PLANS FOR CONSTRUCTION

JOHNSONVILLE FOSSIL PLANT
ASH DISPOSAL AREA NO. 2
STATION SUMP DISCHARGE RELOCATION
WORK PLAN 15 (JOF-110701-WP-15)

NEW JOHNSONVILLE, HUMPHREYS COUNTY, TENNESSEE

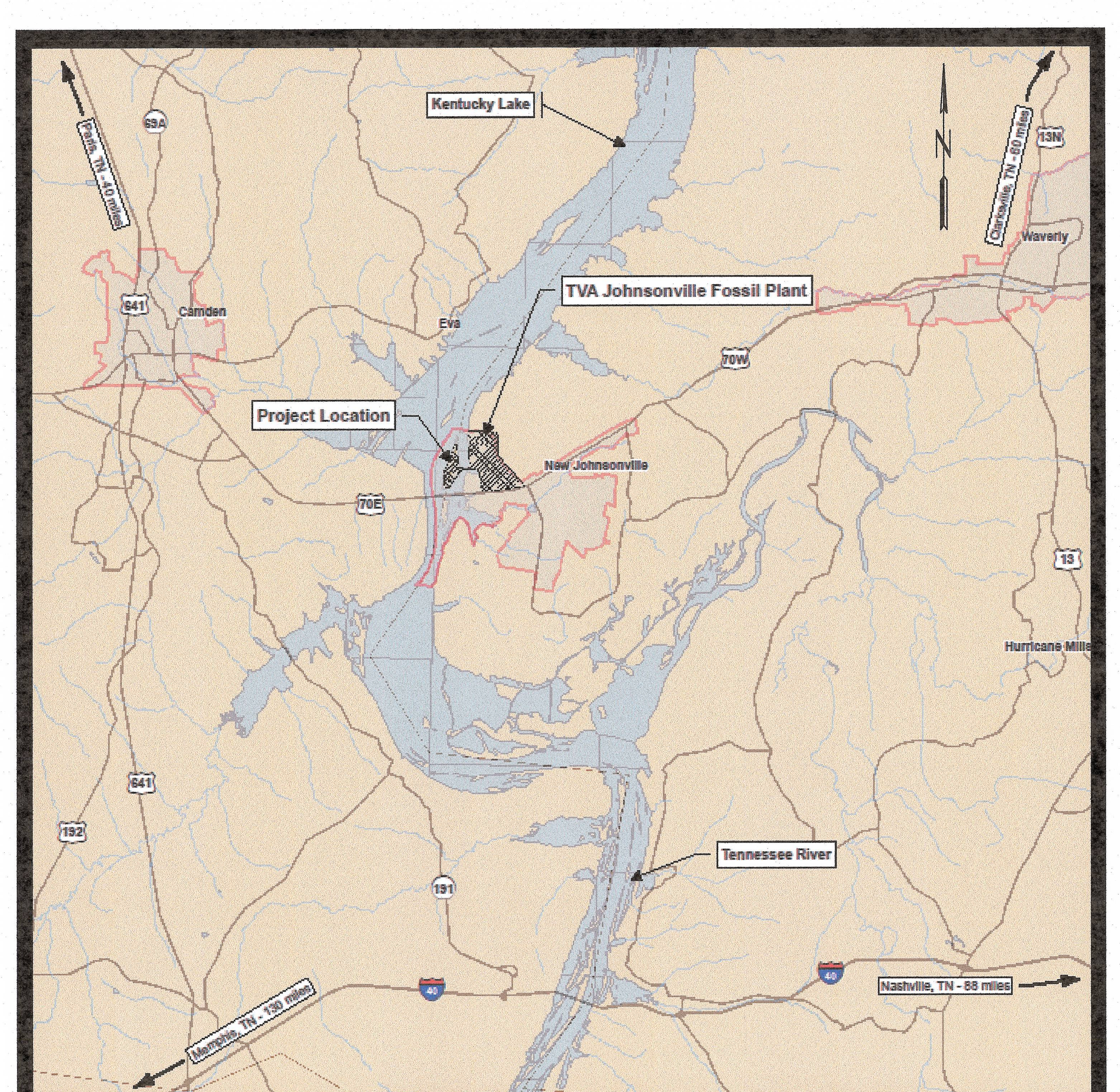
PREPARED FOR

TENNESSEE VALLEY AUTHORITY

PREPARED BY

Stantec

Stantec Consulting Services Inc.
10509 Timberwood Circle
Suite 100
Louisville, Kentucky
40223-5301
Tel. 502.212.5000
Fax. 502.212.5055
www.stantec.com



6000 0 12000 24000 FEET
GRAPHIC SCALE

VICINITY MAP

INDEX OF SHEETS

ISSUED FOR CONSTRUCTION

FOR SUPPORTING DESIGN CALCULATIONS SEE FPGJOFFESCDX00030020110001

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	07/01/2011	JDK	RRP	WRM	SHB	RLS	MST	JCK	–	–	–

ISSUED FOR CONSTRUCTION

DISCIPLINE INTERFACE: 1, 2, 3, 4

SCALE: AS SHOWN EXCEPT AS NOTED

STEPHEN H. BICKEL REGISTERED ENGINEER AGRICULTURE COMMERCE No. 113134 STATE OF TENNESSEE

7/1/2011

YARD
ASH DISPOSAL AREA NO. 2

STATION SUMP DISCHARGE RELOCATION
COVER SHEET
WORK PLAN 15 (JOF-110701-WP-15)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.D. KOPP	R.R. PETTY	W.R. MARSHALL	S.H. BICKEL	R.L. SANCHEZ	M.S. TURNBOW	J.C. KAMMEYER

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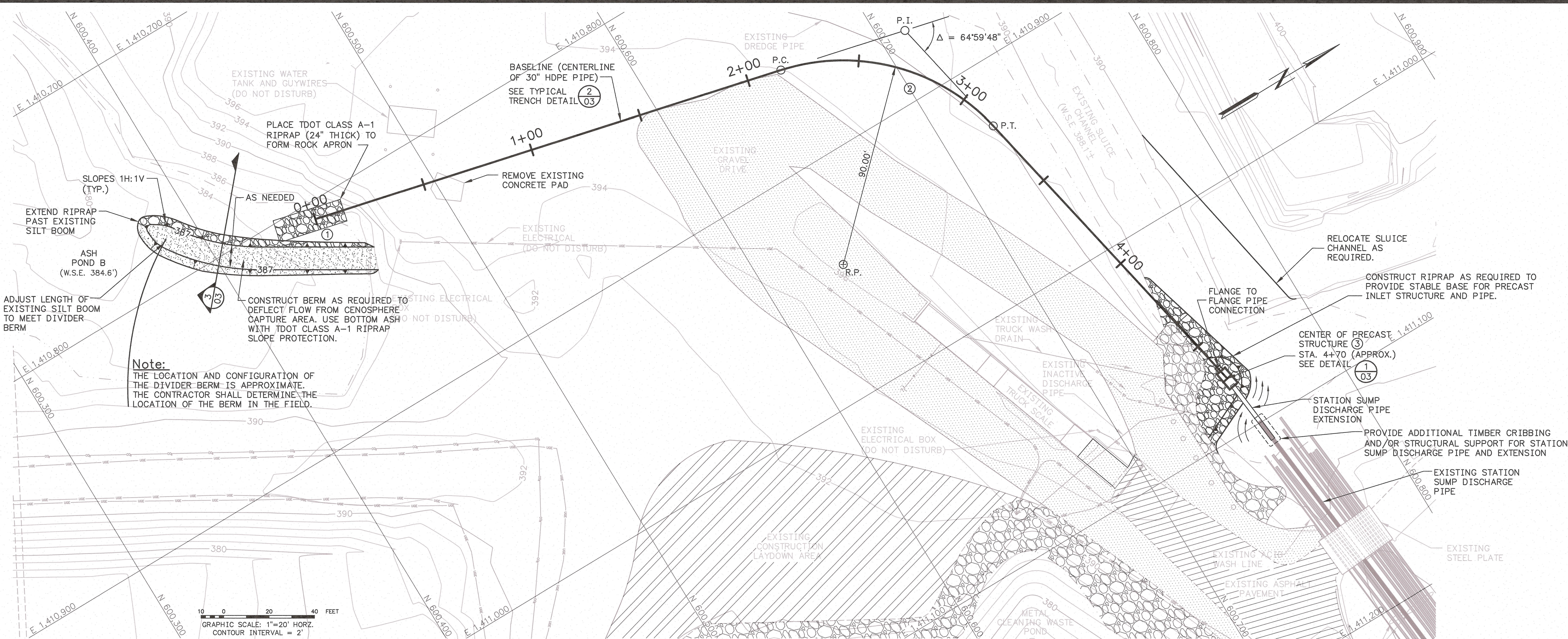
JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 07/01/2011 | 30 | C | 17W436-01 | R 0

STANTEC	0
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:1
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY



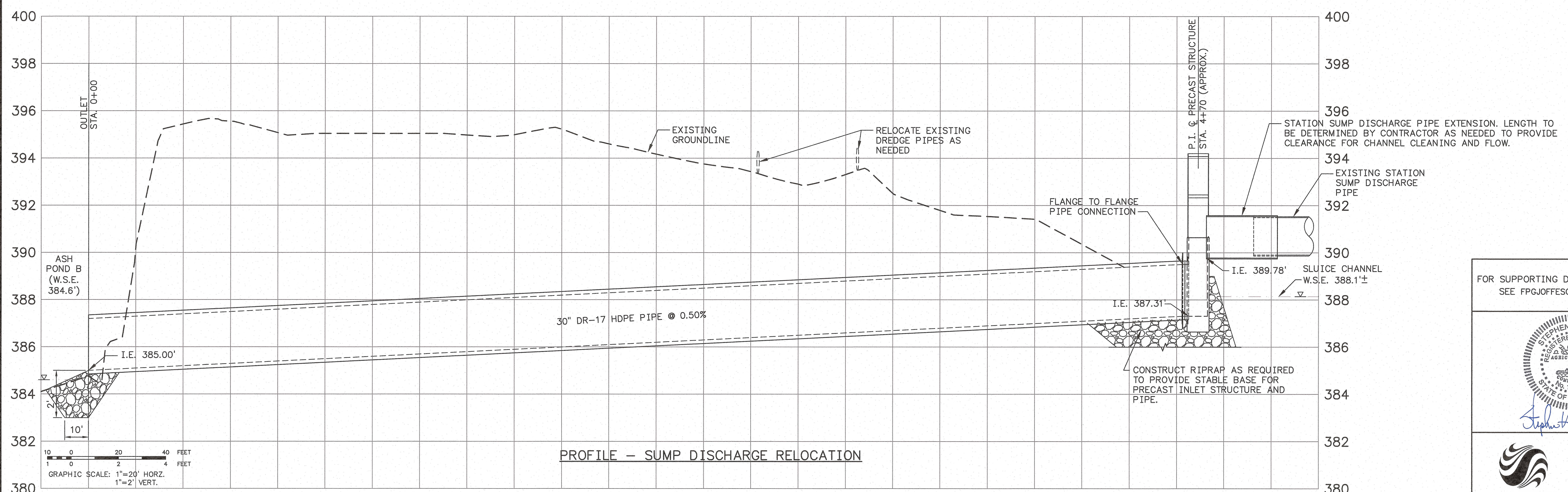
LEGEND

ST	EXISTING STORM LINE
UGE	EXISTING UNDERGROUND ELECTRIC
	EXISTING DREDGE PIPE
	EXISTING WATER SURFACE
390	EXISTING INDEX CONTOUR
	EXISTING INTERIM CONTOUR
CL	EXISTING CL LINE

BASELINE ALIGNMENT DATA

① BEGIN BASELINE (PIPE OUTLET)
NORTHING = 600,446.50
EASTING = 1,410,807.52

② CURVE
P.C.
STATION = 2+15.25
NORTHING = 600,655.84
EASTING = 1,410,857.62
R.P.
Northing = 600,634.90
Easting = 1,410,945.15
Δ = 64°59'48"
RADIUS = 90.00'
TANGENT = 57.33'
LENGTH = 102.10'
P.T.
STATION = 3+17.35
NORTHING = 600,723.08
EASTING = 1,410,927.14



SURVEY CONTROL NOTE:

A GLOBAL POSITIONING SYSTEM (GPS) BASE STATION HAS BEEN ESTABLISHED AND TRANSFORMATION PARAMETERS DETERMINED BY TVA USING SELECTED SURVEY CONTROL MONUMENTS. CONTACT WITH TVA SURVEYING DEPARTMENT (423)751-8416 OR (423)751-2571 SHALL BE MADE BEFORE ANY SURVEY OR CONSTRUCTION WORK IS COMMENCED. BASE STATION FREQUENCIES AND TRANSFORMATION PARAMETERS WILL BE PROVIDED TO THE CONTRACTOR FOR USE IN CONSTRUCTION ACTIVITIES AT THE SITE. PREVIOUSLY USED OR ESTABLISHED CONTROL POINTS AND MONUMENTS SHALL NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL BY TVA SURVEYING DEPARTMENT.

ISSUED FOR CONSTRUCTION

FOR SUPPORTING DESIGN CALCULATIONS SEE FPGJOFFESCDX00030020110001

REV NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD
R 0	07/01/2011	JDK	RRP	WRM	SHB	RLS	MST	JCK

ISSUED FOR CONSTRUCTION

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
ASH DISPOSAL AREA NO. 2
STATION SUMP DISCHARGE RELOCATION
PLAN AND PROFILE
WORK PLAN 15 (JOF-110701-WP-15)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.D. KOPP	R.R. PETTY	W.R. MARSHALL	S.H. BICKEL	R.L. SANCHEZ	M.S. TURNBOW	J.C. KAMMEYER

STEPHEN H. BICKEL, REGISTERED ENGINEER, STATE OF TENNESSEE — 7/1/2011

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JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 07/01/2011 | 30 | C | 17W436-02 | R 0

STANTEC 0 — TASK COMPLETED BY: REV NO.

PLOT FACTOR:20 W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

GENERAL NOTES

1. DEFINITIONS: WHENEVER THE FOLLOWING TERMS ARE USED IN THESE PLANS FOR CONSTRUCTION, IT IS UNDERSTOOD THAT THEY REPRESENT THE FOLLOWING:
   A. CONTRACTOR: TRANS ASH
   B. ENGINEER: STANTEC CONSULTING SERVICES INC. (STANTEC)
   C. OWNER: TENNESSEE VALLEY AUTHORITY (TVA) – JOHNSONVILLE FOSSIL PLANT (JOF)
   D. TDOT: TENNESSEE DEPARTMENT OF TRANSPORTATION AND SPECIFICALLY REFERENCES THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION. ANY MATERIAL DESIGNATED AS "TDOT" IS TO CONFORM TO THE MATERIAL STANDARDS NOTED AND PLACEMENT/INSTALLATION METHODOLOGY SPECIFIED IN THE CURRENT EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" UNLESS NOTED OTHERWISE.
2. THE CONTRACTOR SHALL COMMUNICATE CONSTRUCTABILITY ISSUES OR DISCREPANCIES IN THE PLANS FOR CONSTRUCTION TO THE ENGINEER AND OWNER IMMEDIATELY. THE CONTRACTOR SHALL USE THE OWNER'S REQUEST FOR INFORMATION (RFI) FORM TO COMMUNICATE AND ESTABLISH WRITTEN DOCUMENTATION OF THE ISSUE AND ITS RESOLUTION.
3. CONSTRUCTION ACTIVITIES SHALL BE OBSERVED BY THE QC MANAGER OR THE DESIGNATED REPRESENTATIVE ON THE QC TEAM. THE CONTRACTOR SHALL COORDINATE WITH THE ONSITE QC REPRESENTATIVE AND INFORM THE REPRESENTATIVE OF THE CONTRACTOR'S SCHEDULED WORK SHIFTS TO ENSURE THAT QC REPRESENTATION OCCURS AS REQUIRED.
4. ONSITE UTILITIES AND UNDERGROUND FACILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE LOCATED AND PROTECTED BY THE CONTRACTOR FROM DAMAGE BY THE CONTRACTOR'S OPERATIONS. IF DAMAGE OCCURS THE CONTRACTOR SHALL COORDINATE REPAIRS WITH THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE THAT IS ATTRIBUTED TO THE CONTRACTOR'S OPERATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HEALTH AND SAFETY OF HIS/HER PERSONNEL. THE CONTRACTOR SHALL ADHERE TO THE OWNER'S REQUIREMENTS FOR SAFETY DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL ACCESS ROADS, STAGING AREAS AND STORAGE AREAS USED DURING CONSTRUCTION, AND SHALL RESTORE SAID AREAS TO THEIR ORIGINAL CONDITION, OR BETTER, UNLESS THE OWNER GIVES WRITTEN PERMISSION TO THE CONTRACTOR TO RETAIN THE AREA "AS IS".
7. MATERIALS DELIVERED FOR INCORPORATION INTO THE WORK SHALL BE TEMPORARILY STORED IN AREAS SELECTED BY THE CONTRACTOR AND APPROVED BY THE OWNER. MATERIALS SHALL BE STORED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. THE CONTRACTOR SHALL CONTROL FUGITIVE DUST EMISSIONS DURING CONSTRUCTION IN SUCH A MANNER AS TO COMPLY WITH APPLICABLE REGULATIONS.
9. A GLOBAL POSITIONING SYSTEM (GPS) BASE STATION HAS BEEN ESTABLISHED AND TRANSFORMATION PARAMETERS DETERMINED BY TVA USING SELECTED SURVEY CONTROL MONUMENTS. CONTACT WITH TVA SURVEYING DEPARTMENT (423)751-8416 OR (423)751-2571 SHALL BE MADE BEFORE ANY SURVEY OR CONSTRUCTION WORK IS COMMENCED. BASE STATION FREQUENCIES AND TRANSFORMATION PARAMETERS WILL BE PROVIDED TO THE CONTRACTOR FOR USE IN CONSTRUCTION ACTIVITIES AT THE SITE. PREVIOUSLY USED OR ESTABLISHED CONTROL POINTS AND MONUMENTS SHALL NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL BY TVA SURVEYING DEPARTMENT.

PLANT SUMP SHUTDOWN

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH JOF PLANT STAFF TO DETERMINE THE OPPORTUNE TIMES TO SHUTDOWN THE SUMPS TO PERFORM CERTAIN ASPECTS OF WORK. AN EFFORT SHALL BE MADE TO MINIMIZE THE NUMBER OF TIMES THE SUMPS WILL NEED TO BE SHUTDOWN.
11. THE STATION SUMPS CAN BE SHUTDOWN FOR APPROXIMATELY 60 MINUTE PERIODS. THE DURATION BETWEEN SHUTDOWNS WILL VARY AND WILL BE DETERMINED BY THE JOF PLANT STAFF.
12. THE CONTRACTOR SHALL PROVIDE A SCHEDULE TO JOF PLANT STAFF AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE FIRST ANTICIPATED SHUTDOWN. THE SCHEDULE SHALL LIST ALL THE ANTICIPATED SHUTDOWN REQUIREMENTS AND THE WORK TO BE PERFORMED. THE JOF PLANT STAFF SHALL BE IN AGREEMENT PRIOR TO ANY SUMP SHUTDOWN TAKING PLACE.
13. ANY ASPECTS OF THE PROJECT THAT ARE PARTIALLY INSTALLED (I.E. PRECAST STRUCTURE) DURING A SHUTDOWN MUST BE TEMPORARILY STABILIZED BEFORE THE PUMPS ARE RESTARTED.

HDPE PIPE

14. HIGH DENSITY POLYETHYLENE PIPE (HDPE) DIMENSIONS SHALL CONFORM TO IRON PIPE SIZE (IPS). THE HDPE PIPE SHALL HAVE AN OUTSIDE DIAMETER (OD) OF 30 INCHES AND HAVE A DIMENSION RATIO (DR) OF 17.
15. HDPE PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D-3350 (POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS) AND CONFORM TO THE STANDARD DESIGNATION CODE PE3408.
16. JOINTS SHALL BE BUTT FUSED JOINTS WHICH MEET THE REQUIREMENTS OF ASTM D-3261 (BUTT HEAT FUSION POLYETHYLENE (PE) PLASTIC FITTINGS FOR POLYETHYLENE (PE) PLASTIC PIPE AND TUBING).

MATERIALS

17. NO. 57 CRUSHED STONE SHALL CONSIST OF QUARRIED STONE MEETING THE REQUIREMENTS OF SECTION 903 OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (STANDARD SPECIFICATIONS) LATEST EDITION. THE GRADATION SHALL CONFORM TO TABLE 1 (AASHTO M43) IN SECTION 903.22 OF THE STANDARD SPECIFICATIONS.
18. MACHINED RIPRAP (CLASS A-1) SHALL CONSIST OF QUARRIED STONE MEETING THE REQUIREMENTS OF SECTION 709 OF THE TDOT STANDARD SPECIFICATIONS (LATEST EDITION).
19. GEOTEXTILE FABRIC SHALL CONSIST OF NON-WOVEN FABRIC MEETING THE REQUIREMENTS FOR TYPE III FABRIC AS LISTED IN SECTION 918.27 OF THE TDOT STANDARD SPECIFICATIONS (LATEST EDITION). THE UNIT WEIGHT SHALL BE AT LEAST 11 OZ/SQUARE YARD (ASTM D 5261).
20. BOTTOM ASH AND FLY ASH MATERIALS USED TO FORM THE DIVIDER BERM AND TRENCH BACKFILL SHALL CONSIST OF DEWATERED ASH PRODUCED AT THE JOF PLANT.
21. STEEL ANGLES AND PLATES SHALL MEET THE REQUIREMENTS OF ASTM A992, GRADE 50.
22. CERTIFICATION STATEMENTS SHALL BE PROVIDED BY EACH MATERIAL SUPPLIER INDICATING THAT THE PRODUCTS (I.E. CRUSHED STONE, MACHINED RIPRAP, GEOTEXTILE FABRIC AND STEEL) CONFORM TO THESE SPECIFICATIONS. SUBMITTALS SHALL BE MADE AT LEAST FIVE (5) WORKING DAYS PRIOR TO INSTALLATION OR USAGE.

PRECAST STRUCTURE

23. THE PRECAST STRUCTURE SHALL BE A 48"X96" (48" HEIGHT) CATCH BASIN BY SHERMAN DIXIE, OR ENGINEER APPROVED EQUIVALENT. PIPE PENETRATIONS SHALL BE LOCATED AS SHOWN ON THESE PLANS. WALL THICKNESS SHALL BE 8 INCHES.
24. THE STRUCTURE SHALL BE CAST AS A SINGLE UNIT WITH SUITABLE LIFTING LUGS DESIGNED AND LOCATED SO THAT THE STRUCTURE CAN BE LIFTED AND PLACED INTO POSITION.
25. THE STRUCTURE SHALL BE DELIVERED WITH A 30" FLANGE ADAPTOR, BACKUP RING, AND WALL ANCHOR CAST INTO THE REAR WALL OF THE STRUCTURE AS SHOWN ON THESE PLANS.
26. THE CONTRACTOR SHALL PROVIDE TWO (2) SETS OF SHOP DRAWINGS TO THE ENGINEER FOR REVIEW.

SAFETY HANDRAILS

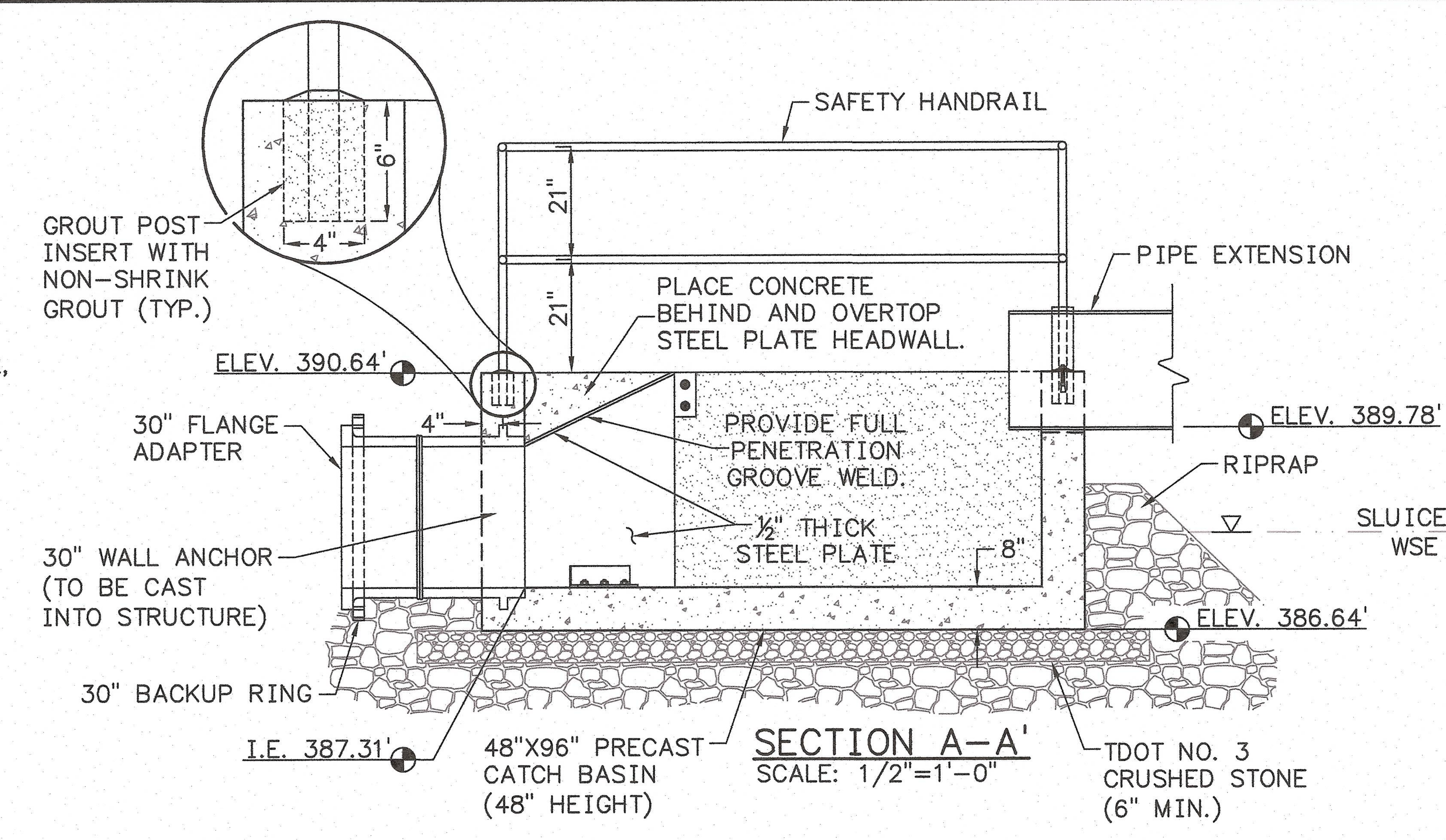
27. FABRICATE SAFETY HANDRAILS FROM 1 ½" STD. SCH 40 STEEL PIPE.
28. WELDS TO BE CONTINUOUS AND 3/16" THICK MINIMUM.
29. CLEAN, PRIME, AND APPLY TWO COATS OF INDUSTRIAL YELLOW ENAMEL TO EXTERIOR SURFACES.

EXISTING PIPES

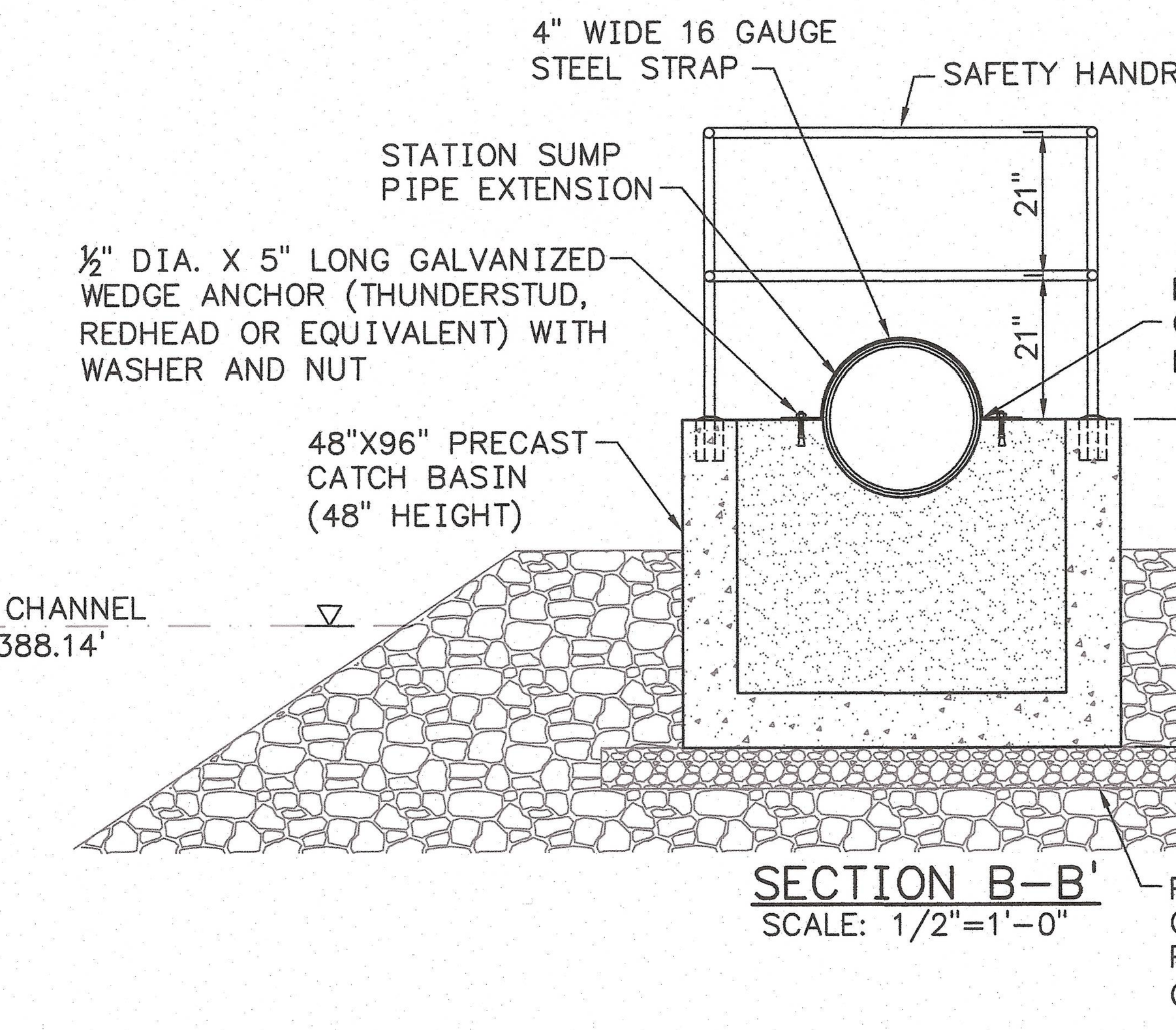
30. SECTIONS OF THE EXISTING SLUICE PIPES AND FLUMES MAY BE CUT AND REMOVED TO ALLOW PLACEMENT OF RIPRAP IN THE SLUICE CHANNEL. EFFORT SHALL BE MADE TO MINIMIZE THE LENGTH OF PIPE CUT. UNDER NO CIRCUMSTANCE SHALL SLUICE WATER BE ALLOWED TO REVERSE FLOW UNDERNEATH THE EXISTING STEEL PLATE AND OVER THE DIKE.
31. TIMBER CRIBBING AND/OR OTHER STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE STATION SUMP DISCHARGE PIPE AND EXTENSION. THE PIPE SHALL BE SUPPORTED SO THAT THERE IS NO DEFLECTION CAUSED BY THE PIPE EXTENSION AND WATER.

STATION SUMP DISCHARGE PIPE EXTENSION

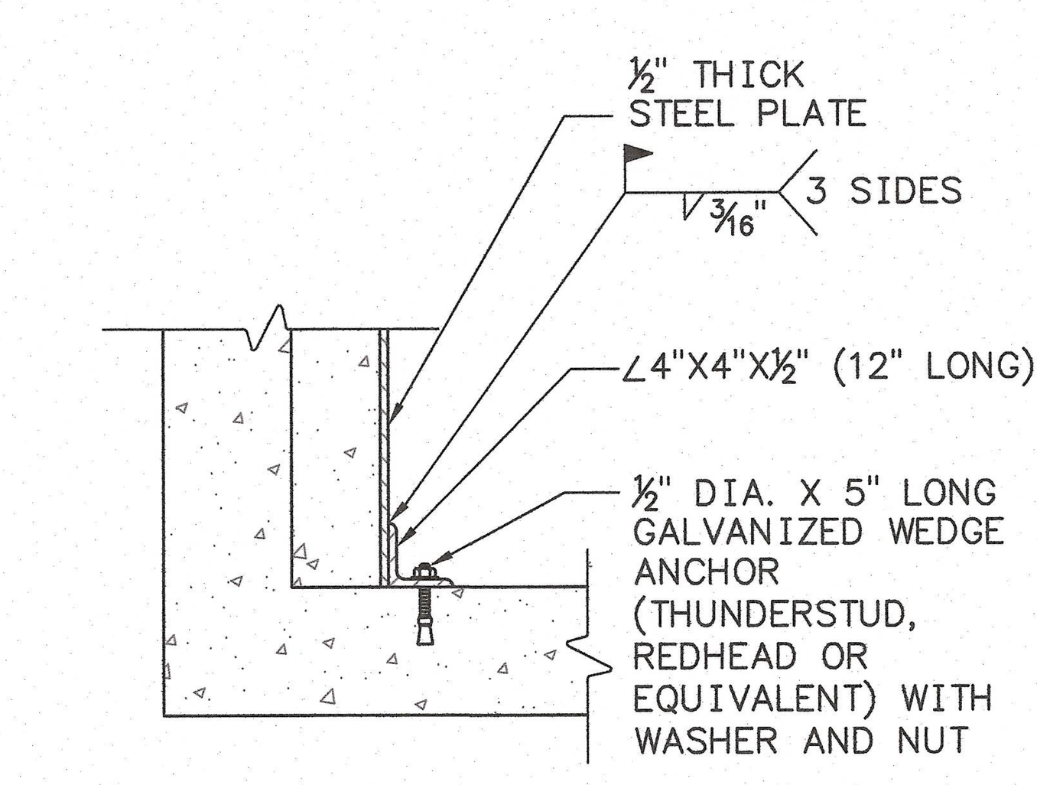
32. THE STATION SUMP DISCHARGE PIPE EXTENSION SHALL BE STEEL PIPE SIZED TO SLIP OVER THE DISCHARGE PIPE WITH ONE TO TWO INCHES OF CLEARANCE. THE OUTSIDE OF THE EXISTING PIPE SHALL BE CLEANED OF ASH BUILD-UP, AND THE EXTENSION SHALL BE SLIPPED OVER THE EXISTING PIPE SO THERE IS AT LEAST SIX FEET OF OVERLAP. THE ANNULAR SPACE BETWEEN THE EXISTING PIPE AND THE PIPE EXTENSION SHALL BE FILLED WITH FOAM, RUBBER OR OTHER RESILIENT MATERIAL APPROPRIATE TO PREVENT EXCESSIVE WATER LEAKAGE AND ALLOW FREE SLIPPAGE BETWEEN THE EXISTING PIPE AND THE PIPE EXTENSION.



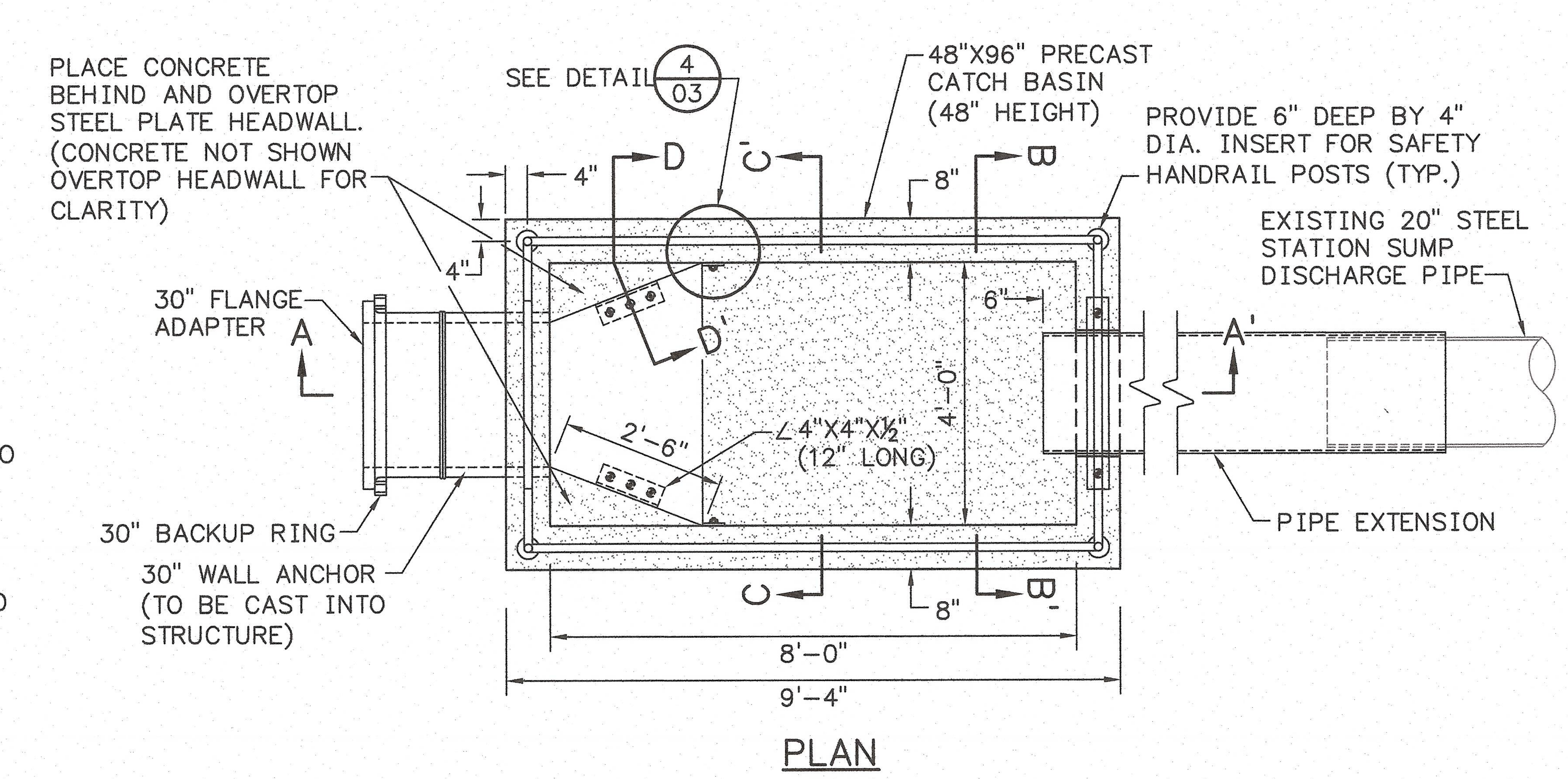
SECTION A–A'
SCALE: 1/2"=1'-0"



SECTION B–B'
SCALE: 1/2"=1'-0"

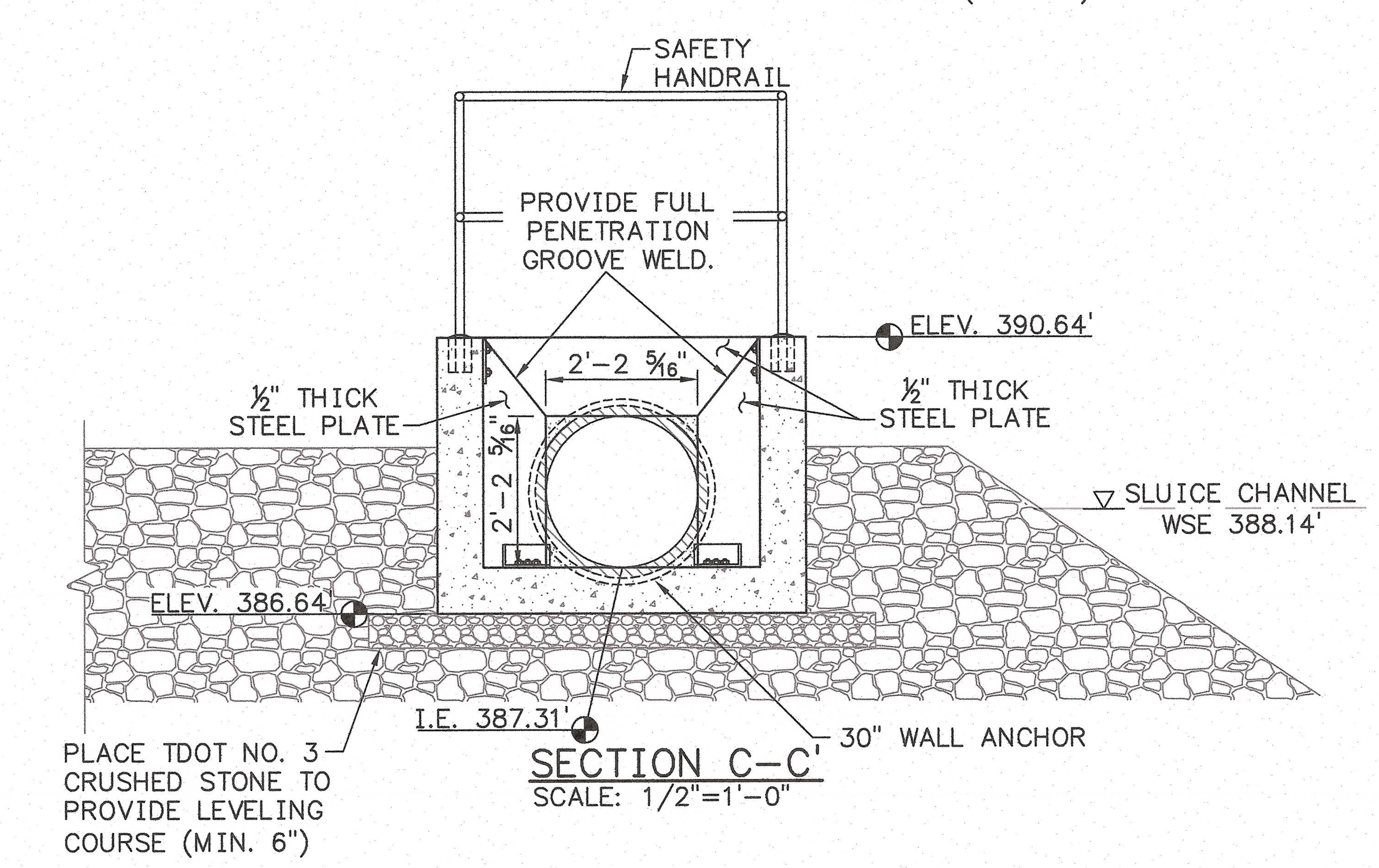


SECTION D–D'
SCALE: 1"=1'-0"

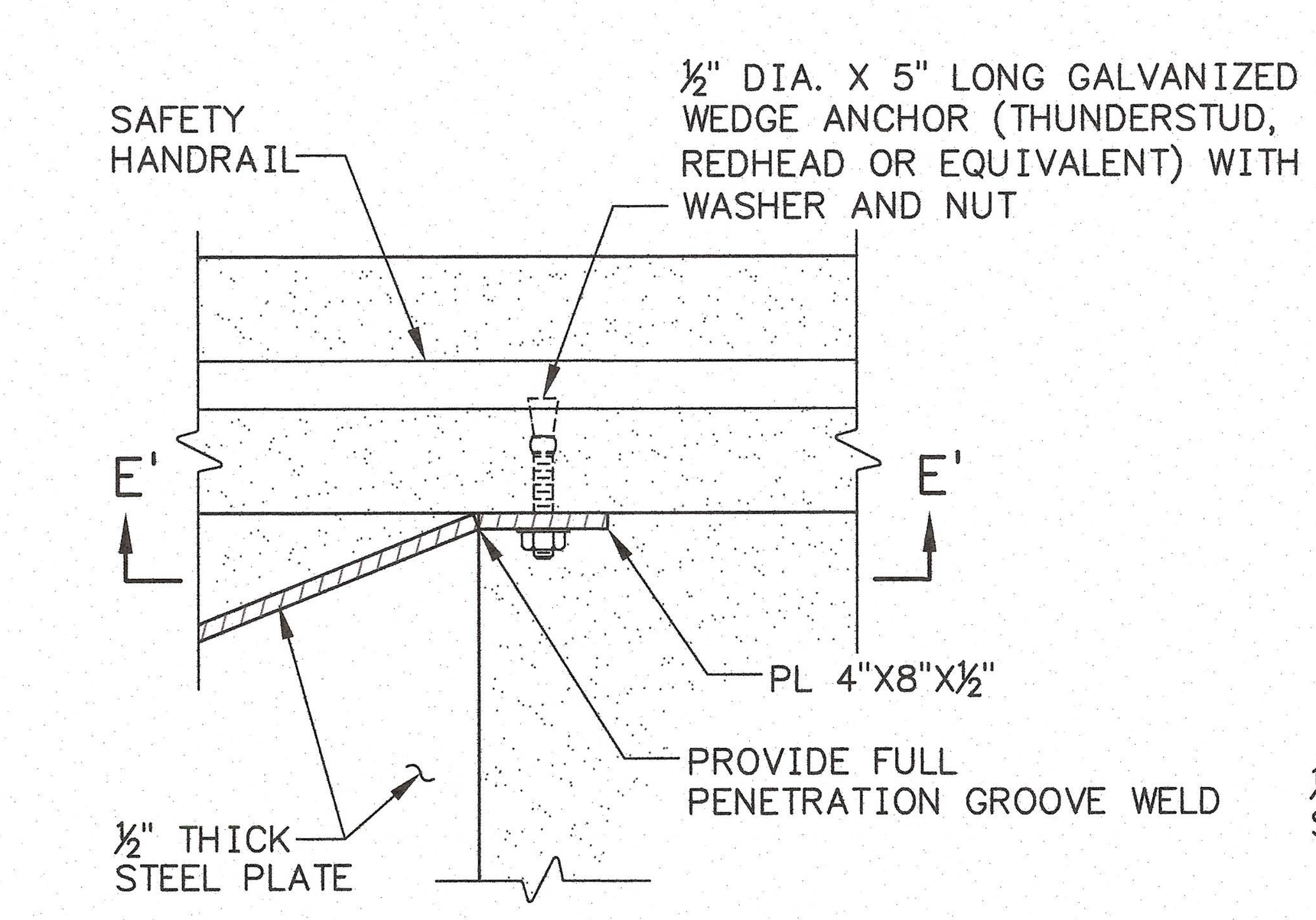


PLAN

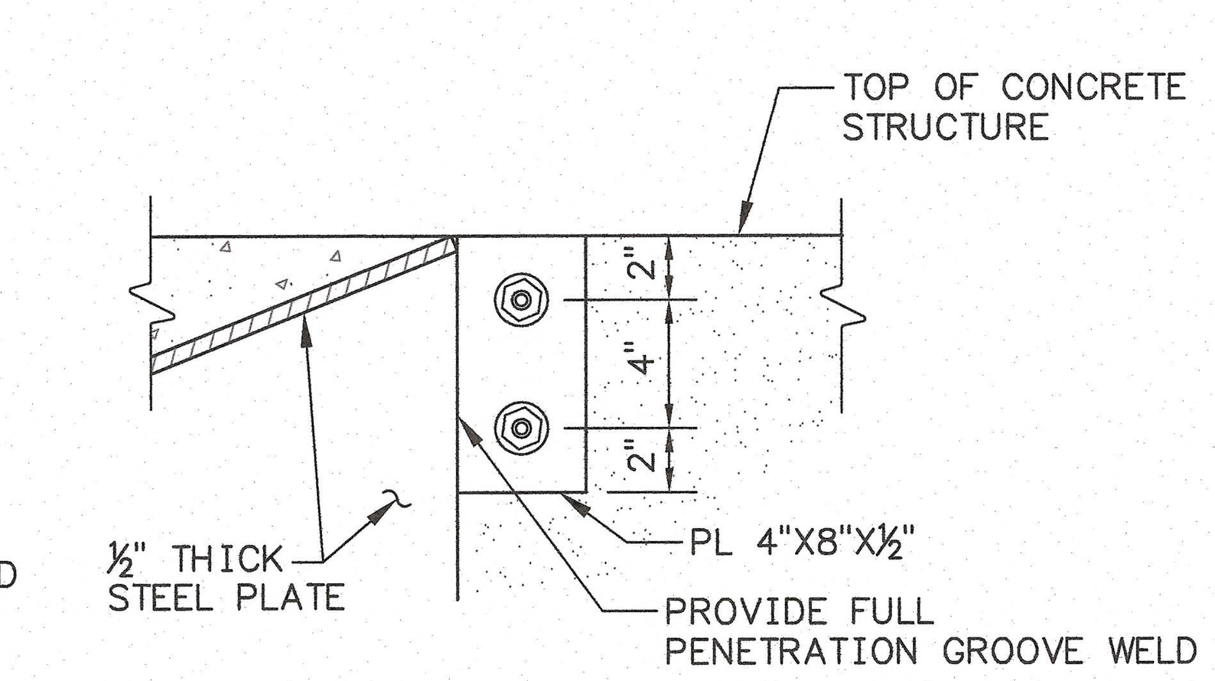
1/03 DETAIL – PRECAST STRUCTURE
SCALE: 1/2"=1'-0"



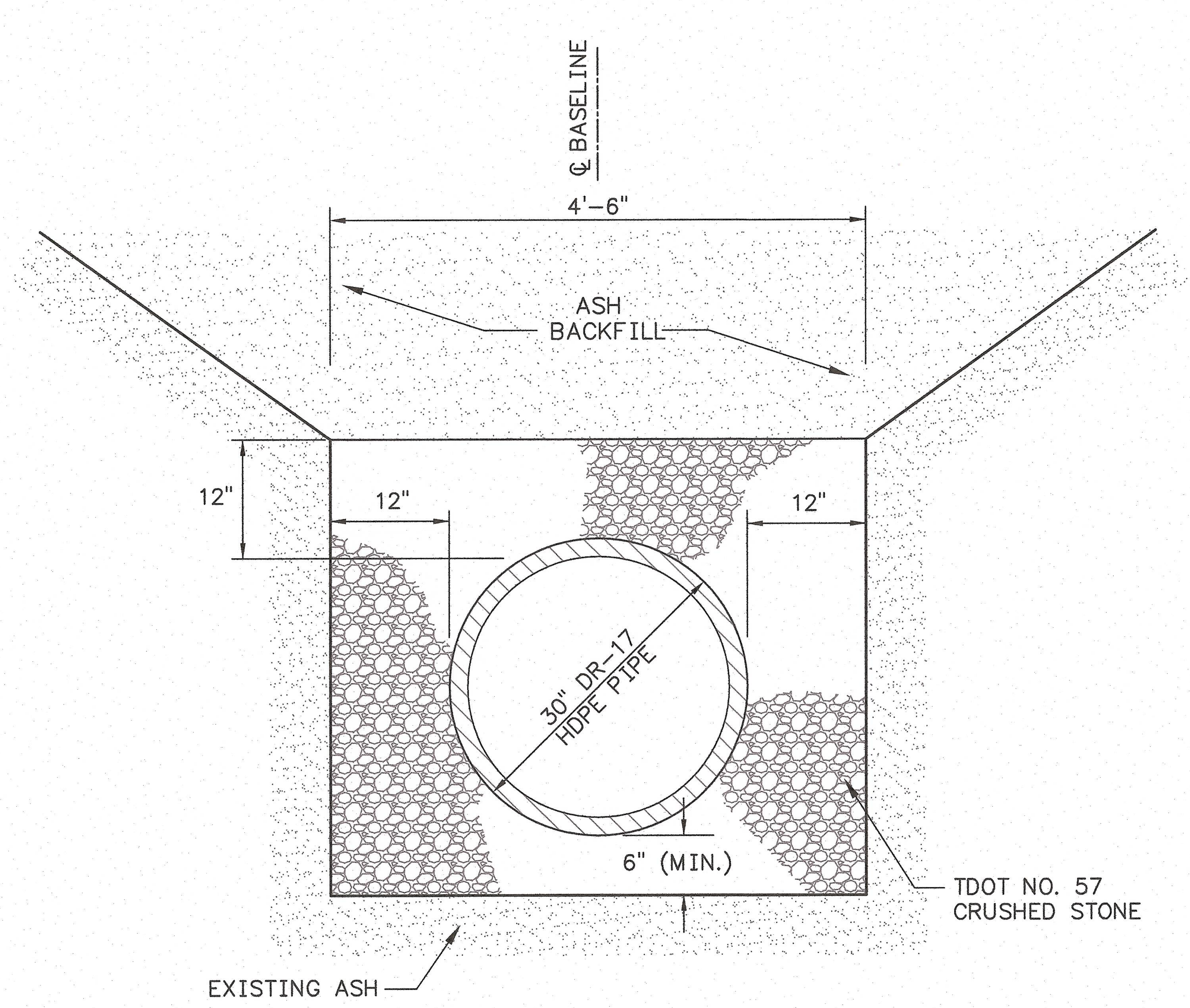
SECTION C–C'
SCALE: 1/2"=1'-0"



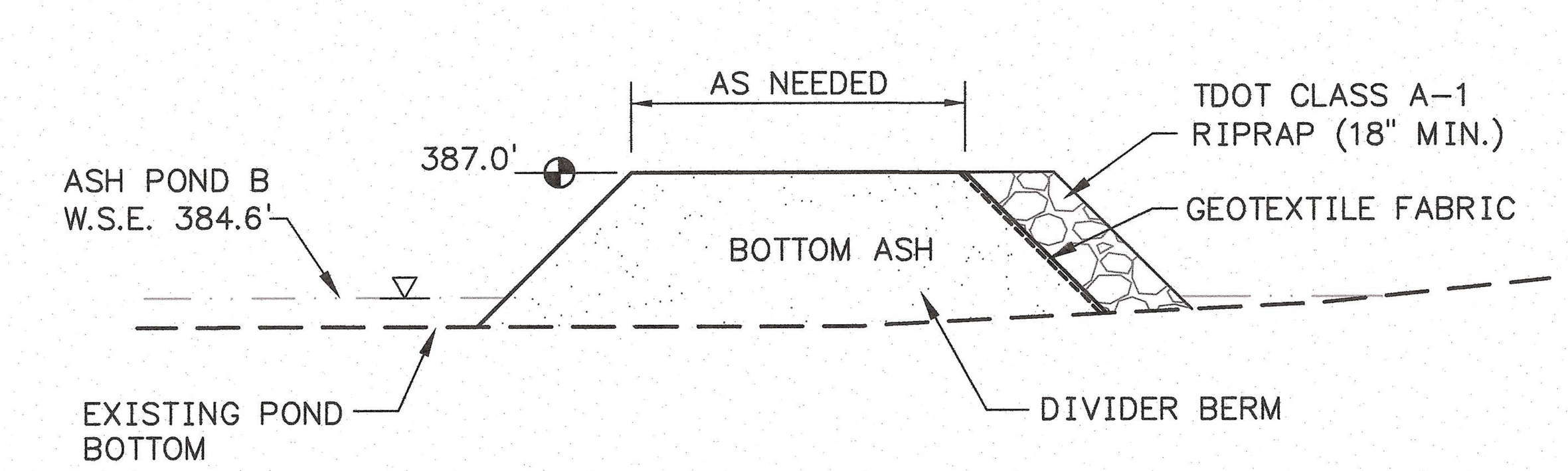
4/03 DETAIL – CONNECTION
SCALE: 2"=1'-0"



SECTION E–E'
SCALE: 2"=1'-0"



2/03 DETAIL – TYPICAL TRENCH
SCALE: 1"=1'-0"



3/03 DETAIL – TYPICAL SECTION AT DIVIDER BERM
SCALE: 1/4"=1'-0"

FOR SUPPORTING DESIGN CALCULATIONS SEE FPGJOFFESCDX00030020110001

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SCALE: AS SHOWN EXCEPT AS NOTED

YARD
ASH DISPOSAL AREA NO. 2

STATION SUMP DISCHARGE RELOCATION
GENERAL NOTES AND DETAILS
WORK PLAN 15 (JOF-110701-WP-15)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
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