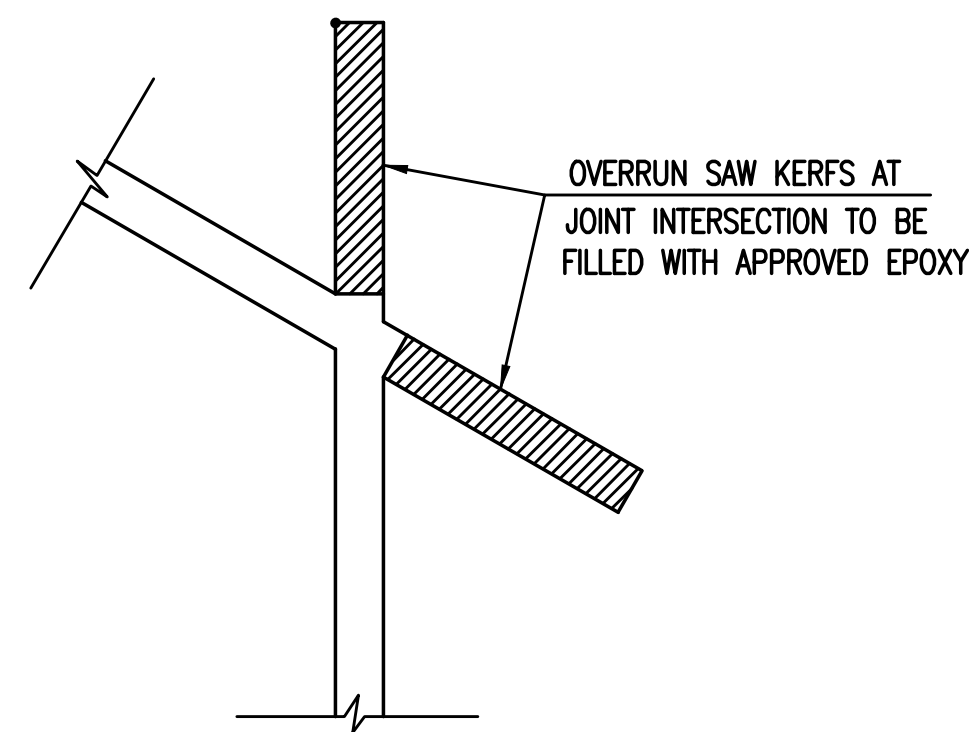
Saved: 06-26-2017 11:10:02 AM by CSI  
 Plot Scale: 1" = 5'-27-2017 4:47:02 PM by CATHY LUNK  
 U:\Wichita-Civil\2016\160316\001\Wm\Drawings\160316-001-C1.7 JOINTING PLAN

		No. _____ Revision _____ By _____ Date _____	
<b>LIFT STATION REHABILITATION</b> 31ST STREET SOUTH AND GLENN AVENUE <b>JOINTING PLAN</b> GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136			
		Designed by: RWG, SAD Drawn by: CSL, KTD	
Job No. 35-160316-1-0042 Date: JUNE 2017		Sht. C1.7	

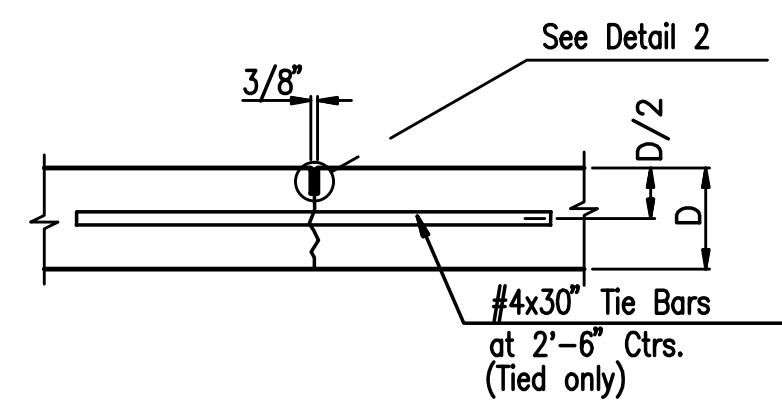


**WELDED WIRE FABRIC**

REINFORCING FABRIC SHALL BE FURNISHED IN FLAT SHEETS. THE CONTRACTOR MAY PROVIDE A DIFFERENT PATTERN OF FABRIC AS LONG AS A MINIMUM OF 0.054 SQ. IN./ FT. OF REINFORCING IS PROVIDED IN EACH DIRECTION. WELDED WIRE FABRIC SHALL BE CUT IN THE FIELD AS REQUIRED TO CONFORM TO THE SHAPE OF THE PANEL TO BE REINFORCED.

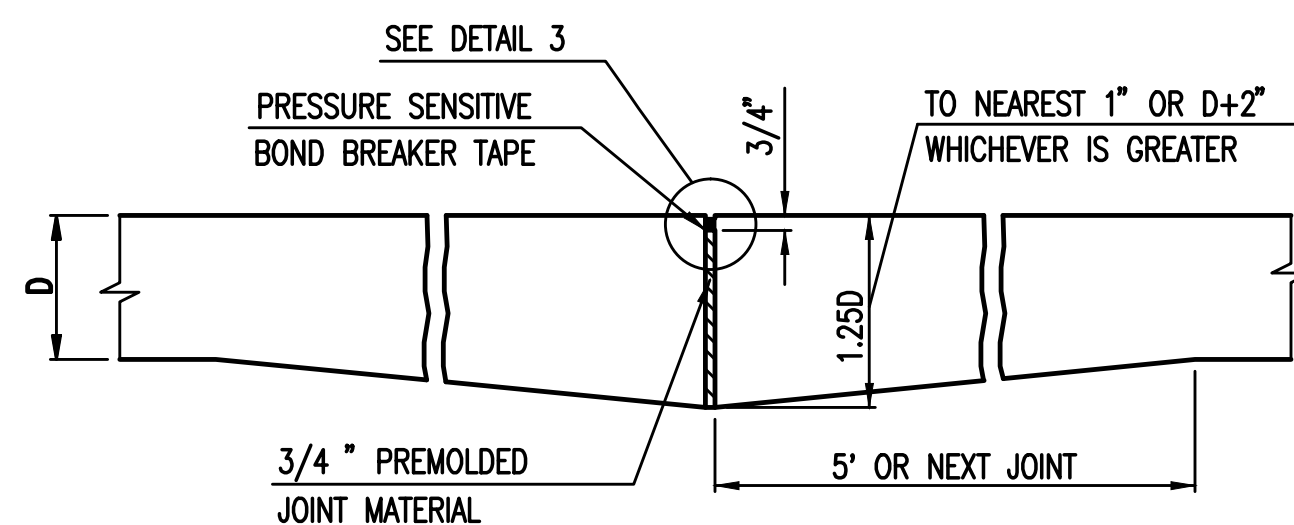


**KERF DETAIL**

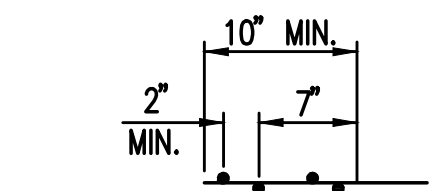


**TRANSVERSE CONTRACTION JOINT DETAIL REINFORCED PAVEMENT**

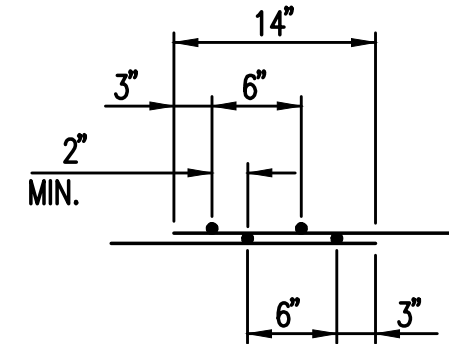
— ○ — UNTIED  
— X — TIED



**PAVEMENT THICKENED EDGE DETAIL**



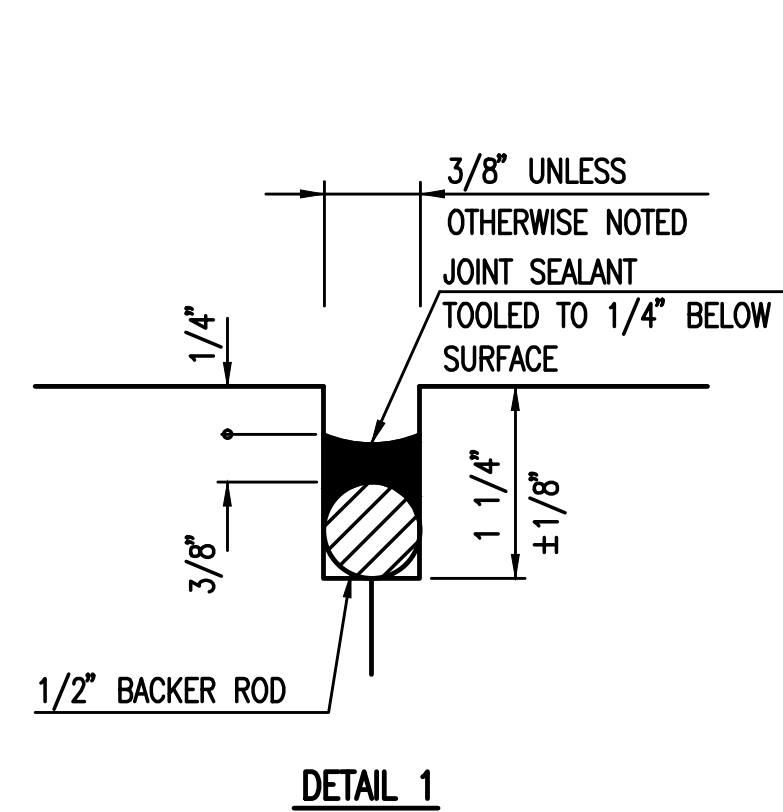
**TYPICAL PANEL LONGITUDINAL OR TYPICAL "MINIMUM" LAP SPLICE**



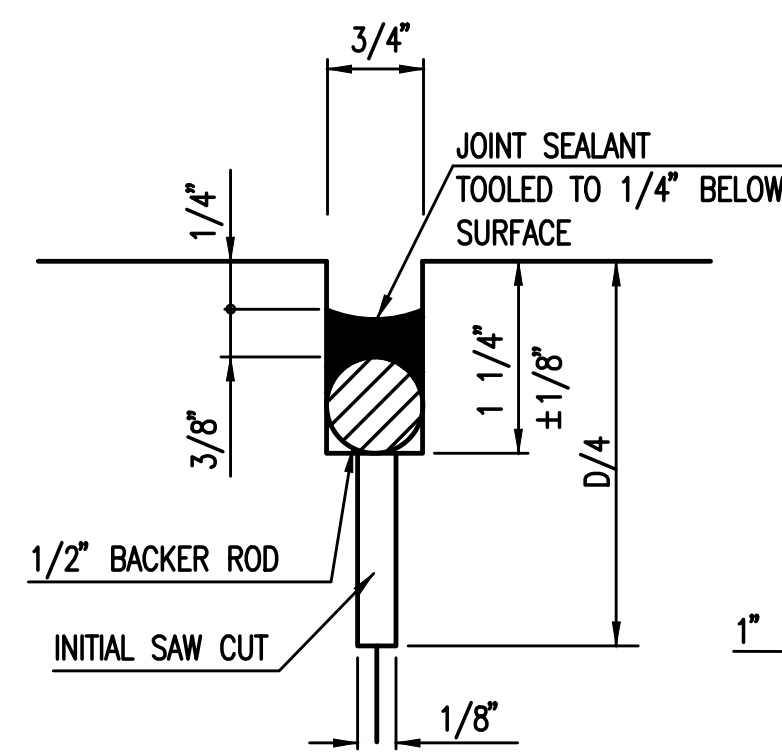
**TYPICAL PANEL TRANSVERSE SPLICE**

**TYPICAL SPLICE DETAILS**

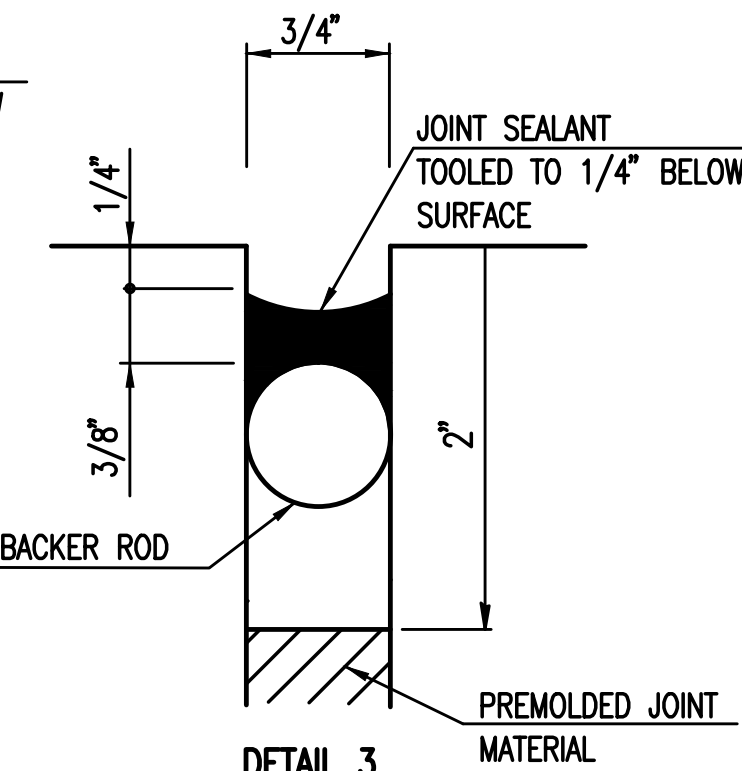
**REINFORCING DETAILS**



**DETAIL 1**

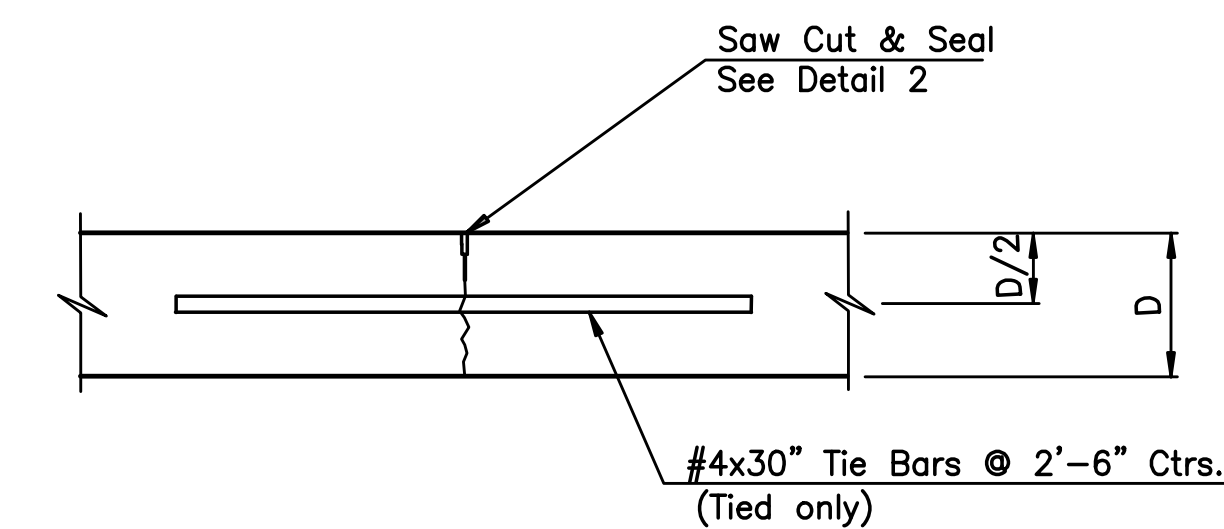


**DETAIL 2**



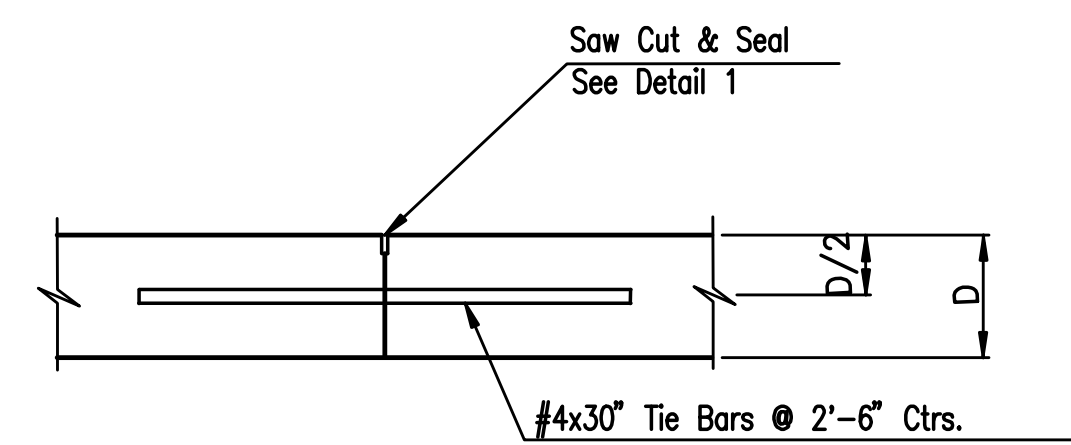
**DETAIL 3**

**JOINT SEAL DETAILS**



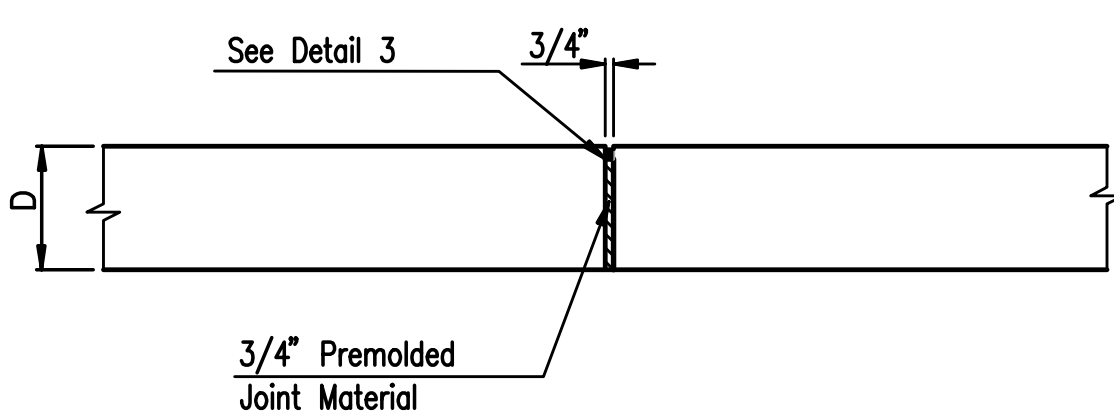
**LONGITUDINAL JOINT DETAIL REINFORCED PAVEMENT (TRANSVERSE SECTION) (L.J.)**

○ UNTIED  
+ TIED

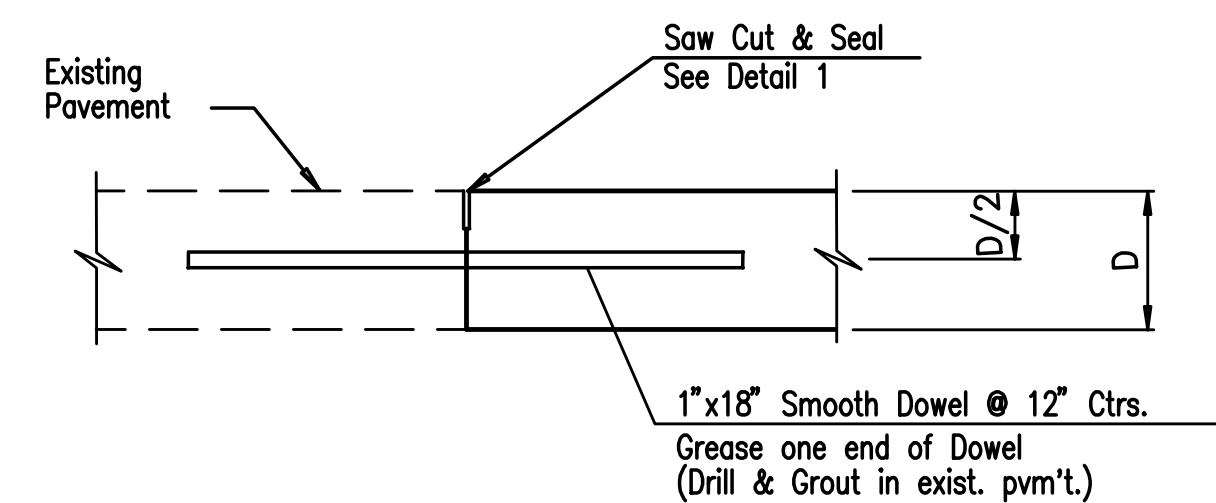


**CONSTRUCTION JOINT DETAIL REINFORCED PAVEMENT (TRANSVERSE SECTION)**

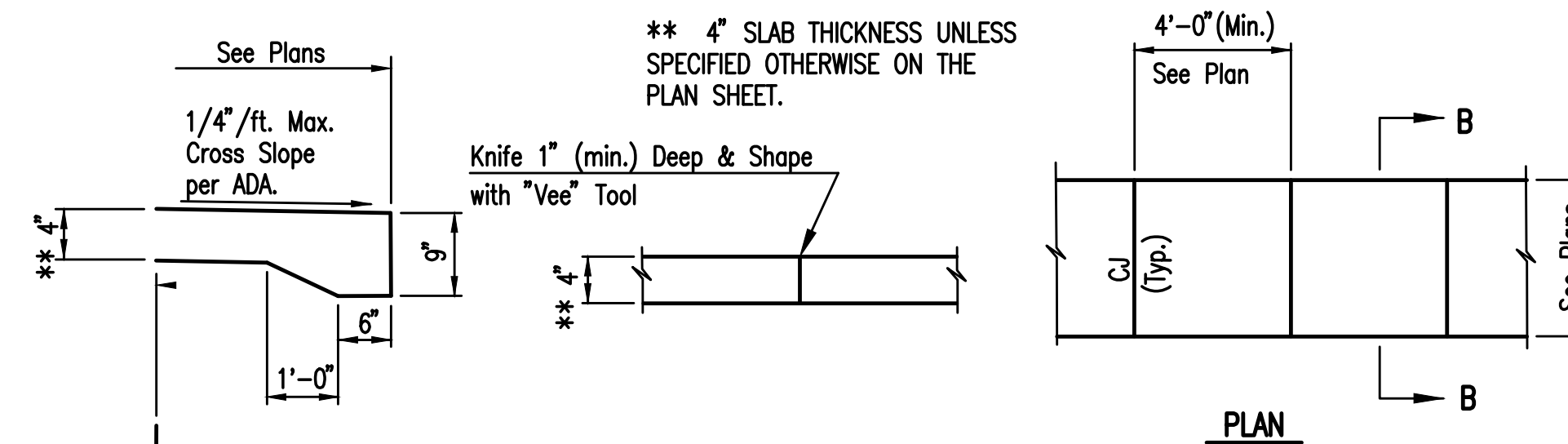
**NOTE: ALL JOINTS SHALL BE SEALED.**



**ISOLATION JOINT (I.J.)**



**CONSTRUCTION JOINT DETAIL**



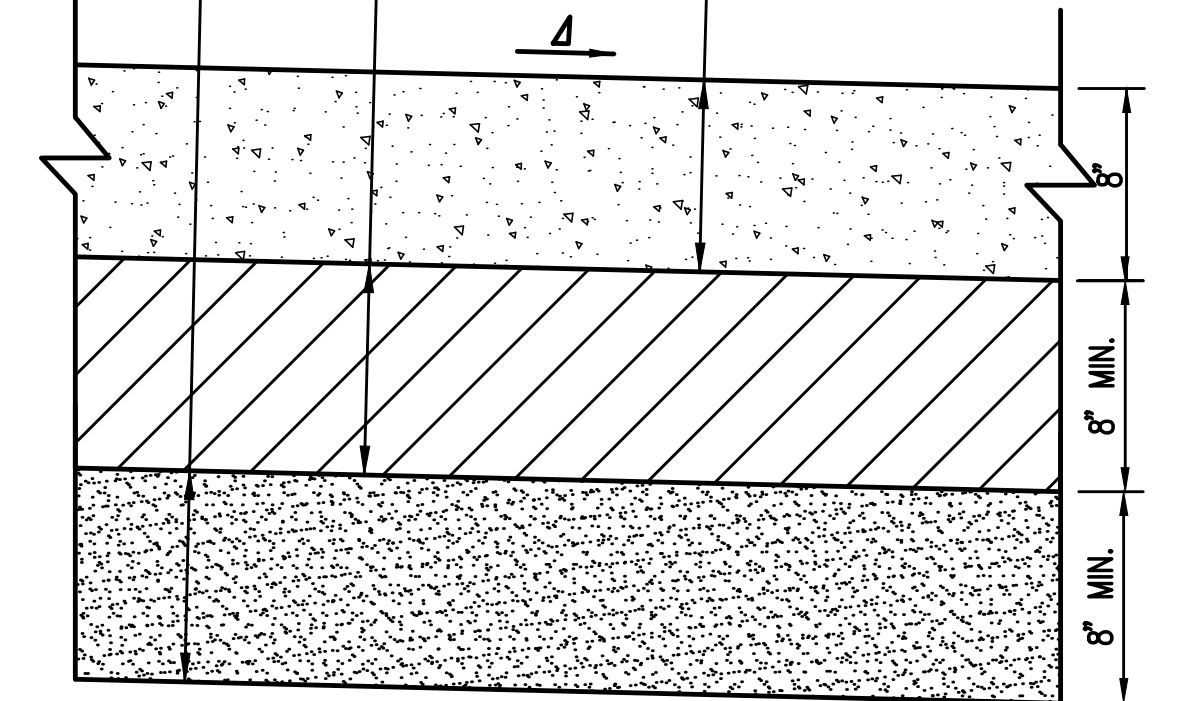
**CONCRETE WALK DETAILS**

**CONCRETE WALK DETAILS**

8" LVC COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY WEIGHT DETERMINED BY ASTM D698 WITH OPTIMUM OR 4% ABOVE OPTIMUM MOISTURE CONTENT. REFERENCE THE GEOTECHNICAL REPORT.

8" REINFORCED CRUSHED ROCK BASE. REFERENCE THE GEOTECHNICAL REPORT.

8" CONCRETE PAVEMENT 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI



**NOTES:**

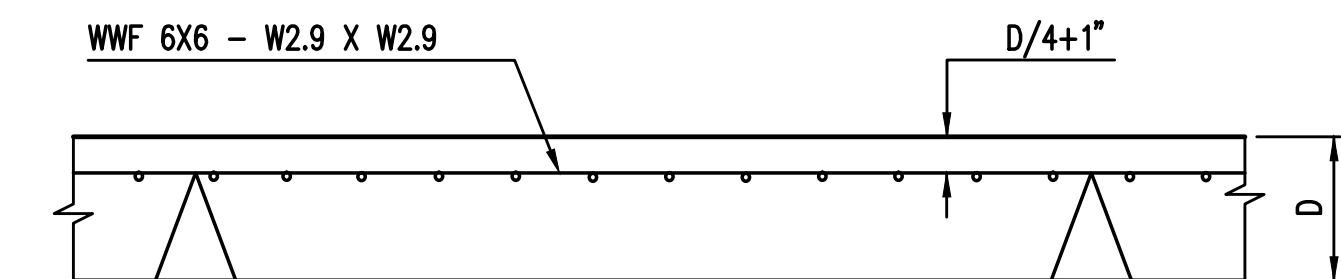
1. REINFORCED CRUSHED ROCK BASE AND STABILIZED SUBGRADE SHALL BE EXTENDED TO 1" BEYOND THE LIMITS OF ALL PAVING, EXCEPT WHERE ADJACENT TO EXISTING PAVING.
2. PORTLAND CEMENT CONCRETE MEETS CITY OF WICHITA STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR CONSTRUCTION.

**CONCRETE PAVEMENT TYPICAL SECTION**

Δ See Grading Plan for Pavement Slopes

\* D= DEPTH OF PAVEMENT. SLOPE SAME AS ADJACENT PAVEMENT. CONTRACTOR SHALL VERIFY DIRECTION OF SLOPE WITH FINAL GRADING.

\*\* LONGITUDINAL CONSTRUCTION JOINT AND #4 X 24" BARS @ 30" CTRS. WHERE CONCRETE PAVEMENT IS CONSTRUCTED AND CURB IS NOT MONOLITHIC. CONTRACTOR CAN OMIT TIE BARS AND CONSTRUCTION JOINT FOR CURB AND GUTTER IF POURED MONOLITHIC WITH ADJACENT CONCRETE PAVEMENT. JOINTS SHALL BE IN ACCORDANCE WITH THE JOINTING PLAN AND DETAILS FOR MONOLITHIC CURB. CURB JOINTS ADJACENT TO ASPHALT SHALL BE SAW-CUT AT RIGHT ANGLES TO THE CURB TO A DEPTH OF 1 1/4" (MIN.) AND HAVE A WIDTH NO GREATER THAN 3/8". SEALING OF JOINTS IS NOT REQUIRED. EXPANSION JOINTS SHALL BE CONSTRUCTED AT CURVE RETURNS AND AT A MAXIMUM SPACING OF 50' ON STRAIGHT RUNS. JOINT SPACING SHALL MATCH ADJACENT CONCRETE PAVEMENT.

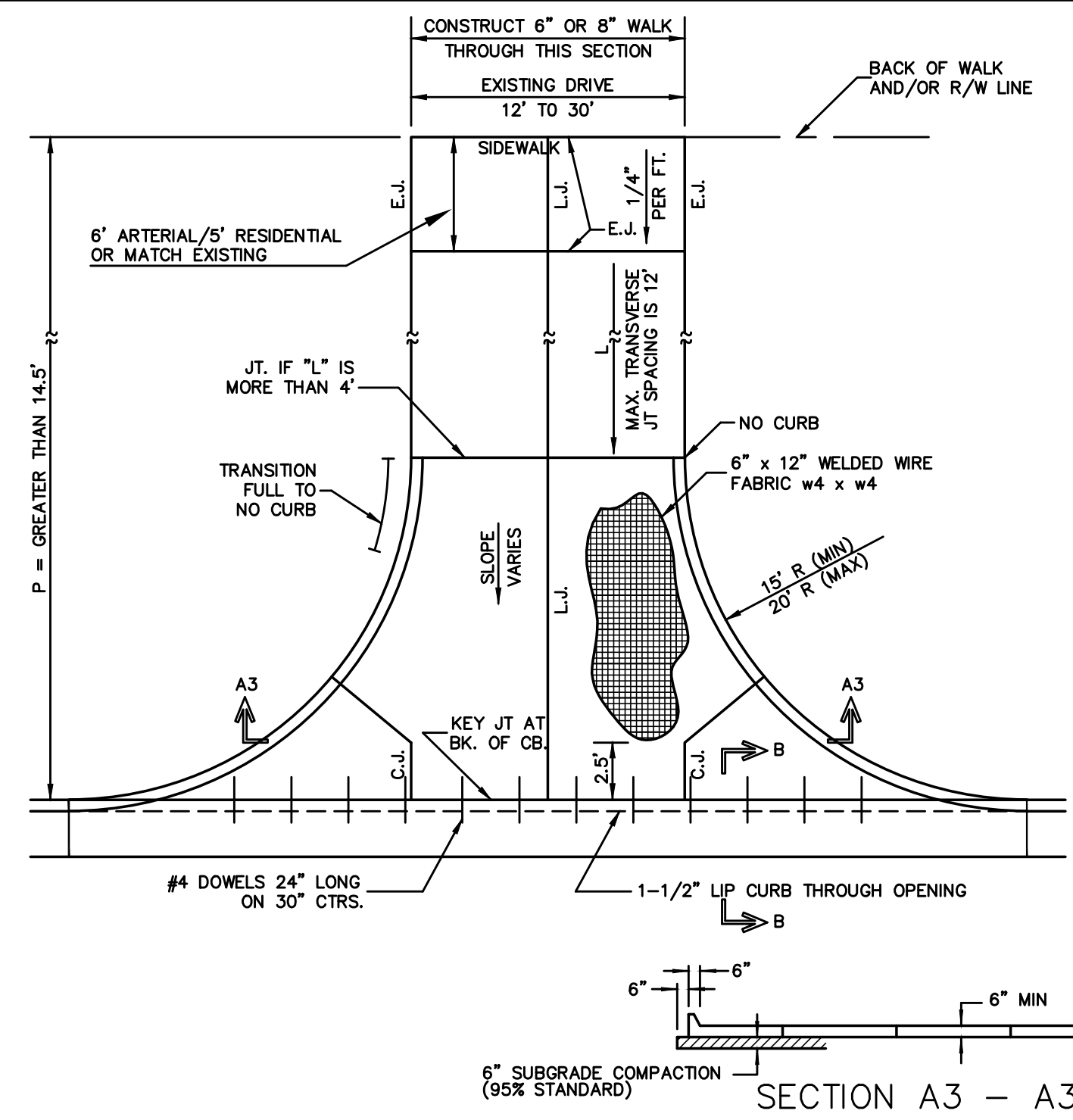


**SECTION THRU PAVEMENT**

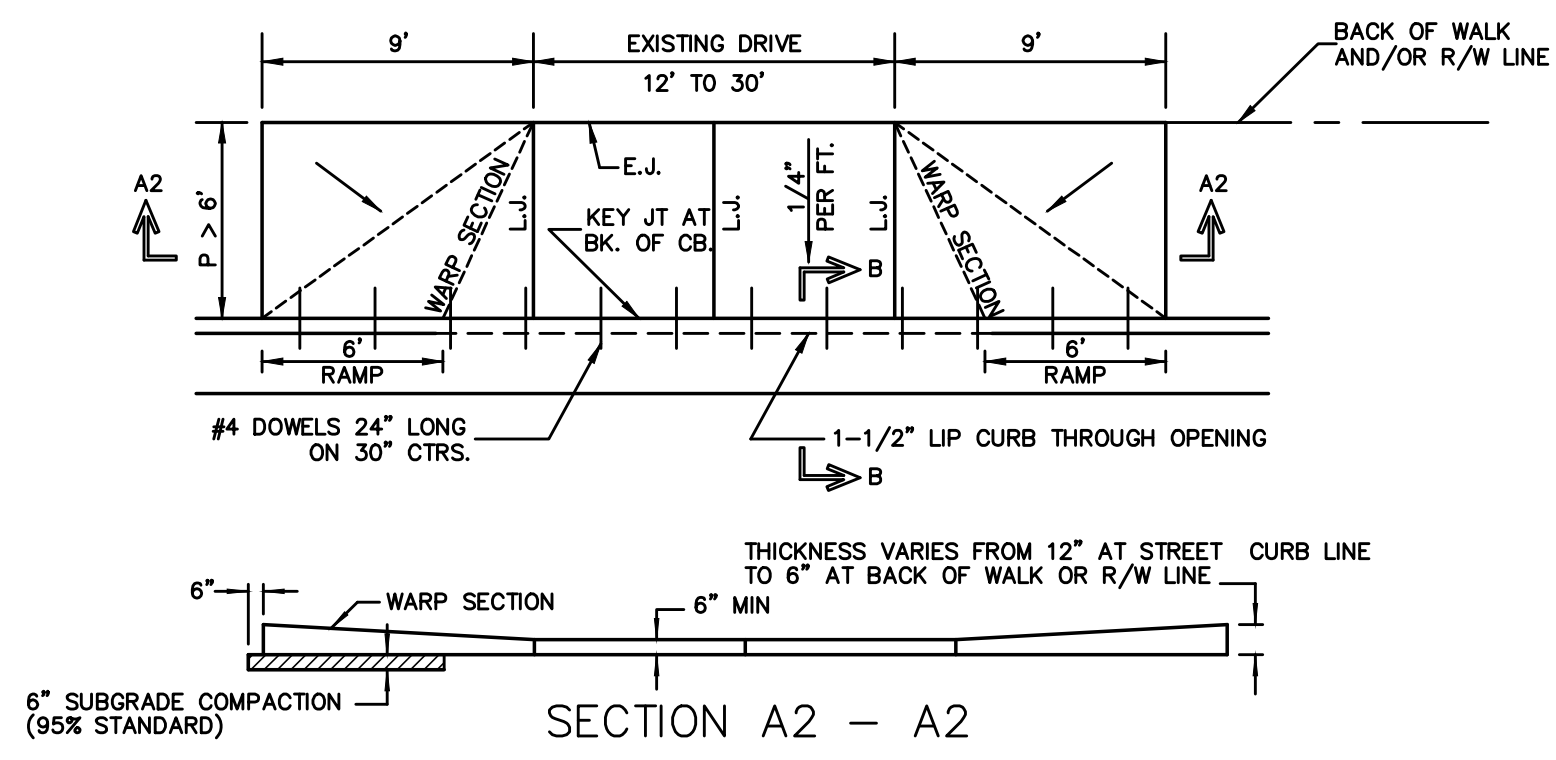
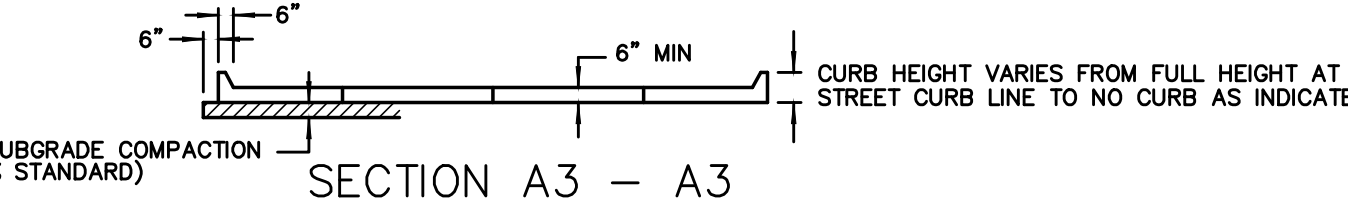
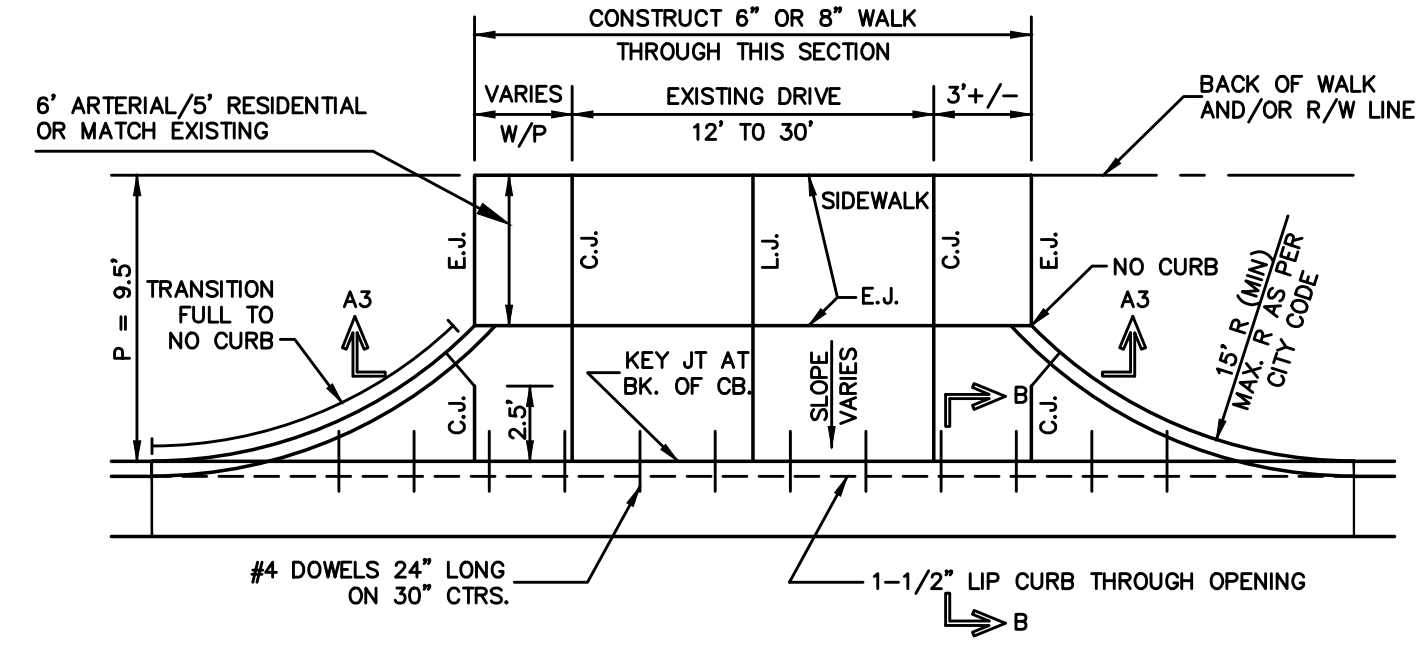
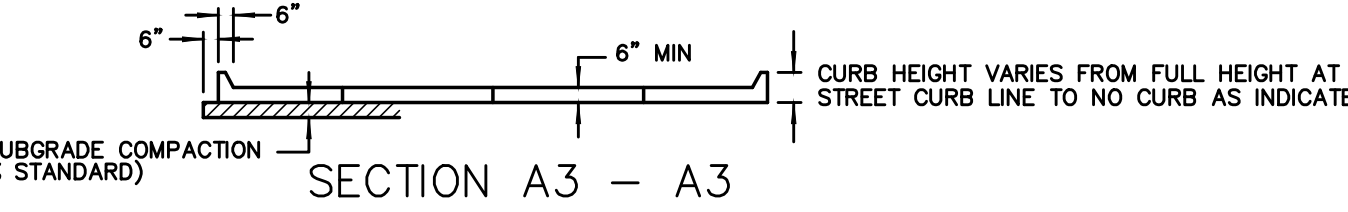
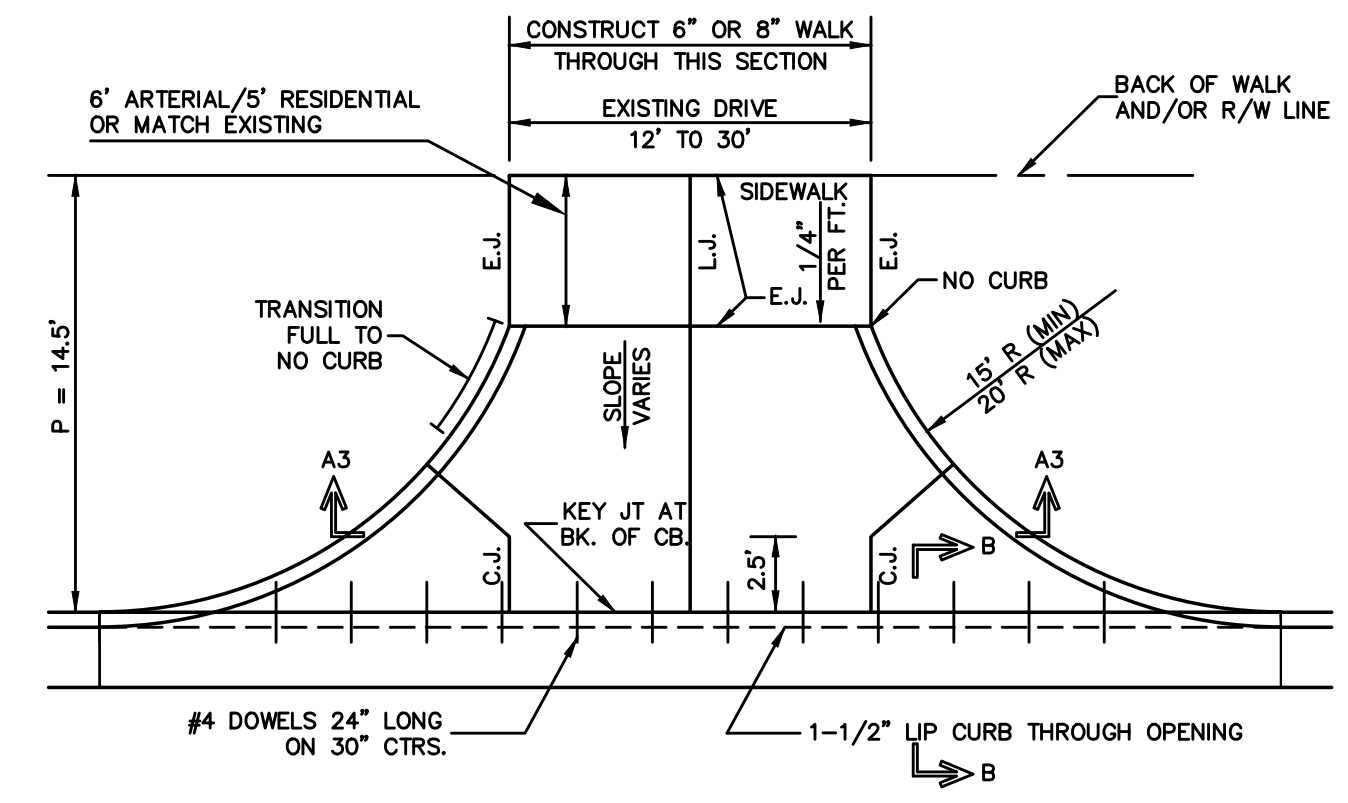
REINFORCING FOR ALL PANELS SHALL BE AS DETAILED ABOVE. CUT TO THE APPROPRIATE SHAPE & OVERLAP SPLICE AS REQUIRED.

Sowed 05-17-2017 1:23:30 PM by CSI  
Plot Scale 1:1 06-27-2017 4:47:06 PM by CATHY LUNK  
U:\Wichita-Civil\2016\160316\001\Wm\Drawings\160316-001-C1.8 PAVING DETAILS

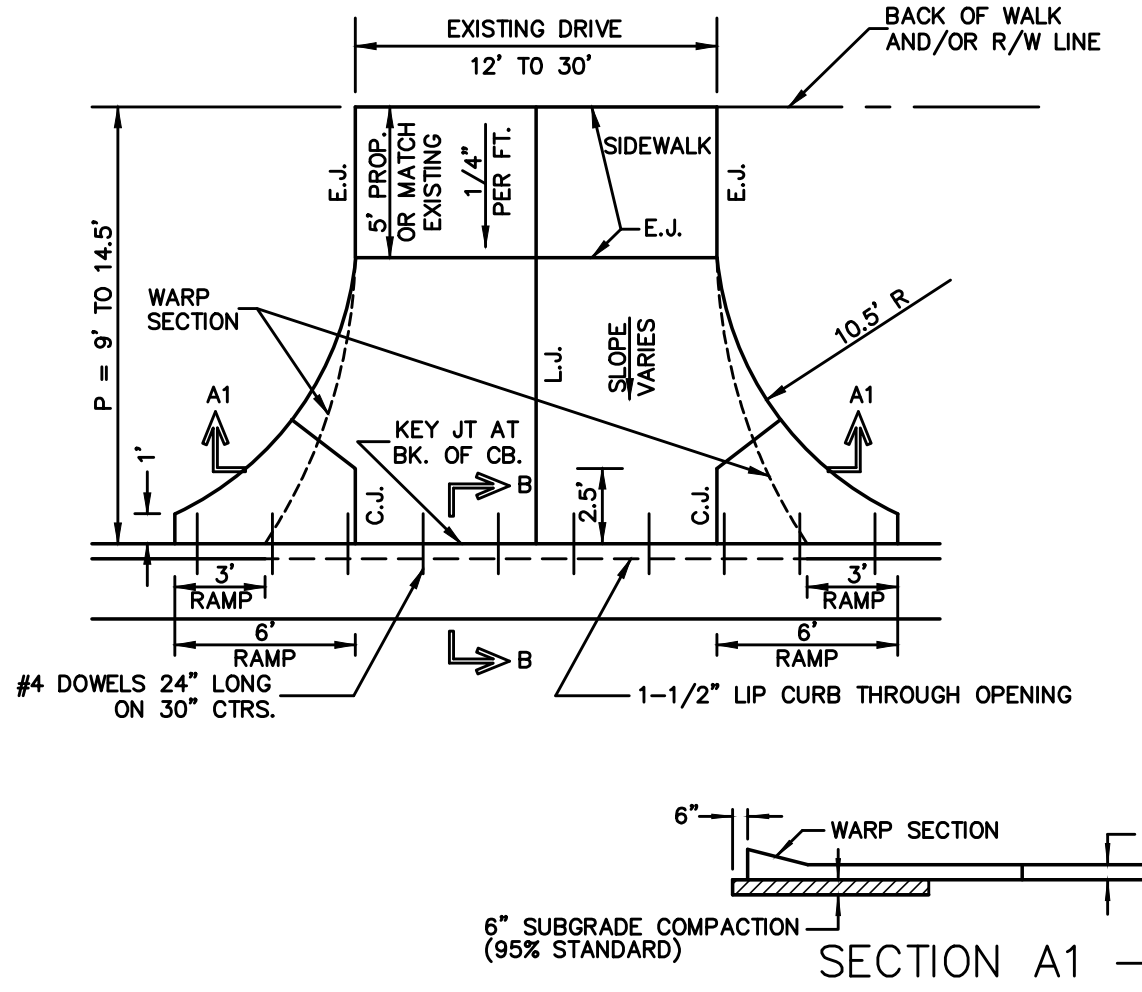
No.	Revision	By	Date
<b>LIFT STATION REHABILITATION</b> <b>31ST STREET SOUTH AND GLENN AVENUE</b> <b>PAVING DETAILS</b> GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136 PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com			
Designed by	RWG, SAD	Job No.	35-160316-1-0042
Drawn by	CSL, KTD	Date	JUNE 2017
			Sht. C1.8



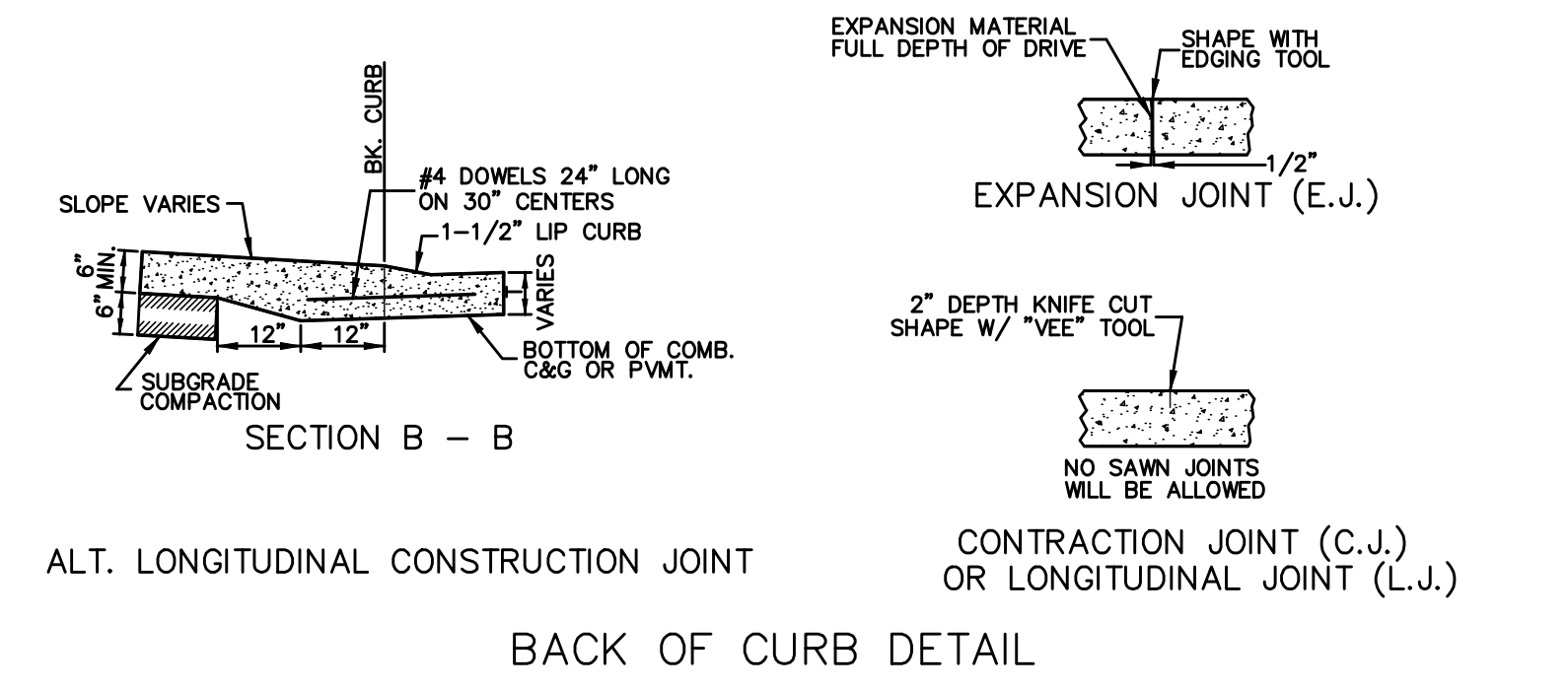
FULL RADIUS DRIVES (ARTERIAL/COLLECTOR DRIVEWAY)



FULL RAMP DRIVES (P = 4.0' & 6.5')



RADIUS RAMP DRIVES (RESIDENTIAL DRIVEWAY)



GENERAL NOTES

1. DRIVEWAY CONSTRUCTION DETAILED ON THIS SHEET IS FOR USE WITH FULL HEIGHT STREET CURBS AND IN AREAS WITHOUT FULL WALK CONSTRUCTION IN THE PARKING. SEE OTHER DETAIL SHEETS FOR DRIVEWAY CONSTRUCTION WITH ROLL CURB AND/OR FULL WALK.
2. ONE LONGITUDINAL JOINT SHALL BE CONSTRUCTED ALONG THE CENTERLINE OF DRIVES HAVING A WIDTH DIMENSION OF 24' OR LESS. TWO LONGITUDINAL JOINTS SHALL BE CONSTRUCTED WITH EQUAL SPACINGS NOT TO EXCEED 10' FOR DRIVES WITH A WIDTH DIMENSION GREATER THAN 24'.
3. DRIVEWAY WIDTH DENOTED AS WIDTH ON THE DETAIL DRAWINGS SHALL BE A MINIMUM OF 12' AND A MAXIMUM OF 30'. THE MAXIMUM OPENING FOR RADIUS TYPE DRIVES WITH CURBS THROUGH THE RADIUS SHALL NOT EXCEED 52' AT THE STREET CURB LINE.
4. CONTRACTION JOINT SPACING IN THE DRIVEWAY WALK SECTION SHALL BE A MINIMUM OF 3' AND A MAXIMUM OF 6' AND ARE TO BE EQUALLY SPACED WITHIN THIS RANGE. WALK SECTION SHALL BE CONSTRUCTED TO THE SAME THICKNESS AS THE DRIVEWAY.
5. ADDITIONAL THICKNESS OF DRIVE AS INDICATED IN THE DRAWINGS WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE DRIVEWAY CONSTRUCTION.
6. ONE HALF INCH EXPANSION JOINTS SHALL BE INSTALLED WHEREVER DRIVE CONSTRUCTION ABUTS SIDEWALK. ONE HALF INCH EXPANSION JOINTS SHALL ALSO BE INSTALLED ALONG THE PROPERTY LINE AND/OR BACK OF WALK LINE WHEN DRIVE CONSTRUCTION ALONG THIS LINE ABUTS CONCRETE PARKING LOTS OR CONCRETE DRIVE EXTENSION.
7. DRIVEWAYS ONLY ON RESIDENTIAL PROPERTIES ONLY CAN BE CONSTRUCTED WITH 6" IN THICKNESS AND CAN BE WITHOUT REINFORCEMENT.
8. ALL DRIVEWAYS TO NONRESIDENTIAL PROPERTY SHALL BE A MINIMUM OF 8" IN THICKNESS AND SHALL HAVE REINFORCEMENT WITH 6"x12", W4xW4.

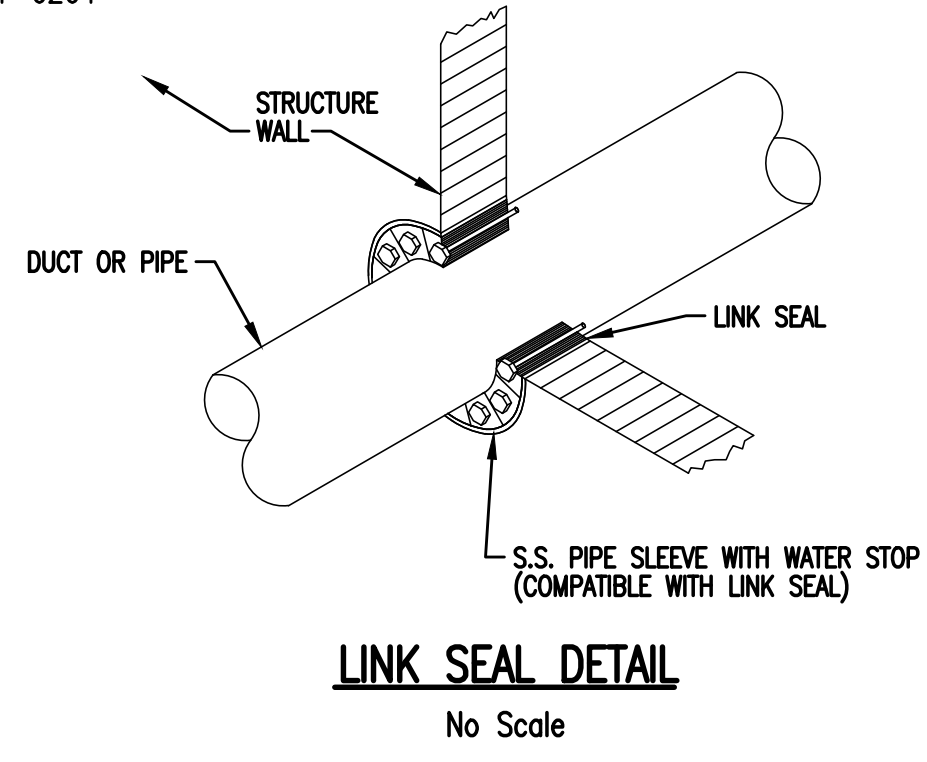
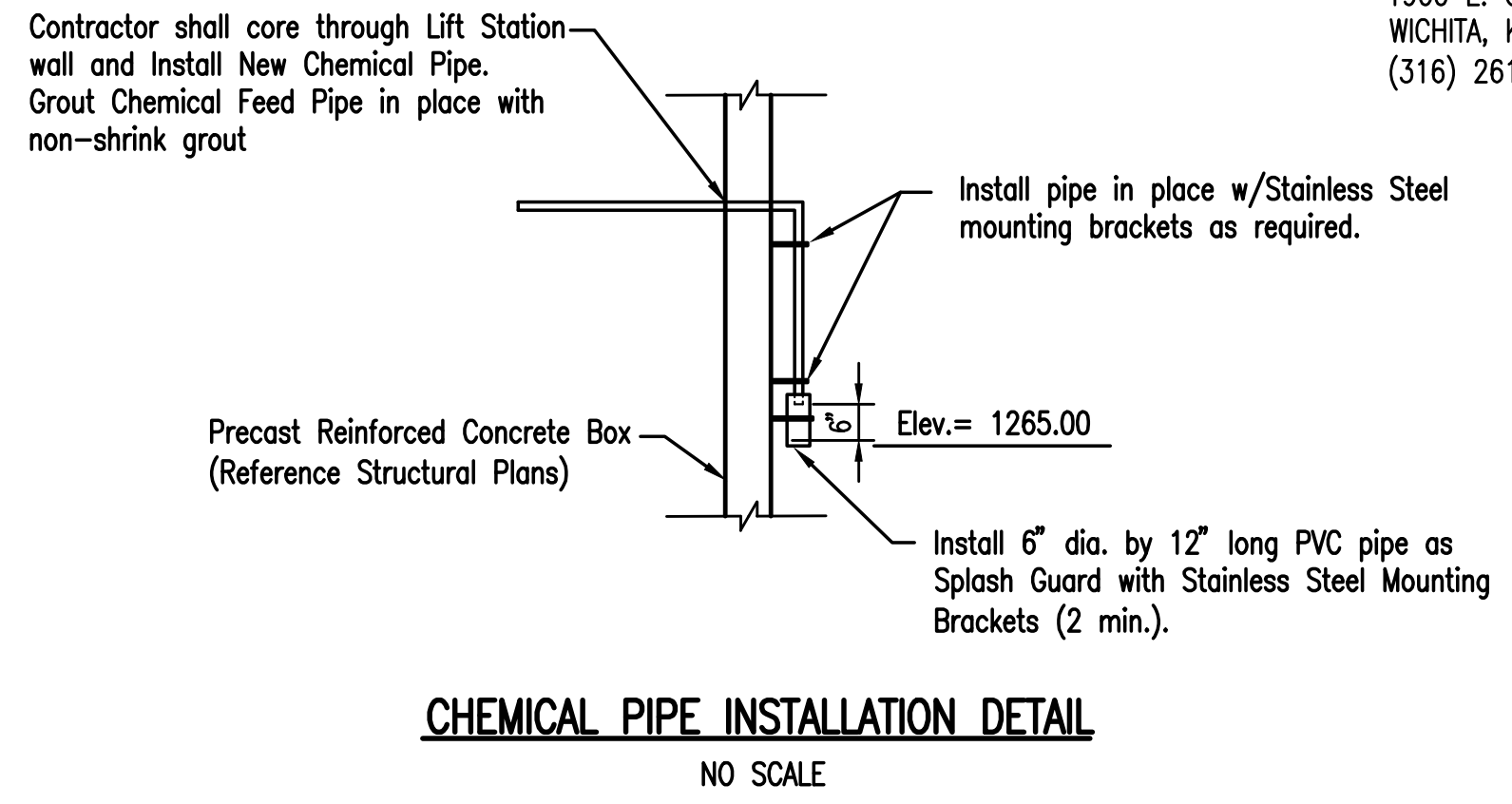
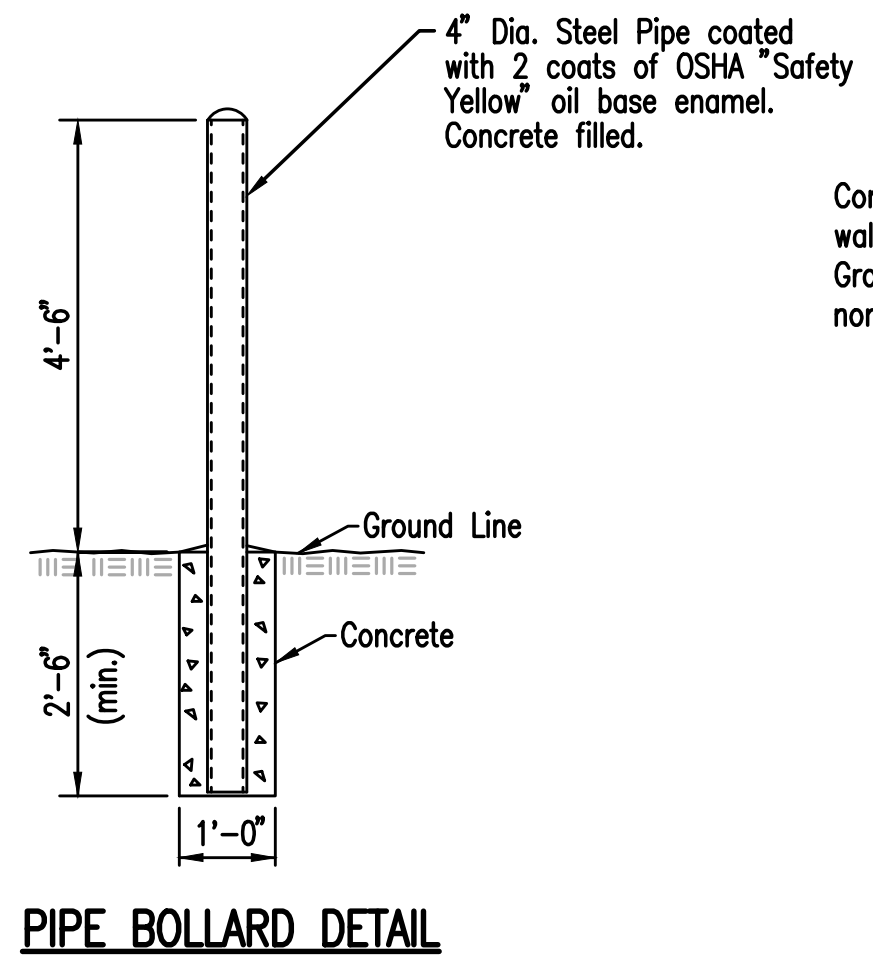
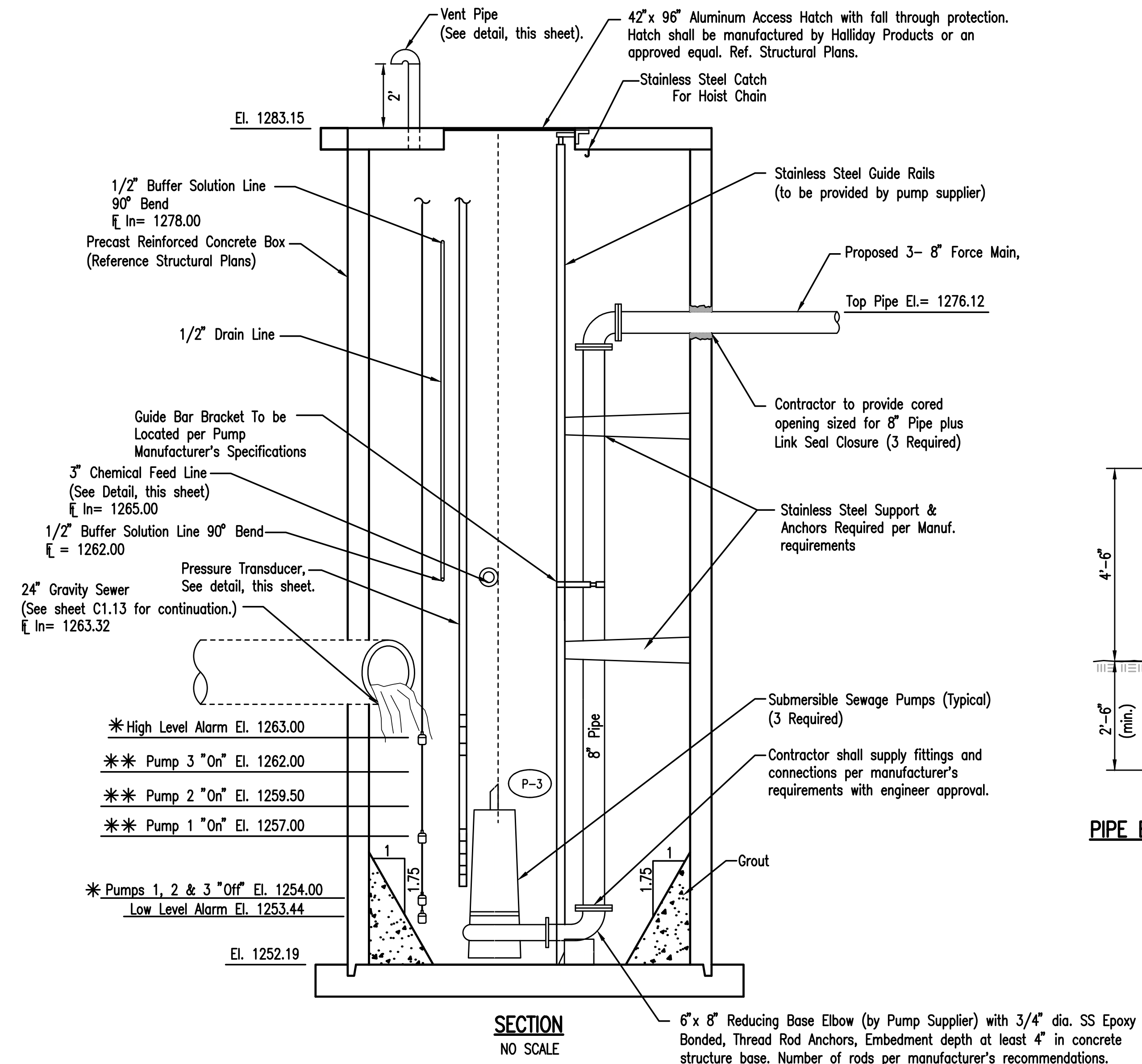
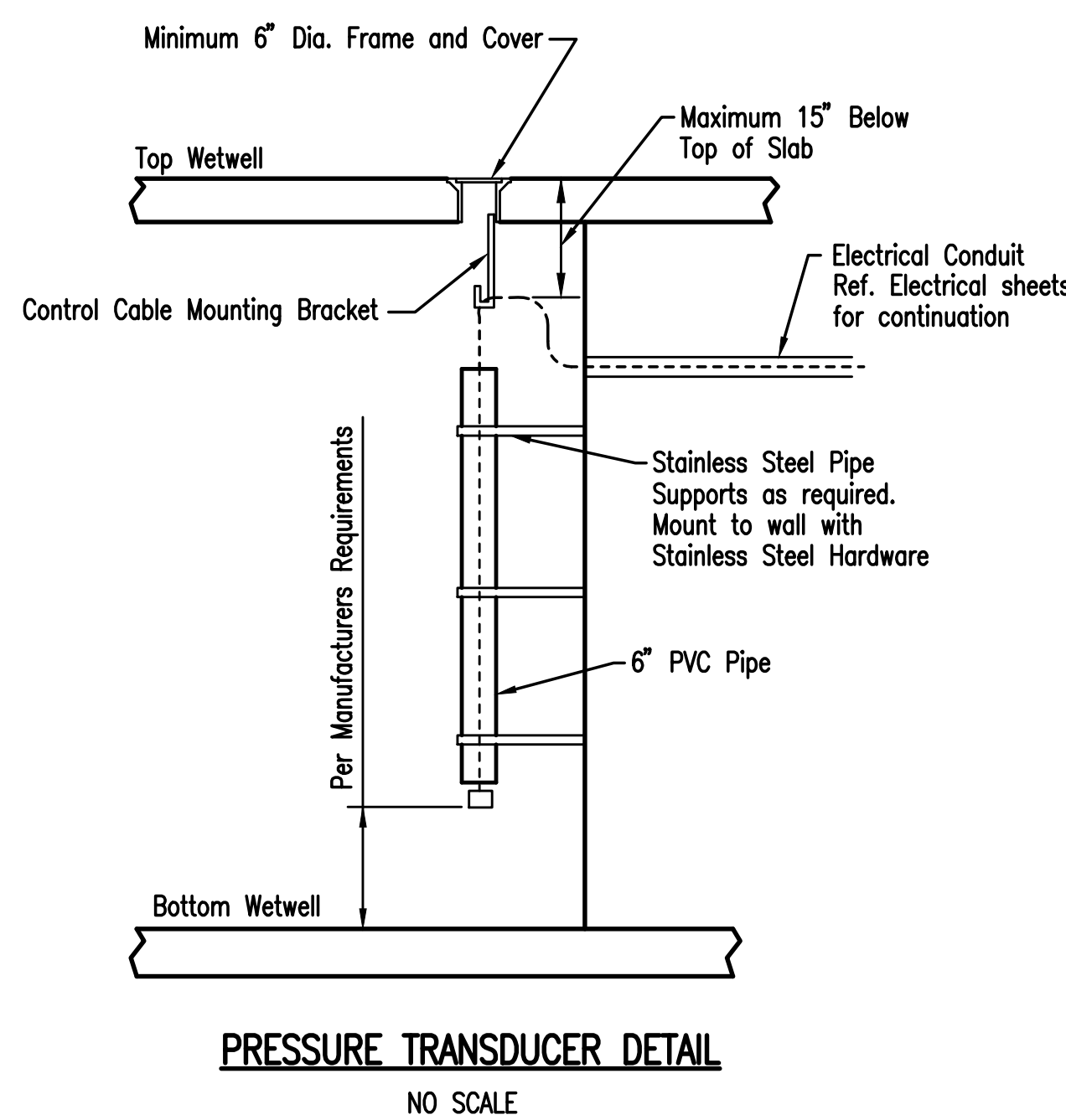
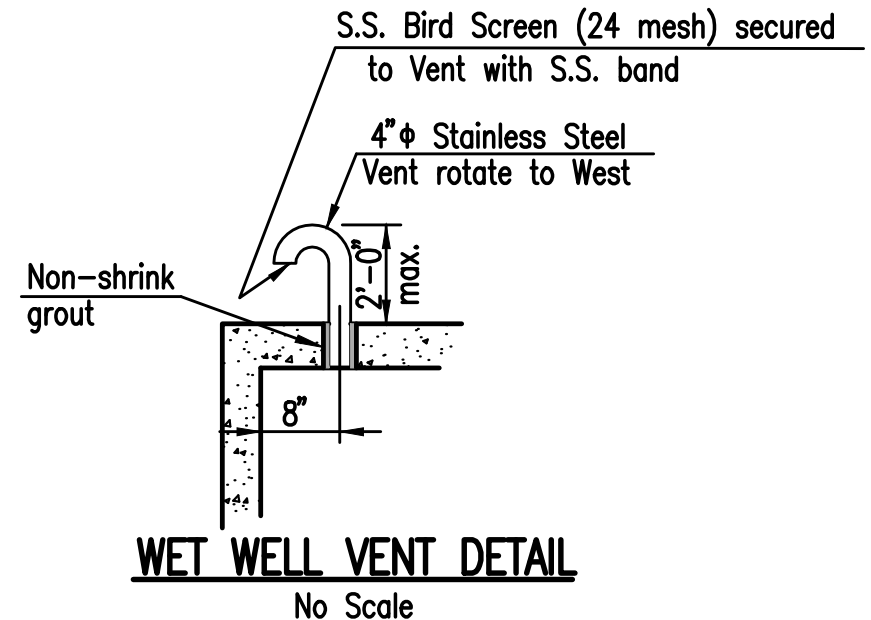
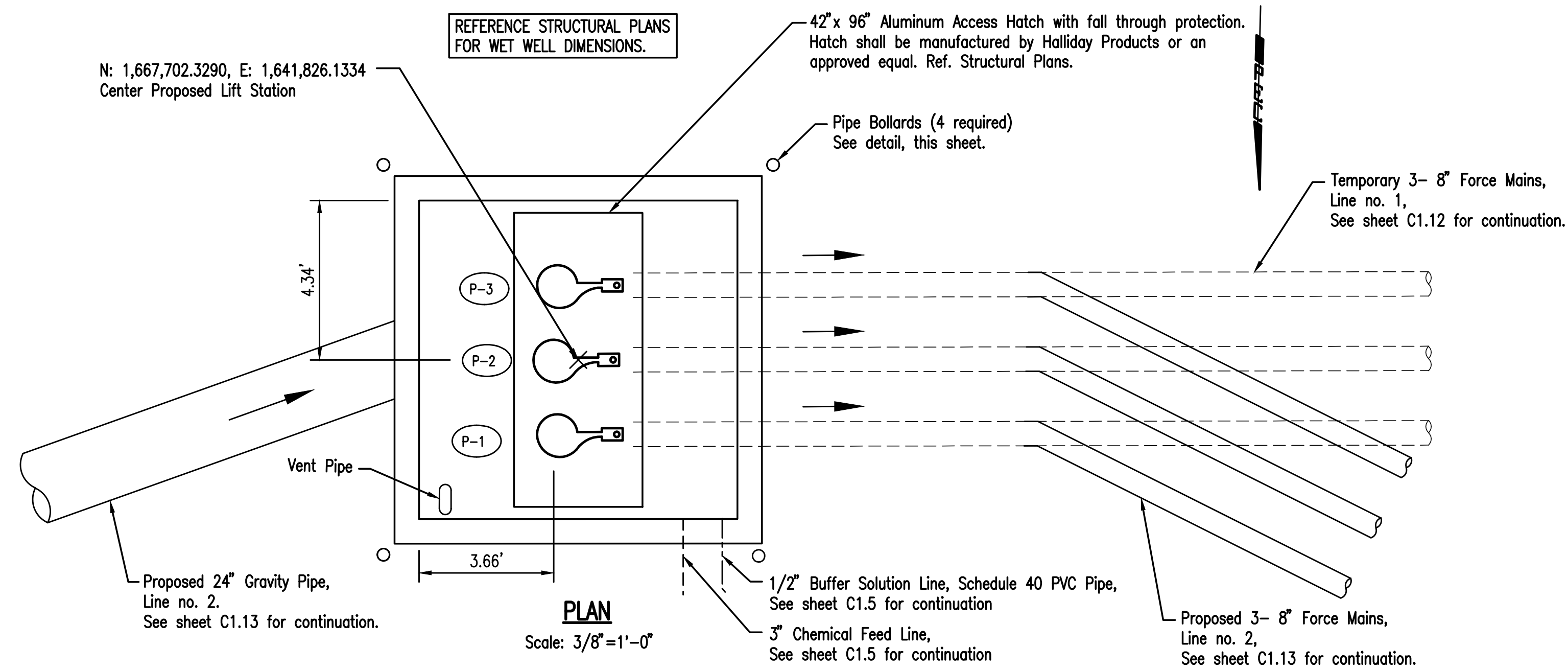


REVISED: NOVEMBER 2015		
<b>STANDARD DRIVE ENTRANCES FULL HEIGHT CURB</b>		
CITY ENGINEER <b>GARY JANZEN, P.E.</b>		
PROJECT NUMBER <b>468-85136</b>	OCA NUMBER <b>620783</b>	DATE
CITY ENGINEER'S OFFICE CITY HALL - SEVENTH FLOOR 455 NORTH MAIN STREET WICHITA, KANSAS 67202-1620 (316) 268-4501		SHEET <b>C1.9</b>

Saved 05-11-2017 8:24:50 AM by CSL  
 \\wchita-civil\2016\160316\001\Drawings\160316-01-C1.9 STANDARD DRIVE ENTRANCES

N: 1,667,702.3290, E: 1,641,826.1334  
Center Proposed Lift Station

REFERENCE STRUCTURAL PLANS  
FOR WET WELL DIMENSIONS.



PROPOSED LIFT STATION NOTES:

1. THE PRICE BID FOR FURNISHING AND INSTALLING THE LIFT STATION INCLUDING THE WET WELL, VALVE VAULT, AND MISCELLANEOUS APPURTENANCES COMPLETE IN PLACE SHALL INCLUDE ALL COSTS FOR FURNISHING AND INSTALLING THE LIFT STATION AS SHOWN IN THE PLANS COMPLETE, IN PLACE AND IN OPERATION. THIS PRICE SHALL INCLUDE THE COST OF CONSTRUCTING AND/OR INSTALLING COMPACTED SUBGRADE, CONCRETE PAVEMENT, ELECTRICAL CONDUIT, ELECTRICAL WIRING, DISCONNECT SWITCH, PUMP CONTROLS, ELECTRICAL POWER SUPPLY, FINISHED GRADING, SPECIAL COATING, AND ANY OTHER INCIDENTALS NECESSARY TO COMPLETE THE WORK AND PLACE THE LIFT STATION INTO SATISFACTORY OPERATION. THE PRICE BID SHALL INCLUDE ALL SANITARY SEWER PIPE AND FORCE MAIN EXTENDED OUTSIDE THE SLAB AS SHOWN IN THE SITE PLAN AND DETAILS (THIS SHEET). WET WELL CONSTRUCTION SHALL MEET THE REQUIREMENTS AS SHOWN ON THE STRUCTURAL PLANS.
2. UNLESS OTHERWISE NOTED, ALL FORCE MAIN PIPING INSIDE THE WET WELL SHALL BE STAINLESS STEEL OR PVC. ALL INTERIOR PIPING SHALL BE 8" FLANGED JOINT.
3. THE CONTRACTOR SHALL PERFORM AN EXFILTRATION TEST ON THE COMPLETED WET WELL. THE WET WELL SHALL BE TESTED INDIVIDUALLY BY SECURELY PLUGGING ALL INLET AND OUTLET PIPES. THE WET WELL SHALL BE FILLED TO ITS FULL DEPTH AND THEN OBSERVED FOR AT LEAST 6 HOURS. EXFILTRATION LOSS FROM THE 5-FOOT DIAMETER WET WELL SHALL NOT EXCEED THE RATE OF 1.20 GALLONS PER FOOT OF WET WELL DEPTH PER DAY. IF EXFILTRATION EXCEEDS THE MAXIMUM LIMITS THE CONTRACTOR SHALL REPAIR LEAKS AND DEFECTS AND THEN RETEST.
4. ALL HARDWARE WITHIN THE WET WELL INCLUDING GUIDE BAR, HOIST CHAIN, HOIST CHAIN CATCH, ETC. SHALL BE STAINLESS STEEL. ALL ANCHOR BOLTS, FLANGE JOINT BOLTS AND NUTS, FASTENERS AND APPURTENANCES SHALL BE STAINLESS STEEL.
5. REFERENCE STRUCTURAL PLAN SHEETS FOR WET WELL DESIGN.
6. REFERENCE ELECTRICAL PLAN SHEETS FOR WET WELL ELECTRICAL DESIGN.
7. CONTRACTOR SHALL LOCATE FLOATS SO FLOW INTO THE WET WELL WILL NOT INTERFERE WITH FLOAT OPERATION.
8. BACKFILL SHALL BE LOW VOLUME CHANGE MATERIAL COMPACTED TO 95% ASTM D-1557 AROUND WET WELL AND UNDER PROPOSED CONCRETE SLAB.
9. IN ADDITION TO COORDINATING INSTALLATION WITH THE CITY OF WICHITA AND TELEMETRY SYSTEMS, CONTRACTOR SHALL PROVIDE START UP, TESTING, AND ADJUSTMENT OF PUMP STATION EQUIPMENT, CONTROLS, AND RELATED COMPONENTS. THESE START UP SERVICES SHALL BE PROVIDED AFTER INSTALLATION OF RELATED UTILITY SERVICES BY WESTAR ENERGY.
10. ALL COSTS FOR THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE LUMP SUM BID ITEM "LIFT STATION." ALL INTERIOR SURFACES OF THE WET WELL SHALL BE COATED WITH A CITY APPROVED COATING SYSTEM, RAVEN 405, SPECTRASHEILD, SAUERREISEN SEWERGARD 210S, ZEBRON, WARREN ENVIRONMENTAL S301 OR AN APPROVED EQUAL.
11. DO NOT SUPPORT DISCHARGE PIPING ON GUIDE RAIL OR BASE ELBOWS. SECURE AISI TYPE 316SS SUPPORTS TO WET WELL WALL.
12. CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER TO VERIFY ALL DIMENSIONS PRIOR TO MANUFACTURE AND INSTALLATION OF EQUIPMENT.
13. THE CONTRACTOR SHALL COORDINATE WITH WESTAR TO EXTEND ELECTRICAL SERVICE TO THE LIFT STATION SITE. THE CONTRACTOR SHALL VERIFY THE ELECTRICAL REQUIREMENTS THAT WILL BE PROVIDED BY WESTAR. THE CONTRACTOR SHALL ALLOW 2 WEEKS FOR WESTAR TO PROVIDE SERVICE. ALL COSTS INCURRED TO EXTEND SERVICES TO THE SITE SHALL BE BORNE BY THE CONTRACTOR. THE CONTACT PEOPLE ARE LISTED BELOW:

WESTAR ENERGY  
ZACH LAWS  
1900 E. CENTRAL  
WICHITA, KS 67201  
(316) 261-6264

- \* DENOTES FLOAT SWITCH ELEVATION
- \*\* DENOTES PUMP CONTROLS BY PRESSURE TRANSDUCER

PUMP SCHEDULE

MARK	TYPE	STATUS	GPM	SHUTOFF HEAD	TDH	EFF. %	HP	RPM	ELECT.
P-1	SUBMERSIBLE	PROPOSED	1660	60	35	57	25	1150	460/60/3
P-2	SUBMERSIBLE	PROPOSED	1660	60	35	57	25	1150	460/60/3
P-3	SUBMERSIBLE	PROPOSED	1660	60	35	57	25	1150	460/60/3

Sowed: 06-15-2017 3:42:22 PM by CSI  
 Plot Scale: 1" = 10'-0" (1:120)  
 U:\Wichita-Civil\2016\160316\001\Main\Drawings\160316-001-C1.10 PROPOSED LIFT STATION DETAILS

No.	Revision	By	Date
-----	----------	----	------

**LIFT STATION REHABILITATION**  
31ST STREET SOUTH AND GLENN AVENUE  
**PROPOSED LIFT STATION DETAILS**

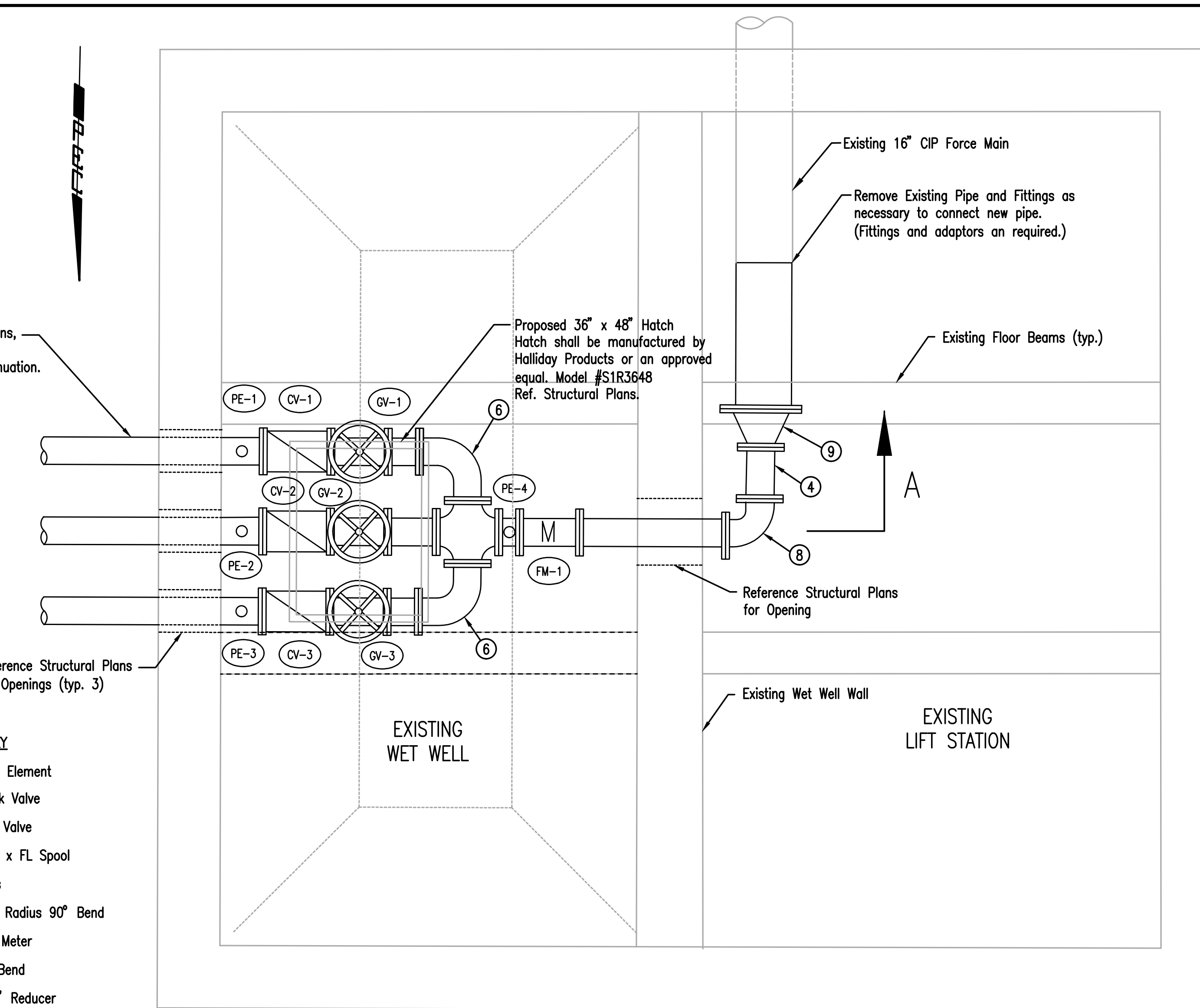
GARY JANZEN, P.E. - CITY ENGINEER  
CITY OF WICHITA PROJECT NO. 468-85136

23090  
06/28/2017  
KANSAS  
PROFESSIONAL ENGINEER

**PEC**  
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.  
303 SOUTH TOPEKA WICHITA, KS 67202  
316-262-2691 www.pec1.com

Designed by RWG, SAD	Job No. 35-160316-1-0042	Date JUNE 2017
Drawn by CSL, KTD	Sht. C1.10	

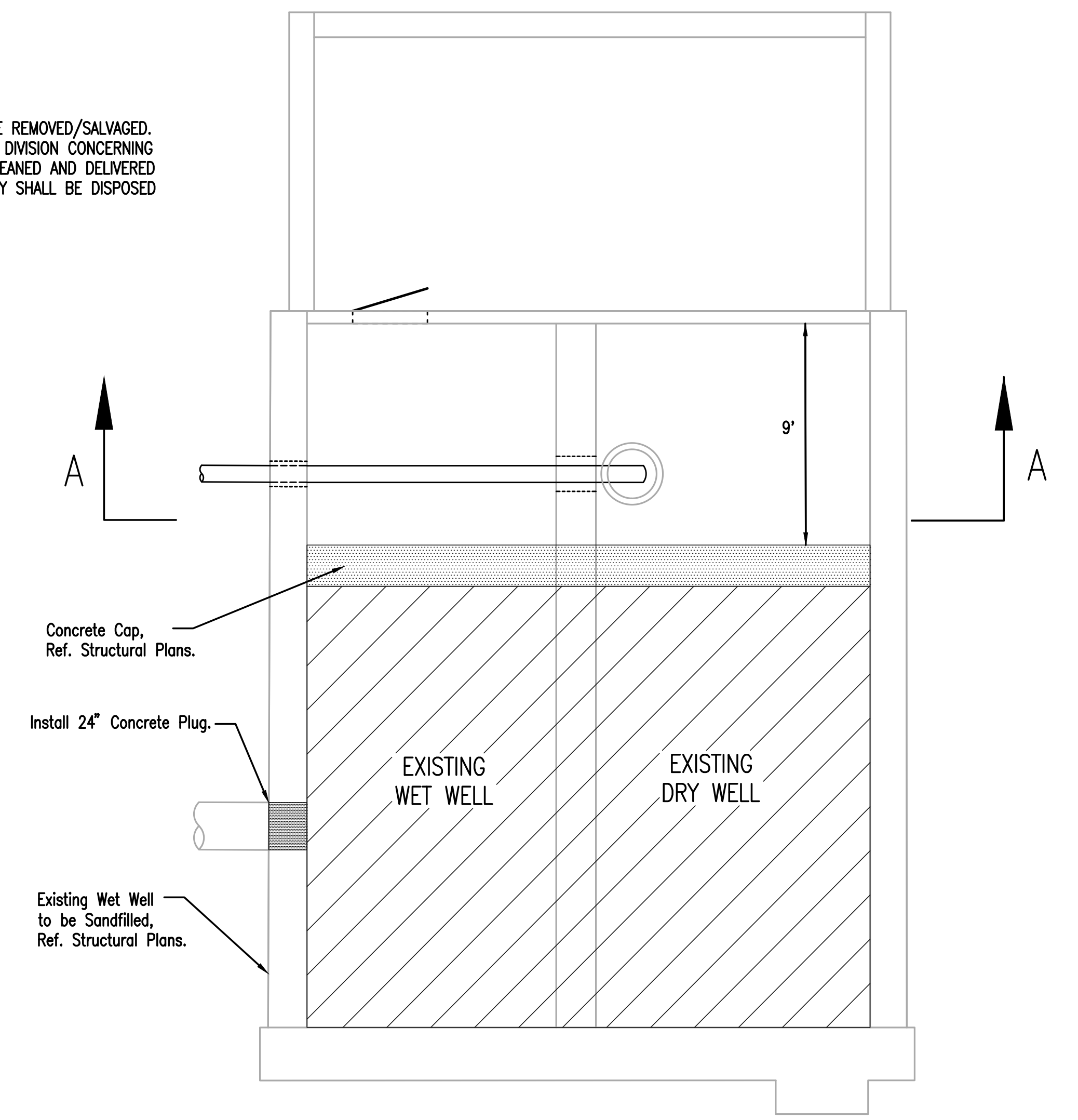
Proposed 3- 8" Force Mains,  
Line no. 2  
See sheet C1.13 for continuation.



**EXISTING LIFT STATION PLAN**  
Scale: 1" = 2'-0"

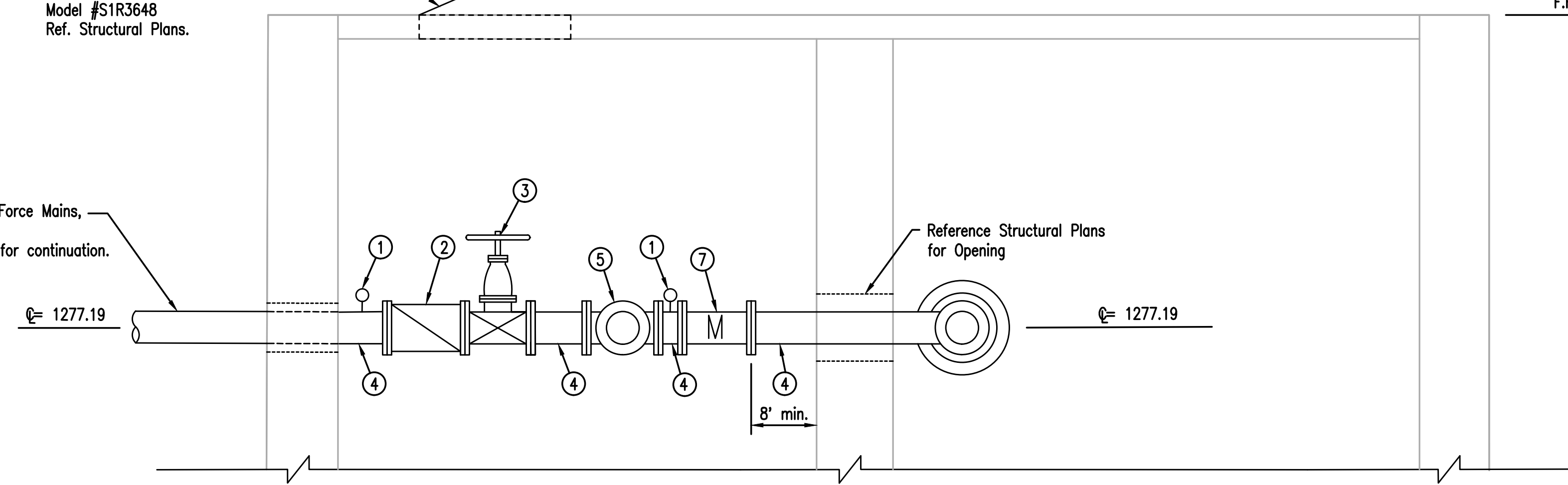
- LEGEND KEY**
- ① 3- Pressure Element
  - ② 3- 8" Check Valve
  - ③ 3- 8" Gate Valve
  - ④ 8" DI CL FL x FL Spool
  - ⑤ 1- 8" Cross
  - ⑥ 2- 8" Long Radius 90° Bend
  - ⑦ 1- 8" Flow Meter
  - ⑧ 1- 8" 90° Bend
  - ⑨ 1- 16" x 8" Reducer

**DEMOLITION NOTES**  
ALL EXISTING EQUIPMENT WITHIN THE EXISTING DRY WELL SHALL BE REMOVED/SALVAGED. THE CONTRACTOR SHALL COORDINATE WITH THE CITY WASTE WATER DIVISION CONCERNING ITEMS TO BE SALVAGED. ANY ITEMS TO BE SALVAGED SHALL BE CLEANED AND DELIVERED TO THE CITY. ITEMS TO BE DISPOSED OF AS DIRECTED BY THE CITY SHALL BE DISPOSED OF IN AN ACCEPTABLE LOCATION.



**EXISTING LIFT STATION PROFILE**  
Not to Scale

Proposed 36" x 48" Hatch (inside Building)  
Hatch shall be manufactured by Halliday Products or an approved equal.  
Model #S1R3648  
Ref. Structural Plans.



**SECTION A-A**  
Not to Scale

Existing Lift Station  
F.F. Elev. = 1283.69

**PRESSURE ELEMENT SCHEDULE**

MARK	LOCATION	STATUS	TYPE				RANGE (Psi)	SPEC SECTION
			INDICATOR	TRANSMITTER	PS-LOW	PS-HIGH		
PE-1	EXISTING LIFT STATION	NEW	x	x	1	1	0-100 psi	43 21 31
PE-2	EXISTING LIFT STATION	NEW	x	x	1	1	0-100 psi	43 21 31
PE-3	EXISTING LIFT STATION	NEW	x	x	1	1	0-100 psi	43 21 31
PE-4	EXISTING LIFT STATION	NEW	x	x	1	1	0-100 psi	43 21 31

**GATE VALVE SCHEDULE**

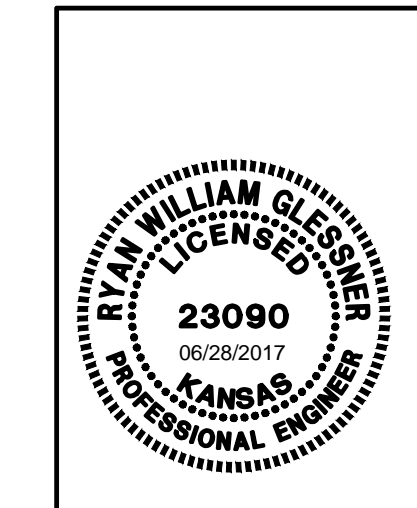
MARK	LOCATION	STATUS	SIZE	FITTINGS	OPERATOR	SPEC SECTION
GV-1	BUILDING	NEW	8"	FLANGE	HANDWHEEL	33 12 16
GV-2	BUILDING	NEW	8"	FLANGE	HANDWHEEL	33 12 16
GV-3	BUILDING	NEW	8"	FLANGE	HANDWHEEL	33 12 16


**CHECK VALVE SCHEDULE**

MARK	LOCATION	STATUS	SIZE	FITTINGS	OPERATOR	SPEC SECTION
CV-1	BUILDING	NEW	8"	FLANGE	LEVER & SPRING	33 12 16
CV-2	BUILDING	NEW	8"	FLANGE	LEVER & SPRING	33 12 16
CV-3	BUILDING	NEW	8"	FLANGE	LEVER & SPRING	33 12 16

**FLOW METER SCHEDULE**

MARK	LOCATION	STATUS	SIZE	FITTINGS	TYPE	SPEC SECTION
FM-1	BUILDING	NEW	8"	FLANGE	MAG METER	43 21 29



No.	Revision	By	Date
<b>LIFT STATION REHABILITATION</b> <b>31ST STREET SOUTH AND GLENN AVENUE</b> <b>EXISTING LIFT STATION DETAILS</b> GARY JANZEN, P.E. - CITY ENGINEER CITY OF WICHITA PROJECT NO. 468-85136			
		PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com	
Designed by	RWG, SAD	Job No.	35-160316-1-0042
Drawn by	CSL, KTD	Date	JUNE 2017
			Shl. C1.11

Sowed: 06-27-2017 4:41:24 PM by CSI  
 Plot Scale: 1" = 2'-0" 4:47:19 PM  
 U:\Wichita-Civil\2016\160316\001\Drawings\160316-001-C1.11 EXISTING LIFT STATION DETAILS

SS 1, Sta. 0+00.00  
Existing 16" CIP Force Main \*  
Remove Exist. 16" Pipe as necessary and install 1- 16" x 8" CIP Tee (Fitting and adapters as necessary for construction.)  
1- By-Pass Port (See detail, sheet C1.14)

SS 1, Sta. 0+36.50  
1- 8" 90° Bend (Defl.= 90°00'00")  
2.45'- 8" DI CL SJ Pipe (N)  
1- 8" x 8" Tee  
1- 8" Check Valve (E) \*\*  
2.02'- 8" DI CL SJ Pipe (N)  
1- 8" x 8" Tee  
1- 8" Check Valve (E) \*\*  
2.03'- 8" DI CL SJ Pipe (N)

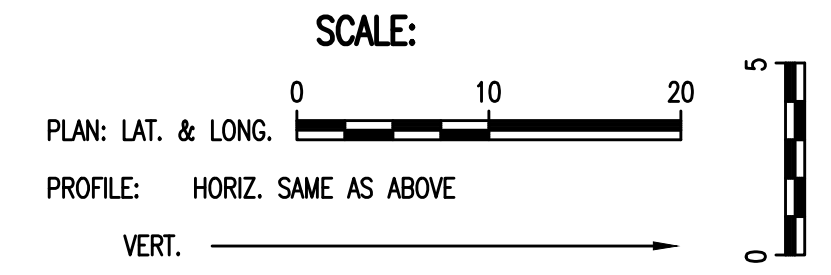
SS 1, Sta. 0+11.50  
1- 8" 45° Bend  
Defl.= 44°51'56"

SS 1, Sta. 0+43.00  
1- 8" 90° Bend (Defl.= 90°00'00")  
1- 8" Check Valve (E) \*\*

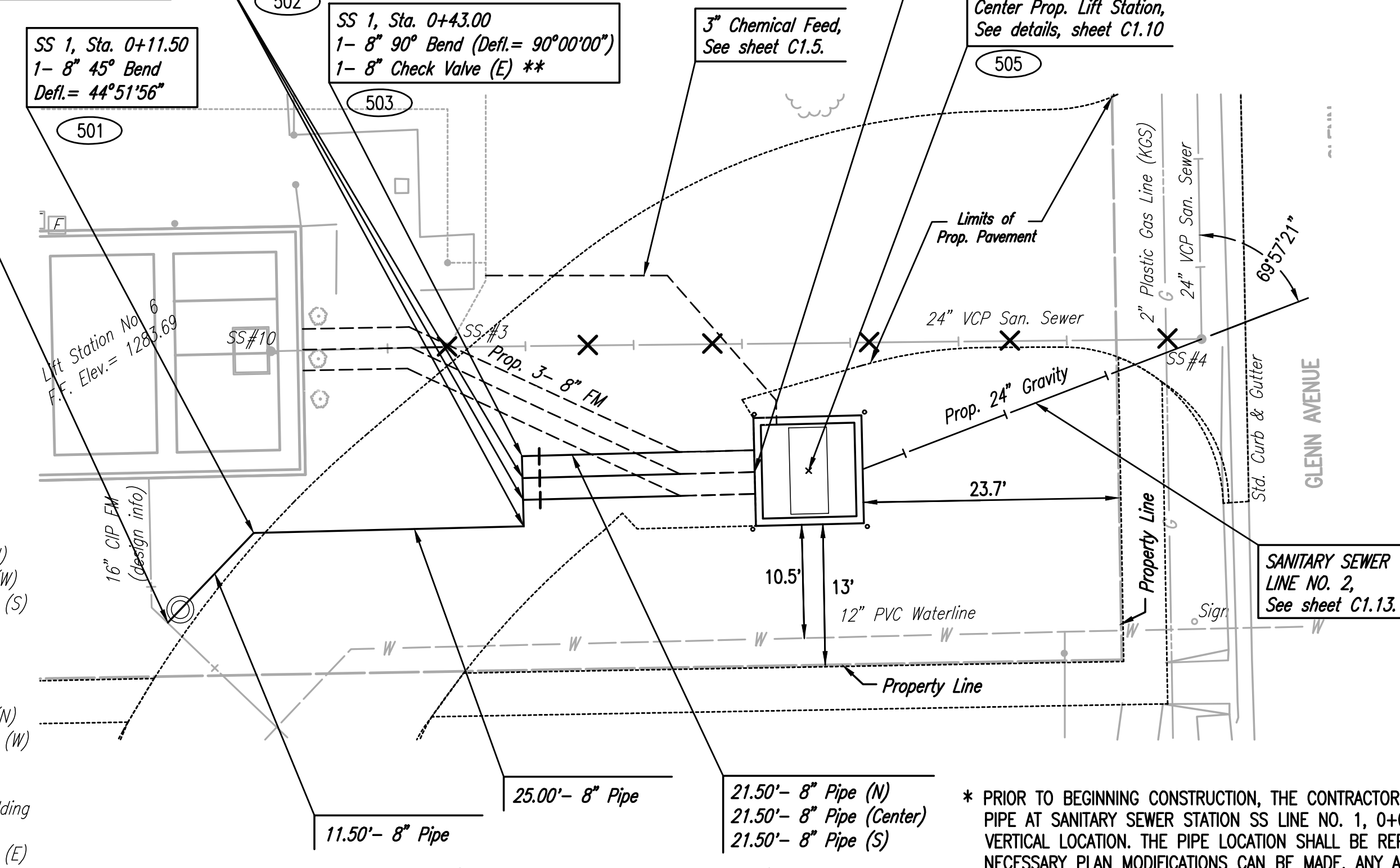
SS 1, Sta. 0+64.50  
Proposed Lift Station,  
See sheet C1.10 for continuation.

500 - SEE SHEET NO. C1.3 FOR SANITARY SEWER COORDINATES (TYP.)

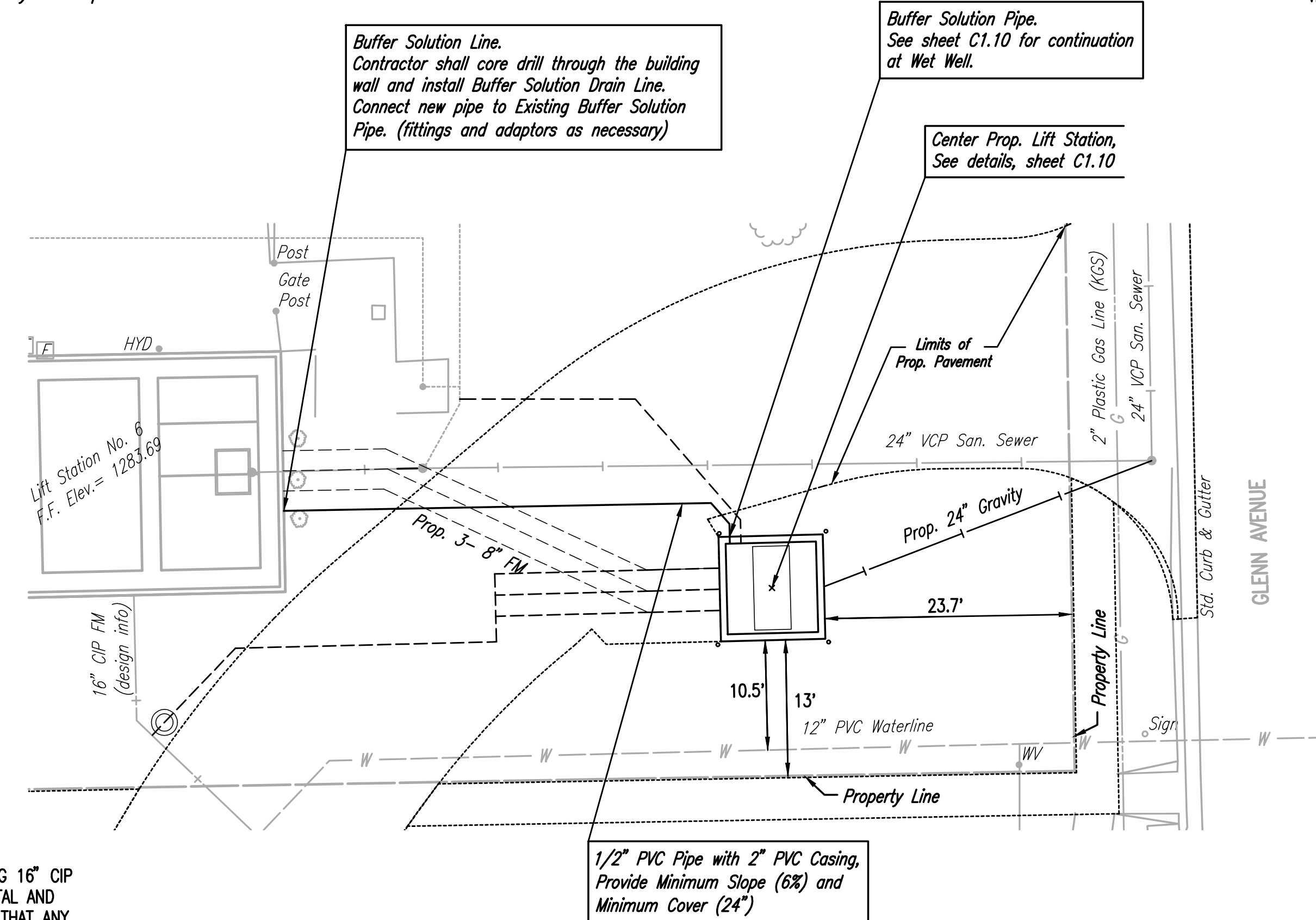
\*\* 8" Utility Swing Check Valve as manufactured by Spears or an approved equal, Model #S1520-008 (This work shall be considered subsidiary to the price bid for pipe in place.)



PLAN	CHECKED	DATE
	CHECKED	



SANITARY SEWER LINE NO. 1 (TEMPORARY FORCE MAIN)



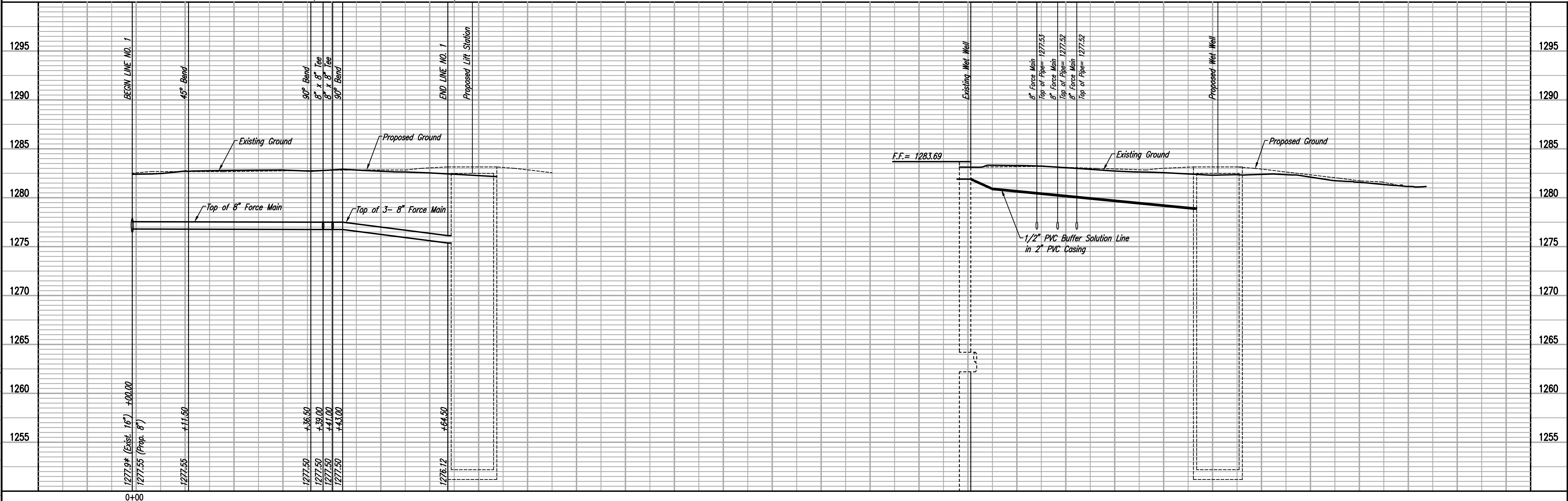
BUFFER SOLUTION LINE

\* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 16" CIP PIPE AT SANITARY SEWER STATION SS LINE NO. 1, 0+00.00 TO VERIFY ITS HORIZONTAL AND VERTICAL LOCATION. THE PIPE LOCATION SHALL BE REPORTED TO THE ENGINEER SO THAT ANY NECESSARY PLAN MODIFICATIONS CAN BE MADE. ANY ADDITIONAL LABOR OR MATERIALS NECESSARY TO COMPLETE THE CONNECTION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT.

EXISTING PIPE/MH TO BE REMOVED, REF. DEMOLITION PLAN



PROFILE	CHECKED	DATE
	CHECKED	



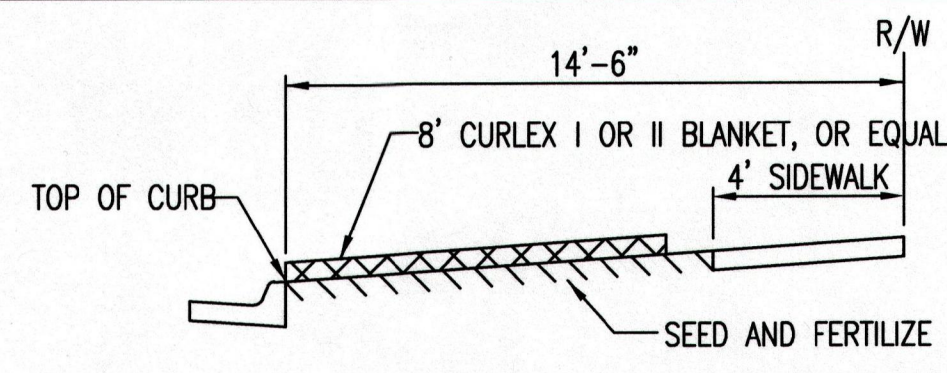
Drawn: 06-27-2017 4:45:29 PM by CSI  
Plot Scale: 1" = 10'-0" (Horizontal), 1" = 4'-0" (Vertical)  
U:\Wichita-Civil\2016\160316-001\C1.12 SANITARY SEWER LINE NO. 1

LIFT STATION REHABILITATION  
31ST STREET SOUTH AND GLENN AVENUE  
SANITARY SEWER LINE NO. 1  
GARY JANZEN, P.E. - CITY ENGINEER  
CITY OF WICHITA PROJECT NO. 468-

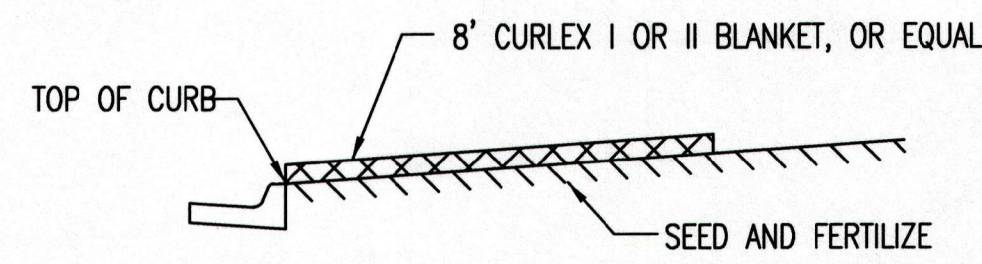
DESIGNED BY: RWC, SAD  
DRAWN BY: CSI, KTD  
JOB NO.: 35-160316-001-0042  
DATE: OCTOBER 2016  
PROFESSIONAL ENGINEERING CONSULTANTS P.A.  
303 SOUTH TOPEKA WICHITA, KS 67202  
316-262-2691 www.pec1.com





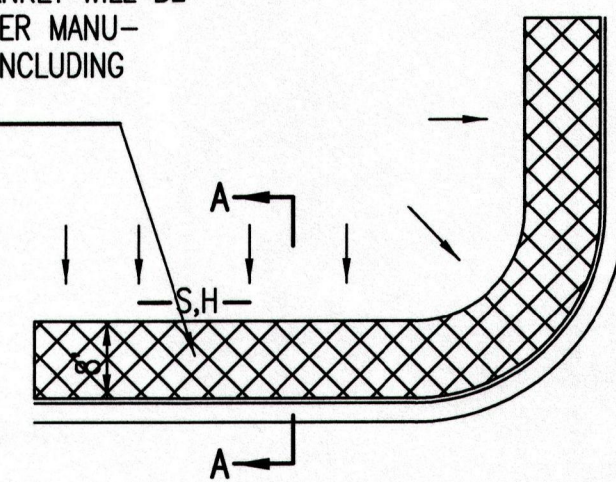


SECTION B-B

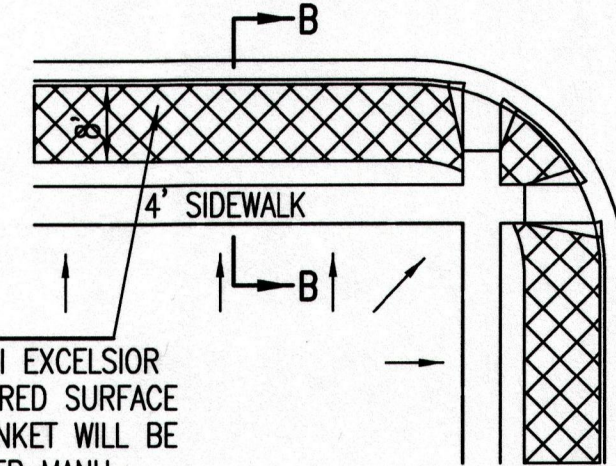


SECTION A-A

INSTALL 8' WIDE CURLEX I OR II EXCELSIOR BLANKET, OR EQUAL, ON PREPARED SURFACE BACK OF CURB. EDGE OF BLANKET WILL BE AT BACK OF CURB. INSTALL PER MANUFACTURERS RECOMMENDATION, INCLUDING STAPLES. (SEE DETAIL)



SOUTH STREET

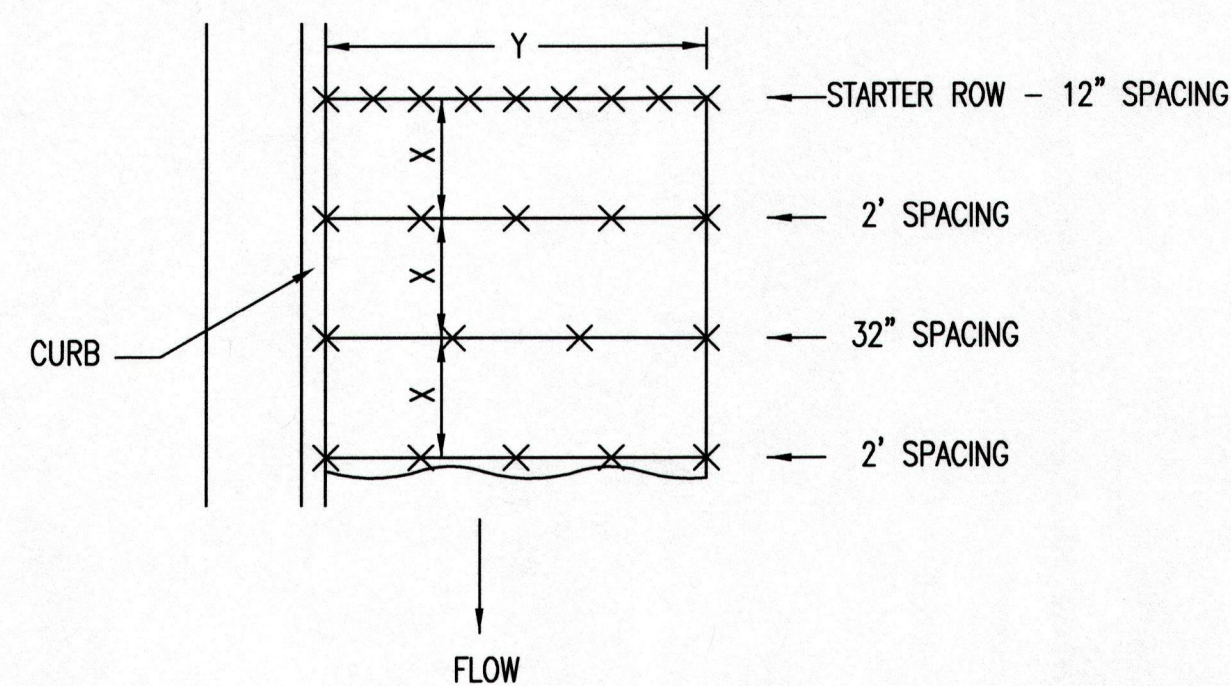


INSTALL 8' WIDE CURLEX I OR II EXCELSIOR BLANKET, OR EQUAL, ON PREPARED SURFACE BACK OF CURB. EDGE OF BLANKET WILL BE AT BACK OF CURB. INSTALL PER MANUFACTURERS RECOMMENDATION, INCLUDING STAPLES. (SEE DETAIL)

**GENERAL NOTES**

- EXCELSIOR MAT TO BE INSTALLED WHEN SOD IS NOT SPECIFIED ON PROJECT.
- EXCELSIOR BLANKET TO BE INSTALLED OVER SEED AND FERTILIZER, AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
- AFTER INSTALLATION OF EXCELSIOR BLANKET, AT LOCATIONS WHERE CONCENTRATED FLOW CARRIES SEDIMENT OVER THE CURB AND INTO THE GUTTER, SUPPLEMENTAL EROSION CONTROL DEVICES WILL BE INSTALLED BY THE CONTRACTOR AS NEEDED, TO FIX THE PROBLEM.

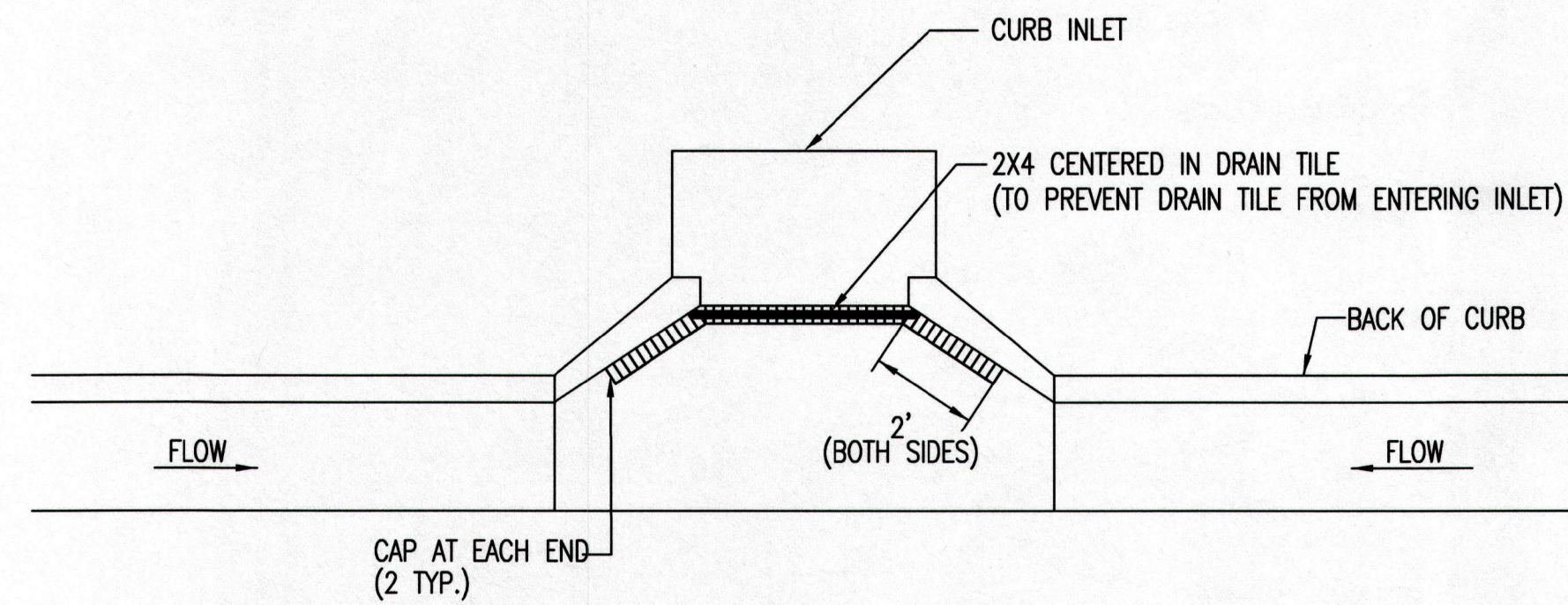
**BACK OF CURB PROTECTION DETAIL**



STAPLE PATTERN

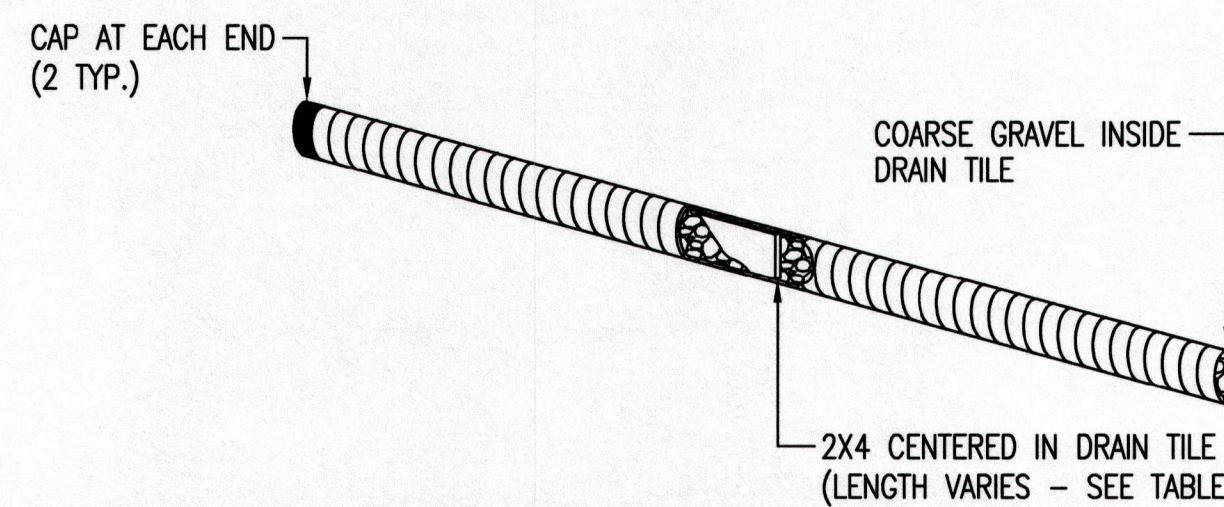
NOTES: USE 6" SEAM OVERLAP  
(X & Y = RECOMMENDED BY MANUFACTURE)

**DETAILS FOR APPROVED EROSION CONTROL MAT**



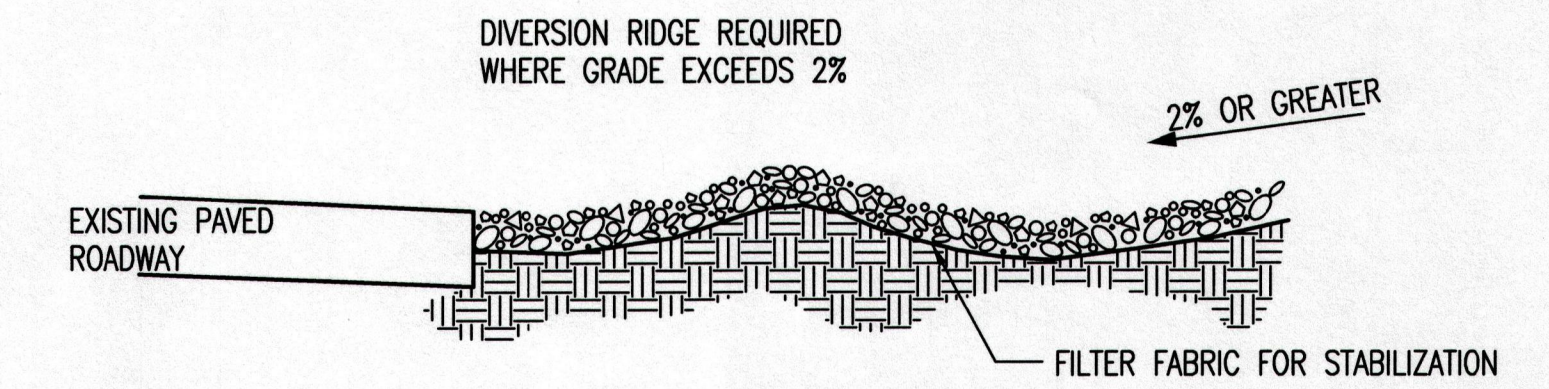
NOTE: PLACE 4" PERFORATED PVC PIPE, FILLED WITH 1/2"-1" DIA. GRAVEL, IN FRONT OF CURB INLET AS SHOWN.

2X4 LENGTH	INLET TYPE	INLET OPENING
5'-6"	1-A	5'-0"
10'-6"	1-A	10'-0"
15'-6"	1-A	15'-0"

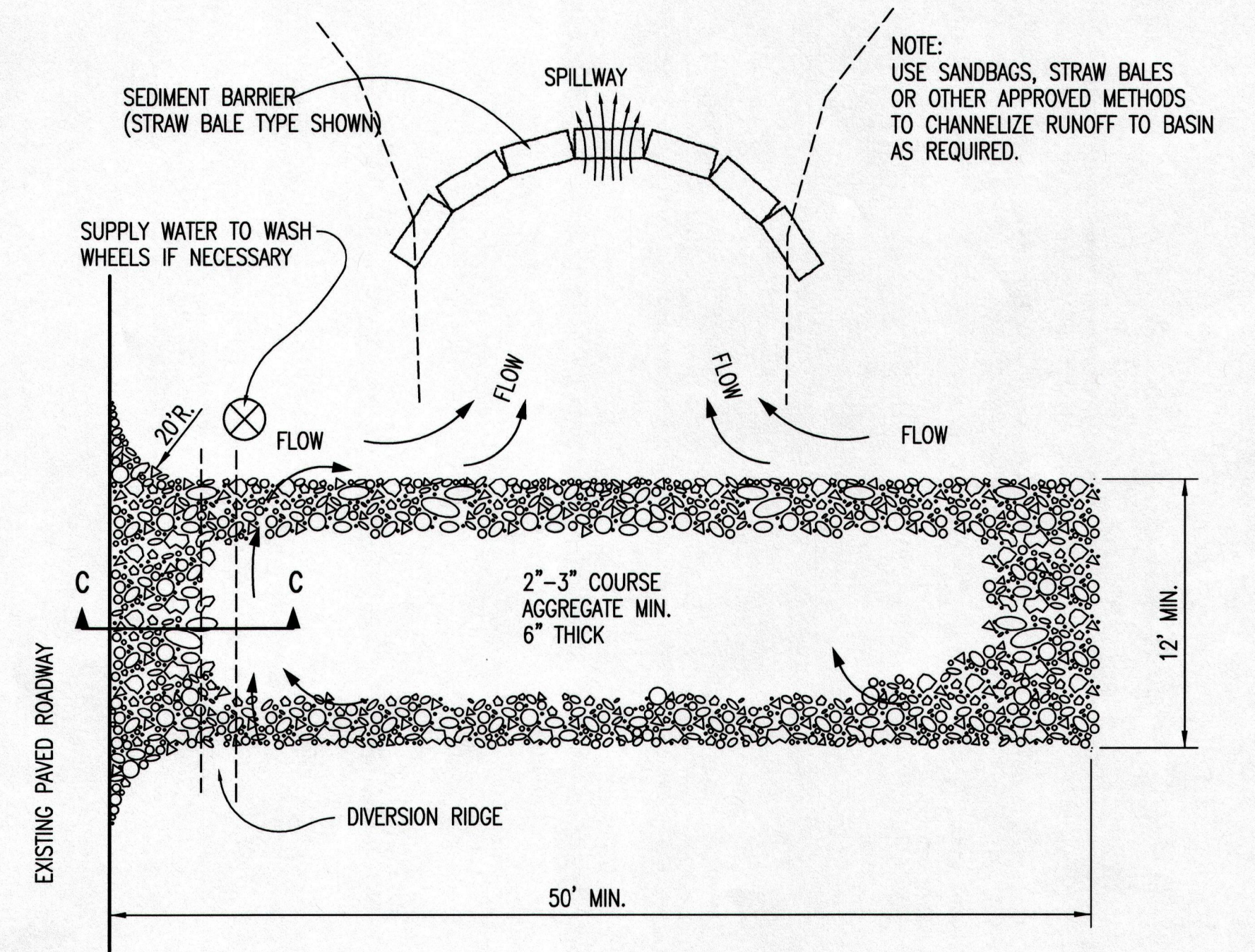


**CURB INLET PROTECTION**

4" PERFORATED PIPE W/ GRAVEL



SECTION C-C

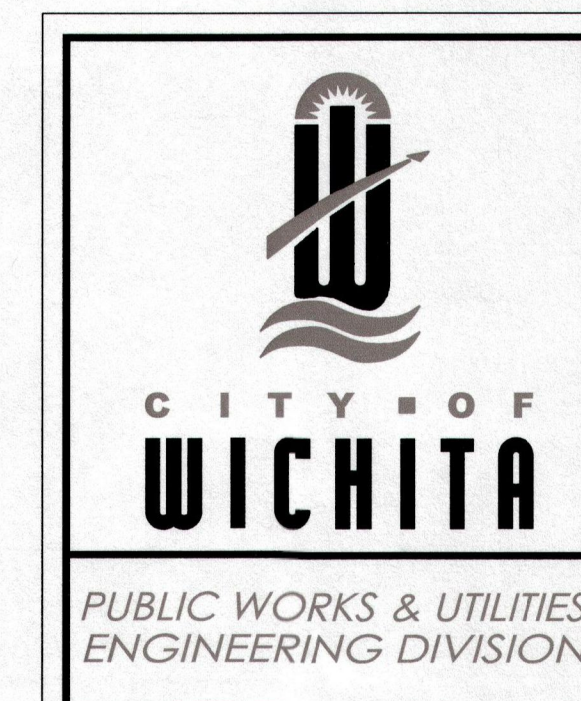


**STABILIZED CONSTRUCTION ENTRANCE**

**GENERAL NOTES**

- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
- DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.

REVISION DATE: MAY 2013



**BACK OF CURB PROTECTION, CURB INLET PROTECTION AND CONSTRUCTION ENTRANCE**

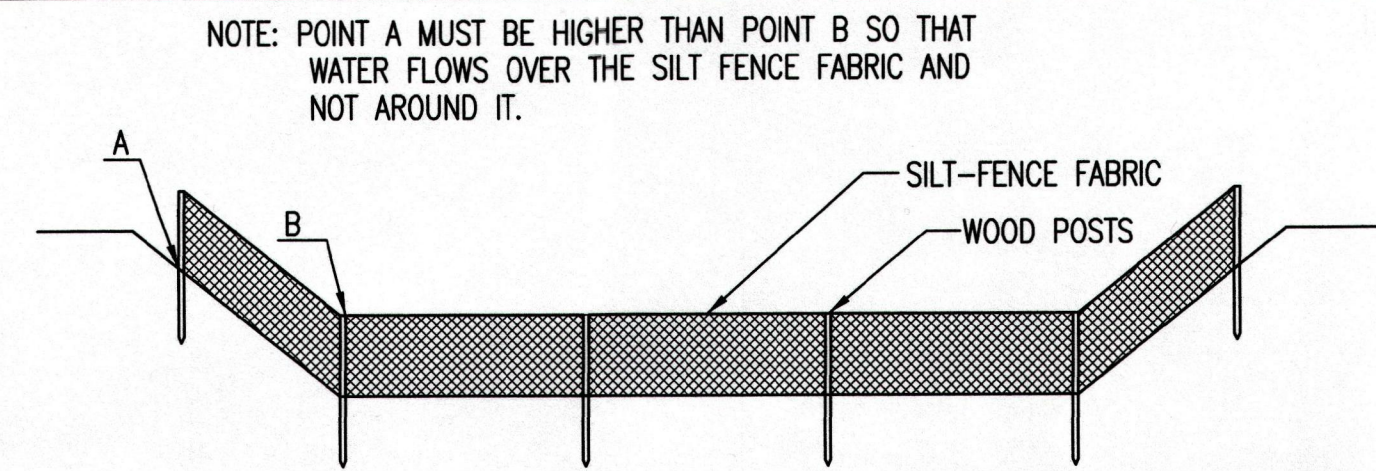
CITY ENGINEER  
**GARY JANZEN, P.E.**

PROJECT NUMBER 468-85136	OCA NUMBER 620783	DATE
-----------------------------	----------------------	------

CITY ENGINEER'S OFFICE  
CITY HALL - SEVENTH FLOOR  
455 NORTH MAIN STREET  
WICHITA, KANSAS 67202-1620  
(316) 268-4501

SHEET

C1.15



**ELEVATION**  
**SILT FENCE DITCH CHECKS**  
(STREAM PROTECTION)

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. SILT FENCE FABRIC SHOULD BE ATTACHED TO THE WOODEN POSTS WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

PLACE SILT FENCE IN DITCHES WHERE IT IS UNLIKELY THAT IT WILL BE OVERTOPPED. WATER SHOULD FLOW THROUGH A SILT FENCE DITCH CHECK, NOT OVER IT. SILT FENCE DITCH CHECKS OFTEN FAIL WHEN OVERTOPPED. SILT FENCE DITCH CHECKS SHOULD BE PLACED PERPENDICULAR TO THE FLOWLINE OF THE DITCH. THE SILT FENCE SHOULD EXTEND FAR ENOUGH SO THAT THE GROUND LEVEL AT THE ENDS OF THE FENCE IS HIGHER THAN THE TOP OF THE LOW POINT OF THE FENCE. THIS PREVENTS WATER FROM FLOWING AROUND THE CHECK. SILT FENCE DITCH CHECKS SHOULD NOT BE PLACED IN DITCHES WHERE HIGH FLOWS ARE EXPECTED. ROCK CHECKS SHOULD BE USED INSTEAD. SILT FENCE SHOULD BE PLACED IN DITCHES WITH SLOPES OF 6% OR LESS. FOR SLOPES STEEPER THAN 6%, ROCK CHECKS SHOULD BE USED.

THE FOLLOWING TABLE PROVIDES CHECK SPACING FOR A GIVEN DITCH GRADE:

DITCH CHECK GRADE (%)	SPACING CHECK SPACING (FEET)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

**PROPER INSTALLATION METHOD:**

EXCAVATE A TRENCH PERPENDICULAR TO THE DITCH FLOWLINE THAT IS AT LEAST 12" DEEP BY 6" WIDE. EXTEND THE TRENCH IN A STRAIGHT LINE ALONG THE ENTIRE LENGTH OF THE PROPOSED DITCH CHECK. PLACE THE SOIL ON THE UPSTREAM SIDE OF THE TRENCH FOR LATER USE. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC ON THE DOWNSTREAM SIDE OF THE TRENCH. PLACE THE EDGE OF THE FABRIC IN THE TRENCH STARTING AT THE TOP UPSLOPE EDGE OF THE TRENCH. LINE TWO SIDES OF THE TRENCH WITH THE FABRIC AS SHOWN ON DETAIL. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT FENCE FABRIC SHOULD REMAIN EXPOSED. LAY THE EXPOSED SILT FENCE ON THE UPSLOPE SIDE OF THE TRENCH TO CLEAR AN AREA FOR DRIVING IN THE POSTS. JUST DOWNSTREAM OF THE TRENCH, DRIVE POSTS INTO THE GROUND TO A DEPTH OF AT LEAST 24". PLACE POSTS NO MORE THAN 4' APART. ATTACH THE SILT FENCE TO THE ANCHORED POST WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

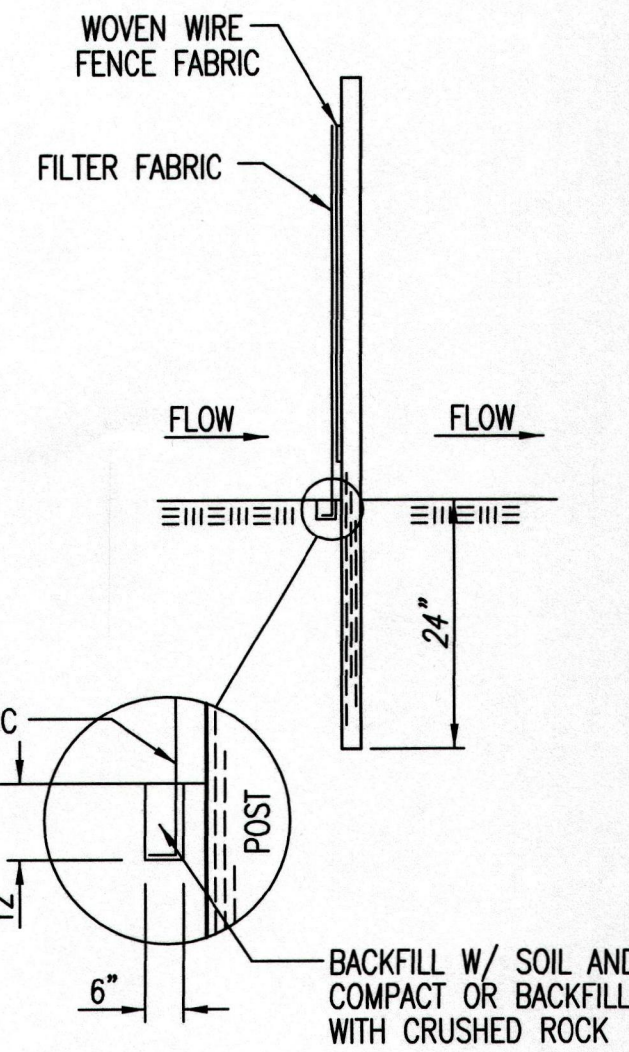
**LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:**

WATER SHOULD FLOW THROUGH A SILT FENCE DITCH CHECK—NOT OVER IT. PLACE SILT FENCE IN DITCHES WHERE IT IS UNLIKELY THAT IT WILL BE OVERTOPPED. SILT FENCE INSTALLATIONS QUICKLY DETERIORATE WHEN WATER OVERTOPS THEM. DO NOT PLACE SILT FENCE POSTS ON THE UPSLOPE SIDE OF THE SILT FENCE FABRIC. IN THIS CONFIGURATION, THE FORCE OF THE WATER IS NOT RESTRICTED BY THE POSTS, BUT ONLY BY THE STAPLES (WIRE, ZIP TIES, NAILS, ETC.). THE SILT FENCE WILL RIP AND FAIL. DO NOT PLACE A SILT FENCE DITCH CHECK DIRECTLY IN FRONT OF A CULVERT OUTLET. IT WILL NOT STAND UP TO THE CONCENTRATED FLOW. DO NOT PLACE SILT FENCE DITCH CHECKS IN DITCHES THAT WILL LIKELY EXPERIENCE HIGH FLOWS. THEY WILL NOT STAND UP TO CONCENTRATED FLOW. FOLLOW PRESCRIBED DITCH CHECK SPACING GUIDELINES. IF SPACING GUIDELINES ARE EXCEEDED, EROSION WILL OCCUR BETWEEN THE DITCH CHECKS. DO NOT ALLOW WATER TO FLOW AROUND THE DITCH CHECK. MAKE SURE THAT THE DITCH CHECK IS LONG ENOUGH SO THAT THE GROUND LEVEL AT THE ENDS OF THE FENCE IS HIGHER THAN THE LOW POINT ON THE TOP OF THE FENCE. DO NOT PLACE SILT FENCE DITCH CHECKS IN CHANNELS WITH SHALLOW SOILS UNDERLAIN BY ROCK. IF THE CHECK IS NOT ANCHORED SUFFICIENTLY, IT WILL WASH OUT.

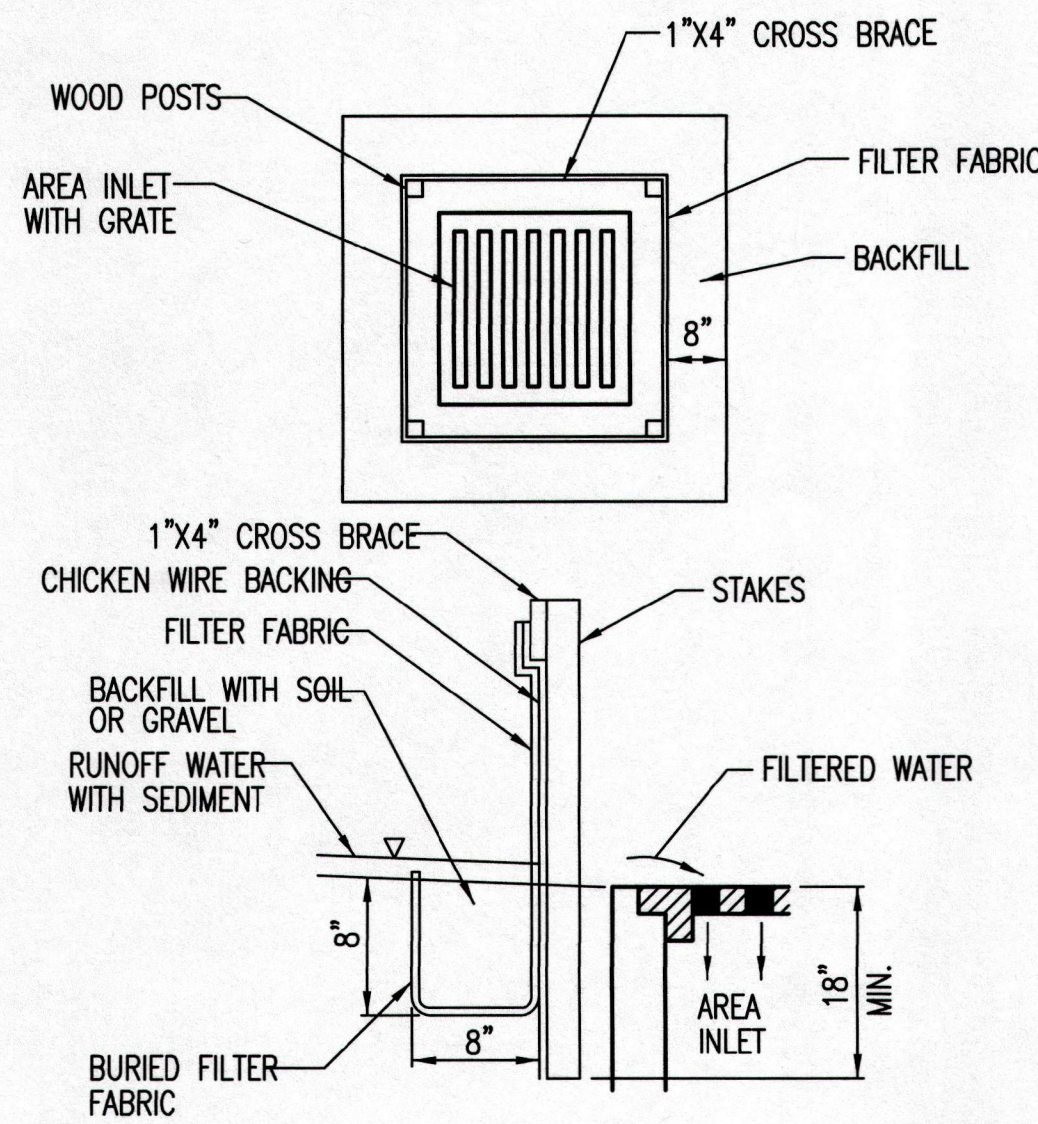
**INSPECTION AND MAINTENANCE:**

SILT FENCE DITCH CHECKS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- DOES WATER FLOW AROUND THE DITCH CHECK?
- DOES WATER FLOW UNDER THE DITCH CHECK?
- DOES THE SILT FENCE SAG EXCESSIVELY?
- HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE DITCH CHECK?



**ANCHOR TRENCH DETAIL**



**SILT FENCE BARRIERS FOR AREA INLETS**  
(INLET PROTECTION)

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE WIRE OR POLYMERIC MESH BACKING USED TO HELP SUPPORT THE SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. THE MATERIAL USED TO FRAME THE TOPS OF THE POSTS SHOULD BE 1" BY 4" BOARDS. SILT FENCE FABRIC AND SUPPORT BACKING SHOULD BE ATTACHED TO THE WOODEN POSTS AND FRAME WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

PLACE A SILT FENCE DROP INLET BARRIER IN A LOCATION WHERE IT IS UNLIKELY TO BE OVERTOPPED. WATER SHOULD FLOW THROUGH SILT FENCE, NOT OVER IT. SILT FENCE BARRIERS FOR AREA INLETS OFTEN FAIL WHEN REPEATEDLY OVERTOPPED. WHEN USED AS A BARRIER FOR AREA INLETS, SILT FENCE FABRIC AND POSTS MUST BE SUPPORTED AT THE TOP BY A WOODEN FRAME. WHEN A SILT FENCE BARRIER FOR AREA INLETS IS LOCATED NEAR AN INLET THAT HAS STEEP APPROACH SLOPES, THE STORAGE CAPACITY BEHIND THE BARRIER IS DRASTICALLY REDUCED. TIMELY REMOVAL OF SEDIMENT MUST OCCUR FOR A BARRIER TO OPERATE PROPERLY IN THIS LOCATION.

**PROPER INSTALLATION METHOD:**

EXCAVATE A TRENCH AROUND THE PERIMETER OF THE AREA INLET THAT IS AT LEAST 8" DEEP BY 8" WIDE. DRIVE POSTS TO A DEPTH OF AT LEAST 18" AROUND THE PERIMETER OF THE AREA INLET. THE DISTANCE BETWEEN POSTS SHOULD BE 4' OR LESS. IF THE DISTANCE BETWEEN TWO ADJACENT CORNER POSTS IS MORE THAN 4', ADD ANOTHER POST(S) BETWEEN THEM. CONNECT THE TOPS OF ALL THE POSTS WITH A WOODEN FRAME MADE OF 1" BY 4" BOARDS. USE NAILS OR SCREWS FOR FASTENING. ATTACH THE WIRE OR POLYMERIC-MESH BACKING TO THE OUTSIDE OF THE POST/FRAME STRUCTURE WITH STAPLES, WIRE, ZIP TIES, OR NAILS. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC LONG ENOUGH TO WRAP AROUND THE PERIMETER OF THE AREA INLET. ADD MORE LENGTH FOR OVERLAPPING THE FABRIC JOINT. PLACE THE EDGE OF THE FABRIC IN THE TRENCH, STARTING AT THE OUTSIDE EDGE OF THE TRENCH. LINE ALL THREE SIDES OF THE TRENCH WITH THE FABRIC. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT FENCE FABRIC SHOULD REMAIN EXPOSED. ATTACH THE SILT FENCE TO THE OUTSIDE OF THE POST/FRAME STRUCTURE WITH STAPLES, WIRE, ZIP TIES, OR NAILS. THE JOINT SHOULD BE OVERLAPPED TO THE NEXT POST.

NOTE: WHEN A SILT FENCE BARRIER FOR AREA INLET IS PLACED IN A SHALLOW MEDIAN DITCH, MAKE SURE THAT THE TOP OF THE BARRIER IS NOT HIGHER THAN THE PAVED ROAD. IN THIS CONFIGURATION, WATER MAY SPREAD ONTO THE ROADWAY CAUSING A HAZARDOUS CONDITION.

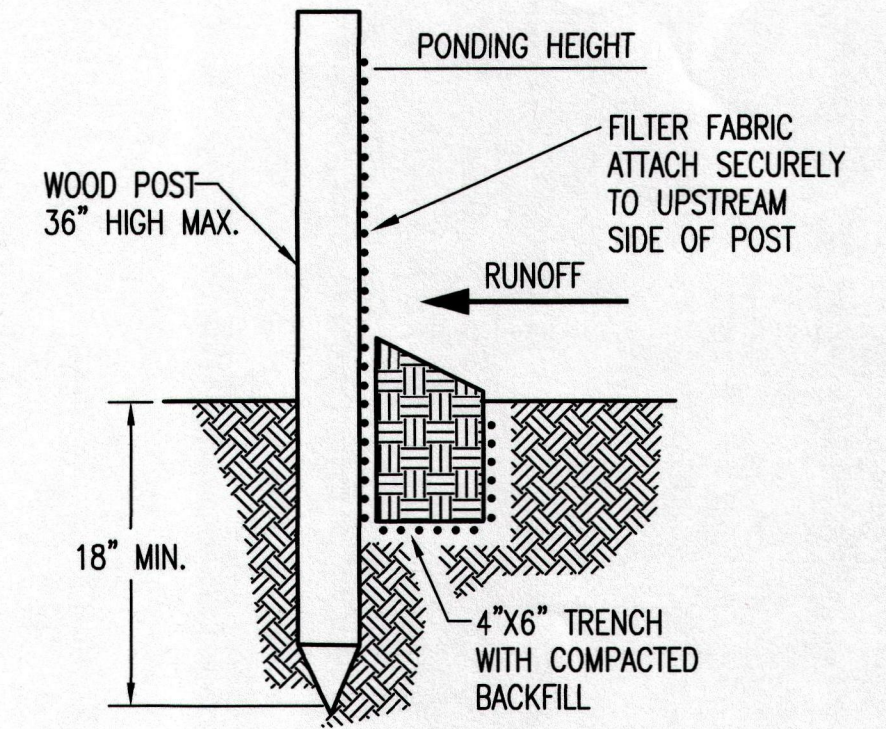
**LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:**

WATER SHOULD FLOW THROUGH A SILT FENCE BARRIER FOR AREA INLET—NOT OVER IT. PLACE A SILT FENCE BARRIER FOR AREA INLET IN A LOCATION WHERE IT IS UNLIKELY TO BE OVERTOPPED. SILT FENCE BARRIER FOR AREA INLETS OFTEN FAIL WHEN REPEATEDLY OVERTOPPED. DO NOT PLACE POSTS ON THE OUTSIDE OF THE SILT FENCE BARRIER FOR AREA INLET. IN THIS CONFIGURATION, THE FORCE OF THE WATER IS NOT RESTRICTED BY THE POSTS, BUT ONLY BY THE STAPLES (WIRE, ZIP TIES, NAILS, ETC.). THE SILT FENCE WILL RIP AND FAIL. DO NOT INSTALL SILT FENCE BARRIER FOR AREA INLETS WITHOUT FRAMING THE TOP OF THE POSTS. THE CORNER POSTS AROUND AREA INLETS ARE STRESSED IN TWO DIRECTIONS WHEREAS A NORMAL SILT FENCE IS ONLY STRESSED IN ONE DIRECTION. THIS ADDED STRESS REQUIRES MORE SUPPORT.

**INSPECTION AND MAINTENANCE:**

SILT FENCE BARRIER FOR AREA INLETS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- DOES WATER FLOW UNDER THE SILT FENCE?
- DOES THE SILT FENCE SAG EXCESSIVELY?
- HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE AREA INLET BARRIER?



**SILT FENCE BARRIERS**

**MATERIAL SPECIFICATION:**

SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. SILT FENCE FABRIC SHOULD BE ATTACHED TO THE WOODEN POSTS WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**PLACEMENT:**

A SLOPE BARRIER SHOULD BE USED AT THE TOE OF A SLOPE WHEN A DITCH DOES NOT EXIST. THE SLOPE BARRIER SHOULD BE PLACED ON NEARLY LEVEL GROUND 5' TO 10' AWAY FROM THE TOE OF A SLOPE. THE BARRIER IS PLACED AWAY FROM THE TOE OF THE SLOPE TO PROVIDE ADEQUATE STORAGE FOR SETTLING OUT SEDIMENT. WHEN PRACTICABLE, SILT FENCE SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. SILT FENCE SLOPE BARRIERS CAN ALSO BE PLACED ALONG RIGHT-OF-WAY FENCE LINES TO KEEP SEDIMENT FROM CROSSING ONTO ADJACENT PROPERTY. WHEN PLACED IN THIS MANNER, THE SLOPE BARRIER WILL NOT LIKELY FOLLOW CONTOURS.

**PROPER INSTALLATION METHOD:**

EXCAVATE A TRENCH THE LENGTH OF THE PLANNED SLOPE BARRIER THAT IS 6" DEEP BY 4" WIDE. MAKE SURE THAT THE TRENCH IS EXCAVATED ALONG A SINGLE CONTOUR. WHEN PRACTICABLE, SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. PLACE THE SOIL ON THE UPSLOPE SIDE OF THE TRENCH FOR LATER USE. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC ON THE DOWNSLOPE SIDE OF THE TRENCH. PLACE THE EDGE OF THE FABRIC IN THE TRENCH STARTING AT THE TOP UPSLOPE EDGE. LINE ALL THREE SIDES OF THE TRENCH WITH THE FABRIC. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT. AFTER FILLING THE TRENCH, APPROXIMATELY 24" TO 36" OF SILT-FENCE FABRIC SHOULD REMAIN EXPOSED. LAY THE EXPOSED SILT FENCE UPSLOPE OF THE TRENCH TO CLEAR AN AREA FOR DRIVING IN THE POSTS. JUST DOWNSLOPE OF THE TRENCH, DRIVE POSTS INTO THE GROUND TO A DEPTH OF AT LEAST 18". PLACE POSTS NO MORE THAN 4' APART. ATTACH THE SILT FENCE TO THE ANCHORED POST WITH STAPLES, WIRE, ZIP TIES, OR NAILS.

**LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:**

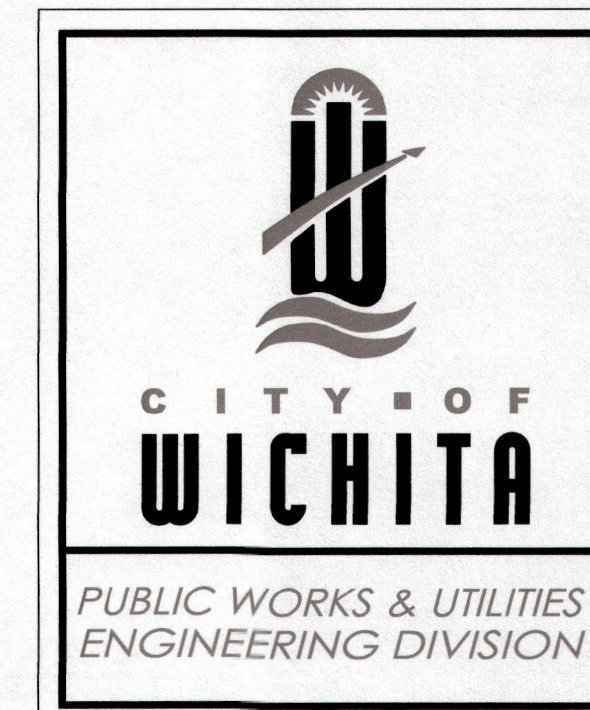
WHEN PRACTICABLE, DO NOT PLACE SILT FENCE SLOPE BARRIERS ACROSS CONTOURS. SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. WHEN THE FLOW CONCENTRATES, IT OVERTOPS THE BARRIER AND THE SILT FENCE SLOPE BARRIER QUICKLY DETERIORATES. DO NOT PLACE SILT-FENCE POSTS ON THE UPSLOPE SIDE OF THE SILT FENCE FABRIC. IN THIS CONFIGURATION, THE FORCE OF THE WATER IS NOT RESTRICTED BY THE POSTS, BUT ONLY BY THE STAPLES (WIRE, ZIP TIES, NAILS, ETC.). THE SILT FENCE WILL RIP AND FAIL. DO NOT PLACE SILT FENCE SLOPE BARRIERS IN AREAS WITH SHALLOW SOILS UNDERLAIN BY ROCK. IF THE BARRIER IS NOT SUFFICIENTLY ANCHORED, IT WILL WASH OUT. SILT FENCE SLOPE BARRIERS MUST BE DIG INTO THE GROUND—SILT FENCE AT GROUND LEVEL DOES NOT WORK BECAUSE WATER WILL FLOW UNDERNEATH.

**INSPECTION AND MAINTENANCE:**

SILT FENCE SLOPE BARRIERS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- ARE THERE ANY POINTS ALONG THE SLOPE BARRIER WHERE WATER IS CONCENTRATING?
- DOES WATER FLOW UNDER THE SLOPE BARRIER?
- DO THE SILT FENCES SAG EXCESSIVELY?
- HAS THE SILT FENCE TORN OR BECOME DETACHED FROM THE POSTS?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE SLOPE BARRIER?

REVISION DATE: MAY 2013



**SILT FENCE DITCH CHECK AND BARRIER DETAILS**

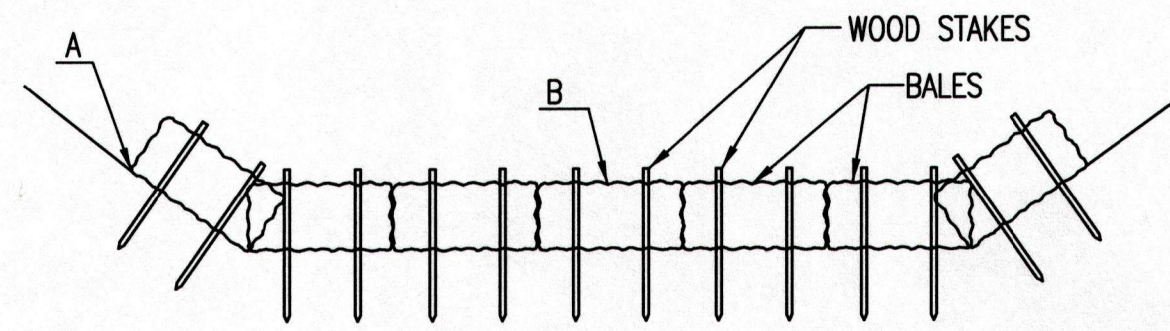
CITY ENGINEER  
**GARY JANZEN, P.E.**

PROJECT NUMBER	OCA NUMBER	DATE
468-85136	620783	

CITY ENGINEER'S OFFICE  
CITY HALL - SEVENTH FLOOR  
455 NORTH MAIN STREET  
WICHITA, KANSAS 67202-1620  
(316) 268-4501

SHEET  
**C1.16**

NOTE: POINT A MUST BE HIGHER THAN POINT B SO THAT WATER FLOWS OVER THE BALES AND NOT AROUND THEM.



### STRAW BALE DITCH CHECKS

#### MATERIAL SPECIFICATION:

BALE DITCH CHECKS MAY BE CONSTRUCTED OF WHEAT STRAW, OAT STRAW, PRAIRIE HAY, OR BROMEGRASS HAY THAT IS FREE OF WEEDS DECLARED NOXIOUS BY THE KANSAS STATE BOARD OF AGRICULTURE. THE STAKES USED TO ANCHOR THE BALES SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. OPTIONAL: THE DOWNSTREAM SCOUR APRON SHOULD BE CONSTRUCTED OF A DOUBLE-NETTED STRAW EROSION-CONTROL BLANKET AT LEAST 6' WIDE. OPTIONAL: THE METAL LANDSCAPE STAPLES USED TO ANCHOR THE EROSION-CONTROL BLANKET SHOULD BE AT LEAST 8" LONG.

#### PLACEMENT:

BALE DITCH CHECKS SHOULD BE PLACED PERPENDICULAR TO THE FLOWLINE OF THE DITCH. THE DITCH CHECK SHOULD EXTEND FAR ENOUGH SO THAT THE GROUND LEVEL AT THE ENDS OF THE CHECK IS HIGHER THAN THE TOP OF THE LOWEST CENTER BALE. THIS PREVENTS WATER FROM FLOWING AROUND THE CHECK. STRAW BALE DITCH CHECKS SHOULD NOT BE PLACED IN DITCHES WHERE HIGH FLOWS ARE EXPECTED. ROCK CHECKS SHOULD BE USED INSTEAD. BALES SHOULD BE PLACED IN DITCHES WITH SLOPES OF 6% OR LESS. FOR SLOPES STEEPER THAN 6%, ROCK CHECKS SHOULD BE USED. THE FOLLOWING TABLE PROVIDES CHECK SPACING FOR A GIVEN DITCH GRADE:

DITCH CHECK SPACING	DITCH GRADE (%)	CHECK SPACING (FEET)
	0.5	200
	1.0	200
	2.0	100
	3.0	65
	4.0	50
	5.0	40
	6.0	30

#### PROPER INSTALLATION METHOD:

EXCAVATE A TRENCH PERPENDICULAR TO THE DITCH FLOWLINE THAT IS 4" DEEP AND A BALE'S WIDTH WIDE. EXTEND THE TRENCH IN A STRAIGHT LINE ALONG THE ENTIRE LENGTH OF THE PROPOSED DITCH CHECK. PLACE THE SOIL ON THE UPSTREAM SIDE OF THE TRENCH—IT WILL BE USED LATER. OPTIONAL: ON THE DOWNSTREAM SIDE OF THE TRENCH, ROLL OUT A LENGTH OF EROSION-CONTROL BLANKET (SCOUR APRON) EQUAL TO THE LENGTH OF THE TRENCH. PLACE THE UPSTREAM EDGE OF THE EROSION-CONTROL BLANKET ALONG THE BOTTOM UPSTREAM EDGE OF THE TRENCH. THE EROSION CONTROL BLANKET SHOULD BE ANCHORED IN THE TRENCH WITH ONE ROW OF 8" LANDSCAPE STAPLES PLACED ON 18" CENTERS. THE REMAINDER OF THE EROSION-CONTROL BLANKET (THE PORTION THAT IS NOT LYING IN THE TRENCH) WILL SERVE AS THE DOWNSTREAM SCOUR APRON. THIS SECTION OF THE BLANKET SHOULD BE ANCHORED TO THE GROUND WITH 8" LANDSCAPE STAPLES PLACED AROUND THE PERIMETER OF THE BLANKET ON 18" CENTERS. THE REMAINDER OF THE BLANKET SHOULD BE ANCHORED USING TWO EVENLY SPACED ROWS OF 8" LANDSCAPE STAPLES ON 18" CENTERS PLACED PERPENDICULAR TO THE FLOWLINE OF THE DITCH. PLACE THE BALES IN THE TRENCH, MAKING SURE THAT THEY ARE BUTTED TIGHTLY. TWO STAKES SHOULD BE DRIVEN THROUGH EACH BALE ALONG THE CENTERLINE OF THE DITCH CHECK, APPROXIMATELY 6" TO 8" IN FROM THE BALE ENDS. STAKES SHOULD BE DRIVEN AT LEAST 12" INTO THE GROUND. ONCE ALL THE BALES HAVE BEEN INSTALLED AND ANCHORED, PLACE THE EXCAVATED SOIL AGAINST THE UPSTREAM SIDE OF THE CHECK AND COMPACT IT. THE COMPACTED SOIL SHOULD BE NO MORE THAN 3" TO 4" DEEP AND EXTEND UPSTREAM NO MORE THAN 24".

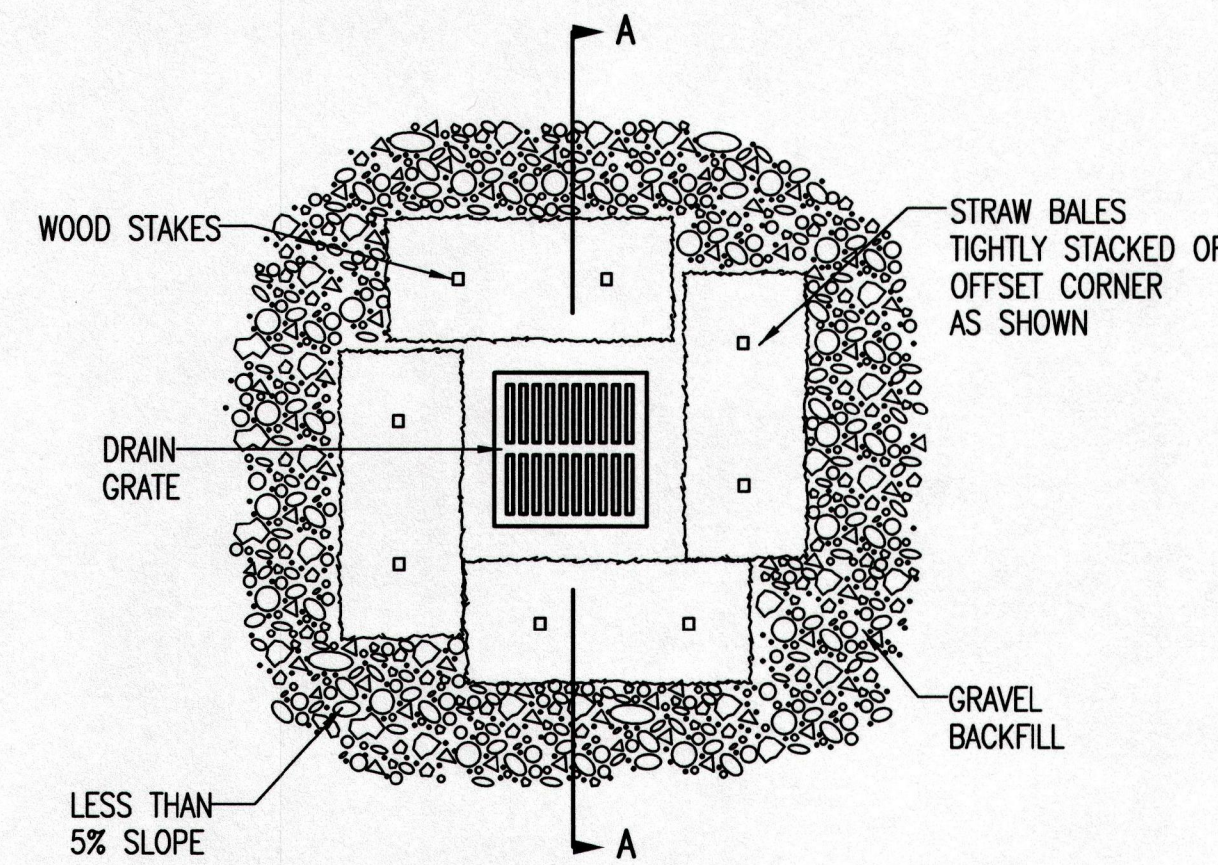
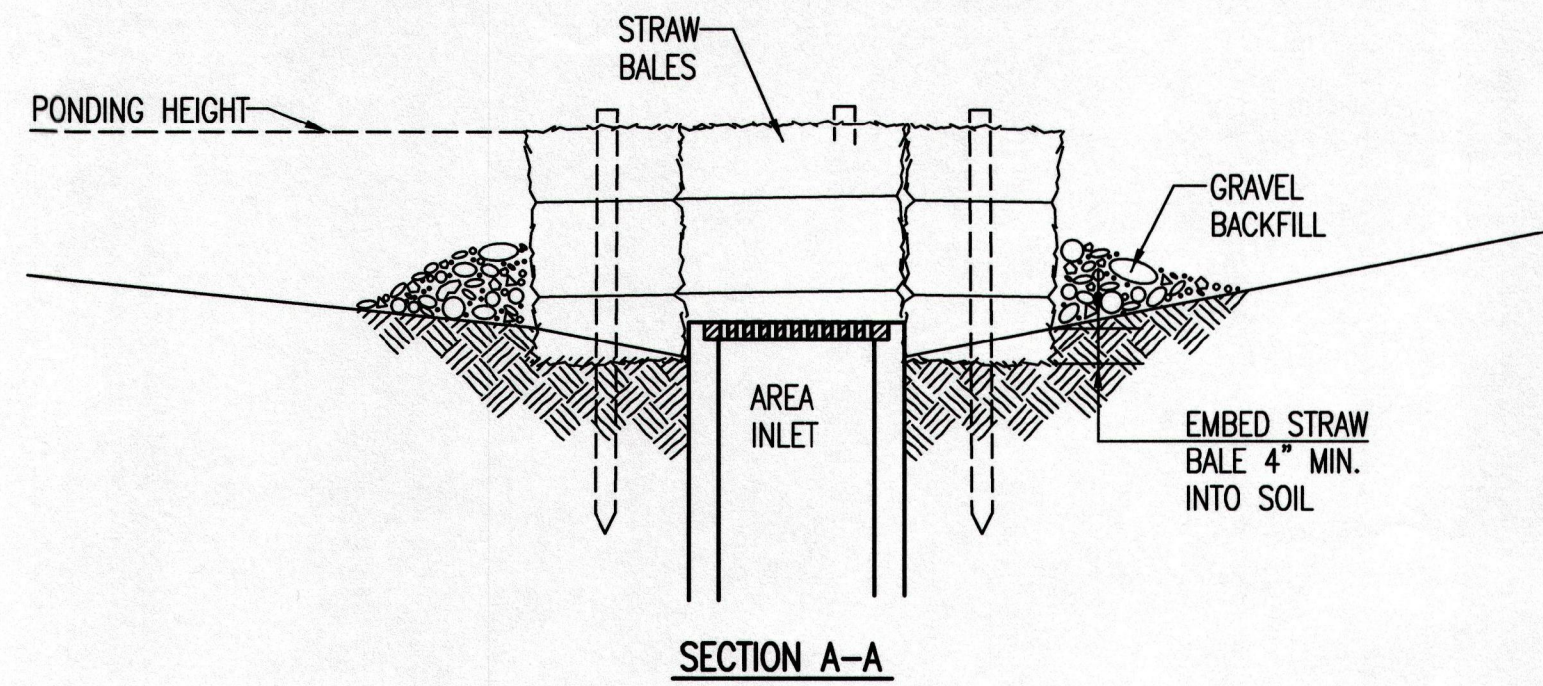
#### LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:

DO NOT PLACE A BALE DITCH CHECK DIRECTLY IN FRONT OF A CULVERT OUTLET. IT WILL NOT STAND UP TO THE CONCENTRATED FLOW. DO NOT PLACE BALE DITCH CHECKS IN DITCHES THAT WILL LIKELY EXPERIENCE HIGH FLOWS. THEY WILL NOT STAND UP TO CONCENTRATED FLOW. FOLLOW PRESCRIBED DITCH-CHECK SPACING GUIDELINES. IF SPACING GUIDELINES ARE EXCEEDED, EROSION WILL OCCUR BETWEEN THE DITCH CHECKS. DO NOT ALLOW WATER TO FLOW AROUND THE DITCH CHECK. MAKE SURE THAT THE DITCH CHECK IS LONG ENOUGH SO THAT THE GROUND LEVEL AT THE ENDS OF THE CHECK IS HIGHER THAN THE TOP OF THE LOWEST CENTER BALE. DO NOT PLACE BALE DITCH CHECKS IN CHANNELS WITH SHALLOW SOILS UNDERLAIN BY ROCK. IF THE CHECK IS NOT ANCHORED SUFFICIENTLY, IT WILL WASH OUT. BALE DITCH CHECKS MUST BE DUG INTO THE GROUND. BALES AT GROUND LEVEL DO NOT WORK BECAUSE THEY ALLOW WATER TO FLOW UNDER THE CHECK.

#### INSPECTION AND MAINTENANCE:

BALE DITCH CHECKS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- DOES WATER FLOW AROUND THE DITCH CHECK?
- DOES WATER FLOW UNDER THE DITCH CHECK?
- DOES WATER FLOW THROUGH SPACES BETWEEN ABUTTING BALES?
- ARE ANY BALES AND/OR SCOUR APRONS (OPTIONAL) DISLODGED?
- ARE BALES DECOMPOSING DUE TO AGE AND/OR WATER DAMAGE?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE DITCH CHECK?



### STRAW BALE BARRIERS FOR AREA INLETS (INLET PROTECTION)

#### MATERIAL SPECIFICATION:

BALE AREA INLET BARRIERS SHOULD BE CONSTRUCTED OF WHEAT STRAW, OAT STRAW, PRAIRIE HAY, OR BROMEGRASS HAY THAT IS FREE OF WEEDS DECLARED NOXIOUS BY THE KANSAS STATE BOARD OF AGRICULTURE. THE STAKES USED TO ANCHOR THE BALES SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. TWINE SHOULD BE USED TO BIND BALES. THE USE OF WIRE BINDING IS PROHIBITED BECAUSE IT DOES NOT BIODEGRADE READILY.

#### PLACEMENT:

BALE AREA INLET BARRIERS SHOULD BE PLACED DIRECTLY AROUND THE PERIMETER OF A DROP INLET. WHEN A BALE AREA INLET BARRIER IS LOCATED NEAR AN INLET THAT HAS STEEP APPROACH SLOPES, THE STORAGE CAPACITY BEHIND THE BARRIER IS DRastically REDUCED. TIMELY REMOVAL OF SEDIMENT MUST OCCUR FOR A BARRIER TO OPERATE PROPERLY IN THIS LOCATION.

#### PROPER INSTALLATION METHOD:

EXCAVATE A TRENCH AROUND THE PERIMETER OF THE AREA INLET THAT IS AT LEAST 4" DEEP BY A BALE'S WIDTH WIDE. PLACE THE BALES IN THE TRENCH, MAKING SURE THAT THEY ARE BUTTED TIGHTLY. SOME BALES MAY NEED TO BE SHORTENED TO FIT INTO THE TRENCH AROUND THE AREA INLET. TWO STAKES SHOULD BE DRIVEN THROUGH EACH BALE, APPROXIMATELY 6" TO 8" IN FROM THE BALE ENDS. STAKES SHOULD BE DRIVEN AT LEAST 12" INTO THE GROUND. ONCE ALL THE BALES HAVE BEEN INSTALLED AND ANCHORED, PLACE THE EXCAVATED SOIL AGAINST THE RECEIVING SIDE OF THE BARRIER AND COMPACT IT. THE COMPACTED SOIL SHOULD BE NO MORE THAN 3" TO 4" DEEP. NOTE: WHEN A BALE AREA INLET BARRIER IS PLACED IN A SHALLOW MEDIAN DITCH, MAKE SURE THAT THE TOP OF THE BARRIER IS NOT HIGHER THAN THE PAVED ROAD. IN THIS CONFIGURATION, WATER MAY SPREAD ONTO THE ROADWAY CAUSING A HAZARDOUS CONDITION.

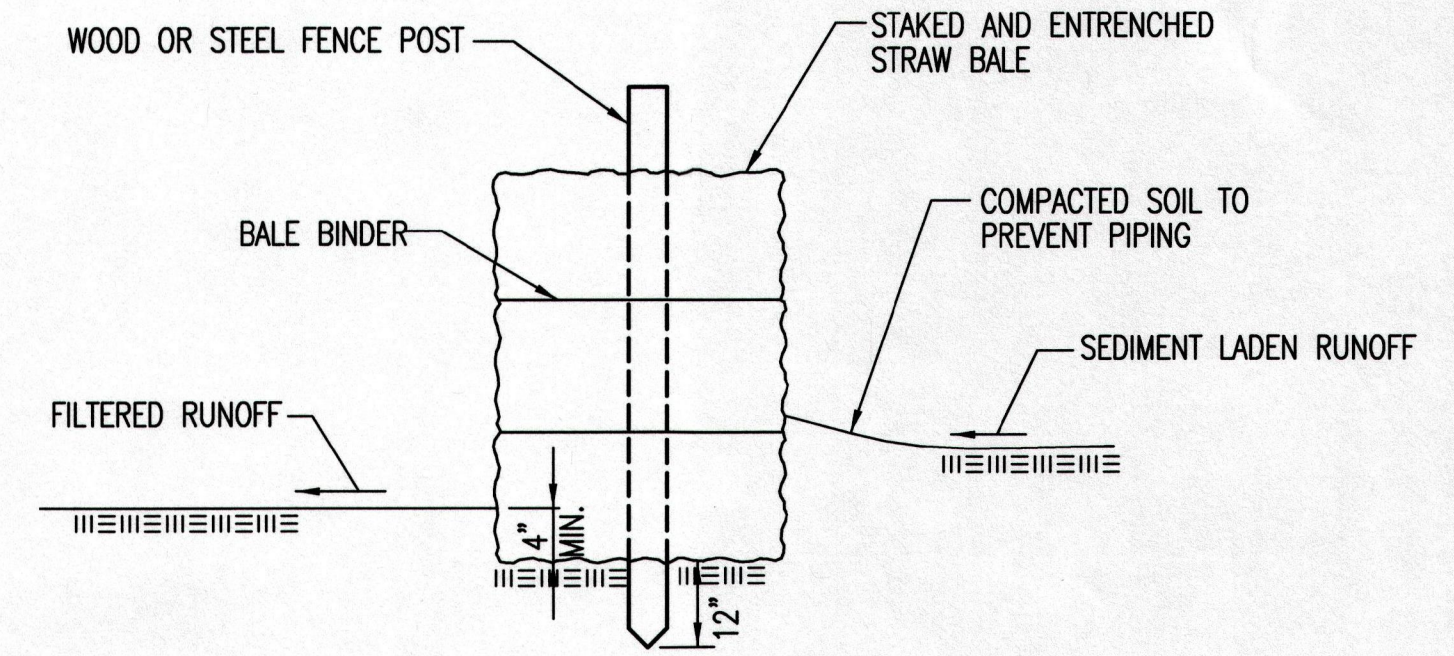
#### LIST OF COMMON PLACEMENT INSTALLATION MISTAKES TO AVOID:

BALES SHOULD BE PLACED DIRECTLY AGAINST THE PERIMETER OF THE AREA INLET. THIS ALLOWS OVERTOPPING WATER TO FLOW DIRECTLY INTO THE INLET INSTEAD OF ONTO NEARBY SOIL CAUSING SCOUR. BALE AREA INLET BARRIERS MUST BE DUG INTO THE GROUND. BALES AT GROUND LEVEL DO NOT WORK BECAUSE THEY ALLOW WATER TO FLOW UNDER THE BARRIER.

#### INSPECTION AND MAINTENANCE:

BALE AREA INLET BARRIERS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- DOES WATER FLOW UNDER THE AREA INLET BARRIER?
- DOES WATER FLOW THROUGH SPACES BETWEEN ABUTTING BALES?
- ARE ANY BALES DISLODGED?
- ARE BALES DECOMPOSING DUE TO AGE AND/OR WATER DAMAGE?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE AREA INLET BARRIER?



### STRAW BALE BARRIERS

#### MATERIAL SPECIFICATION:

BALE SLOPE BARRIERS MAY BE CONSTRUCTED OF WHEAT STRAW, OAT STRAW, PRAIRIE HAY, OR BROMEGRASS HAY THAT IS FREE OF WEEDS DECLARED NOXIOUS BY THE KANSAS STATE BOARD OF AGRICULTURE. THE STAKES USED TO ANCHOR THE BALES SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 2" SQUARE (NOMINAL) BY 4' LONG. TWINE SHOULD BE USED TO BIND BALES. THE USE OF WIRE BINDING IS PROHIBITED BECAUSE IT DOES NOT BIODEGRADE READILY.

#### PLACEMENT:

A SLOPE BARRIER SHOULD BE USED AT THE TOE OF A SLOPE WHEN A DITCH DOES NOT EXIST. THE SLOPE BARRIER SHOULD BE PLACED ON NEARLY LEVEL GROUND 5' TO 10' AWAY FROM THE TOE OF A SLOPE. THE BARRIER IS PLACED AWAY FROM THE TOE OF THE SLOPE TO PROVIDE ADEQUATE STORAGE FOR SETTLING OUT SEDIMENT. WHEN PRACTICABLE, BALE SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. BALE SLOPE BARRIERS CAN ALSO BE PLACED ALONG RIGHT-OF-WAY FENCE LINES TO KEEP SEDIMENT FROM CROSSING ONTO ADJACENT PROPERTY. WHEN PLACED IN THIS MANNER, THE SLOPE BARRIER WILL NOT LIKELY FOLLOW CONTOURS.

#### PROPER INSTALLATION METHOD:

EXCAVATE A TRENCH THE LENGTH OF THE PLANNED SLOPE BARRIER THAT IS 4" DEEP AND A BALE'S WIDTH WIDE. MAKE SURE THAT THE TRENCH IS EXCAVATED ALONG A SINGLE CONTOUR. WHEN PRACTICABLE, SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. PLACE THE SOIL ON THE UPSLOPE SIDE OF THE TRENCH FOR LATER USE. PLACE THE BALES IN THE TRENCH, MAKING SURE THAT THEY ARE BUTTED TIGHTLY. TWO STAKES SHOULD BE DRIVEN THROUGH EACH BALE ALONG THE CENTERLINE OF THE DITCH CHECK, APPROXIMATELY 6" TO 8" IN FROM THE BALE ENDS. STAKES SHOULD BE DRIVEN AT LEAST 12" INTO THE GROUND. ONCE ALL THE BALES HAVE BEEN INSTALLED AND ANCHORED, PLACE THE EXCAVATED SOIL AGAINST THE UPSLOPE SIDE OF THE CHECK AND COMPACT IT. THE COMPACTED SOIL SHOULD BE NO MORE THAN 3" TO 4" DEEP.

#### LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:

WHEN PRACTICAL, DO NOT PLACE BALE SLOPE BARRIERS ACROSS CONTOURS. SLOPE BARRIERS SHOULD BE PLACED ALONG CONTOURS TO AVOID A CONCENTRATION OF FLOW. CONCENTRATED FLOW OVER A SLOPE BARRIER CREATES A SCOUR HOLE ON THE DOWNSLOPE SIDE OF THE BARRIER. THE SCOUR HOLE EVENTUALLY UNDERMINES THE BALES AND THE BARRIER FAILS. DO NOT PLACE BALE SLOPE BARRIERS IN AREAS WITH SHALLOW SOILS UNDERLAIN BY ROCK. IF THE BARRIER IS NOT ANCHORED SUFFICIENTLY, IT WILL WASH OUT. BALE SLOPE BARRIERS MUST BE DUG INTO THE GROUND. BALES AT GROUND LEVEL DO NOT WORK BECAUSE THEY ALLOW WATER TO FLOW UNDER THE BARRIER.

#### INSPECTION AND MAINTENANCE:

BALE SLOPE BARRIERS SHOULD BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. THE FOLLOWING IS A LIST OF QUESTIONS THAT SHOULD BE ADDRESSED DURING EACH INSPECTION:

- ARE THERE ANY POINTS ALONG THE SLOPE BARRIER WHERE WATER IS CONCENTRATING?
- DOES WATER FLOW UNDER THE SLOPE BARRIER?
- DOES WATER FLOW THROUGH SPACES BETWEEN ABUTTING BALES?
- ARE ANY BALES DISLODGED?
- ARE BALES DECOMPOSING DUE TO AGE AND/OR WATER DAMAGE?
- DOES SEDIMENT NEED TO BE REMOVED FROM BEHIND THE SLOPE BARRIER?

REVISION DATE: MAY 2013



**CITY OF WICHITA**

PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STRAW BALE DITCH CHECK AND BARRIER DETAILS		
CITY ENGINEER <b>GARY JANZEN, P.E.</b>		
PROJECT NUMBER 468-85136	OCA NUMBER 620783	DATE
CITY ENGINEER'S OFFICE CITY HALL - SEVENTH FLOOR 455 NORTH MAIN STREET WICHITA, KANSAS 67202-1620 (316) 268-4501		SHEET <b>C1.17</b>