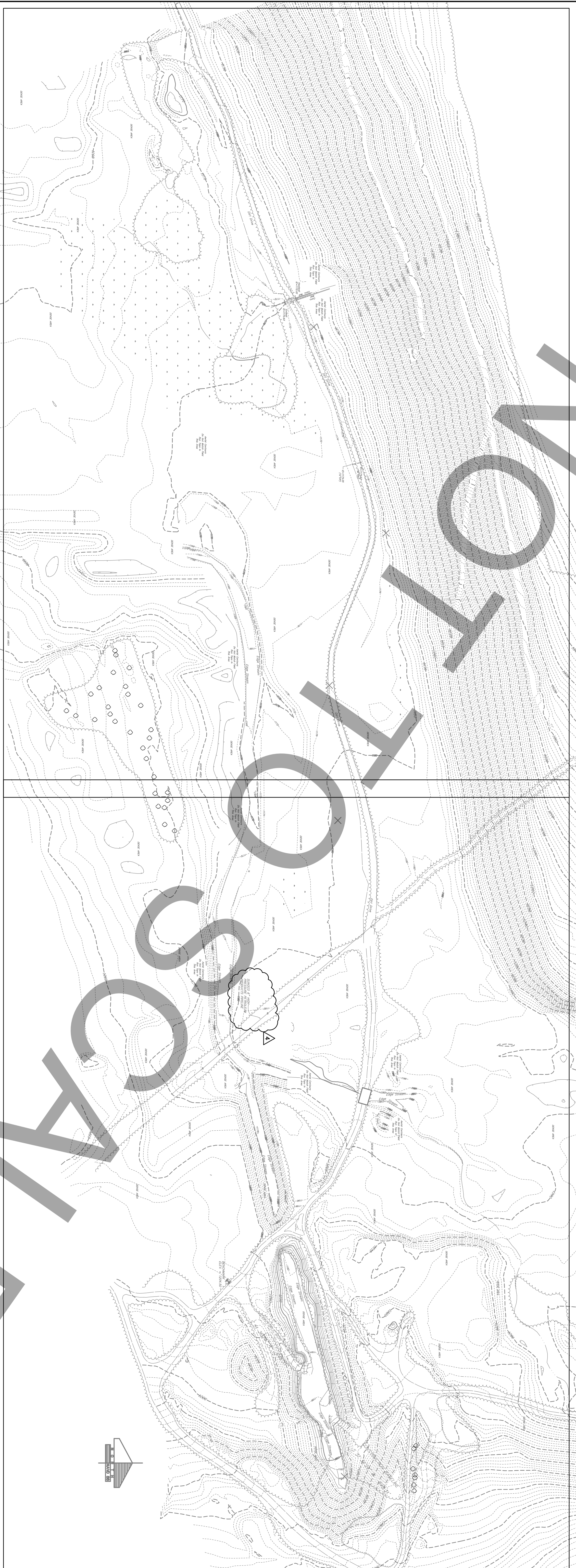
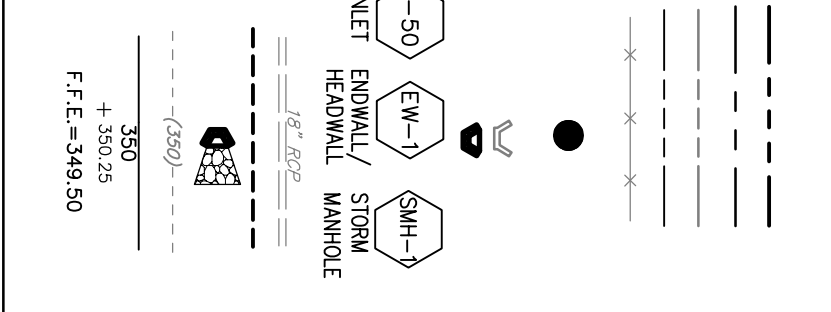


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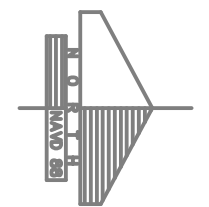
- EXISTING RIGHT-OF-WAY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- EXISTING FENCE
- PROPOSED STORM MANHOLE
- EXISTING STORM HEADWALL/ENDWALL
- PROPOSED STORM HEADWALL/ENDWALL
- PROPOSED STORM STRUCTURE LABEL
- EXISTING STORM PIPE
- PROPOSED STORM PIPE
- PROPOSED PIPE OUTLET PROTECTION
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- PROPOSED SPOT ELEVATION
- PROPOSED FINISHED FLOOR ELEVATION



SHEETS 3 & 5

SHEETS 4 & 6

NOT FOR CONSTRUCTION



ISSUED FOR CONSTRUCTION

DATE: DEC. 20, 2004
 SHEET NO. 2 OF 12
 DWA. NO. 04-03883-001

ABANDONED MINE DRAINAGE REMEDIATION FOR
AUDENREID MINE TUNNEL
 EXISTING SITE PLAN
 EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

RETTEW
 RETTEW Associates, Inc.
 Union Street Station, 101 East Union Street
 Pottsville, PA 17901
 Phone (570) 622-8222 · Fax (570) 622-4260
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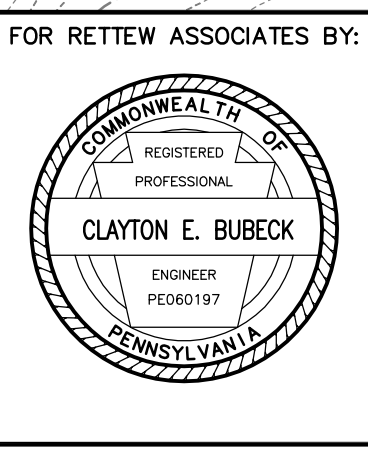
CLIENT
SCHUYLKILL CONSERVATION DISTRICT
 1206 AG CENTER DRIVE
 POTTSVILLE, PA 17901-9733

SCALE
 0' 50' 100' 200' 300'

MANAGER: CLAYTON BUBECK, P.E.
 DESIGN BY: PGD CHKD BY: CEB
 SURV. CHIEF: DRAWN BY: MJS/PGD
 FIELDBOOK NO. DATA COLLECTOR
 CHKD BY: G. WAGNER

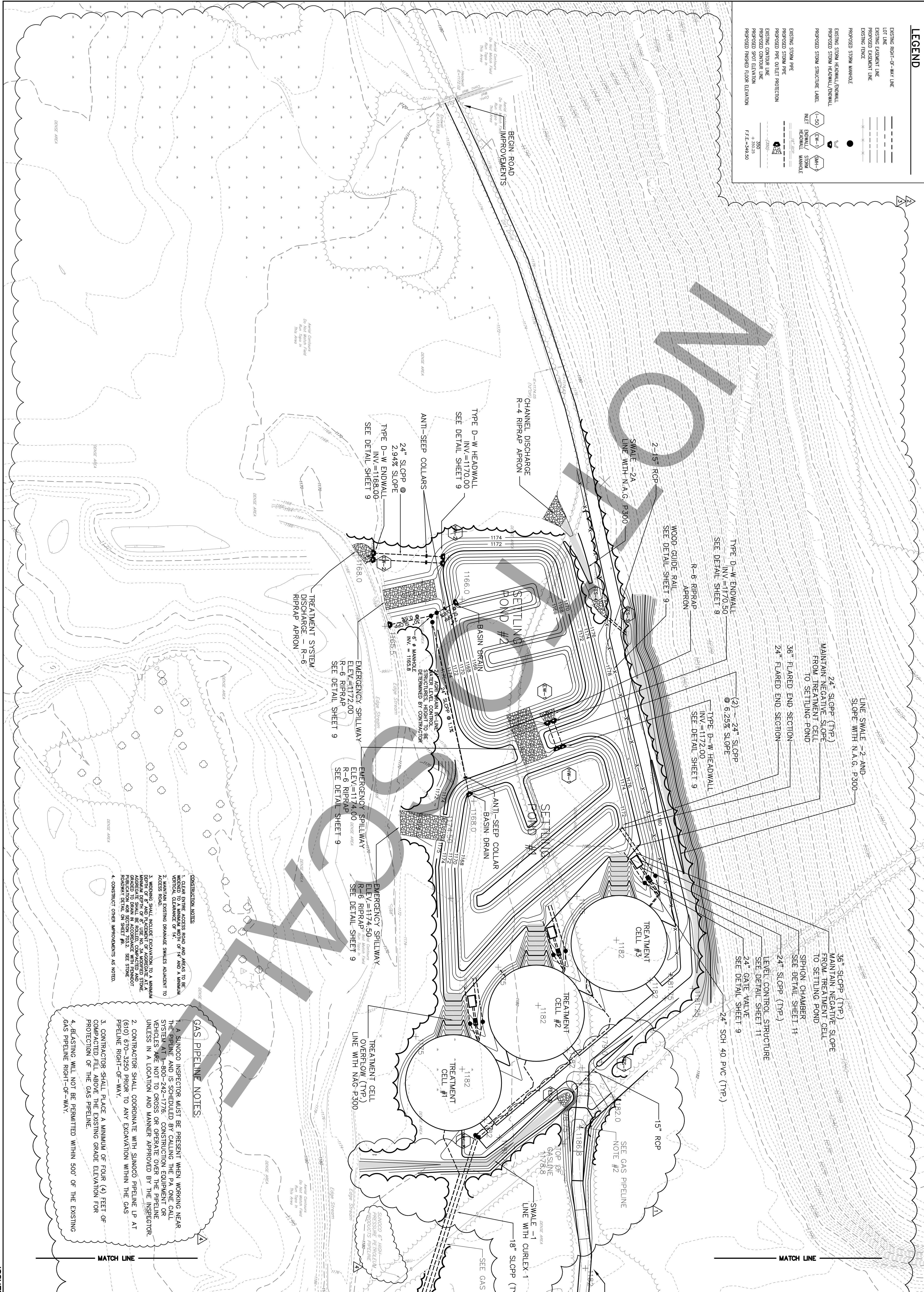
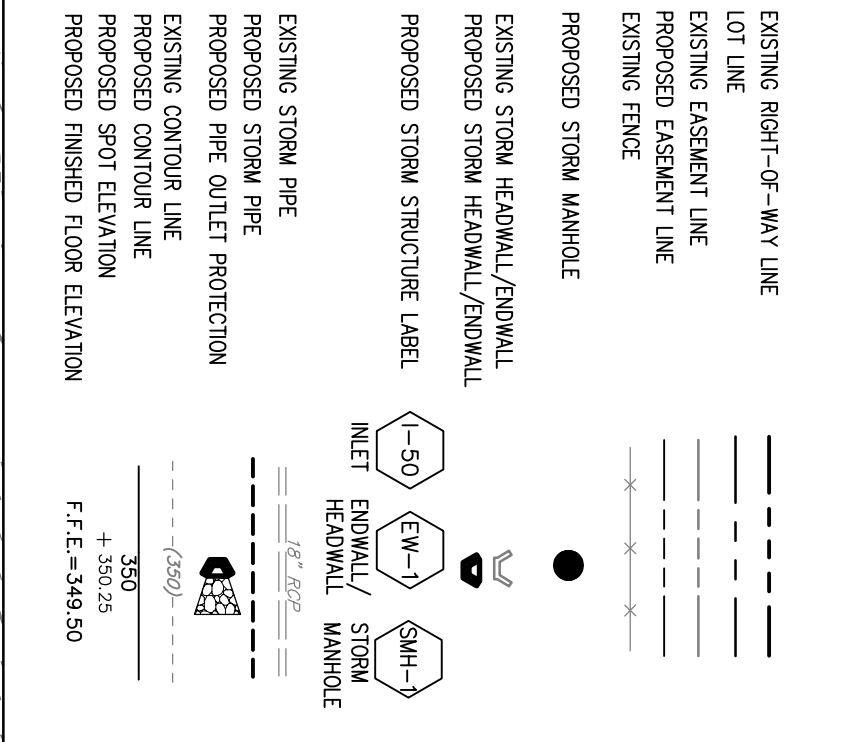
DRAWING REFERENCE:
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FOR RETTEW ASSOCIATES BY:		
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2	3/17/05	REVISED TO REFLECT ADDENDUMS #1, #2, & #3
1	2/25/05	REVISIONS FOR NPDES PERMIT SUBMISSION

LEGEND



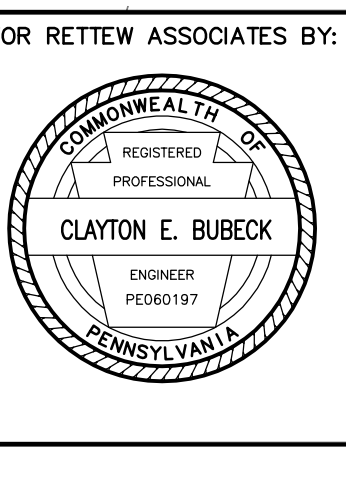
ABANDONED MINE DRAINAGE REMEDIATION FOR
AUDENREID MINE TUNNEL
 GRADING AND LAYOUT PLAN
 EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

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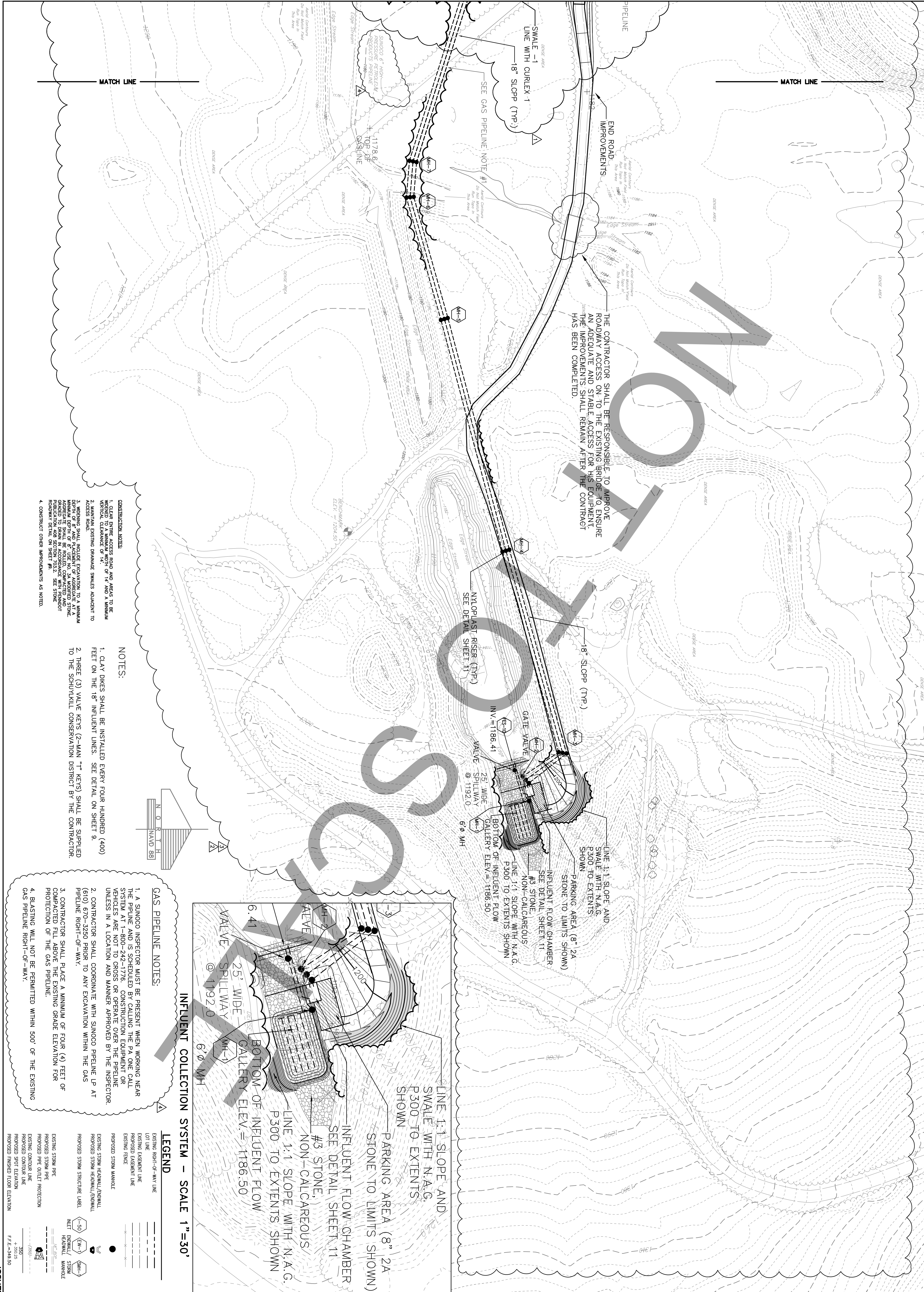
SCALE
 0' 25' 50' 100' 150'

MANAGER: CLAYTON BUBECK, P.E.
 DESIGN BY: PGD CHKD BY: CEB
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THE CONTRACTOR SHALL BE RESPONSIBLE TO IMPROVE ROADWAY ACCESS ON TO THE EXISTING BRIDGE TO ENSURE AN ADEQUATE AND STABLE ACCESS FOR HIS EQUIPMENT. THE IMPROVEMENTS SHALL REMAIN AFTER THE CONTRACT HAS BEEN COMPLETED.

NYLOPLAST RISER (TYP.) SEE DETAIL SHEET 11

25' WIDE VALVE SPILLWAY @ 1192.0

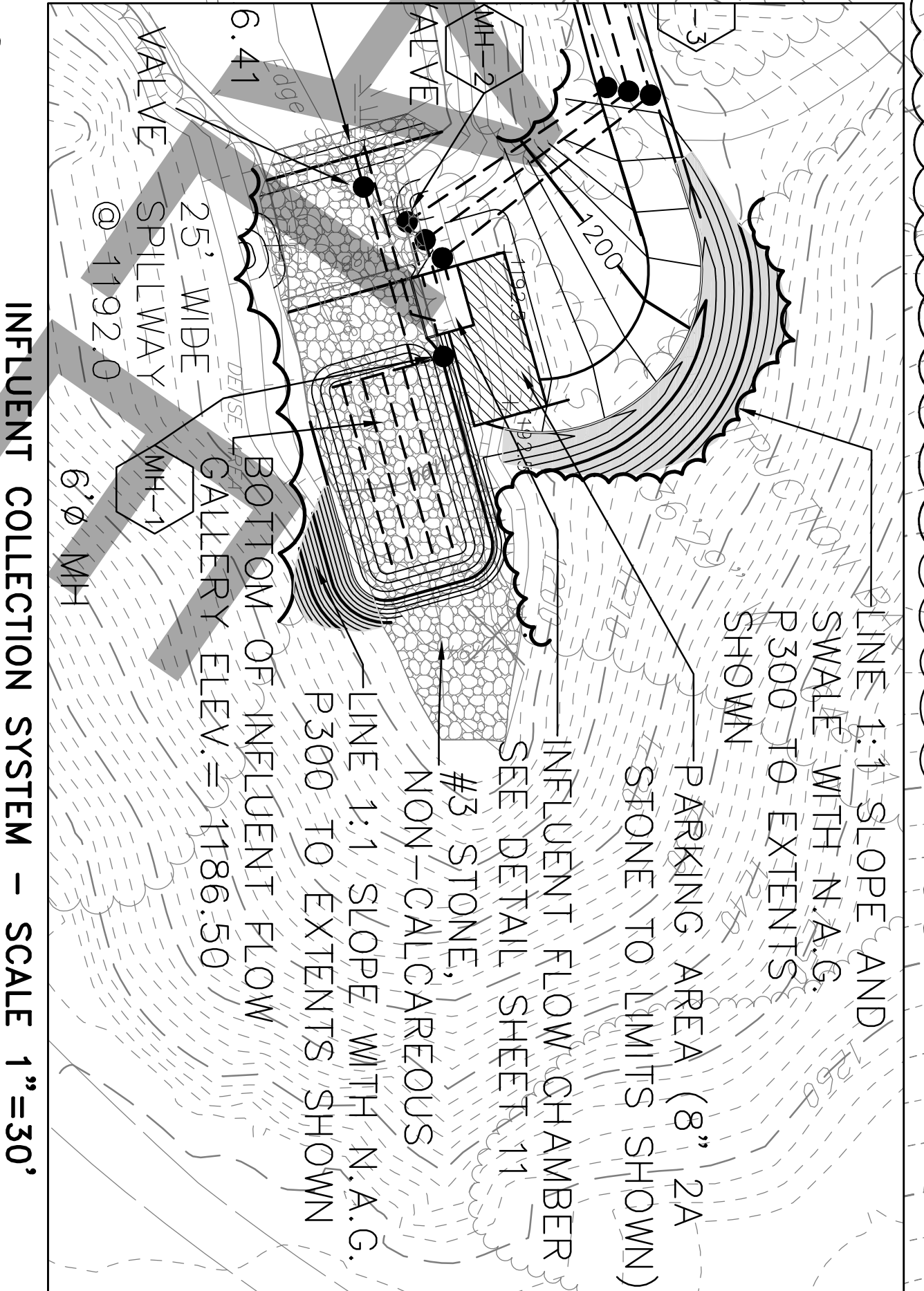
6"Ø MH

LINE 1: 1.1 SLOPE AND SWALE WITH N.A.G. P300 TO EXTENTS SHOWN

INFLUENT FLOW CHAMBER #3 STONE, NON-CALCAREOUS/ P300 TO EXTENTS SHOWN

LINE 1: 1.1 SLOPE WITH N.A.G. P300 TO EXTENTS SHOWN

LINE 1: 1.1 SLOPE AND SWALE WITH N.A.G. P300 TO EXTENTS SHOWN



GAS PIPELINE NOTES:

1. A SUNOCO INSPECTOR MUST BE PRESENT WHEN WORKING NEAR THE PIPELINE AND IS SCHEDULED BY CALLING THE PA ONE CALL SYSTEM AT 1-800-242-1776. CONSTRUCTION EQUIPMENT OR VEHICLES ARE NOT TO CROSS OR OPERATE OVER THE PIPELINE UNLESS IN A LOCATION AND MANNER APPROVED BY THE INSPECTOR.

2. CONTRACTOR SHALL COORDINATE WITH SUNOCO PIPELINE LP AT (610) 670-3230 PRIOR TO ANY EXCAVATION WITHIN THE GAS PIPELINE RIGHT-OF-WAY.

3. CONTRACTOR SHALL PLACE A MINIMUM OF FOUR (4) FEET OF COMPACTED FILL ABOVE THE EXISTING GRADE ELEVATION FOR PROTECTION OF THE GAS PIPELINE.

4. BLASTING WILL NOT BE PERMITTED WITHIN 500' OF THE EXISTING GAS PIPELINE RIGHT-OF-WAY.

CONSTRUCTION NOTES:

1. CLEAR ENTIRE ACCESS ROAD AND AREAS TO BE WIDENED TO A MINIMUM WIDTH OF 14' AND A MINIMUM VERTICAL CLEARANCE OF 14'.

2. MAINTAIN EXISTING DRAINAGE SWALES ADJACENT TO WIDENED AREAS.

3. WIDENING SHALL INSURE EQUIPMENT TO A MINIMUM MANHOLE DEPTH OF 8' AND PLACEMENT OF AGGREGATE AT A MINIMUM DEPTH OF 8' AND USE NO. 5A WOTTERD STONE. GRADED TO DRAIN IN ACCORDANCE WITH PERMITS FOR ROADWAY AND SECTION 703.2. SEE STONE PRODUCTION FOR SECTION 703.2.

4. CONSTRUCT OTHER IMPROVEMENTS AS NOTED.

NOTES:

1. CLAY DIKES SHALL BE INSTALLED EVERY FOUR HUNDRED (400) FEET ON THE 18' INFLUENT LINES. SEE DETAIL ON SHEET 9.

2. THREE (3) VALVE KEYS (2-MAN "T" KEYS) SHALL BE SUPPLIED TO THE SCHUYLKILL CONSERVATION DISTRICT BY THE CONTRACTOR.

LEGEND



ABANDONED MINE DRAINAGE REMEDIATION FOR

AUDENREID MINE TUNNEL

GRADING AND LAYOUT PLAN

EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

DATE: DEC. 20, 2004

SHEET NO. 4 OF 12

DWG. NO. 04-03883-001

RETTEW Associates, Inc.
 Union Street Station, 101 East Union Street
 Pottsville, PA 17901
 Phone (570) 622-8222 · Fax (570) 622-4260
 Email: rettew@rettew.com Website: www.rettew.com
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Engineers · Planners · Surveyors · Landscape Architects
 Environmental Consultants · IT Consultants

CLIENT

SCHUYLKILL CONSERVATION DISTRICT
 1206 AG CENTER DRIVE
 POTTSVILLE, PA 17901-9733

SCALE

MANAGER: CLAYTON BUBECK, P.E.

DESIGN BY: PGD

CHKD BY: CEB

DRAWING REFERENCE: N:\04\04-03883-001\CAD\E\04-03883-001-grading.dwg

XREFS:

SURV. CHIEF: CLAYTON BUBECK, P.E.

CHKD BY: CEB

DRAWN BY: MJS/PGD

CHKD BY: G.WAGNER

FIELDBOOK NO. DATA COLLECTOR

FOR RETTEW ASSOCIATES BY:

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ISSUED FOR CONSTRUCTION

LEGEND

EXISTING RIGHT-OF-WAY LINE	---
LOT LINE	---
EXISTING STREAM CENTERLINE	---
PROPOSED STORM MAINLINE	---
PROPOSED STORM HEADWALL/ENDWALL	○
PROPOSED STORM STRUCTURE LABEL	○
PROPOSED STORM PIPE	---
PROPOSED PRE-OUTLET PROTECTION	---
TEMPORARY ROCK FILTER	---
EXISTING CONTROL LINE	---
PROPOSED CONTROL LINE	---
PROPOSED SPOT ELEVATION	+
CURVE/JOINT LIVING	---
LIMITS OF DISTURBANCE	---
TEMPORARY FILTER SOCK	---
SEDIMENT BASIN/RAP BRANDED INWDE	---
SOIL THE BOUNDARY LINE	---
SOIL THE RESERVATION	---
	BUB

SOILS CLASSIFICATIONS

BdG - BUGHAMM EXTREMELY STONY LOAM, 3 TO 8 PERCENT SLOPES
 DMF - DEEPAH AND LEHEW EXTREMELY STONY SOILS, STEEP
 Ph - PHLO SILT LOAM

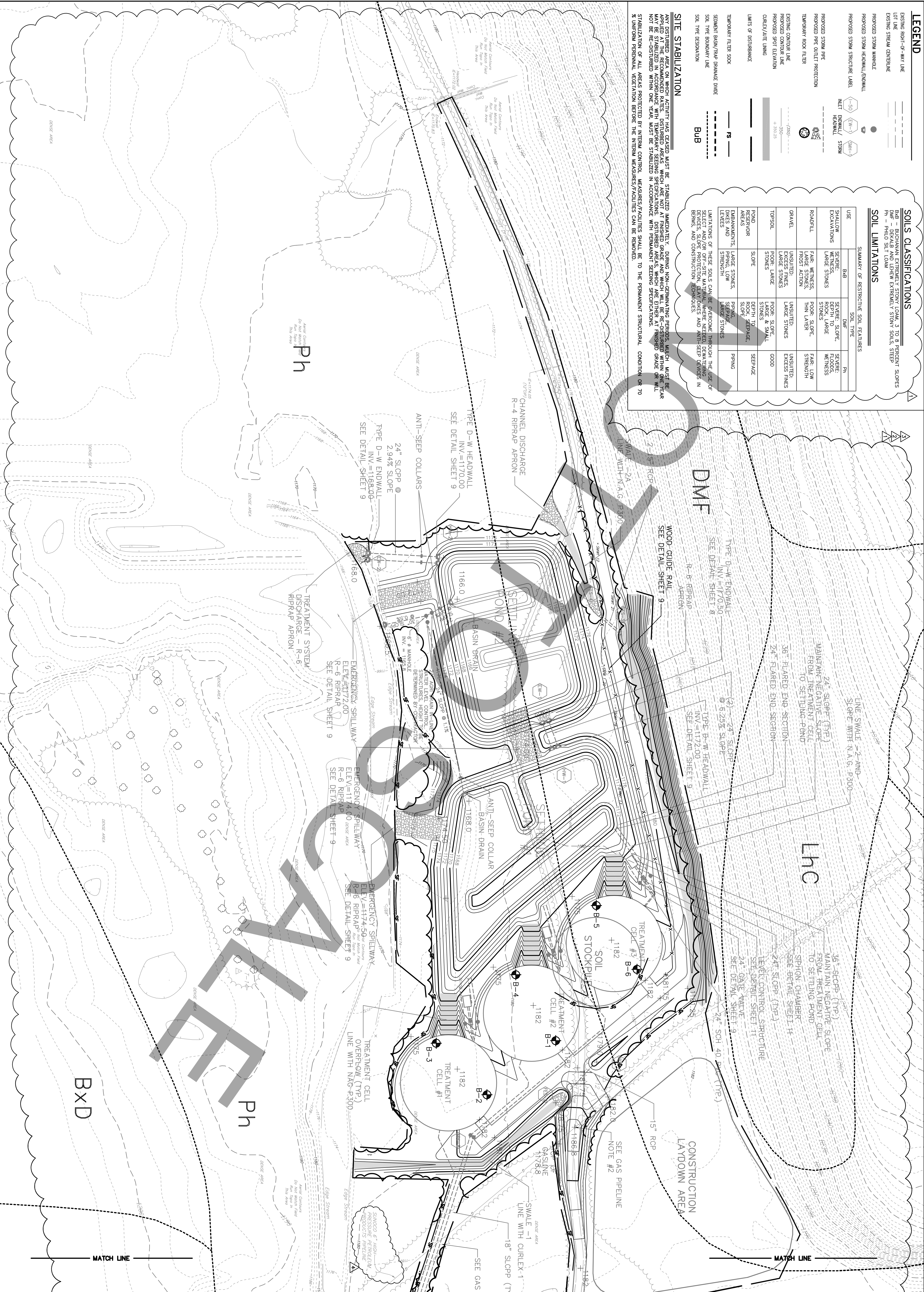
SOIL LIMITATIONS

USE	BdG	DMF	Ph
SHALLOW EXCAVATIONS	SEVERE: DEPTH TO LARGE STONES	SEVERE: SLOPE, DEPTH TO LARGE STONES	SEVERE: RECORDS, WEARNESS
ROADFILL	FAR: WEARNESS, FROST ACTION	POOR: SLOPE, FROST ACTION	FAR: LOW STRENGTH
GRAVEL	UNSUITED: EXCESS FINES, LARGE STONES	UNSUITED: LARGE STONES	UNSUITED: EXCESS FINES
TOPSOIL	POOR: LARGE STONES	POOR: SLOPE, LARGE STONES	GOOD
POND RESERVOIR	SLOPE	DEPTH TO ROCK, SEEPAGE, SLOPE	SEEPAGE
EMBANKMENTS AND LEVELS	LARGE STONES, LOW STRENGTH	PIPING, LARGE STONES	PIPING

LIMITATIONS OF THESE SOILS CAN BE OVERCOME THROUGH THE USE OF SELECT AND/OR OPTIMIZE MATERIAL WHERE NEEDED, DRAINAGE BERMS, AND CONSTRUCTION TECHNIQUES.

SITE STABILIZATION

ALL DISTURBED AREAS ON WHICH VEGETATION HAS GROWN MUST BE STABILIZED IMMEDIATELY. PLANTING NON-SPREADING SPECIES PLANTS MUST BE APPLIED IN THE RECOMMENDED PATTERNS. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-ENGINEERED WITHIN ONE YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS. STABILIZATION OF ALL AREAS PROTECTED BY INTERIM CONTROL MEASURES/FACILITIES SHALL BE TO THE PERMANENT STRUCTURAL CONDITION OR TO ± UNIFORM PERENNIAL VEGETATION BEFORE THE INTERIM MEASURES/FACILITIES CAN BE REMOVED.



ABANDONED MINE DRAINAGE REMEDIATION FOR
AUDENREID MINE TUNNEL
 EROSION CONTROL PLAN
 EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

RETTEW
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CLIENT
SCHUYLKILL CONSERVATION DISTRICT
 1206 AG CENTER DRIVE
 POTTSVILLE, PA 17901-9733

SCALE
 0' 25' 50' 100' 150'

MANAGER: CLAYTON BUBECK, P.E.
 DESIGN BY: PGD CHKD BY: CEB
 DRAWN BY: MJS/PGD CHKD BY: G.WAGNER

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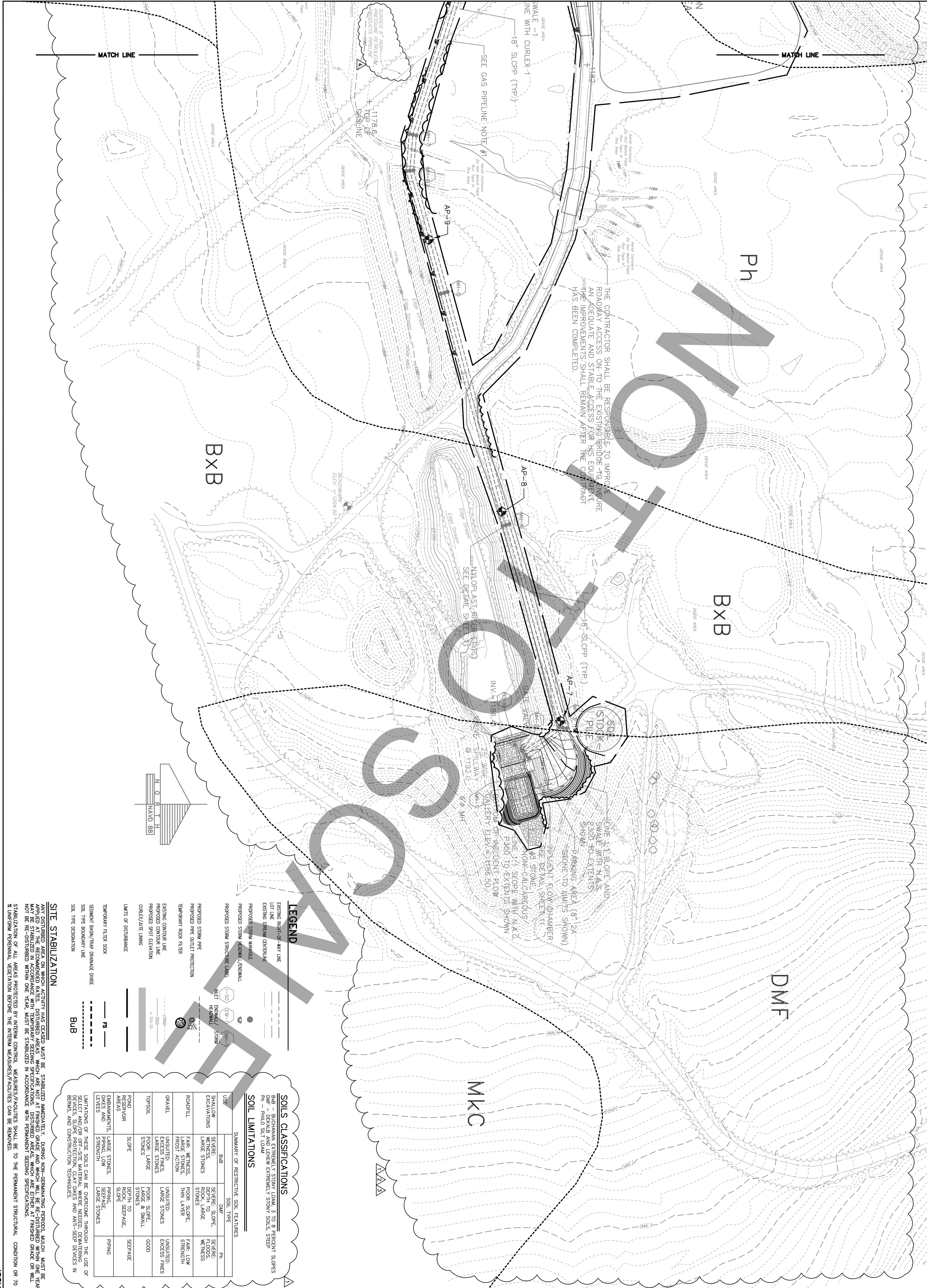
XREFS:

FOR RETTEW ASSOCIATES BY:

 CLAYTON E. BUBECK

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ISSUED FOR CONSTRUCTION



LEGEND

- EXISTING RIGHT-OF-WAY LINE
- EXISTING LOT LINE
- EXISTING STREAM CENTERLINE
- PROPOSED STORM MAINLINE
- PROPOSED STORM STRUCTURE LABEL
- PROPOSED STORM PILE
- PROPOSED PILE OUTLET PROTECTION
- TEMPORARY ROCK FILTER
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- PROPOSED SPOT ELEVATION
- CURB/AIUT LIMB
- LIMS OF DISTURBANCE
- TEMPORARY FILTER SOCK
- SEDIMENT BASIN/TRAP DRAINAGE DITCH
- SOIL TYPE BOUNDARY LINE
- SOIL TYPE DESIGNATION

SOIL CLASSIFICATIONS

Bx8 - BUCHANAN EXTREMELY STONY LOAM, 3 TO 8 PERCENT SLOPES
 Ph - PHILIP SILT LOAM
 DMF - DUNFORD EXTREMELY STONY SOILS, STEEP

SOIL LIMITATIONS

USE	Bx8	DMF	Ph
SHALLOW FOUNDATIONS	SEVERE, POOR TO FAIR STRENGTH	SEVERE SLOPE, POOR TO FAIR STRENGTH	SEVERE SLOPE, POOR TO FAIR STRENGTH
ROADFILL	FAIR TO WEAKNESS, LARGE STONES	POOR TO FAIR, THIN LAYER	FAIR TO WEAKNESS, LARGE STONES
GRAVEL	UNSATURATED, LARGE STONES	UNSATURATED, LARGE STONES	UNSATURATED, EXCESS FINES
TOPSOIL	POOR TO FAIR, LARGE STONES	POOR TO FAIR, LARGE & SMALL STONES	GOOD
POND FOUNDATIONS	POOR TO FAIR, LARGE STONES	DEPTH TO SEEPAGE, POOR TO FAIR SLOPE	SEEPAGE
EMBANKMENTS AND LEVAYS	POOR TO FAIR, LARGE STONES	PIPING, SEEPAGE, LARGE STONES	PIPING

SITE STABILIZATION

ANY DISTURBED AREA ON WHICH ACTIVITY HAS OCCURRED MUST BE STABILIZED IMMEDIATELY. DURING NON-GRASSING PERIODS, WHICH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE RE-DISTURBED WITHIN ONE YEAR, MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS. STABILIZATION OF ALL AREAS PROTECTED BY INTERIM CONTROL MEASURES/FACILITIES SHALL BE TO THE PERMANENT STRUCTURAL CONDITION OR 70% UNIFORM PERENNIAL VEGETATION BEFORE THE INTERIM MEASURES/FACILITIES CAN BE REMOVED.

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 EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

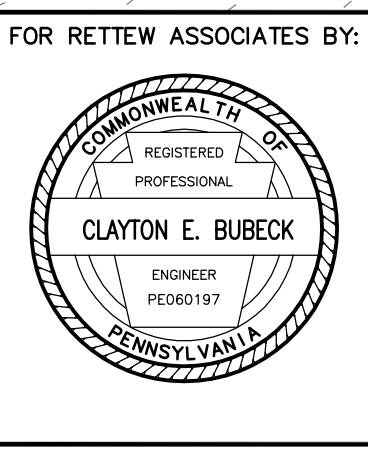
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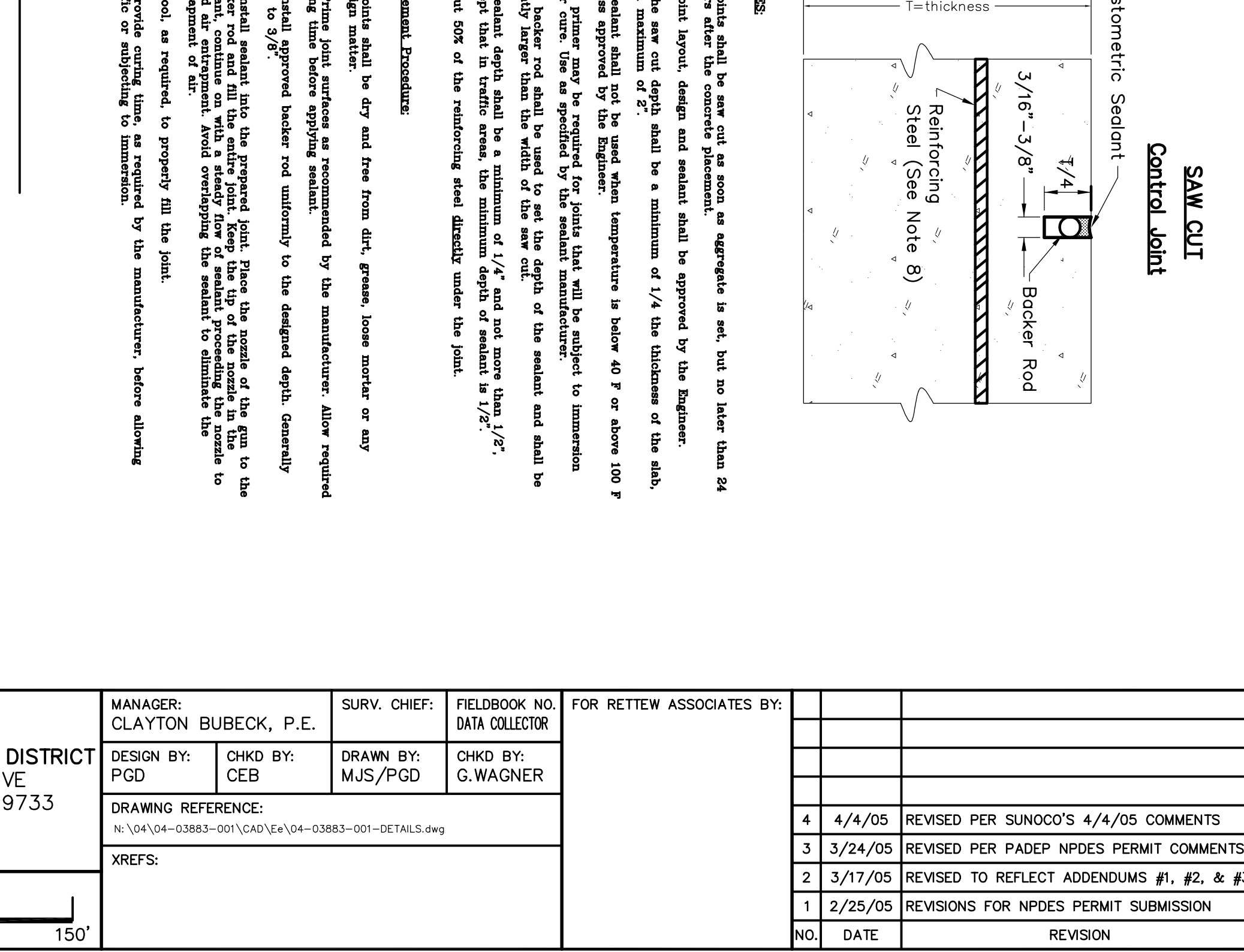
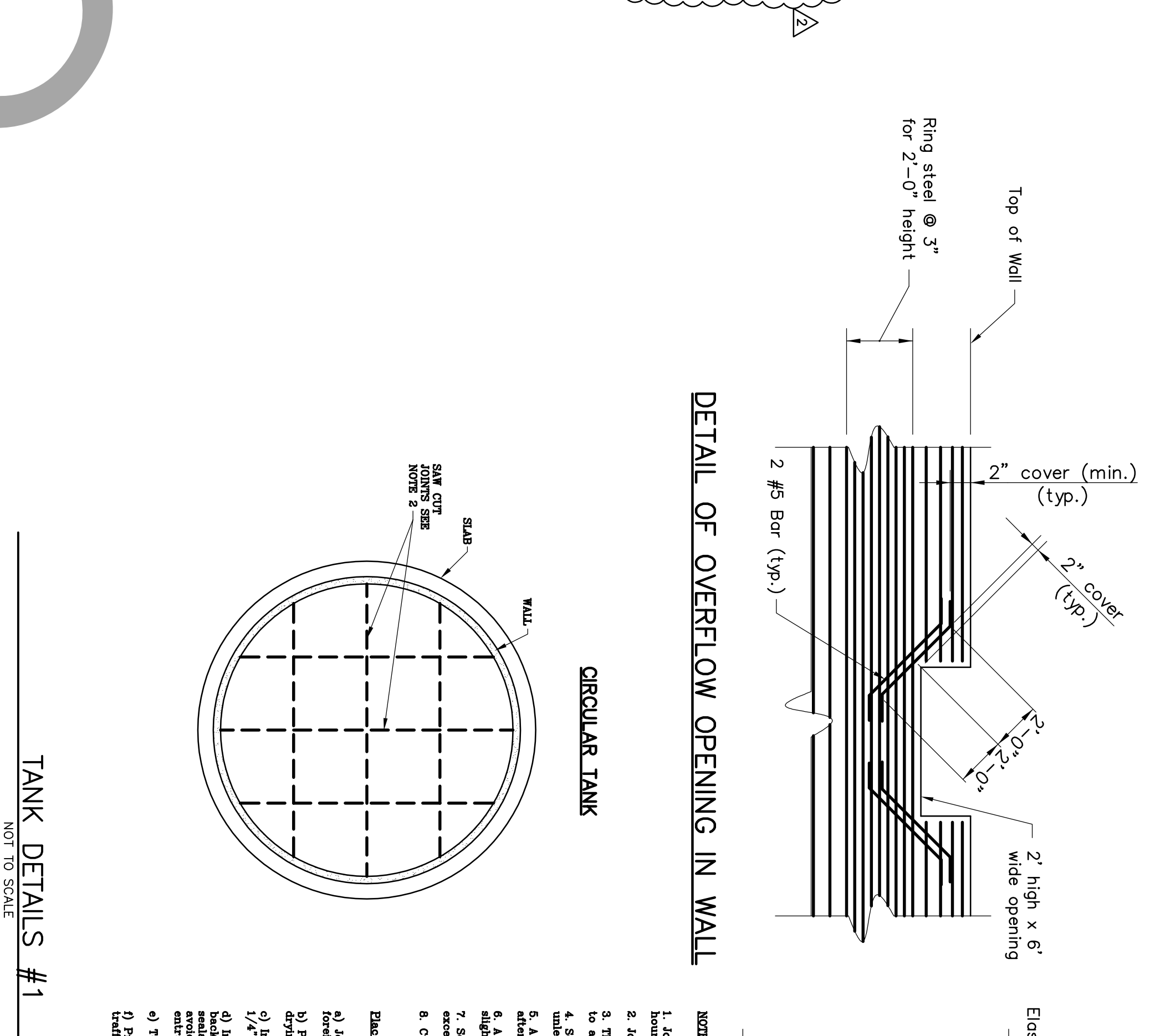
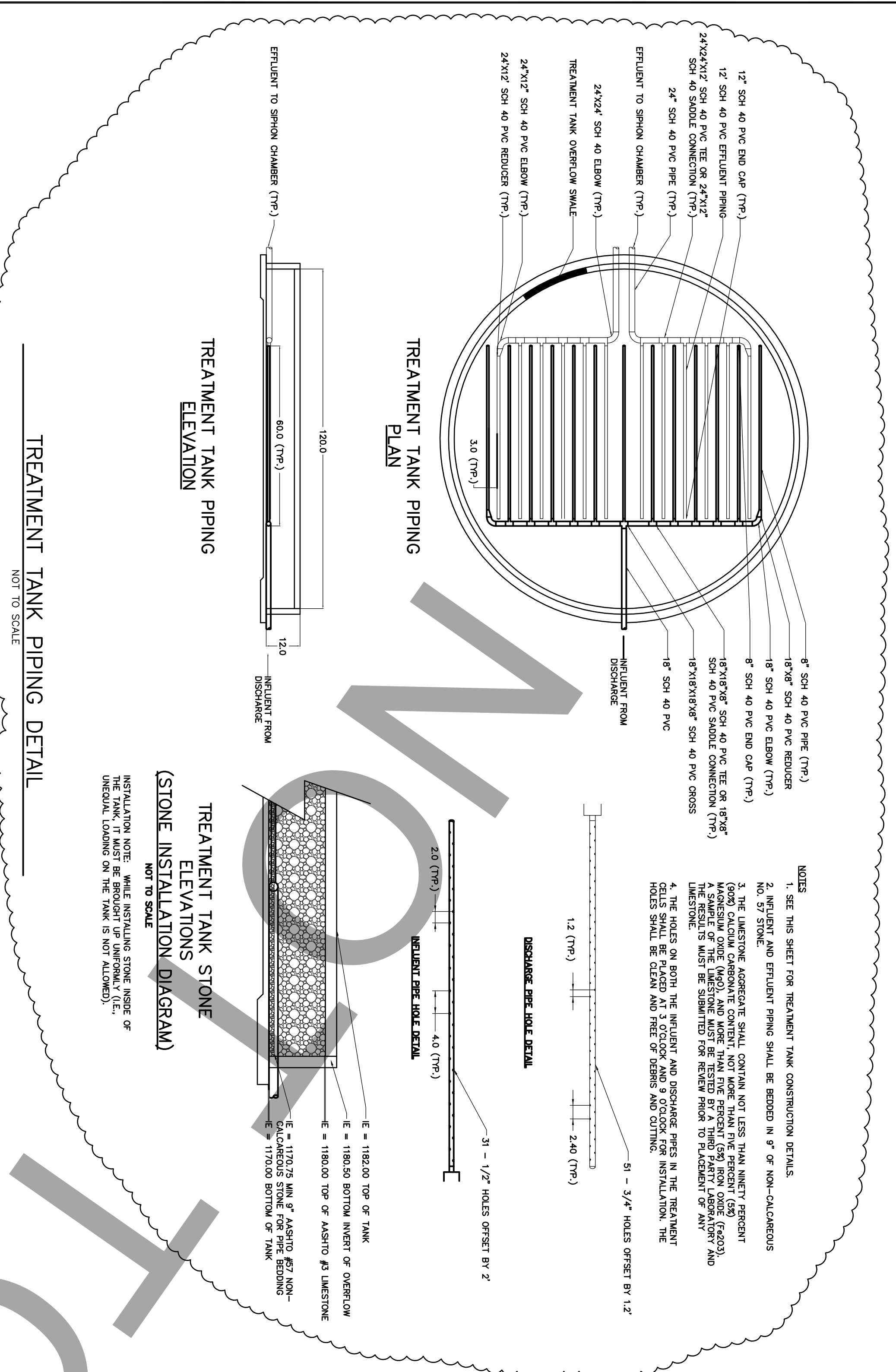
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NOTES:

1. Details shall be set out as soon as aggregate is set, but no later than 24 hours after the concrete placement.
2. Joint layout, design and sealant shall be approved by the Engineer.
3. The saw cut depth shall be a minimum of 1/4 the thickness of the slab, to a maximum of 2".
4. Sealant shall not be used when temperature is below 40 F or above 100 F unless approved by the Engineer.
5. A primer may be required for joints that will be subject to immersion.
6. A backup rod shall be used to get the depth of the sealant and shall be removed after the sealant has cured.
7. Sealant depth shall be a minimum of 1/4" and not more than 1 1/2".
8. Out 50% of the reinforcing steel directly under the joint.

Elimination Procedure:

- a) Joints shall be dry and free from dirt, grease, loose mortar or any other material.
- b) Prepare joint surfaces as recommended by the manufacturer. Allow required drying time before applying sealant.
- c) Install approved backup rod uniformly to the designated depth. Generally 1/4" to 3/8".
- d) Install sealant into the prepared joint. Place the middle of the bag to the backup rod and fill the entire joint. Keep the lip of the mortar in the sealant to the end of the joint. Avoid overlapping the sealant to eliminate the entrapment of air.
- e) Tool, as required, to properly fill the joint.
- f) Provide curing time, as required by the manufacturer, before allowing traffic or subjecting to immersion.

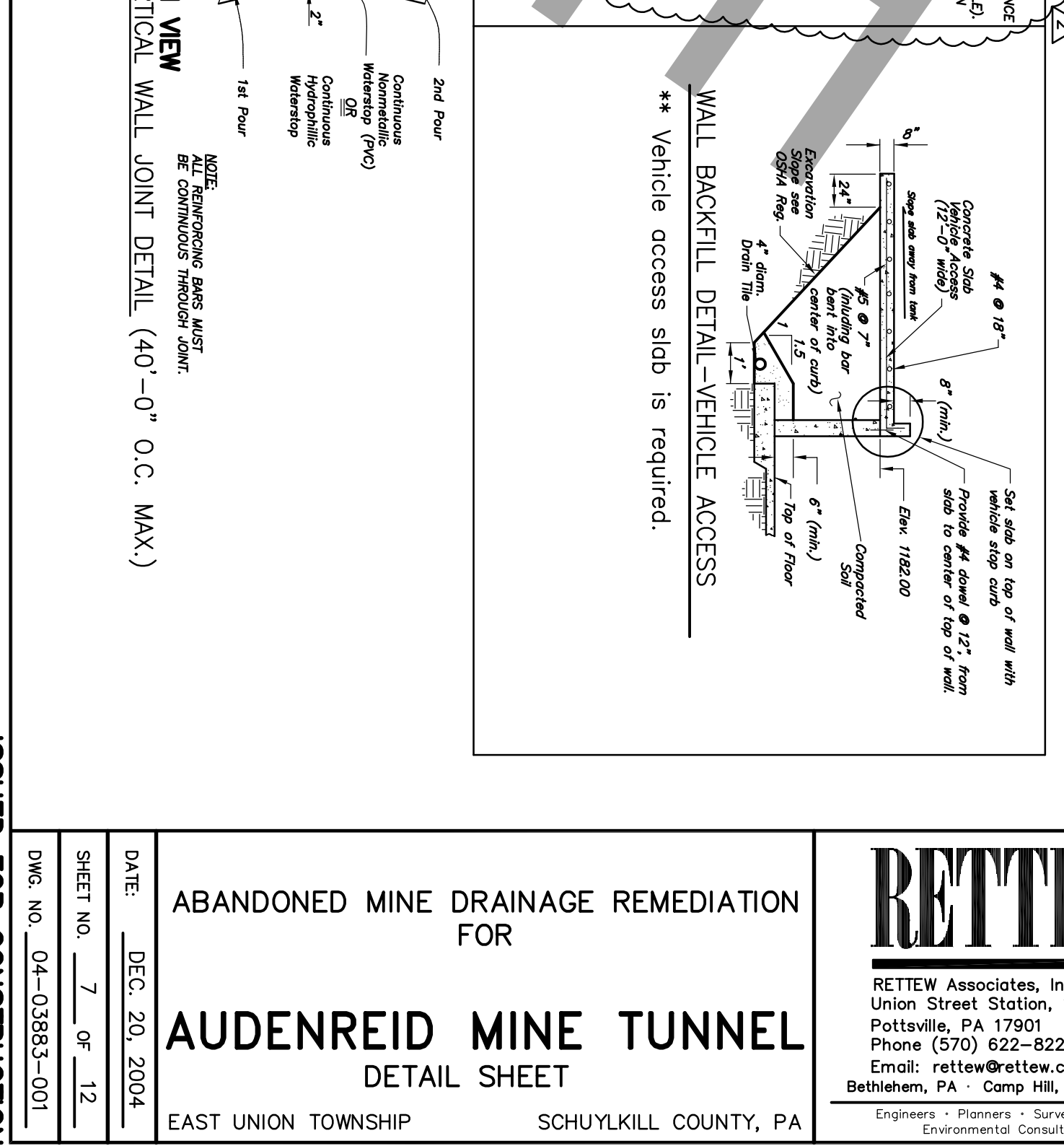
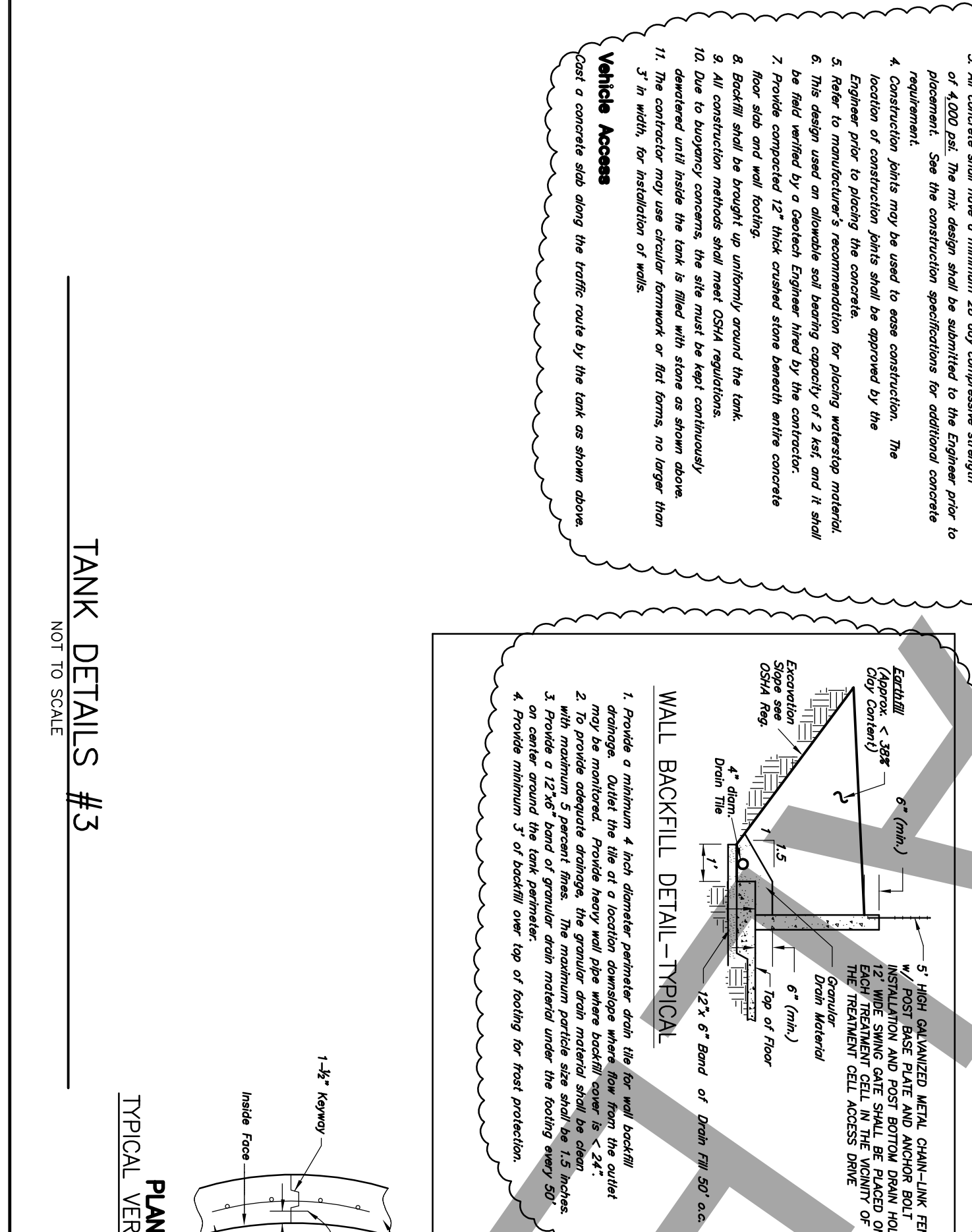
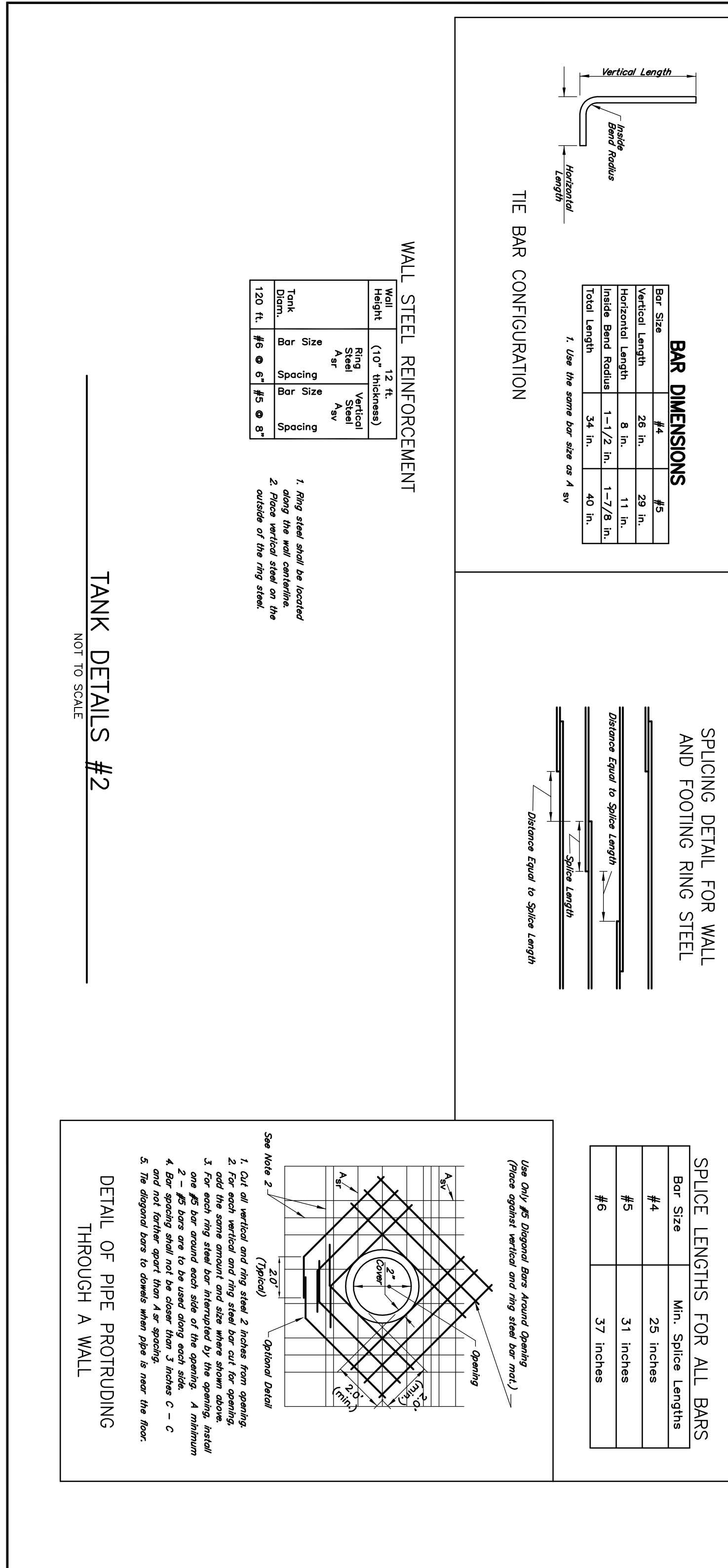
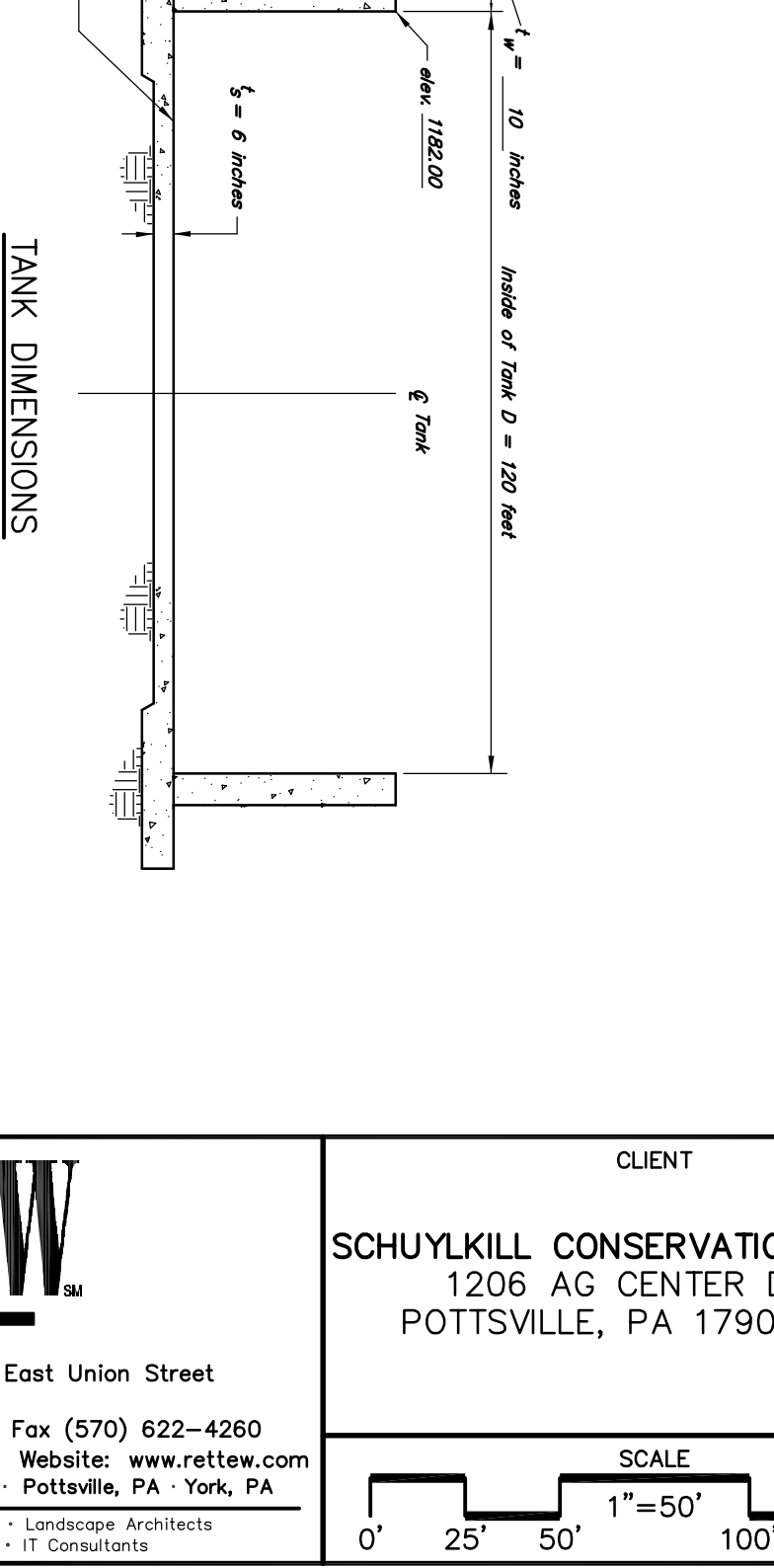
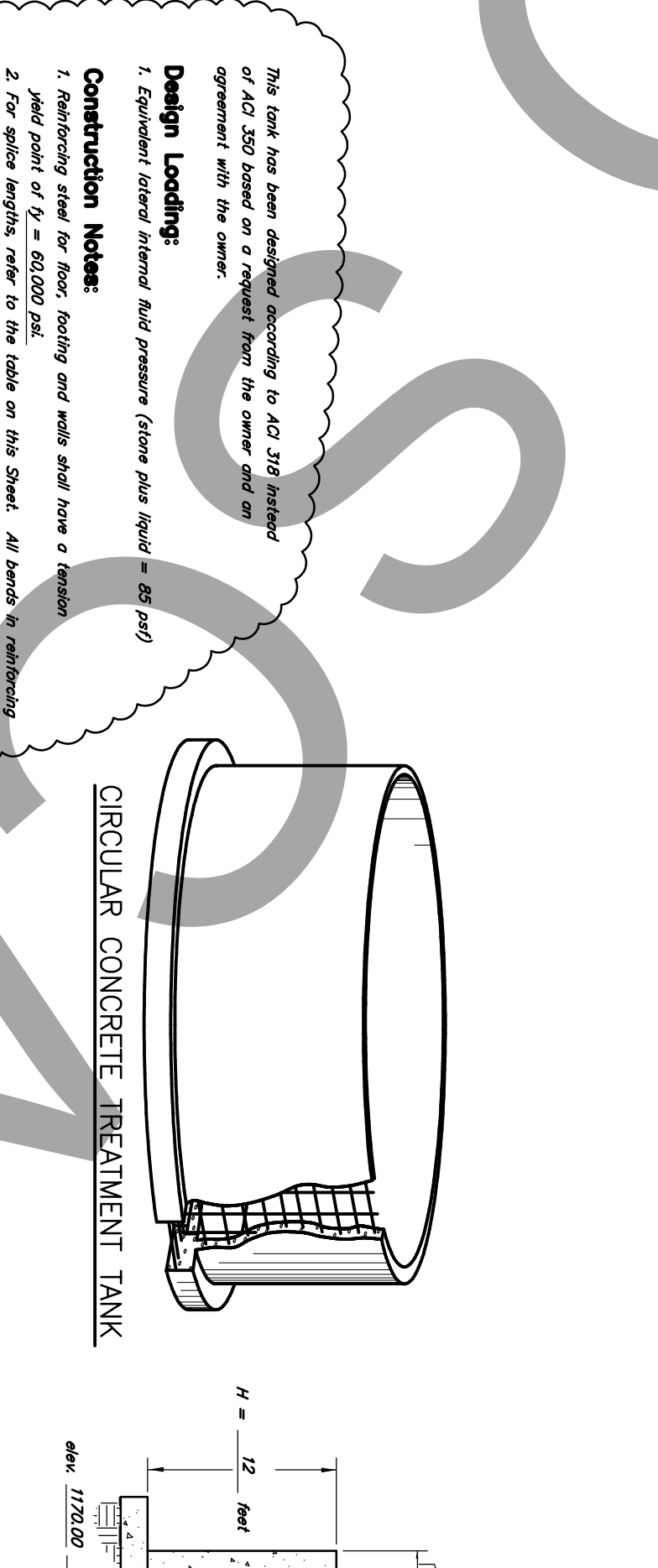
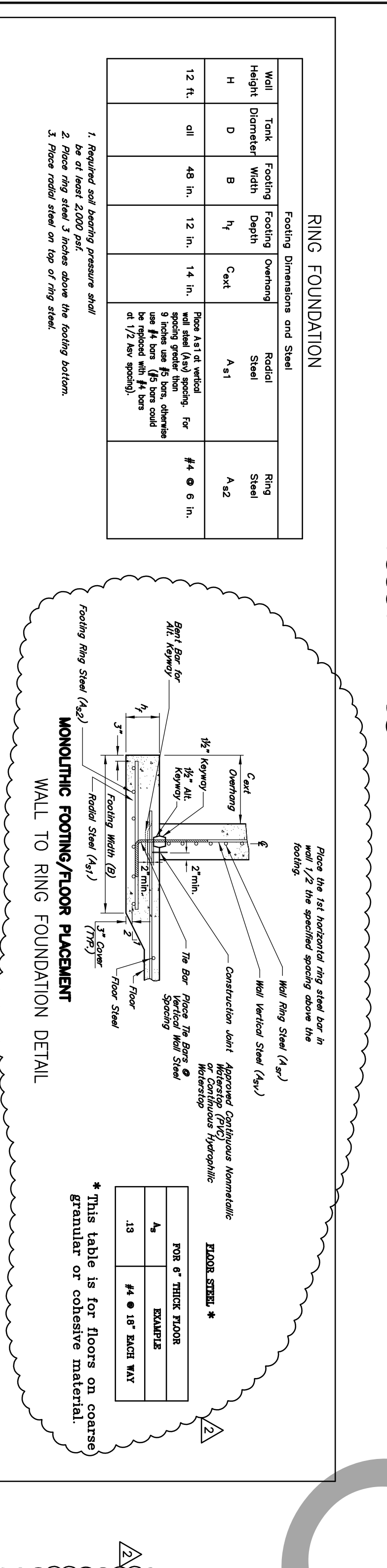


TABLE 1: RING FOUNDATION

Wall Height	Footing Width	Footing Depth	Footing Opening	Footing Steel
12 ft.	48 in.	12 in.	14 in.	4 #4 @ 6 in.

TABLE 2: BAR DIMENSIONS

Bar Size	#4	#5
Vertical Length	28 in.	29 in.
Horizontal Length	8 in.	11 in.
Min. Bar Spacing	1-1/2 in.	1-7/8 in.
Max. Bar Spacing	34 in.	40 in.

TABLE 3: SPICE LENGTHS FOR ALL BARS

Bar Size	Min. Splice Length
#4	25 inches
#5	31 inches
#6	37 inches

STORMTECH LLC (STORMTECH) REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S SYSTEM INSTALLATION INSTRUCTIONS FROM THE BEGINNING OF THE PROJECT.

OUR TECHNICAL SERVICES DEPARTMENT OFFERS TECHNICAL SUPPORT TO CONTRACTORS THROUGHOUT THE PROJECT. CONTRACTORS SHOULD CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND PROVIDE THE NECESSARY INFORMATION TO ASSIST WITH THE INSTALLATION. REQUIREMENTS BEFORE BEGINNING THE SYSTEMS CONSTRUCTION, CALL 1-888-892-2884 TO SPEAK TO A MEMBER OF OUR TECHNICAL SERVICES DEPARTMENT OR VISIT WWW.STORMTECH.COM FOR SYSTEM INSTALLATION INSTRUCTIONS.

STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVEMENT, ETC.) MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE. FOR RUTTING FROM VEHICLES MAY OCCUR, MINIMUM COVER IS 24 INCHES. MAXIMUM COVER IS 36 INCHES. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER POLYMER CONCRETE BEARING CAPACITIES TO StormTech, LLC, 646 S. W. 22ND AVENUE, MIAMI, FL 33135.

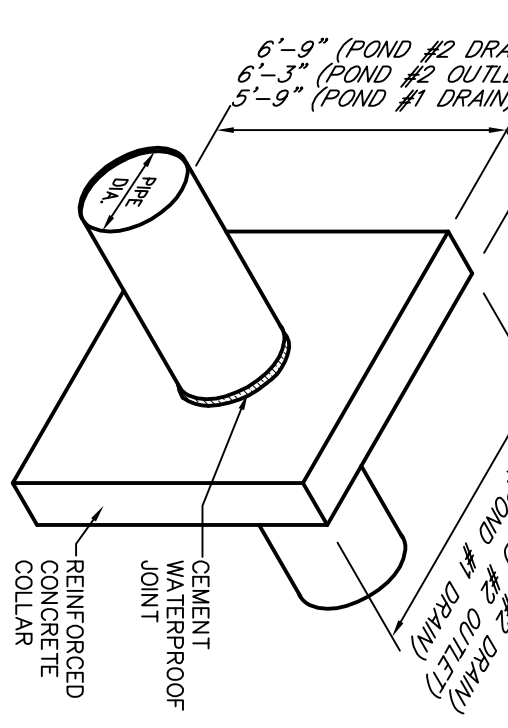
ASPHALT M288 CLASS 2 NON-WOVEN GEOTEXTILE FILTER FABRIC MUST BE USED AS INDICATED IN THE PROJECT PLANS.

STORMTECH GENERAL NOTES

- GENERAL.
 - STORMTECH CHAMBERS ARE DESIGNED TO CONTROL STORMWATER RUNOFF. AS A SUBSURFACE RETENTION SYSTEM, STORMTECH CHAMBERS RETAIN AND ALLOW A SUBSURFACE DETENTION SYSTEM, STORMTECH'S POLYMER CONCRETE CHAMBER, TO STORE AND RELEASE WATER TO THE STREET.
 - CHAMBER PARAMETERS.
 - POLYMER CONCRETE IS MANUFACTURED BY POLYMER CONCRETE INDUSTRIES THROUGH HIGHER TEMPERATURES EXPERIENCED DURING INSTALLATION AND SERVICE.
 - THE NOMINAL CHAMBER DIMENSIONS OF THE CHAMBER SHALL BE 18 INCHES LONG, 18 INCHES WIDE AND 9 INCHES HIGH. THE NOMINAL CHAMBER DIMENSIONS OF THE STORMTECH SC-740 CHAMBER SHALL BE 36 INCHES LONG, 36 INCHES WIDE AND 9 INCHES HIGH. THE INSTALLATION LENGTH OF A JOINED CHAMBER SHALL BE 86.4 INCHES.
 - THE CHAMBER SHALL HAVE A CONTINUOUSLY CURVED DESIGN TOP SURFACE.
 - THE CHAMBER SHALL INCORPORATE AN OVERLAPPING JOINT SYSTEM. THE OVERLAPPING JOINT SYSTEM SHALL BE TRIMMED TO SHORTEN ITS OVERALL LENGTH.
 - THE NOMINAL STORAGE VOLUME OF A JOINED STORMTECH SC-740 CHAMBER SHALL BE 7.9 CUBIC FEET. THE NOMINAL STORAGE VOLUME OF A JOINED STORMTECH SC-740 CHAMBER SHALL BE 7.9 CUBIC FEET OF CRUSHED ANGULAR STONE WITH AN OVERLAPPING JOINT SYSTEM. THE NOMINAL STORAGE VOLUME OF AN INSTALLED CHAMBER SHALL BE 7.9 CUBIC FEET OF CRUSHED ANGULAR STONE WITH AN OVERLAPPING JOINT SYSTEM. THE NOMINAL STORAGE VOLUME OF AN INSTALLED CHAMBER SHALL BE 7.9 CUBIC FEET OF CRUSHED ANGULAR STONE WITH AN ASSUMED JOINT PENOSULT. THIS EQUATES TO 13 CUBIC FEET OF STORMTECH POLYMER CONCRETE.
 - THE CHAMBER SHALL HAVE RIBBY REINFORCING CORNERS CONFORMANCE OF WATER.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILL OVER THE CHAMBER MUST FOLLOW STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT THE CONTRACTOR'S RESPONSIBILITY FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE CHAMBER. STORMTECH'S REQUIREMENTS FOR TRAFFIC AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMTECH CHAMBER SYSTEM FROM EROSION AND SEDIMENT LOCAL CODES AND DESIGN ENGINEERS SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CHAMBER PRODUCT WARRANTY FOR FULL DETAILS. VISIT WWW.STORMTECH.COM.
- THE CHAMBER SHALL HAVE TWO RECESSED WEAR SURFACES. THE CHAMBER SHALL HAVE BOTH OF ITS ENDS OPEN TO ALLOW FOR UNIMPEDED HYDRAULIC FLOW AND VISUAL INSPECTIONS DOWN A ROW'S ENTIRE LENGTH.
- THE CHAMBER SHALL HAVE 14 CORROSIONS.
- THE CHAMBER SHALL HAVE A CONCRETE INVERTED FLAT SURFACE ON THE TOP OF THE CHAMBER FOR AN OPTIONAL, NON-SLIP SURFACE ON GRASSY AREAS.
- THE CHAMBER SHALL BE ANALYZED AND DESIGNED BY A LICENSED PROFESSIONAL ENGINEER. DESIGN LOADS SHALL BE THE ASHITO HESH TRUCK. DESIGN LOAD SPECIFICATIONS THROUGHOUT 2001. DESIGN LOAD FOR THE MINIMUM TO MAXIMUM SPECIFIED DEPTH OF FILL.
- THE CHAMBER SHALL BE MANUFACTURED IN AN ISO 9001:2000 CERTIFIED FACILITY.
- END CAP PARAMETERS.
 - POLYMER CONCRETE IS MANUFACTURED BY POLYMER CONCRETE INDUSTRIES THROUGH HIGHER TEMPERATURES EXPERIENCED DURING INSTALLATION AND SERVICE.
 - THE END CAP SHALL BE DESIGNED TO FIT AND ANY GAPPING A CHAMBER THAT HAS ITS LENGTH TRIMMED, RESEMBLING ROWS INTO STORAGE BASINS OF VARIOUS LENGTHS.
 - THE END CAP SHALL HAVE SLOTTED TO ALLOW RAIN WATER TO INLET THE SYSTEM. THE END CAP SHALL HAVE EXCESS STRUCTURAL AREA TO INLET THE SYSTEM.
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 - THE END CAP SHALL BE MANUFACTURED IN AN ISO 9001:2000 CERTIFIED FACILITY.

STORMTECH PRODUCT SPECIFICATIONS

- NOTE:
- CONCRETE COMPRESSIVE STRENGTH - 3,500 P.S.I.
 - REINFORCEMENT SHALL BE #6 W/D#4.0 OR #3 REBAR SPACED 12" EACH WAY, CENTERED WITHIN COLLAR, 3" MIN. COVER.
 - DETAIL FOR EROSION CONTROL.

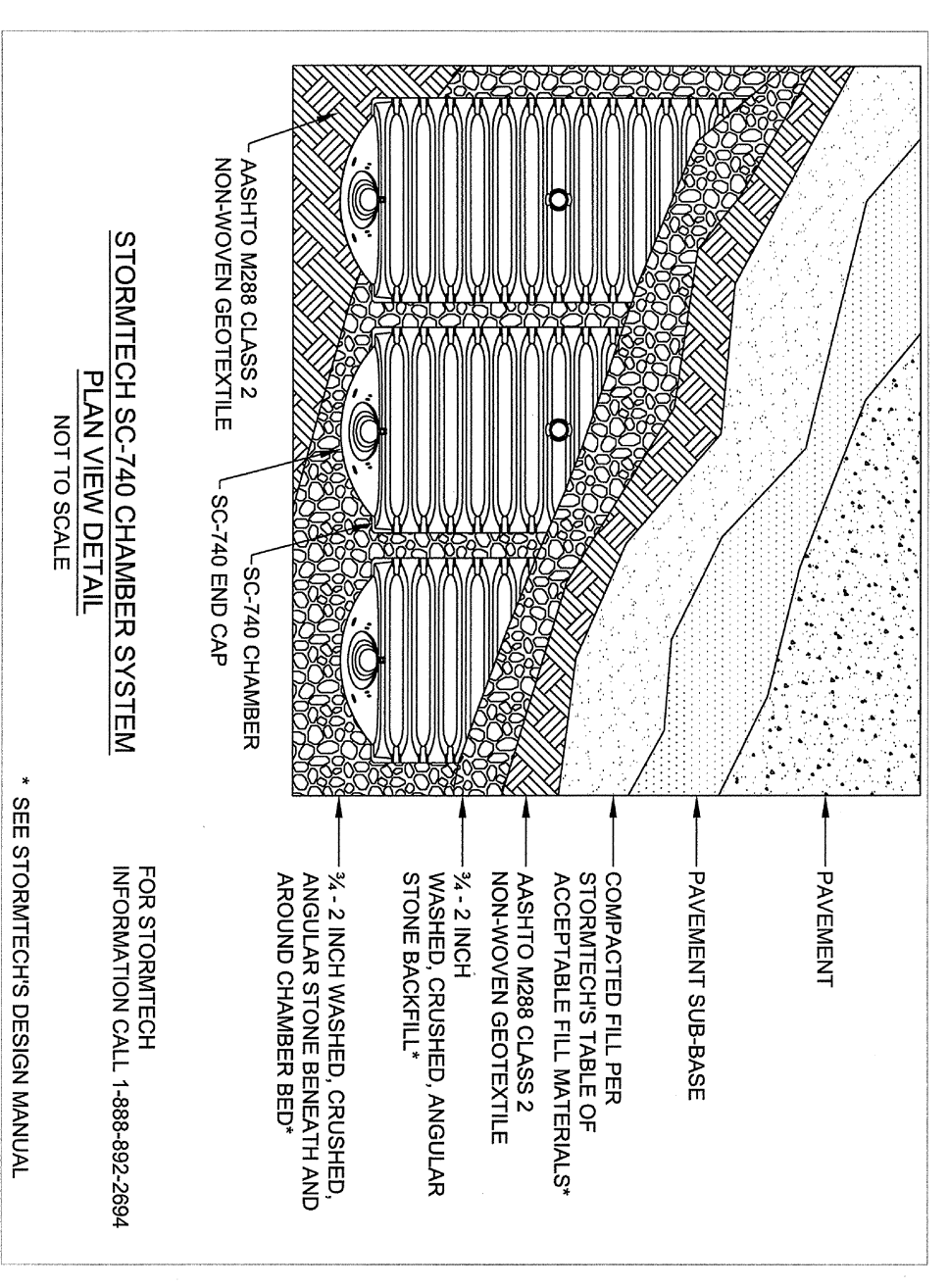
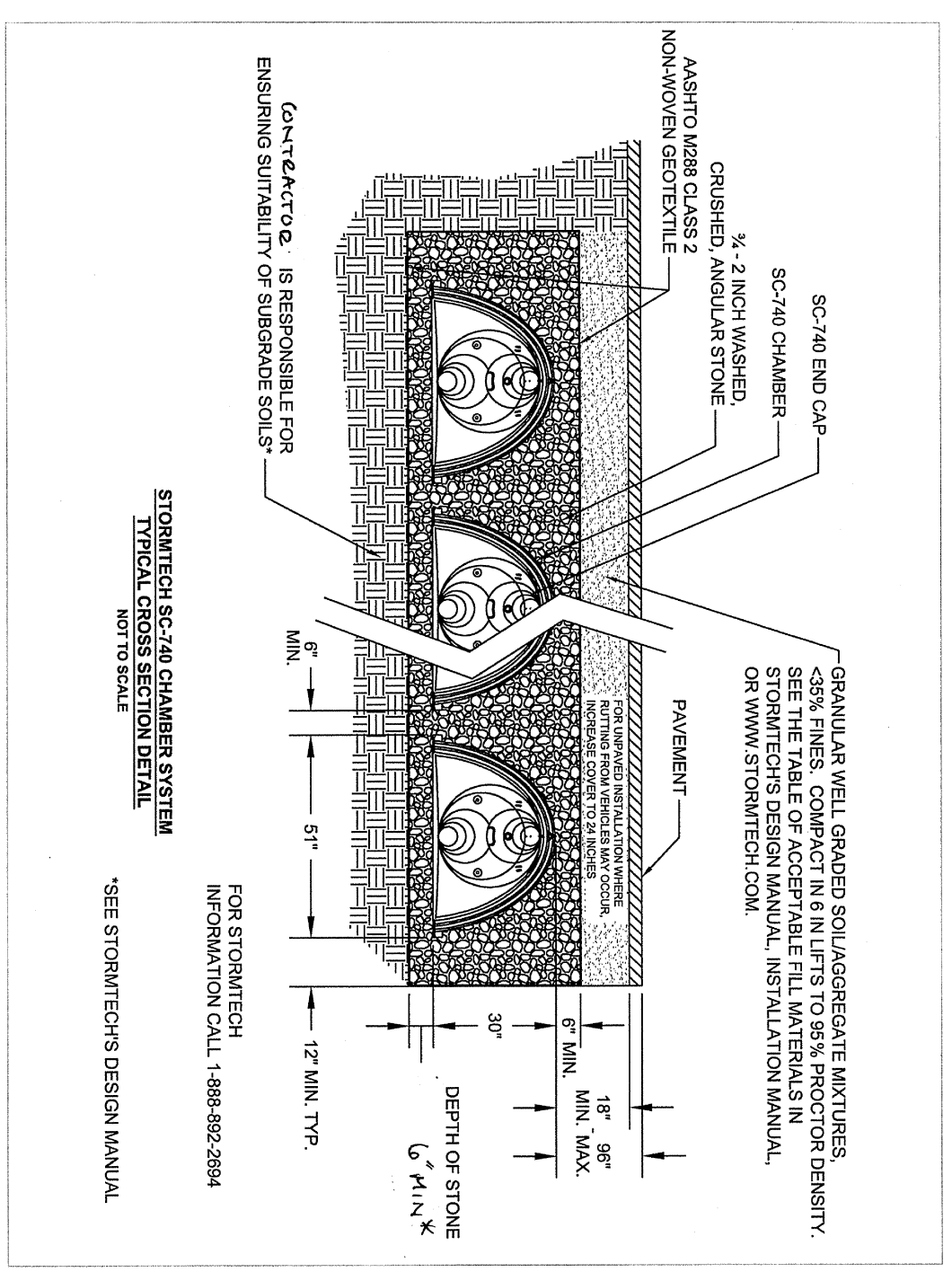
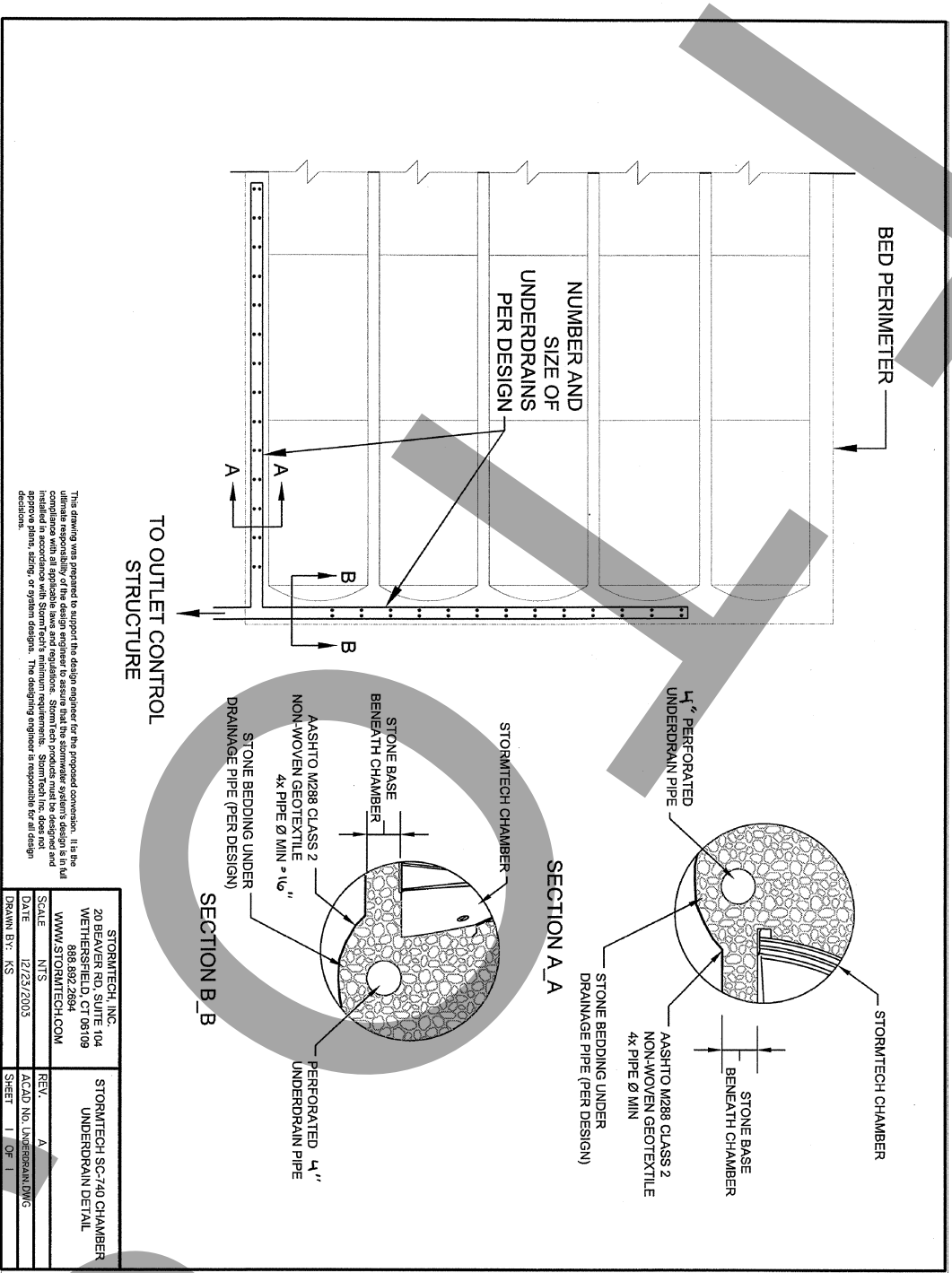
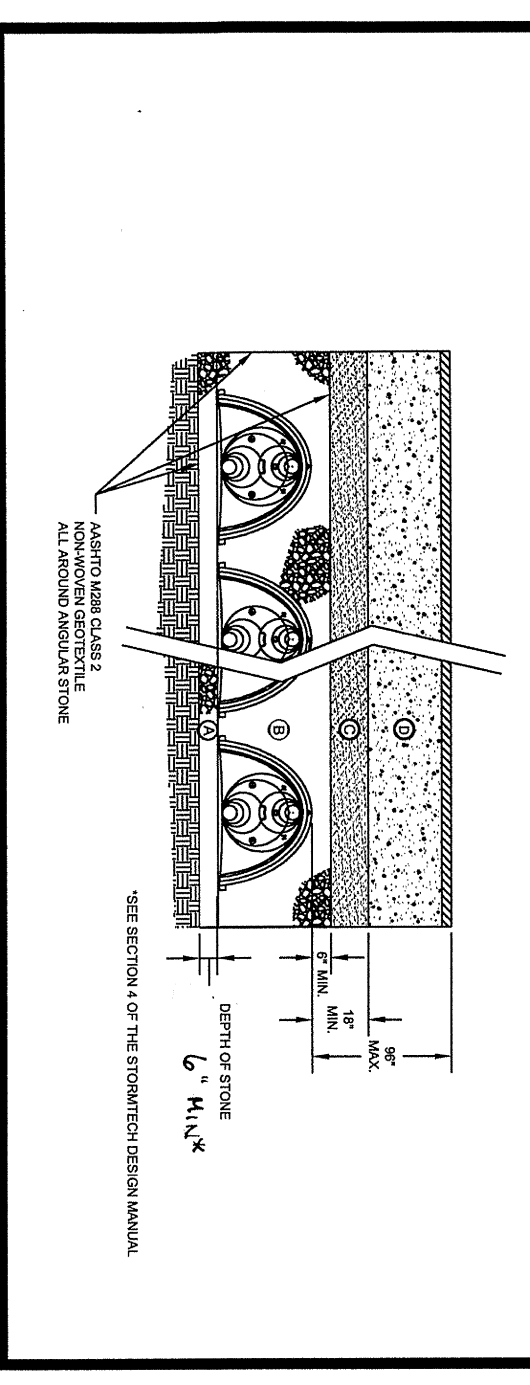


ANTI-SEEP COLLAR

NOT TO SCALE

ACCEPTABLE FILL MATERIALS

STORMTECH SC-310 AND SC-740 CHAMBER SYSTEMS	DESCRIPTION	MINIMUM	MAXIMUM	REMARKS
1. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
2. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
3. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
4. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
5. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
6. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
7. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
8. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
9. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.
10. FILL MATERIAL OVER THE CHAMBER	GRAVEL	18"	36"	MINIMUM COVER IS 18 INCHES INCLUDING PAVEMENT, STORMTECH CHAMBER, AND STORMTECH POLYMER CONCRETE.

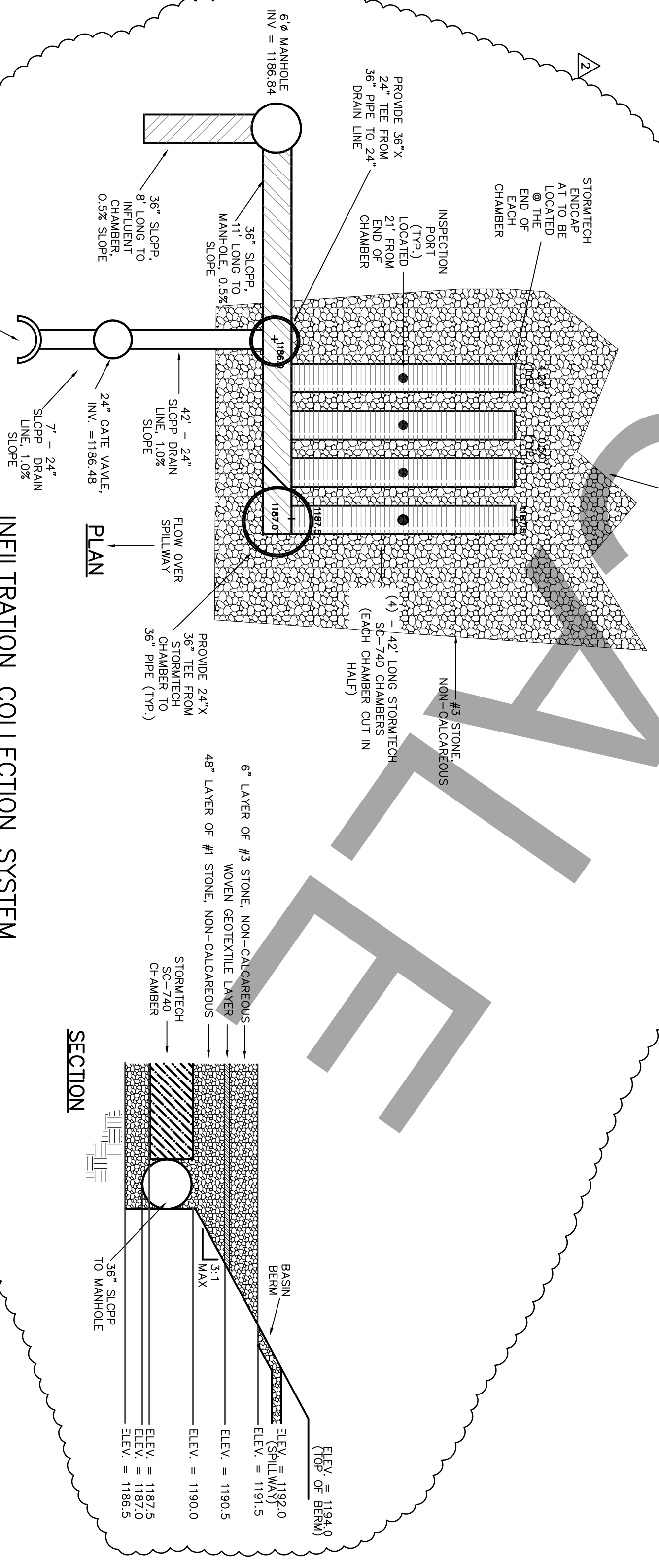


INFILTRATION COLLECTION SYSTEM CONSTRUCTION SEQUENCE

- PERFORM GRADING AND GRUBBING AS NEEDED, TROUGH GRADING AND EXPANSION IN THE EXISTING CHANNEL TO PREPARE FOR STREAM BY-PASS AND INFILTRATION COLLECTION SYSTEM CONSTRUCTION.
- INSTALL TEMPORARY STREAM CROSSING PIPES IN THE EXISTING CHANNEL TO MAINTAIN FLOW OF WATER THROUGH THE CHANNEL DURING CONSTRUCTION.
- CONSTRUCT THE TEMPORARY STREAM BY-PASS, STABILIZE BY-PASS CHANNEL, AS WELL AS THE EXISTING CHANNEL, WITH STORMTECH CHAMBERS.
- REMOVE EXCESS SOIL MATERIAL TO SOFT EARTH IN THE AREA OF THE INFILTRATION COLLECTION SYSTEM BEAM.
- INSTALL THE IMPERVIOUS CLAY CORE OF THE INFILTRATION COLLECTION SYSTEM BEAM.
- CONSTRUCT THE INFILTRATION COLLECTION SYSTEM BEAM STARTING ON THE ACCESS SIDE OF THE CHANNEL AND MOVING TOWARDS THE OPPOSITE SIDE OF THE CHANNEL.
- INSTALL THE INFILTRATION COLLECTION SYSTEM PIPING, APPURTENANCES AND ASSOCIATED GRAVEL.
- CONSTRUCT THE INFILTRANT FLOW CHAMBER AS SPECIFIED.
- COMPLETE CONSTRUCTION OF THE INFILTRATION COLLECTION SYSTEM WITH THE PLACEMENT OF R-6 RIBBAP PROTECTION.
- REDIRECT STREAM FLOW INTO THE INFILTRATION COLLECTION SYSTEM FROM THE BY-PASS CHANNEL.
- REMOVE THE BY-PASS CHANNEL AND RESTORE THE AREA TO EXISTING GRADE.
- SEED, MULCH AND MAINTAIN ANY REMAINING EXPOSED AREAS WITH REMANENT GRASS SEEDING.

ANTI-SEEP COLLAR

NOT TO SCALE



INFILTRATION COLLECTION SYSTEM

NOT TO SCALE

NO.	DATE	REVISION
4	4/4/05	REVISED PER SUNOCO'S 4/4/05 COMMENTS
3	3/24/05	REVISED PER PADEP NPDES PERMIT COMMENTS
2	3/17/05	REVISED TO REFLECT ADDENDUMS #1, #2, & #3
1	2/25/05	REVISIONS FOR NPDES PERMIT SUBMISSION
		NO. DATE REVISION

FOR RETTEW ASSOCIATES BY:

MANAGER: CLAYTON BUBECK, P.E.

DESIGN BY: PGD

CHKD BY: CEB

DRAWN BY: MJS/PGD

CHKD BY: G. WAGNER

FIELDBOOK NO. DATA COLLECTOR

FOR STORMTECH INFORMATION CALL: 1-888-892-2884

SEE STORMTECH'S DESIGN MANUAL

CLIENT

SCHUYLKILL CONSERVATION DISTRICT

1206 AG CENTER DRIVE

POTTSVILLE, PA 17901-9733

SCALE

0' 25' 50' 100' 150'

RETTEW

RETTEW Associates, Inc.

Union Street Station, 101 East Union Street

Pottsville, PA 17901

Phone (570) 622-8222 • Fax (570) 622-4260

Email: rettew@rettew.com Website: www.rettew.com

Bethlehem, PA • Camp Hill, PA • Pottsville, PA • York, PA

Engineers • Planners • Surveyors • Landscape Architects

Environmental Consultants • IT Consultants

ABANDONED MINE DRAINAGE REMEDIATION FOR

AUDENREID MINE TUNNEL

DETAILS SHEET

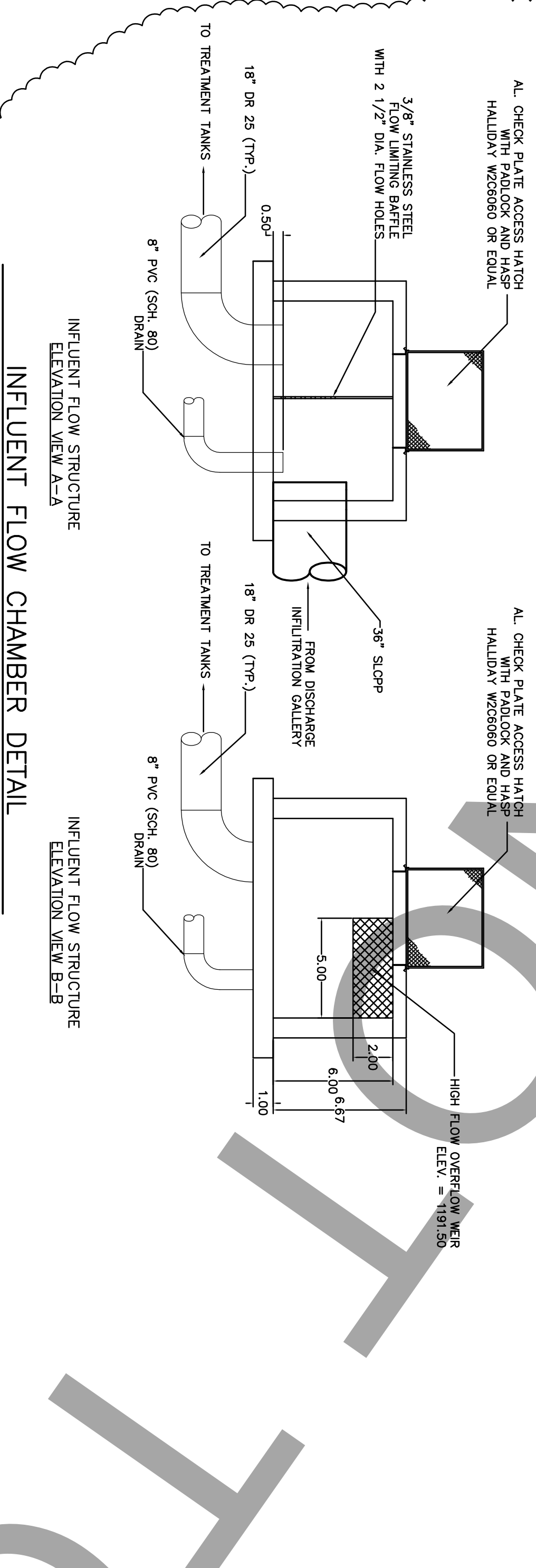
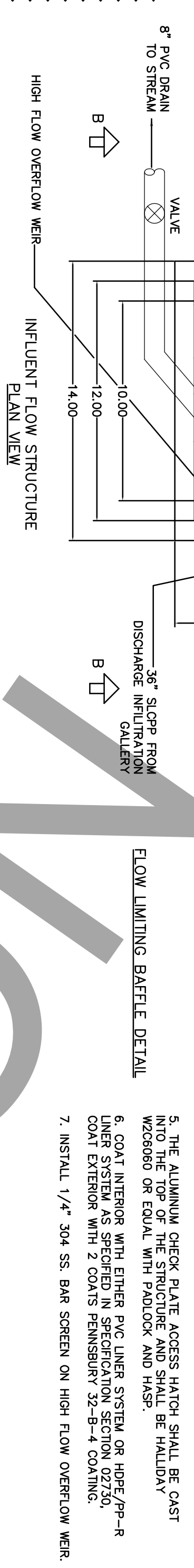
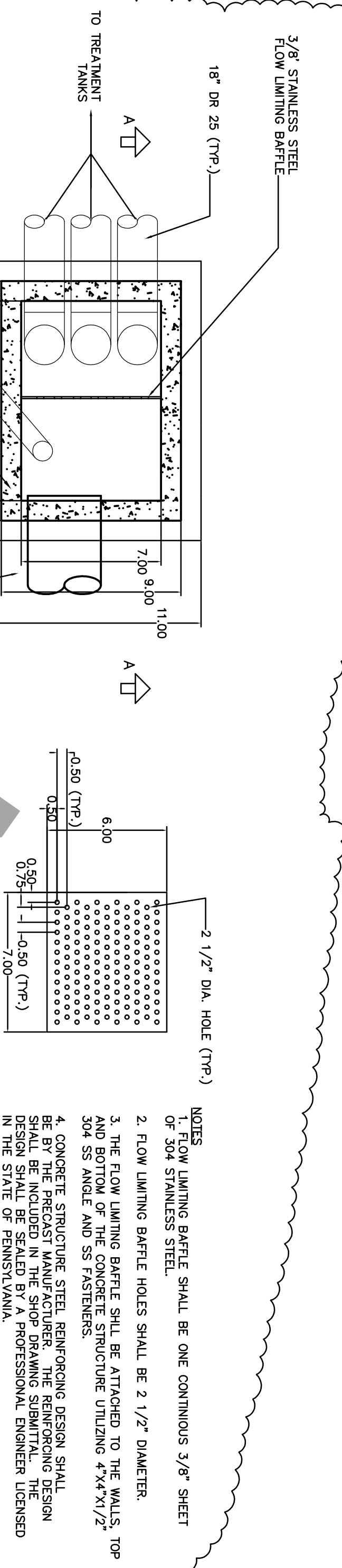
EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

DATE: DEC. 20, 2004

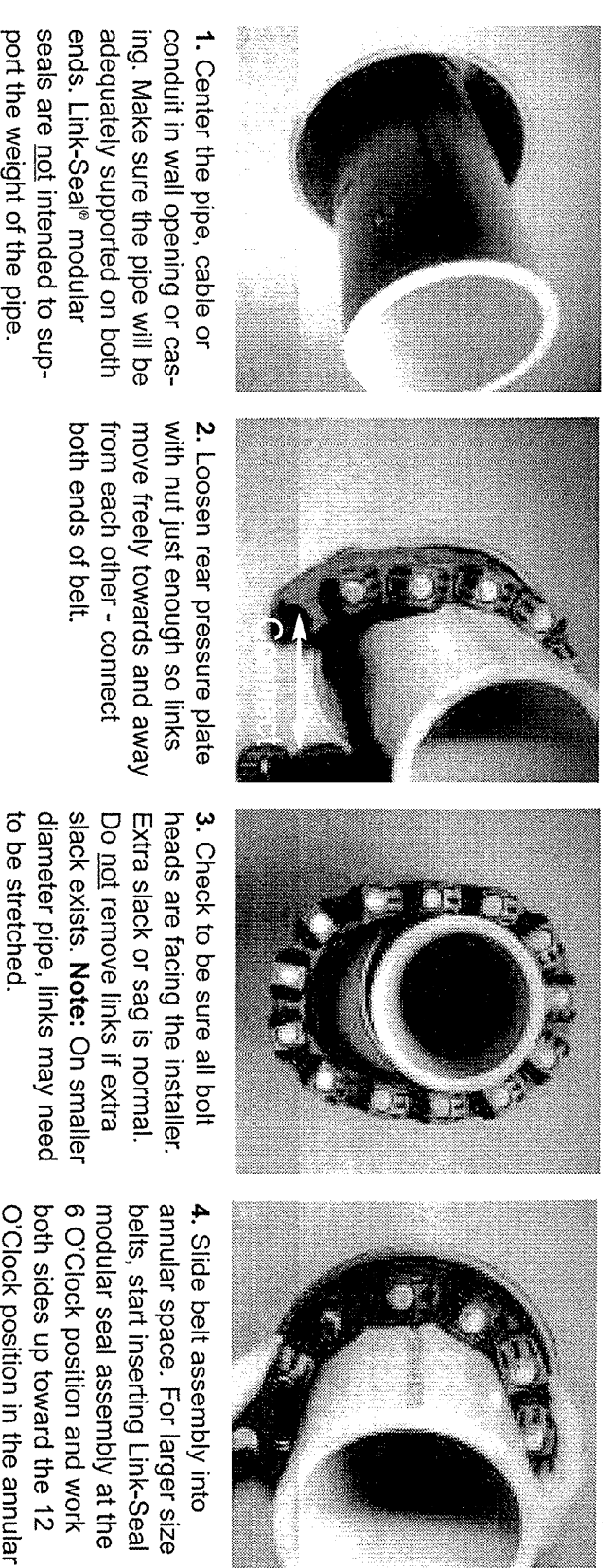
SHEET NO. 10 OF 12

DWG. NO. 04-03883-001

ISSUED FOR CONSTRUCTION

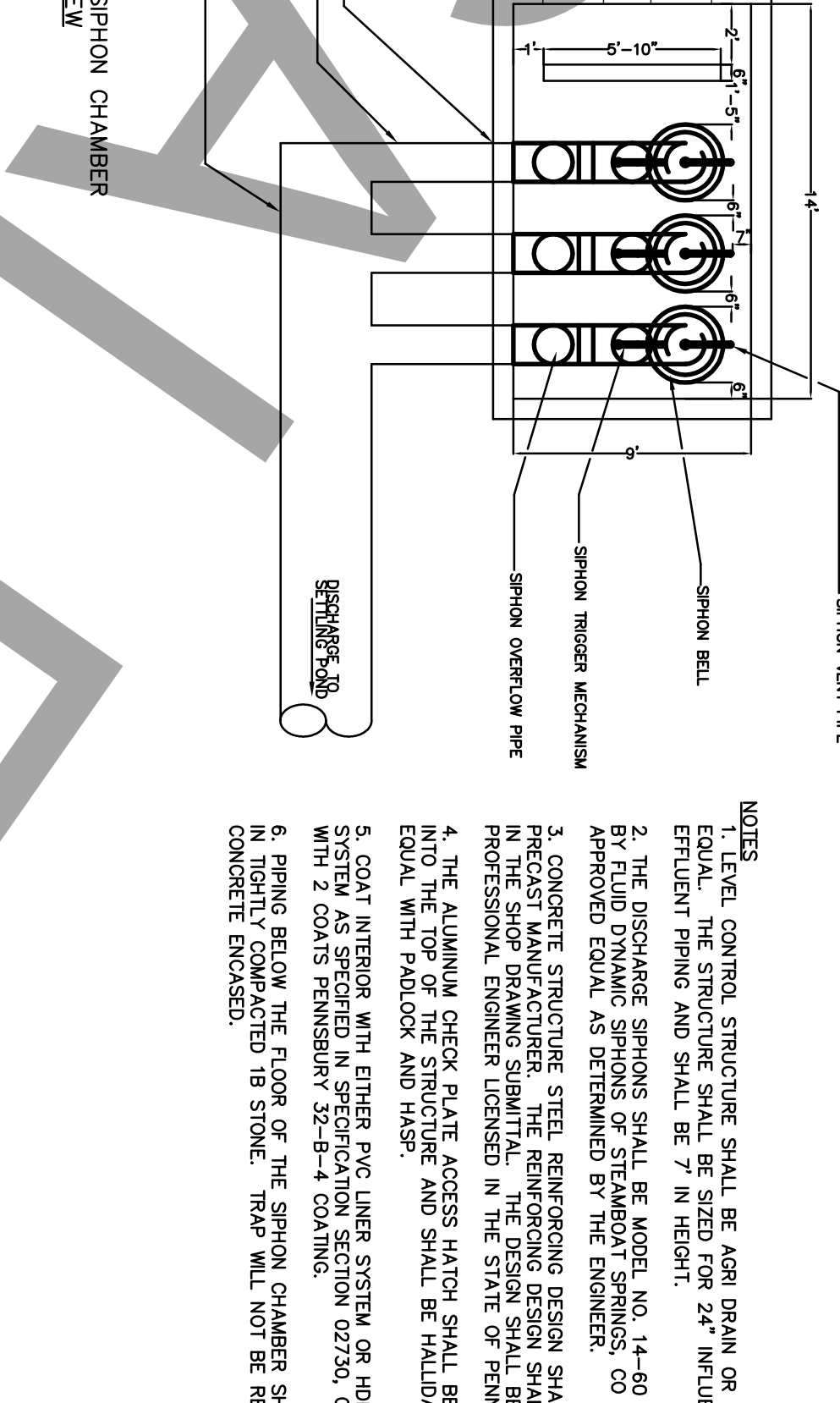
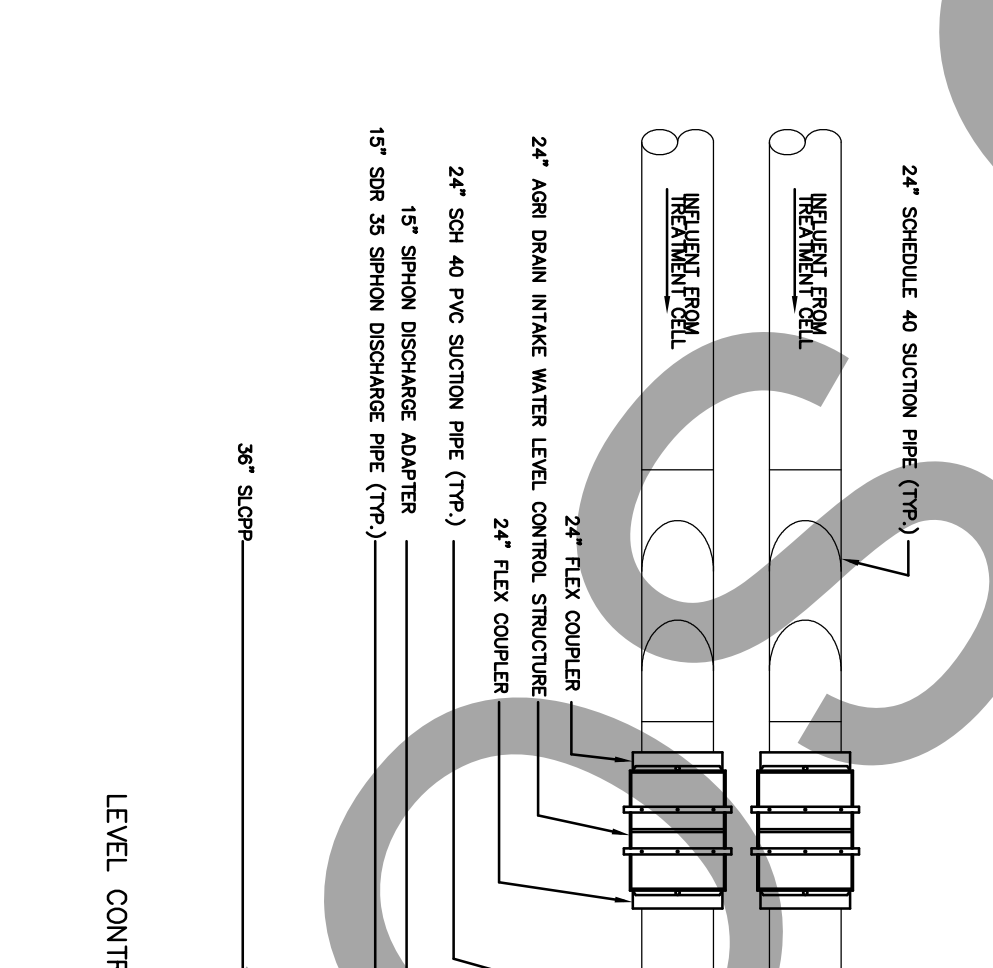
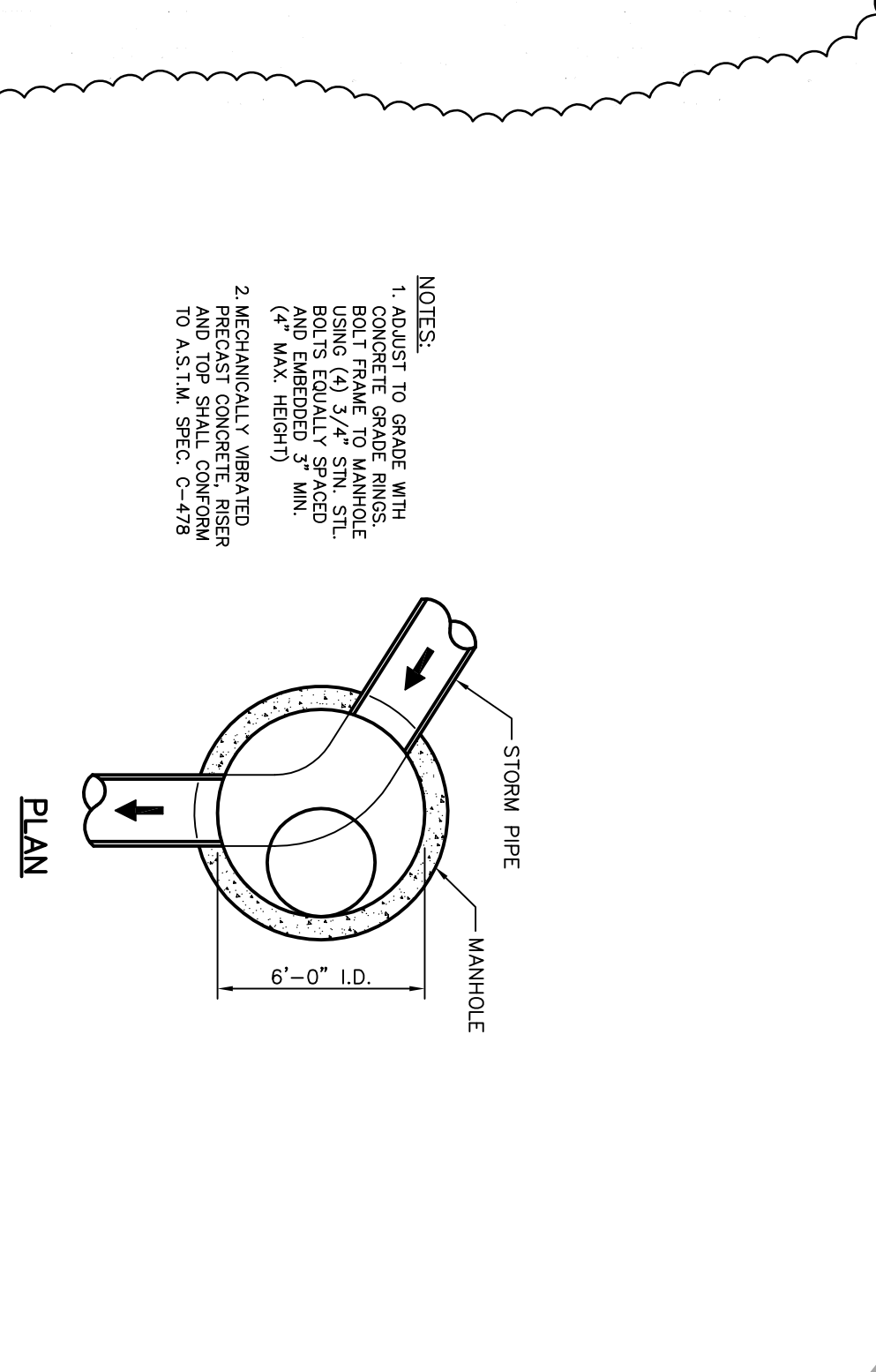
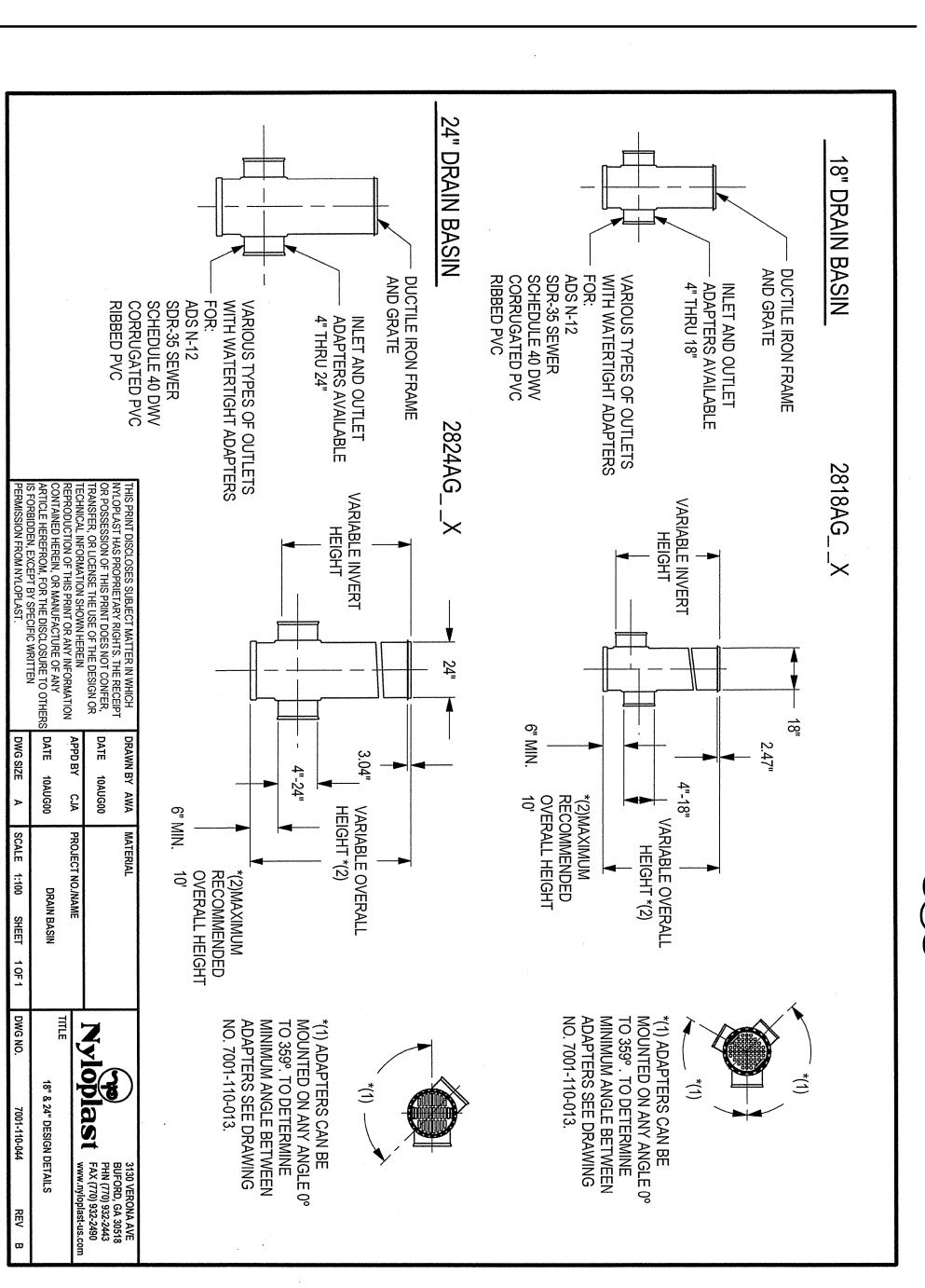
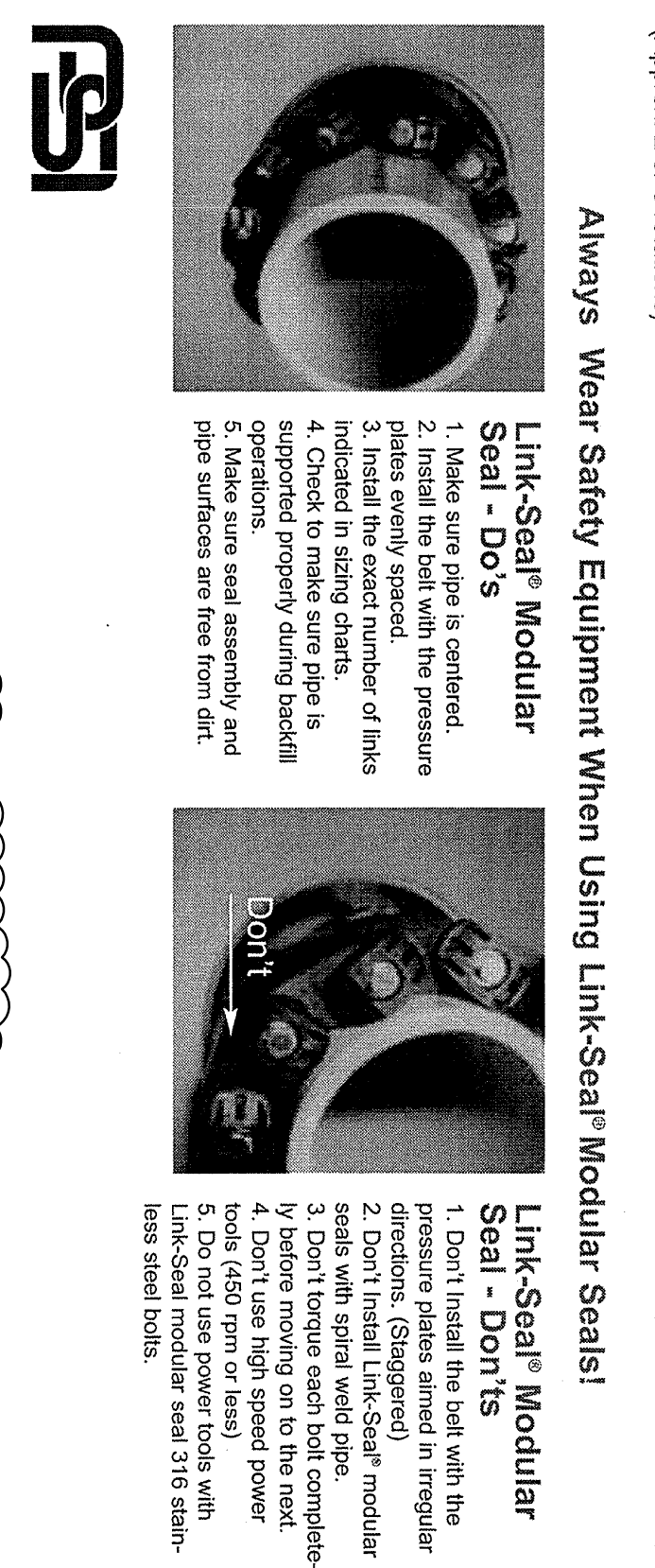


- LINK-SEAL NOTE:**
1. CONTRACTOR SHALL PROVIDE AND INSTALL LINK-SEALS WITH SLEEVES AT ALL PIPE PENETRATIONS. SLEEVES SHALL BE PRECAST INTO WET WALL AND VALVE PIT WALL (NO COOLD JOINTS), TO BECOME AN INTEGRAL PART OF THE CONCRETE. SLOTTING SLEEVES IN PLACE WITH COOLD JOINTS WILL NOT BE ACCEPTABLE.
 2. AN ALTERNATIVE TO THE PRECAST SLEEVE IS FOR THE CONTRACTOR TO CORE DRILL ALL PIPE PENETRATIONS IN THE CORRECT LOCATION AND INSTALL LINK-SEALS.
 3. CONTRACTOR SHALL DETERMINE CORRECT SIZE OF ALL LINK-SEALS.
 4. ALL SIZES OF LINK-SEALS SHALL SHOW AND CALL OUT LOCATION OF PRECAST SLEEVES OR CORE DRILLING.

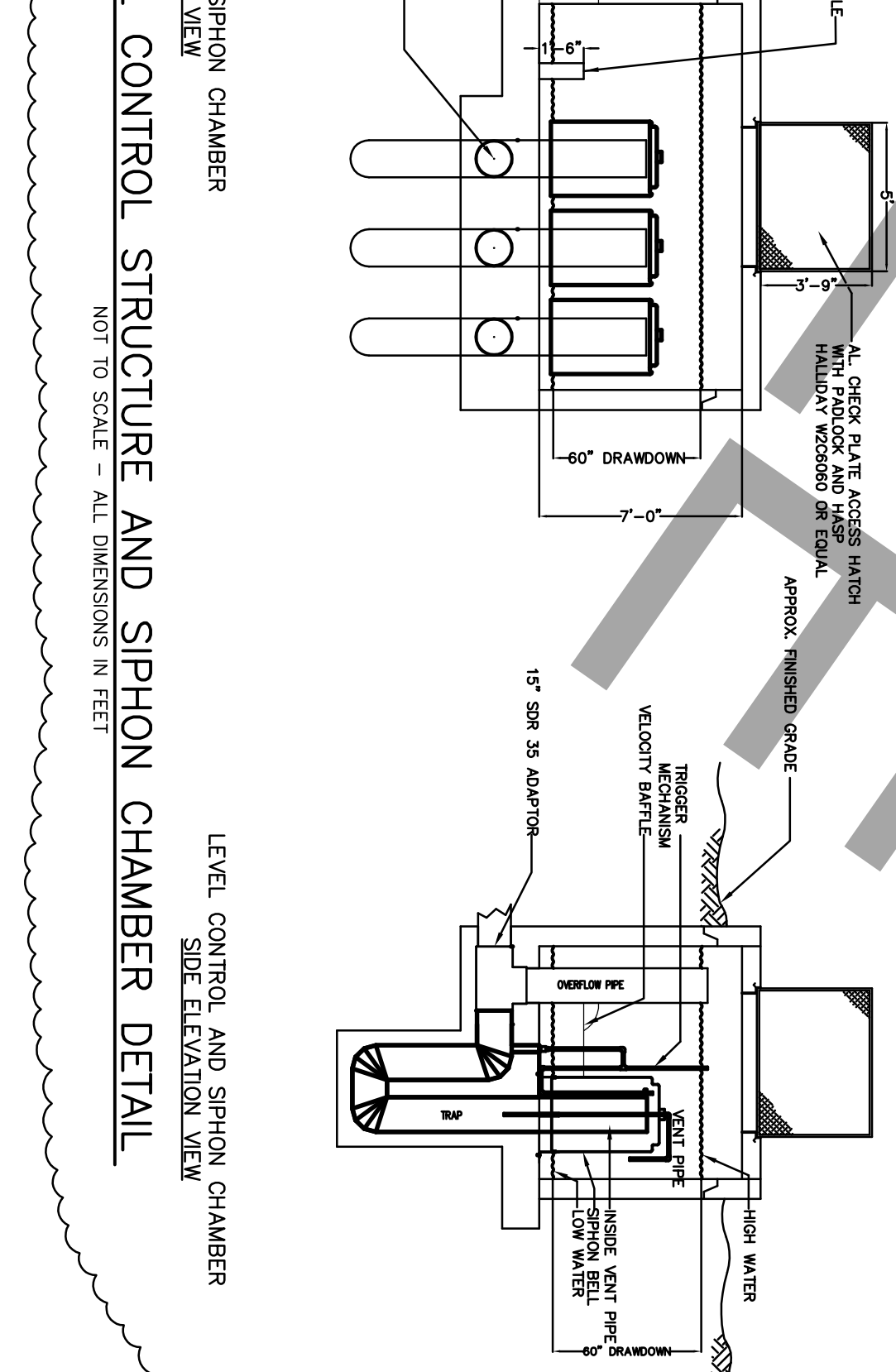
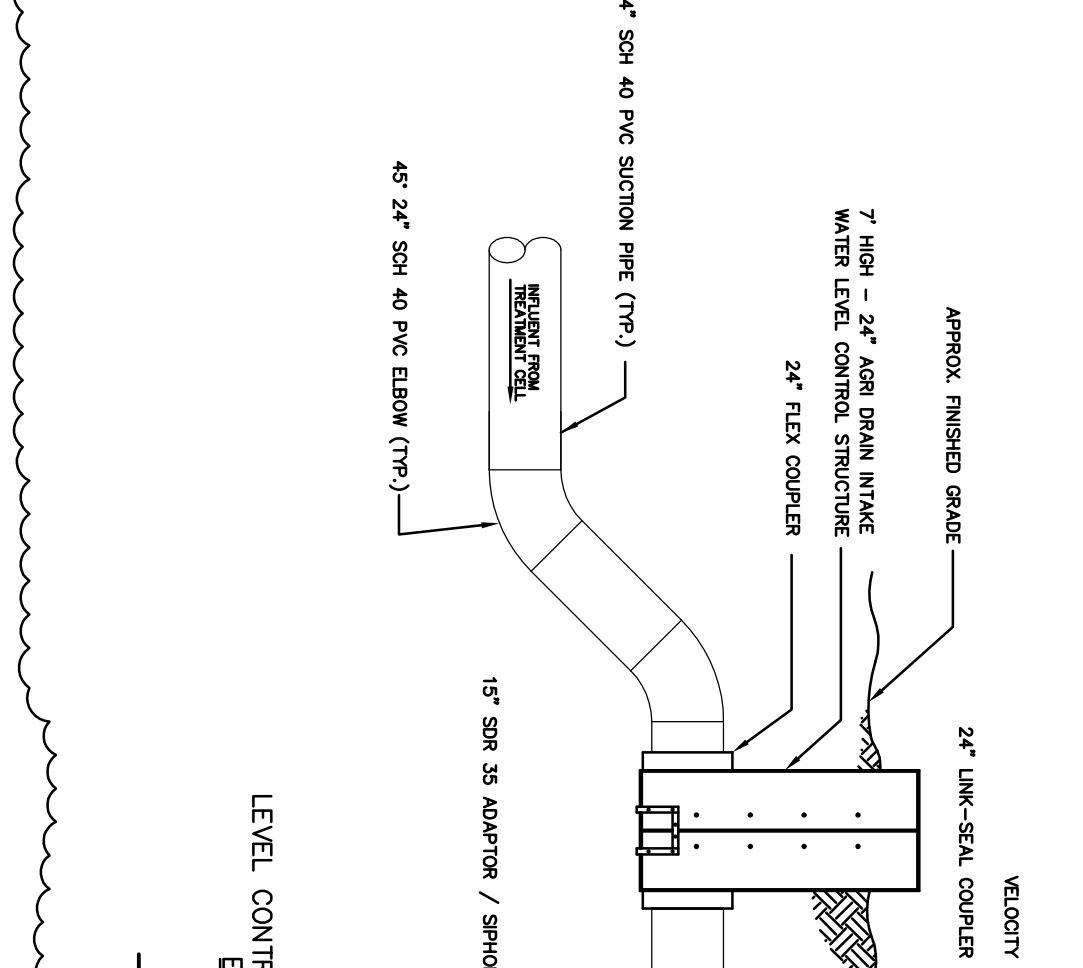
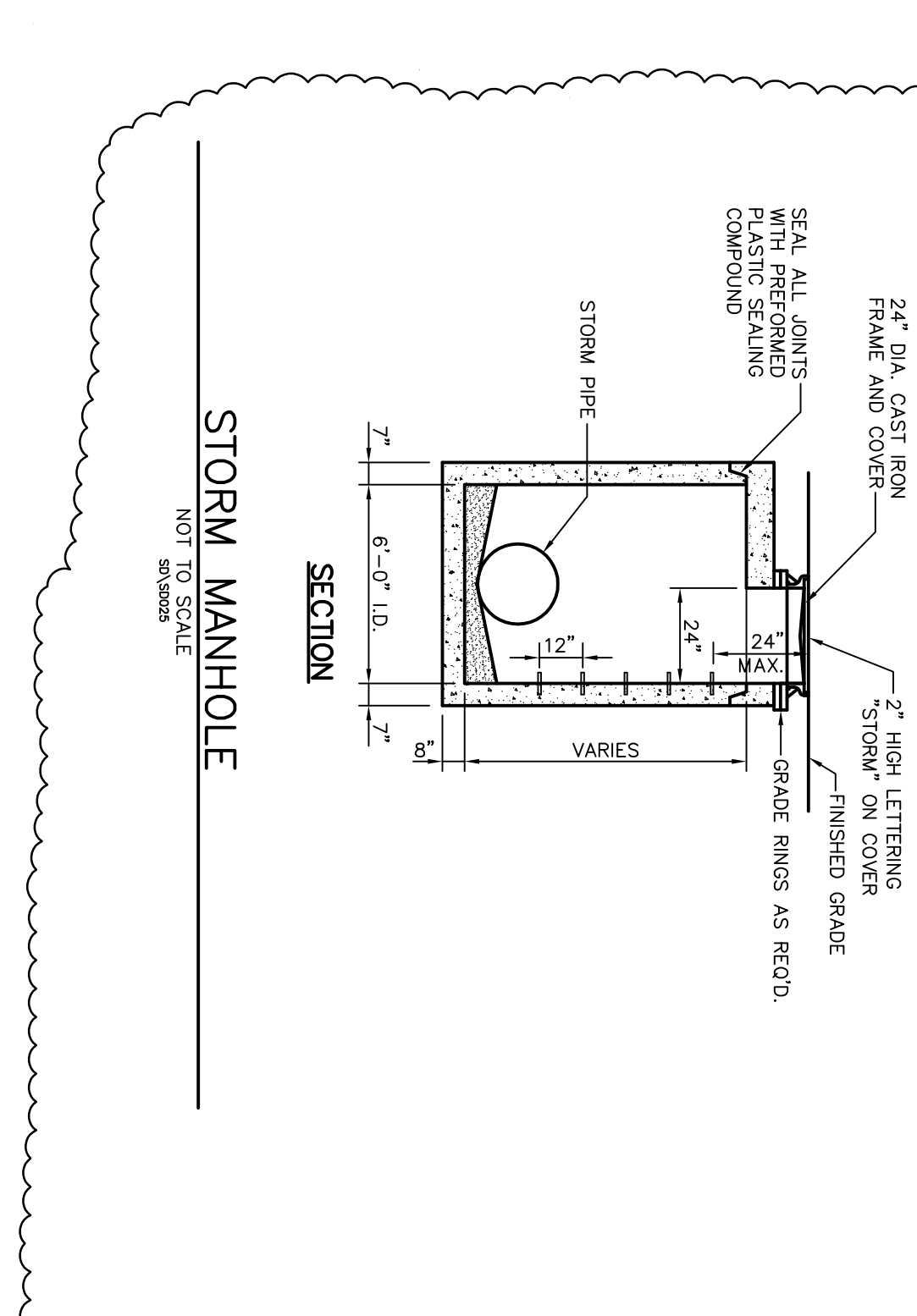
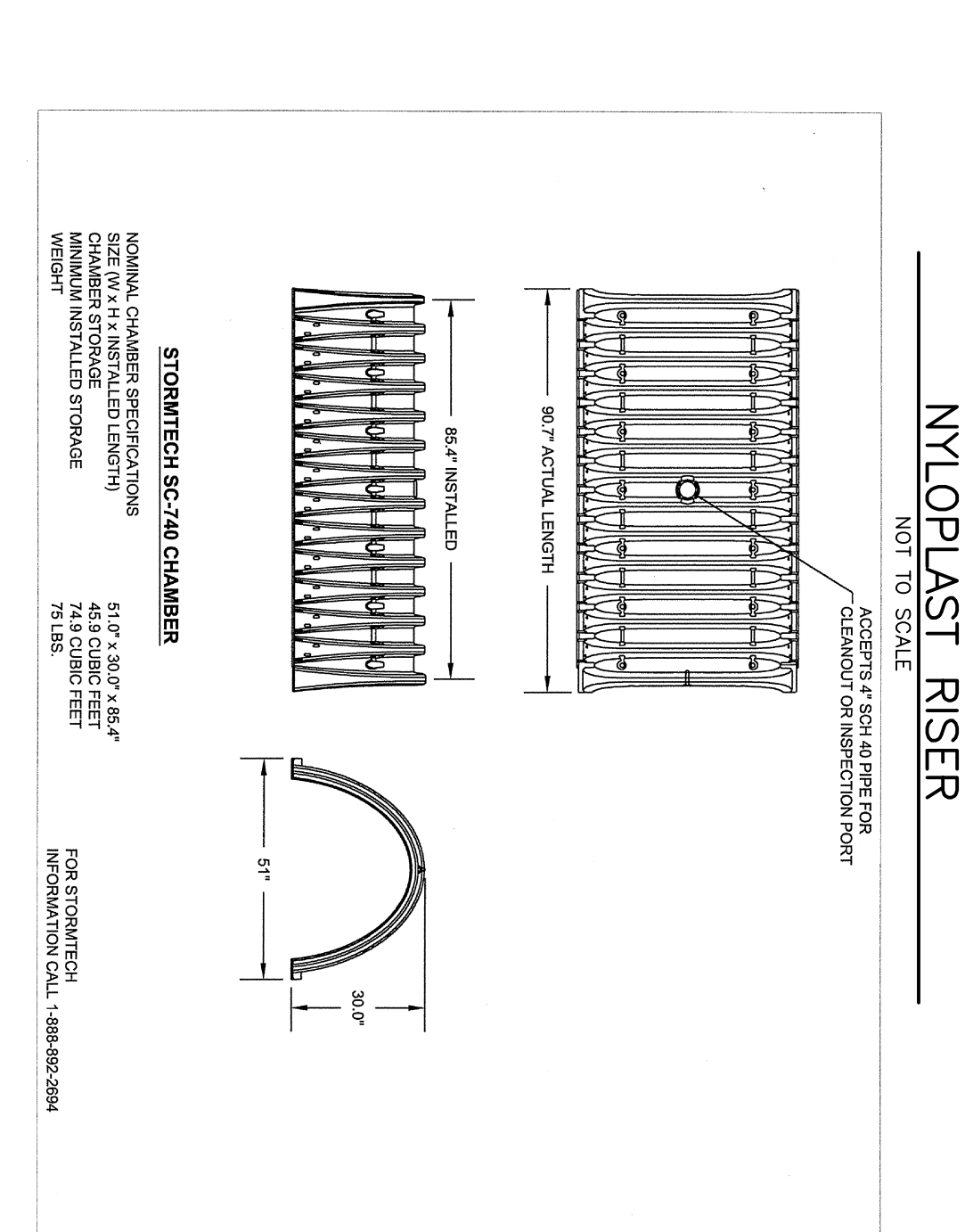


- Installation Techniques - Link-Seal® Modular Seals**
1. Center the pipe, cable or conduit in wall opening or casing. Make sure the pipe will be adequately supported on both ends of bell. Link-Seal® modular seals are not intended to support the weight of the pipe.
 2. Loosen rear pressure plate with nut, just enough so links move freely towards and away from each other - connect both ends of bell.
 3. Check to be sure all bolt heads are facing the installer. Extra slack or sag is normal. Do not remove links if extra slack exists. Note: On smaller diameter pipe, links may need to be stretched.
 4. Slide bolt assembly into annular space. For larger size bells, start inserting Link-Seal modular seal assembly at the 6 O'Clock position and work both sides up toward the 12 O'Clock position in the annular space.
- Link-Seal®**
- Installation Notes:** The Link-Seal® modular seal bolt heads are usually recessed below the wall opening or the edge of casing pipe and therefore a socket or offset hand tool. Use 5/16" hex or #6 screwdriver for LS-200. 1/2" hex requires 3/8" drive socket wrench. 9/16" and 3/4" hex requires 1/2" drive socket wrench. (Tools not provided.)
- Always Wear Safety Equipment When Installing Link-Seal® Modular Seals!**
- Always Wear Safety Equipment When Using Link-Seal® Modular Seals!**
- Link-Seal® Modular Seal - DO's**
1. Make sure pipe is centered.
 2. Install the bell with the pressure plates evenly spaced.
 3. Install the exact number of links.
 4. Contact in string chains.
 5. Support the seal properly during backfill operations.
 6. Make sure seal assembly and pipe surfaces are free from dirt.
- Link-Seal® Modular Seal - DON'Ts**
1. Don't install the bell with the pressure plates aimed in irregular directions. (Slopped)
 2. Don't install Link-Seal® modular seals into a wall opening that is not supported properly during backfill operations.
 3. Don't use high speed tools.
 4. Don't use high speed tools (450 rpm or less).
 5. Do not use power tools with Link-Seal® seal of 9/8" and less steel bolts.

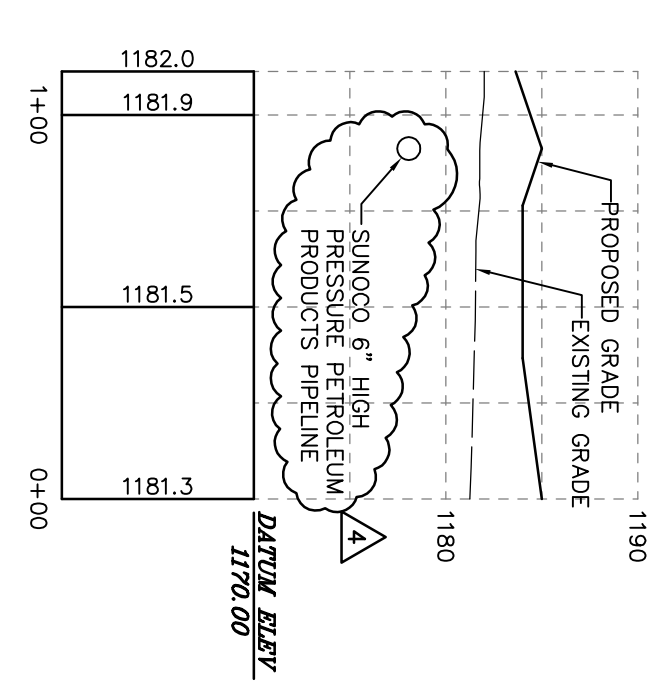
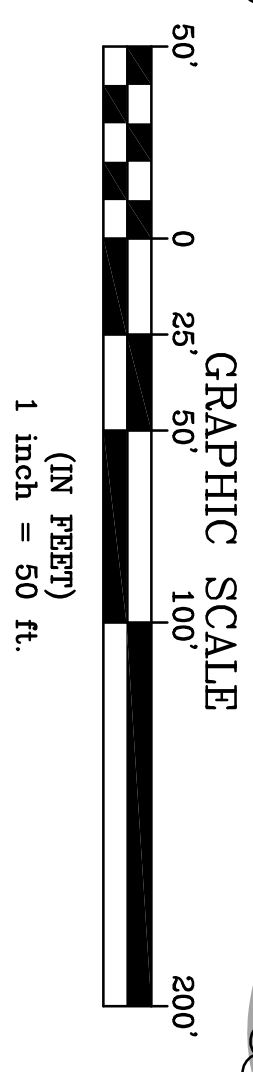
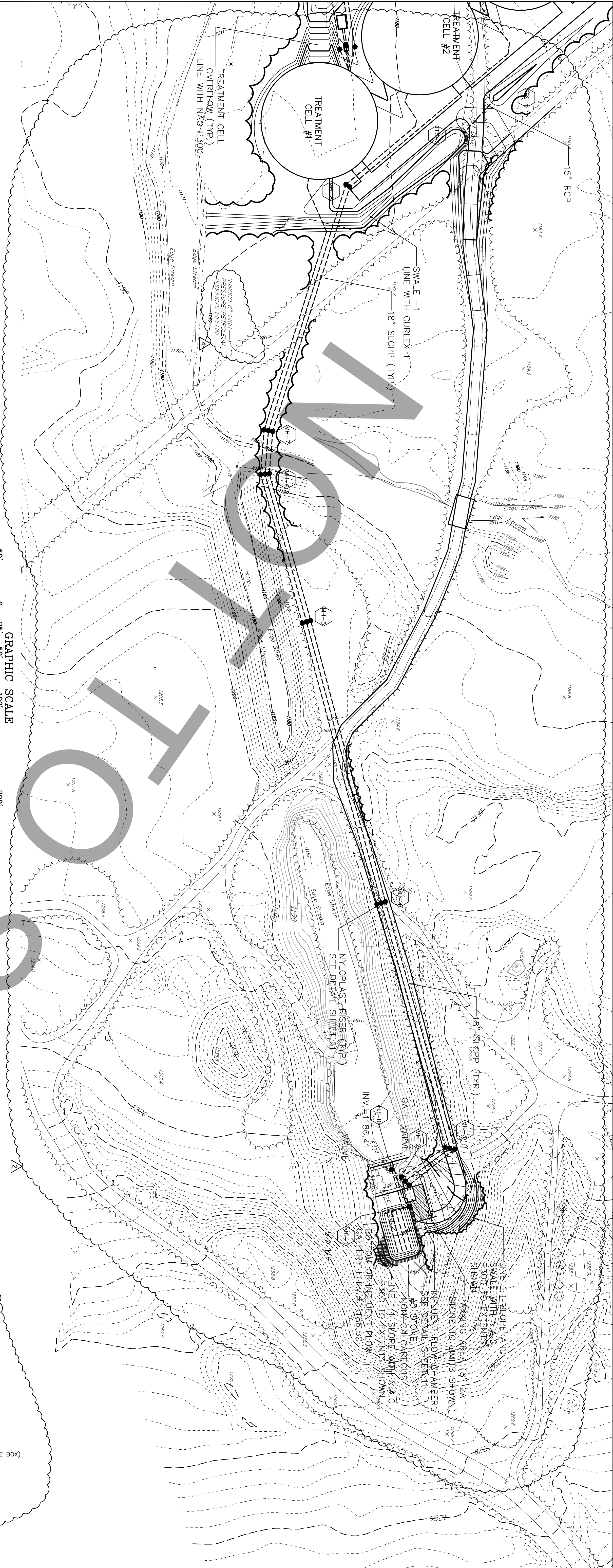
- NOTES:**
1. FLOW LIMITING BARFLE HOLES SHALL BE ONE CONTINUOUS 3/8" SHEET OF 304 STAINLESS STEEL.
 2. FLOW LIMITING BARFLE SHALL BE ATTACHED TO THE WALLS, TOP AND BOTTOM OF THE CONCRETE STRUCTURE UTILIZING 4"x4"x1/2" 304 SS ANGLE AND SS FASTENERS.
 3. THE FLOW LIMITING BARFLE SHALL BE REINFORCING DESIGN SHALL BE BY THE PRECAST MANUFACTURER. THE REINFORCING DESIGN SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF PENNSYLVANIA.
 4. THE ALUMINUM CHECK PLATE ACCESS HATCH SHALL BE CAST INTO THE TOP OF THE STRUCTURE AND SHALL BE HALIDAY WZ60800 OR EQUAL WITH PADLOCK AND HASP.
 5. COAT INTERIOR WITH EITHER PVC LINER SYSTEM OR HDPE/PP-R LINER SYSTEM AS SPECIFIED IN SPECIFICATION SECTION 02730.
 6. COAT EXTERIOR WITH 2 COATS PENNSBURT 32-B-4 COATING.
 7. INSTALL 1/4" 304 SS BAR SCREEN ON HIGH FLOW OVERFLOW WER.



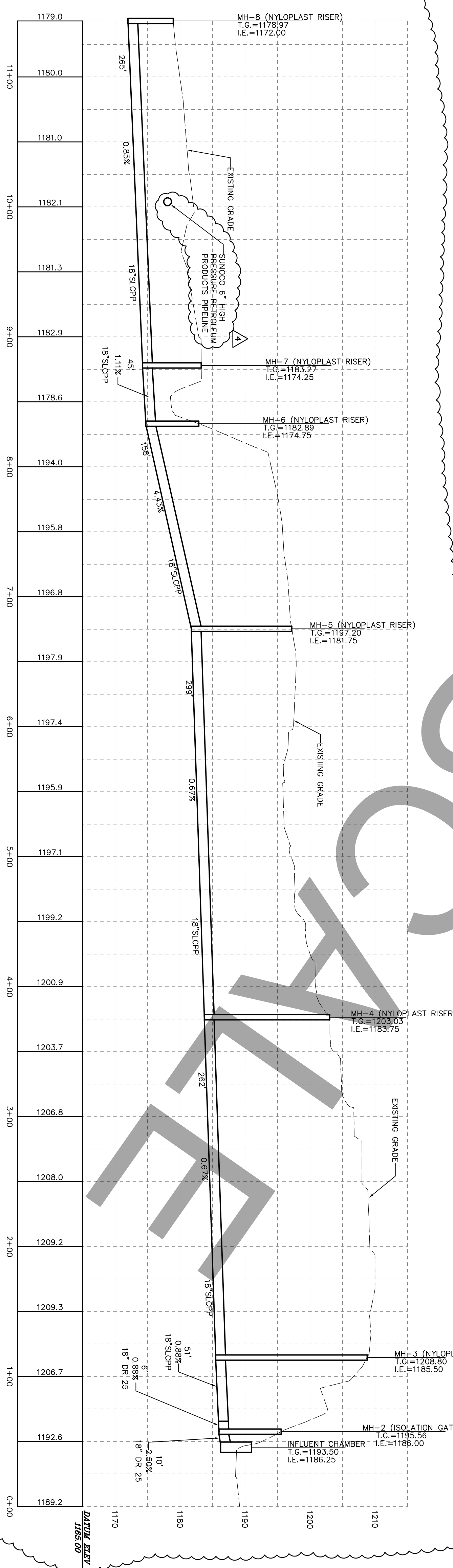
- NOTES:**
1. LEVEL CONTROL STRUCTURE SHALL BE AGRY DRAIN OR APPROVED EQUAL. THE STRUCTURE SHALL BE SIZED FOR 24" INFLUENT AND EFFLUENT PIPING AND SHALL BE 7' IN HEIGHT.
 2. THE DISCHARGE SIPHONS OF STANDARD SIPHONS, CO OR AN APPROVED EQUAL, AS DEFINED BY THE ENGINEER.
 3. CONCRETE STRUCTURE STEEL REINFORCING DESIGN SHALL BE BY THE PRECAST MANUFACTURER. THE REINFORCING DESIGN SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF PENNSYLVANIA.
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 6. FINISH BELOW THE FLOOR OF THE SIPHON CHAMBER SHALL BE BEDDED WITH 1/2" STONE. TRAP WILL NOT BE REQUIRED TO BE CONCRETE ENCASED.



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PROFILE: ACCESS ROAD
SCALE: HORIZ. 1"=50', VERT. 1"=10'



PROFILE: PIPE RUN
SCALE: HORIZ. 1"=50', VERT. 1"=10'

ISSUED FOR CONSTRUCTION

ABANDONED MINE DRAINAGE REMEDIATION FOR
AUDENREID MINE TUNNEL
PROFILES SHEET
EAST UNION TOWNSHIP SCHUYLKILL COUNTY, PA

RETTEW
RETTEW Associates, Inc.
Union Street Station, 101 East Union Street
Pottsville, PA 17901
Phone (570) 622-8222 · Fax (570) 622-4260
Email: rettew@rettew.com Website: www.rettew.com
Bethlehem, PA · Camp Hill, PA · Pottsville, PA · York, PA
Engineers · Planners · Surveyors · Landscape Architects
Environmental Consultants · IT Consultants

CLIENT
SCHUYLKILL CONSERVATION DISTRICT
1206 AG CENTER DRIVE
POTTSVILLE, PA 17901-9733

SCALE
AS NOTED

MANAGER: CLAYTON BUBECK, P.E.
DESIGN BY: PGD
CHKD BY: CEB
DRAWING REFERENCE:
N:\04\04-03883-001\CAD\E\04-03883-001-Profile2.dwg
XREFS:

SURV. CHIEF:
FIELDBOOK NO. DATA COLLECTOR
CHKD BY: G. WAGNER

FOR RETTEW ASSOCIATES BY:

CLAYTON E. BUBECK

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