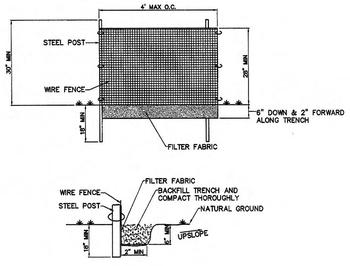
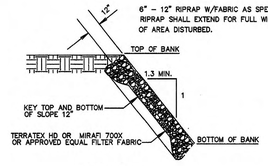


TYPICAL SILT FENCE TYPE C SF
NOT TO SCALE
(TYPE C TO BE USED FOR THIS PROJECT)



RIPRAP DETAIL
NOT TO SCALE

GENERAL NOTES:

THE FOLLOWING GENERAL EARTHWORK PROCEDURE SHALL BE FOLLOWED FOR CONSTRUCTION OF ROADWAYS, EMBANKMENTS, AND OTHER GENERAL GRADING ACTIVITIES.

1) INSTALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) REQUIREMENTS.

2) CONTRACTOR IS TO REFER TO THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION DIVISION OF WATER POLLUTION CONTROL FOR DETAILS ON INSTALLING AND MAINTAINING THE EROSION CONTROL DEVICES CALLED FOR IN THIS PLAN.

3) SEEDING.
A. THE CONTRACTOR IS TO APPLY TEMPORARY OR PERMANENT SEEDING TO ANY COMPLETED SECTIONS OF WORK. THE CONTRACTOR SHALL SEED AND MULCH THESE AREAS TO MINIMIZE THE AMOUNT OF DISTURBED AREA PER SPECIFICATIONS.

B. APPLY TEMPORARY SEEDING WHENEVER GRADING OPERATIONS ARE TEMPORARILY HALTED FOR OVER 14 DAYS AND FINAL GRADING OF EXPOSED SURFACES IS TO BE COMPLETED WITHIN ONE YEAR. APPLY TEMPORARY SEEDING TO SOIL STOCKPILES PER SPECIFICATIONS.

C. APPLY PERMANENT SEEDING WHENEVER GRADING OPERATIONS ARE COMPLETED AND ALL CONSTRUCTION OPERATIONS WILL NOT IMPACT THE DISTURBED AREA. APPLY PERMANENT SEEDING TO ALL NON-CONSTRUCTION AREAS WHICH SHOW SIGNS OF EXCESSIVE EROSION PER SPECIFICATIONS.

4) ALL SILT FENCE SHOULD BE INSTALLED ALONG THE CONTOUR, NEVER UP OR DOWN A SLOPE. THE DRAINAGE AREA SHOULD NOT EXCEED 1/4 ACRE FOR EVERY 100 FEET OF SILT FENCE.

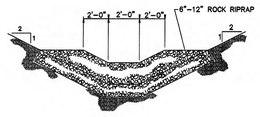
CRITERIA FOR SILT FENCE PLACEMENT:

LAND SLOPE(%)	MAXIMUM SLOPE LENGTH ABOVE FENCE(FT)
<2	100
2 TO 5	75
5 TO 10	50
10 TO 20	25
>20	15

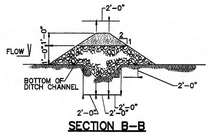
*IN AREAS WHERE THE SLOPE IS GREATER THAN 20%, A FLAT AREA LENGTH OF 10 FEET BETWEEN THE SLOPE AND THE FENCE SHOULD BE PROVIDED.

5) IN AREAS WHERE THE PROPOSED WATERLINE IS UNDER THE EXISTING ROADSIDE DITCH, ROCK CHECK DAMS ARE TO BE NO GREATER THAN 1 FOOT IN HEIGHT AND SPACED PROPERLY. THE EXISTING ROADSIDE DITCHES ARE ON AVERAGE 1.5 FOOT TO 2.0 FEET DEEP. THE ROCK CHECK DAMS ARE TO BE 1 FOOT IN HEIGHT TO ENSURE THAT WATER WILL NOT BE PUSHED OUT IN TO THE ROADWAY BY THE CHECK DAM DURING HEAVY RAIN EVENTS.

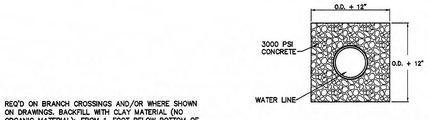
6) DETAILS FOR STRUCTURAL PRACTICES SHOWN IN: "TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOK", DATED MARCH 2002.



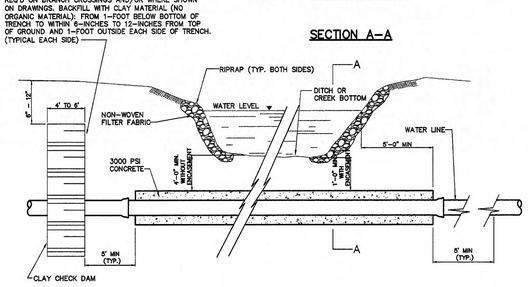
SECTION A–A



SECTION B–B

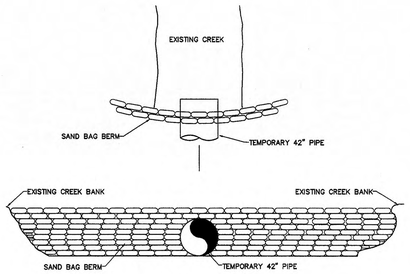


SECTION A–A

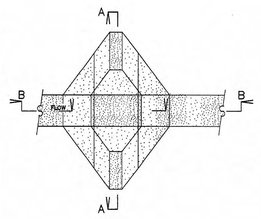


BRANCH OR DITCH CROSSING DETAIL
NOT TO SCALE

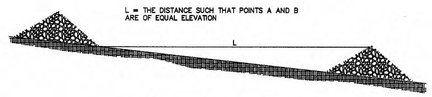
NOTE:
PROVIDE MIN. 4 FEET OF COVER UNLESS IN ROCK. IF ROCK IS ENCOUNTERED TOP OF PIPE SHALL BE 1 FOOT BELOW ROCK ENCASED IN CONCRETE. PIPING MATERIAL SHALL BE DUCTILE IRON UNLESS OTHERWISE SPECIFIED IN DRAWINGS.



SAND BAG BERM
NOT TO SCALE



PLAN



SPACING BETWEEN CHECK DAMS

STONE CHECK DAM CD
NOT TO SCALE

JOHN L. KING
REGISTERED ENGINEER
No. 102733
STATE OF TENNESSEE

RECORD DRAWING
12-17-2010

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV. NO.
R 1	12/17/10	JLK	JMG	JLK	--	--	JLK	--	--	--	D
RECORD DRAWING											

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
CIVIL

KIF – UTILITY RESTORATION
HARRIMAN UTILITY BOARD – EFFLUENT
EROSION CONTROL DETAIL SHEET

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.L.K.	J.M.G.	D.L.J.				

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

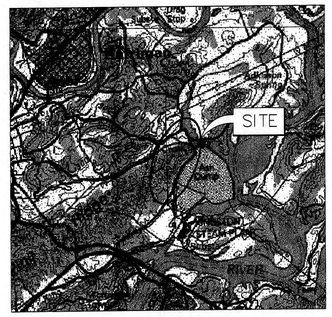
AUTOCAD R07	DATE 3/17/09	36	C	670-HE006.1	R 1

PLOT FACTOR:1:1

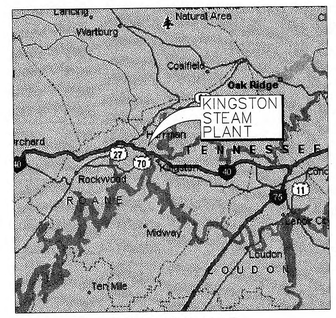
C.A.D. DRAWING

CONSOLIDATED TECH., INC.

KIF - UTILITY RESTORATION
HARRIMAN UTILITY BOARD - EFFLUENT



SITE MAP



VICINITY MAP

DRAWING INDEX

670–HE001	TITLE SHEET
670–HE002	PLAN AND PROFILE SHEET 1 OF 3
670–HE003	PLAN AND PROFILE SHEET 2 OF 3
670–HE004	PLAN AND PROFILE SHEET 3 OF 3
670–HE005	DETAIL SHEET
670–HE006	EROSION CONTROL DETAIL SHEET

PREPARED BY:

CTI ENGINEERS, INC.
112 DURWOOD ROAD SUITE A
KNOXVILLE, TN 37922
865-246-2760

JOHN L. KING, PE 7/31/09
TENNESSEE LICENSE NO. 103702 DATE

NOTE:
THESE RECORD DRAWINGS PREPARED BY CTI ARE BASED UPON THE REPRESENTATIONS OF OTHERS (MAYSE CONSTRUCTION COMPANY. OF CHATTANOOGA, TENNESSEE AND THE R.L.S. GROUP, LLC OF HIXSON, TENNESSEE) AND ARE NOT FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES. THESE DRAWINGS HAVE BEEN REVIEWED BY CTI AND ARE BELIEVED TO REFLECT, TO THE BEST OF OUR KNOWLEDGE, AN ACCURATE RECORD OF THE WORK AS CONSTRUCTED. THE INFORMATION CONTAINED HEREIN SHOULD BE FIELD–VERIFIED PRIOR TO BEING USED FOR FUTURE DESIGN AND/OR CONSTRUCTION.

RECORD DRAWING
12–17–2010

I CERTIFY THAT THESE PLANS HAVE BEEN REVIEWED AND APPROVED BY THE HARRIMAN UTILITY BOARD

CHUCK FLORA, GENERAL MANAGER DATE

REV NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R 1	12/17/10	JLK	JMG	JLK	–	–	JLK	–	–	–
RECORD DRAWING										

SCALE: NOT TO SCALE EXCEPT AS NOTED

YARD
CIVIL

KIF – UTILITY RESTORATION
HARRIMAN UTILITY BOARD – EFFLUENT
TITLE SHEET

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.L.K.	J.M.G.	D.L.J.				

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

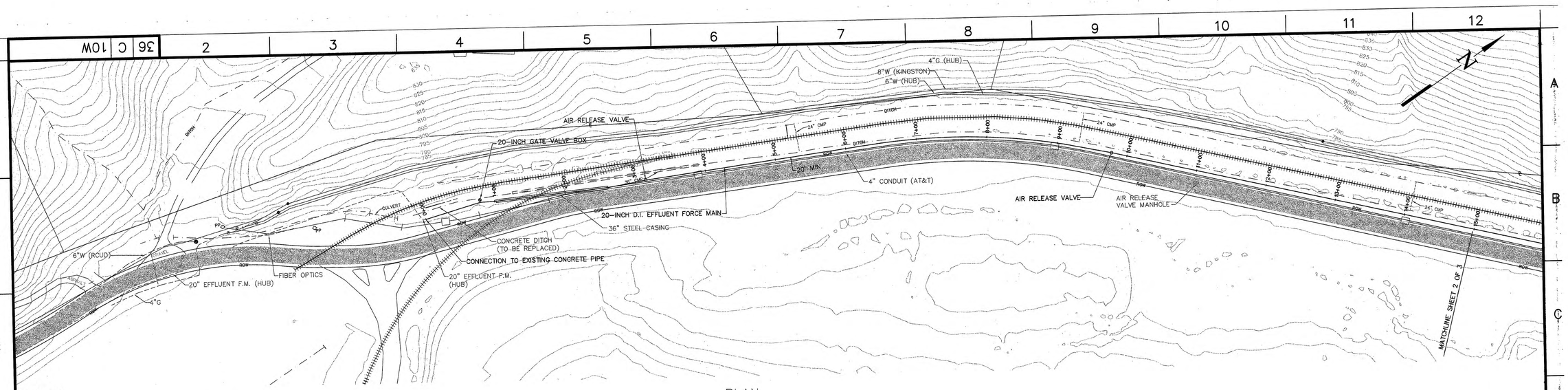
AUTOCAD R07	DATE 3/17/09	36	C	670–HE001.1	R 1

CONSOLIDATED TECH., INC.
TASK COMPLETED BY: REV NO.

PLOT FACTOR:1:1
W_TVA

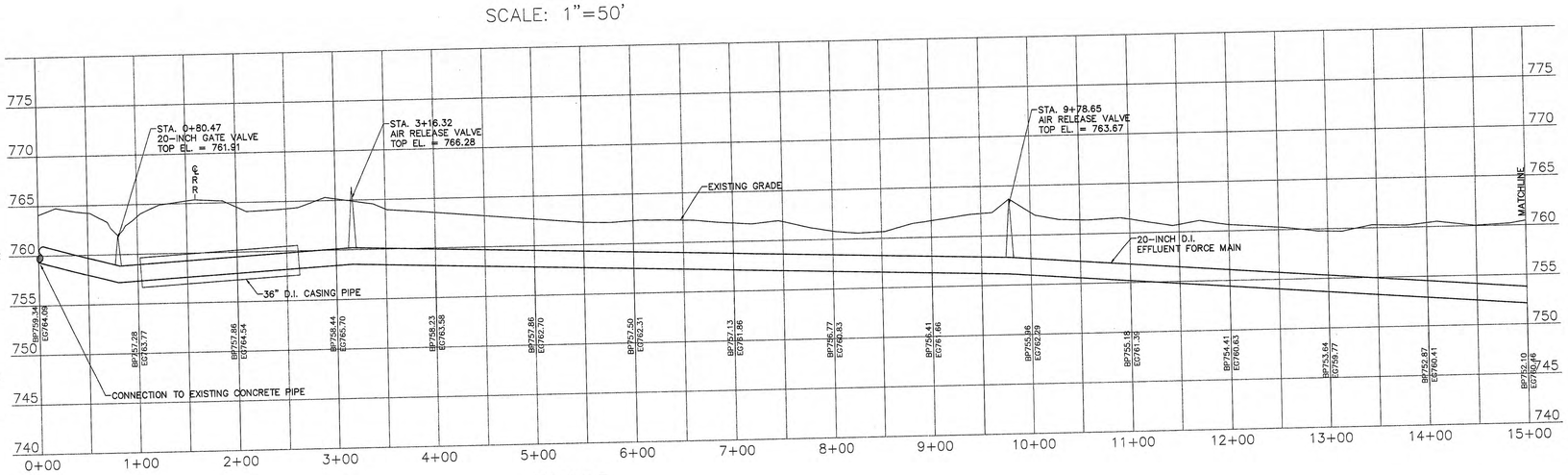
C.A.D. DRAWING
DO NOT ALTER MANUALLY

Sewer



PLAN

SCALE: 1"=50'



PROFILE

SCALE: 1"=50'H, 1"=5'V

GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING "TN ONE-CALL" AND ALL NON-MEMBER UTILITY OWNERS IN THE PROJECT AREA AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY. ALL EXISTING UTILITIES ARE NOT SHOWN ON THESE PLANS AND LOCATIONS SHOWN HAVE BEEN APPROXIMATED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATIONS OF ALL EXISTING UTILITIES AND PROTECT ALL EXISTING UTILITIES AND STRUCTURES FROM DAMAGE. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THESE PLANS, INCORRECTLY SHOWN ON THESE PLANS OR NOT SHOWN ON THESE PLANS, SHALL BE REPAIRED BY THE CONTRACTOR, AS HIS EXPENSE, TO THE SATISFACTION OF THE UTILITY OWNER.

2. THE CONTRACTOR SHALL PERFORM ALL WORK IN A LOGICAL CONSTRUCTION SEQUENCE AS REQUIRED TO STREAMLINE AND EXPEDITE THE COMPLETION OF THE PROJECT AS MUCH AS POSSIBLE. HOWEVER, IN CONSTRUCTING THE UTILITIES, PIPING INSTALLATION SHALL COMMENCE AT ONE LOCATION AND BE CONTINUOUS WITHOUT SKIPS TO AVOID ROCK OR OTHER OBSTACLES AND CONTINUE UNTIL COMPLETE. INSTALLATION OF SLEEVES IN NEW PIPING SHALL NOT BE PERMITTED.

3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION AND SCHEDULING WITH OTHER CONTRACTORS, UTILITIES AND ALL OTHER PARTIES WORKING WITHIN, UTILIZING, RESIDING OR OTHERWISE ACCESSING THE PROJECT AREA AS NEEDED TO EXPEDITE AND SUCCESSFULLY COMPLETE THE UTILITIES INSTALLATIONS. THE CONTRACTOR SHALL ALLOW TIME FOR COORDINATION AND DELAYS CAUSED BY OTHERS USING, WORKING WITHIN OR OTHERWISE ACCESSING THE PROJECT AREA.

4. THE CONTRACTOR IS RESPONSIBLE FOR ENGAGING THE SERVICES OF A TENNESSEE PROFESSIONAL LAND SURVEYOR, TO STAKE OUT ALL WORK RELATED TO THE PROJECT AND VERIFY ALL DIMENSIONS AND GRADES PRIOR TO COMMENCING CONSTRUCTION. SHOULD ANY CONFLICTS OR OTHER DISCREPANCIES EXIST, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER AND AWAIT FURTHER INSTRUCTION PRIOR TO COMMENCING CONSTRUCTION ON THE PROJECT.

5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEMOLITION, CLEARING, GRUBBING AND DISPOSAL OF ALL WASTE MATERIALS AS NECESSARY TO SATISFACTORILY COMPLETE ALL CONSTRUCTION. ALL WASTE MATERIALS SHALL BE REMOVED AND DISPOSED OF OFF THE PROJECT PROPERTY BY THE CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCEPTABLE ACCESS TO ALL PARTIES THROUGHOUT THE PROJECT AREA AND OTHER AFFECTED PROPERTIES THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND INSTALL MAINTENANCE STONE AND OTHER MEASURES AS MAY BE NECESSARY TO MAINTAIN PEDESTRIAN AND VEHICLE ACCESS IN A CONDITION ACCEPTABLE TO THE ENGINEER, TVA, TDOT, COUNTY ROAD DEPARTMENT, RAILROAD, AND OTHER PARTIES AFFECTED BY CONSTRUCTION ACTIVITIES.

7. SHOULD GROUNDWATER BE ENCOUNTERED DURING CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN AN ADEQUATE DEWATERING SYSTEM. DEWATERING EQUIPMENT SHALL BE USED IN A MANNER WHICH PREVENTS CONTAMINATION OF STREAMS OR DAMAGE TO ANY PUBLIC PROPERTIES, PRIVATE PROPERTIES, INCLUDING UTILITIES.

8. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SIGNING AND TRAFFIC CONTROL. ALL CONSTRUCTION SIGNING AND TRAFFIC CONTROL MATERIALS, METHODS AND MEANS SHALL BE IN ACCORDANCE WITH TDOT, RAILROAD, AND COUNTY HIGHWAY STANDARDS AND ANY PROJECT SPECIFIC REQUIREMENTS IMPOSED BY LOCAL OFFICES AND BY TVA.

9. THE CONTRACTOR IS RESPONSIBLE FOR ALL SECURITY AND SAFETY RELATED TO THIS PROJECT.

10. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING PUBLIC AND PRIVATE PROPERTIES FROM DAMAGE RELATED TO CONSTRUCTION ACTIVITIES. ANY DAMAGE AS A RESULT OF CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER.

11. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AN ACCURATE SET OF AS-BUILT DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE ENGINEER WITH AN ACCURATE AS-BUILT SURVEY, COMPLETED BY A QUALIFIED TENNESSEE PROFESSIONAL LAND SURVEYOR. THE SURVEY SHALL BE PROVIDED IN BOTH SEALED HARDCOPY AND DIGITAL (AUTOCAD COMPATIBLE WITH ALL RAW SURVEY DATA POINTS) FORMATS. THE AS-BUILT SURVEY SHALL INCLUDE ALL AREAS AFFECTED BY CONSTRUCTION AND SHALL BE PREPARED ON PLAN HORIZONTAL AND VERTICAL DATUMS PROVIDED AND SHALL PROVIDE HORIZONTAL LOCATIONS OF ALL UTILITIES INSTALLATIONS AND OF EXISTING UNDERGROUND UTILITIES ENCOUNTERED AND INCLUDE VERTICAL LOCATIONS OF KINGSTON'S WATER LINE AND HUB'S EFFLUENT FORCE MAIN.

12. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING AND PREVENTING PROBLEMS DUE TO DUST OR MUD TO THE SATISFACTION OF THE ENGINEER, TDOT, TVA, AND COUNTY HIGHWAY DEPARTMENT.

13. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING ALL CONSTRUCTION ACTIVITIES TO AREAS WITHIN DESIGNATED EASEMENT OR RIGHT OF WAY AREAS. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE USE OF OFF-SITE STORAGE AND STAGING AREAS(S) AS NECESSARY TO COMPLETE THE PROJECT.

14. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL UTILITY TIE-INS/CONNECTIONS WITH THE ENGINEER AND APPROPRIATE UTILITY OWNER.

15. WHERE NECESSARY TO PREVENT EXTENDED DISRUPTION OF WATER, GAS, AND/OR COMMUNICATIONS SERVICE TO EXISTING CUSTOMERS, THE CONTRACTOR SHALL INSTALL, PROTECT AND MAINTAIN TEMPORARY SERVICES AS NEEDED.

16. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING WORK IN ACCORDANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE ENVIRONMENTAL PERMITS FOR THE PROJECT.

CALL BEFORE YOU DIG
DIG - DRILL - BLAST - BORE
(800) 351-1111
TENNESSEE - ONE CALL CENTER

RECORD DRAWING
12-17-2010

JOHN L. KING
REGISTERED ENGINEER
No. 104725
STATE OF TENNESSEE

REV NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV NO.
R 2	12/17/10	JLK	JMG	JLK	--	--	JLK	--	--	--	
RECORD DRAWING											D
R 1	8/17/09	JLK	JMG	JLK	--	--	JLK	--	--	--	
ADDED CASING, MOVED AIR RELEASE VALVE AND ADDED SWPPP INFORMATION											

SCALE: 1"=50' EXCEPT AS NOTED

CIVIL
YARD

KIF - UTILITY RESTORATION
HARRIMAN UTILITY BOARD - EFFLUENT
PLAN & PROFILE SHEET 1 OF 3

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.L.K.	J.M.G.	D.L.J.				

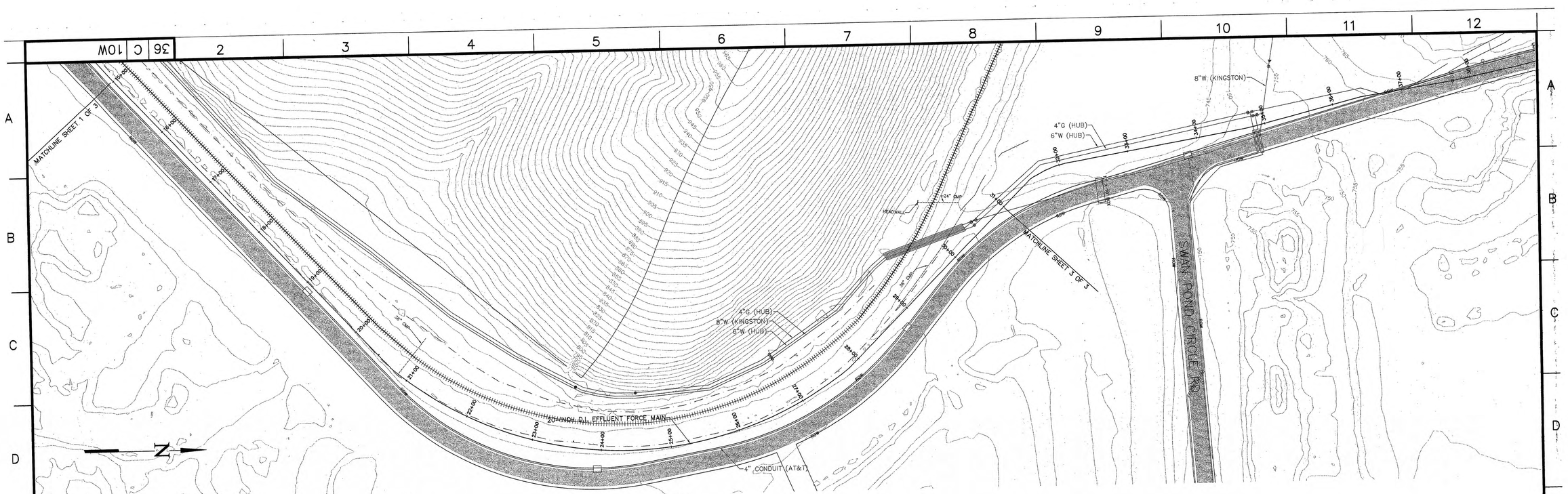
KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R07	DATE 3/17/09	36	C	670-HE002.2	R 2

CTI ENGINEERS, INC.
TASK COMPLETED BY: | REV NO.

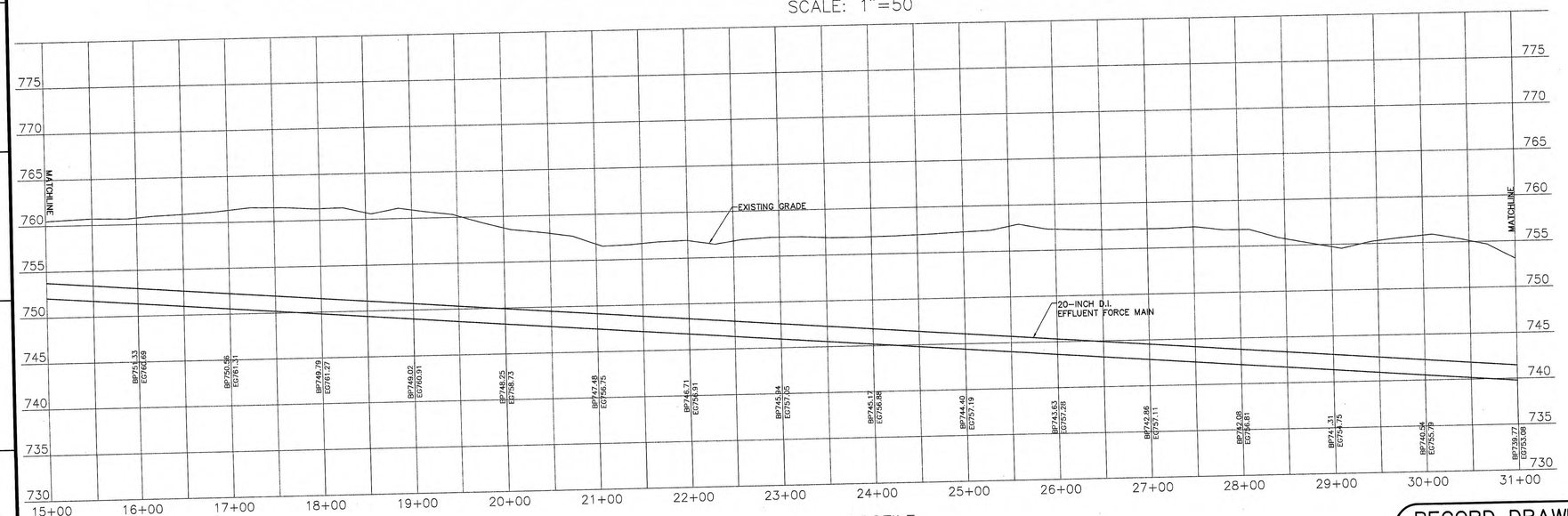
PLOT FACTOR:1:1
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY



PLAN

SCALE: 1"=50'



PROFILE

SCALE: 1"=50'H, 1"=5'V

RECORD DRAWING
12-17-2010

JOHN L. KING
REGISTERED ENGINEER
No. 102128
STATE OF TENNESSEE

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R 2	12/17/10	JLK	JMG	JLK	--	--	JLK	--	--	--
RECORD DRAWING										
R 1	8/17/09	JLK	JMG	JLK	--	--	JLK	--	--	--
ADDED SWPPP INFORMATION										

SCALE: 1"=50' EXCEPT AS NOTED

CIVIL
YARD

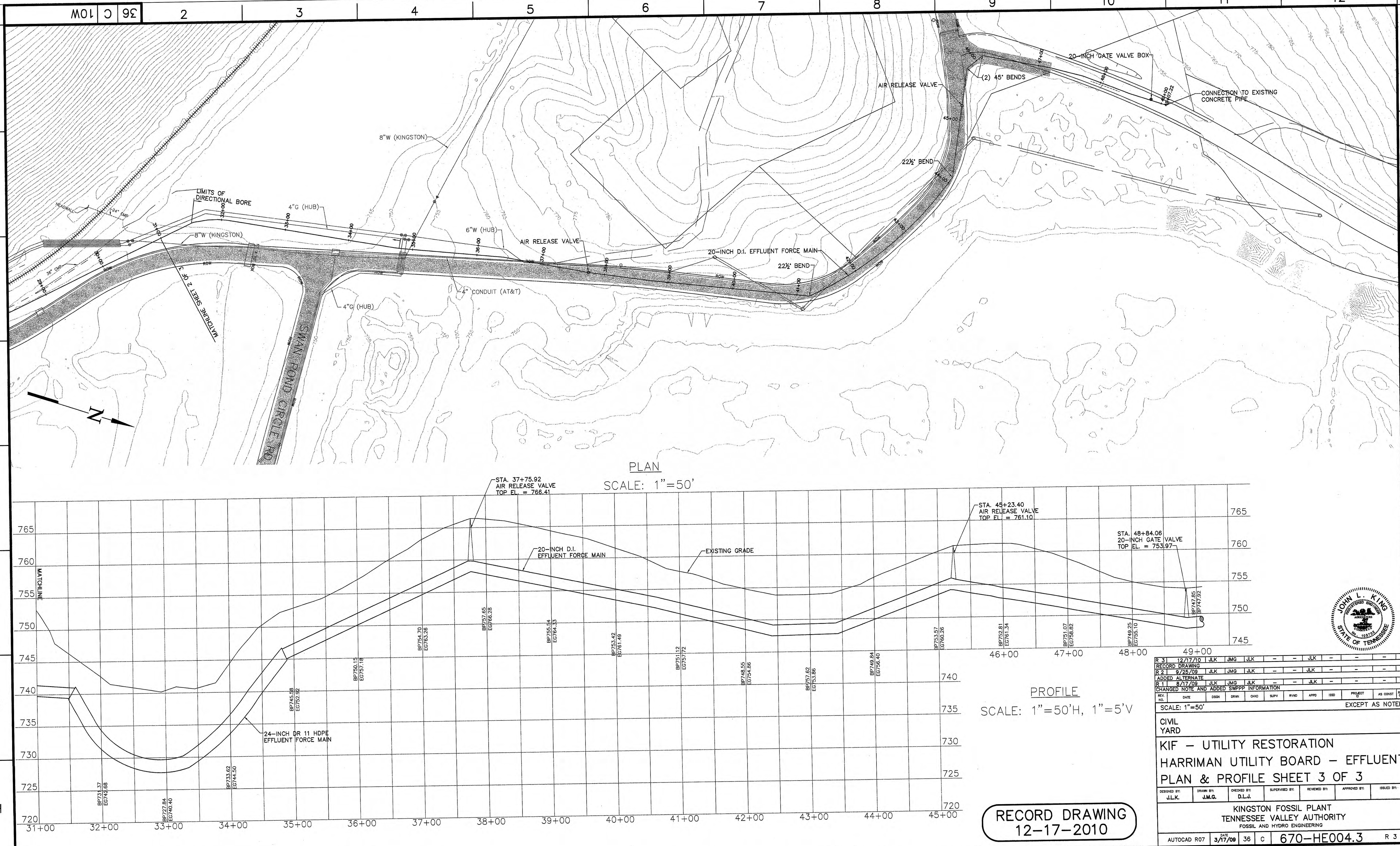
KIF – UTILITY RESTORATION
HARRIMAN UTILITY BOARD – EFFLUENT
PLAN & PROFILE SHEET 2 OF 3

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.L.K.	J.M.G.	D.L.J.				

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R07	DATE 3/17/09	36	C	670-HE003.2	R 2

PLOT FACTOR:1:1



REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R 3	12/17/10	JLK	JMG	JLK	–	–	JLK	–	–	–
RECORD DRAWING										
R 2	9/25/09	JLK	JMG	JLK	–	–	JLK	–	–	–
ADDED ALTERNATE										
R 1	8/17/09	JLK	JMG	JLK	–	–	JLK	–	–	–
CHANGED NOTE AND ADDED SWPPP INFORMATION										

SCALE: 1"=50' EXCEPT AS NOTED

CIVIL
YARD

KIF – UTILITY RESTORATION HARRIMAN UTILITY BOARD – EFFLUENT PLAN & PROFILE SHEET 3 OF 3

DESIGNED BY: J.L.K. | DRAWN BY: J.M.G. | CHECKED BY: D.L.J. | SUPERVISED BY: | REVIEWED BY: | APPROVED BY: | ISSUED BY:

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

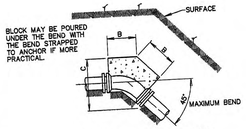
AUTOCAD R07 | DATE 3/17/09 | 36 | C | 670-HE004.3 | R 3

RECORD DRAWING 12-17-2010

JOHN L. KING REGISTERED ENGINEER No. 103702 STATE OF TENNESSEE

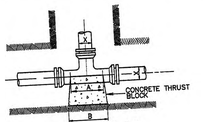
PLOT FACTOR:1:1

GTI ENGINEERS, INC.

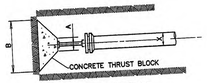


PLAN–TYPICAL VERTICAL BEND
NOT TO SCALE

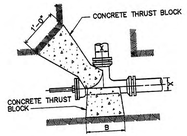
BLOCK MAY BE POURED UNDER THE BEND WITH THE BEND STRAPPED TO ANCHOR IF MORE PRACTICAL



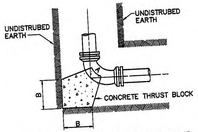
PLAN–TYPICAL TEE
NOT TO SCALE



PLAN–TYPICAL PLUG
NOT TO SCALE



PLAN–UNBALANCED TEE
NOT TO SCALE



PLAN–TYPICAL HORIZONTAL BEND
NOT TO SCALE

THRUST BLOCK DETAILS

PIPE SIZE	A	B	DEPTH C	CONCRETE (CY)
		11¼° BEND		
12"	0'-9"	1'-0"	1'-0"	0.06
8"	0'-9"	1'-0"	0'-8"	0.03
6"	0'-9"	1'-0"	0'-8"	0.03
		DEAD END		
12"	0'-9"	2'-0"	2'-4"	0.11
8"	0'-9"	1'-6"	1'-8"	0.05
6"	0'-9"	1'-3"	1'-5"	0.03
		TEE		
12"	1'-6"	4'-0"	2'-1"	0.22
8"	1'-6"	3'-0"	2'-0"	0.14
6"	1'-6"	2'-6"	1'-6"	0.08

PIPE SIZE	A	B	DEPTH C	CONCRETE (CY)
		90° BEND AND UNBALANCED TEE		
12"	1'-4"	2'-3"	3'-0"	0.20
8"	1'-4"	2'-3"	2'-0"	0.11
6"	1'-4"	2'-3"	2'-0"	0.08
		45° BEND		
12"	0'-9"	2'-0"	1'-9"	0.15
8"	0'-9"	1'-6"	1'-6"	0.11
6"	0'-9"	1'-6"	1'-6"	0.06
		22½° BEND		
12"	0'-9"	1'-3"	1'-6"	0.11
8"	0'-9"	1'-0"	1'-0"	0.07
6"	0'-9"	1'-0"	1'-0"	0.04

TABLE OF DIMENSIONS FOR HORIZONTAL & VERTICAL BENDS

NOTE:
ALL CONCRETE FOR THRUST BLOCKS SHALL BE READY-MIXED 3000psi (MIN) CLASS "B" MIX DESIGN SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO USE. THRUST BLOCKS BASED ON 2250psi & 2000lb/ft2 SOIL RESISTANCE TYPICAL FOR UNDISTURBED SAND AND GRAVEL CEMENTERD WITH CLAY. FOR OTHER SOILS THE BEARING FACE OF THE THRUST BLOCKS SHOULD BE INCREASED BY THE FOLLOWING FACTORS:

SAND	2.00
SAND & GRAVEL	1.33
SHALE	0.40

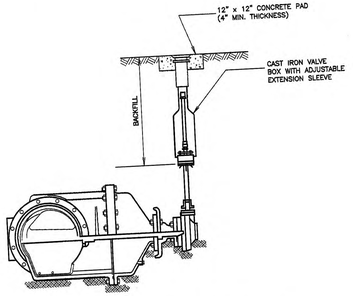
SOFT CLAYS, MUCK AND PEAT SHALL USE RESTRAINED JOINTS IN LIEU OF THRUST BLOCKS.

FOR DUCTILE IRON PIPE

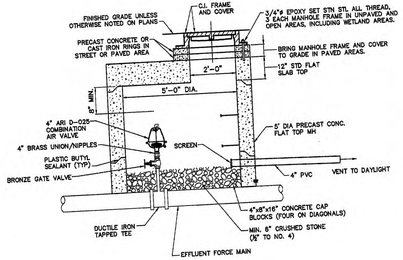
NOTE: THE FOLLOWING JOINTS MUST BE RESTRAINED IN ALL APPLICATIONS:

BENDS	CAPS
TEES	PLUGS
WYES	HYDRANTS

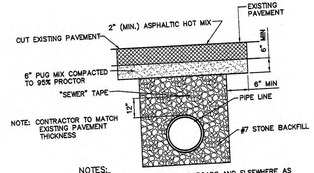
** MECHANICAL JOINTS SHALL BE RESTRAINED WITH EBAA MEGA-A-LUG SERIES 1100, UNI-FLANGE SERIES 1400, OR APPROVED EQUAL.
PUSH-ON JOINTS SHALL BE RESTRAINED WITH EBBA PUSH-ON JOINTS SHALL BE RESTRAINED WITH EBBA MEGA-A-LUG SERIES 1700, U.S. PIPE FIELD LOK 350 GASKET (WITH U.S. PIPE TYTON PIPE OR FITTINGS), AMERICAN DUCTILE IRON PIPE'S FAST GRIP GASKET (WITH STANDARD AMERICAN DUCTILE IRON FASTITE



16"–24" GATE VALVE WITH BEVEL GEAR
NOT TO SCALE

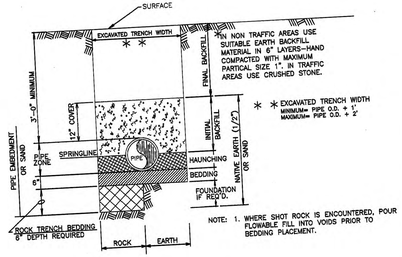


AIR RELEASE VALVE DETAIL
NOT TO SCALE

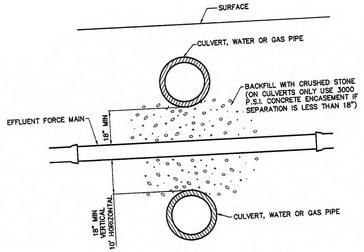


NOTES:
1. TO BE USED ON HOT MIX PAVED ROADS AND ELSEWHERE AS DESIGNATED BY THE ENGINEER.

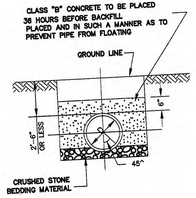
PAVEMENT INSTALLATION DETAIL
NOT TO SCALE



DUCTILE IRON PIPE INSTALLATION DETAIL
NOT TO SCALE



DETAIL OF INSTALLATION UNDER OR OVER PIPING
NOT TO SCALE



TYPICAL SECTION CONCRETE PROTECTION
(FOR PIPE I.E. – 6 IN. DEEP & LESS)
NOT TO SCALE

NOTES:
1. BACKFILLING, COMPACTING, GRADING, AND SITE–CLEANUP SHALL OCCUR DAILY AS PIPE INSTALLATION PROGRESSES.
2. ANY DISCREPANCIES AND/OR CONFLICTS SHOWN ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OR UTILITY PRIOR TO PROCEEDING ANY FURTHER WITH CONSTRUCTION ACTIVITIES.
3. ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL REQUIREMENTS SHALL BE FOLLOWED DURING CONSTRUCTION. ALL NECESSARY MEASURES TO CONTROL EROSION AND TO MINIMIZE THE AMOUNT OF SEDIMENT LEAVING THE SITE THROUGHOUT THE CONSTRUCTION PERIOD SHALL BE TAKEN. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE EARTH MOVING OPERATIONS BEGIN.
4. VALVES AND AIR RELEASE VALVES SHALL BE FIELD LOCATED AT THE APPROXIMATE LOCATIONS NOTATED ON THE PLAN DRAWINGS. AIR RELEASE VALVES SHALL BE LOCATED AT THE HIGH POINTS ALONG THE LINE, AT THE DOWNSTREAM END OF THE HIGH POINT SEGMENTS.
5. THE CROWN OF THE LINE SHALL BE INSTALLED AT A MINIMUM DEPTH OF 30–INCHES BELOW THE EXISTING SURFACE UNLESS OTHERWISE NOTED. MAINS IN ROADWAYS AND RIGHTS–OF–WAY SHALL BE AT LEAST 3 FEET BELOW GRADE, UNLESS OTHERWISE NOTED. IN ORDER TO INSTALL THE AIR RELEASE VALVES, ADDITIONAL DEPTH WILL BE REQUIRED AT THE VALVE LOCATIONS AS WELL AS ALONG THE LINE SEGMENTS LEADING UP TO THAT HIGH POINT.
6. ALL UTILITY COMPANIES THAT HAVE INSTALLED FACILITIES WITHIN THE BOUNDARIES OF THE PROJECT SHALL BE NOTIFIED PRIOR TO THE CONSTRUCTION. THOSE UTILITIES SHALL BE LOCATED AND PROTECTED FROM DAMAGE DURING CONSTRUCTION.
7. THE EFFLUENT FORCE MAIN SHALL BE CONSTRUCTED OF CLASS 350 DUCTILE IRON AND SHALL BE INSTALLED AS SHOWN ON THE PLANS. PROVIDE POLYETHYLENE WRAP PROTECTION OF PIPING AND FITTINGS IN AREAS IMPACTED BY ASH.
8. PROVIDE THRUST RESTRAINT AT ALL FITTINGS USING MECHANICALLY RESTRAINED JOINTS, UNLESS OTHERWISE NOTED.
9. CONNECTION TO EXISTING 20–INCH CONCRETE PIPE SHALL BE MADE AT STRAIGHT RUNS USING 24–INCH DRESSER STYLE 62 TRANSITION COUPLINGS, A SECTION OF 24–INCH DUCTILE IRON PIPE, AND A 24–INCH TO 20–INCH DUCTILE IRON MJ X MJ REDUCER, OR OTHER METHOD APPROVED BY UTILITY. FIELD VERIFY DIMENSIONS OF EXISTING 20–INCH CONCRETE PIPE PRIOR TO ORDERING MATERIALS.
10. PRECAST MANHOLE FLAT TOP SECTION SHALL BE IN ACCORDANCE WITH ASTM C478 DESIGNED FOR HS–20 TRAFFIC LOADING. PROVIDE HEAVY DUTY HS–20 FRAME AND COVER WITH "SEWER" LABEL ON COVER.
11. CONNECTION TO EXISTING REINFORCED CONCRETE PIPE SHALL BE FIELD DETERMINED AFTER TYPE DIMENSIONS OF EXISTING CONCRETE PIPE ARE DETERMINED. WHERE DIMENSIONS ARE SIMILAR TO PRESTRESSED CONCRETE STEEL CYLINDER PIPE, CONNECTIONS SHALL BE MADE WITH APPROPRIATELY SIZED "LCP JOINT BY MECHANICAL JOINT SPIGOT ADAPTER FITTING" OR APPROVED EQUAL.

JOHN L. KING
REGISTERED ENGINEER