WATERLINE IMPROVEMENTS

TO SERVE

KOCH WICHITA CAMPUS EXPANSION

PRIVATE PROJECT NO. 1744 PPW (607853)

CITY OF WICHITA, KANSAS

GARY JANZEN, P.E.- CITY ENGINEER

AS BUILTS

Contractor: Mies Construction

10/21/2013

Project Inspector: Larry Gann

KEMILLER ENGINEERING PA
117 E. Lewis, Wichita, KS 67202 (316)264-0242

PARTIAL COMPLETION, Ph II

AS BUILTS

Contractor: McCullough Excavation, Inc.

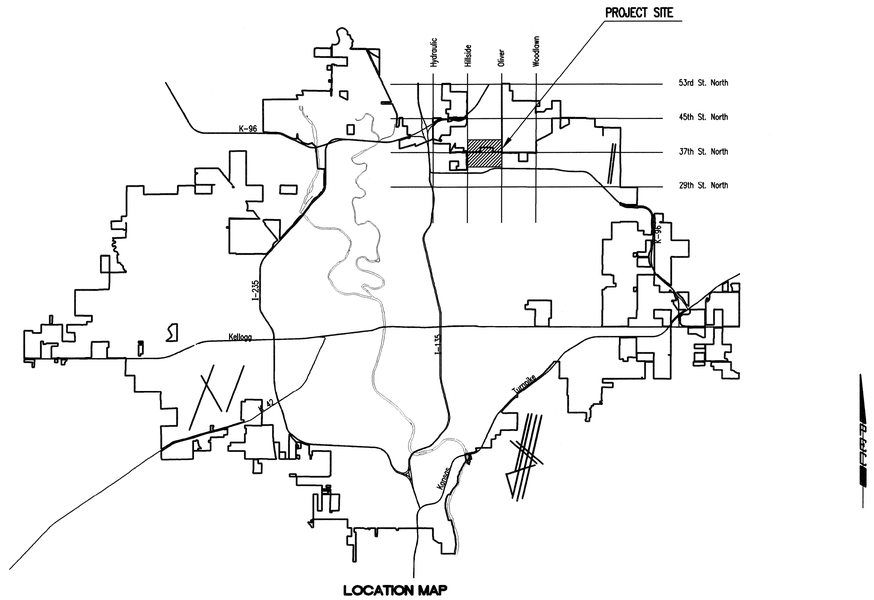
10/02/2014

Project Inspector: Larry Gann

KEMILLER ENGINEERING PA
117 E. Lewis, Wichita, KS 67202 (316)264-0242

COMPLETED, Ph III

project was done in
2 phases



LOCATION MAP

INDEX OF SHEETS

APPROVED AS NOTED
BY CITY ENGINEER OF WICHITA
& BY WICHITA FIRE DEPARTMENT

Water Mains (Engineering) 6/6/13

Water Mains (Water) 6-6-13

Fire Prot. Line 06-06-2013

NOTE TO CONTRACTORS

PUBLIC PROPERTY:
Inspection and testing for the waterline is to be provided by a Licensed Consulting Engineering Firm under contract with the Owner/Developer. Said inspection to be in accordance with the City of Wichita standard construction engineering practices and certified by a Licensed Professional Engineer licensed in the State of Kansas. No work shall be performed in dedicated easements or public right-of-way by the Contractor without such inspection nor shall any work be commenced without written authorization by the City Engineer. All Construction and Materials shall comply with the City of Wichita Specifications and Standards (on file and available in the City Engineer's Office).

PRIVATE PROPERTY:
Installation and testing for the fire protection line is to be performed by a City of Wichita licensed fire protection contractor in accordance with the fire codes as adopted by the City of Wichita. All materials and construction practices for the fire protection line shall comply with the fire codes as adopted by the City of Wichita (available from the City of Wichita Fire Department). The Contractor shall not commence work without notification and approval of the Wichita Fire Department.
Inspection of the fire protection line is to be provided by the City of Wichita Fire Department and by a licensed Consulting Engineering Firm under contract with the Owner/Developer.
The contractor shall not start work until the project inspector is assigned to the project and present on the site. Any work done without inspection will be required to be uncovered for inspection.

JUNE 2013

PLANS PREPARED BY

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

ENGINEERS

WICHITA, KANSAS

MICHAEL D. KEMILLER
LICENSED
13944
6/6/13
KANSAS
PROFESSIONAL ENGINEER

Saved: 06-10-2013 8:18:53 AM by CSL
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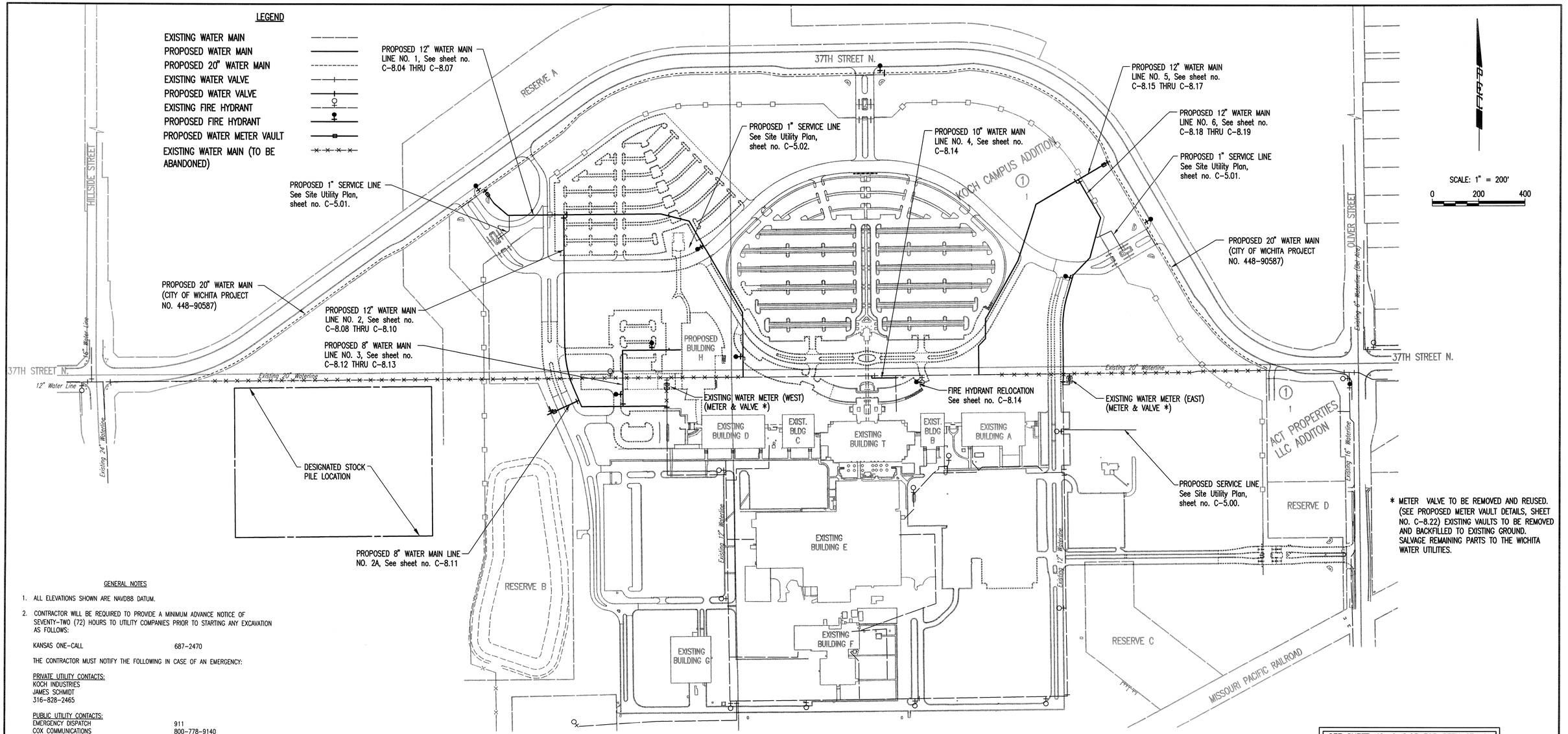
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_PPW Title Sheet



* METER VALVE TO BE REMOVED AND REUSED. (SEE PROPOSED METER VAULT DETAILS, SHEET NO. C-8.22) EXISTING VAULTS TO BE REMOVED AND BACKFILLED TO EXISTING GROUND. SALVAGE REMAINING PARTS TO THE WICHITA WATER UTILITIES.

GENERAL NOTES

1. ALL ELEVATIONS SHOWN ARE NAVD88 DATUM.
2. 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:

   PRIVATE UTILITY CONTACTS:
   KOCH INDUSTRIES
   JAMES SCHMIDT
   316-828-2465

   PUBLIC UTILITY CONTACTS:

EMERGENCY DISPATCH	911
COX COMMUNICATIONS	800-778-9140
KANSAS GAS SERVICE	888-482-4950
WESTAR ENERGY	800-383-1183
AT&T	800-286-8313
LEVEL 3 COMMUNICATIONS	316-858-6146
CITY OF WICHITA WATER DEPARTMENT	262-6000
CITY OF WICHITA SEWER MAINTENANCE	262-6000

3. ALL WATER MAINS AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF WICHITA, KANSAS STANDARD SPECIFICATIONS.
4. 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.
5. 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.
6. 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.
7. THE CONTRACTOR SHALL GIVE THE OWNER A MINIMUM OF TEN (10) DAYS ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION.
8. 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.
9. THE CONTRACTOR SHALL RESTORE ALL DITCHES, SWALES, ROAD SHOULDERS, ENTRANCES, AND BANKLINES TO THEIR ORIGINAL SLOPES AND GRADES EXCEPT AS SHOWN OTHERWISE.
10. INTERURBAN TRAFFIC GENERATED OUTSIDE THE PROJECT AREA AND LOCAL BUSINESS 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.
11. 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.
12. ALL EXCESS EXCAVATION WHICH IS TO BE WASTED SHALL BE STOCKPILED AT THE LOCATION AS SHOWN ABOVE.
13. REFERENCE LANDSCAPING PLANS FOR SEED MIX. 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 PROJECT SPECIFICATIONS AND THE CITY OF WICHITA ADMINISTRATIVE REGULATION NO. AR6.5 WHICH GOVERNS CLEANUP AND RESTORATION OR REPLACEMENT FOLLOWING CONSTRUCTION.
14. 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.
15. 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 KOCH INDUSTRIES INC..
16. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL METHODS AS SPECIFIED. THE GENERAL LOCATION OF THE REQUIRED EROSION CONTROL IS SHOWN ON THE EROSION CONTROL PLAN. THE GENERAL 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.
17. CONTRACTOR SHALL PROVIDE TEMPORARY BLOWOFF MATERIALS FOR TEMPORARY FLUSHING OF PROPOSED WATERLINES. CONNECTIONS TO THE EXISTING WATERLINE SHALL BE MADE WITH CLEAN, SWABBED PIPE AND FLUSHED UPON COMPLETION OF TIE-INS.
18. THE CONTRACTOR MUST SCHEDULE THE CONNECTIONS TO THE EXISTING MAINS WITH THE CITY SUCH THAT THERE IS MINIMUM DISRUPTION TO THE CITY. CONNECTIONS SHALL BE MADE DURING PERIODS AT LOW WATER USAGE.
19. THE CONTRACTOR SHALL COORDINATE ANY CONNECTIONS THAT WILL CREATE LOSS OF WATER SERVICE TO KOCH INDUSTRIES. LOSS OF WATER SERVICE SHALL BE LIMITED TO A MAXIMUM PERIOD OF 4 HOURS AND SHALL BE ACCOMPLISHED AS APPROVED BY KOCH INDUSTRIES AND DURING NON-PEAK HOURS.
20. WHEN ABANDONING/REMOVING WATERLINE AS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CAP OR PLUG THE END OF THE PIPES REMAINING IN PLACE PRIOR TO REMOVAL.
21. BACKFILL SHALL BE TYPE I OR III.
20. WHERE A MINIMUM OF 36" OF COVER CANNOT BE OBTAINED THE CONTRACTOR SHALL PROVIDE TEMPORARY FILL PRIOR TO PERMANENT FILL BEING PLACED IN ACCORDANCE WITH THE DETAIL ON SHEET NO. C-8.20. APPROVED MATERIAL SHALL BE COMPACTED TO 95% DENSITY AS DETERMINED BY ASTM D698.

SEE SHEET NO. C-8.03 FOR 37TH ST. N. WATERLINE AND KOCH SITE WATERLINE IMPROVEMENTS CONSTRUCTION SEQUENCING

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

SURVEY PROVIDED BY:
GARBER SURVEYING SERVICE, P.A.
2908 NORTH PLUM STREET
HUTCHINSON, KS. 67502
620-665-7032
www.garbersurveying.com
FEBRUARY 2013

MICHAEL D. KELSEY LICENSED 13944 KANSAS PROFESSIONAL ENGINEER 4/4/13

No.	Revision	By	Date

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

KEY MAP AND GENERAL NOTES

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Designed by	MDK, SAD	Job No.	35-12275-3-7208
Drawn by	CSL	Date	FEBRUARY 2013
		Sht.	C-8.01 of 27

Saved 06-07-2013 9:55:32 AM by CSL
Plot Scale 1:200 06-07-2013 1:22:05 PM by GLM
O:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_PPW Key Map

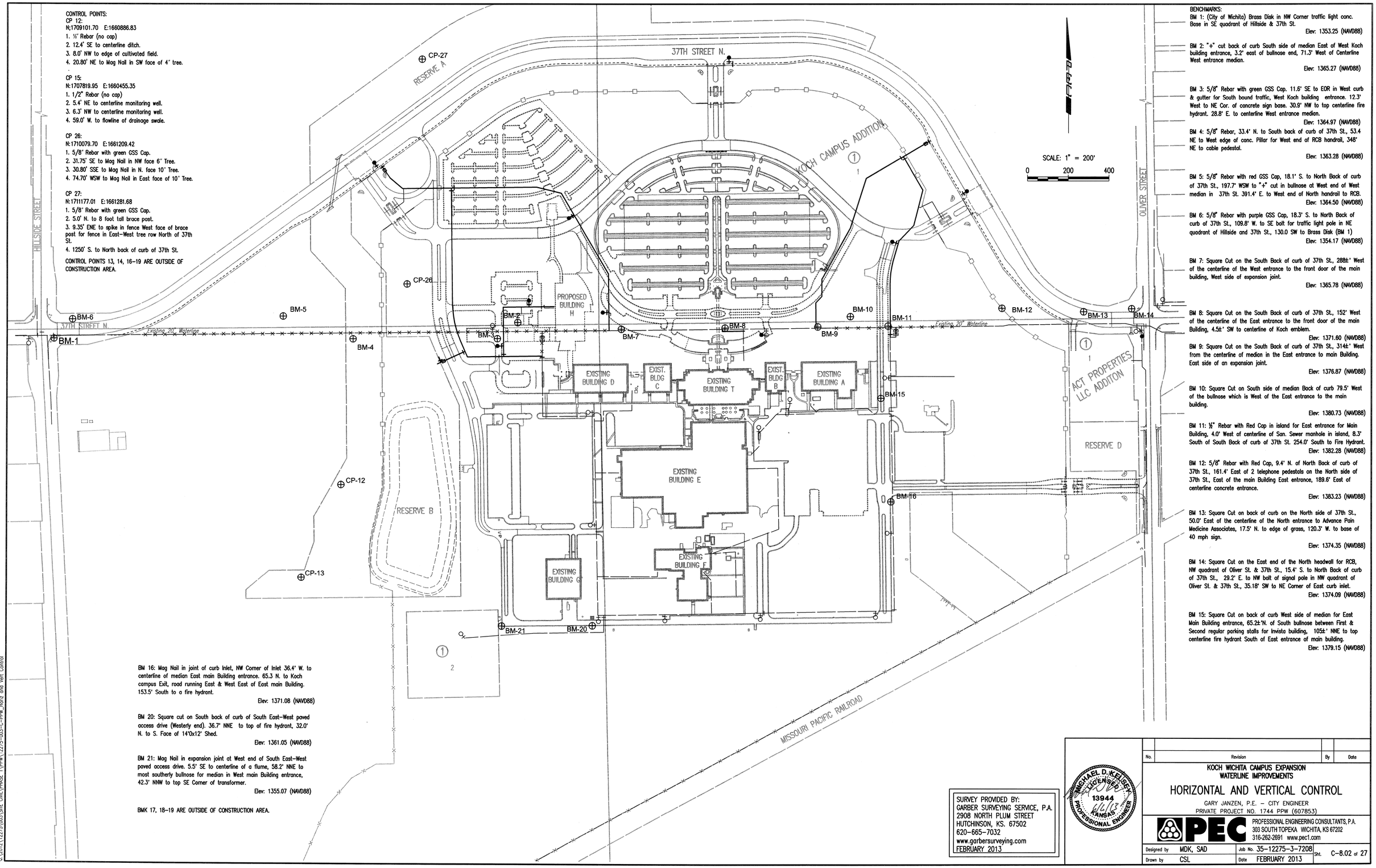
CONTROL POINTS:
CP 12:
N:1709101.70 E:1660886.83
1. ½" Rebar (no cap)
2. 12.4' SE to centerline ditch.
3. 8.0' NW to edge of cultivated field.
4. 20.80' NE to Mag Nail in SW face of 4" tree.

CP 15:
N:1707819.95 E:1660455.35
1. 1/2" Rebar (no cap)
2. 5.4' NE to centerline monitoring well.
3. 6.3' NW to centerline monitoring well.
4. 59.0' W. to flowline of drainage swale.

CP 26:
N:1710079.70 E:1661209.42
1. 5/8" Rebar with green GSS Cap.
2. 31.75' SE to Mag Nail in NW face 6" Tree.
3. 30.80' SSE to Mag Nail in N. face 10" Tree.
4. 74.70' WSW to Mag Nail in East face of 10" Tree.

CP 27:
N:1711177.01 E:1661281.68
1. 5/8" Rebar with green GSS Cap.
2. 5.0' N. to 8 foot tall brace post.
3. 9.35' ENE to spike in fence West face of brace post for fence in East-West tree row North of 37th St.
4. 1250' S. to North back of curb of 37th St.

CONTROL POINTS 13, 14, 16-19 ARE OUTSIDE OF CONSTRUCTION AREA.



BENCHMARKS:

BM 1: (City of Wichita) Brass Disk in NW Corner traffic light conc. Base in SE quadrant of Hillside & 37th St.
Elev: 1353.25 (NAVD88)

BM 2: "+" cut back of curb South side of median East of West Koch building entrance, 3.2' east of bullnose end, 71.3' West of Centerline West entrance median.
Elev: 1365.27 (NAVD88)

BM 3: 5/8" Rebar with green GSS Cap. 11.6' SE to EOR in West curb & gutter for South bound traffic, West Koch building entrance. 12.3' West to NE Cor. of concrete sign base. 30.9' NW to top centerline fire hydrant. 28.8' E. to centerline West entrance median.
Elev: 1364.97 (NAVD88)

BM 4: 5/8" Rebar, 33.4' N. to South back of curb of 37th St., 53.4 NE to West edge of conc. Pillar for West end of RCB handrail, 348' NE to cable pedestal.
Elev: 1363.28 (NAVD88)

BM 5: 5/8" Rebar with red GSS Cap, 18.1' S. to North Back of curb of 37th St., 197.7' WSW to "+" cut in bullnose at West end of West median in 37th St. 391.4' E. to West end of North handrail to RCB.
Elev: 1364.50 (NAVD88)

BM 6: 5/8" Rebar with purple GSS Cap, 18.3' S. to North Back of curb of 37th St., 109.8' W. to SE bolt for traffic light pole in NE quadrant of Hillside and 37th St., 130.0 SW to Brass Disk (BM 1)
Elev: 1354.17 (NAVD88)

BM 7: Square Cut on the South Back of curb of 37th St., 288±' West of the centerline of the West entrance to the front door of the main building, West side of expansion joint.
Elev: 1365.78 (NAVD88)

BM 8: Square Cut on the South Back of curb of 37th St., 152' West of the centerline of the East entrance to the front door of the main Building, 4.5±' SW to centerline of Koch emblem.
Elev: 1371.60 (NAVD88)

BM 9: Square Cut on the South Back of curb of 37th St., 314±' West from the centerline of median in the East entrance to main Building. East side of an expansion joint.
Elev: 1376.87 (NAVD88)

BM 10: Square Cut on South side of median Back of curb 79.5' West of the bullnose which is West of the East entrance to the main building.
Elev: 1380.73 (NAVD88)

BM 11: ½" Rebar with Red Cap in island for East entrance for Main Building, 4.0' West of centerline of San. Sewer manhole in island, 8.3' South of South Back of curb of 37th St. 254.0' South to Fire Hydrant.
Elev: 1382.28 (NAVD88)

BM 12: 5/8" Rebar with Red Cap, 9.4' N. of North Back of curb of 37th St., 161.4' East of 2 telephone pedestals on the North side of 37th St., East of the main Building East entrance, 189.6' East of centerline concrete entrance.
Elev: 1383.23 (NAVD88)

BM 13: Square Cut on back of curb on the North side of 37th St., 50.0' East of the centerline of the North entrance to Advance Pain Medicine Associates, 17.5' N. to edge of grass, 120.3' W. to base of 40 mph sign.
Elev: 1374.35 (NAVD88)

BM 14: Square Cut on the East end of the North headwall for RCB, NW quadrant of Oliver St. & 37th St., 15.4' S. to North Back of curb of 37th St., 29.2' E. to NW bolt of signal pole in NW quadrant of Oliver St. & 37th St., 35.18' SW to NE Corner of East curb inlet.
Elev: 1374.09 (NAVD88)

BM 15: Square Cut on back of curb West side of median for East Main Building entrance, 65.2±'N. of South bullnose between First & Second regular parking stalls for Invista building, 105±' NNE to top centerline fire hydrant South of East entrance of main building.
Elev: 1379.15 (NAVD88)

BM 16: Mag Nail in joint of curb inlet, NW Corner of Inlet 36.4' W. to centerline of median East main Building entrance. 65.3 N. to Koch campus Exit, road running East & West East of East main Building. 153.5' South to a fire hydrant.
Elev: 1371.08 (NAVD88)

BM 20: Square cut on South back of curb of South East-West paved access drive (Westerly end). 36.7' NNE to top of fire hydrant, 32.0' N. to S. Face of 14'0x12' Shed.
Elev: 1361.05 (NAVD88)

BM 21: Mag Nail in expansion joint at West end of South East-West paved access drive. 5.5' SE to centerline of a flume, 58.2' NNE to most southerly bullnose for median in West main Building entrance, 42.3' NNW to top SE Corner of transformer.
Elev: 1355.07 (NAVD88)

BMK 17, 18-19 ARE OUTSIDE OF CONSTRUCTION AREA.

SURVEY PROVIDED BY:
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FEBRUARY 2013

MICHAEL D. KLEISER LICENSED 13944 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

HORIZONTAL AND VERTICAL CONTROL

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

PEC
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303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	MDK, SAD	Job No.	35-12275-3-7208
Drawn by	CSL	Date	FEBRUARY 2013

Sht. C-8.02 of 27

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Plot Scale 1:200 06-07-2013 1:21:18 PM by GLM
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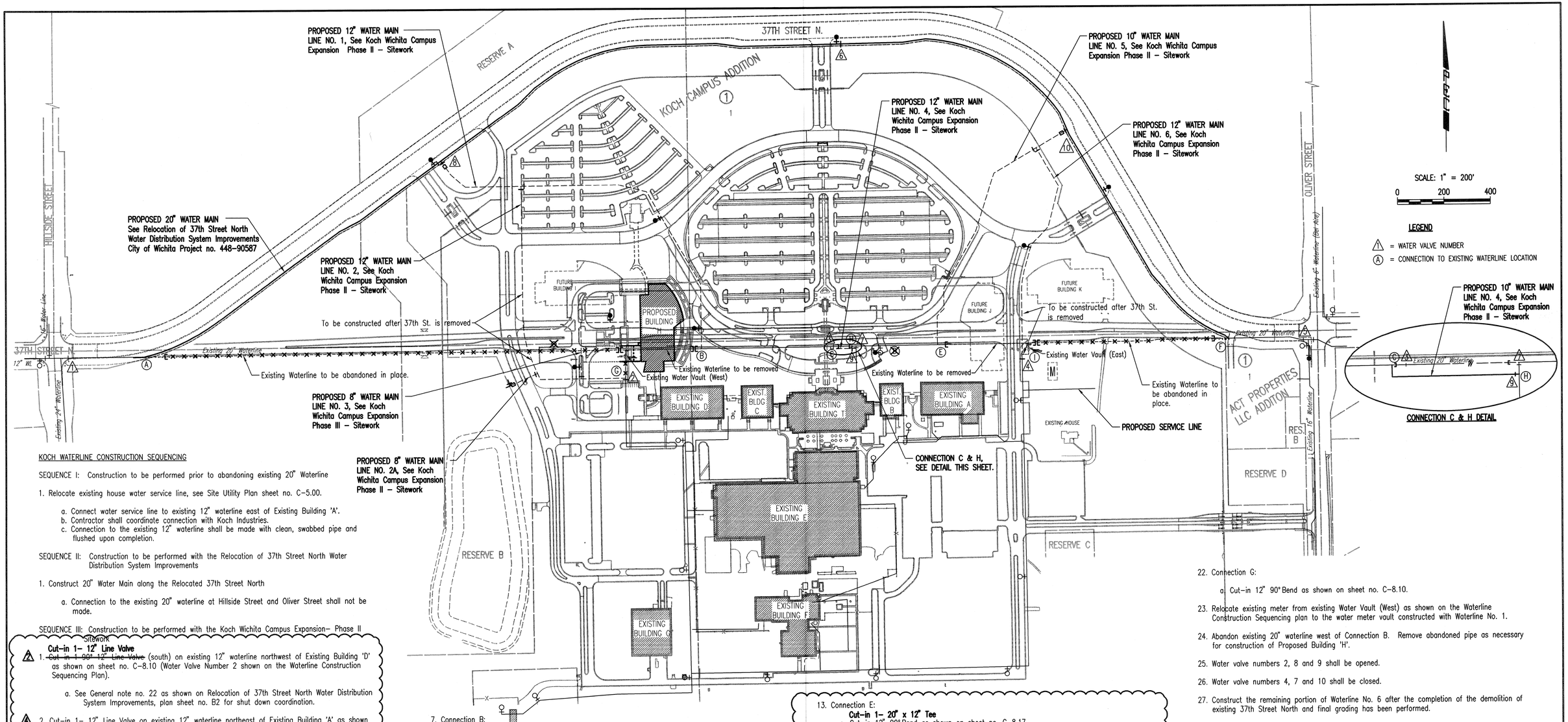

KOCH WATERLINE CONSTRUCTION SEQUENCING

SEQUENCE I: Construction to be performed prior to abandoning existing 20" Waterline

1. Relocate existing house water service line, see Site Utility Plan sheet no. C-5.00.

   a. Connect water service line to existing 12" waterline east of Existing Building 'A'.
   b. Contractor shall coordinate connection with Koch Industries.
   c. Connection to the existing 12" waterline shall be made with clean, swabbed pipe and flushed upon completion.

SEQUENCE II: Construction to be performed with the Relocation of 37th Street North Water Distribution System Improvements

1. Construct 20" Water Main along the Relocated 37th Street North

   a. Connection to the existing 20" waterline at Hillside Street and Oliver Street shall not be made.

SEQUENCE III: Construction to be performed with the Koch Wichita Campus Expansion– Phase II Sitework

Cut-in 1- 12" Line Valve

1. ~~Cut in 1-90° 12" Line Valve~~ (south) on existing 12" waterline northwest of Existing Building 'D' as shown on sheet no. C-8.10 (Water Valve Number 2 shown on the Waterline Construction Sequencing Plan).

   a. See General note no. 22 as shown on Relocation of 37th Street North Water Distribution System Improvements, plan sheet no. B2 for shut down coordination.

2. Cut-in 1- 12" Line Valve on existing 12" waterline northeast of Existing Building 'A' as shown on sheet no. C-8.19 (Water Valve Number 4 shown on the Waterline Construction Sequencing Plan).

   a. See General note no. 22 as shown on Relocation of 37th Street North Water Distribution System Improvements, plan sheet no. B2 for shut down coordination.

3. Construct 12" Waterline No. 1 as shown on sheet nos. C-8.04 thru C-8.07.

   a. Install temporary pipe in new Water Meter Vault until water meter is installed.
   b. Connection to the existing 20" waterline north of Existing Building 'D' shall not be made.

4. Construct 12" Waterline No. 2 as shown on sheet nos. C-8.08 thru C-8.10.

   a. Portion of Waterline No. 2 to be constructed under the existing creek shall not be installed. See Waterline Construction Sequencing plan for approximate location.
   b. Waterline No. 2 shall be plugged north and south of the existing creek until the traffic is rerouted to the Relocated 37th Street North.
   c. Connection to the existing 12" waterline northeast of Existing Building 'D' shall not be made.

5. Water Valve Numbers 1 thru 3 and 6 as shown on the Waterline Construction Sequencing plan shall be closed.

6. Connection A:

   a. Cut-in 20" waterline as shown in the Relocation of 37th Street North Water Distribution System Improvements, plan sheet no. B20.
   b. Install 20" Bell bulkhead cap as shown on plan sheet no. B20.

7. Connection B:

   a. Cut-in 20" x 12" Tee as shown on sheet no. C-8.07.
   b. Cut and cap existing 20" waterline west of the existing water vault (west) as shown on the Waterline Construction Sequencing plan.

8. Connection C and H:

   a. Construct 10" Waterline No. 4 as shown in the sheet no. C-8.14. Connection to the existing 10" waterline shall be made as shown on plan sheet no. C-8.14.

9. Water valves numbers 1 and 2 as shown on the Waterline Construction Sequencing plan shall be opened.

10. Construct 12" Waterline No. 5 as shown on sheet nos. C-8.15 thru C-8.17.

    a. Install temporary pipe in new Water Meter Vault until water meter is installed.
    b. Connection to the existing 20" waterline north of Existing ~~Building 'D'~~ shall not be made.
    Building 'A'

11. Construct 12" Waterline No. 6 as shown on sheet nos. C-8.18 thru C-8.19.

    a. Portion of Waterline No. 6 to be constructed under existing 37th Street North shall not be installed. See Waterline Construction Sequencing plan for approximate location.
    b. Waterline No. 6 shall be plugged north of existing 37th Street North until the traffic is rerouted to the Relocated 37th Street North.

12. Water valves numbers 4 thru 7 as shown on the Waterline Construction Sequencing plan shall be closed.

13. Connection E:

    Cut-in 1- 20" x 12" Tee

    a. ~~Cut in 12" 90° Bend~~ as shown on sheet no. C-8.17.
    b. ~~Cut and cap existing 20" waterline east of the existing water vault (east) as shown on the Waterline Construction Sequencing plan.~~

~~14. Connection D:~~

~~a. Cut in Fire Hydrant tee on existing 20" waterline as shown on sheet no. C-8.14.~~

15. Abandon existing 20" waterline between water valve numbers 3 and 7 as shown on the Waterline Construction Sequencing plan.

    a. Install caps east and west of Connection C and H. See detail this sheet.

16. Connection F:

    a. Cut-in 20" waterline as shown in the Relocation of 37th Street North Water Distribution System Improvements, plan sheet no. B20.
    b. Install 20" Bell bulkhead cap as shown on plan sheet no. B20.

17. Water valve numbers ~~5 thru 7~~ shall be opened.
    4 thru 7

18. Water valve numbers 2, 8 and 9 shall be closed.

19. Construct the remaining portion of Waterline No. 2 after the completion of the demolition of existing 37th Street North and final grading has been performed.

20. Construct 8" Waterline No. 3 as shown on plan sheet nos. C-8.12 thru C-8.13.

21. Construct ~~6" Waterline~~ No. 2A as shown on plan sheet no. C-8.11.
    8" Waterline

22. Connection G:

    a. Cut-in 12" 90° Bend as shown on sheet no. C-8.10.

23. Relocate existing meter from existing Water Vault (West) as shown on the Waterline Construction Sequencing plan to the water meter vault constructed with Waterline No. 1.

24. Abandon existing 20" waterline west of Connection B. Remove abandoned pipe as necessary for construction of Proposed Building 'H'.

25. Water valve numbers 2, 8 and 9 shall be opened.

26. Water valve numbers 4, 7 and 10 shall be closed.

27. Construct the remaining portion of Waterline No. 6 after the completion of the demolition of existing 37th Street North and final grading has been performed.

28. Connection I:

    a. Connect Waterline No. 6 as shown on sheet no. C-8.19.

29. Abandon existing 20" waterline east of Connection E. Remove abandon pipe as necessary for the construction of Future Building 'J'.

30. Relocate existing meter from existing Water Vault (East) as shown on the Waterline Construction Sequencing plan to the water meter vault constructed with Waterline No. 5.

31. Water valve numbers 4, 7 and 10 shall be opened.

No.	Revision	By	Date
1	UPDATED SEQUENCE NOTES	SAD	06/20/2013

MICHAEL D. KEISER LICENSED 13944 6/20/13 KANSAS PROFESSIONAL ENGINEER

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE CONSTRUCTION SEQUENCING

GARY JANZEN, P.E. – CITY ENGINEER
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Designed by	MDK, SAD	Job No.	35-12275-3-7208
Drawn by	CSL	Date	FEBRUARY 2013

Sht. C-8.03 of 27

ADDENDUM #3

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12" valve
16" dicl
111/4 bend
16" dicl
111/4 bend
16" dicl
12" to 10" reducer
dicl to vault
N: 1,710,659.4384, E: 1,661,080.8317
WL 1, Sta. 0+00.00
Existing 12" Anchored Valve Assembly *
from City of Wichita Project No. 448-90587
Remove 12" Plug and begin new 12" water
main installation.
CITY MAINTENANCE ENDS
N: 1,710,654.5851, E: 1,661,084.3595
WL 1, Sta. 0+06.00
See Water Meter Vault Detail, sheet
no. C-8.22 for continuation.
N: 1,710,635.9805, E: 1,661,097.8825
WL 1, Sta. 0+29.00
See Water Meter Vault Detail, sheet
no. C-8.22.
N: 1,710,597.6296, E: 1,661,125.7585
WL 1, Sta. 0+76.41
1- 12" CI CL MJ 11 1/4° Bend
Defl.= 13°38'53"
N: 1,710,546.0387, E: 1,661,186.5070
WL 1, Sta. 1+56.11
1- 12" CI CL MJ 45° Bend
Defl.= 41°00'00"
CAUTION !!!
Proposed Gas Line
(KGS)
N: 1,710,548.8087, E: 1,661,426.8590
WL 1, Sta. 3+96.48
1- 12" x 12" CI CL MJ Tee
2- 12" Valve Assembly (E&S)
(Butterfly Valves)
Top Valve Box El.= 1371.3
SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
0
20
40
0
5
R/W
37TH STREET NORTH
Prop. 42" RCP (Ref. 37th St. N. Pavement Plans)
Prop. 6' Sidewalk
8'
Prop. 20" Waterline (City of Wichita Project No. 448-90587)
Proposed Sign (reference Landscape Plans)
Limits of Prop. Pvmt.
Prop. Gas Line (Reference Kansas Gas Service Plans)
Prop. Communications Duct Bank (Reference C-9.00 Series)
PROPOSED SERVICE LINE
See Site Utility Plan, sheet no. C-5.01
Limits of Prop. Pvmt.
Proposed Gas Line Ref. Kansas Gas Service Plans
Limits of Prop. Pvmt.
Proposed Fence
Limits of Future Pvmt.
LINE NO. 2
See sheet no. C-8.08
6.00'- 12" DI CL SJ Pipe
47.41'- 12" Pipe
79.70'- 12" Pipe
240.37'- 12" Pipe
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 1
1385
1380
1375
1370
1365
1360
1355
1350
1345
BEGIN WL NO. 1
20" x 12" Tee
SEE LIST
Proposed Water Meter Vault
11 1/4° Bend
45° Bend
Proposed Gas Line
12" x 12" Tee
Existing Ground
Proposed Ground (Ph I Sitework)
Proposed Ground (PH II Sitework)
Top of Proposed 12" Water Main
+00.00
1366.22 (20")
1365.85 (12")*
+28.00
1365.85
+76.41
1365.81
1365.79
+56.11
1365.73
1365.69
1365.59
+96.48
1365.50
0+00
1+00
2+00
3+00
4+00

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 12" WATERLINE AT STATION 0+00.00 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.

AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202 (316)264-0242

MICHAEL D. KELSEY
LICENSED 13944
KANSAS
PROFESSIONAL ENGINEER
6/6/13

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 1

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.04 of 27

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Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_01 WL no 1

AS BUILTS

kemiller engineering
516 S. Market,
Wichita, KS 67202
(316)264-0242

MICHAEL D. KELSEY
LICENSED
13944
6/6/13
KANSAS
PROFESSIONAL ENGINEER

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 1

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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Job No.	35–12275–3–7208
Date	FEBRUARY 2013
Designed By	MDK, SAD
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Sheet C–8.05 of 27

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Plot Scale 1:20 06–07–2013 1:18:59 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275–003–C–PPW_02 WL no 1


SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
N: 1,710,523.5756, E: 1,661,966.6754
WL 1, Sta. 9+39.98
12" CI CL MJ 45° Bend
MATCH POINT
N: 1,710,417.2448, E: 1,662,029.4512
WL 1, Sta. 10+63.46
1- Fire Hydrant Assembly clow (storz)
L= 4'
Top Valve Box El.= 1368.5
FH Bury Line El.= 1368.6
CAUTION !!!
Existing 42"x 66" RCB
Storm Water Sewer *
CAUTION !!!
Proposed 24" RCP
Storm Water Sewer
CAUTION !!!
Buried Electric
(Koch)
N: 1,710,131.6452, E: 1,662,198.0641
WL 1, Sta. 13+95.12
1- 12" CI CL PExMJ 11 1/4° Bend
1- 12" CI CL MJ 22 1/2° Bend
Defl.= 29°53'48"
MATCH POINT
Prop. Gas Line
Ref. Kansas Gas Service Plans
Limits of Prop. Pvmt.
Prop. Communications Duct Bank
(reference C-9.00 Series)
Prop. 48" RCP SWS
Buried Electric (rec. info.)
Prop. 24" RCP SWS
Limits of Ph III Prop. Pvmt.
Existing 42"x66" RCB
SECTION LINE
Asphalt
12" Pine
123.48'– 12" Pipe
PROPOSED SERVICE LINE
See Site Utility Plan, sheet no. C-5.00
331.66'– 12" Pipe
Remove and replace
18 L.F. Asphalt and Curb/Gutter
with Temporary Asphalt
AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242
MICHAEL D. KELSEY
LICENSED
13944
6/6/13
KANSAS
PROFESSIONAL ENGINEER
* UTILITY TO BE ABANDONED. SEE PHASE III SITEWORK AND DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITE WORK AND UTILITY/PAVEMENT DEMOLITION.
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 1
1385
1380
1375
1370
1365
1360
1355
1350
1345
45° Bend
Fire Hydrant
clow (storz)
Existing 42"x 66" RCB
E= 1360.68
(to be removed)*
Prop. 24" RCP SWS
E= 1363.87
Buried Electric
11 1/4° Bend
22 1/2° Bend
Proposed Ground (Phase II Sitework)
Proposed Ground (Ph I Sitework)
Existing Ground
Top of Proposed 12" Water Main
Proposed Ground (Phase III Sitework)
+39.98
+63.46
+83.00
+10.00
+95.12
1364.40
1364.42
1364.44
1363.00
1362.89
1362.23
1361.56
1361.50
1363.00
10+00
11+00
12+00
13+00
14+00
KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS
WATERLINE NO. 1
GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)
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Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL
Sheet C-8.06 of 27

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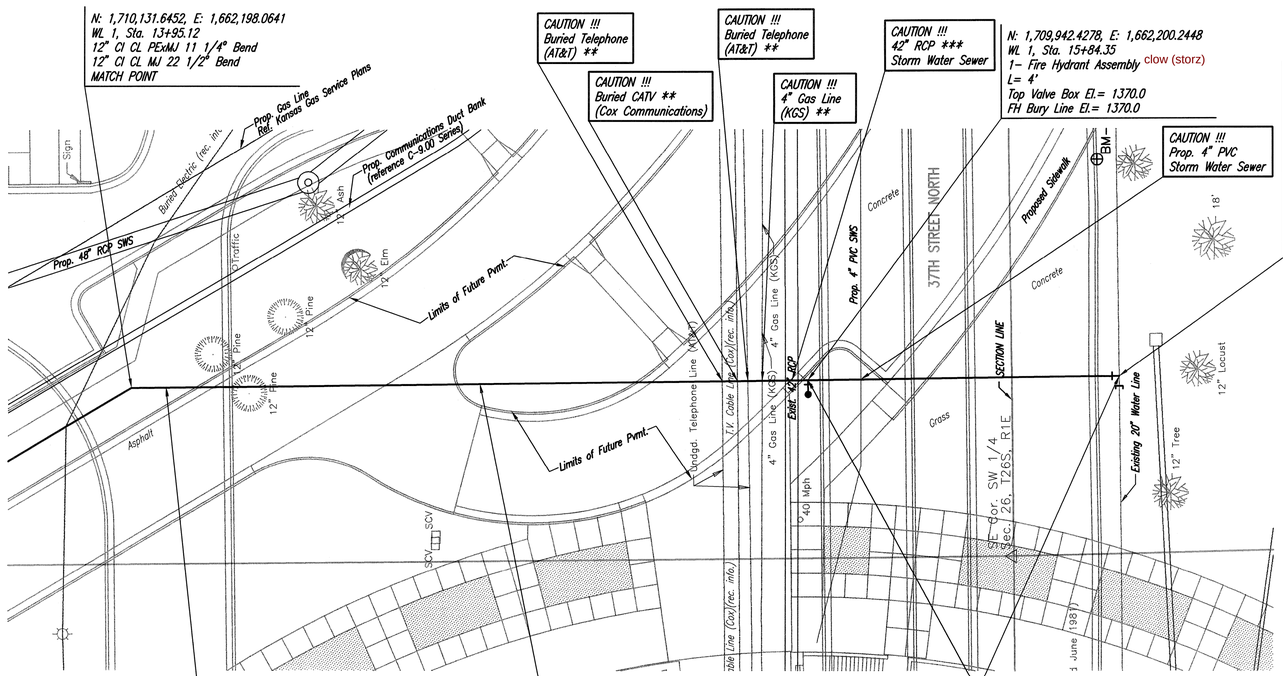


SCALE:
0 20 40
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT. 0 5

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 20" WATERLINE AT STATION 16+71.35 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.

** PRIOR TO DIRECTIONAL DRILLING THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

*** UTILITY TO BE ABANDONED. SEE PHASE III SITEWORK AND DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITEWORK AND UTILITY/PAVEMENT DEMOLITION.

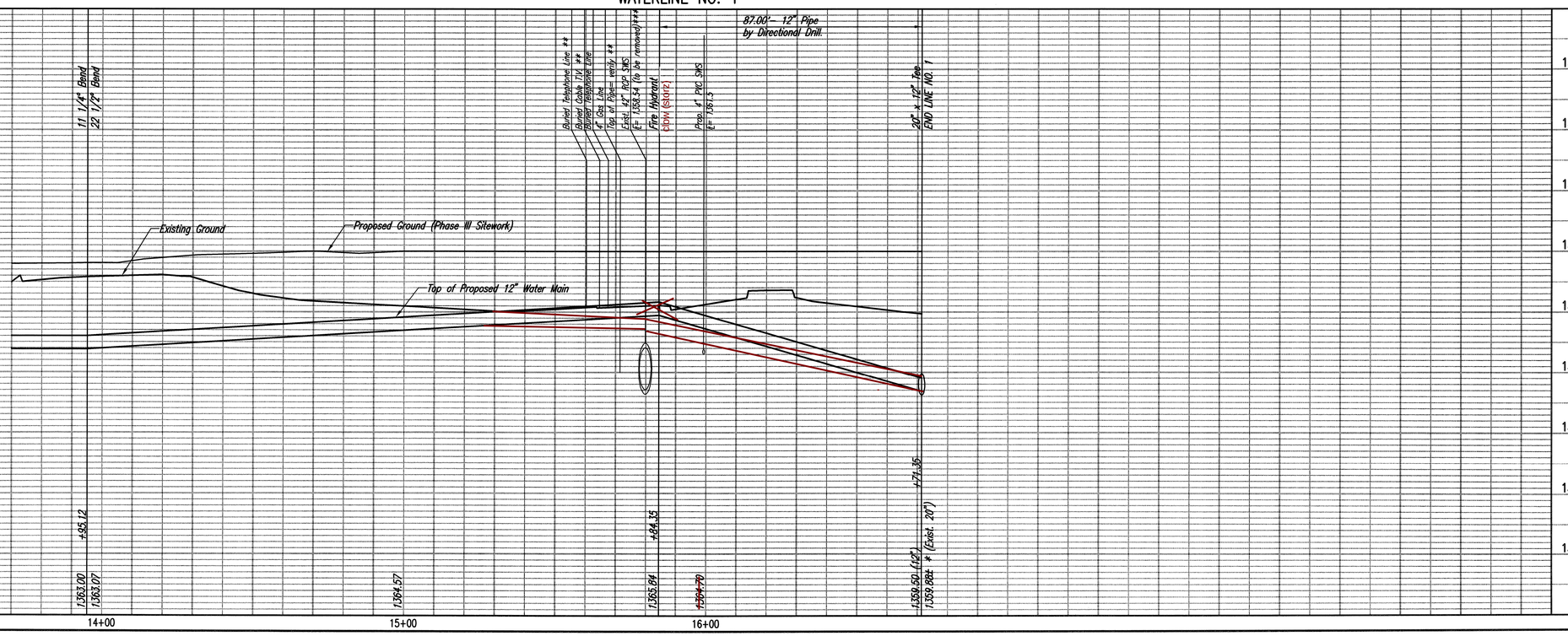
AS BUILTS

kemiller engineering
516 S. Market, Wichita, KS 67202 (316)264-0242

MICHAEL D. KELSEY LICENSED 13944 KANSAS PROFESSIONAL ENGINEER

Unless noted otherwise, elevations shown are top of pipe

WATERLINE NO. 1



KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 1

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
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Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.07 of 27

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Plot Scale 1:20 08-07-2013 1:17:41 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_04 WL no 1

N: 1,710,548.8087, E: 1,661,426.8590
WL 1, Sta. 3+96.48 =
WL 2, Sta. 0+00.00
12" x 12" Tee
MATCH POINT
N: 1,710,324.8236, E: 1,661,429.4404
WL 2, Sta. 2+24.00
1- 12" CI CL MJ 22 1/2" Bend (Vert.)
Defl.= 21°19'43"
N: 1,710,310.3246, E: 1,661,429.6075
WL 2, Sta. 2+38.50
1- 12" CI CL RJ 22 1/2" Bend (Vert.)
Defl.= 22°28'46"
CAUTION !!!
Proposed 10' x 4' RCB
Storm Water Sewer
N: 1,710,290.3259, E: 1,661,429.8380
WL 2, Sta. 2+58.50
1- 12" CI CL RJ 22 1/2" Bend (Vert.)
Defl.= 19°32'12"
N: 1,710,274.8269, E: 1,661,430.0166
WL 2, Sta. 2+74.00
1- 12" CI CL MJ 22 1/2" Bend (Vert.)
Defl.= 19°22'47"
CAUTION !!!
Proposed 1"
Force Main
N: 1,710,128.8366, E: 1,661,431.6991
WL 2, Sta. 4+20.00
MATCH POINT
SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
Prop. 10' x 4' RCB
Proposed 1" Force Main (Ref. Site Utility Plan)
Proposed 8" Sanitary Sewer
Limits of Future Pvmt
Limits of Prop. Pvmt.
Proposed Fence
LINE NO. 1
See sheet no. C-8.04
224.00'- 12" Pipe
14.50'-12" DI CL Pipe
15.50'- 12" DI CL Pipe
WL1 Sta. 2+38.50 to WL1 Sta. 2+58.50
Install 20.00'- 12" DI CL RJ Pipe
146.00'- 12" Pipe
AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242
MICHAEL D. KELSEY
LICENSED
13944
6/6/13
KANSAS
PROFESSIONAL ENGINEER
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 2
20.00'- 12" RJ Pipe
BEGIN LINE NO. 2
12" x 12" Tee
22 1/2" Bend (Vert.)
Prop. 10' x 4' RCB SWS
22 1/2" Bend (Vert.)
Prop. 1" Force Main
MATCH POINT
Existing Ground
Proposed Ground (PH I Sitework)
Proposed Ground (Phase II Sitework)
Proposed Ground (Phase III Sitework)
Proposed 12" Water Main
2' Clear (Min.)
1385
1380
1375
1370
1365
1360
1355
1350
1345
+00.00
+24.00
+38.50
+58.50
+74.00
+20.00
1363.50
1363.49
1361.48
1361.00
1355.00
1355.00
1360.50
1360.49
1360.83
1360.90
0+00
1+00
2+00
3+00
4+00

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 2

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
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Designed By	MDK, SAD
Drawn By	CSL
Job No.	35-12275-3-7208
Date	FEBRUARY 2013

Sheet C-8.08 of 27

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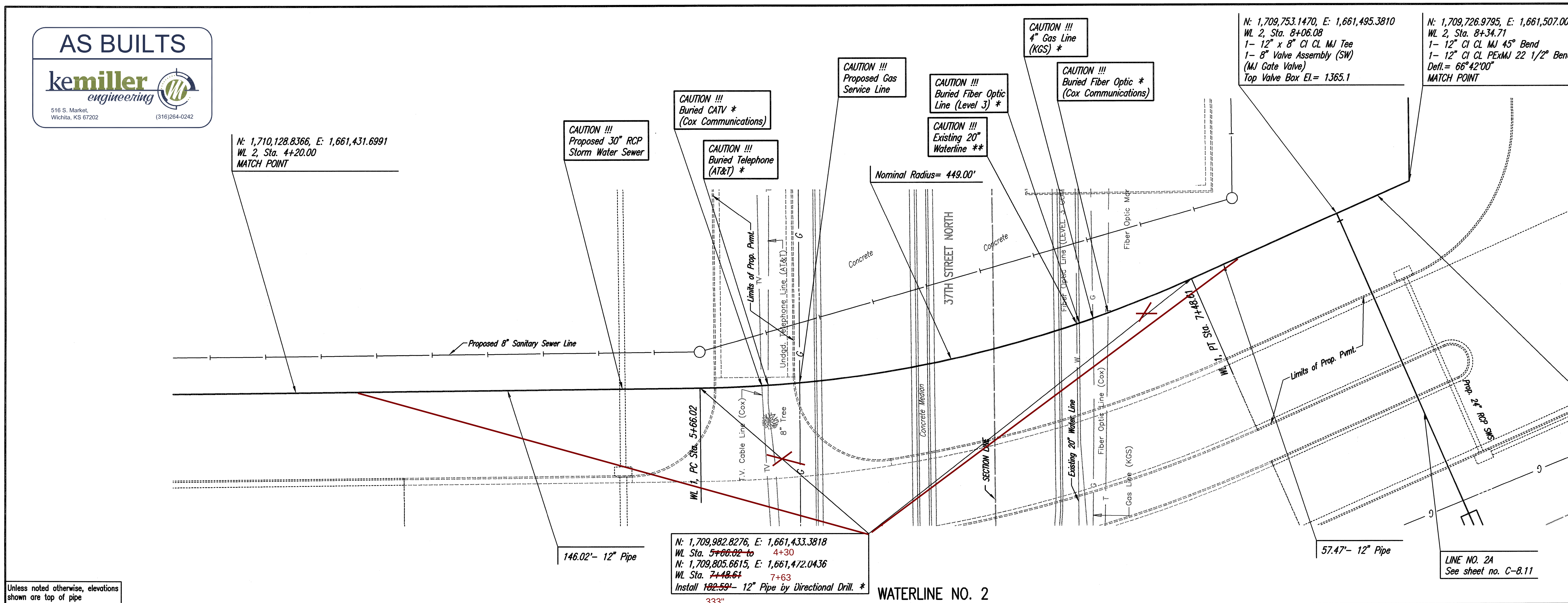
AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242
N: 1,710,128.8366, E: 1,661,431.6991
WL 2, Sta. 4+20.00
MATCH POINT
CAUTION !!! Proposed 30" RCP Storm Water Sewer
CAUTION !!! Buried CATV * (Cox Communications)
CAUTION !!! Buried Telephone (AT&T) *
CAUTION !!! Proposed Gas Service Line
CAUTION !!! Buried Fiber Optic Line (Level 3) *
CAUTION !!! Existing 20" Waterline **
CAUTION !!! 4" Gas Line (KGS) *
CAUTION !!! Buried Fiber Optic * (Cox Communications)
N: 1,709,753.1470, E: 1,661,495.3810
WL 2, Sta. 8+06.08
1- 12" x 8" CI CL MJ Tee
1- 8" Valve Assembly (SW)
(MJ Gate Valve)
Top Valve Box El.= 1365.1
N: 1,709,726.9795, E: 1,661,507.0097
WL 2, Sta. 8+34.71
1- 12" CI CL MJ 45° Bend
1- 12" CI CL PExMJ 22 1/2° Bend
Defl.= 66°42'00"
MATCH POINT
Nominal Radius= 449.00'
Proposed 8" Sanitary Sewer Line
37TH STREET NORTH
Concrete
Concrete Median
Limits of Prop. Pvmt.
Undgd. Telephone Line (AT&T)
T.V. Cable Line (Cox)
8" Tree
Existing 20" Water Line
Fiber Optic Line (Level 3)
Fiber Optic Line (Cox)
Fiber Optic
Gas Line (KGS)
SECTION LINE
WL 1, PC Sta. 5+66.02
WL 1, PT Sta. 7+48.61
Prop. 24" RCP SWS
146.02'– 12" Pipe
57.47'– 12" Pipe
28.63'– 12" Pipe
LINE NO. 2A
See sheet no. C-8.11
N: 1,709,982.8276, E: 1,661,433.3818
WL Sta. 5+66.02 to 4+30
N: 1,709,805.6615, E: 1,661,472.0436
WL Sta. 7+48.61 7+63
Install 182.59'– 12" Pipe by Directional Drill. * 333'
MICHAEL D. KELSEY
LICENSED
13944
KANSAS
PROFESSIONAL ENGINEER

SCALE:

PLAN: LAT. & LONG. 0 20 40

PROFILE: HORIZ. SAME AS ABOVE

VERT. 0 5

* PRIOR TO DIRECTIONAL DRILLING THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

** UTILITY TO BE ABANDONED. SEE PHASE III SITEWORK AND DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITE WORK AND UTILITY/PAVEMENT DEMOLITION.

Unless noted otherwise, elevations shown are top of pipe

WATERLINE NO. 2


333' 182.59' 12" Pipe by Directional Drill.
1385
1380
1375
1370
1365
1360
1355
1350
1345
MATCH POINT
Prop. 30" RCP SWS
Buried Cable TV *
Buried Telephone Line *
Prop. Gas Service Line *
Existing 20" Water Line
Fiber Optic Line (Level 3) *
Gas Line (KGS)
Fiber Optic Line (Cox) *
12" x 8" Tee
45° Bend
22 1/2° Bend
Proposed Ground (PH I Sitework)
Proposed Ground (Phase II Sitework)
Existing Ground
Proposed Ground (Phase III Sitework)
Top of Proposed 12" Water Main
Protective fill to be placed and compacted prior to construction of waterline.
+20.00
+00.00
+35.00
+66.02 PC Curve
+48.61 PT Curve
+06.08
+34.71
1360.90
1358.60
1358.60
1358.60
1358.60
4+00
5+00
6+00
7+00
8+00

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 2

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.09 of 27

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Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_06 WL no 2

AS BUILTS

kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242

N: 1,709,726.9795, E: 1,661,507.0097
WL 2, Sta. 8+34.71
12" CI CL MJ 45° Bend
12" CI CL PExMJ 22 1/2° Bend
MATCH POINT

CAUTION !!!
Buried Fiber Optic
Line (Level 3) *

CAUTION !!!
Buried Fiber Optic *
(Cox Communications)

CAUTION !!!
4" Gas Line
(KGS) *

CAUTION !!!
Buried Electric
(Koch) *

LINE NO. 3
See sheet no. C-8.12

N: 1,709,729.0301, E: 1,661,684.9356
WL 2, Sta. 10+~~12.65~~ 60'
1- 12" x 8" CI CL MJ Tee
1- 8" Valve Assembly (N)
(MJ Gate Valve)
Top Valve Box El.= 1364.7

CAUTION !!!
Proposed 8"
Sanitary Sewer

CAUTION !!!
48" CMP ***
Storm Water Sewer

N: 1,709,731.2116, E: 1,661,874.2265
WL 2, Sta. 12+01.95
Existing 12" Waterline.*
Remove existing pipe as necessary and Cut in
1- 12" CI CL MJ 90° Bend
Defl.= 90°06'16"
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)
Make connection and remove 12" Waterline (N) per Waterline per Waterline Construction Sequence, sheet no. C-8.03.

N: 1,709,728.2117, E: 1,661,874.2556
WL 2, Sta. 12+04.95
Existing 12" Waterline.*
1- 12" Line Valve, Special Anchored on existing 12" waterline.
See detail, sheet no. C-8.23.
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)
Install Line Valve per Waterline Construction Sequence, sheet no. C-8.03.

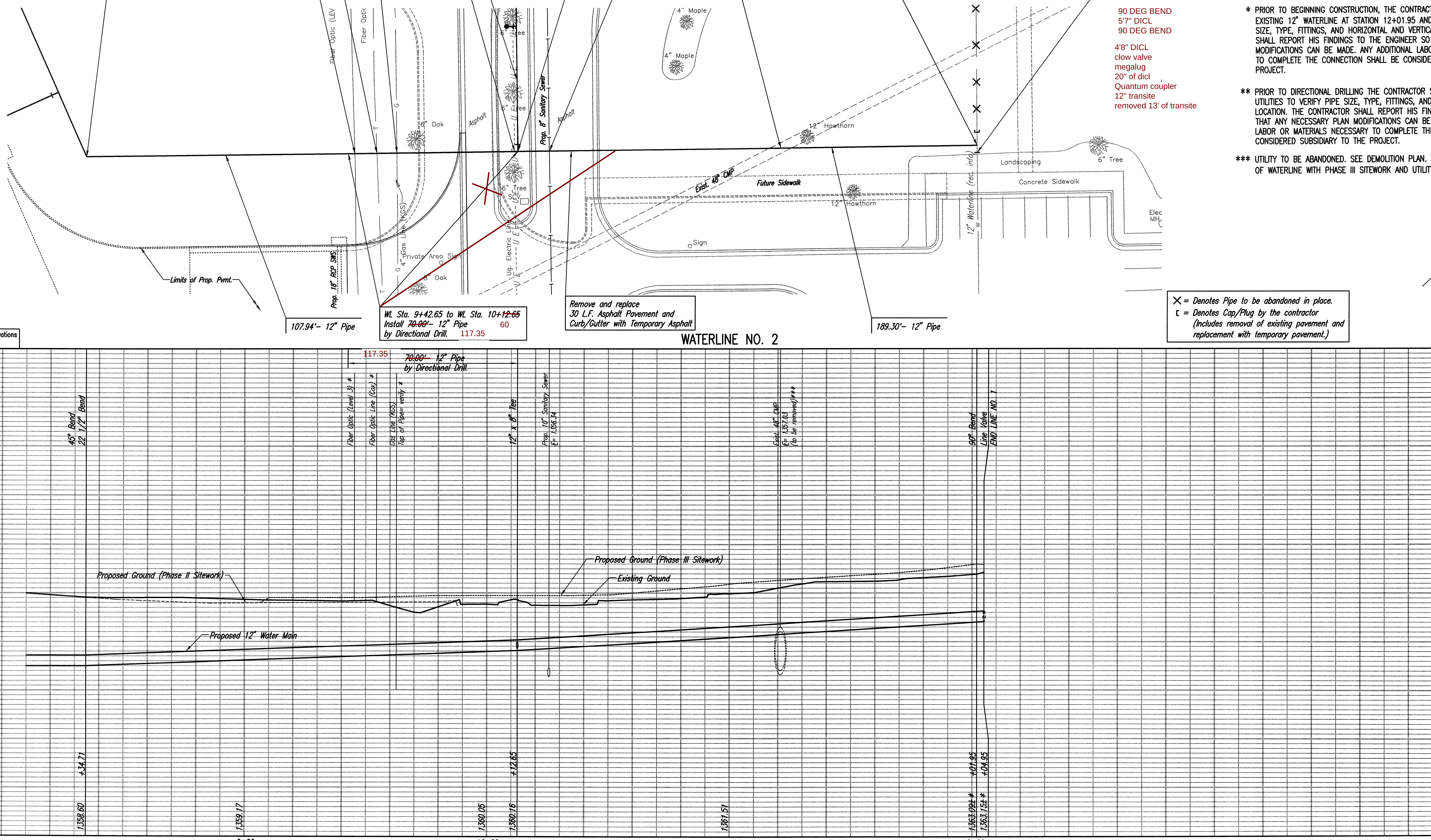
SCALE:
PLAN: LAT. & LONG. 0 20 40
PROFILE: HORIZ. SAME AS ABOVE
VERT. 0 5

90 DEG BEND
5'7" DICL
90 DEG BEND
4'8" DICL
clow valve
megalug
20" of dicl
Quantum coupler
12" transite
removed 13' of transite

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 12" WATERLINE AT STATION 12+01.95 AND 12+04.95 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.

** PRIOR TO DIRECTIONAL DRILLING THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

*** UTILITY TO BE ABANDONED. SEE DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITEWORK AND UTILITY/PAVEMENT DEMOLITION.



X = Denotes Pipe to be abandoned in place.
[= Denotes Cap/Plug by the contractor
(Includes removal of existing pavement and replacement with temporary pavement.)

MICHAEL D. KELSEY LICENSED 13944 6/6/13 KANSAS PROFESSIONAL ENGINEER

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 2

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

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Plot Scale 1:20 06-07-2013 1:15:17 PM by GLM
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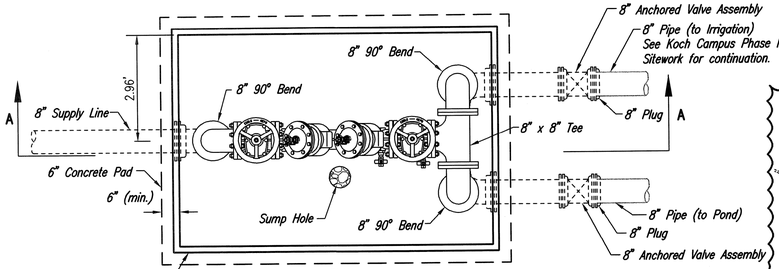
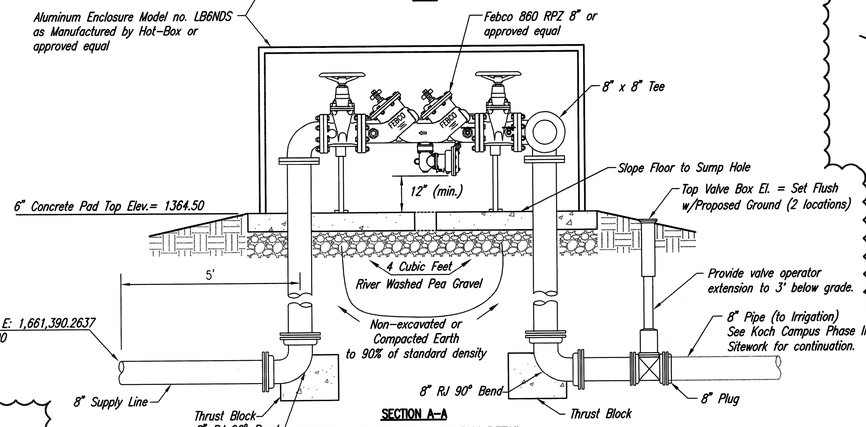


PLAN

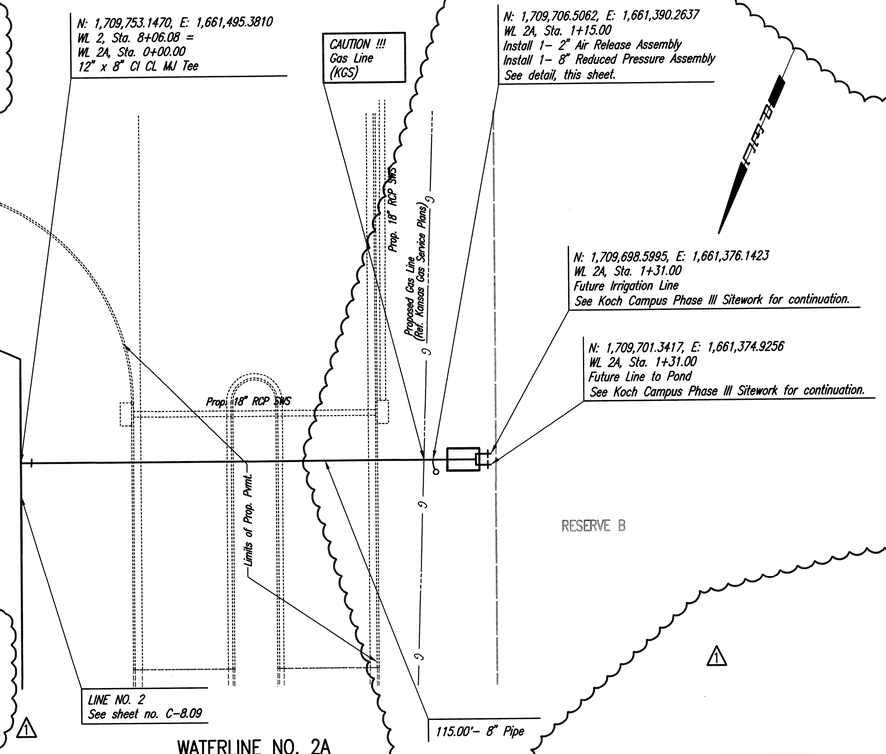


SECTION A-A

REDUCED PRESSURE ASSEMBLY DETAIL

SCALE: 1" = 2'

Unless noted otherwise, elevations shown are top of pipe



WATERLINE NO. 2A

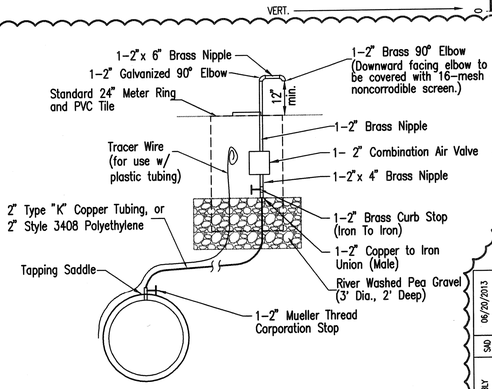
SCALE:

0 20 40

PLAN: LAT. & LONG.

PROFILE: HORIZ. SAME AS ABOVE

VERT.



2" COMBINATION AIR VALVE DETAIL

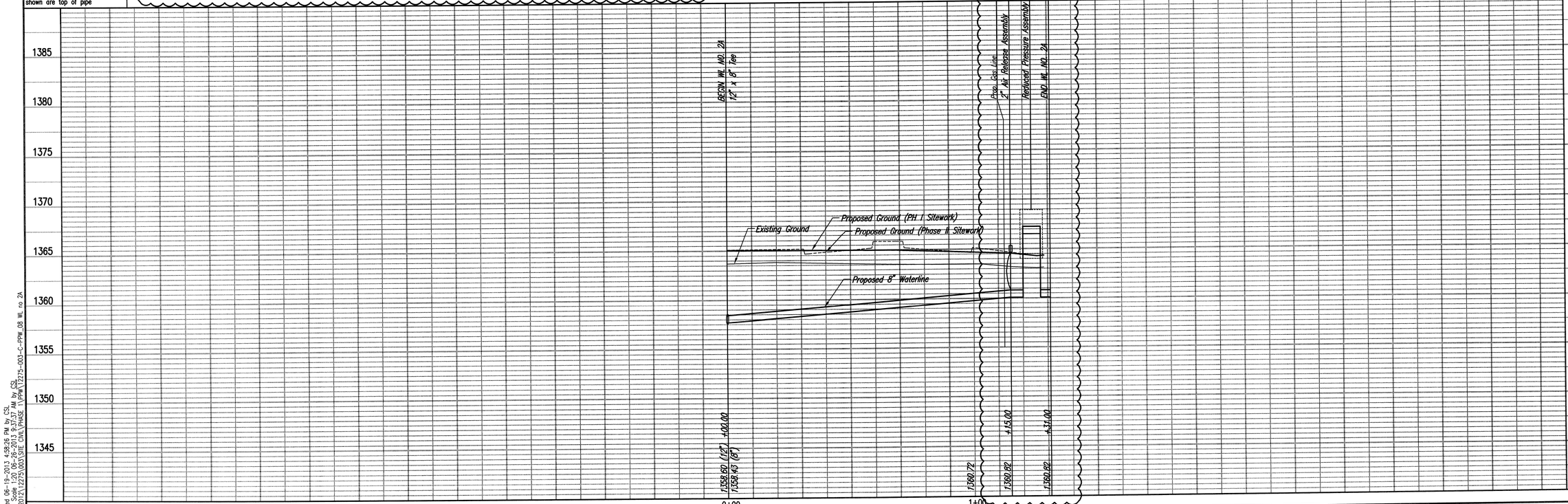
AS BUILTS

kemiller engineering

516 S. Market, Wichita, KS 67202 (316)264-0242

MICHAEL D. KELLER LICENSED 13944 6/21/13 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date
1	REPLACED DOUBLE CHECK DETECTOR WITH REDUCED PRESSURE ASSEMBLY	SAD	06/20/2013



KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 2A

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

PEC

Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.11 of 27

ADDENDUM #3

Saved 06-19-2013 4:58:26 PM by CSL
Plot: Scale 1:20 06-26-2013 3:37:37 AM by CSL
P:\2012\12275\000\SITE\CIVIL\PHASE I\PPW\12275-003-C-PPW_08 WL no. 2A

* PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

** UTILITY TO BE ABANDONED. SEE DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITEWORK AND UTILITY/PAVEMENT DEMOLITION.

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 3

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

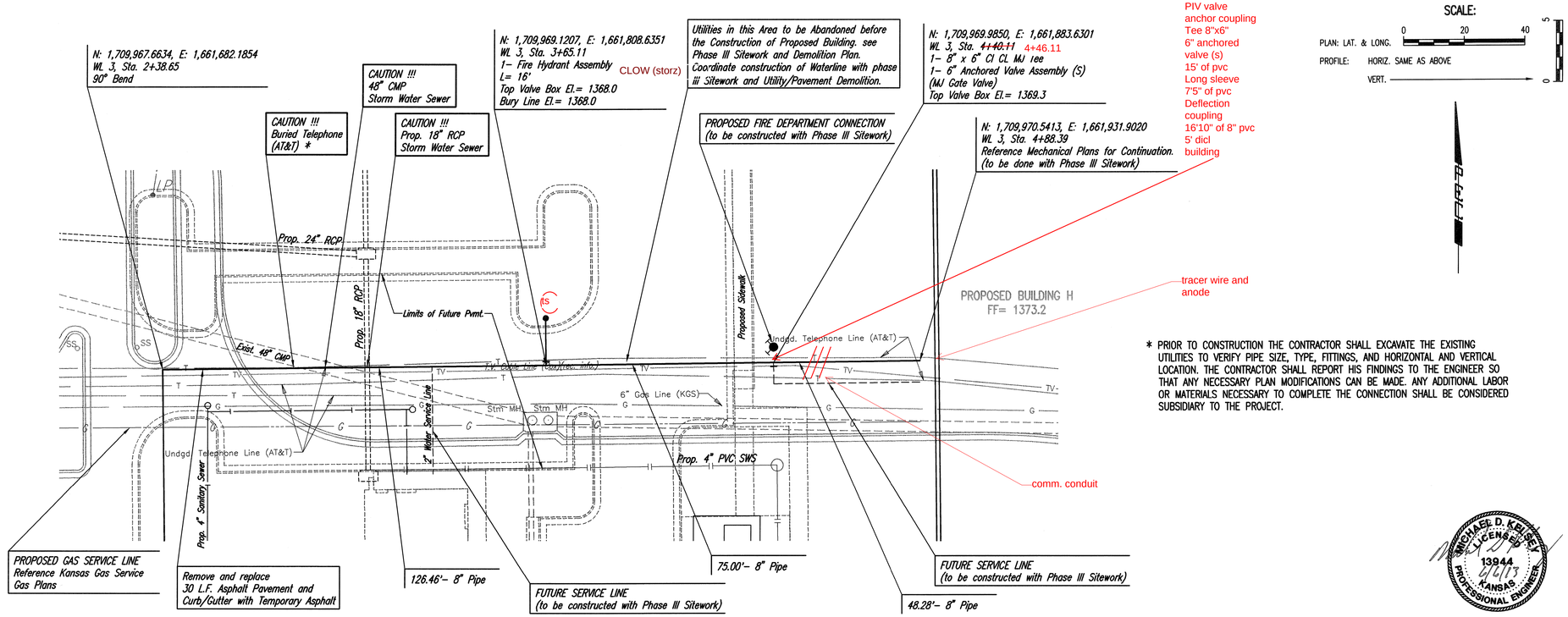
Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.12 of 27

Saved 06-06-2013 6:41:49 PM by CSL
Plot Scale 1:20 06-07-2013 1:13:27 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW-09 WL no 3

AS BUILTS

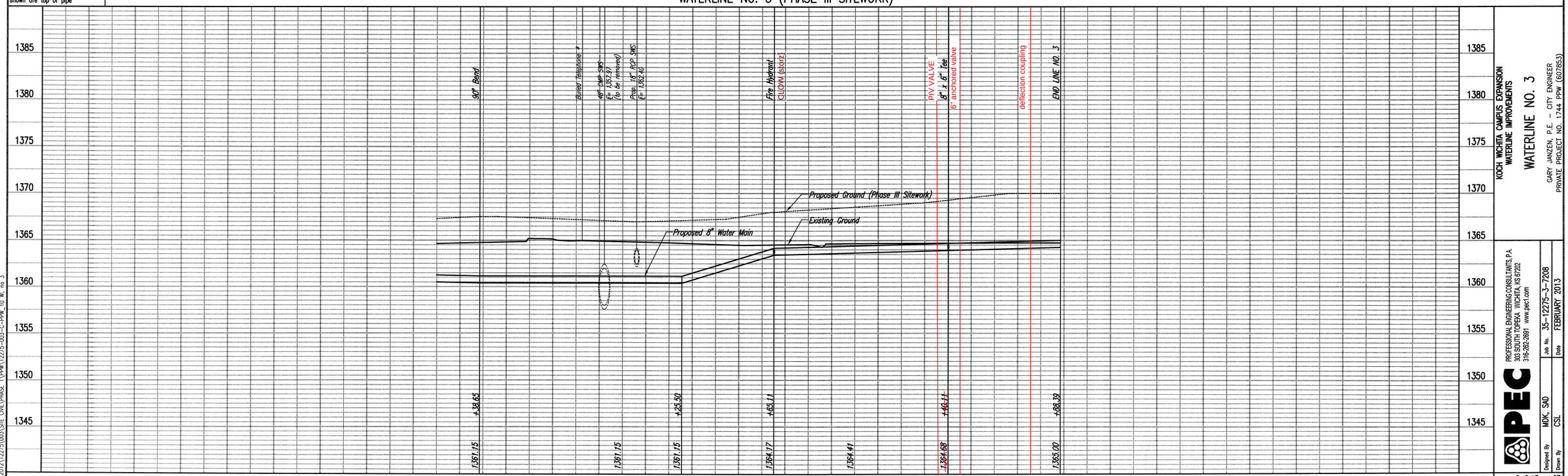
KEMILLER ENGINEERING PA
117 E. Lewis,
Wichita, KS 67202
(316)264-0242



* PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

WATERLINE NO. 3 (PHASE III SITEWORK)

Unless noted otherwise, elevations shown are top of pipe



KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 3

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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Designed By	MDK, SAD	Job No.	35-12275-3-7208
Drawn By	CSL	Date	FEBRUARY 2013

Sheet C-8.13 of 27

Saved 06-06-2013 4:17:54 PM by CSL
Plot Scale 1:20 06-07-2013 1:12:43 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_10 WL no 3

20" main reduced to 16"
MEGALUG
16" to 10" reducer
90 deg. bend
5'6"dicl
long sleeve
5' dicl
90 deg. bend

AS BUILTS

kemiller engineering
516 S. Market,
Wichita, KS 67202
(316)264-0242

N: 1,709,861.8279, E: 1,662,756.0599
WL 4, Sta. 0+00.00
Existing 20" Waterline.*
Remove existing pipe as necessary and Cut in
1– 20" x 10" Reducer
1– 10" CI CL MJ 90° Bend
Defl.= 90°00'00"
See detail, sheet no. C–8.23
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)
Make Connection and abandon 20" Waterline (E) per Waterline Construction Sequence, sheet no. C–8.03.

N: 1,709,851.8286, E: 1,662,756.1751
WL 4, Sta. 0+10.00
1– 10" CI CL MJ 90° Bend
Defl.= 90°00'00"

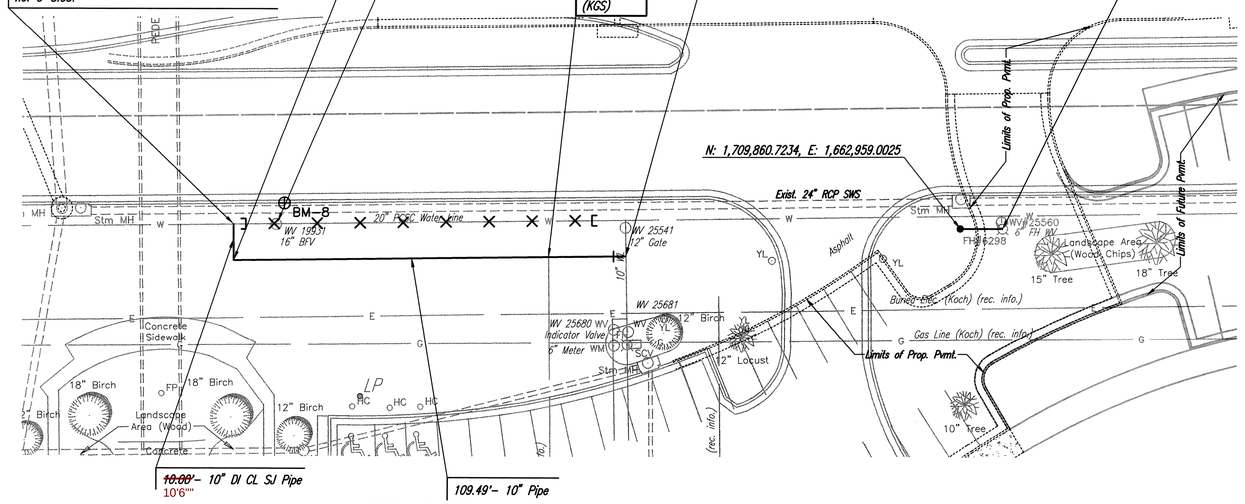
Close Existing Water Valve and Remove Valve Box. Abandoned Waterline and Close Valve per Waterline Construction Sequence, sheet no. C–8.03.

CAUTION !!!
Gas Line
(KGS)

N: 1,709,853.0903, E: 1,662,865.6559
WL 4, Sta. 1+19.49
Existing 10" Waterline.**
1– 10" x 10" Tapping Sleeve
1– 6" Valve Box
(To be furnished and set by City of Wichita Water Dept.)
Top Valve Box El.= 1372.0
Contractor shall reimburse the City of Wichita for this work.

Existing Fire Hydrant ***
Remove Exist. Fire Hydrant, Salvage to City and connect new 6" Pipe.
1– 6" CI CL RJ 90° Bend
12.00'– 6" DI CL SJ Pipe (W)
1– Fire Hydrant CLOW (STORZ)
FH Bury Line El.= 1368.7
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)

2'6" DICL
90 DEG BEND
10"6" DICL TO WEST
CLOW (STORZ)



10.00'– 10" DI CL SJ Pipe
10'6""

109.49'– 10" Pipe

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 20" WATERLINE AT STATION 0+00.00 AND STATION 0+00.00 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.

** PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 10" WATERLINE AT STATION 1+19.49 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.

*** PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 6" WATERLINE AT THE EXISTING FIRE HYDRANT 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.

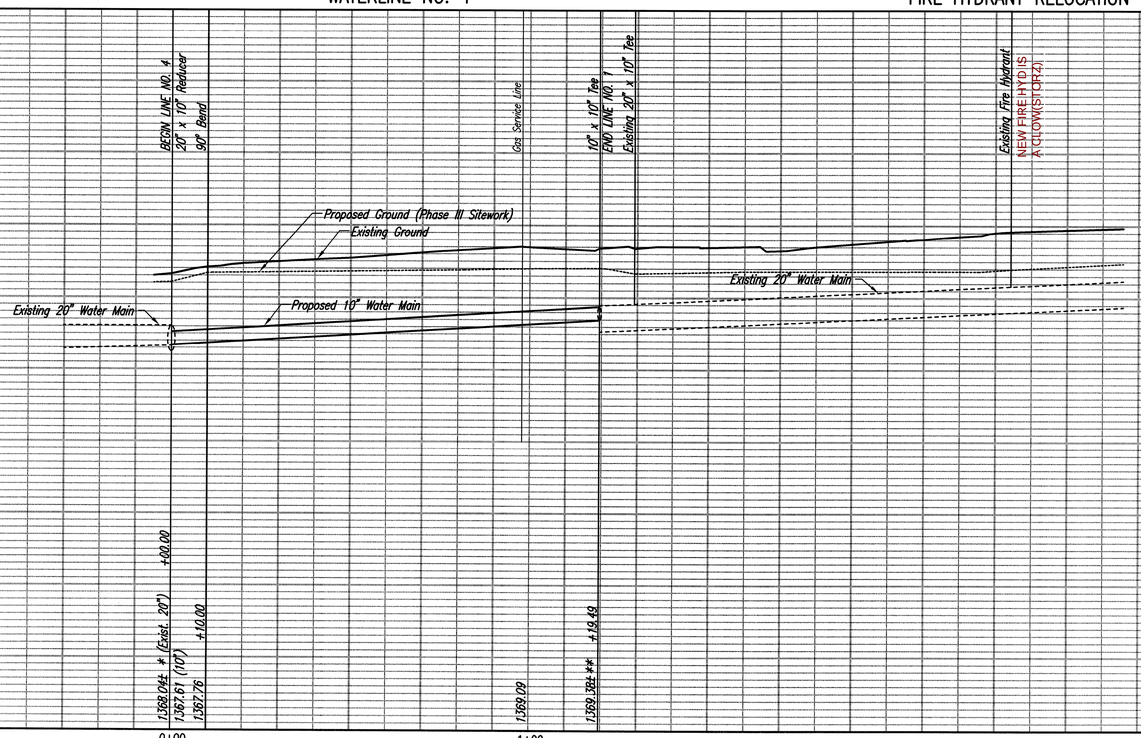
SCALE:
PLAN: LAT. & LONG. 0 20 40
PROFILE: HORIZ. SAME AS ABOVE
VERT. 0 5

X = Denotes Pipe to be abandoned in place.
[= Denotes Cap/Plug by the contractor (Includes removal of existing pavement and replacement with temporary pavement.)

MICHAEL D. KEITH LICENSED 13944 6/4/13 KANSAS PROFESSIONAL ENGINEER

Unless noted otherwise, elevations shown are top of pipe

WATERLINE NO. 4



FIRE HYDRANT RELOCATION

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS
WATERLINE NO. 4
AND FIRE HYDRANT RELOCATION
GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No. 35–12275–3–7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C–8.14 of 27

Saved 06–07–2013 10:17:35 AM by CSL
Plot Scale 1:20 06–07–2013 1:1:43 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275–003–C–PPW_11 WL no 4

N: 1,710,781.5638, E: 1,663,778.4378
WL 5, Sta. 0+00.00
Existing 12" Anchored Valve Assembly * from City of Wichita Project No. 448-90587
Remove 12" Plug and begin new 12" water main installation.
N: 1,710,778.8837, E: 1,663,772.3350
WL 5, Sta. 0+06.67
1- 10" CI CL MJ 11 1/4° Bend
Defl.= 6°43'42"
See Water Meter Vault Detail, sheet no. C-8.22 for continuation.
N: 1,710,767.2318, E: 1,663,752.5049
WL 5, Sta. 0+29.67
See Vault Detail, sheet no. C-8.22.
LINE NO. 6
See sheet no. C-8.18
N: 1,710,703.4641, E: 1,663,643.9795
WL 5, Sta. 1+55.54
1- 12" x 12" CI CL MJ Tee
2- 12" Valve Assembly (W&S) (Butterfly Valves)
Top Valve Box El.= 1379.0
N: 1,710,596.3262, E: 1,663,461.6431
WL 5, Sta. 3+67.02
1- 12" CI CL MJ 45° Bend
Defl.= 41°48'41"
N: 1,710,517.2968, E: 1,663,436.3441
WL 5, Sta. 4+50.00
MATCH POINT
SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
0 20 40
12" valve
16" dicl
221/2 deg. bend
16" dicl
221/2 deg. bend
16" dicl
reducer 12" to 10" dicl to vault
CITY MAINTENANCE ENDS
37TH STREET NORTH
Prop. Sidewalk
R/W
8'
Prop. Gas Service Line (by KGS)
Proposed Fence
Limits of Prop. Pvmt. (Ref. 37th St. N. Pavement Plans)
Prop. 15" RCP (Ref. 37th St. N. Pavement Plans)
Prop. 20" Waterline (City of Wichita Project No. 448-90587)
Prop. Communications Duct Bank (reference C-9.00 Series)
Prop. Gas Line (by KGS)
6.67'- 12" DI CL SJ Pipe
125.87'- 12" Pipe
211.48'- 12" Pipe
82.98'- 12" Pipe
AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242
MICHAEL D. KELSEY
LICENSED
13944
KANSAS
PROFESSIONAL ENGINEER
6/6/13
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 5
1395
1390
1385
1380
1375
1370
1365
1360
1355
BEGIN WL NO. 1
20" x 12" Tee
11 1/4° Bend
Proposed Water Meter Vault
Prop. Gas Service Line
12" x 12" Tee
45° Bend
MATCH POINT
Existing Ground
Proposed Ground (PH 1 Sitework)
Top of Proposed 12" Water Main
+00.00
+06.67
+28.00
+55.54
+67.02
+50.00
1374.30 (20")
1373.95 (12")*
1373.95
1373.95
1373.91
1373.90
1373.50
1372.60
1372.00
1372.00
1372.00
0+00
1+00
2+00
3+00
4+00

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 5

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No.	35-12275-3-7208
Date	FEBRUARY 2013
Designed By	MDK, SAD
Drawn By	CSL

Sheet C-8.15 of 27

Saved 06-07-2013 8:37:23 AM by CSL
Plot Scale 1:20 06-07-2013 1:10:56 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_12 WL no 5

N: 1,710,517.2968, E: 1,663,436.3441
WL 5, Sta. 4+50.00
MATCH POINT
CAUTION !!!
Proposed 24" RCP
Storm Water Sewer
N: 1,710,352.9737, E: 1,663,383.7409
WL 5, Sta. 6+22.54
1- 12" CI CL MJ 11 1/4 Bend
Defl.= 11°29'07"
CAUTION !!!
Buried Electric
(Koch)
N: 1,710,104.1666, E: 1,663,244.4806
WL 5, Sta. 9+07.67
1- 12" CI CL MJ 22 1/2" Bend
Defl.= 29°47'37"
MATCH POINT
SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
Prop. 24" RCP SWS
Limits of Future Pvmt.
Traffic Sign
Asphalt
Prop. 18" RCP SWS
Limits of Prop. Pvmt.
Prop. Communications Duct Bank
(reference C-9.00 Series)
Prop. Gas Line
(by KGS)
Buried Electric
Tree
172.54'- 12" Pipe
285.13'- 12" Pipe
Remove and replace
56 L.F. Asphalt Pavement and
Curb/Gutter with Temporary Asphalt
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 5
1390
1385
1380
1375
1370
1365
1360
1355
1350
MATCH POINT
Prop. 24" RCP SWS
E= 1372.36
11 1/4" Bend
Buried Electric
22 1/2" Bend
Existing Ground
Proposed Ground (PH 1 Sitework)
Proposed Ground (Phase III Sitework)
Proposed Ground (Phase II Sitework)
Top of Proposed 12" Water Main
+50.00
+35.00
+22.54
+07.67
1372.00
1371.58
1371.00
1371.00
1371.00
1370.73
1370.38
1370.03
1370.00
5+00
6+00
7+00
8+00
9+00

AS BUILTS

kemiller engineering
516 S. Market, Wichita, KS 67202 (316)264-0242

MICHAEL D. KELSEY
LICENSED
13944
6/6/13
KANSAS
PROFESSIONAL ENGINEER

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 5

GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

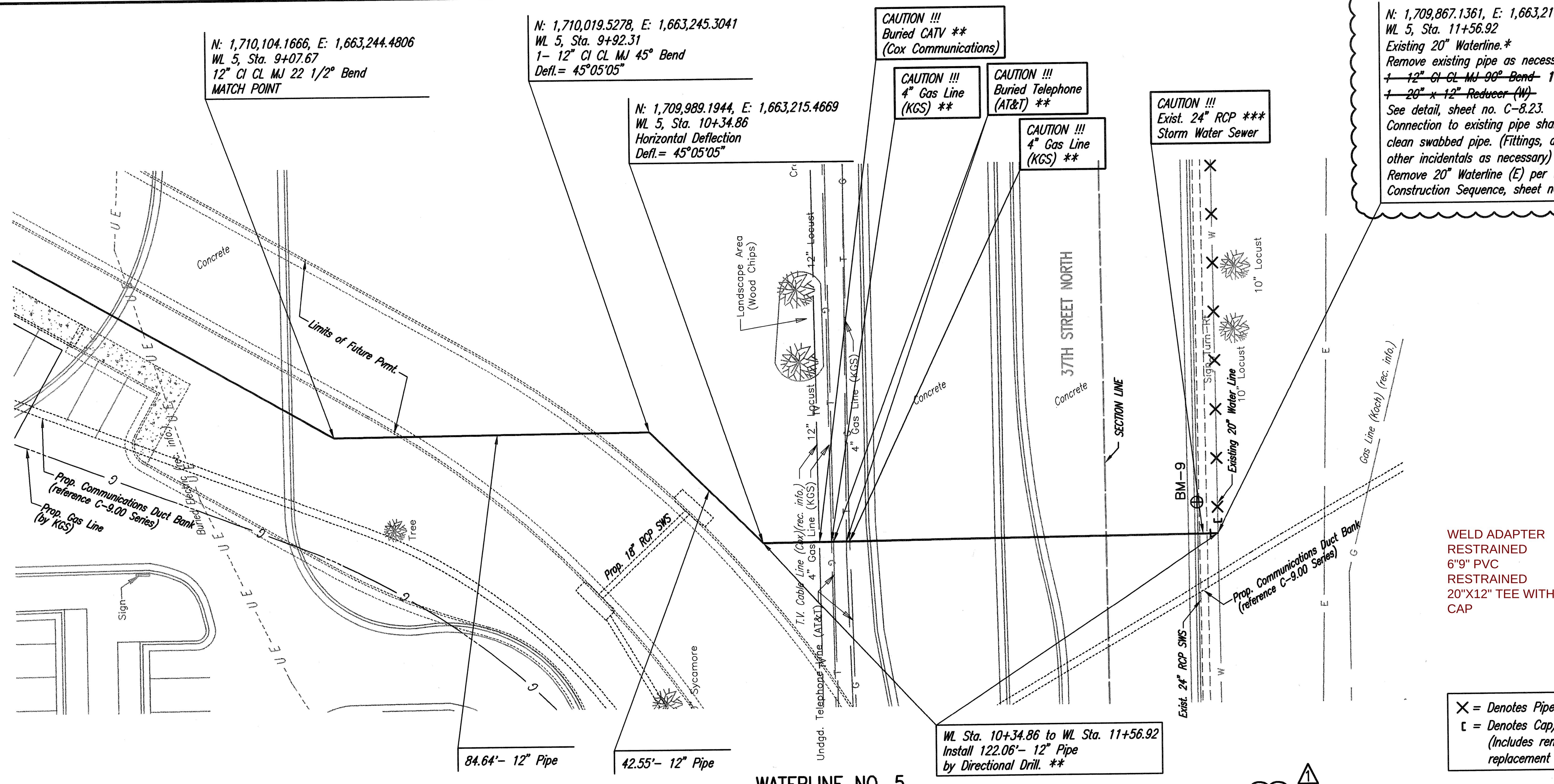
Designed By	MDK, SAD
Drawn By	CSL
Job No.	35-12275-3-7208
Date	FEBRUARY 2013

Sheet C-8.16 of 27

Saved 05-30-2013 2:33:12 PM by CSL
Plot Scale 1:20 06-07-2013 1:29:26 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_13 WL no 5

AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202 (316)264-0242

SCALE:
PLAN: LAT. & LONG. 0 20 40
PROFILE: HORIZ. SAME AS ABOVE
VERT. 0 5



* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 20" WATERLINE AT STATION 11+56.92 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.

** PRIOR TO DIRECTIONAL DRILLING THE CONTRACTOR SHALL EXCAVATE THE EXISTING UTILITIES 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.

*** UTILITY TO BE ABANDONED/REMOVED. SEE PHASE III SITEWORK AND DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITEWORK AND UTILITY/PAVEMENT DEMOLITION.

WELD ADAPTER
RESTRAINED
6"9" PVC
RESTRAINED
20"X12" TEE WITH
CAP

X = Denotes Pipe to be abandoned in place.
[= Denotes Cap/Plug by the contractor (Includes removal of existing pavement and replacement with temporary pavement.)

No.	Revision	By	Date
1	REPLACED DOUBLE CHECK DETECTOR WITH REDUCED PRESSURE ASSEMBLY	SAD	06/20/2013

MICHAEL D. KEISER LICENSED 13944 6/20/13 KANSAS PROFESSIONAL ENGINEER

WATERLINE NO. 5

Unless noted otherwise, elevations shown are top of pipe

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS
WATERLINE NO. 5
GARY JANZEN, P.E. - CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Designed By	MDK, SAD	Job No.	35-12275-3-7208
Drawn By	CSL	Date	FEBRUARY 2013

Sheet C-8.17 of 27

ADDENDUM #3

Saved 06-19-2013 5:06:15 PM by CSL
Plot Scale 1:20 06-26-2013 9:35:59 AM by CSL
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_14 WL no 5

N: 1,710,539.5426, E: 1,663,740.2972
WL 6, Sta. 1+90.13
1- 12" CI CL MJ 45° Bend
Defl.= 44°56'08"
PROPOSED SERVICE LINE
See Site Utility Plan, sheet no. C-5.00
N: 1,710,365.9835, E: 1,663,695.4186
WL 6, Sta. 3+69.40
1- 12" CI CL MJ 22 1/2° Bend
1- 12" CI CL PExMJ 11 1/4° Bend
Defl.= 29°39'19"
CAUTION !!!
Proposed 1" Force Main
N: 1,710,290.9969, E: 1,663,622.6164
WL 6, Sta. 4+73.91
1- 12" CI CL MJ 22 1/2° Bend
Defl.= 28°07'19"
N: 1,710,278.6712, E: 1,663,619.0747
WL 6, Sta. 4+86.73
1- Fire Hydrant Assembly clow (storz)
L= 4'
Top Valve Box El.= 1380.1
FH Bury Line El.= 1380.1
N: 1,710,208.2499, E: 1,663,598.8401
WL 6, Sta. 5+60.00
MATCH POINT
N: 1,710,703.4641, E: 1,663,643.9795
WL 5, Sta. 1+55.54 =
WL 6, Sta. 0+00.00
12" x 12" CI CL MJ Tee
MATCH POINT
SCALE:
PLAN: LAT. & LONG.
PROFILE: HORIZ. SAME AS ABOVE
VERT.
0 20 40
Proposed Fence
Proposed Gas Service Line (Ref. Kansas Gas Service Plans)
Proposed 1" Force Main
Limits of Prop. Pvmt.
AS BUILTS
kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242
Prop. Gas Line (by KGS)
Prop. Communications Duct Bank (reference C-9.00 Series)
190.13'- 12" Pipe
179.27'- 12" Pipe
104.51'- 12" Pipe
12.82'- 12" Pipe
73.27'- 12" Pipe
5+76.15 PC Curve
8" Sanitary Sewer
24" RCP SWS
LINE NO. 5
See sheet no. C-8.15
MICHAEL D. KELSEY
LICENSED
13944
6/6/17
KANSAS
PROFESSIONAL ENGINEER
Unless noted otherwise, elevations shown are top of pipe
WATERLINE NO. 6
1395
1390
1385
1380
1375
1370
1365
1360
1355
12" x 12" Tee
45° Bend
22 1/2° Bend
11 1/4° Bend
Prop. 1" Force Main
22 1/2° Bend
Fire Hydrant clow (storz)
MATCH POINT
Proposed Ground (PH I Sitework)
Proposed Ground (Phase II Sitework)
Existing Ground
Top of Proposed 12" Water Main
2' Clear (Min.)
+00.00
+90.13
+69.40
+60.00
+73.91
+86.73
+60.00
1373.90
1374.14
1374.34
1374.38
1374.62
1374.76
1374.86
1375.0
1375.50
1375.94
1375.77
1375.00
0+00
1+00
2+00
3+00
4+00
5+00

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE NO. 6

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.18 of 27

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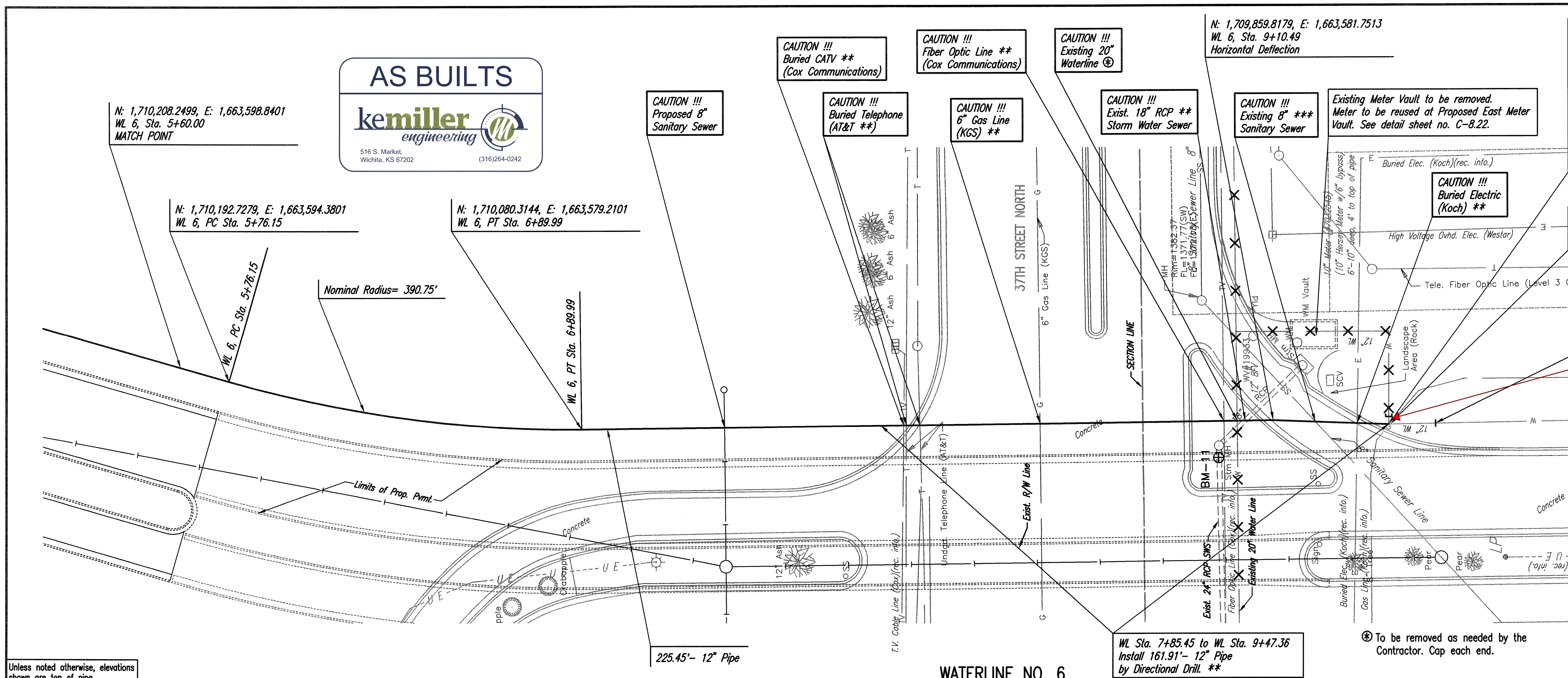
Plot Scale 1:20 06-07-2013 1:09:06 PM by GLM
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW-15 WL no 6

AS BUILTS

kemiller engineering
516 S. Market, Wichita, KS 67202
(316)264-0242



N: 1,709,822.9734, E: 1,663,580.4269
WL 6, Sta. 9+47.36
Existing 12" Waterline.*
Remove existing pipe as necessary and connect to existing 12" waterline.
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)
Make connection and remove 12" Waterline (W) per Waterline per Waterline Construction Sequence, sheet no. C-8.03.

N: 1,709,807.9557, E: 1,663,580.6958
Existing 12" Waterline.*
Cut-in 1- 12" Line Valve, Special Anchored on existing 12" waterline.
See detail, sheet no. C-8.23.
Connection to existing pipe shall be made with clean swabbed pipe. (Fittings, adaptors, and other incidentals as necessary)
Install Line Valve per Waterline Construction Sequence, sheet no. C-8.03.

QUANTUM COUPLER
10'7" PVC
M&H VALVE REBAR ANCHORED & MEGALUGGED
2' DICL
QUANTUM COUPLER

SCALE:
PLAN: LAT. & LONG. 0 20 40
PROFILE: HORIZ. SAME AS ABOVE
VERT. 0 5

* PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE EXISTING 12" WATERLINE AT STATION 9+47.36 AND 9+62.38 TO VERIFY PIPE SIZE, TYPE, FITTINGS, AND HORIZONTAL AND VERTICAL LOCATION. THE CONTRACTOR SHALL REPORT HIS FINDINGS TO THE ENGINEER SO THAT ANY PLAN MODIFICATIONS CAN BE MADE. ANY ADDITIONAL LABOR OR MATERIALS NECESSARY TO COMPLETE THE CONNECTION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT.

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

*** UTILITY TO BE ABANDONED. SEE PHASE III SITEWORK AND DEMOLITION PLAN. COORDINATE CONSTRUCTION OF WATERLINE WITH PHASE III SITEWORK AND UTILITY/PAVEMENT DEMOLITION.

MICHAEL D. KELSEY
LICENSED PROFESSIONAL ENGINEER
13944
KANSAS
6/6/13

⊛ To be removed as needed by the Contractor. Cap each end.

X = Denotes Pipe to be abandoned in place.
C = Denotes Cap/Plug by the contractor (Includes removal of existing pavement and replacement with temporary pavement.)

Unless noted otherwise, elevations shown are top of pipe

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Job No. 35-12275-3-7208
Date FEBRUARY 2013
Designed By MDK, SAD
Drawn By CSL

Sheet C-8.19 of 27

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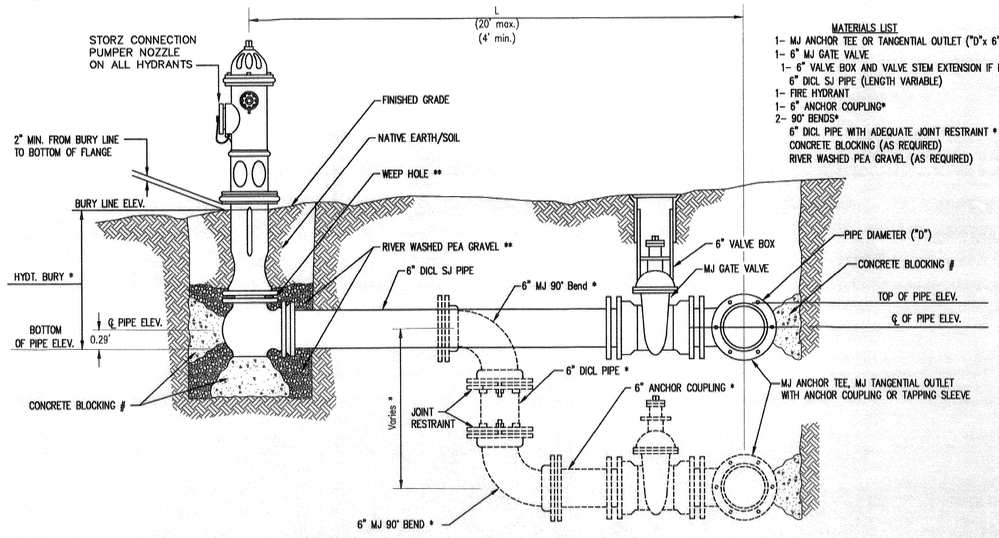


MATERIALS LIST
1- MJ ANCHOR TEE OR TANGENTIAL OUTLET ("D"x 6")
1- 6" MJ GATE VALVE
1- 6" VALVE BOX AND VALVE STEM EXTENSION IF REQUIRED *
6" DICL SJ PIPE (LENGTH VARIABLE)
1- FIRE HYDRANT
1- 6" ANCHOR COUPLING*
2- 90° BENDS*
6" DICL PIPE WITH ADEQUATE JOINT RESTRAINT *
CONCRETE BLOCKING (AS REQUIRED)
RIVER WASHED PEA GRAVEL (AS REQUIRED)

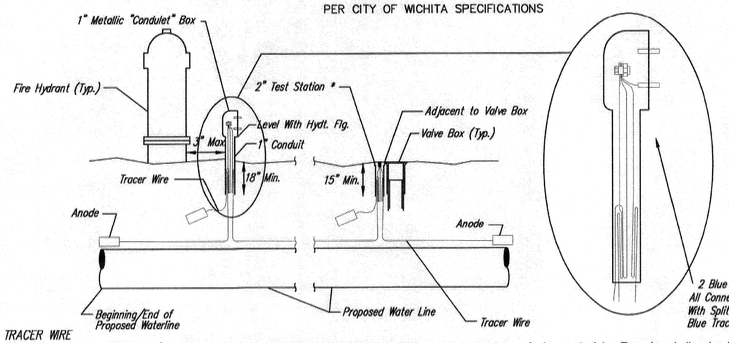
* IF THE REQUIRED HYDRANT BURY IS IN EXCESS OF 5', BUT LESS THAN 7', CONTRACTOR SHALL USE STANDARD 5' HYDRANT BURY AND HYDRANT BARREL EXTENSIONS AS NECESSARY. IF THE REQUIRED HYDRANT BURY IS GREATER THAN 7', CONTRACTOR SHALL USE 5' HYDRANT BURY, 2-MJ 90° BENDS, 6" ANCHOR COUPLING AND 6" DICL PIPE AS NECESSARY FOR VERTICAL ADJUSTMENT. THE CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING AT HYDRANT AND MEGALUGS, OR SIMILAR RESTRAINT BETWEEN 90° BENDS TO SECURE ALL FITTINGS DURING TESTING AND OPERATION. THE CONTRACTOR SHALL PROVIDE A VALVE STEM EXTENSION PER DETAIL THIS SHEET.

** 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.

FIRE HYDRANT ASSEMBLY

PER CITY OF WICHITA SPECIFICATIONS



* FLUSH STYLE TEST STATIONS SHALL ONLY BE USED IN PAVEMENT.

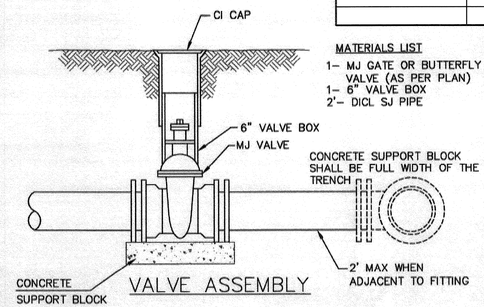
TRACER WIRE
Conductive type pipe locator/tracer wire shall be installed to locate all waterline pipe regardless of pipe material. The wire shall extend the entire length of the proposed pipe. The wire shall be taped to the waterline and pulled with the pipe. Split-bolt connectors shall be used at splice 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 3 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 or Blue No. 12 AWG CCS with 30 mil HDPE 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 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 3 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

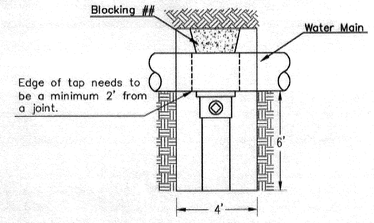
FIRE HYDRANTS REQUIRED

STATION	BURY LINE ELEVATION	TOP OF PIPE ELEVATION	FIRE HYDRANT BURY REQUIRED*	VALVE STEM EXT. REQUIRED (ft)*
	ELEVATION	ELEVATION	BURY REQUIRED*	
WL 1, STA. 10+63.46	1368.6	1364.44	5.0'	NONE
WL 1, STA. 15+84.35	1370.0	1365.84	5.0'	NONE
WL 3, STA. 0+51.04	1365.9	1362.07	4.5'	NONE
WL 3, STA. 3+65.11	1368.0	1364.17	4.5'	NONE
WL 6, STA. 4+86.73	1380.1	1375.94	5.0'	NONE



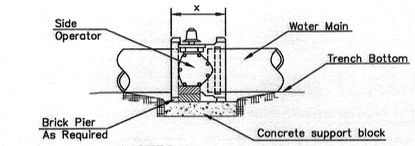
MATERIALS LIST
1- MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
1- 6" VALVE BOX
2'- DICL SJ PIPE

VALVE ASSEMBLY



CITY TAP

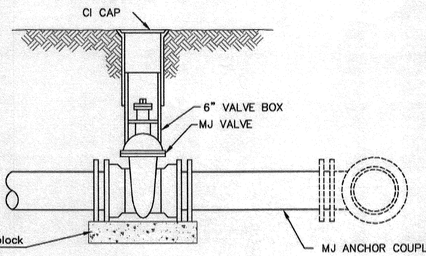
When the City of Wichita makes tap, blocking is to be done by Contractor



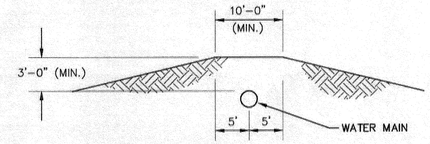
NOTES
1. This detail covers Butterfly Valve installation, inclusive, regardless of type of pipe or joint used. 24" and larger lines to be detailed on plans.
2. 6" Valve Box and Cover required per City of Wichita Std. Specifications.
3. Conc. Support Block to be full width of trench.

CONCRETE SUPPORT BLOCKING FOR BUTTERFLY VALVE INSTALLATION

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

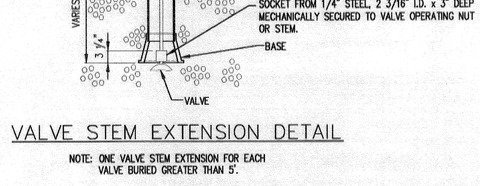


ANCHORED VALVE ASSEMBLY



PROTECTIVE FILL DETAIL

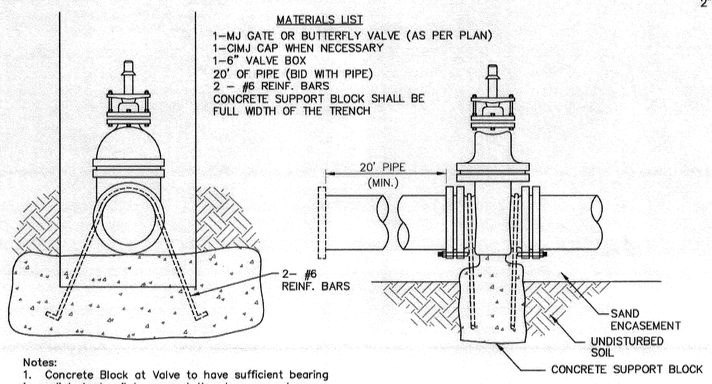
MINIMUM PROTECTIVE FILL SHALL BE PROVIDED IN ALL INSTANCES WHERE COVER OVER THE PROP. WATER LINE IS LESS THAN 3'. (COST SUBSIDIARY TO PIPE INSTALLATION)



VALVE STEM EXTENSION DETAIL

NOTE: ONE VALVE STEM EXTENSION FOR EACH VALVE BURIED GREATER THAN 5'.

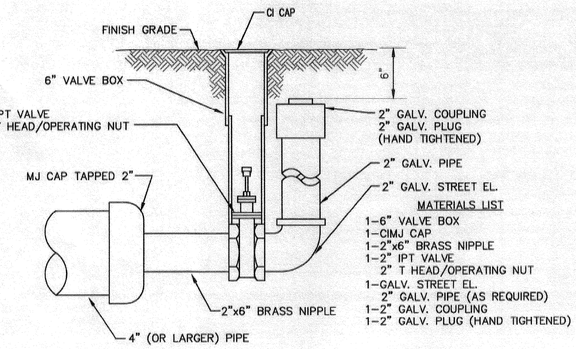
MATERIALS LIST
1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
1-CIMJ CAP WHEN NECESSARY
1-6" VALVE BOX
20' OF PIPE (BID WITH PIPE)
2 - #6 REINF. BARS
CONCRETE SUPPORT BLOCK SHALL BE
FULL WIDTH OF THE TRENCH



Notes:
1. 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.
2. The thrust block shall be constructed such that bolts, nuts, and other MJ accessories are kept clear of concrete.
3. All valves at dead ends and at other locations as called out on the plans shall be blocked as shown here.

THRUST AT VALVES	
VALVE	THRUST AT 150 #/in²
4"	1809 lbs.
6"	4245 lbs.
8"	7540 lbs.
12"	16965 lbs.

ANCHORED VALVE ASSEMBLY, SPECIAL



MATERIALS LIST
1-6" VALVE BOX
1-CIMJ CAP
1-2"x6" BRASS NIPPLE
1-2" IPT VALVE
2" T HEAD/OPERATING NUT
1-GALV. STREET EL.
2" GALV. PIPE (AS REQUIRED)
1-2" GALV. COUPLING
1-2" GALV. PLUG (HAND TIGHTENED)

2" BLOWOFF ASSEMBLY

CITY OF WICHITA
PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

GARY L. JANZEN — LICENSED — 16204 — KANSAS — PROFESSIONAL ENGINEER
04/30/13

STANDARD WATER ASSEMBLY DETAIL

CITY ENGINEER
GARY JANZEN, P.E.

PROJECT NUMBER	OCA NUMBER	DATE
1744 PPW	(607853)	04/2013

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

SHEET
C-8.20

WL-101

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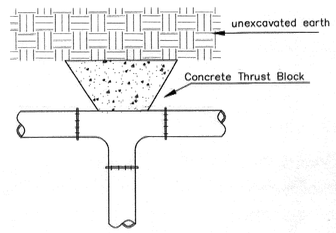
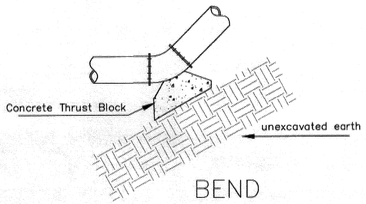
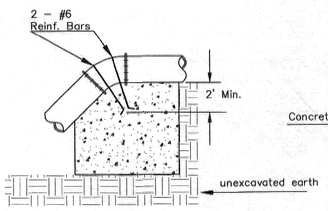


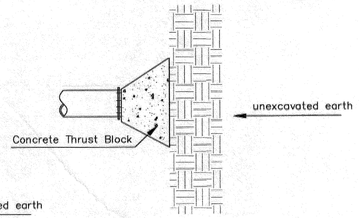
TEE



BEND



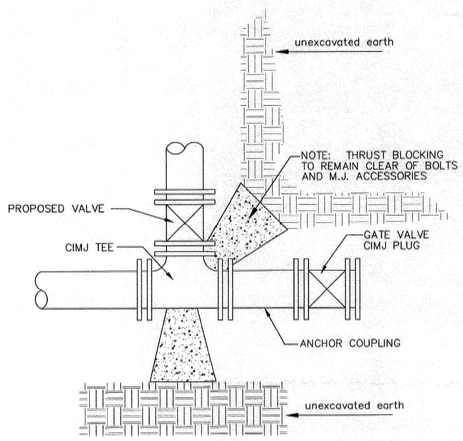
VERTICAL BEND



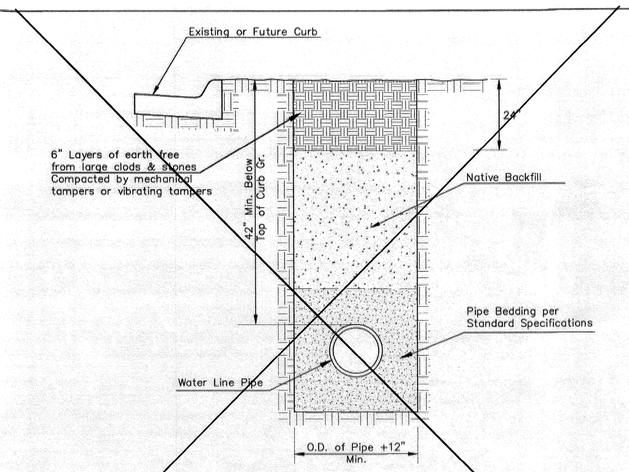
PLUG

PIPE SIZE	THRUST AT FITTINGS IN TONS–AT 150#/IN^{2}P					
	PLUG	90°	45°	22 1/2°	11 1/4°	TEE
6"	2.8	3.95	2.15	1.09	.55	2.8
8"	4.9	6.95	3.75	1.90	.96	4.9
12"	11.4	16.1	8.75	4.45	2.25	11.4
16"	20.15	28.5	15.4	7.85	3.95	20.15
20"	31.15	44.0	23.85	12.15	6.10	31.15
24"	44.55	63.0	34.1	17.4	8.75	44.55

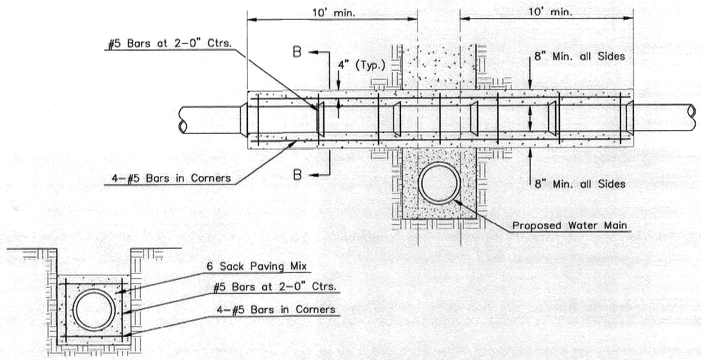
TYPICAL THRUST BLOCKS



KEY BLOCK DETAIL



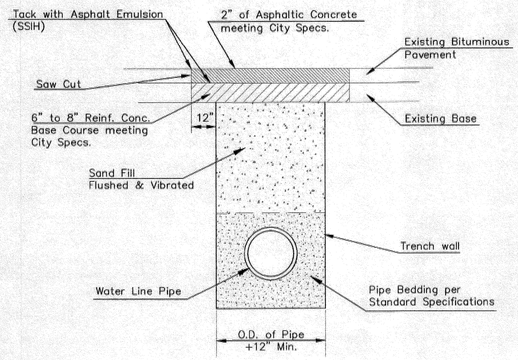
TRENCH COMPACTION IN ROAD RIGHT–OF–WAY



Note: Encasement to begin and end at a Bell on Sanitary Sewer Pipe.

SECTION B–B

REINFORCED CONCRETE ENCASEMENT OF SANITARY SEWER



PAVEMENT REPLACEMENT & TRENCH COMPACTION UNDER EXISTING AND PROPOSED CITY ROADS

* PLANS GOVERN
UNLESS OTHERWISE NOTED ON PLANS

GARY L. JANZEN LICENSED 16294 KANSAS PROFESSIONAL ENGINEER
04/22/13

CITY OF WICHITA
PUBLIC WORKS & UTILITIES ENGINEERING DIVISION

MISCELLANEOUS WATER DETAILS

CITY ENGINEER
GARY JANZEN, P.E..

PROJECT NUMBER	OCA NUMBER	DATE
1744 PPW	(607853)	04/2013

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

SHEET
C-8.21

WL-104

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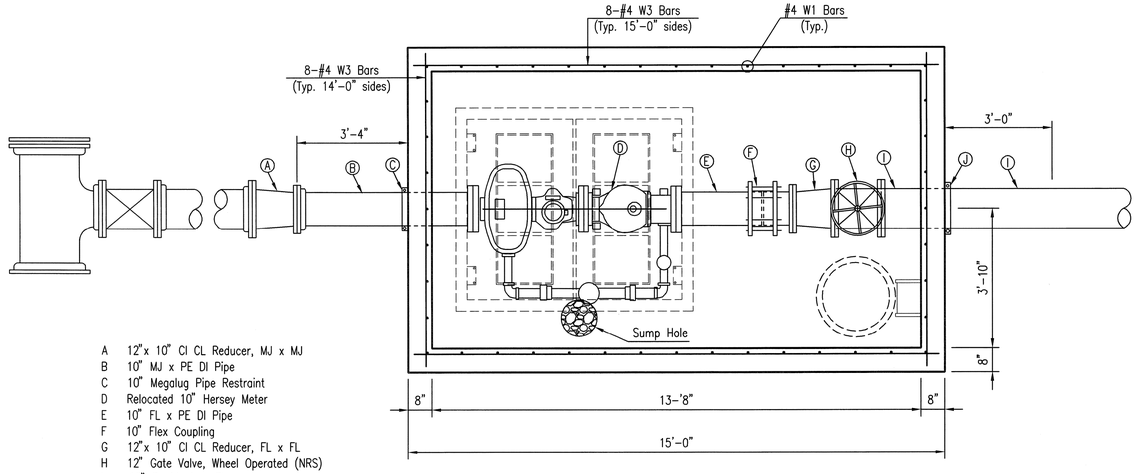
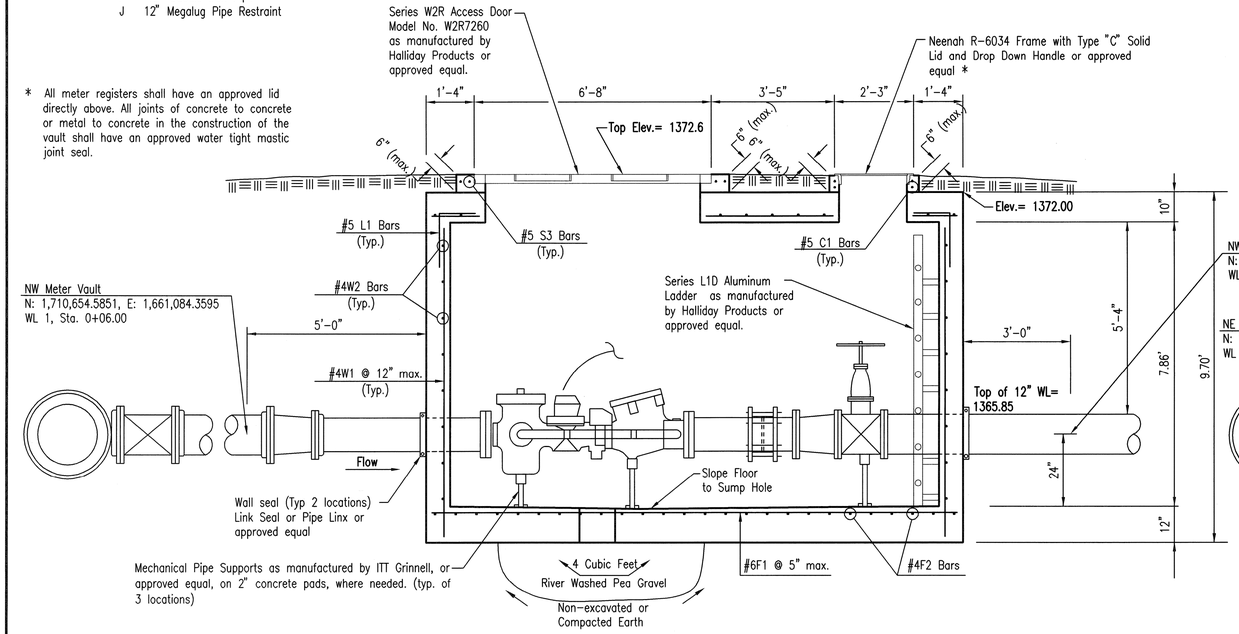


A 12"x 10" CI CL Reducer, MJ x MJ
B 10" MJ x PE DI Pipe
C 10" Megalug Pipe Restraint
D Relocated 10" Hersey Meter
E 10" FL x PE DI Pipe
F 10" Flex Coupling
G 12"x 10" CI CL Reducer, FL x FL
H 12" Gate Valve, Wheel Operated (NRS)
I 12" Ductile Iron Pipe
J 12" Megalug Pipe Restraint

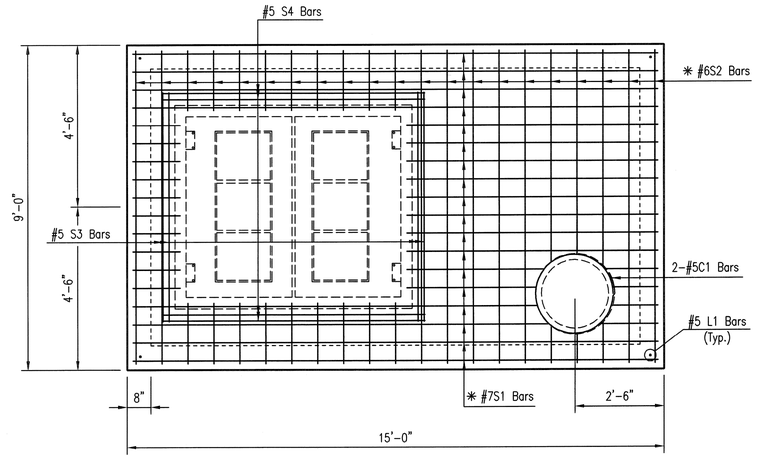
* All meter registers shall have an approved lid directly above. All joints of concrete to concrete or metal to concrete in the construction of the vault shall have an approved water tight mastic joint seal.



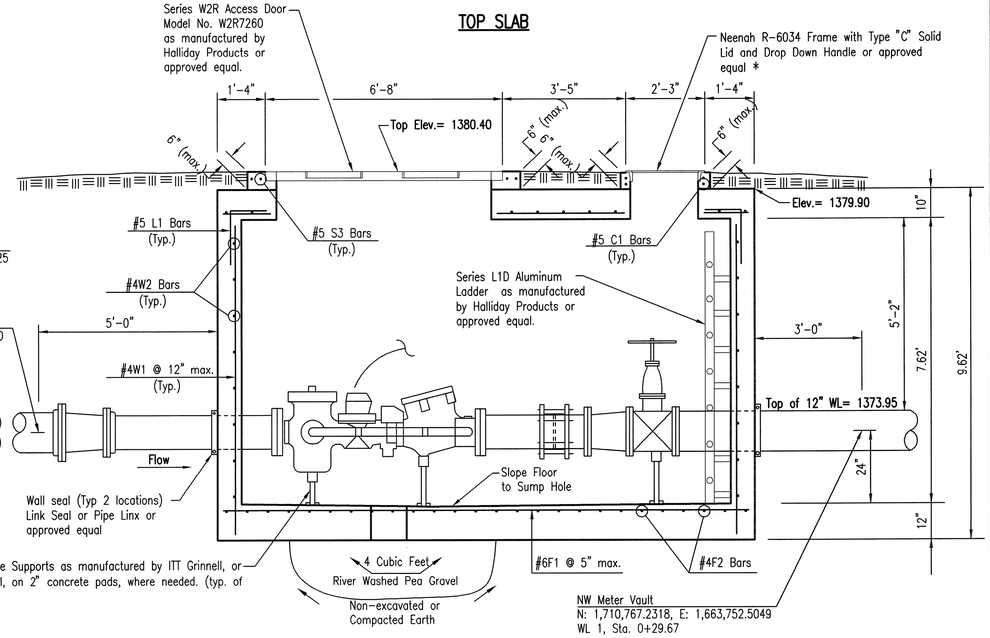
NORTHWEST WATER METER VAULT DETAIL

L1

PIPE OPENING DETAIL



TOP SLAB



NORTHEAST WATER METER VAULT DETAIL

GENERAL NOTES

1. USE 4000 P.S.I. COMPRESSIVE STRENGTH CONCRETE THROUGHOUT. ALL EXPOSED EDGES SHALL BE FINISHED WITH AN EDGING TOOL. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.
2. IN GENERAL, PIPES WILL ENTER AND LEAVE VAULT AT VARIOUS POSITIONS. WHERE POSSIBLE BEND BARS AROUND PIPES.
3. VAULT OPENINGS SHALL BE PLACED TO AFFORD EASY ACCESS TO EQUIPMENT. TOP REINFORCING BARS SHALL BE ADJUSTED ACCORDINGLY.
4. DESIGN LOADING IS AASHTO H 20–44.
5. ALL REINFORCING TO HAVE 2" EDGE AND END CLEARANCE UNLESS NOTED.
6. ALL VAULT CONSTRUCTION SHALL BE WATERTIGHT.
7. THE VAULT TOP SHALL BE SEALED ON AN APPROVED BUTYL–RUBBER SEALANT TO PROVIDE A WATERTIGHT SEAL.
8. THE "CONFINED SPACE WARNING" SIGN SHALL BE FASTENED TO THE TOP OF ALL VAULTS. IF NECESSARY FOR LANDSCAPING OR SITE CONSIDERATIONS, THE SIGN MAY BE FASTENED TO THE VAULT LID IF IT DOES NOT IMPEDE ACCESS TO THE HANDLE. ACCEPTABLE MATERIALS: ALUMINUM 73415HH, PLASTIC 73439HH, OR S.A. VINYL 73463HH.

MICHAEL D. KEITH SET LICENSED 13944 6/6/13 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATER METER VAULT DETAILS

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Designed by	MDK, SAD	Job No.	35–12275–3–7208	Sht.	C–8.22 of 27
Drawn by	CSL	Date	FEBRUARY 2013		

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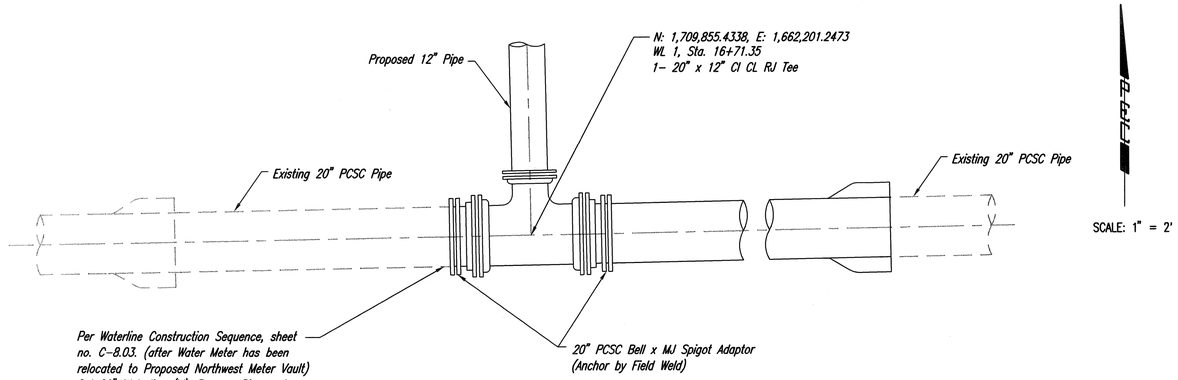
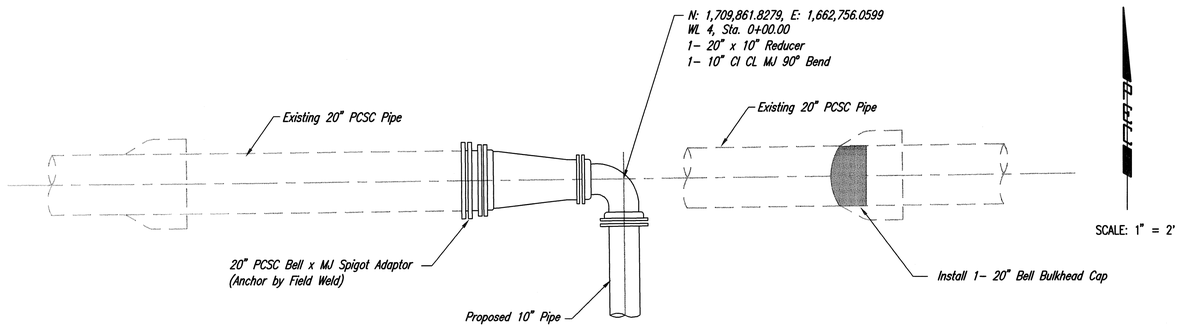
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275–003–C–PPW_Meter Vault Details



SCALE: 1" = 2'

WATERLINE CONNECTION NO. 1 (WL 1, STA. 16+71.35)

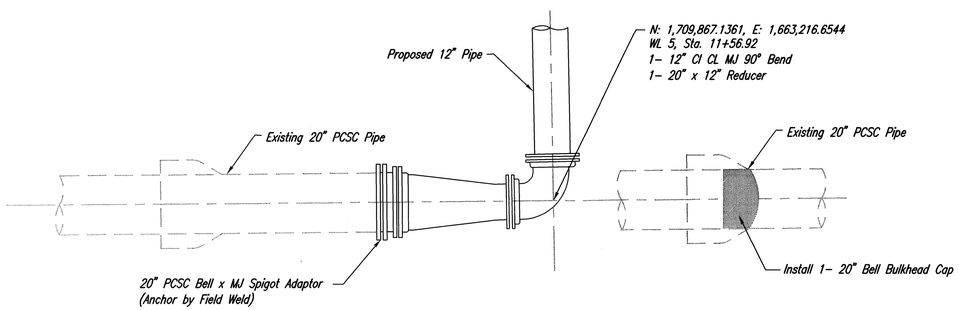
SEE PLAN/PROFILE, SHEET NO. C-8.07



SCALE: 1" = 2'

WATERLINE CONNECTION NO. 2 (WL 4, STA. 0+00.00)

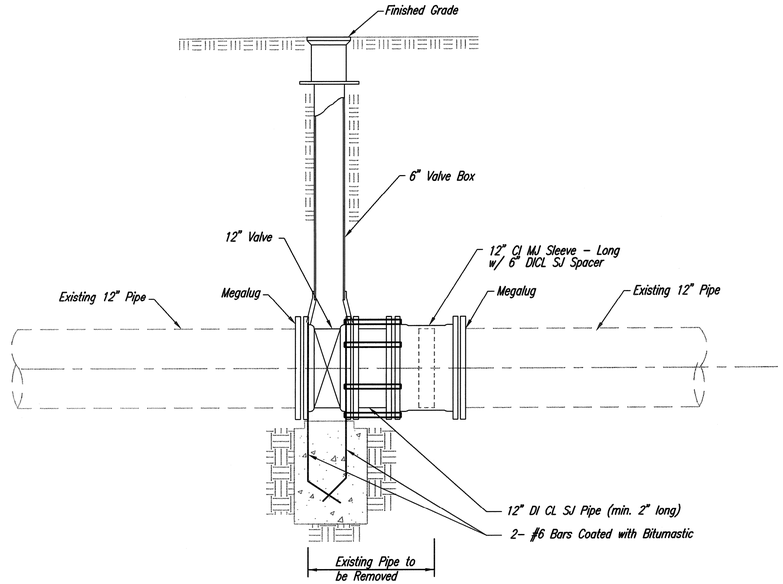
SEE PLAN/PROFILE, SHEET NO. C-8.14



SCALE: 1" = 2'

WATERLINE CONNECTION NO. 3 (WL 5, STA. 11+56.92)

SEE PLAN/PROFILE, SHEET NO. C-8.17



12" LINE VALVE, SPECIAL ANCHORED DETAIL

SEE PLAN/PROFILE, SHEET NO. C-8.10 & C-8.19

NOTE: THE CONTRACTOR SHALL PROVIDE THREADED RODS AND COLLARS TO ANCHOR VALVES AND SLEEVES TO PROPOSED RESTRAINED JOINT PIPING, AS SHOWN IN THE PLANS. THREADED RODS AND COLLARS SHALL BE HIGH STRENGTH, HEAT TREATED CORTEN STEEL AND SHALL CONFORM TO ASTM A242, TYPE 2, AS MANUFACTURED BY STAR NATIONAL PRODUCTS OR APPROVED EQUAL. THE NUMBER OF TIEBOLT RESTRAINERS AND FASTENING METHOD SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. TIE BOLTS SHALL BE DESIGNED FOR A TOTAL DESIGN PRESSURE OF 200 PSI.

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No.	Revision	By	Date

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

WATERLINE CONNECTION DETAILS

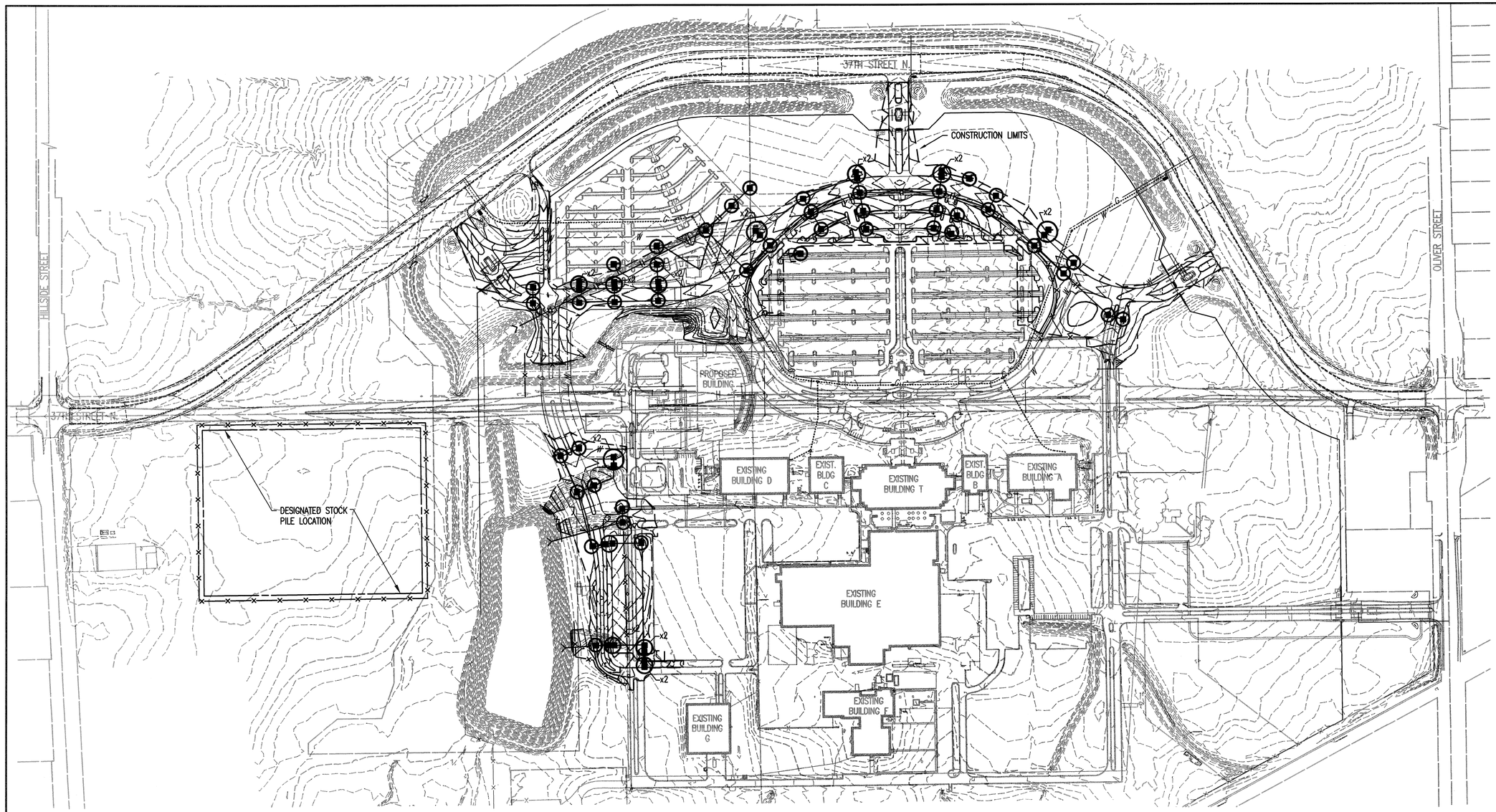
GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Designed by	MDK, SAD	Job No.	35-12275-3-7208
Drawn by	CSL	Date	FEBRUARY 2013

Sht. C-8.23 of 27

MICHAEL D. KELSEY LICENSED 13944 6/6/13 KANSAS PROFESSIONAL ENGINEER



SCALE: 1" = 200'

0 200 400

LEGEND

- EXISTING STORM WATER SEWER
- PROPOSED STORM WATER SEWER
- EXISTING STORM WATER SEWER w/STRUCTURE
- PROPOSED STORM WATER SEWER w/STRUCTURE
- SILT FENCE
- DITCH CHECK
- INLET PROTECTION
- CONSTRUCTION LIMITS

NOTES:

1. THE EROSION CONTROL DEVICES SHOWN ON THIS SHEET ARE CONSIDERED MINIMUM STANDARDS. WHENEVER SEDIMENT ENTERS THE STREETS, STORM SEWERS, DITCHES, OR PONDS, CONTRACTOR SHALL INSTALL ADDITIONAL DEVICES, AS NEEDED, TO CORRECT THE PROBLEM.
2. THE EROSION CONTROL DEVICES SHOWN HEREON MUST BE IN PLACE AT ALL TIMES DURING CONSTRUCTION UNTIL SUCH TIME AS THE SITE IS REESTABLISHED WITH PAVING OR GRASS. REMOVE TEMPORARY EROSION CONTROL DEVICES, INCLUDING ROCK DAMS AND DITCH CREEKS, AFTER PERMANENT GRASS IS ESTABLISHED.
3. ANY MUD INADVERTENTLY TRACKED ONTO ANY STREET SHALL BE CLEANED UP BY THE CONTRACTOR, AT THE END OF EACH DAY'S WORK.
4. CONTRACTOR TO FURNISH A TRUCK WASH-OUT PIT TO BE PLACED AT A CONVENIENT LOCATION THAT DOES NOT CONFLICT WITH CONSTRUCTION. CONTRACTOR SHALL CLEAN OUT AND BACKFILL PIT PRIOR TO FINAL INSPECTION. CONTRACTOR TO USE TRUCK WASH-OUT PIT TO WASH SEDIMENT FROM THE TIRES AND UNDERCARRIAGE OF EXISTING VEHICLES AND TO PREVENT SEDIMENT FROM BEING TRACKED ONTO EXISTING ROADWAYS. THIS INCLUDES ALL VEHICLES EXITING THE SITE.
5. CONTRACTOR SHALL INSTALL TEMPORARY SEEDING, MULCH, OR OTHER EFFECTIVE STABILIZATION PRACTICE WHERE CONSTRUCTION SHALL CEASE FOR MORE THAN 14 DAYS.
6. SEE LANDSCAPE PLANS FOR PERMANENT SEEDING.

SURVEY PROVIDED BY:
GARBER SURVEYING SERVICE, P.A.
2908 NORTH PLUM STREET
HUTCHINSON, KS. 67502
620-665-7032
www.garbersurveying.com
FEBRUARY 2013

MATTHEW BILLINGSLEY LICENSED 2008 PROFESSIONAL ENGINEER KANSAS 6/27/13

No.	Revision	By	Date

KOCH WICHITA CAMPUS EXPANSION
WATERLINE IMPROVEMENTS

EROSION CONTROL PLAN

GARY JANZEN, P.E. – CITY ENGINEER
PRIVATE PROJECT NO. 1744 PPW (607853)

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

Designed by	MDK, SAD	Job No.	35-12275-3-7208
Drawn by	CSL	Date	FEBRUARY 2013

Sht. C-10.00 of 27

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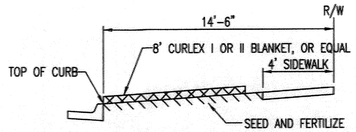
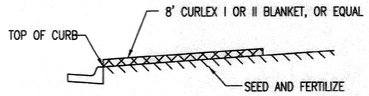
Plot Scale 1:200 06-07-2013 1:14:04 PM by CSL
Q:\2012\12275\003\SITE CIVIL\PHASE 1\PPW\12275-003-C-PPW_Erosion Control Plan



SECTION B-B



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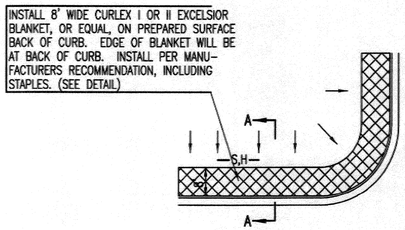
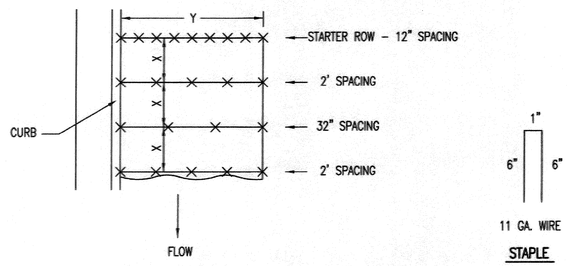


GENERAL NOTES

1. EXCELSIOR MAT TO BE INSTALLED WHEN SOD IS NOT SPECIFIED ON PROJECT.
2. EXCELSIOR BLANKET TO BE INSTALLED OVER SEED AND FERTILIZER, AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
3. 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.

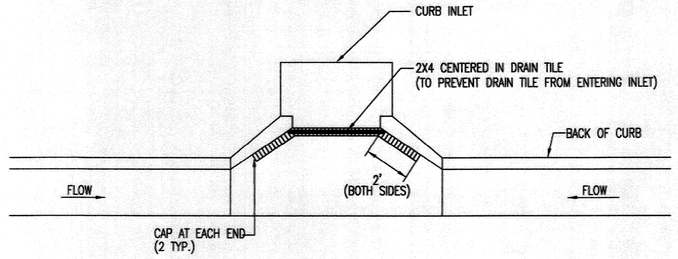
BACK OF CURB PROTECTION DETAIL



STAPLE PATTERN

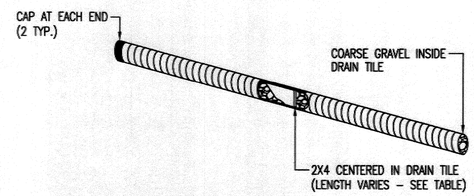
NOTES: USE 6" SEAM OVERLAP
(X & Y = RECOMMENDED BY MANUFACTURE)

DETAILS FOR APPROVED EROSION CONTROL MAT

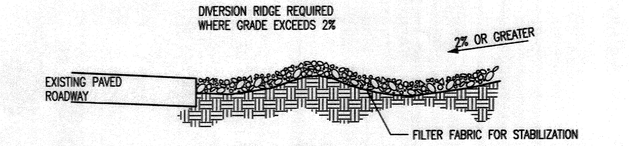


NOTE:
PLACE 4" PERFORATED PVC PIPE, FILLED WITH 1/2"-1" DIA. GRAVEL, IN FRONT OF CURB INLET AS SHOWN.

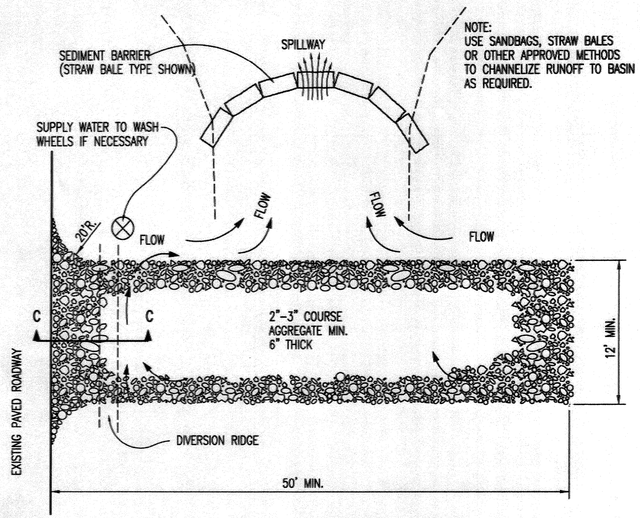
2X4 LENGTH	INLET TYPE	INLET OPENING
5'-6"	1-A	5'-0"
10'-6"	1-A	10'-0"
15'-6"	1-A	15'-0"



CURB INLET PROTECTION
4" PERFORATED PIPE W/ GRAVEL



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE

GENERAL NOTES

1. 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.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. 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.
4. 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

GARY L. JANZEN LICENSED PROFESSIONAL ENGINEER 16204 KANSAS
05/30/13

CITY OF WICHITA
PUBLIC WORKS & UTILITIES ENGINEERING DIVISION

BACK OF CURB PROTECTION, CURB INLET PROTECTION AND CONSTRUCTION ENTRANCE

CITY ENGINEER
GARY JANZEN, P.E.

PROJECT NUMBER	OCA NUMBER	DATE
1744 PPW	(607853)	

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

SHEET
C-10. 01

SW-501

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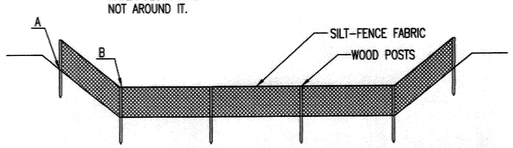
NOTE: POINT A MUST BE HIGHER THAN POINT B SO THAT WATER FLOWS OVER THE SILT FENCE FABRIC AND NOT AROUND IT.



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.

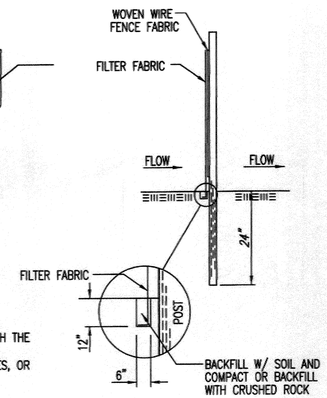
LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:

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.

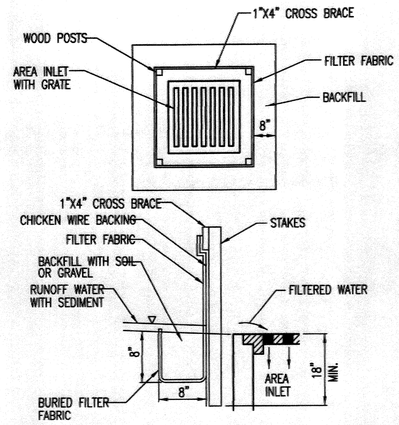
INSPECTION AND MAINTENANCE:

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 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.

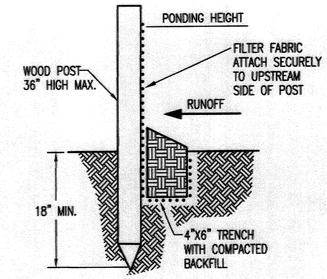
LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:

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 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?

REVISION DATE: MAY 2013

GARY L. JANZEN LICENSED 19294 PROFESSIONAL ENGINEER KANSAS
05/21/13

CITY OF WICHITA
PUBLIC WORKS & UTILITIES ENGINEERING DIVISION

SILT FENCE DITCH CHECK AND BARRIER DETAILS

CITY ENGINEER
GARY JANZEN, P.E.

PROJECT NUMBER	OCA NUMBER	DATE
2163 PPS	(607861)	

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

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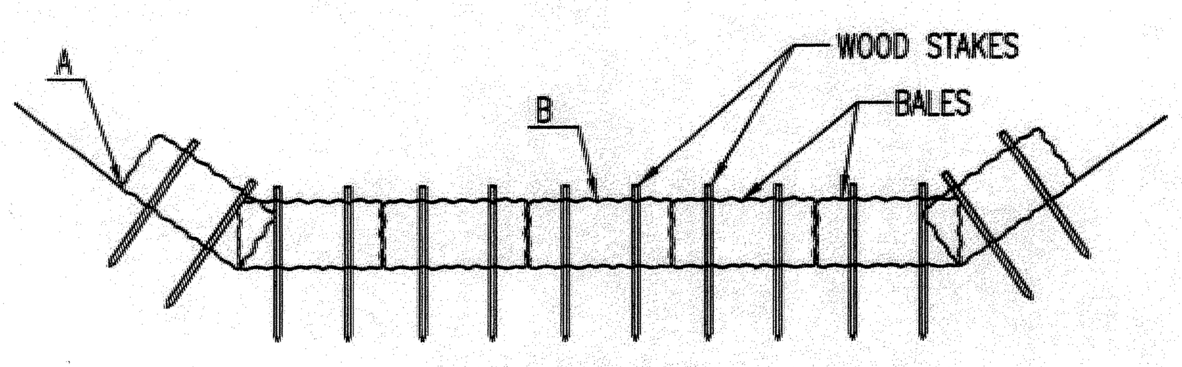
NOTE: POINT A MUST BE HIGHER THAN POINT B SO THAT WATER FLOWS OVER THE BALES AND NOT AROUND THEM.



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".

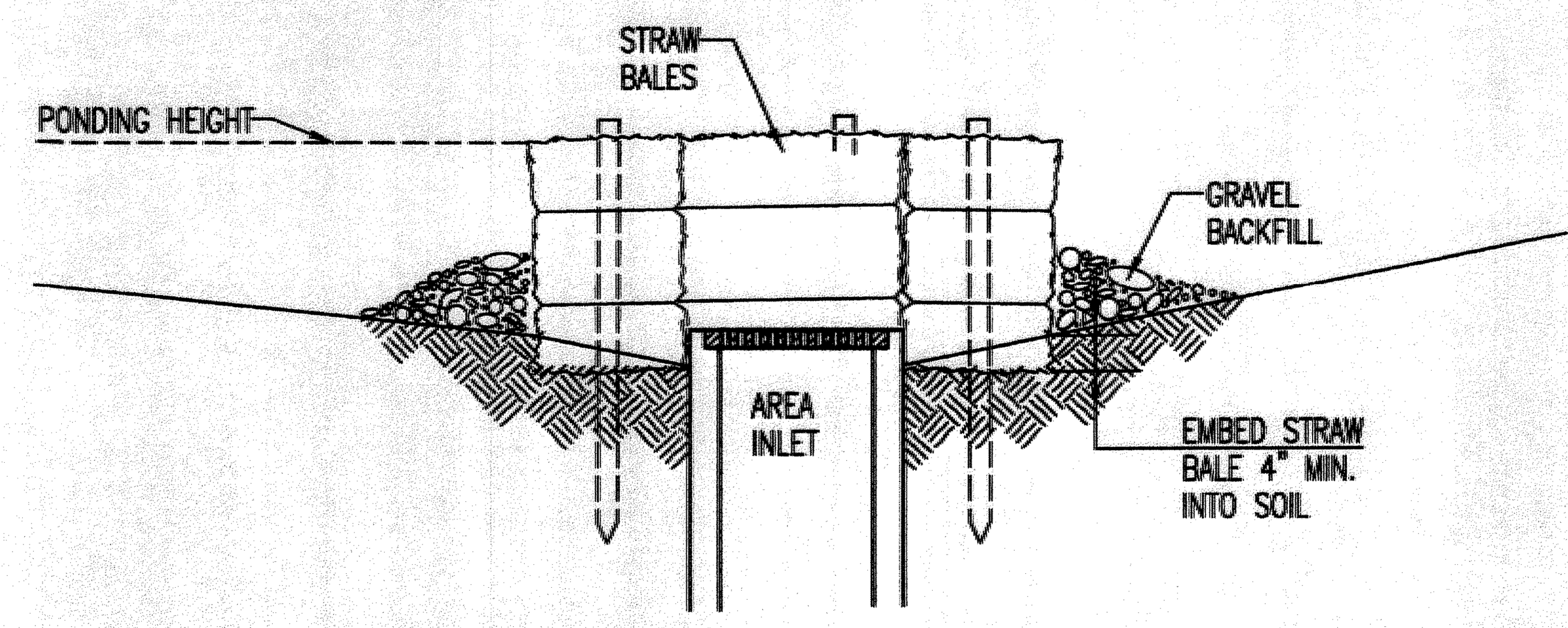
LIST OF COMMON PLACEMENT/INSTALLATION MISTAKES TO AVOID:

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.

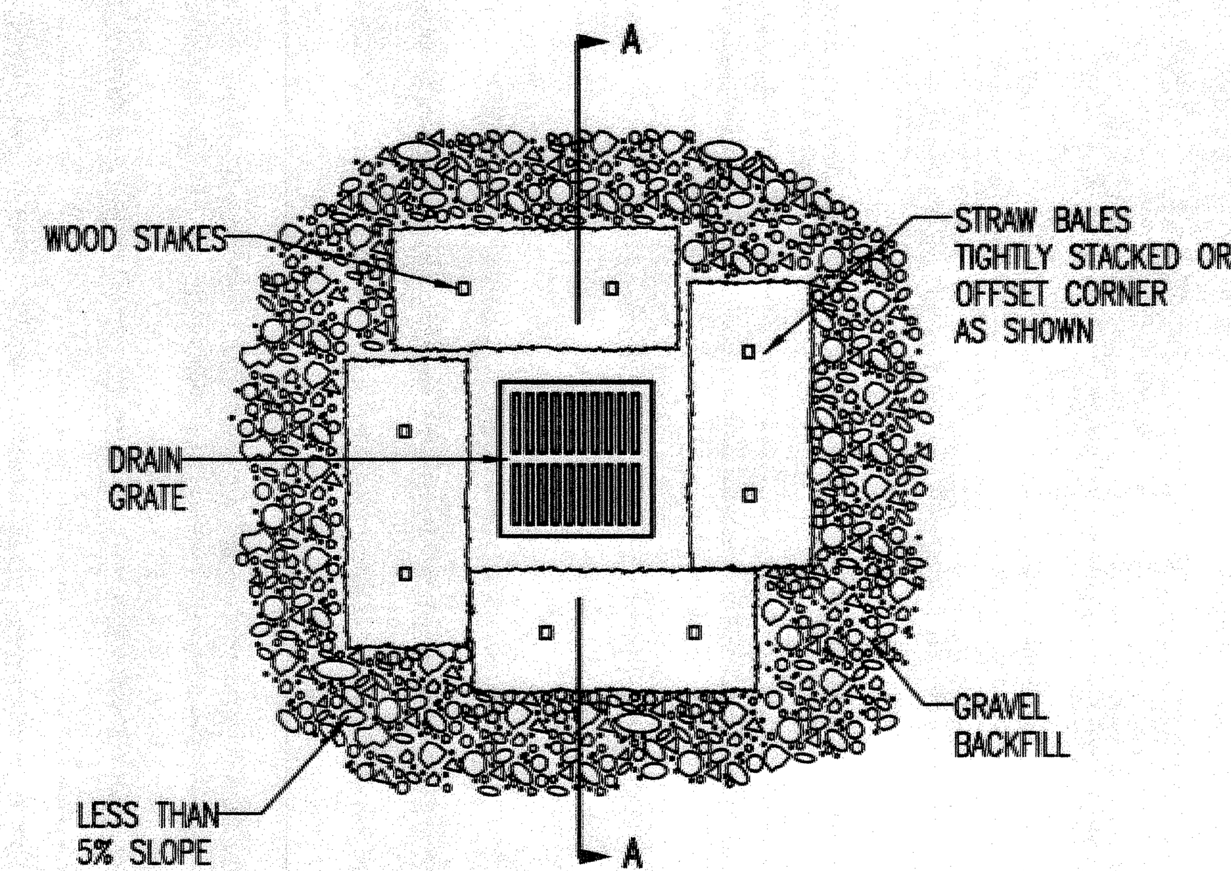
INSPECTION AND MAINTENANCE:

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?



SECTION A-A



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.

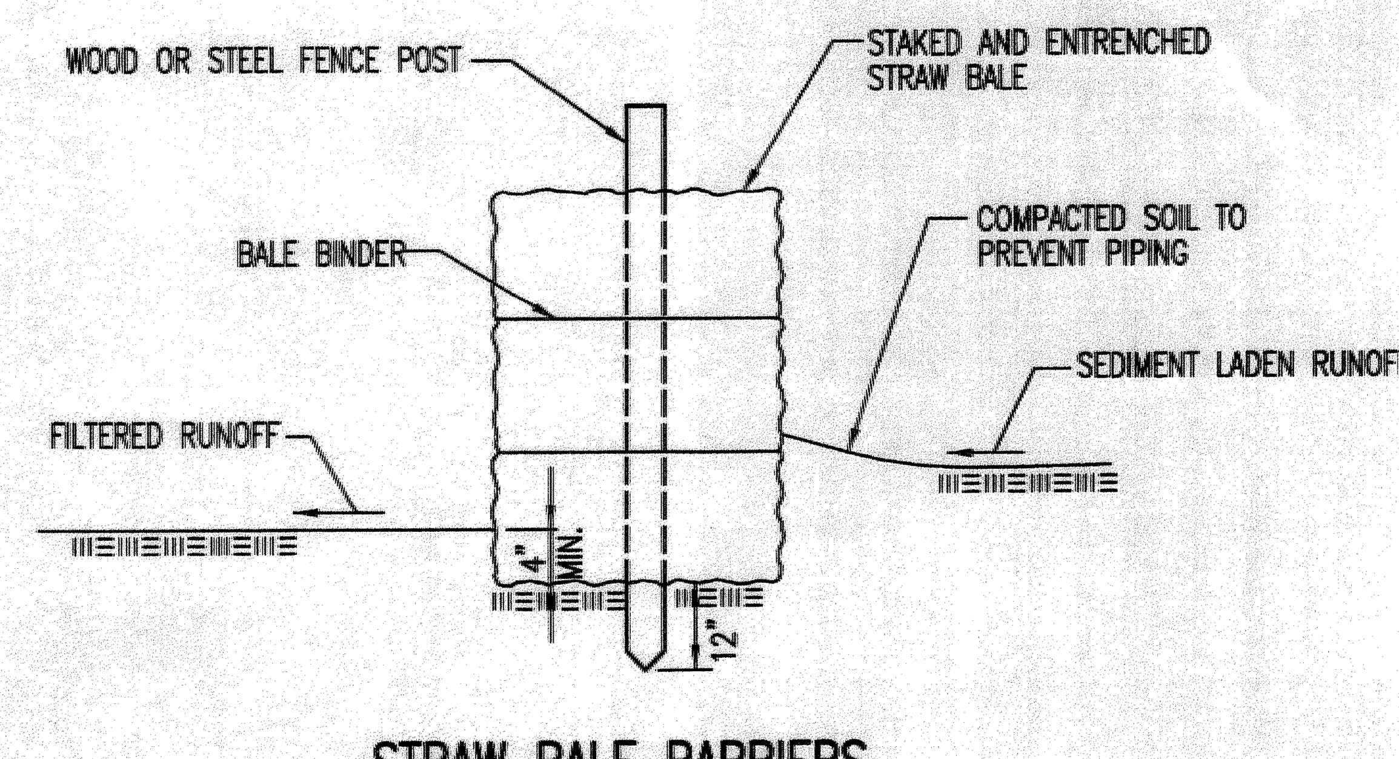
LIST OF COMMON PLACEMENT INSTALLATION MISTAKES TO AVOID:

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?

REVISION DATE: MAY 2013

GARY L. JANZEN LICENSED KANSAS 16294 PROFESSIONAL ENGINEER 05/30/13

CITY OF WICHITA
PUBLIC WORKS & UTILITIES ENGINEERING DIVISION

STRAW BALE DITCH CHECK AND BARRIER DETAILS

CITY ENGINEER
GARY JANZEN, P.E.

PROJECT NUMBER	OCA NUMBER	DATE
2163 PPS	(607861)	

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

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SW-503

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