

WATER DISTRIBUTION SYSTEM IMPROVEMENTS

TO SERVE

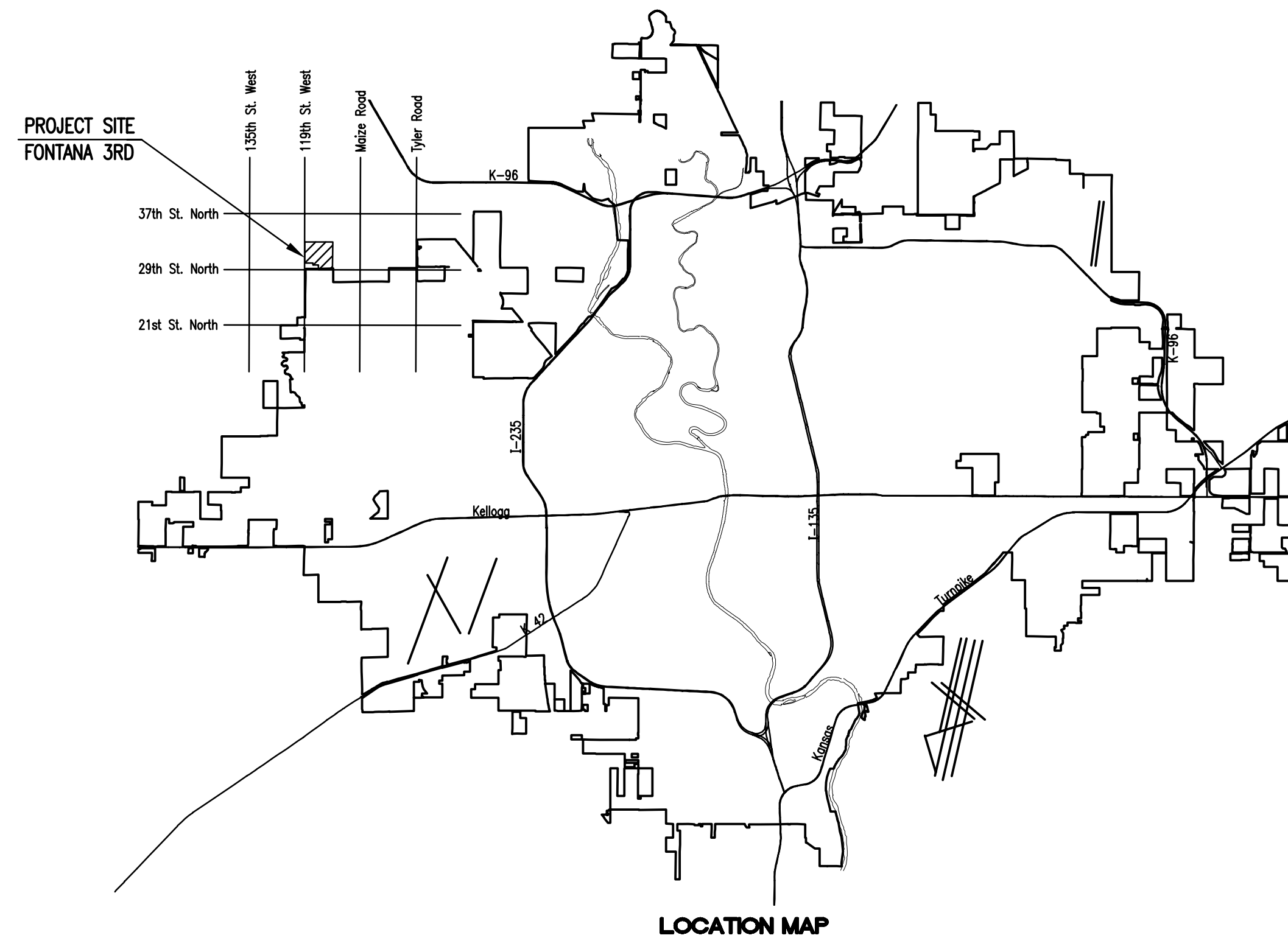
FONTANA 3RD ADDITION

OCA NO. 735355

CITY OF WICHITA PROJECT NO. 448-90004

CITY OF WICHITA, KANSAS

JAMES L. ARMOUR, P.E. - CITY ENGINEER



INDEX OF SHEETS

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CONSTRUCTION SCHEDULE/SEQUENCE

THE CONTRACTOR FOR EACH OF THE FOLLOWING FONTANA 3RD PROJECTS SHALL COORDINATE THEIR EFFORTS WITH OTHER CONTRACTORS PERFORMING WORK IN THIS AREA SUCH THAT ANY NECESSARY SIMULTANEOUS CONSTRUCTION CAN PROCEED CONCURRENTLY WITHOUT CAUSING UNDUE DELAYS SO THAT CONSTRUCTION CAN BE COMPLETED WITHIN THE TIME FRAMES AS NOTED.

SANITARY SEWER (468-83882)

THE CONTRACTOR SHALL COMPLETE LINE NO. 1 IN ITS ENTIRETY PRIOR TO COMMENCING WITH WORK ON THE REMAINDER OF THE PROJECT. THE CONTRACTOR SHALL SEQUENCE HIS WORK TO COMPLETE, INCLUDING TESTING AND ACCEPTANCE, BY MAY 23, 2007.

WATER DISTRIBUTION SYSTEM (448-90004)

THE CONTRACTOR SHALL COMPLETE FONTANA 3RD WATERLINE CONSTRUCTION BY JUNE 6, 2007. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF WATERLINES WITH THE STORM WATER DRAIN AND PAVING CONTRACTOR SO THAT STORM SEWERS CROSSING BELOW PROPOSED WATERLINES WILL BE INSTALLED PRIOR TO WATERLINE CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK EFFORTS WITH THE CONTRACTOR FOR THE WATER SUPPLY LINE (BY OTHERS) FOR CONNECTION TO THE SUPPLY LINE AND BLOWING OFF/TESTING OF THE PROPOSED WATERLINES.

STREETS/DRAINAGE (472-84091)

THE CONTRACTOR SHALL COMPLETE FONTANA 3RD STREETS/DRAINAGE CONSTRUCTION BY JULY 6, 2007.

MARCH 2007

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

GENERAL NOTES

- ALL ELEVATIONS SHOWN ARE CITY OF WICHITA DATUM. (U.S.G.S. - 1187.4 = CITY 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
 THE CONTRACTOR MUST NOTIFY THE FOLLOWING IN CASE OF AN EMERGENCY:
 COX COMMUNICATIONS 262-0661
 KANSAS GAS SERVICE 832-3169
 WESTAR ENERGY 383-8600
 AQUILA NETWORK 1(800)-527-0357
 AT&T 1(800)-870-8390
 CITY OF WICHITA WATER DEPARTMENT 262-6000
 CITY OF WICHITA SEWER MAINTENANCE 262-6000
- ALL WATER MAINS AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF WICHITA, KANSAS STANDARD SPECIFICATIONS.
- THE WATER MAIN SHALL BE CONSTRUCTED ON THE ALIGNMENT SHOWN BY THE PLANS. TREES AND SHRUBS IN PUBLIC RIGHT-OF-WAY WHICH ARE IN DIRECT CONFLICT WITH PROPOSED NEW CONSTRUCTION SHALL BE REMOVED BY THE CONTRACTOR WITH THE ENGINEER'S APPROVAL. TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH PROPOSED NEW CONSTRUCTION SHALL BE SAVED AND PROTECTED FROM DAMAGE. THE COST FOR ANY NECESSARY TREE TRIMMING, CLEARING AND/OR GRUBBING SHALL BE SUBSIDIARY TO SITE CLEARING.
- OPENING AND CLOSING WATER VALVES SHALL BE DONE SLOWLY TO PREVENT DAMAGE TO THE WATER DISTRIBUTION SYSTEM FROM WATER HAMMER. ALL VALVES CLOSED BY THE CONTRACTOR MUST BE REOPENED AS NEW CONSTRUCTION PERMITS. PROJECT INSPECTOR MUST ASCERTAIN THAT ANY VALVE CLOSED BY THE CONTRACTOR IS REOPENED. CONTRACTOR WILL BE PERMITTED TO OPERATE WATER VALVES ONLY WHEN THE PROJECT INSPECTOR ASSIGNED TO THE PROJECT IS PRESENT.
- THE CONTRACTOR SHALL NOT START WORK ON THE PROJECT UNTIL THE PROJECT INSPECTOR IS ASSIGNED TO THE PROJECT AND IS PRESENT ON THE SITE. ANY WORK DONE WITHOUT INSPECTION WILL BE REQUIRED TO BE UNCOVERED FOR INSPECTION.
- THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ADJUTING THE CONSTRUCTION OF THIS PROJECT A MINIMUM OF TEN (10) DAYS ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR SHALL 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 SITE RESTORATION.
- THE CONTRACTOR SHALL RESTORE ALL DITCHES, SWALES, ROAD SHOULDERS, ENTRANCES, AND BANKLINES TO THEIR ORIGINAL SLOPES AND GRADES EXCEPT AS SHOWN OTHERWISE.
- NO SERVICES WILL BE INSTALLED AS PART OF THIS PROJECT.
- 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.
- RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES INCLUDING ANY TREES REMOVED AND TREE TRIMMINGS AND EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF ON SITES PROVIDED BY THE CONTRACTOR. THESE SITES SHALL ALSO BE APPROVED OF BY THE ENGINEER AS TO SUITABILITY, APPEARANCE, AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, 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 STOCKPILED WITHIN FONTANA 3RD ADDITION AT NO ADDITIONAL COST TO THE OWNER. STOCKPILE LOCATIONS SHALL BE AS DIRECTED BY THE DEVELOPER AND IN ACCORDANCE WITH GENERAL NOTE NO. 12 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. AR78 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. 14 ABOVE. TEMPORARY SEEDING OR PERMANENT SEEDING/SODDING SHALL BE APPLIED WITHIN 14 DAYS AFTER THE AREA HAS BEEN DISTURBED.
- 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.
- THE CONTRACTOR SHALL INSTALL AND/OR MAINTAIN EROSION CONTROL METHODS AS SPECIFIED ON SHEETS 8-12. 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 WATERLINE 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 1,200 L.F.
 CONSTRUCTION ENTRANCE 1 EACH

1" = 150'

W. BRANCH CHISHOLM CREEK FLOODWAY (DEED BOOK 1280, PAGE 529)

BENEFIT DISTRICT

SEE SHEET NO. 15, 16 & 17 FOR PLAT COORDINATES

PROPOSED 8" WATER MAIN LINE NO. 1, See sheet no. 4-5

PROPOSED 8" WATER MAIN LINE NO. 2, See sheet no. 6-7

LEGEND

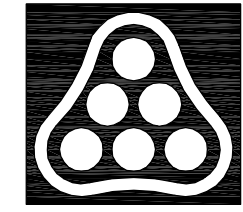
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED WATER MAIN (by others)
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED FIRE HYDRANT (by others)
- EXISTING BLOW OFF
- PROPOSED BLOW OFF

BENCHMARK LIST

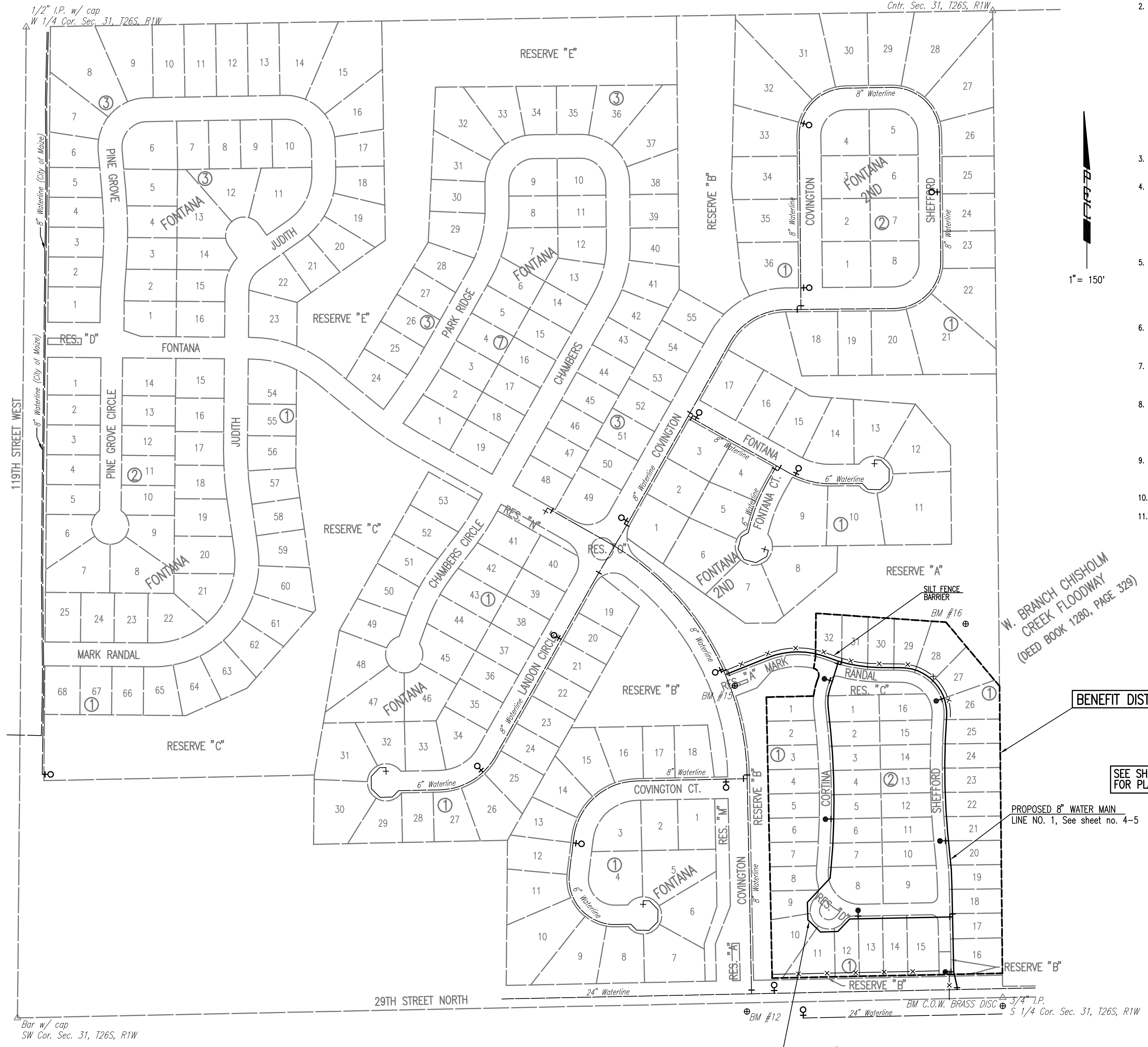
BM DATUM - BRASS DISC ON SOUTH RIGHT OF WAY 29TH STREET NORTH 1/2 MILE WEST OF MAIZE ROAD.	ELEV. = 178.29
BM #12 - "T" POST 33' SOUTH OF E 29TH STREET ON LINE W/E RIGHT OF WAY COVINGTON.	ELEV. = 172.72
BM #15 - CHIS. "d" CUT WEST END OF CONCRETE MEDIAN AT COVINGTON AND MARK RANDAL STREET.	ELEV. = 175.20
BM #16 - CHIS. "d" CUT WEST END OF POND WIER NEAR NORTHEAST CORNER LOT 23, BLOCK 4 OF FONTANA ADDITION. (NEAR NORTHEAST CORNER LOT 28, BLOCK 1, FONTANA 3RD ADDITION.)	ELEV. = 167.93

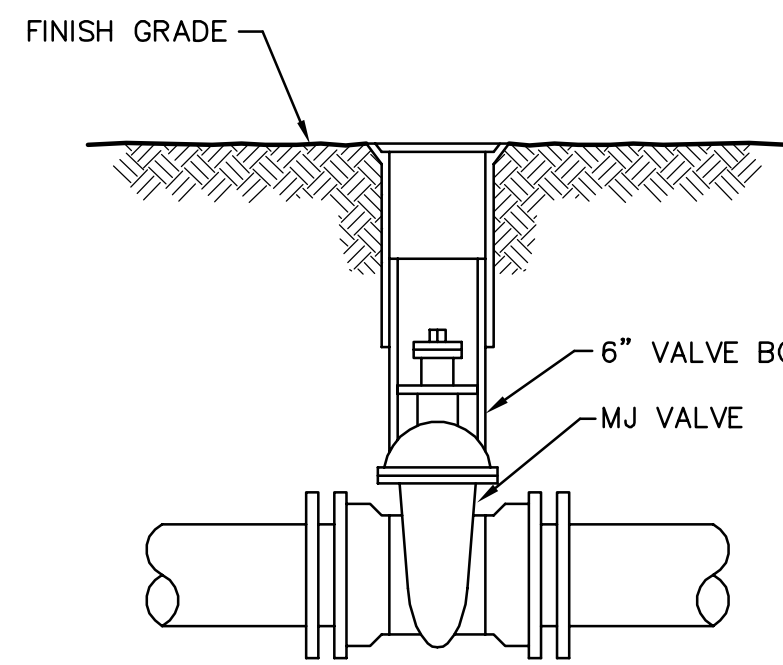
NOTE: WATERLINE VALVES TO BE OPERATED BY CONTRACTOR ONLY IF WATER DEPARTMENT REPRESENTATIVE IS ON SITE.

No.	Revision	By	Date
CITY OF WICHITA, KANSAS JAMES L. ARMOUR, P.E. - CITY ENGINEER FONTANA 3RD ADDITION			
KEY MAP AND GENERAL NOTES CITY OF WICHITA PROJECT NO. 448-90004 Professional Engineering Consultants, P.A. 303 S. TOPKA • WICHITA, KANSAS 67202 316-262-2691 • FAX 316-262-3003			
Designed by	MDK	Job No.	35-06611-002
Drawn by	RFT, JAN	Date	November 2006
			SH. 2 of 12



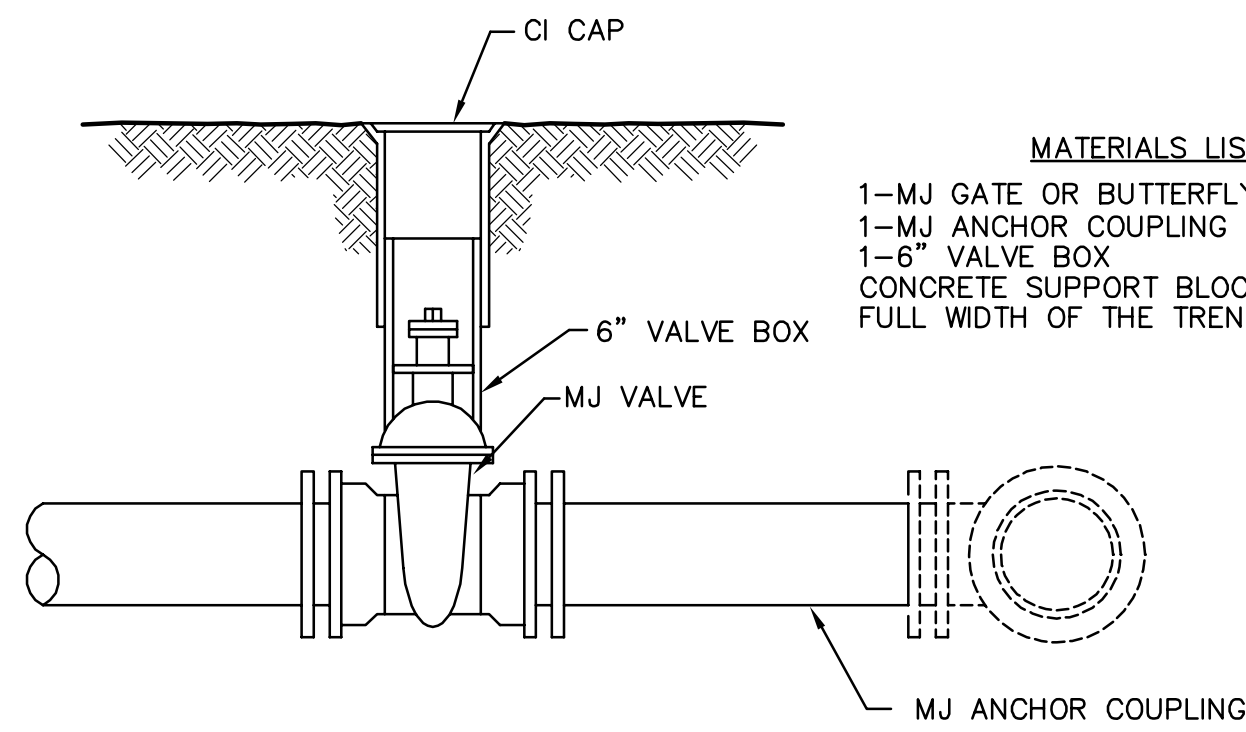
Sowed 03-06-2007 9:19:56 AM by BFT
 Plot Scale 1:150 03-06-2007 10:06:17 AM by REJ
 J:\SEN\001\2006\08611\2007-03-06 to Wichita\Waterlines\DWG\02-keymap





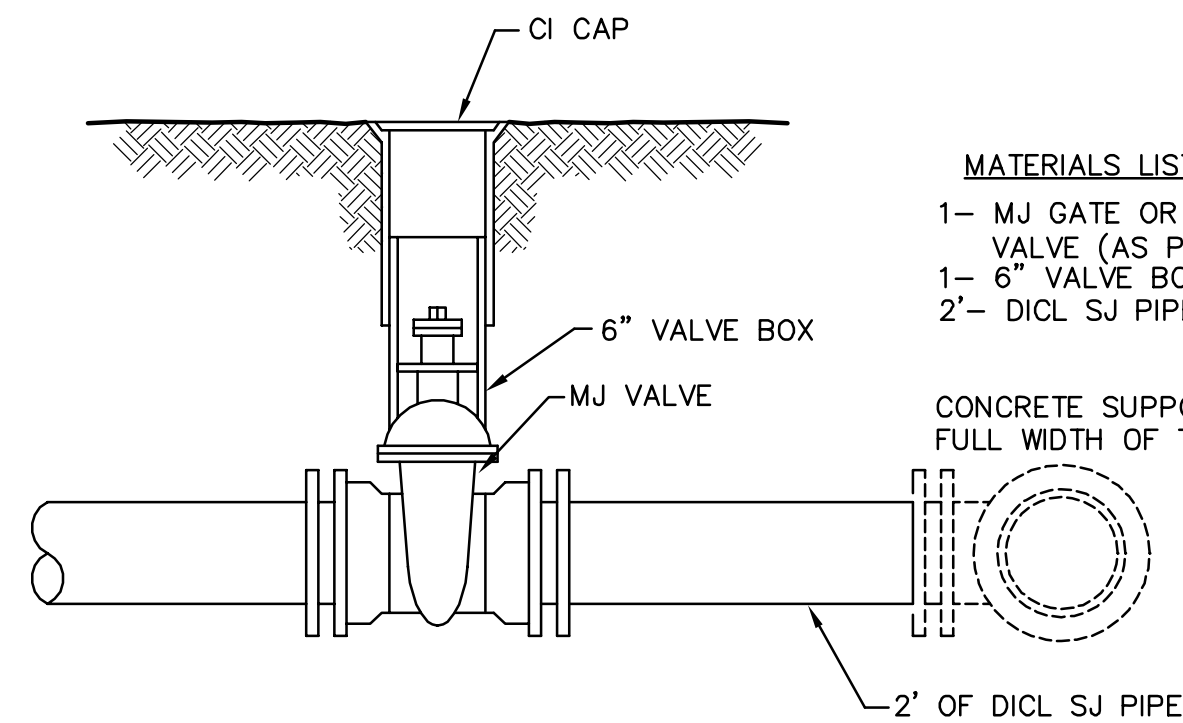
MATERIALS LIST
 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
 1-6" VALVE BOX
 CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH

LINE VALVE ASSEMBLY



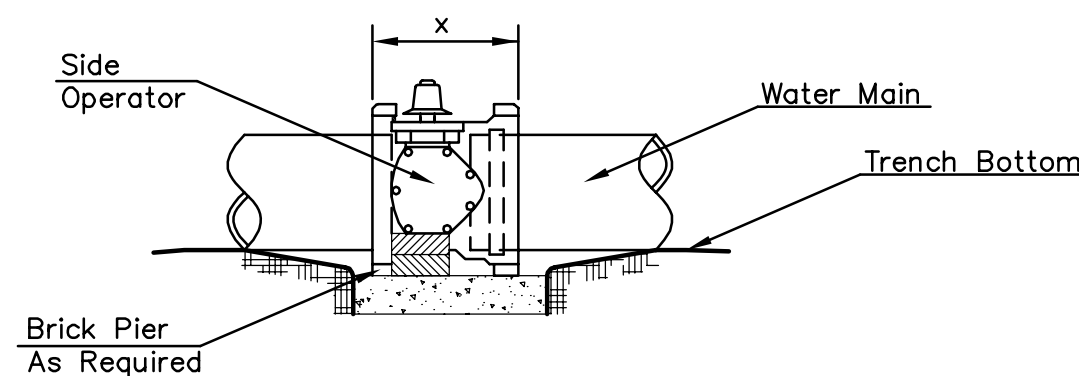
MATERIALS LIST
 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
 1-MJ ANCHOR COUPLING (12" OR SMALLER)
 1-6" VALVE BOX
 CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH

ANCHORED VALVE ASSEMBLY



MATERIALS LIST
 1- MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
 1- 6" VALVE BOX
 2'- DI CL SJ PIPE
 CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH

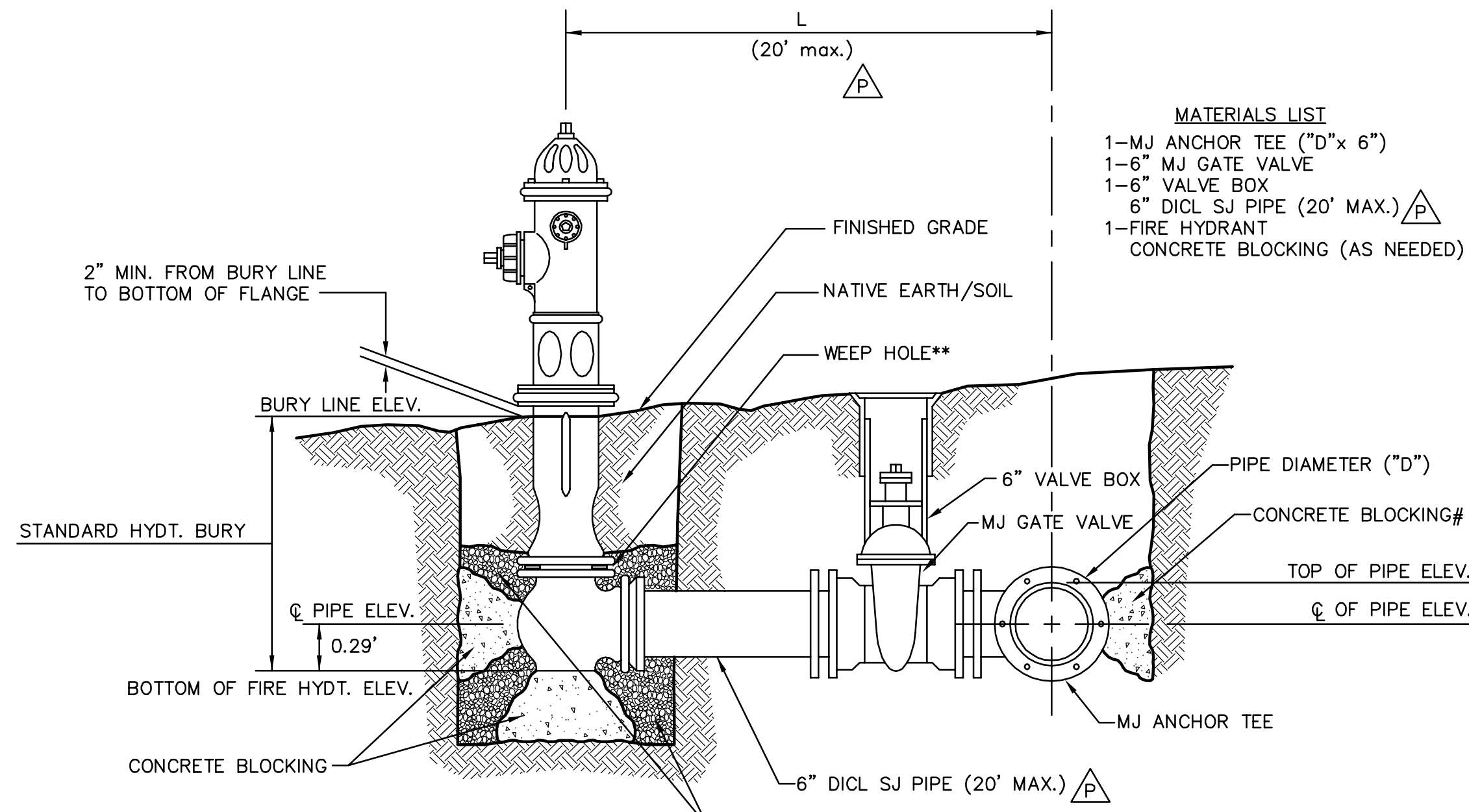
VALVE ASSEMBLY



NOTES

- This detail covers Butterfly Valve installation, inclusive, regardless of type of pipe or joint used. Larger lines to be detailed on plans.
- 6" Valve Box and Cover required per City of Wichita Std. Specifications.
- Conc. Support Block to be full width of trench.

CONCRETE SUPPORT BLOCKING FOR BUTTERFLY VALVE INSTALLATION



MATERIALS LIST
 1-MJ ANCHOR TEE ("D"x 6")
 1-6" MJ GATE VALVE
 1-6" VALVE BOX
 6" DI CL SJ PIPE (20' MAX.)
 1-FIRE HYDRANT
 CONCRETE BLOCKING (AS NEEDED)

** CAUTION! WEEP HOLES TO BE KEPT CLEAR DURING CONSTRUCTION AND BACKFILL. CONCRETE FOR THRUST BLOCKING SHALL NOT OBSTRUCT WEEP HOLES. PLACE 1 CUBIC FOOT OF RIVER WASHED PEA GRAVEL AROUND EACH WEEP HOLE.

CONCRETE THRUST BLOCKING SHALL BE KEPT CLEAR OF BOLTS, NUTS, AND MJ ACCESSORIES.

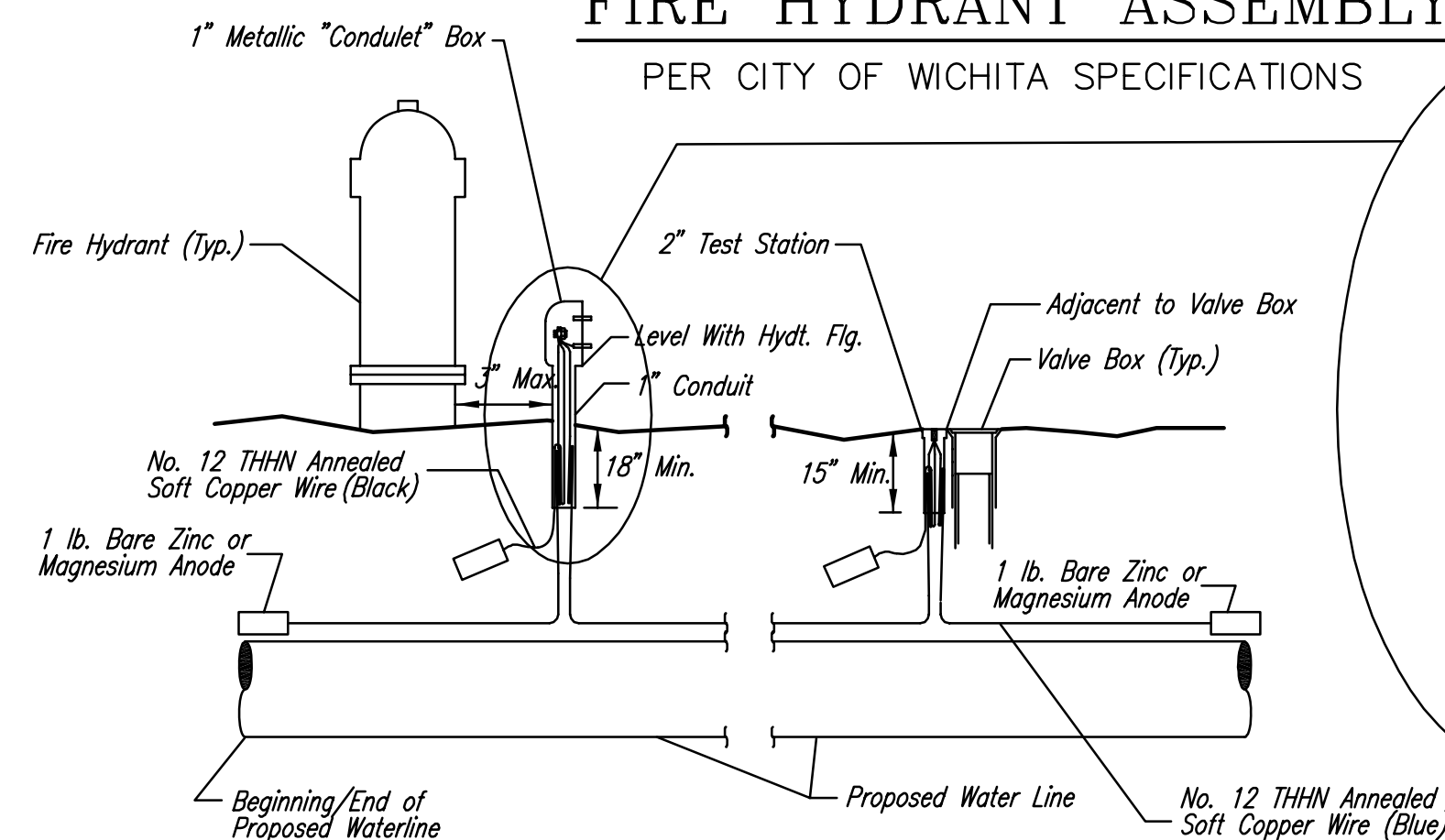
* IF HYDRANT BURY IS IN EXCESS OF 5'. CONTRACTOR SHALL USE STANDARD 5' HYDRANT BURY AND HYDRANT BARREL EXTENSIONS AS NECESSARY.

FIRE HYDRANTS REQUIRED

LINE NO.	STATION	BURY LINE ELEVATION	TOP OF PIPE ELEVATION	FIRE HYDRANT BURY REQUIRED
1	6+33.37	173.6	169.27	5.0
1	10+17.14	177.1	171.77	6.0
1	13+68.61	176.4	171.57	5.5
2	0+56.28	173.6	170.27	4.0
2	4+27.57	177.9	174.07	4.5
2	8+85.39	179.8	174.97	5.5

FIRE HYDRANT ASSEMBLY

PER CITY OF WICHITA SPECIFICATIONS



TRACER WIRE

Conductive type pipe locator/tracer wire shall be installed to locate all waterline pipe regardless of pipe material. The wire shall extend the entire length of the proposed pipe. The wire shall be taped to the waterline and pulled with the pipe. Split-bolt connectors shall be used at splice locations. Electrical tape shall cover all splices so no bare wire is exposed. Test stations shall be installed adjacent to all fire hydrants along the waterline and at blowoffs or valves near the ends of the waterlines. Any exceptions to the location of test stations shall be approved by the engineer. At each test station, the tracer wire shall be connected to a 1 lb. Zinc or magnesium anode. Anodes shall also be attached to the tracer wire at both the beginning and the end of the proposed waterline. A typical layout of the tracer wire and test station is provided in the above figure.

WIRE

The tracer wire shall be Blue No. 12 THHN annealed soft copper wire with thermal plastic insulation. The insulation shall be heat, oil, and gasoline resistant as manufactured by Temple Electric or approved equal. To allow for grade adjustment, a minimum of 12" of excess wire shall be coiled at the bottom of the test station for all wires. The insulation sheathing shall be removed such that 1" bare copper wire is exposed at all points of connection. Contractor shall attach wire being installed with proposed water main to any tracer wire installed with adjacent waterline projects.

TEST STATIONS

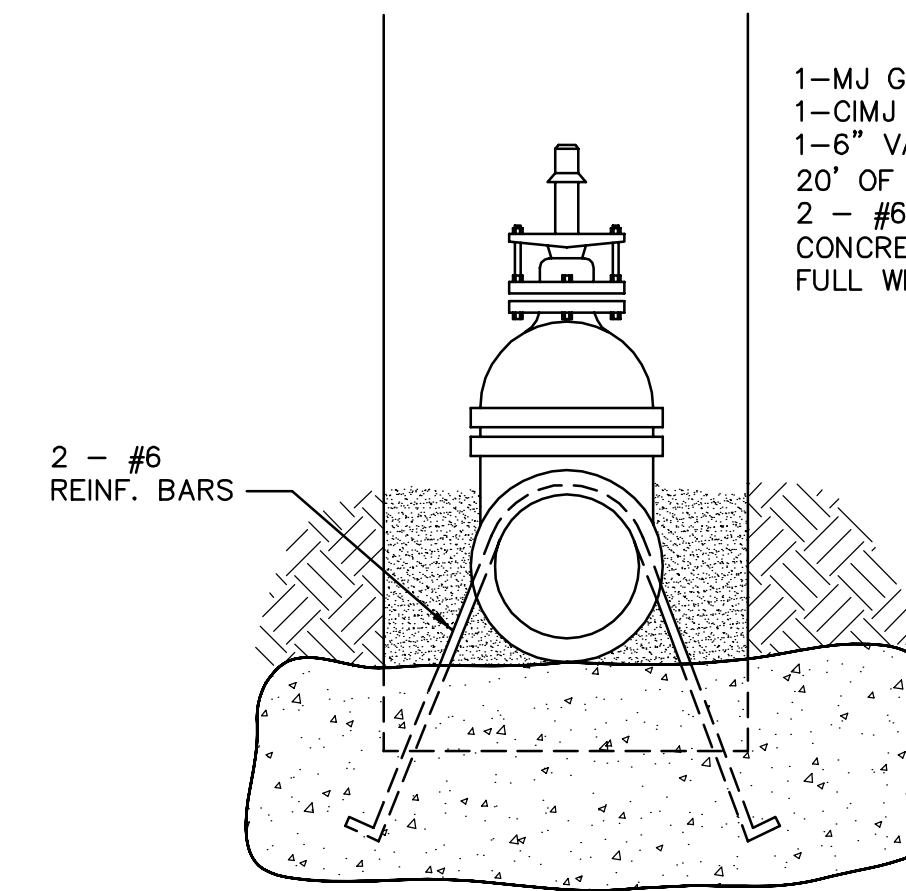
The test station for fire hydrant applications shall be a 1 inch galvanized "condulet" style test station as manufactured by AGRA Industries with a removable solid cover having two leads extending from the face or approved equal. The test station for valve applications shall be 2 inch flush style test station T2PS3B as manufactured by HANDLEY Industries or approved equal. The "condulet" style test station shall be attached to a 1 inch rigid galvanized conduit with a minimum length of 36" and plastic end bushing. The flush style shall have the word "WATER" stamped or molded into the lid. All test stations shall be manufactured using molded blue tops or sufficiently coated with blue enamel paint. The tracer wire and the anode wire shall be installed to allow 10 inches of wire within the test station. In concrete environments such as sidewalks or in the downtown area the contractor shall use the flush style test station. The location of all test stations shall be approved by the engineer, recorded, and shown in the as-built drawings.

ANODES

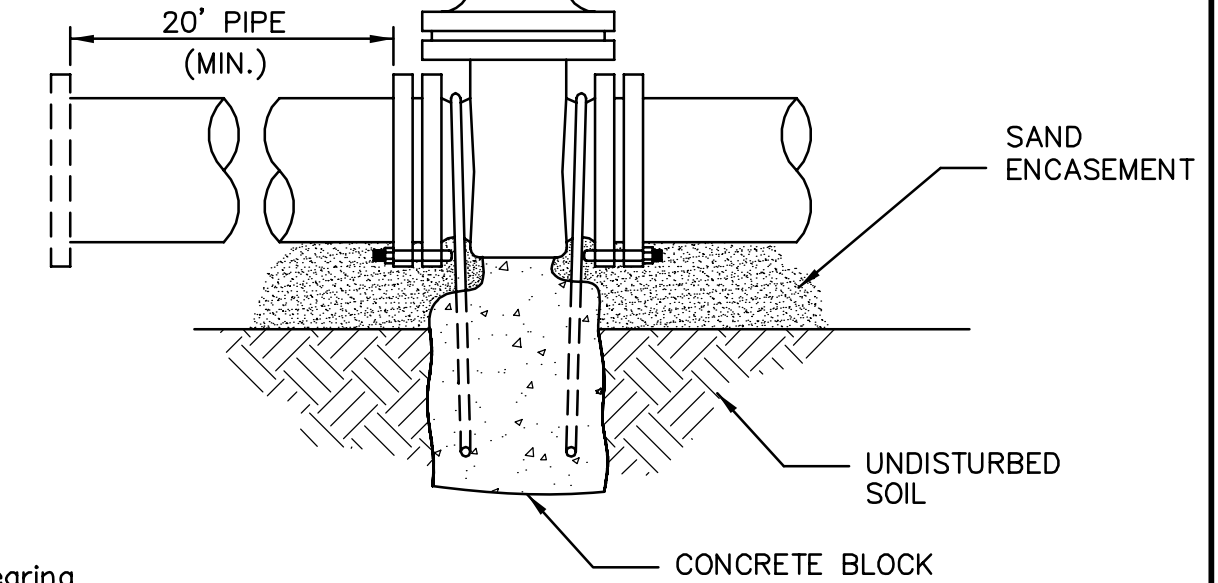
The anodes shall be 1 lb. bare zinc or magnesium. The anodes shall be buried at the same elevation as the waterline at each test station. The anodes shall be connected to Black No. 12 THHN annealed soft copper wire which shall be extended to the test station.

TRACER WIRE DETAIL

COST IS SUBSIDIARY TO PIPE INSTALLATION



MATERIALS LIST
 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
 1-CIMJ CAP WHEN NECESSARY
 1-6" VALVE BOX
 20' OF PIPE (BID WITH PIPE)
 2 - #6 REINF. BARS
 CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH

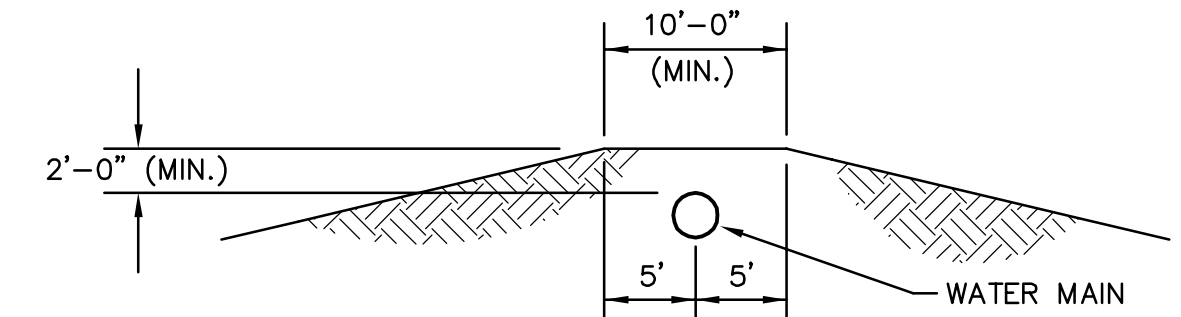


THRUST AT VALVES

VALVE	THRUST AT 150 #/in ²
4"	1809 lbs.
6"	4245 lbs.
8"	7540 lbs.
12"	16965 lbs.

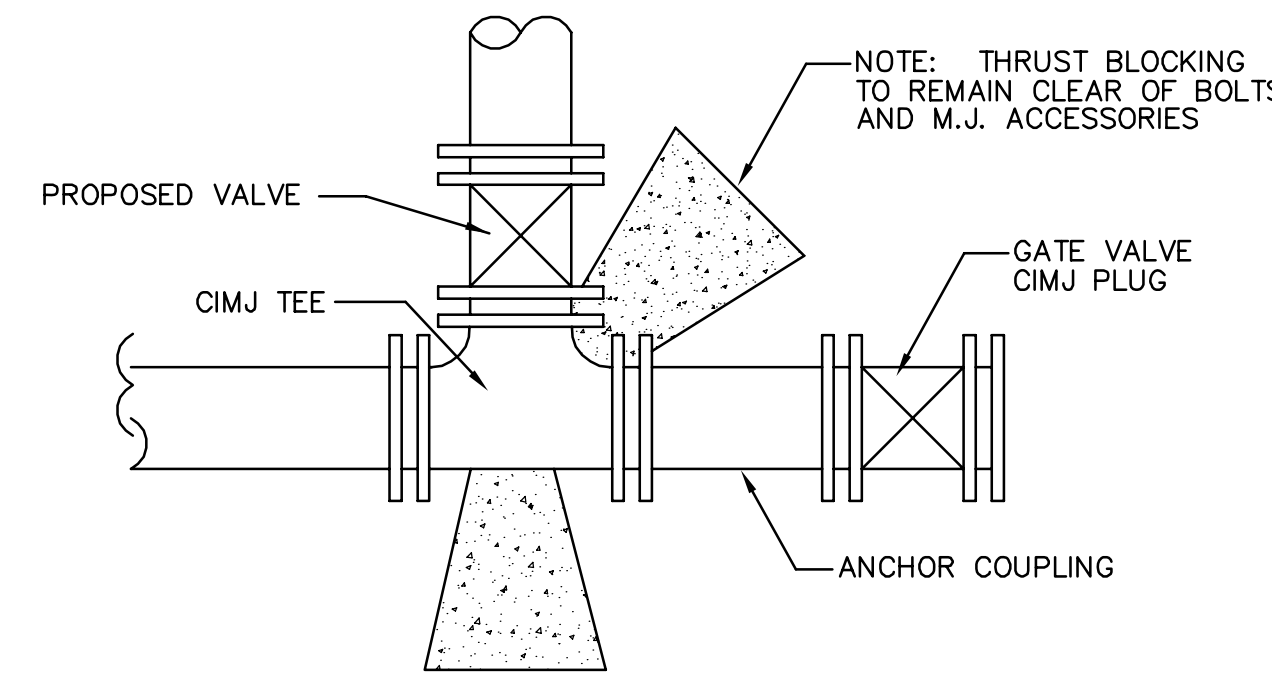
- Notes:**
- Concrete Block at Valve to have sufficient bearing in undisturbed soil to prevent thrust movement as shown in table at right. Field Engineer to determine thrust loading of undisturbed soil and final size of thrust block.
 - The thrust block shall be constructed such that bolts, nuts, and other MJ accessories are kept clear of concrete.
 - All valves at dead ends and at other locations as called out on the plans shall be blocked as shown here.

ANCHORED VALVE ASSEMBLY, SPECIAL



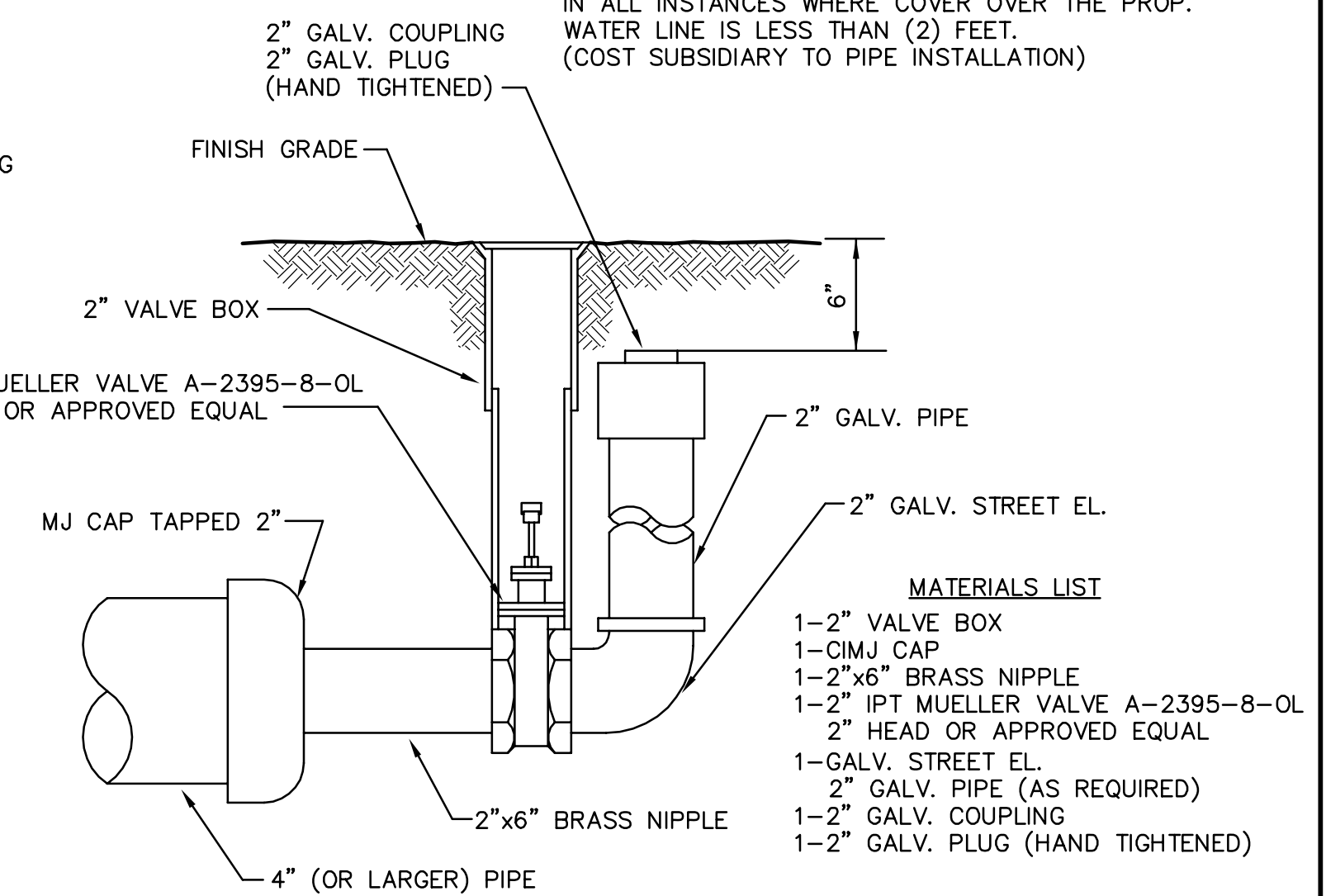
PROTECTIVE FILL DETAIL

MINIMUM PROTECTIVE FILL SHALL BE PROVIDED IN ALL INSTANCES WHERE COVER OVER THE PROP. WATER LINE IS LESS THAN (2) FEET. (COST SUBSIDIARY TO PIPE INSTALLATION)



KEY BLOCK DETAIL

2 Blue Wires and 1 Black Wire
 All Connected to Single Test Lead
 With Split Bolt Connection and Blue No. 12 THHN Annealed Soft Copper Wire



MATERIALS LIST
 1-2" VALVE BOX
 1-CIMJ CAP
 1-2"x6" BRASS NIPPLE
 1-2" IPT MUELLER VALVE A-2395-8-OL
 1-2" HEAD OR APPROVED EQUAL
 1-GALV. STREET EL.
 2" GALV. PIPE (AS REQUIRED)
 1-2" GALV. COUPLING
 1-2" GALV. PLUG (HAND TIGHTENED)

2" BLOWOFF ASSEMBLY

- Revised: 01-07-05 per CITY
- Revised: 10-06-04 by PEC
- Revised: 08-14-01, CITY
- Revised: 11-13-00, MCG
- Revised: 6-7-00, MCG

THE CITY OF WICHITA

CITY ENGINEER'S OFFICE
 CITY HALL - SEVENTH FLOOR
 455 NORTH MAIN STREET
 WICHITA, KANSAS 67202
 (316) 268-4900
 (316) 268-4114 FAX

STANDARD WATER ASSEMBLY DETAILS

JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER 448-90004 OCA NO. 735355

DATE DEC 98 SHEET 3 OF 12

BY: _____ DATE: _____
 CHECKED: _____
 PLAN

BY: _____ DATE: _____
 CHECKED: _____
 PROFILE

Saved: 03-06-2007 9:27:16 AM by: BTJ
 Plot Scale: 1:40 03-06-2007 10:08:50 AM by: BTJ
 J:\SENTOU\2006\06611\2007-03-06 to Wichita Waterlines (WMC)_04-Line01

WL CURVE DATA
 $\Delta=42^{\circ}42'5''$ $D=25^{\circ}41'35.4''$ $R=223.00'$ $L=166.20'$ $T=87.17'$ $E=16.43'$
 CURVE DATA BASED ON \odot RADIUS $\Delta/2=21^{\circ}21'2.5''$

WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PC 1+18.38			0°00'00.0"	0°00'00.0"
1+25.00	6.62'	6.41'	0°51'01.6"	0°51'01.6"
1+50.00	25.00'	24.20'	3°12'41.9"	04°03'43.5"
1+75.00	25.00'	24.20'	3°12'41.9"	07°16'25.5"
2+00.00	25.00'	24.20'	3°12'41.9"	10°29'07.4"
2+25.00	25.00'	24.20'	3°12'41.9"	13°41'49.4"
2+50.00	25.00'	24.20'	3°12'41.9"	16°54'31.3"
2+75.00	25.00'	24.20'	3°12'41.9"	20°07'13.2"
PT 2+84.58	9.58'	9.28'	1°13'50.5"	21°21'02.6"
TOTAL	L=166.20'			Defl./ft.= 7.707953 min.

WL CURVE DATA
 $\Delta=20^{\circ}54'54''$ $D=15^{\circ}11'52.2''$ $R=377.00'$ $L=137.62'$ $T=69.58'$ $E=6.37'$
 CURVE DATA BASED ON \odot RADIUS $\Delta/2=10^{\circ}27'27''$

WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PRC 2+84.57			0°00'00.0"	0°00'00.0"
3+00.00	15.43'	15.72'	1°10'21.0"	01°10'21.0"
3+13.60	13.60'	13.85'	1°02'00.4"	02°12'21.5"
3+25.00	11.40'	11.61'	0°51'58.6"	03°04'20.1"
3+50.00	25.00'	25.46'	1°53'59.0"	04°58'19.1"
3+75.00	25.00'	25.46'	1°53'59.0"	06°52'18.1"
4+00.00	25.00'	25.46'	1°53'59.0"	08°46'17.1"
PT 4+22.20	22.20'	22.60'	1°41'10.3"	10°27'27.0"
TOTAL	L=137.62'			Defl./ft.= 4.559346 min.

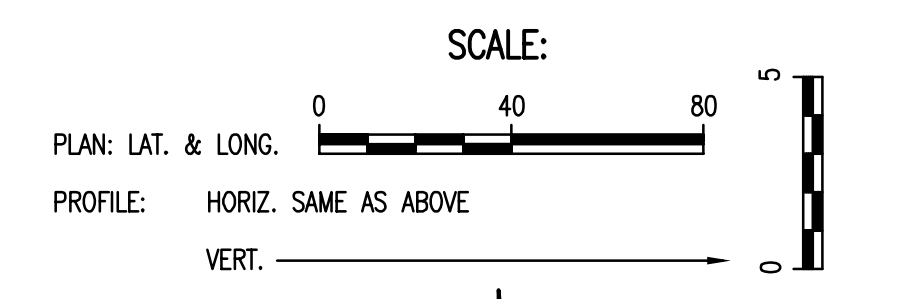
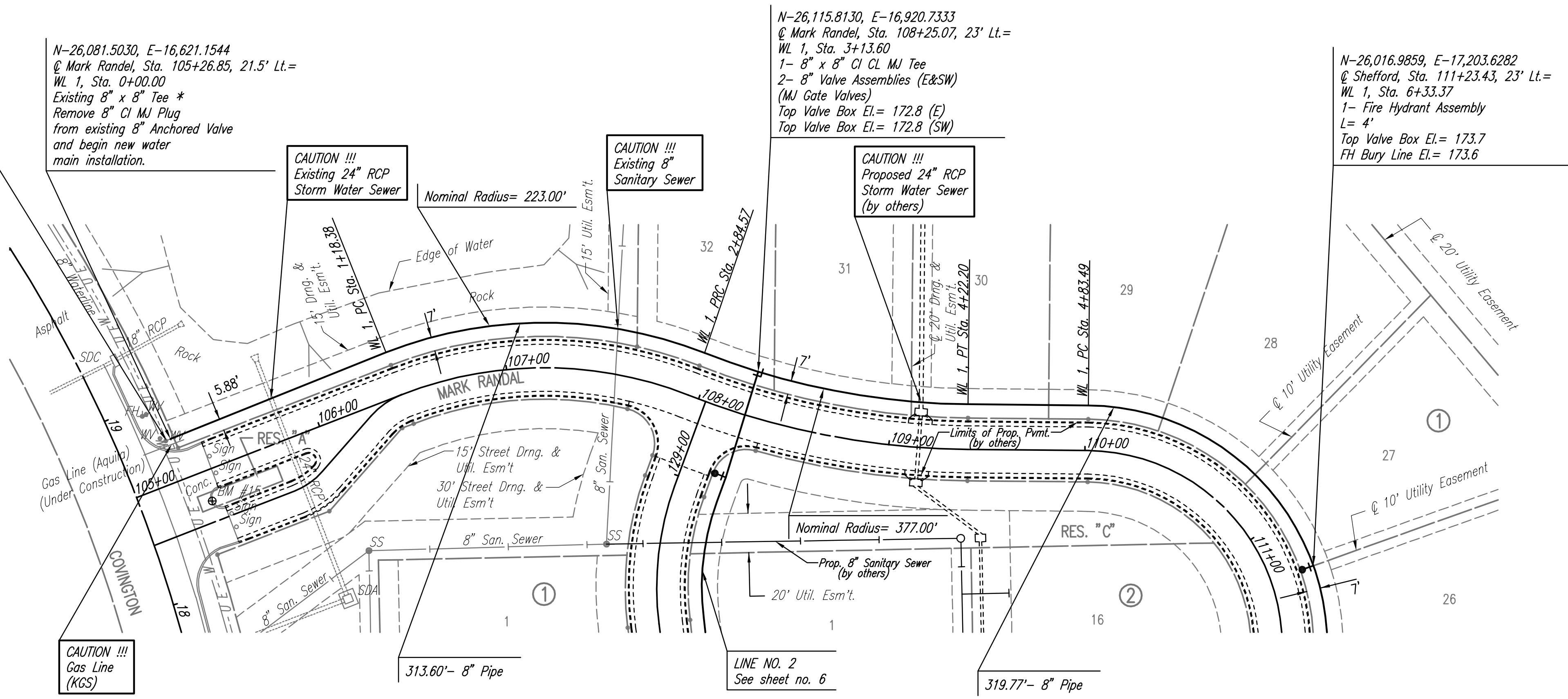
CAUTION!!!
 Buried Electric (Westar Energy)
 Buried CATV (Cox Communications)
 Record Information from Design

CAUTION!!!
 Existing 24" RCP Storm Water Sewer

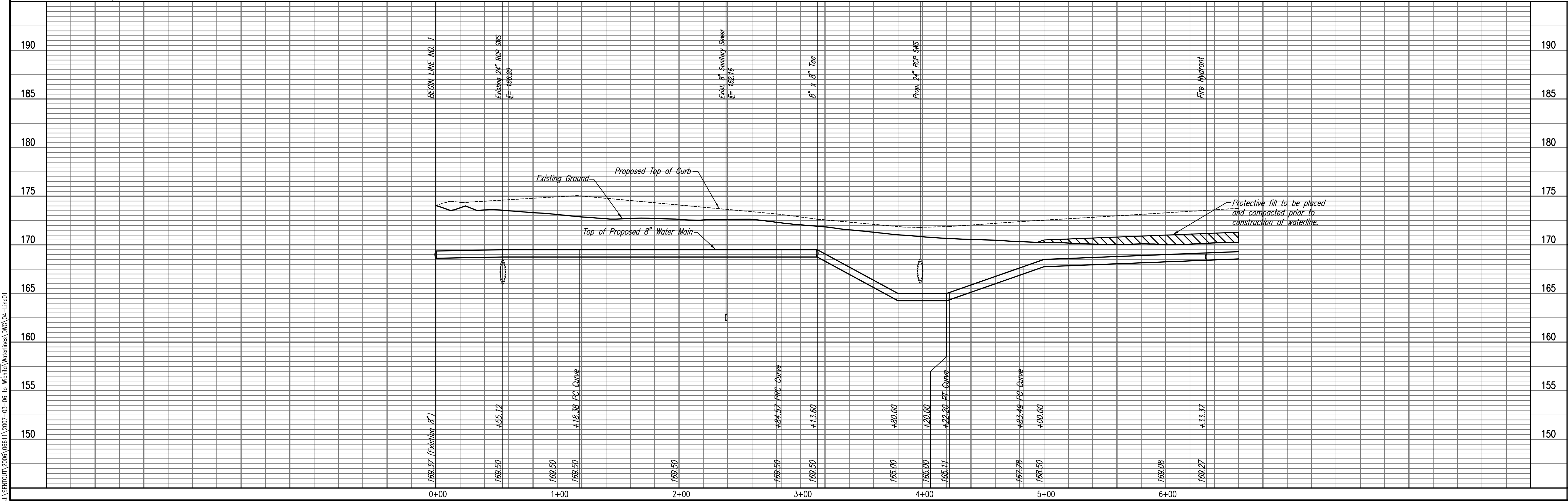
CAUTION!!!
 Existing 8" Sanitary Sewer

CAUTION!!!
 Proposed 24" RCP Storm Water Sewer (by others)

CAUTION!!!
 Gas Line (KGS)



WATERLINE NO. 1



CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR, P.E. - CITY ENGINEER
 FONTANA 3RD ADDITION
WATERLINE NO. 1
 CITY OF WICHITA PROJECT NO. 448-50004

Professional Engineering Consultants, P.A.
 303 S. TOPICKA AVENUE, WICHITA, KANSAS 67202
 316-262-2691 • FAX 316-262-3008

Designed By: MDK
 Drawn By: TJS, JAN
 Job No.: 35-06611-002-042
 Date: November 2006

Sheet 4 of 12

WL CURVE DATA				
$\Delta=93^{\circ}28'21''$ Rt $D=46^{\circ}34'55''$ $R=123.00'$ $L=200.66'$ $T=130.69'$ $E=56.47'$				
CURVE DATA BASED ON \odot RADIUS $\Delta/2=46^{\circ}44'10.5''$				
WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PC 4+83.49			0°00'00.0"	0°00'00.0"
5+00.00	16.51'	15.56'	3°50'43.2"	03°50'43.2"
5+25.00	25.00'	23.54'	5°49'21.9"	09°40'05.1"
5+50.00	25.00'	23.54'	5°49'21.9"	15°29'27.0"
5+75.00	25.00'	23.54'	5°49'21.9"	21°18'48.9"
6+00.00	25.00'	23.54'	5°49'21.9"	27°08'10.8"
6+25.00	25.00'	23.54'	5°49'21.9"	32°57'32.7"
6+50.00	25.00'	23.54'	5°49'21.9"	38°46'54.6"
6+75.00	25.00'	23.54'	5°49'21.9"	44°36'16.4"
PRC 6+84.15	9.15'	8.63'	2°07'52.1"	46°44'10.6"
TOTAL	L=200.66'			Defl./ft.= 13.974581 min.

WL CURVE DATA				
$\Delta=10^{\circ}44'8''$ Lt $D=2^{\circ}53'53.2''$ $R=1977.00'$ $L=370.43'$ $T=185.76'$ $E=8.71'$				
CURVE DATA BASED ON \odot RADIUS $\Delta/2=5^{\circ}22'4''$				
WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PRC 6+84.15			0°00'00.0"	0°00'00.0"
7+00.00	15.85'	15.91'	0°13'46.8"	00°13'46.8"
7+25.00	25.00'	25.09'	0°21'44.2"	00°35'31.0"
7+50.00	25.00'	25.09'	0°21'44.2"	00°57'15.1"
7+75.00	25.00'	25.09'	0°21'44.2"	01°18'59.3"
8+00.00	25.00'	25.09'	0°21'44.2"	01°40'43.4"
8+25.00	25.00'	25.09'	0°21'44.2"	02°02'27.6"
8+50.00	25.00'	25.09'	0°21'44.2"	02°24'11.8"
8+75.00	25.00'	25.09'	0°21'44.2"	02°45'55.9"
9+00.00	25.00'	25.09'	0°21'44.2"	03°07'40.1"
9+25.00	25.00'	25.09'	0°21'44.2"	03°29'24.2"
9+50.00	25.00'	25.09'	0°21'44.2"	03°51'08.4"
9+75.00	25.00'	25.09'	0°21'44.2"	04°12'52.5"
10+00.00	25.00'	25.09'	0°21'44.2"	04°34'36.7"
10+17.14	17.14'	17.20'	0°14'54.1"	04°49'30.8"
10+25.00	7.86'	7.89'	0°06'50.0"	04°56'20.8"
10+50.00	25.00'	25.09'	0°21'44.2"	05°18'05.0"
PRC 10+54.58	4.58'	4.60'	0°03'58.9"	05°22'04.0"
TOTAL	L=370.43'			Defl./ft.= .869435 min.

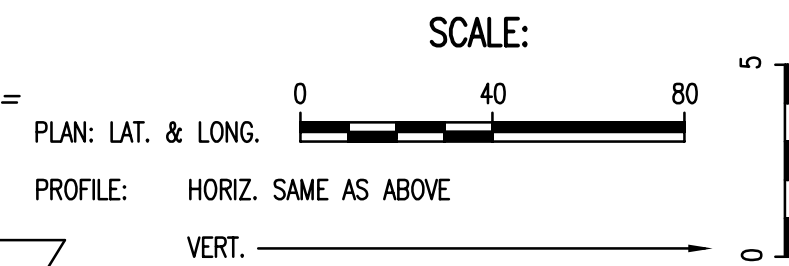
N=26,016.9859, E=17,203.6282
 @ Shefford, Sta. 111+23.43, 23' Lt.=
 WL 1, Sta. 6+33.37

N=25,634.4593, E=17,215.1147
 @ Shefford, Sta. 115+01.59, 23' Lt.=
 WL 1, Sta. 10+17.14
 1- Fire Hydrant Assembly
 L= 4'
 Top Valve Box El.= 177.2
 FH Bury Line El.= 177.1

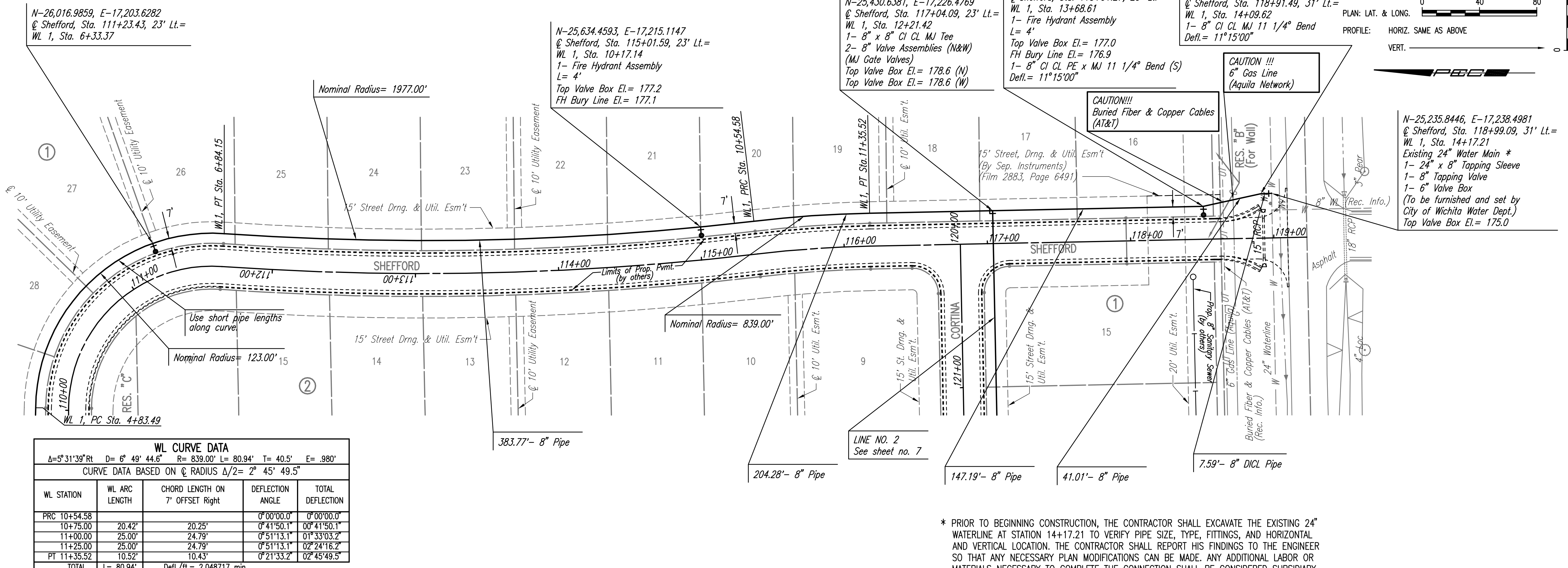
N=25,430.6381, E=17,226.4769
 @ Shefford, Sta. 117+04.09, 23' Lt.=
 WL 1, Sta. 12+21.42
 1- 8" x 8" CI CL MJ Tee
 2- 8" Valve Assemblies (N&W)
 (MJ Gate Valves)
 Top Valve Box El.= 178.6 (N)
 Top Valve Box El.= 178.6 (W)

N=25,283.4810, E=17,229.5134
 @ Shefford, Sta. 118+51.27, 23' Lt.=
 WL 1, Sta. 13+68.61
 1- Fire Hydrant Assembly
 L= 4'
 Top Valve Box El.= 177.0
 FH Bury Line El.= 176.9
 1- 8" CI CL PE x MJ 11 1/4" Bend
 Defl.= 11°15'00"

N=25,243.4359, E=17,238.3415
 @ Shefford, Sta. 118+91.49, 31' Lt.=
 WL 1, Sta. 14+09.62
 1- 8" CI CL MJ 11 1/4" Bend
 Defl.= 11°15'00"



N=25,235.8446, E=17,238.4981
 @ Shefford, Sta. 118+99.09, 31' Lt.=
 WL 1, Sta. 14+17.21
 Existing 24" Water Main *
 1- 24" x 8" Tapping Sleeve
 1- 8" Tapping Valve
 1- 6" Valve Box
 (To be furnished and set by
 City of Wichita Water Dept.)
 Top Valve Box El.= 175.0

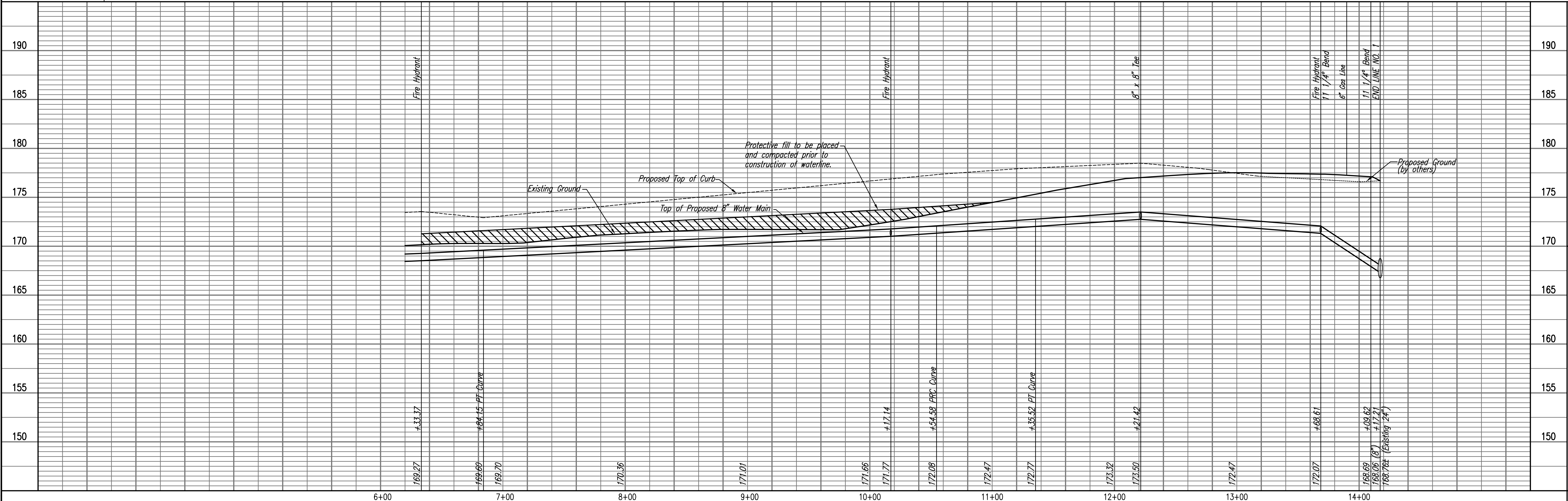


WL CURVE DATA				
$\Delta=5^{\circ}31'39''$ Rt $D=6^{\circ}49'44.6''$ $R=839.00'$ $L=80.94'$ $T=40.5'$ $E=980'$				
CURVE DATA BASED ON \odot RADIUS $\Delta/2=2^{\circ}45'49.5''$				
WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PRC 10+54.58			0°00'00.0"	0°00'00.0"
10+75.00	20.42'	20.25'	0°41'50.1"	00°41'50.1"
11+00.00	25.00'	24.79'	0°51'13.1"	01°33'03.2"
11+25.00	25.00'	24.79'	0°51'13.1"	02°24'16.2"
PT 11+35.52	10.52'	10.43'	0°21'33.2"	02°45'49.5"
TOTAL	L=80.94'			Defl./ft.= 2.048717 min.

WATERLINE NO. 1

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 24" WATERLINE AT STATION 14+17.21 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.

Unless noted otherwise, elevations shown are top of pipe



DATE	
BY	
CHECKED	
PLAN	

DATE	
BY	
CHECKED	
PROFILE	

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 J:\SENTOU\2006\06611\2007-03-06 to Wichita Waterlines (WMO)_05-Line01

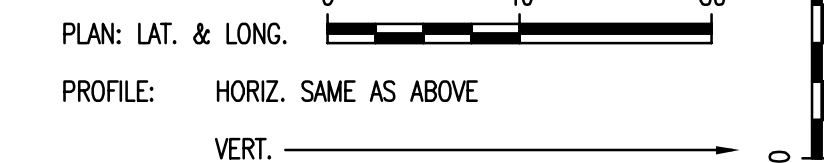
CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR, P.E. - CITY ENGINEER
 FONTANA 3RD ADDITION
WATERLINE NO. 1
 CITY OF WICHITA PROJECT NO. 448-50004

Professional Engineering Consultants, P.A.
 803 S. TOPICKA AVENUE, WICHITA, KANSAS 67202
 316-262-2691 • FAX 316-262-3008

Designed By: MDK
 Drawn By: T.L.S., JAN
 Job No.: 35-06611-002-042
 Date: November 2006

Sheet 5 of 12

SCALE:



WL CURVE DATA
 $\Delta=27^{\circ}13'2''$ Lt = 45' 6" 53.2' R= 127.00' L= 60.33' T= 30.74' E= 3.67'
 CURVE DATA BASED ON \odot RADIUS $\Delta/2= 13^{\circ} 36' 31''$

WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PC 0+69.51			0°00'00.0"	0°00'00.0"
0+75.00	5.49'	5.79'	1°14'18.2"	01°14'18.2"
1+00.00	25.00'	26.34'	5°38'21.7"	06°52'39.9"
1+25.00	25.00'	26.34'	5°38'21.7"	12°31'01.6"
PRC 1+29.84	4.84'	5.11'	1°05'30.4"	13°36'31.0"
TOTAL	L= 60.33'	Defl./ft.= 13.534436 min.		

WL CURVE DATA
 $\Delta=12^{\circ}20'13''$ Rt = 2° 49' 56" R= 2023.00' L= 435.59' T= 218.64' E= 11.78'
 CURVE DATA BASED ON \odot RADIUS $\Delta/2= 6^{\circ} 10' 6.5''$

WL STATION	WL ARC LENGTH	CHORD LENGTH ON 7' OFFSET Right	DEFLECTION ANGLE	TOTAL DEFLECTION
PRC 1+29.84			0°00'00.0"	0°00'00.0"
1+50.00	20.16'	20.09'	0°17'07.8"	0°17'07.8"
1+75.00	25.00'	24.91'	0°21'14.5"	0°38'22.3"
2+00.00	25.00'	24.91'	0°21'14.5"	0°59'36.8"
2+25.00	25.00'	24.91'	0°21'14.5"	01°20'51.3"
2+50.00	25.00'	24.91'	0°21'14.5"	01°42'05.8"
2+75.00	25.00'	24.91'	0°21'14.5"	02°03'20.3"
3+00.00	25.00'	24.91'	0°21'14.5"	02°24'34.8"
3+25.00	25.00'	24.91'	0°21'14.5"	02°45'49.3"
3+50.00	25.00'	24.91'	0°21'14.5"	03°07'03.8"
3+75.00	25.00'	24.91'	0°21'14.5"	03°28'18.3"
4+00.00	25.00'	24.91'	0°21'14.5"	03°49'32.8"
4+25.00	25.00'	24.91'	0°21'14.5"	04°10'47.2"
4+27.57	2.57'	2.56'	0°02'11.0"	04°12'58.3"
4+50.00	22.43'	22.35'	0°19'03.5"	04°32'01.7"
4+75.00	25.00'	24.91'	0°21'14.5"	04°53'16.2"
5+00.00	25.00'	24.91'	0°21'14.5"	05°14'30.7"
5+25.00	25.00'	24.91'	0°21'14.5"	05°35'45.2"
5+50.00	25.00'	24.91'	0°21'14.5"	05°56'59.7"
PT 5+65.43	15.43'	15.38'	0°13'06.6"	06°10'06.5"
TOTAL	L= 435.59'	Defl./ft.= .849666 min.		

N-26,115.8130, E-16,920.7333
 @ Mark Randel, Sta. 108+25.07, 23' Rt.=
 WL 1, Sta. 3+13.60=
 WL 2, Sta. 0+00.00

N-26,062.0114, E-16,904.2259
 @ Cortina, Sta. 129+07.56, 23' Rt.=
 WL 2, Sta. 0+56.28
 1- Fire Hydrant Assembly
 L= 4'
 Top Valve Box El.= 173.6
 FH Bury Line El.= 173.6

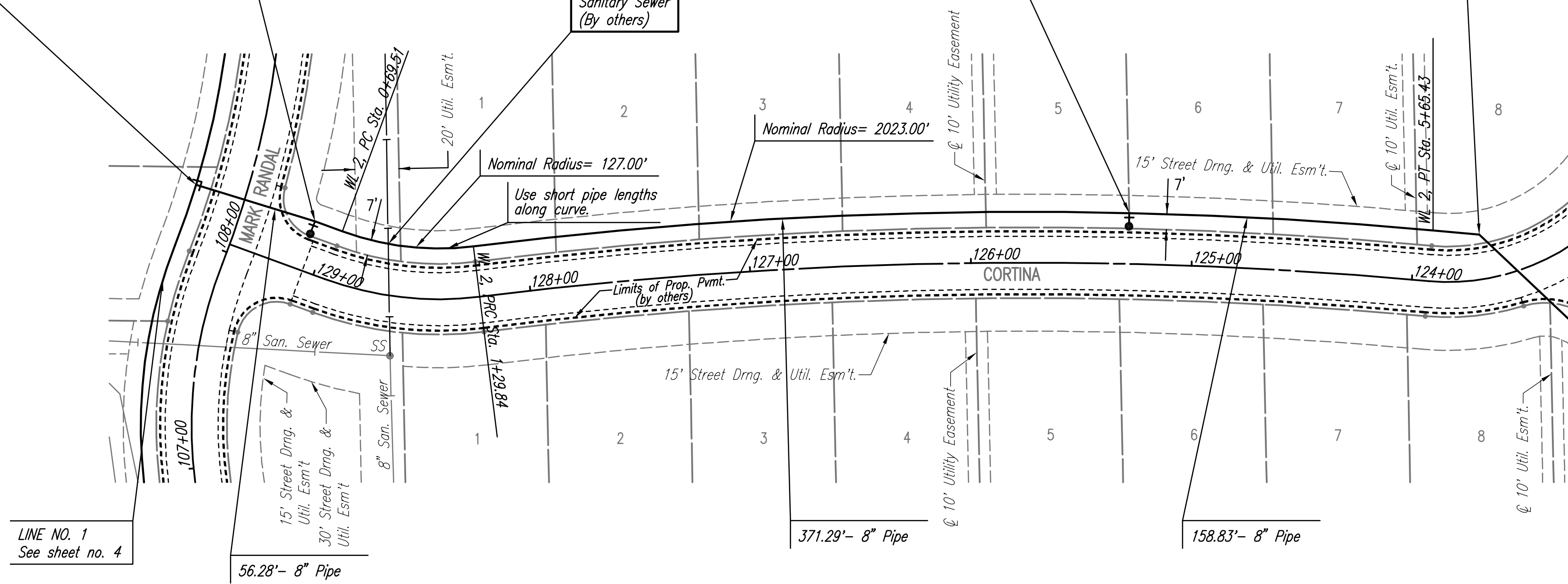
CAUTION !!!
 Proposed 8"
 Sanitary Sewer
 (By others)

N-25,693.1232, E-16,907.9778
 @ Cortina, Sta. 125+28.73, 23' Rt.=
 WL 2, Sta. 4+27.57
 1- Fire Hydrant Assembly
 L= 4'
 Top Valve Box El.= 177.9
 FH Bury Line El.= 177.9

N-25,534.6316, E-16,898.2139
 @ Cortina, Sta. 123+65.85, 20.2' Rt.=
 WL 2, Sta. 5+86.40
 1- 8" CI CL RJ 22 1/2° Bend *
 L= 4'
 1- 8" CI CL PE x RJ 11 1/4° Bend *
 Defl.= 38°07'11"

PLAN
 CHECKED
 BY
 DATE

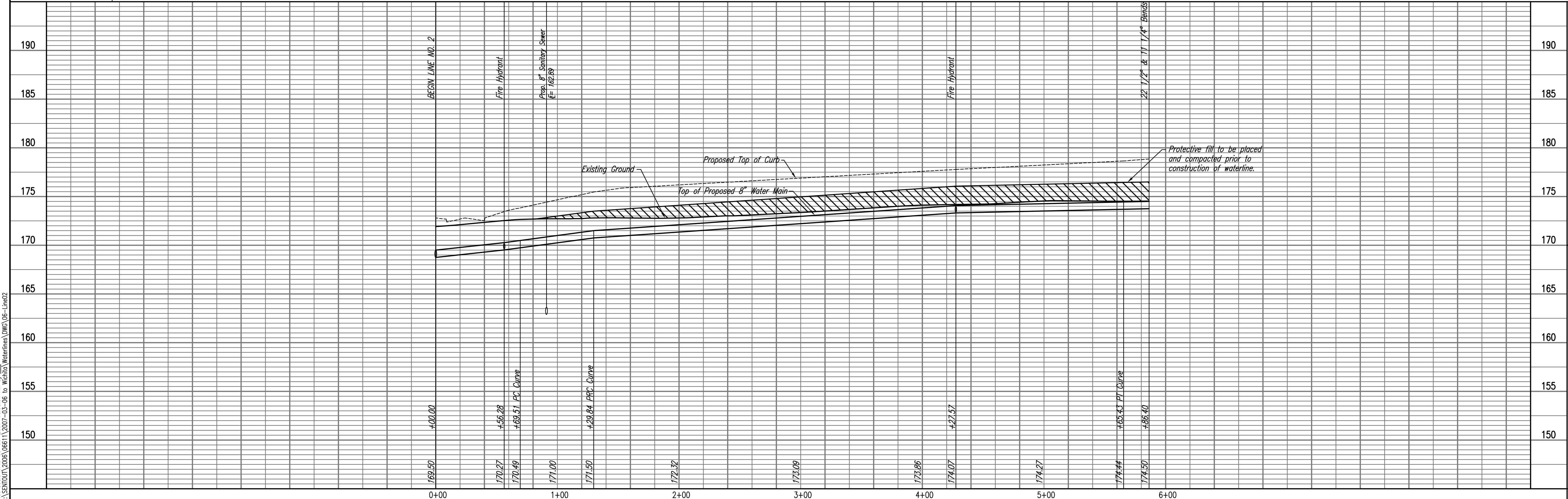
PROFILE
 CHECKED
 BY
 DATE



*STATION 5+86.40 TO STATION 8+85.39
 CONTRACTOR SHALL UTILIZE RESTRAINED
 JOINT PIPE (CERTA-LOK DR18 PVC OR
 APPROVED EQUAL) AND FITTINGS (ONE-BOLT
 OR APPROVED EQUAL).

WATERLINE NO. 2

Unless noted otherwise, elevations shown are top of pipe



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 Plot Scale: 1/40 03-06-2007 10:08:01 AM by BFT
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CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR, P.E. - CITY ENGINEER
 FONTANA 3RD ADDITION
WATERLINE NO. 2
 CITY OF WICHITA PROJECT NO. 448-50004

Professional Engineering Consultants, P.A.
 303 S. TOPICKA AVENUE, WICHITA, KANSAS 67202
 316-262-2691 • FAX 316-262-3008

Designed By: MDK
 Drawn By: TJS, JAW
 Job No.: 35-06611-002-042
 Date: November 2006

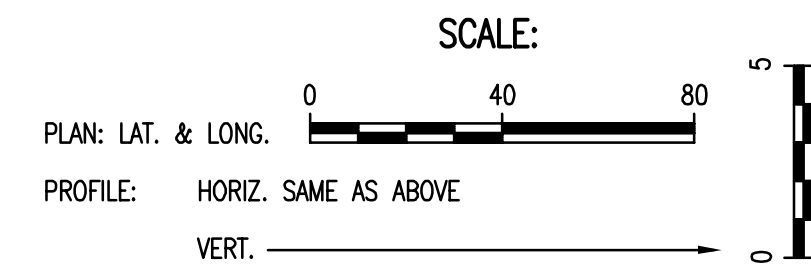
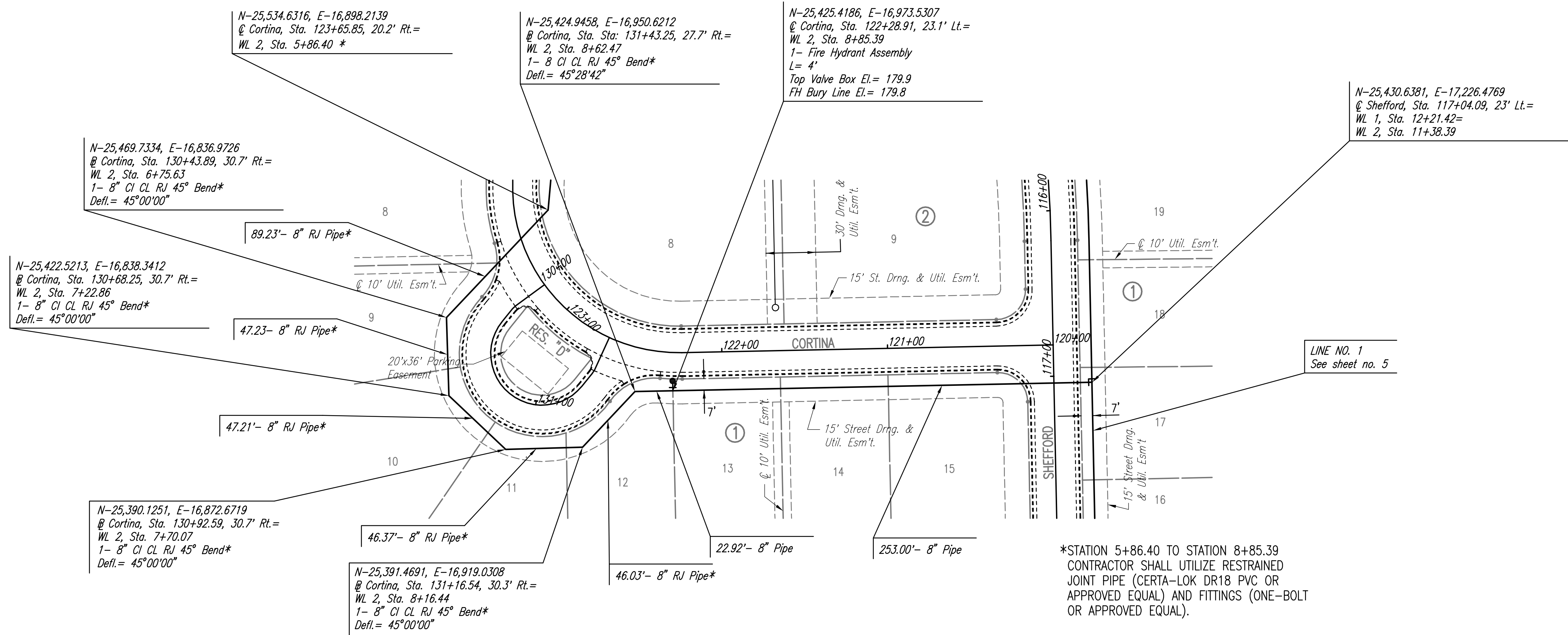
Sheet 6 of 12

PLAN	CHECKED	DATE
	CHECKED	

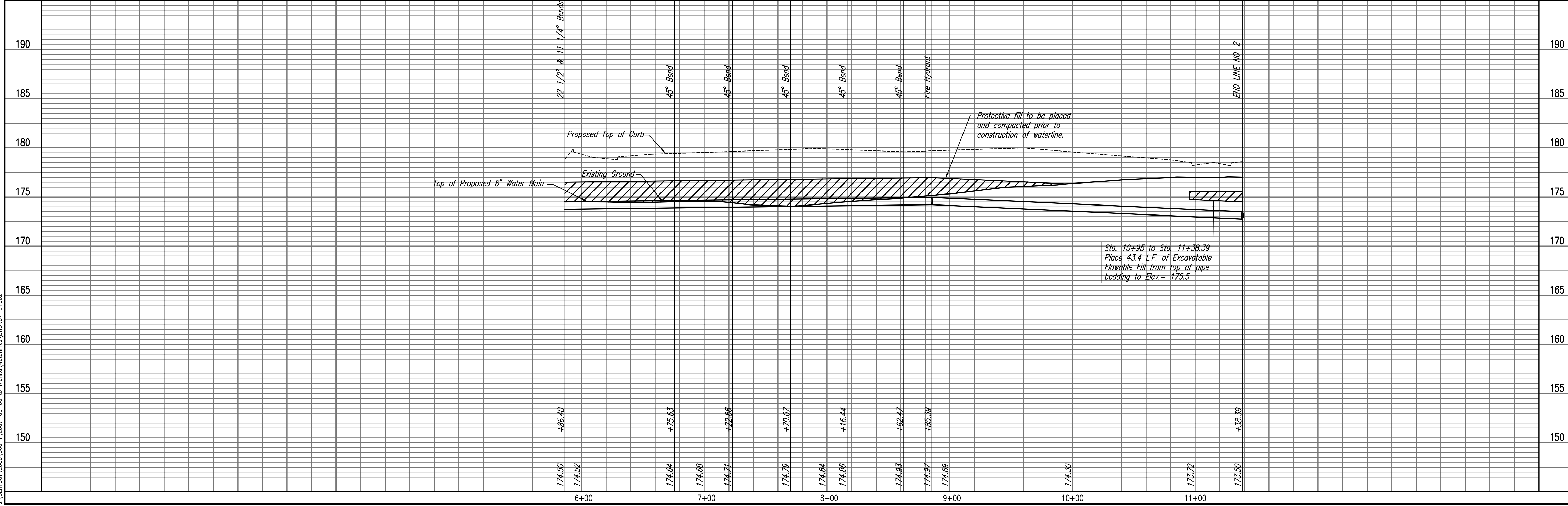
PROFILE	CHECKED	DATE
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Unless noted otherwise, elevations shown are top of pipe



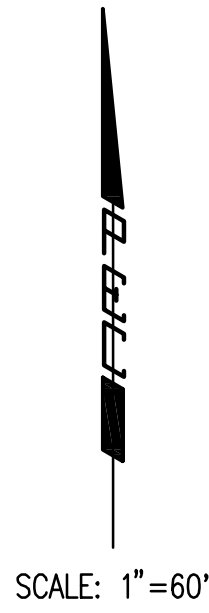
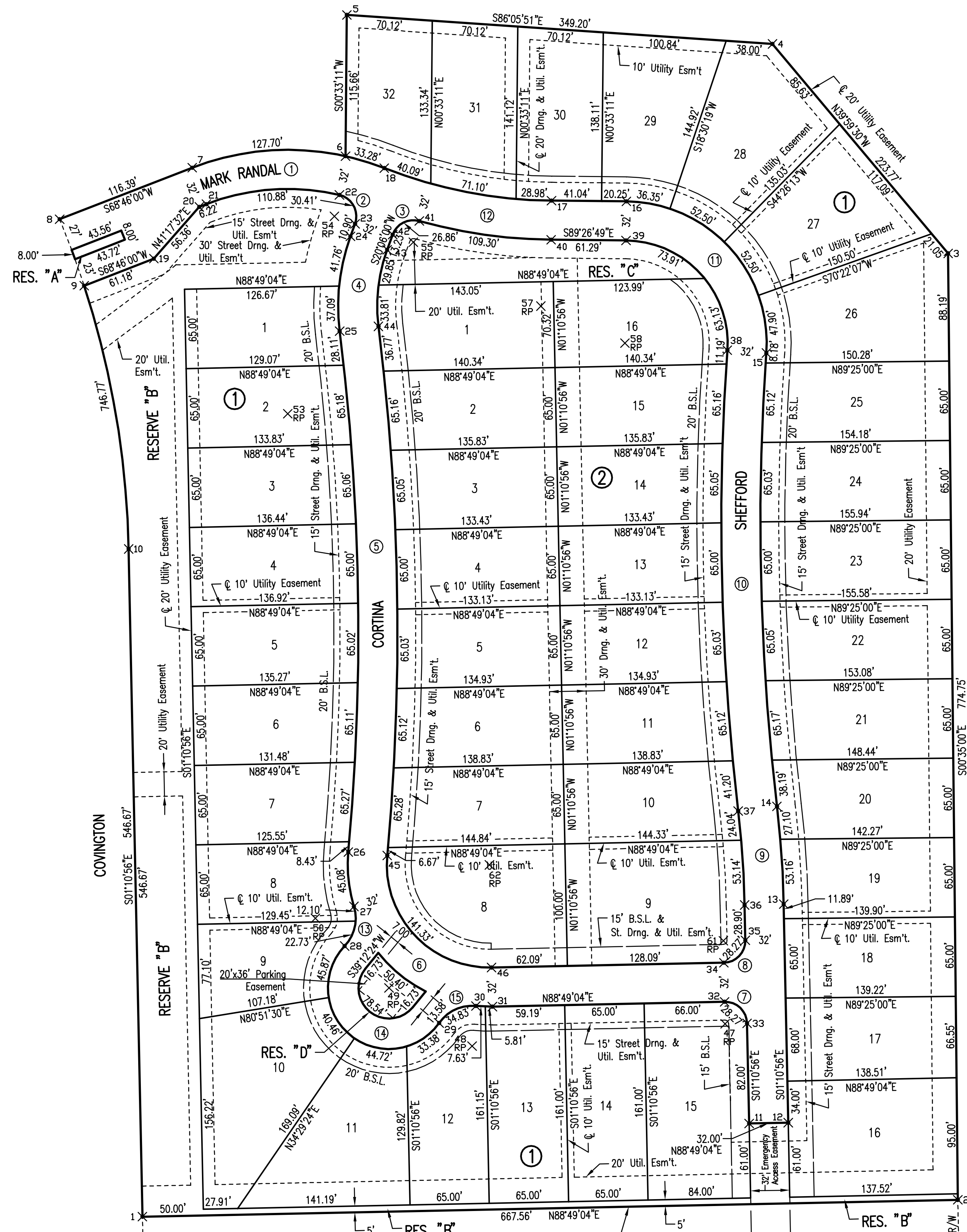
WATERLINE NO. 2



*STATION 5+86.40 TO STATION 8+85.39
 CONTRACTOR SHALL UTILIZE RESTRAINED JOINT PIPE (CERTA-LOK DR18 PVC OR APPROVED EQUAL) AND FITTINGS (ONE-BOLT OR APPROVED EQUAL).

Sta. 10+95 to Sta. 11+38.39
 Place 43.4 L.F. of Excavatable Flowable Fill from top of pipe bedding to Elev. = 175.5

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 Plot Scale: 1/4" = 60'-0" (2007-10-23 10:05:23 AM by BEJ)
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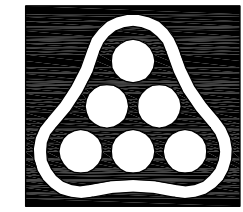


COORDINATE LIST		
POINT	NORTH	EAST
7	26119.194018	16733.497523
8	26077.041027	16625.007691
9	26022.612441	16645.071348
10	25807.140885	16681.498764
11	25336.853287	17189.403788
12	25337.513463	17221.396978
13	25516.373117	17217.706978
14	25596.418882	17212.184793
15	25967.517735	17203.491588
16	26091.656277	17088.897607
17	26092.247941	17027.609351
18	26118.871623	16890.778139
19	26044.770514	16702.099936
20	26087.113783	16739.289283
21	26089.366387	16745.086847
22	26096.927088	16854.034867
23	26073.223556	16866.799606
24	26062.990222	16863.054750
25	25985.375511	16864.235372
26	25959.065283	16861.283616
27	25514.508709	16865.898317
28	25482.150248	16858.314381
29	25419.109737	16935.591441
30	25433.038368	16965.767248
31	25432.536954	16979.195729
32	25436.460655	17169.344569
33	25418.836835	17187.712087
34	25468.453844	17168.684393
35	25486.871362	17186.309214
36	25515.717941	17185.713039
37	25592.680022	17180.403966
38	25969.764341	17171.570549
39	26089.657768	17088.588701
40	26090.749432	17077.300444
41	26075.567554	16919.398563
42	26064.417052	16897.652268
43	26051.993144	16893.105778
44	25989.340305	16885.976964
45	25556.154106	16893.150919
46	25464.530144	16978.535553
47	25418.464486	17169.715918
48	25400.188035	16962.627887
49	25447.778983	16894.627135
50	25504.835283	16834.347963
51	25739.556272	14885.510784
52	25791.734670	15934.858700
53	25917.857509	16811.725461
54	26079.409412	16849.895903
55	26058.231196	16914.555971
56	26476.230049	17031.318233
57	26005.942881	17018.944458
58	25975.661682	17087.777820
59	25828.228149	19182.596035
60	25499.208544	16385.883304
61	25486.450013	17168.313045
62	25548.51226	16976.802592

CURVE DETAILS				
① = CURVE NUMBER				
① CURVE NO. 1 R=184.00' Δ=34°31'37" Δ=42°42'05" R=216.00'	④ CURVE NO. 4 R=134.00' Δ=27°13'02" R=166.00'	⑦ CURVE NO. 7 R=18.00' Δ=90°00'00"	⑩ CURVE NO. 10 R=1984.00' Δ=10°44'08" R=2016.00'	⑬ CURVE NO. 13 R=33.00' Δ=60°28'20"
② CURVE NO. 2 R=18.00' Δ=96°48'23" R=2016.00'	⑤ CURVE NO. 5 R=1984.00' Δ=12°20'13" R=2016.00'	⑧ CURVE NO. 8 R=18.00' Δ=90°00'00"	⑪ CURVE NO. 11 R=84.00' Δ=93°28'22" R=116.00'	⑭ CURVE NO. 14 R=25.00' Δ=180°00'00" Δ=188°26'24" R=50.00'
③ CURVE NO. 3 R=18.00' Δ=85°30'24"	⑥ CURVE NO. 6 R=84.00' Δ=96°24'06" R=116.00'	⑨ CURVE NO. 9 R=800.00' Δ=05°31'39" R=832.00'	⑫ CURVE NO. 12 R=384.00' Δ=20°54'54" Δ=15°03'13" R=416.00'	⑮ CURVE NO. 15 R=33.00' Δ=60°28'20"

SW Cor., Sec. 31, T26S, R1W
 Found Pipe w/Sedgwick County
 Cap in Concrete

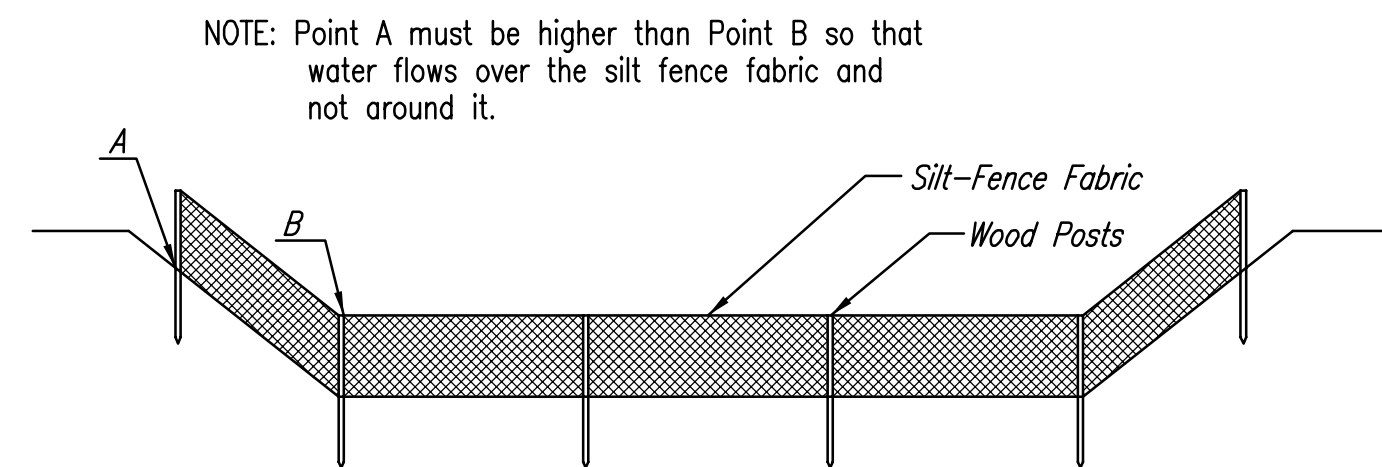
S 1/4 Cor. Sec. 31, T26S, R1W
 Found Stone & 3/4" IP on
 West side



No.	Revision	By	Date

CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR, P.E. - CITY ENGINEER
FONTANA 3RD ADDITION
PLAT
 CITY OF WICHITA PROJECT NO. 448-90004
Professional Engineering Consultants, P.A.
 303 S. TOPKA • WICHITA, KANSAS 67202
 316-262-2691 • FAX 316-262-3003

Designed by	MDK	Job No.	35-06611-002	Sht. 8 of 12
Drawn by		Date	November 2006	



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 Ditch 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 upstream 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 upstream 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.

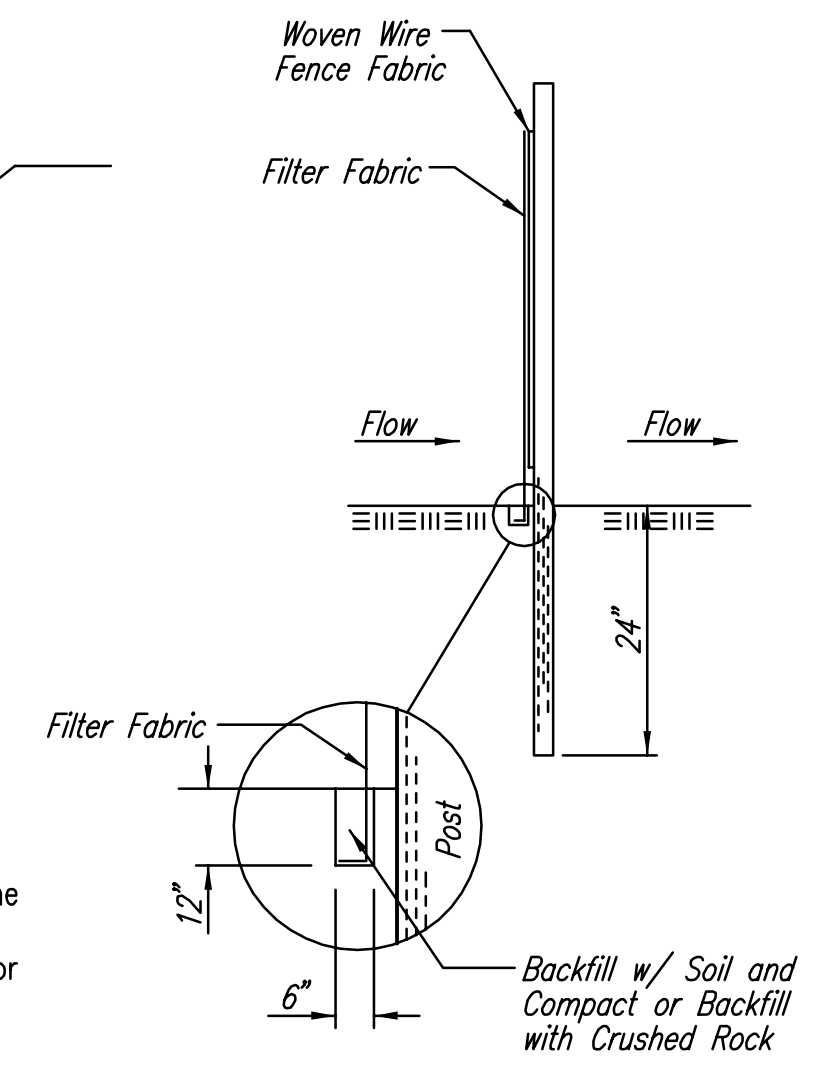
List of common placement/installation mistakes to avoid:

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 upstream 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.

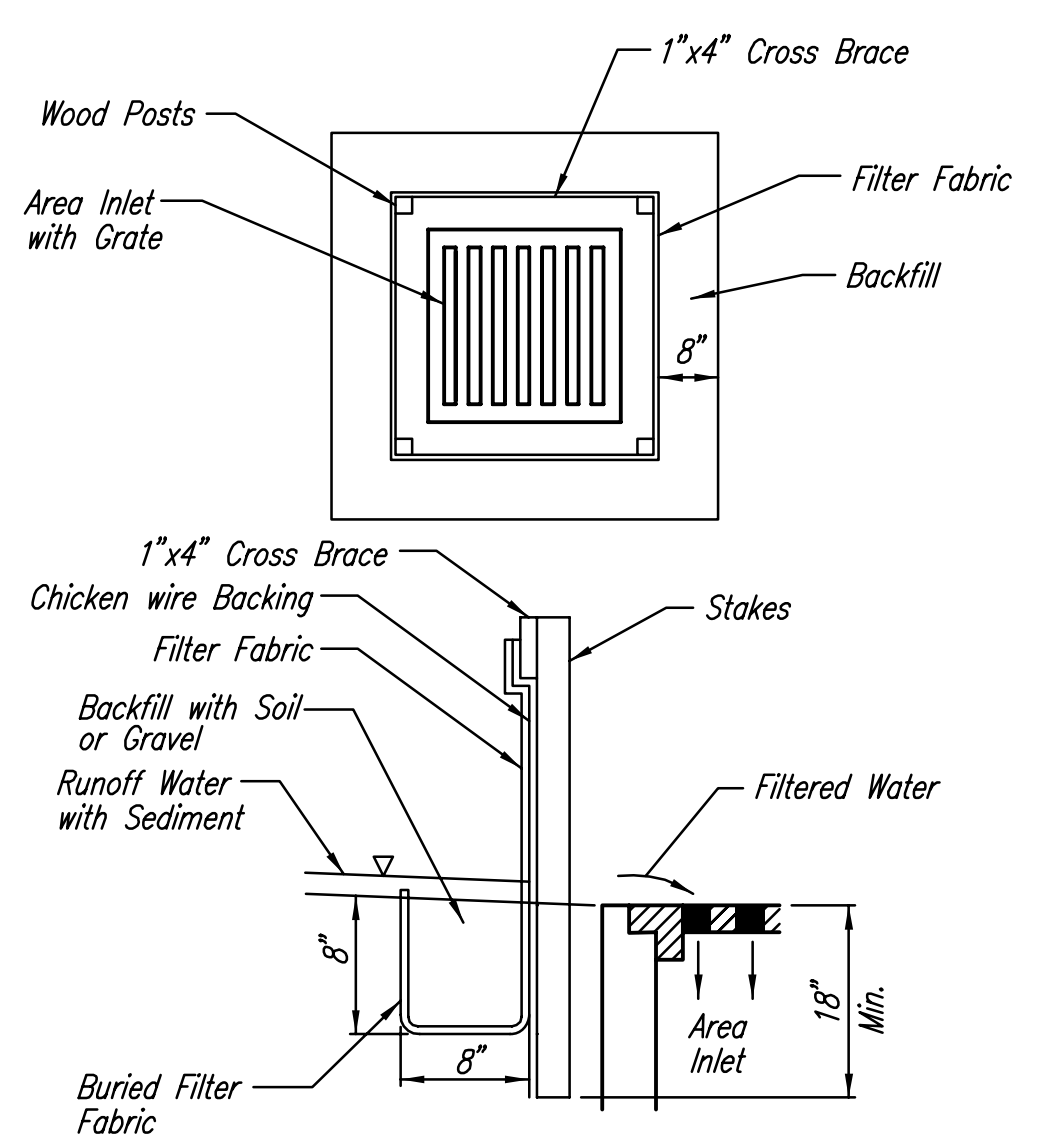
Inspection and Maintenance:

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 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.

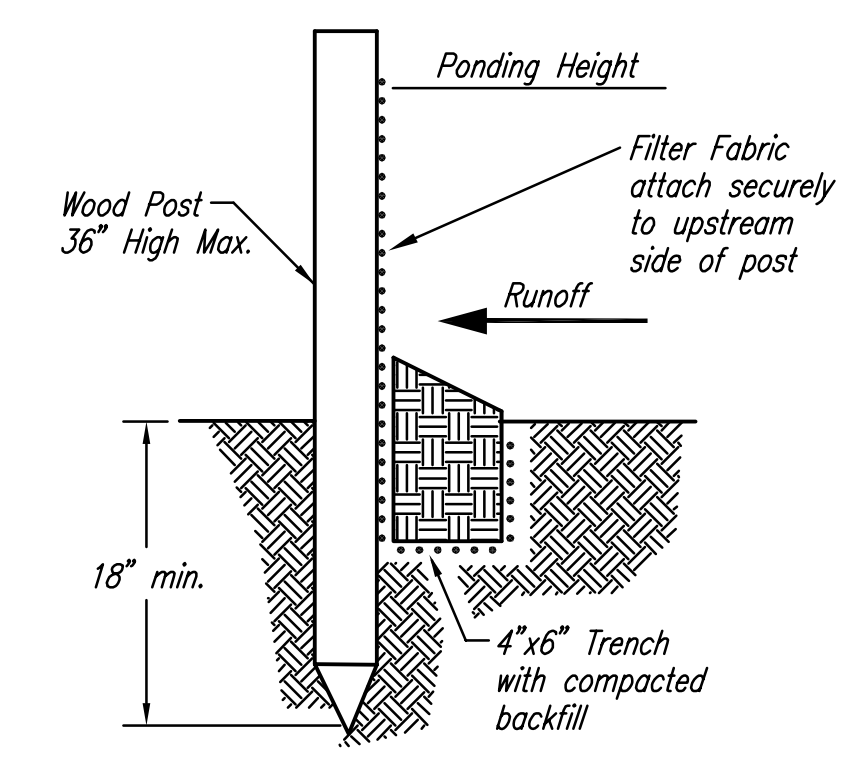
List of common placement/installation mistakes to avoid:

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 resisted 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 dug 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:

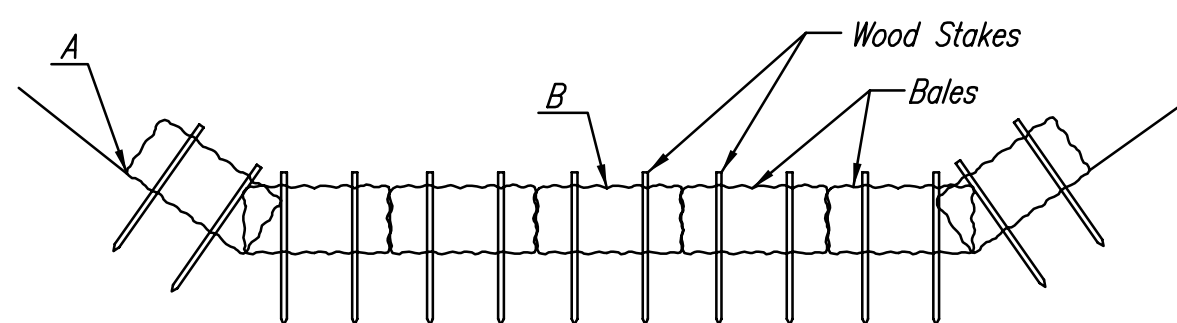
- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Do the silt fences sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the slope barrier?



<i>SOIL EROSION BMPs</i>	
SILT FENCE DITCH CHECK AND BARRIER DETAILS	
JIM ARMOUR, P.E. CITY ENGINEER	
PROJECT NUMBER 448-90004	OCA NO. 735355
DATE JAN, 2007	SHEET 10 OF 12

S:\03-06-2007 9:34:44 AM by BFT
 Plot Scale 1:1 03-06-2007 10:04:31 AM by BFT
 J:\SENTOUT\2006\0611\2007-03-06 to Wichita Waterlines\DWG\10-SiltFenceBMP.dwg

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 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".

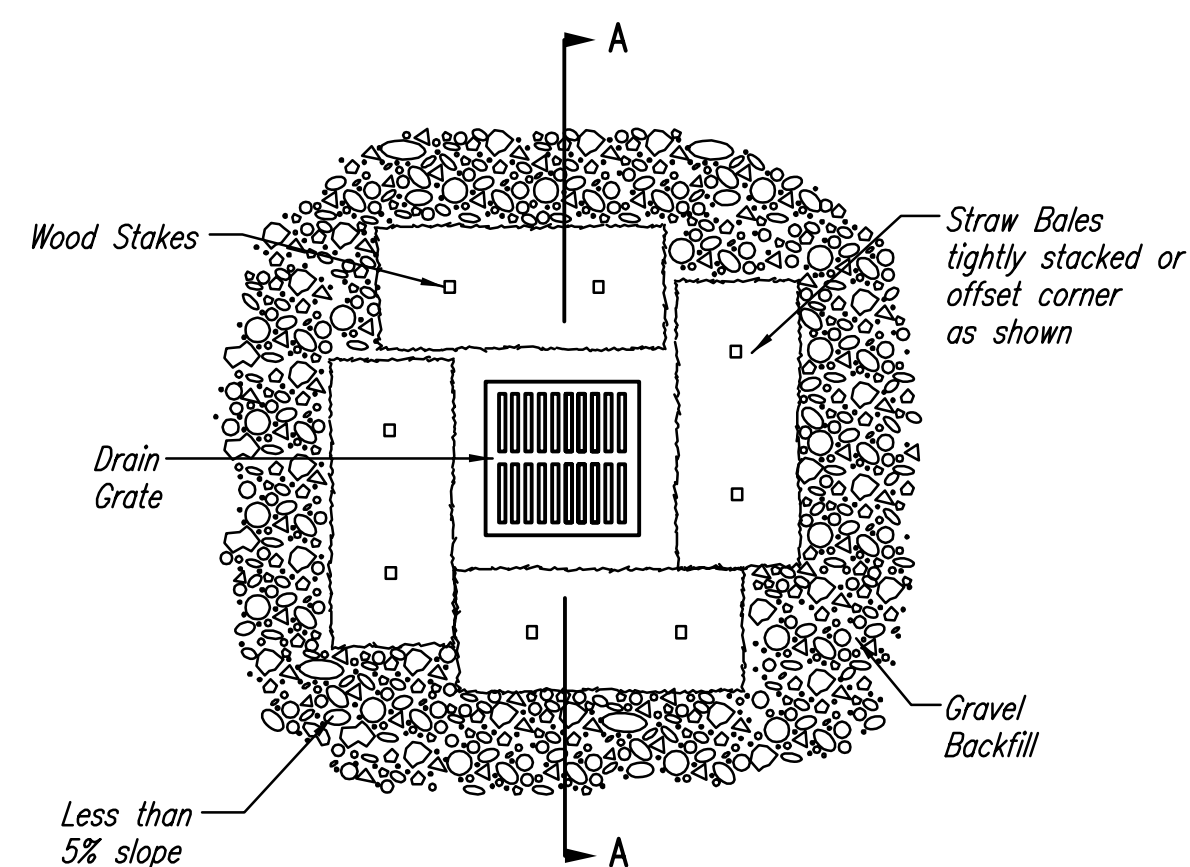
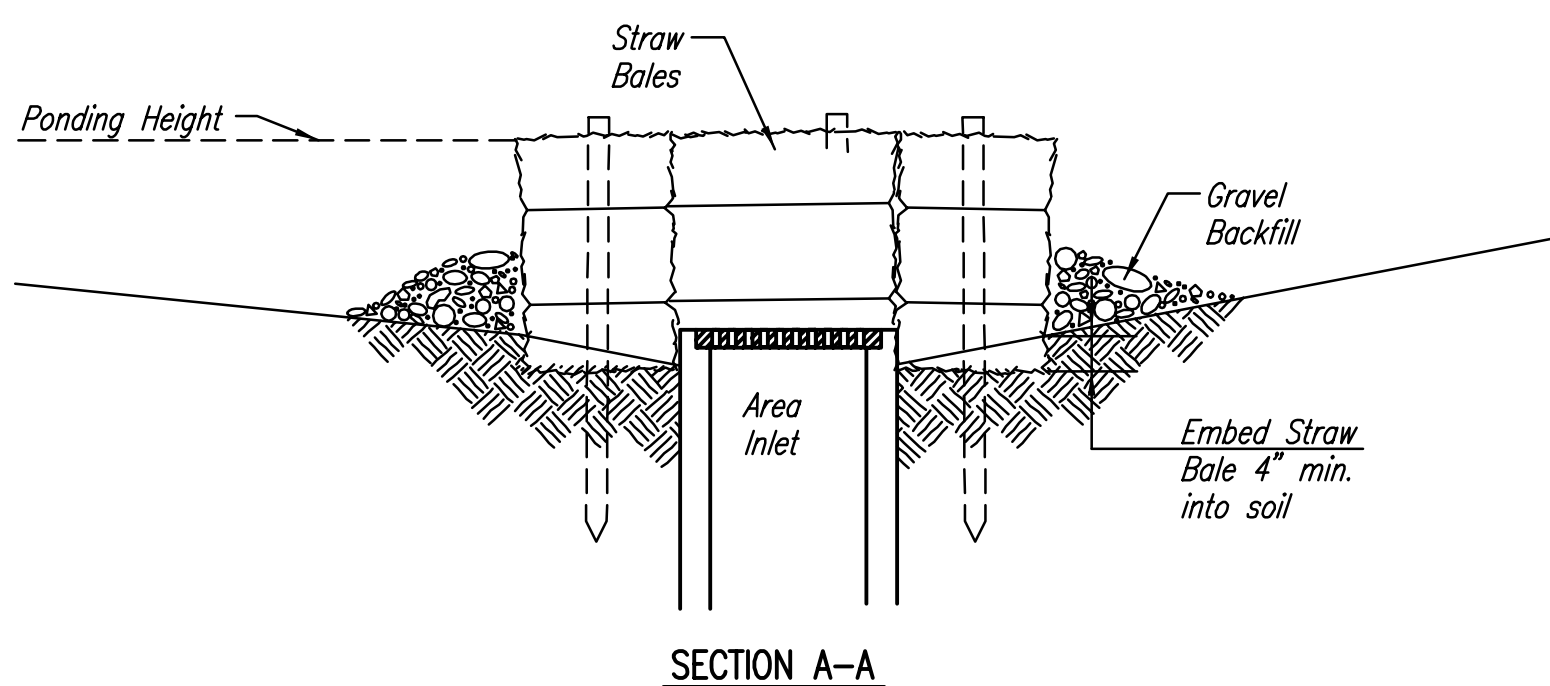
List of common placement/installation mistakes to avoid:

- 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.

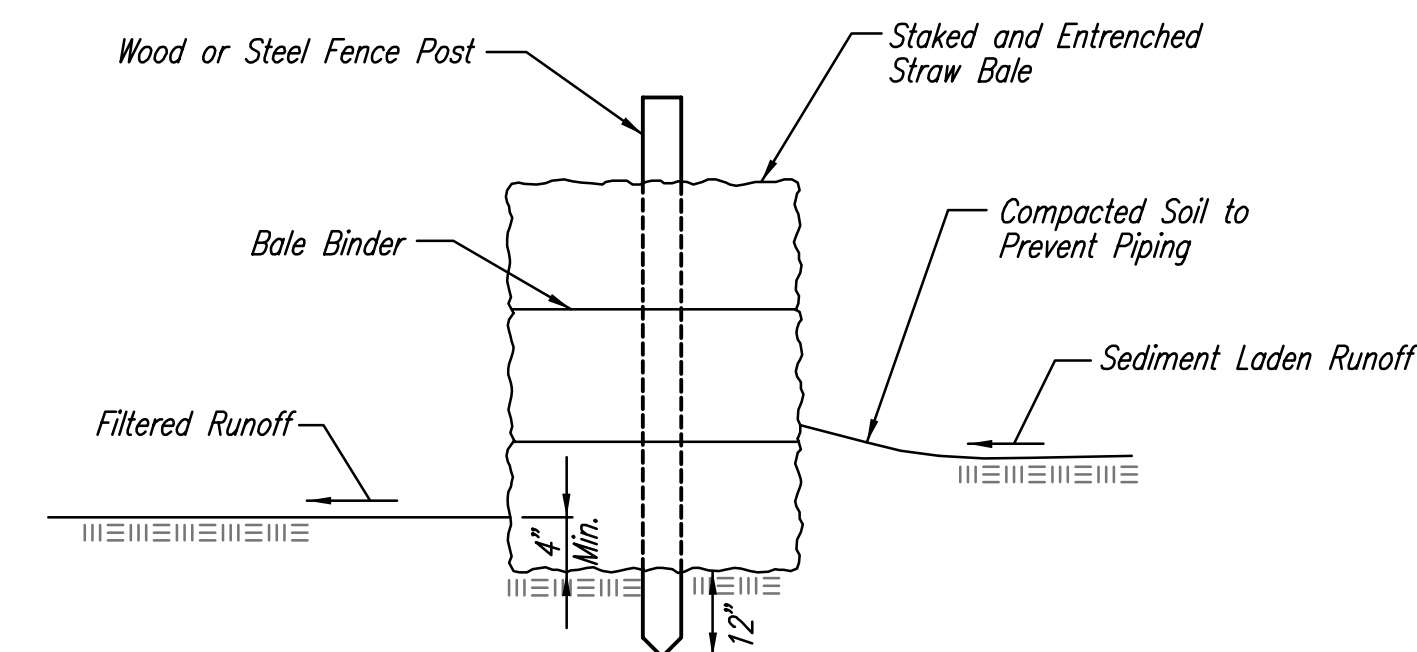
List of common placement installation mistakes to avoid:

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 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:

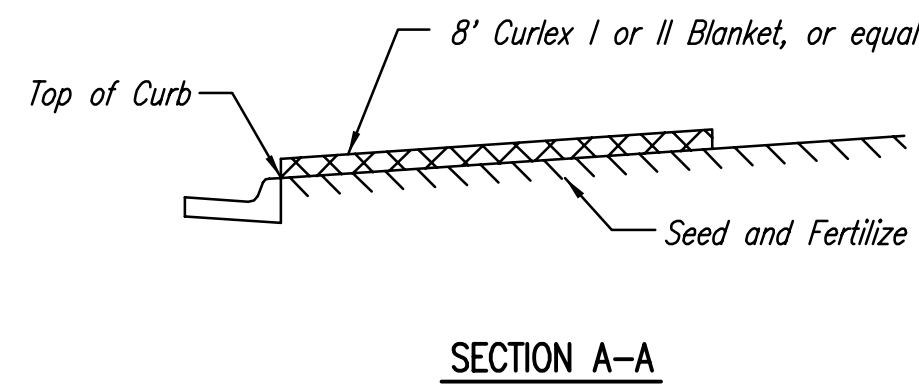
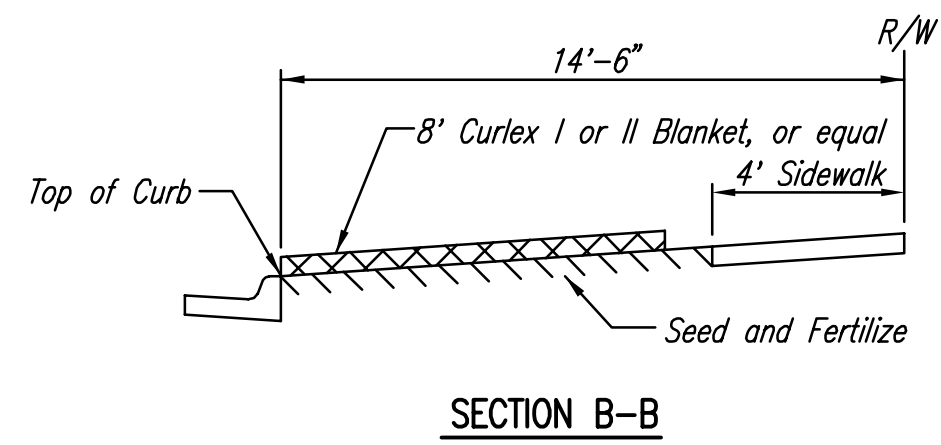
- When practical, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the 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:

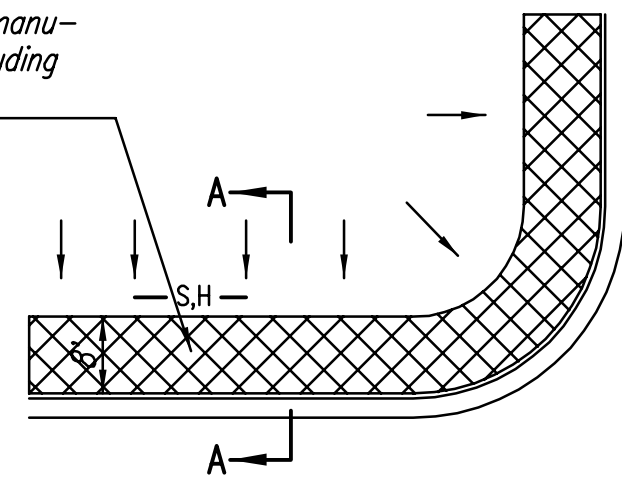
Bale slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- 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?

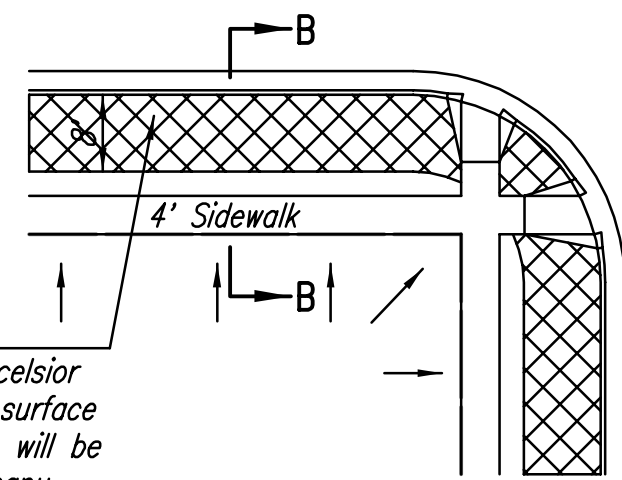
	<i>SOIL EROSION BMPs</i>	
	STRAW BALE DITCH CHECK AND BARRIER DETAILS	
	JIM ARMOUR, P.E. CITY ENGINEER	
	PROJECT NUMBER 448-90004	OCA NO. 735355
DATE JAN, 2007	SHEET 11 OF 12	



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 manufacturer's recommendation, including staples. (See detail)



SOUTH STREET

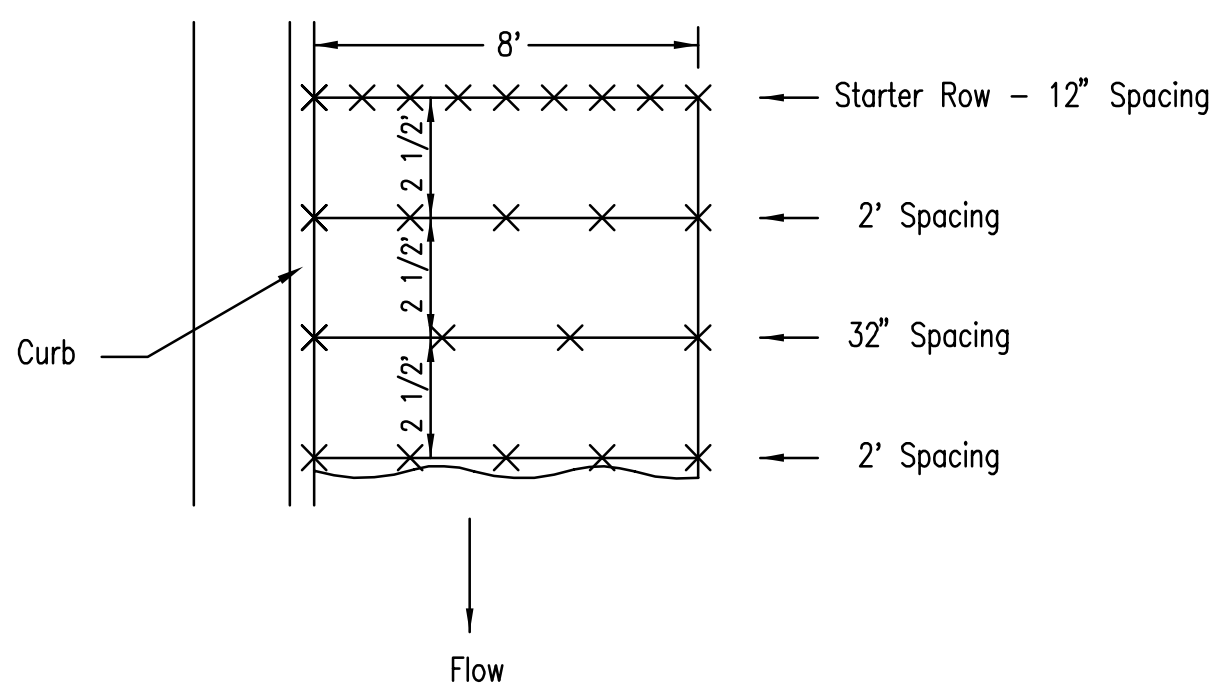


Install 8' wide Curlex I or II Excelsior Blanket, or equal, on prepared surface back of curb. Edge of blanket will be at back of curb. Install per manufacturer's recommendation, including staples. (See detail)

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.

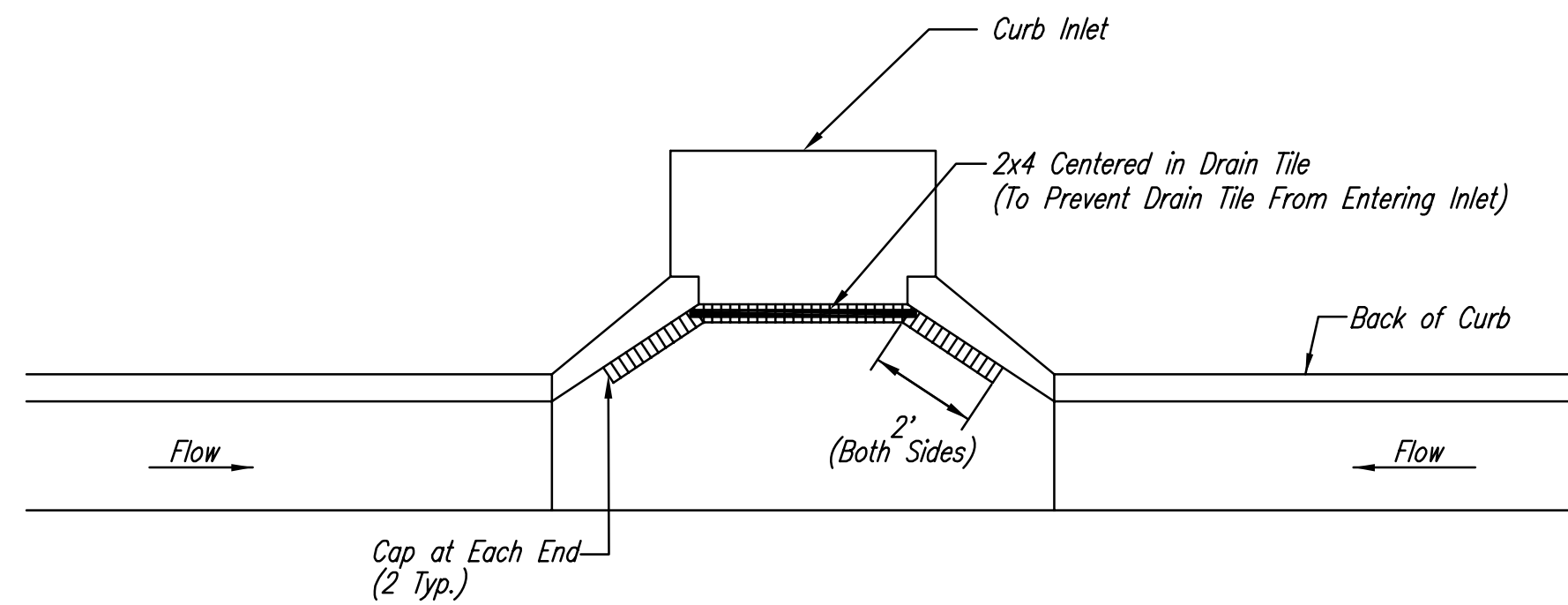
BACK OF CURB PROTECTION DETAIL



STAPLE PATTERN

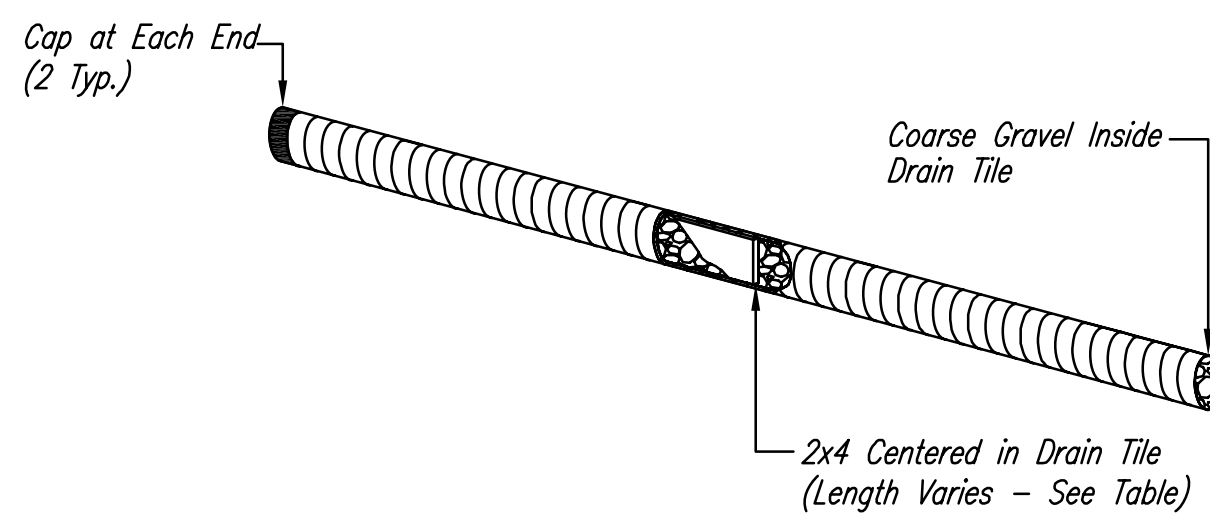
NOTES: Use 6" seam overlap

DETAILS FOR CURLEX I OR II BLANKETS

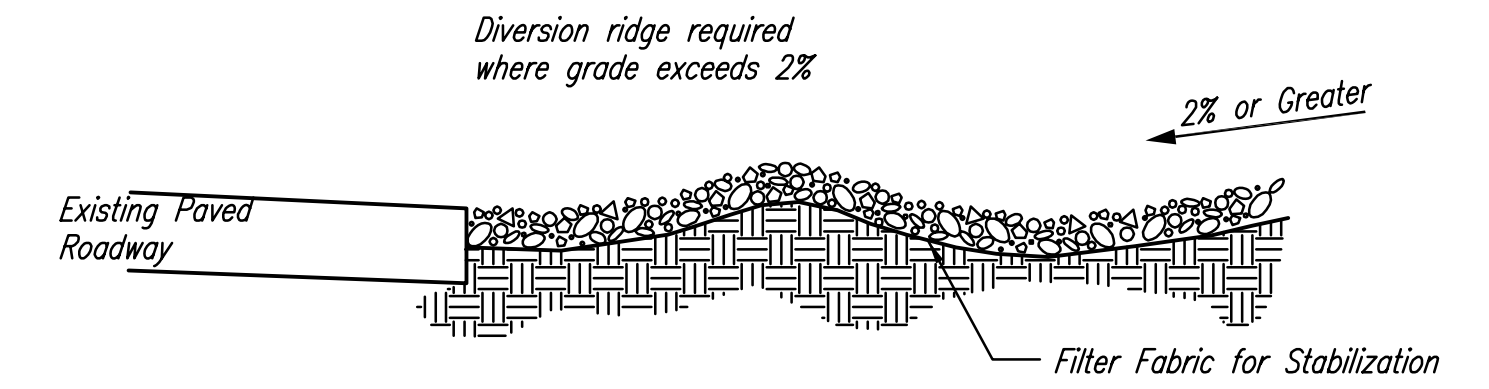


Note: Place 4" perforated PVC pipe, filled with 1/2"-1" dia. gravel, in front of curb inlet as shown.

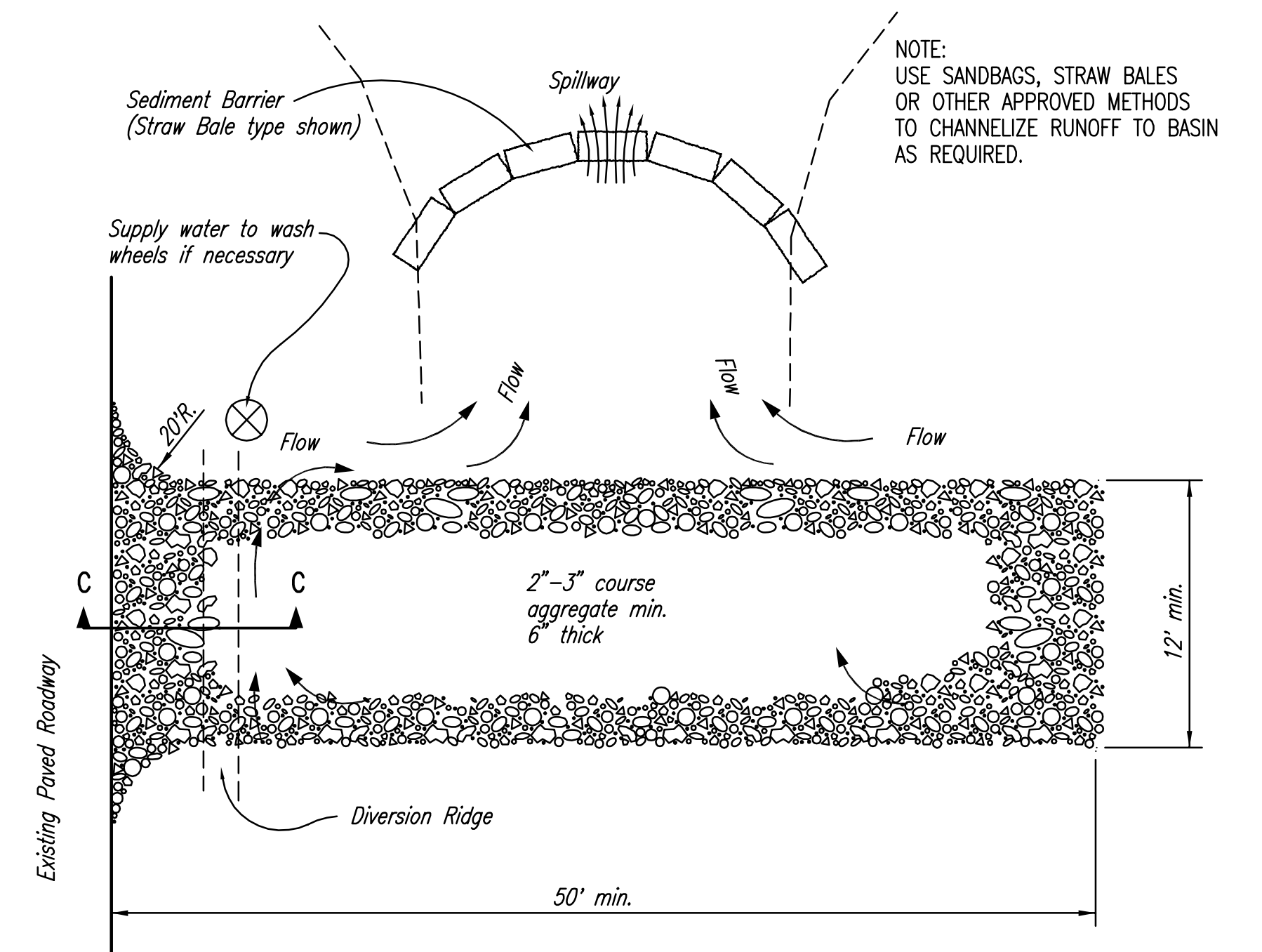
2X4 LENGTH	INLET TYPE	INLET OPENING
5'-6"	1-A	5'-0"
10'-6"	1-A	10'-0"
15'-6"	1-A	15'-0"



CURB INLET PROTECTION
4" PERFORATED PIPE W/ GRAVEL



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE

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.

S:\03-06-2007 9:55:52 AM by BFT
 Plot Scale 1:1 03-06-2007 10:07:05 AM by BCJ
 J:\SENTOU\2006\0611\2007-03-06 to Wichita Waterlines\DWG\12-SoilErosionBMP's

CITY OF WICHITA

SOIL EROSION BMP's

BACK OF CURB PROTECTION, CURB INLET PROTECTION AND CONSTRUCTION ENTRANCE

JIM ARMOUR, P.E.
CITY ENGINEER

PROJECT NUMBER 448-90004	OCA NO. 735355
DATE JAN. 2007	SHEET 12 OF 12