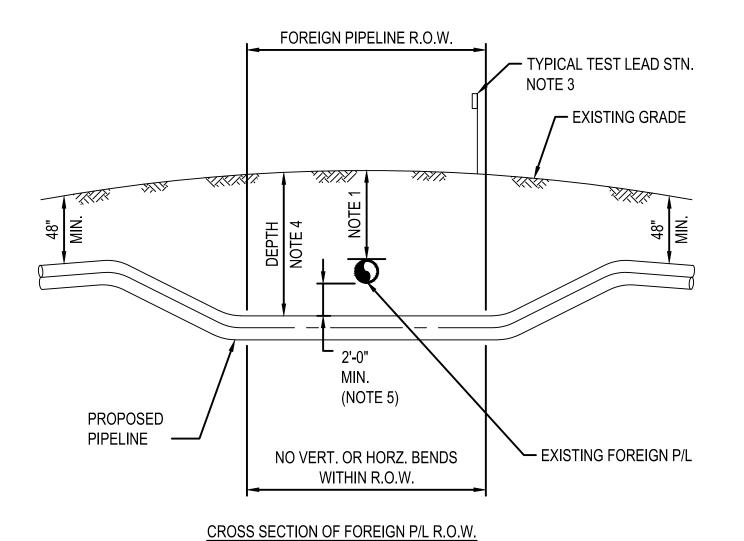


- 1. GEOTEXTILE PIPELINE WEIGHT TO BE 5000 POUNDS FOR 24" PIPE AND 660 POUNDS FOR 8" PIPE.
- 2. GEOTEXTILE PIPELINE WEIGHT TO BE SPACED EVERY 18' FOR 24" PIPE AND 40' FOR 8" PIPE.
- 3. GEOTEXTILE PIPELINE WEIGHT TO BE FILLED WITH SAND OR GRAVEL.
- 4. GEOTEXTILE PIPELINE WEIGHT VENDORS TO BE PIPESAK OR ECOBAG OR APPROVED BY OWNER.

GEOTEXTILE PIPELINE WEIGHT



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SEAL 33142

- 1. FOREIGN PIPELINE LOCATIONS & DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY CAREFULLY EXPOSING BY HAND DIGGING. WHERE WITHIN 24" IN ANY DIRECTION FROM THE PIPELINE.
- 2. OWNER OF FOREIGN PIPELINE(S) SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF EXCAVATION OF CROSSING.
- 3. TEST LEAD STATION TO BE INSTALLED WHERE PRACTICAL AT THE NEAREST FENCE, HEDGE ROW OR FIELD EDGE, AND WHERE READILY ACCESSIBLE. INSTALL COMPANY-SUPPLIED PERMANENT REFERENCE CELL AND EXTEND CELL LEAD TO TEST LEAD STATION.
- 4. DEPTH OF PIPELINE INCLUDING 2'-0" MIN. CLEARANCE SHALL BE MAINTAINED FOR ALL FULL ANGULAR WIDTH OF FOREIGN PIPELINE R.O.W.
- 5. PROPOSED PIPELINE MAY ONLY CROSS ABOVE THE FOREIGN PIPELINE(S) WHERE REQUESTED BY OR APPROVED BY FOREIGN OWNER IN WRITING.

CROSSING FOREIGN PIPELINE

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DATE REVISION(S) DESCRIPTION BY CHK APPD DESCRIPTION **APPROVALS** JXV CEB EPM AREA CODE 02/10/2021 ISSUED FOR AS-BUILT REGIONAL ENGINEER ACCOUNT NUMBER | V8191 PROJECT NUMBER G7UL02PH1 MGR TECH REC & STD DRAWING BY JXV STATION ID PRINCIPAL 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER CHECKER INITIALS | CEB





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SHEET(S) 1 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED PNG -C-043-0001089 0

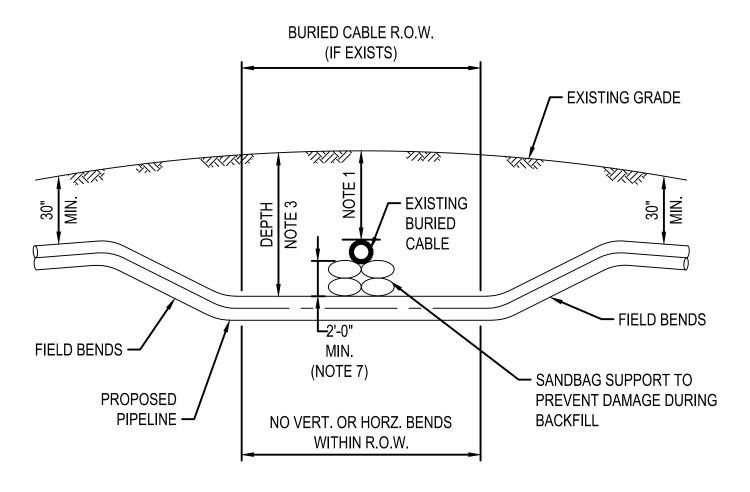
PNG-G-043-0001022

REF. DWG(S)

C\ERLANGER/UL60

- 1. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
- 2. WIDTH SHALL BE INCREASED PROPORTIONAL TO SPACING INCREASE IF REQUIRED.
- 3. SPACING TO BE 21' FOR 24" PIPE AND 33' AND 8" PIPE.
- 4. PIPELINE SUPPORT PILLOWS SHALL BE USED WHEN ROCK IS ENCOUNTERED AT BOTTOM OF TRENCH.

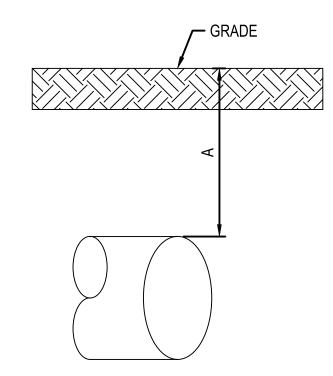
TYPICAL PIPELINE SUPPORT PILLOWS



- 1. BURIED CABLE LOCATIONS & PIPE DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY CAREFULLY EXPOSING BY HAND DIGGING. WHEN WITHIN 24" IN ANY DIRECTION FROM THE PIPELINE.
- 2. OWNER OF BURIED CABLE(S) SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF EXCAVATION OF
- 3. DEPTH OF PIPELINE INCLUDING 2'-0" MIN. CLEARANCE SHALL BE MAINTAINED FOR THE FULL ANGULAR WIDTH OF BURIED CABLE R.O.W.
- 4. PROPOSED PIPELINE MAY ONLY CROSS ABOVE BURIED CABLE(S) WHERE APPROVED IN WRITING BY BURIED CABLE OWNER.
- 5. CONTRACTOR TO SUPPORT EXPOSED CABLE WITH WOOD PLANK OR STRUCTURAL STEEL DURING CONSTRUCTION.
- 6. CONTRACTOR TO UTILIZE CAUTION WITH PLACEMENT OF BACKFILL TO MINIMIZE POSSIBLE DAMAGE TO THE CABLE.

CROSS SECTION OF BURIED CABLE R.O.W.

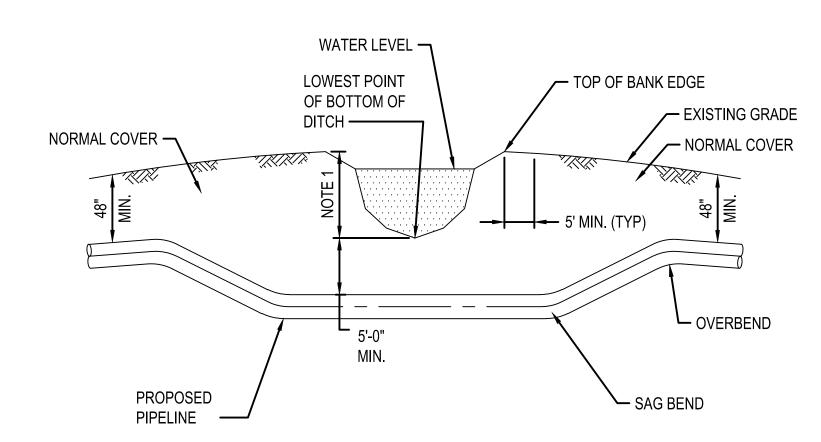
PIPE LOCATION	DEPTH OF COVER (A)
NORMAL	4'-0"
STREAM/WETLAND CROSSING	5'-0"
WETLAND CROSSING	4'-0"
ROAD CROSSING	5'-0"
RAILROAD CROSSING	10'-0"



PIPELINE DEPTH OF COVER

SCALE: N.T.S.

TYPICAL OPEN CUT STREAM CROSSING



1. PIPELINE WEIGHTS OR ANCHORS TO BE INSTALLED PER PLANS OR AS DIRECTED BY COMPANY.

TEMPORARY CONSTRUCTION R.O.W. **SEDIMENT** BOUNDARY R.O.W BARRIER TEMPORARY CONSTRUCTION TRENCH & PIPELINE AS REQUIRED (SEE NOTE 9) TIMBER RIPRAP OR ^JSEE NOTE 19 **EQUIPMENT MATS** AS REQUIRED **TRENCH** TOPSOIL ← ALTERNATIVE TOPSOIL NATURAL GRADE STORAGE AREA - SEDIMENT BARRIER **TOPSOIL** AS REQUIRED (SEE NOTE 9) 12" MAX. — STUMPS, WHERE PRESENT, NOT TO BE REMOVED (SEE NOTE 5) SPOIL SIDE WORKING SIDE PERMANENT EASEMENT (SEE NOTE 1) **TEMPORARY TEMPORARY** WORKSPACE **WORKSPACE** CONSTRUCTION RIGHT-OF-WAY (SEE NOTE 1) -TIMBER RIPRAP OR SEDIMENT BARRIER **EQUIPMENT MATS** AS REQUIRED AS REQUIRED (SEE NOTE 9) ← ALTERNATIVE 6 8 8 8 8 8 8 * WETLAND

BOUNDARY

PLAN VIEW

SPOIL

- 1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 80 FEET WIDE CONSISTING OF 50 FEET OF PERMANENT EASEMENT AND UP TO 30 FEET OF TEMPORARY WORKSPACE.
- 2. THE SAME LAYOUT APPLIES WHETHER CONSTRUCTION R.O.W. DOES OR DOES NOT ABUT A FOREIGN R.O.W.
- 3. LOCATE ANY EXTRA TEMPORARY WORK SPACE AREAS AT LEAST 25 FEET FROM EDGE OF WETLAND AND WITHIN THE APPLICABLE FULL WIDTH CONSTRUCTION R.O.W.
- 4. CLEARING OF VEGETATION AND TREES IS PROHIBITED BETWEEN TEMPORARY EXTRA WORK SPACE AND THE EDGE OF THE WETLAND
- CUT VEGETATION AND TREES OFF AT GROUND LEVEL, LEAVING EXISTING ROOT SYSTEMS IN PLACE WHEREVER PRACTICABLE, AND REMOVE CUTTINGS FROM THE WETLAND FOR DISPOSAL.
- 6. LIMIT CONSTRUCTION EQUIPMENT TO ONE PASS THROUGH WETLANDS TO THE EXTENT PRACTICABLE.
- 7. NO REFUELING OF EQUIPMENT WITHIN 100 FEET OF WETLAND EXCEPT IN ACCORDANCE WITH THE SPCC PLAN.
- 8. IF SATURATED AT TIME OF CONSTRUCTION, REDUCE SOIL COMPACTION BY UTILIZING WIDE-TRACK OR BALLOON TIRE CONSTRUCTION EQUIPMENT OR NORMAL EQUIPMENT OPERATED ON TIMBER RIPRAP OR EQUIPMENT MATS
- 9. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS IMMEDIATELY AFTER INITIAL GROUND DISTURBANCE AND AT THE EDGE OF THE CONSTRUCTION R.O.W. ALONG THE WETLAND AS DIRECTED BY THE COMPANY'S INSPECTOR.
- INSTALLED NO CLOSER THAN 25 FEET FROM POINT OF WETLAND DELINEATION, 11. THIS DRAWING REFLECTS "TRENCH ONLY" TOPSOIL STRIPPING PROCEDURE

10. WETLAND AREAS SHALL HAVE SILT FENCING AND ONE LAYER OF FILTER SOCK

- FOR AREAS WHERE STANDING WATER OR SATURATED SOIL ARE NOT PRESENT.
- 12. SALVAGE UP TO 12" OF TOPSOIL OVER TRENCH AT LOCATIONS IDENTIFIED ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE COMPANY'S INSPECTOR. MAINTAIN SEPARATION BETWEEN TOPSOIL AND TRENCH SPOIL
- 13. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING SPOIL PILE.
- 14. IN UNSATURATED CONDITIONS, SPOIL MAY BE USED TO STABILIZE THE WORKING SIDE.
- 15. IF SATURATED AT TIME OF CONSTRUCTION, LEAVE HARD PLUGS AT THE EDGE OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
- 16. TRENCH THROUGH WETLANDS.
- 17. LOWER-IN PIPE, INSTALL TRENCH BREAKERS AT WETLAND EDGES AS DIRECTED BY THE COMPANY'S INSPECTOR TO PREVENT DRAINAGE. BACKFILL UPON COMPLETION OF CONSTRUCTION.
- 18. REMOVE ALL TIMBER, RIPRAP OR EQUIPMENT MATS FROM WETLANDS UPON COMPLETION OF CONSTRUCTION.
- 19. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND REPLACE TOPSOIL, WHERE SALVAGED, WITHOUT A CROWN OVER THE TRENCH,
- 20. IF STANDING WATER IS NOT PRESENT, SEED AS SPECIFIED.

REF. DWG(S)

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21. TOPSOIL AND TRENCH SPOIL RELATIVE POSITIONS CAN, AS DIRECTED BY THE COMPANY'S INSPECTOR, BE REVERSED.

TYPICAL WETLAND CROSSING

SEDIMENT BARRIER

AS REQUIRED (SEE NOTE 10)

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AMANDA M. PALM 04/17/2020 KENTUCKY SEAL 33142

BURNS & MCDONNELL

STATE LICENSE #43

DATE **REVISION(S) DESCRIPTION** BY CHK APPD DESCRIPTION **APPROVALS** 02/10/2021 ISSUED FOR AS-BUILT 5339 |JXV |CEB|EPM|AREA CODE REGIONAL **ENGINEER** ACCOUNT NUMBER | V8191 PROJECT NUMBER | G7UL02PH1 MGR TECH REC & STD JXV DRAWING BY STATION ID **PRINCIPAL** AMP 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER CHECKER INITIALS | CEB





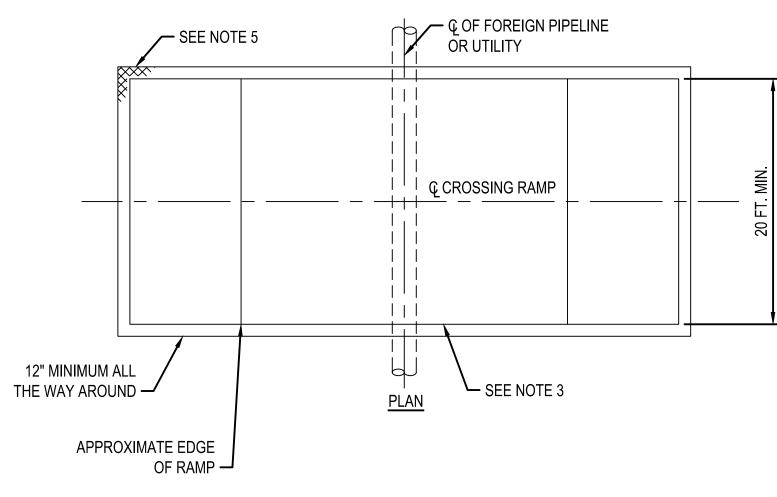
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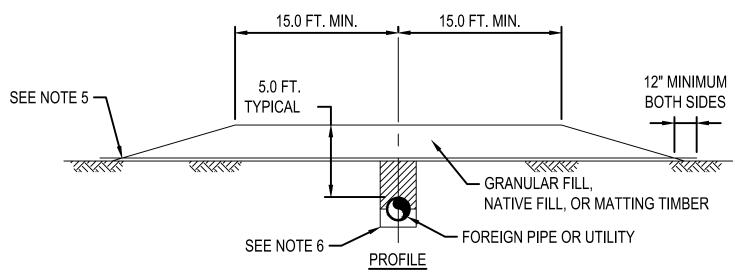
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UL60 PIPELINE - PHASE 1 CONSTRUCTION DETAILS 2 BOONE COUNTY, KY ERLANGER, KY

SHEET(S) 2 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED PNG -C-043-0001090

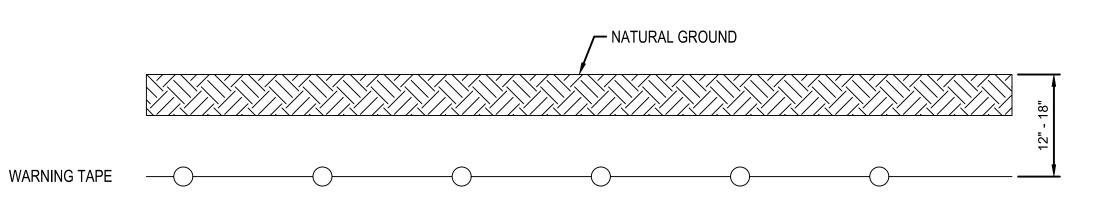
- 1. CONTRACTOR TO NOTIFY EXISTING PIPELINE/UTILITY COMPANY PRIOR TO INSTALLATION OF CROSSING RAMP.
- 2. LENGTH OF RAMP TO VARY IN ACCORDANCE WITH CROSSING ANGLE MINIMUM CROSSING ANGLE TO BE 45 DEGREES.
- 3. VEHICLES OR EQUIPMENT USING CROSSINGS SHALL PROCEED SLOWLY AND WITH CAUTION TO MINIMIZE IMPACT LOADING AND REDUCTION ON DEPTH OF COVER OVER PIPE/UTILITY.
- 4. ON COMPLETION OF CONSTRUCTION, CONTRACTOR TO REMOVE COMPLETE RAMP AND RESTORE AREA TO THE SATISFACTION OF THE EXISTING PIPELINE/UTILTY COMPANY AND THE COMPANY'S INSPECTOR.
- 5. GEOTEXTILE FABRIC (AND GEOTEXTILE GRID WHERE REQUIRED) SHALL BE INSTALLED TO PROTECT NATIVE TOP SOIL AS DIRECTED BY COMPANY'S INSPECTOR WHEN IMPORTED GRANULAR FILL OR NATIVE SUBSOIL FILL MATERIAL IS UTILIZED. IMPORTED GRANULAR FILL MATERIAL OR NATIVE SUBSOIL FILL MATERIAL TO BE REMOVED AND DISPOSED OF AS DIRECTED BY COMPANY'S REPRESENTATIVE.
- 6. IN ROCK TERRAIN THE CONTRACTOR SHALL, UNDER THE EXISTING PIPELINE COMPANY'S SUPERVISION, EXPOSE THE TOP HALF OF THE PIPE AND BACKFILL WITH COMPACTED SAND OR APPROVED SOIL.

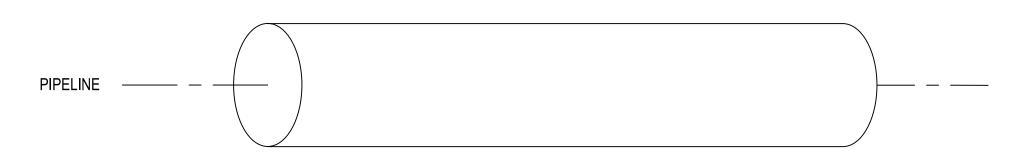




TEMPORARY RAMP CROSSING

SCALE: N.T.S.





UNDERGROUND WARNING TAPE INSTALLATION DETAIL

SCALE: N.T.S.

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UL60 PIPELINE - PHASE 1 **CONSTRUCTION DETAILS 3** BOONE COUNTY, KY

ERLANGER, KY

SHEET(S) 3 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED PNG -C-043-0001091 0 C\ERLANGER/UL60

PNG-G-043-0001022

REF. DWG(S)

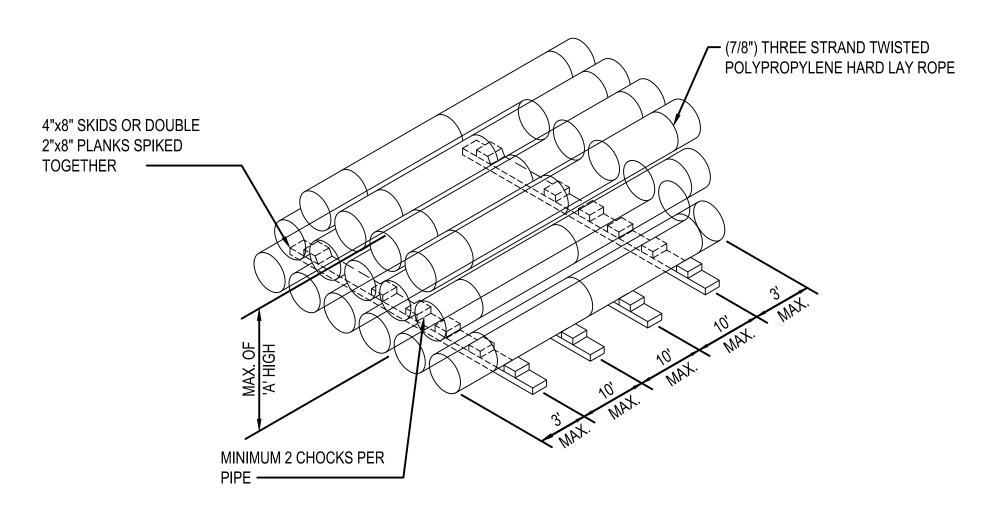
AMANDA M. PALM	NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK APPD	DESCRIPTION	1		APPROVALS	
04/17/2020	0	02/10/2021	ISSUED FOR AS-BUILT	JXV	CEB EPM	AREA CODE	5339	DATE	INITIALS	REGIONAL
KENTUCKY				1		ACCOUNT NUMBER	V8191]-	-	ENGINEER
SEAL 33142						PROJECT NUMBER	G7UL02PH1	DATE	INITIALS	MGR TECH
						DRAWING BY	JXV]-	-	REC & STD
						STATION ID	-		INITIALS	PRINCIPAL
ROFESSIONAL ENG/ARCH STAMP						CHECKED INITIALS C	`ER	02/12/2020	AMP	ENGINEER



PROFESSIONAL ENG/ARCH STAM

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SIZE	'A' (NO. OF ROWS)	CIRCUMFERENCE OF FINISHED LOOPS	SIZE	'A' (NO. OF ROWS)	CIRCUMFERENCE OF FINISHED LOOPS		
4"	12	16"	18"	5	60"		
6"	10	24"	20"	4 *	66"	*	PIPE GREATER THAN 20" WILL BE 4
8"	8	30"	24"	4	72"		ROWS.
10"	6	37"	32"	4	80"		
12"	6	43"	36"	4	92"		
16"	5	54"	42"	4	98"		

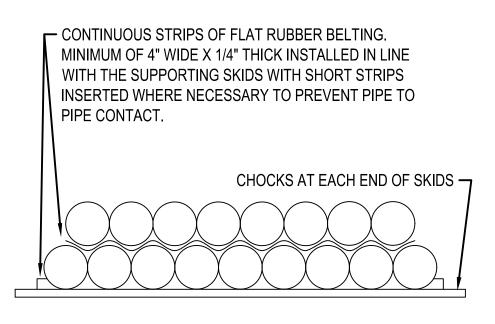


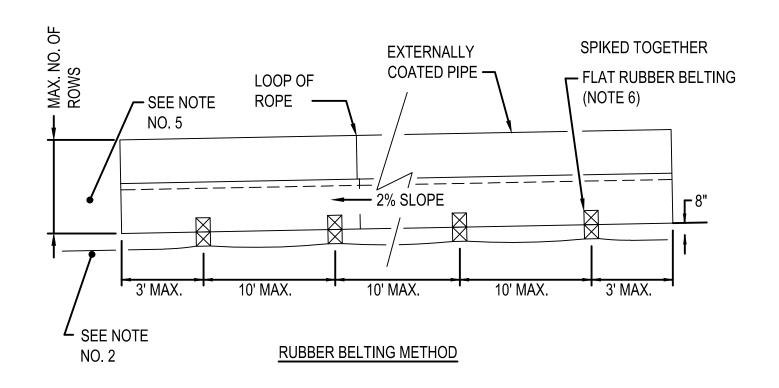
- 1. ALL PIPE THAT IS SURPLUS AFTER A CONSTRUCTION PROJECT MUST BE PERMANENTLY STOCKPILED.
- 2. THE USE OF ALTERNATE METHODS FOR STOCKPILING PIPE AND/OR THE USE OF ALTERNATE MATERIALS FOR PREVENTING PIPE TO PIPE CONTACT SHALL REQUIRE THE APPROVAL OF THE COMPANY REPRESENTATIVE.
- 3. NUMBER OF ROWS TO BE SPECIFIED BY COMPANY.
- 4. ALL MATERIALS SHALL BE FURNISHED BY CONTRACTOR.
- 5. EARTH AND BERMS WILL BE ACCEPTABLE ALTERNATIVES AS APPROVED BY COMPANY REPRESENTATIVE.

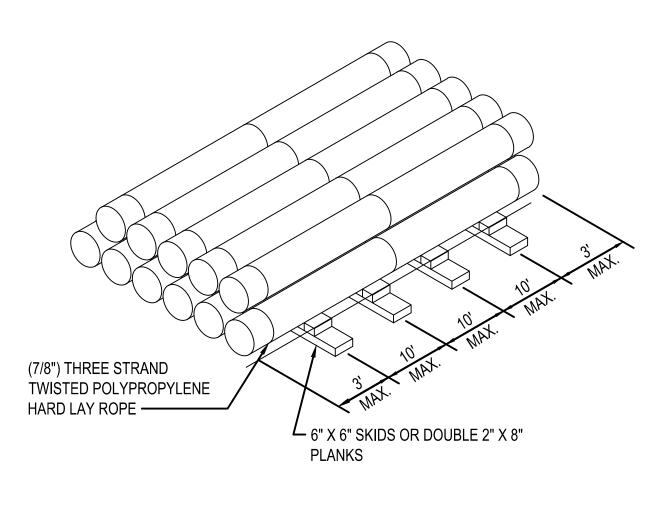
ROPE INSTALLATION

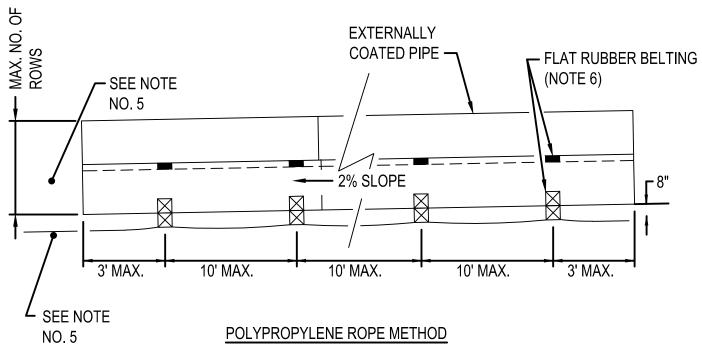
ROPE SPACING SHOULD BE A MAXIMUM OF 6.0 FEET FROM THE PIPE ENDS AND A MAXIMUM OF 6.0 FEET FROM GIRTH WELDS. THE INTERVALS BETWEEN RINGS SHOULD BE BETWEEN 10.0 FEET AND 25.0 FEET WITH A MINIMUM OF FOUR LOOPS SPACED OVER A STANDARD DOUBLE JOINT LENGTH (80 FEET). THE INTERVALS MUST BE ADJUSTED TO INSURE THERE IS NO PIPE TO PIPE CONTACT. ROPE ENDS SHALL BE FUSED WITH A BLOW TORCH PRIOR TO SLIPPING THE LOOP OVER THE PIPE.

TYPICAL TEMPORARY PIPE STOCKPILE









CII	RCUM	FERE	NCE O	F L00	PS				
THE CIRCUMFERENCE O		PS (M E FOLI		,		E IN A	CCOR	DANCI	=
PIPE O.D.	30"	24"	20"	16"	12"	10"	8"	6"	4"
CIRCUMFERENCE OF FINISHED LOOPS	98"	80"	66"	54"	43"	37"	30"	34"	34"

- 1. THE USE OF THE RUBBER BELTING METHOD OR THE POLYPROPYLENE ROPE METHOD TO PREVENT PIPE TO PIPE CONTACT IN THE STOCKPILE SHALL BE AS DIRECTED BY THE COMPANY.
- 2. SITE TO BE GRADED TO 2% SLOPE AND PADDED WITH 8" OF PIT RUN GRAVEL.
- SKIDS TO BE CAREFULLY LEVELED TO MAINTAIN 2% SLOPE. PIPES TO MAINTAIN CLOSE CONTACT THROUGHOUT ENTIRE LENGTH TO PREVENT SPLITTING AND ROLLING OF THE STOCKPILE.
- 4. LONGITUDINAL WELDS TO BE ARRANGED AT TOP OF PIPE TO ALIGN WITH SPACES BETWEEN NESTED PIPES.
- 5. PIPE 4.5" TO 6.625" TO BE STOCKPILED A MAXIMUM OF 4 ROWS HIGH. PIPE 8.625" TO 18" TO BE STOCKPILED A MAXIMUM OF 3 ROWS HIGH. PIPE LARGER THAN 18" TO BE STOCKPILED A MAXIMUM OF 2 ROWS HIGH.
- 6. THE BOTTOM ROW OF PIPE SHALL REST ON SKIDS PROTECTED BY A CONTINUOUS STRIP OF FLAT RUBBER BELTING.
- 7. ALL MATERIAL TO BE SUPPLIED BY CONTRACTOR.

ROPE INSTALLATION:

ROPE SPACING SHOULD BE A MAXIMUM OF 6' FROM THE PIPE ENDS AND A MAXIMUM OF 6' FROM GIRTH WELDS. THE INTERVAL BETWEEN RINGS SHOULD BE BETWEEN 10' AND 25' WITH A MINIMUM OF FOUR LOOPS SPACED OVER A STANDARD DOUBLE JOINT LENGTH (40 FEET). THE INTERVALS MUST BE ADJUSTED TO INSURE THERE IS NO PIPE TO PIPE CONTACT. ROPE ENDS SHALL BE FUSED WITH A BLOW TORCH PRIOR TO SLIPPING THE LOOP OVER THE PIPE.

TYPICAL PERMANENT PIPE STOCKPILE

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> **UL60 PIPELINE - PHASE 1 CONSTRUCTION DETAILS 4**

BOONE COUNTY, KY

ERLANGER, KY

SHEET(S) 4 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED DRAWING NUMBER PNG -C-043-0001092

REF. DWG(S) PNG-G-043-0001022

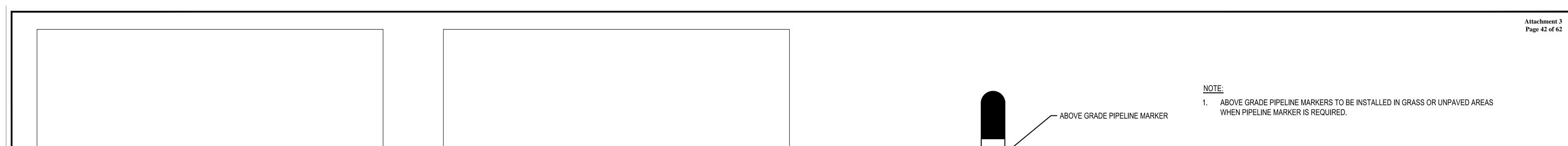
C\ERLANGER/UL60

AMANDA M. PALM 04/17/2020 **KENTUCKY** SEAL 33142

BY CHK APPD DATE REVISION(S) DESCRIPTION DESCRIPTION **APPROVALS** 02/10/2021 ISSUED FOR AS-BUILT JXV CEB EPM AREA CODE 5339 REGIONAL ACCOUNT NUMBER | V8191 ENGINEER PROJECT NUMBER | G7UL02PH1 MGR TECH REC & STD DRAWING BY JXV STATION ID **PRINCIPAL** AMP 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER CHECKER INITIALS | CEB

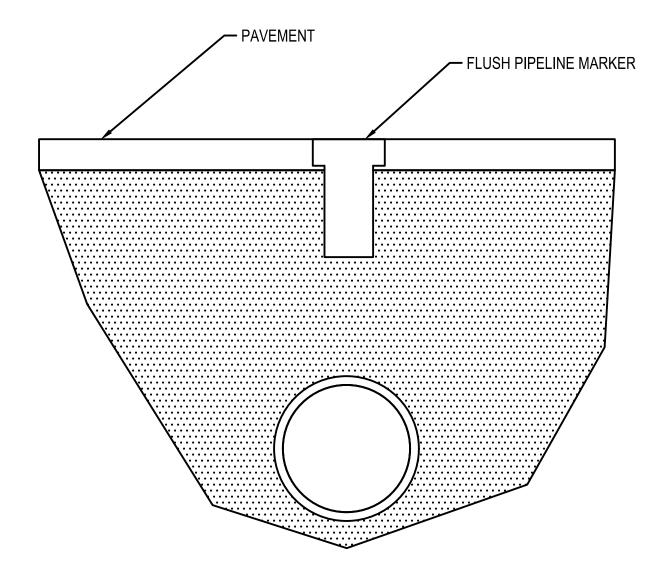






UNPAVED SURFACE

ABOVE GRADE PIPELINE MARKER



1. FLUSH PIPELINE MARKERS TO BE INSTALLED IN PAVEMENT WHEN PIPELINE MARKER IS REQUIRED.

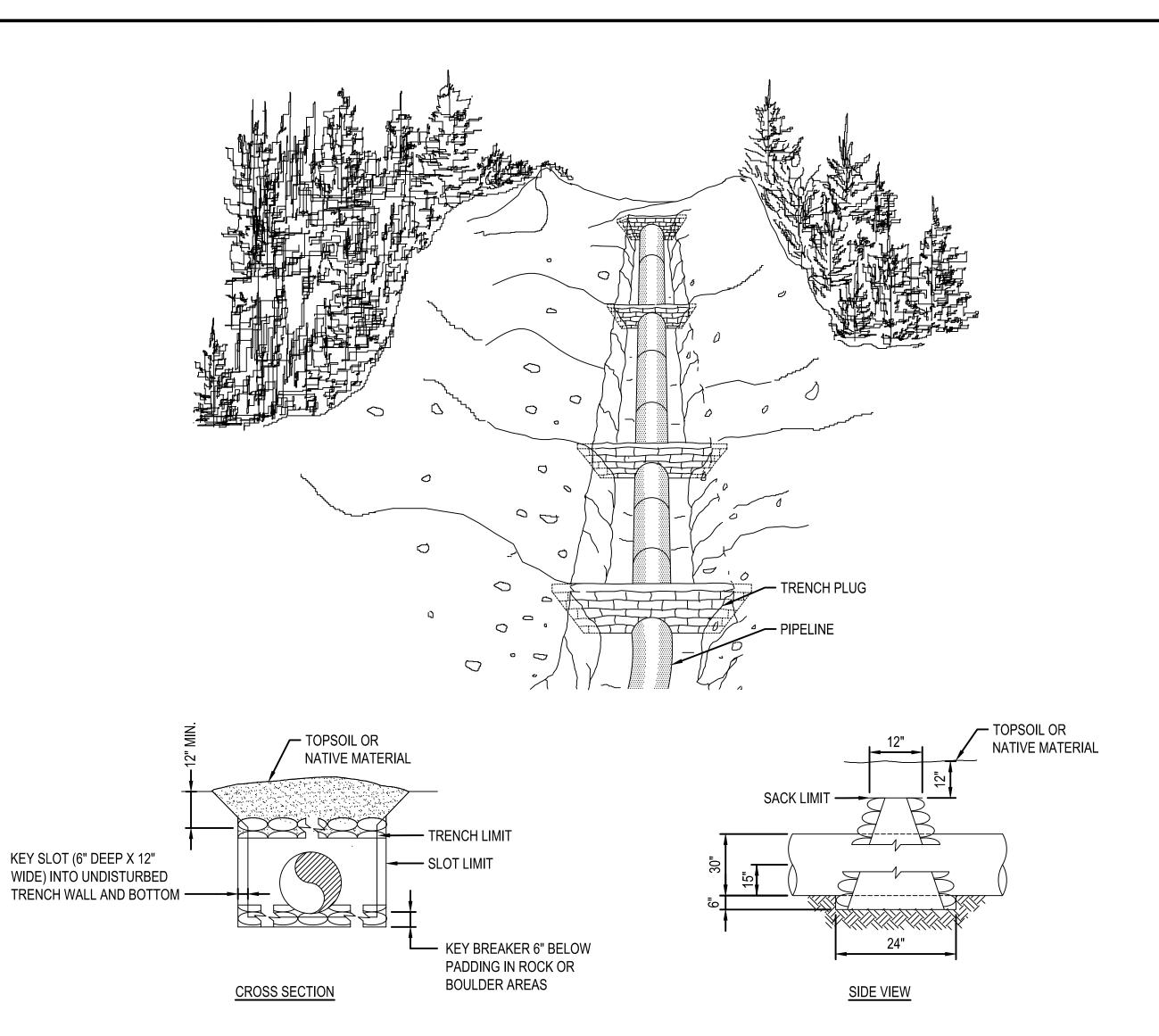
FLUSH PIPELINE MARKER

SCALE: N.T.S.

- 1. PIPELINE MARKERS SHALL BE PLACED AT:
 - IN LINE-OF-SIGHT INTERVALS AND TURNING POINTS
 - ALL PUBLIC ROAD CROSSINGS ALL RAILROAD CROSSINGS
 - RIVER, STREAM, CREEK, DITCH AND CANAL CROSSINGS
 - UTILITY CROSSINGS (PER DUKE DISCRETION) SWAMPS OR WETLANDS (ENTRY AND EXIT)
 - **ROAD MEDIANS**
- ABOVE GROUND FACILITIES SUCH AS VALVE SETTINGS, BORDER STATIONS, REGULATOR STATIONS, AND PIPELINE INTERCONNECTS
- UNDERGROUND VALVES
- HDD ENTRY AND EXIT POINTS
- 2. PIPELINE MARKERS SHALL BE PLACES DIRECTLY ON TOP OR WITHIN 24 INCHES OF THE PIPELINE.
- 3. SET MARKERS AS SOON AS PRACTICAL AFTER THE INSTALLATION OF THE PIPELINE. MAKE EVERY EFFORT TO PROVIDE MARKERS BEFORE VEGETATION IS RE-ESTABLISHED AFTER CONSTRUCTION.

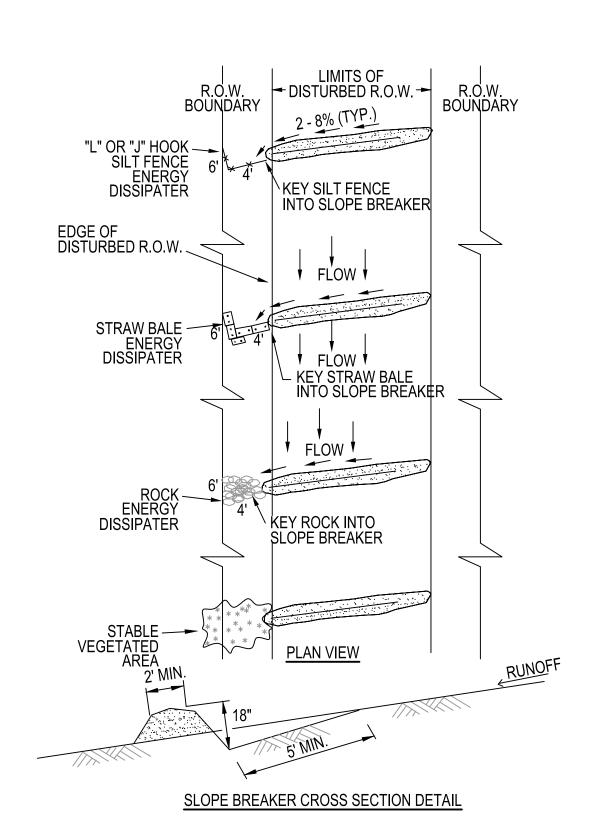
PIPELINE MARKER LOCATIONS

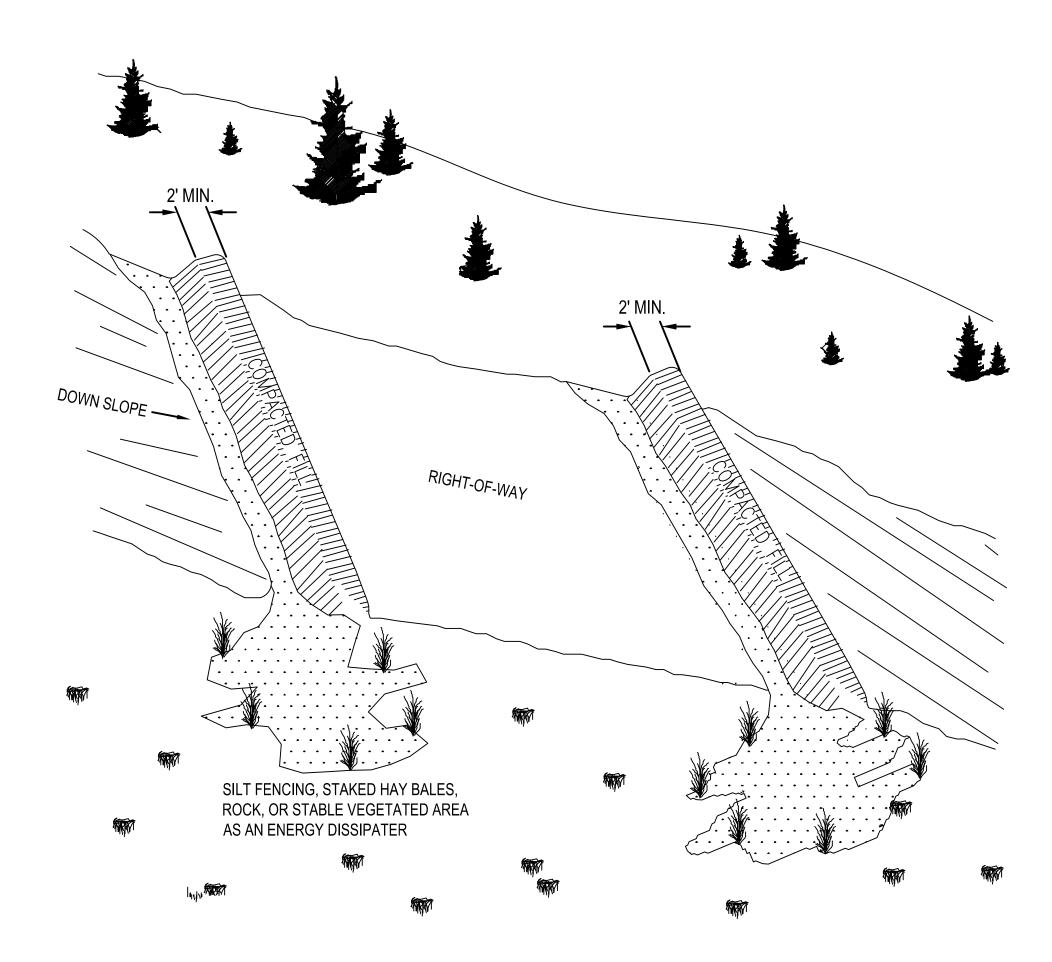
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BURNS & MCDONNELL STATE LICENSE #43	PIEDMONT 'S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIG	DENTIAL (OM-1095) * DRAWING IS					RAWING * USE DIMENSIONS ONLY IATE DISCLOSURE ALL PREVIOUS PAPER COPIES OF THIS DRAWING	MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY 1001	REF. DWG(S) PNG-G-043-0001022
AMANDA M. PALM	NO. DATE REVISION(S) DESCRIPTION	BY CHK A	PPD DESCRIPTION		APPROVALS				SHEET(S) 5 OF 7 DWG SCALE NONE
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98 04/17/2020 KENTUCKY			ACCOUNT NUMBER V8191	_	-	ENGINEER	Piedmont	CONCEDITON DETAILS	DWG DATE 04/10/2019 SUPERSEDED
SEAL 33142			PROJECT NUMBER G7UL02PH1	DATE	INITIALS	MGR TECH	ENERGY. Natural Gas	CONSTRUCTION DETAILS 5	DRAWING NUMBER REVISION
ents\TN			DRAWING BY JXV	-	-	REC & STD	C LINEROIS IVatarar Gas	BOONE COUNTY, KY	PNG -C-043-0001093 0
ldfs/Gl			STATION ID -	02/12/2020	INITIALS	PRINCIPAL		•	1110 0 040 000 1000 0
PROFESSIONAL ENG/ARCH STAMP			CHECKER INITIALS CEB	02/12/2020	AIVIF	ENGINEER	COPYRIGHT 2019	ERLANGER, KY	C\ERLANGER/UL60



NOTES:

- 1. TRENCH PLUGS SHALL BE INSTALLED:
- ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY
- RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
- AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
- WHERE NEEDED TO AVOID DRAINING A WETLAND;
- ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
- IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYPICALLY INSTALLED. AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED
- 2. PLUGS SHALL BE INSTALLED IN ACCORDANCE WITH DUKE CONSTRUCTION STANDARDS AND AS DIRECTED
- BY COMPANY'S INSPECTOR. SACK BREAKS SHALL UTILIZE OPEN WEAVE HEMP OR JUTE SACKS FILLED WITH MINIMUM OF 55LBS OF SUBSOIL, SAND OR A MIXTURE OF 1 PART CEMENT TO 6 PARTS SAND OR SUBSOIL AS DETERMINED BY COMPANY'S INSPECTOR
- POLYURETHANE FOAM BREAKERS MAY BE USED IN-LEIU-OF SACK BREAKERS, WHEN APPROVED BY COMPANY'S REPRESENTATIVE.
- 3. PLUG SPACING AND CONFIGURATION MAY BE CHANGED AS DIRECTED BY COMPANY. DEPTH OF DITCH MAY VARY WITH SITE CONDITIONS.
- 4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.





- 1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF COMPACTED NATIVE SOIL AND INSTALLED AT LOCATIONS AS REQUIRED BY DUKE CONSTRUCTION STANDARDS OR AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
- 2. SLOPE BREAKERS SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE COMPANY'S REPRESENTATIVE TO DIRECT THE WATER OFF THE RIGHT-OF-WAY.
- 3. SLOPE BREAKERS SHALL BE CONSTRUCTED AT 2-8% GRADIENT ACROSS THE SLOPE.
- 4. THE SLOPE BREAKERS SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE THROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE RIGHT-OF-WAY.
- 5. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE ALL RUNOFF OFF THE DISTURBED RIGHT-OF-WAY INTO A STABLE, WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATER.
- 6. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION RIGHT-OF-WAY TO DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS, THESE LOCATIONS MUST BE APPROVED BY THE COMPANY'S REPRESENTATIVE.

FLOW ENERGY DISSIPATER NOTES:

- 1. THE OUTLET SHALL CONTAIN AN ENERGY DISSIPATER IF THE COMPANY'S INSPECTOR DETERMINES EXISTING VEGETATION IS NOT SUFFICIENTLY STABLE TO PREVENT EROSION. THE ENERGY DISSIPATER SHALL BE CONSTRUCTED AS FOLLOWS:
- OUTFALL END OF DISSIPATER SHOULD BE LOWER THAN SLOPE BREAKER END.
- SILT FENCE, STRAW BALE OR ROCK DISSIPATERS SHOULD BE KEYED INTO THE END OF THE SLOPE BREAKER.
- PROVIDE ENOUGH AREA INSIDE "L" TO CAPTURE AND HOLD SEDIMENT.

TYPICAL TRENCH PLUG

SCALE: N.T.S.

TYPICAL SLOPE BREAKER

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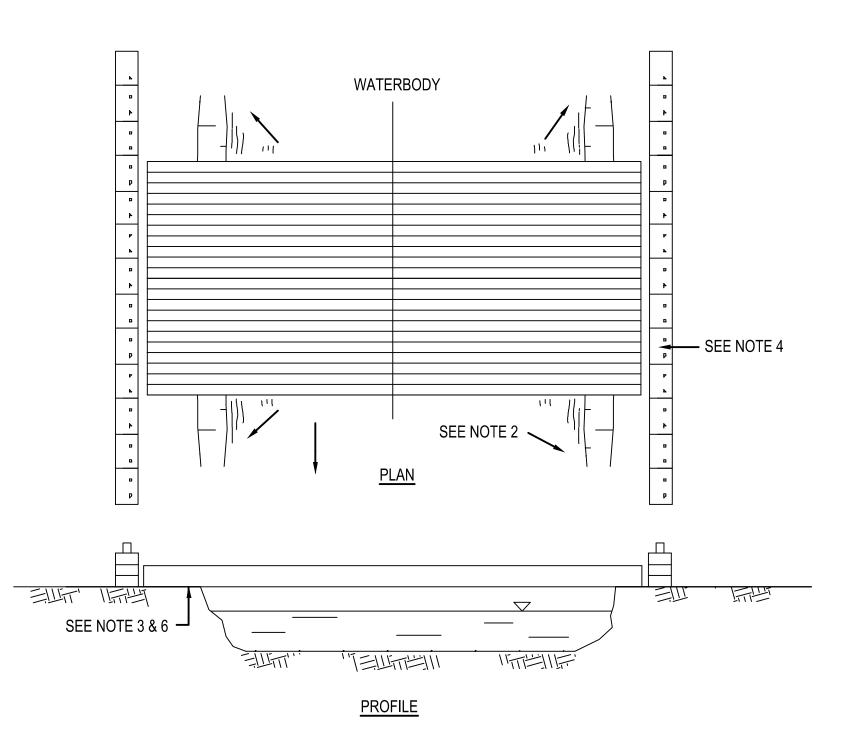
UL60 PIPELINE - PHASE 1 CONSTRUCTION DETAILS 6 BOONE COUNTY, KY ERLANGER, KY

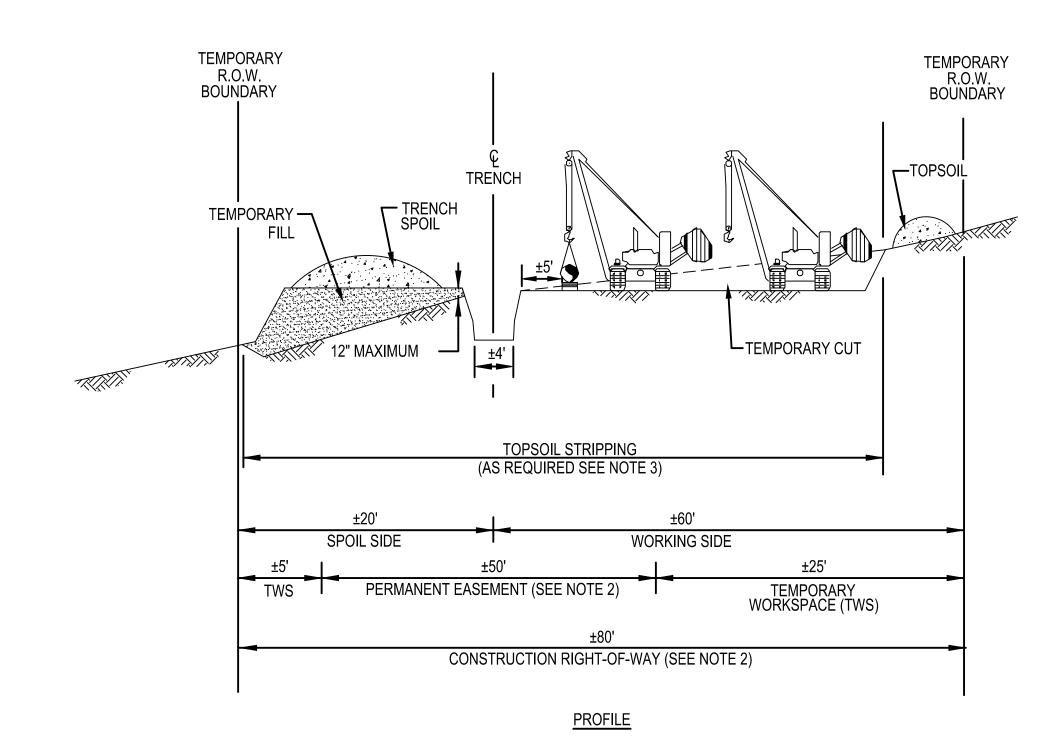
SHEET(S) 6 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED DRAWING NUMBER PNG -C-043-0001094 C\ERLANGER/UL60

PNG-G-043-0001022

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- UTILIZE THE "TRENCH ONLY" TOPSOIL SALVAGE METHOD AT LOCATIONS SUCH AS RIPARIAN AREAS OR UNMANAGED WOODLAND, WHERE IDENTIFIED ON THE CONSTRUCTION DRAWINGS, OR AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
- 2. THE TRENCH ONLY METHOD IS NOT TO BE USED ON AGRICULTURAL LAND EXCEPT AS DIRECTED BY THE COMPANY INSPECTOR (PER LANDOWNER REQUEST).
- FOR TRENCH ONLY STRIPPING, THE STRIPPED AREA SHALL BE WIDE ENOUGH TO ACCOMMODATE TRENCHING EQUIPMENT
- CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 80 FEET WIDE CONSISTING OF 50 FEET OF PERMANENT EASEMENT AND 30 FEET OF TEMPORARY WORKSPACE, EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER
- STOCKPILE TOPSOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE COMPANY'S INSPECTOR. KEEP TOPSOIL CLEAN OF ALL CONSTRUCTION DEBRIS
- LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH TOPSOIL INTO CREEKS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING.
- AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING SPOIL AND TOPSOIL
- SAME LAYOUT APPLIES WHERE CONSTRUCTION R.O.W. DOES NOT ABUT EXISTING R.O.W.
- TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES TO MINIMIZE WIND EROSION CAN BE IMPLEMENTED.
- 10. TOPSOIL AND TRENCH SPOIL RELATIVE POSITIONS CAN, AS DIRECTED BY THE COMPANY'S INSPECTOR, BE REVERSED.

TYPICAL 80' WORKSPACE TOPSOIL SEPARATION

- THIS TYPE OF BRIDGE IS GENERALLY USED ON NARROW CROSSINGS, LESS THAN 20 FEET WIDE WITH APPROPRIATE BANK CONFIGURATION. MULTIPLE MATS MAY BE LAYERED FOR HEAVIER EQUIPMENT CROSSINGS.
- BRIDGE IS ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY. BRIDGE
- 3. IF REQUIRED, UTILIZE APPROACH FILLS OF CLEAN GRANULAR MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. AS REQUIRED, ENSURE THAT FILL MATERIAL IF USED DOES NOT SPILL INTO WATERCOURSE INCLUDING REMOVAL OF DIRT FROM DECK DURING OPERATION.
- CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY, SILT FENCE, HAY BALES OR SANDBAGS MAY BE USED INTERCHANGEABLY.
- REMOVE BRIDGES AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE. THE STRUCTURE IS TO BE REMOVED IF THERE IS MORE THAN ONE MONTH BETWEEN FINAL GRADING AND SEEDING, AND ALTERNATIVE ACCESS TO THE CONSTRUCTION R.O.W. IS AVAILABLE.
- DISPOSE OF ANY ROCK AS DIRECTED BY COMPANY REPRESENTATIVE.
- RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

TYPICAL TIMBER MAT WATERBODY BRIDGE

ENGINEER

- SIDE HILL CONSTRUCTION CUT AND FILL SHALL BE ALLOWED WHENEVER, IN THE OPINION OF THE CONTRACTOR, STEEP SIDE HILL CONSTRUCTION IS WARRANTED FOR PERSONNEL AND/OR EQUIPMENT SAFETY CONSIDERATIONS.
- CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 80 FEET WIDE CONSISTING OF 50 FEET OF PERMANENT EASEMENT AND 30 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
- THIS DRAWING REFLECTS "TRENCH, SPOIL, AND WORKING SIDE" TOPSOIL STRIPPING PROCEDURE AS NEEDED FOR HILL SIDE LEVELING. SALVAGE TOPSOIL OVER TRENCH UNDER THE SPOIL PILE AND FROM TEMPORARY CUT AND FILL AREAS AT LOCATIONS IDENTIFIED OF THE CONSTRUCTION ALIGNMENT SHEETS OR AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
- 4. STOCKPILE TOPSOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE COMPANY'S REPRESENTATIVE. KEEP TOPSOIL CLEAN OF ALL CONSTRUCTION DEBRIS.
- 5. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH TOPSOIL INTO CREEKS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL PILE.

TYPICAL SIDE HILL CONSTRUCTION

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REVISION(S) DESCRIPTION BY CHK APPD DESCRIPTION DATE **APPROVALS** 02/10/2021 ISSUED FOR AS-BUILT 5339 JXV CEB EPM AREA CODE REGIONAL **ENGINEER** ACCOUNT NUMBER | V8191 PROJECT NUMBER | G7UL02PH1 MGR TECH REC & STD DRAWING BY JXV STATION ID **PRINCIPAL** AMP 02/12/2020

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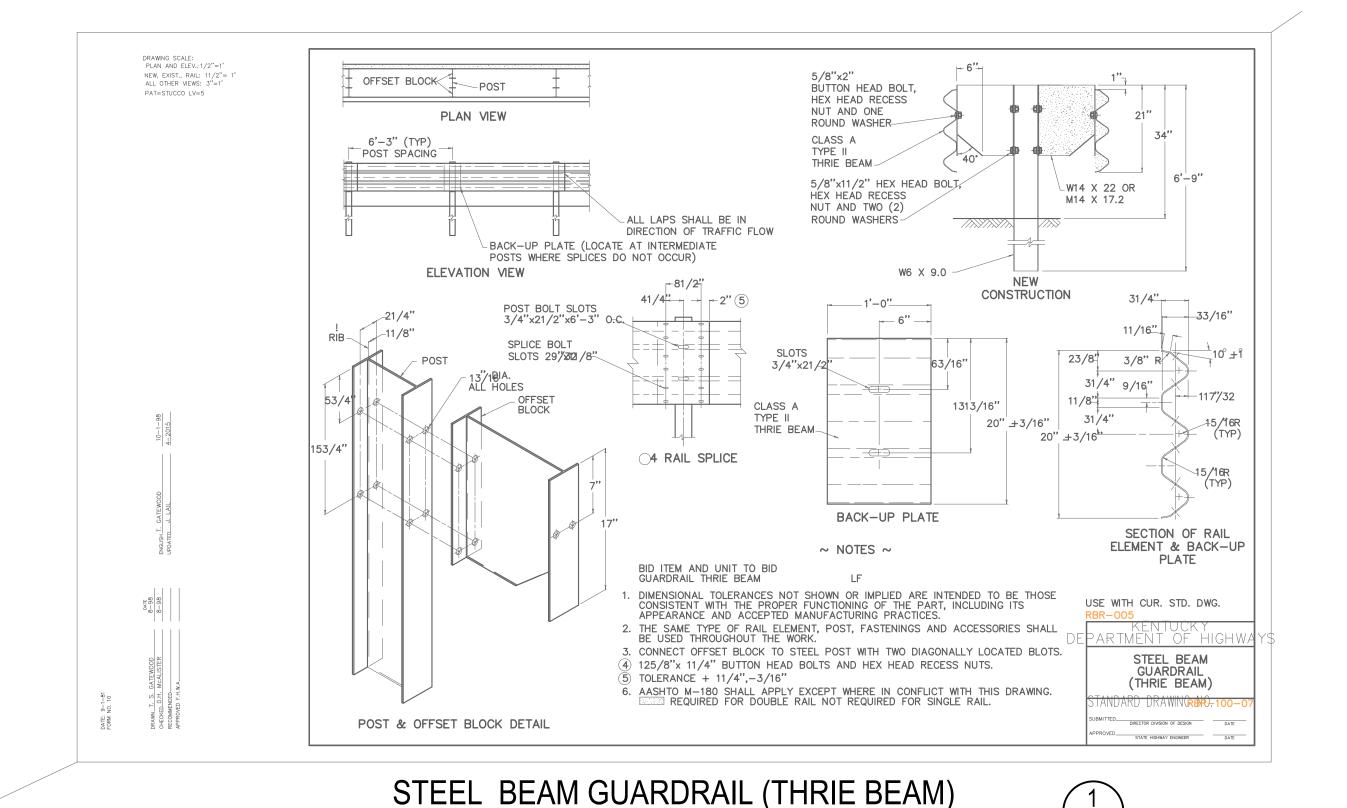
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SHEET(S) 7 OF 7 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED DRAWING NUMBER REVISION PNG -C-043-0001095 C\ERLANGER/UL60

PNG-G-043-0001022

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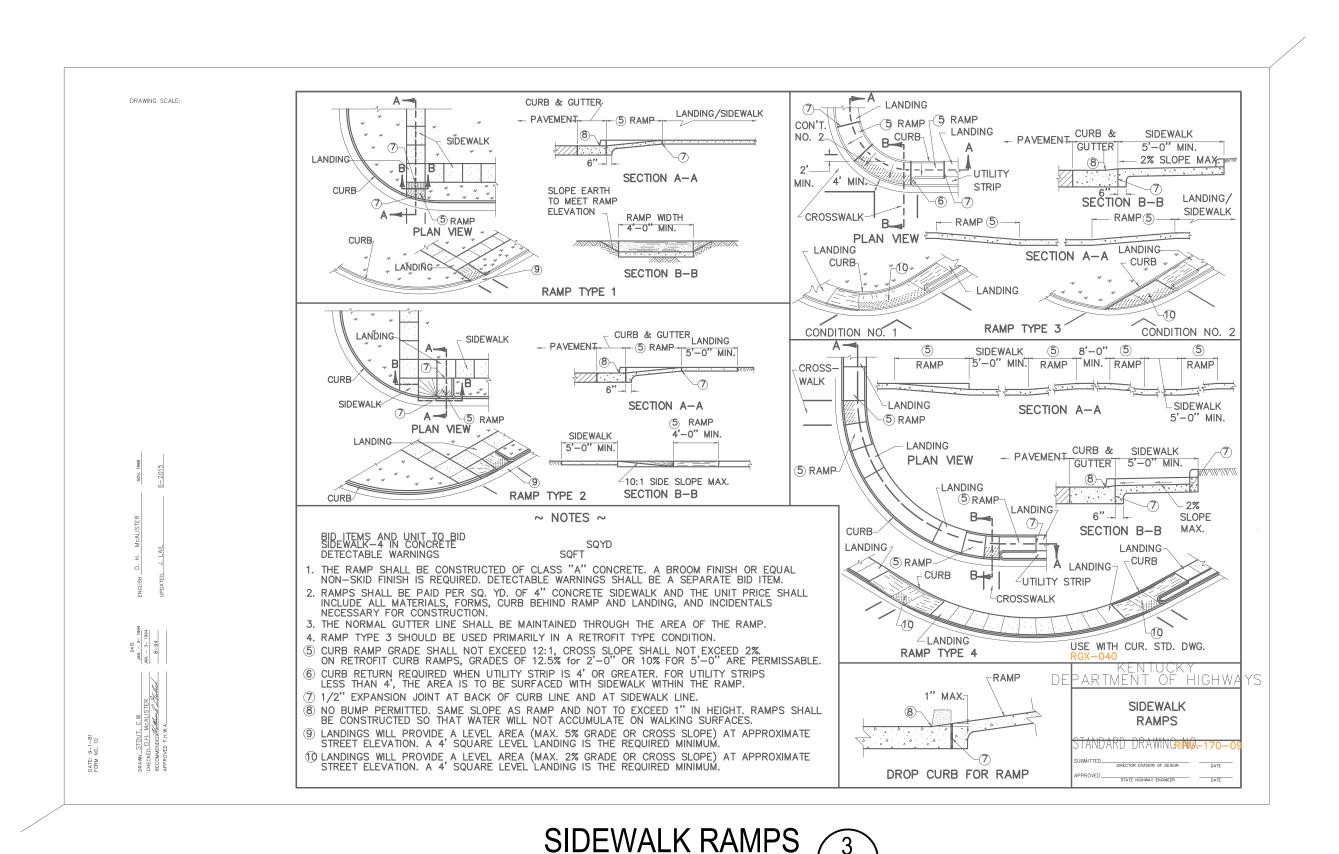
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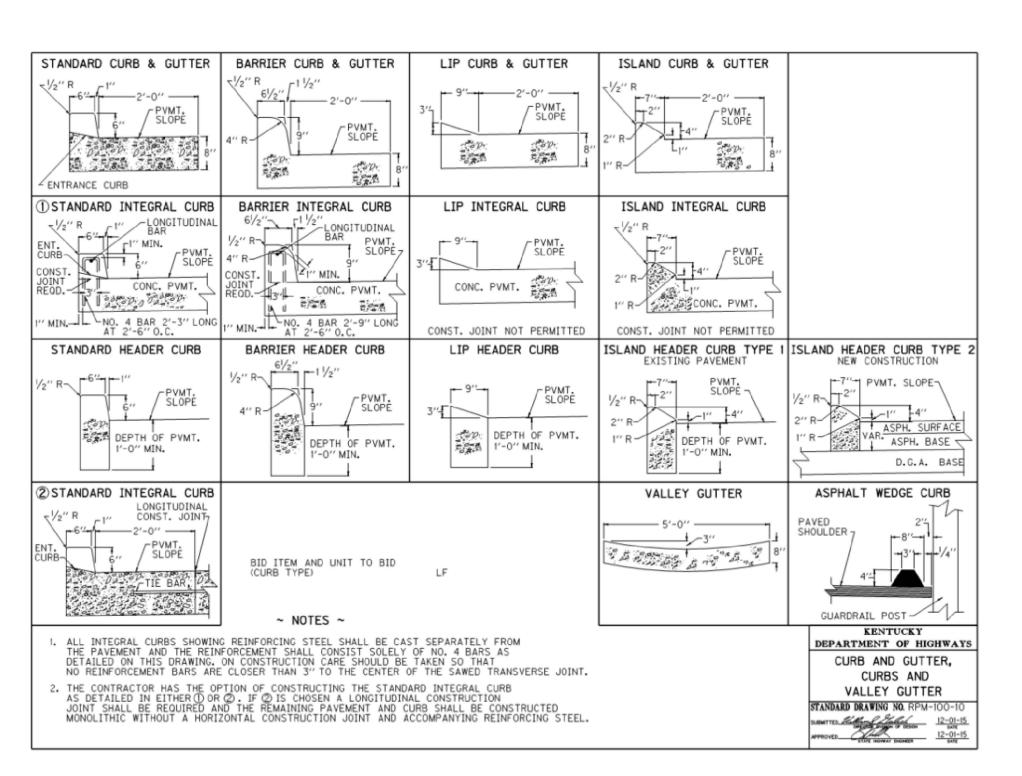


PAVED SHOULDER MINIMUM " 12' DESIRABLE STABILIZED SHOULDER 30' LOW SPEED 150' HIGH SPEED 20' LOW SPEED 100' HIGH SPEED PAVE TO R/W LINE OR END OF RADIUS, WHICHEVER IS FURTHER FROM THE EDGE OF TRAFFIC MAIL BOX TURNOUT 25' R -* L STABILIZED SHOULDER PVMT. DESIRABLE - DITCH-ROAD AND SHOULDER ENTRANCE STREET APPROACHES MINIMUM -SHLD. EXISTING SHOULDER SLOPE ENTRANCE 7 SHOULDER LINE - 36' MINIMUM ----/ NEW CONSTRUCTION ENTRANCE GRADE TO BEGIN NO CLOSER TO EDGE OF PAVEMENT THAN WIDTH OF SHOULDER PLUS DITCH. SECTION A-A PLAN VIEW SECTION B-B ② PAVED TO SHOULDER LINE SURFACE TO R/W LINE OR TOUCHDOWN WITH TRAFFIC BOUND BASE. ~ NOTES ~ MAIL BOX TURNOUT 6 ADD 2'-0" FOR EACH ADDITIONAL MAIL BOX. ENTRANCE THIGH SPEED EQUALS 50 MPH OR GREATER. LOW SPEED EQUALS LESS THAN 50 MPH. (RESIDENTIAL AND THE 2'-O" WIDE FLEXIBLE PAVEMENT FOR THE LENGTH AS SHOWN, OR AS DETERMINED BY THE ENGINEER, SHALL BE APPLIED TO ALL MAIL BOX TURNOUTS. THE PAVEMENT DESIGN SHALL BE AS SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER COMMERICAL) 9. CCCCO FOR STABILIZED SHOULDERS, THIS AREA SHALL RECEIVE THE SAME TREATMENT AS THAT FOR ADJOINING STABILIZED SHOULDERS. FOR EARTH SHOULDERS THIS AREA SHALL RECEIVE 3" TO 5" OF COMPACTED DENSE GRADED AGGREGATE BASE, BANK GRAVEL, OR TRAFFIC BOUND BASE. APPROACHES AND ENTRANCES EDGE OF 4 TRAFFIC LANE ENTR. (10) IF FEASIBLE, ALL APPROACHES AND ENTRANCES SHALL INTERSECT SHOULDER LINE AT RIGHT ANGLES. IF NOT AT RIGHT ANGLES, PIPE LENGTH SHALL BE INCREASED TO PROVIDE ACCURATE RADIUS. ENTRANCE 11. ROAD APPROACH ILLUSTRATION IS FOR MAINLINE ROAD, ADT 400 OR GREATER, PAVED SHOULDER PORTION SHOWN SHALL ONLY BE APPLICABLE WHERE THE MAINLINE SPECIFIES STABILIZED OR PAVED SHOULDERS. IF THE MAINLINE SHOULDER IS PAVED, THIS SHOULDER PORTION SHALL ALSO BE PAVED. (FARM FIELD) PAVE AS SHOWN WITH FLEXIBLE PAVEMENT. 12. WHEN THE MAINLINE ADT IS UNDER 400, USE A 25' RADIUS WITH NO DECELERATION WIDTH PROVIDED. (5) SURFACE TO R/W LINE WITH TRAFFIC BOUND 13. THE PAVEMENT ON ENTRANCES AND APPROACHES THAT IS DISTURBED DURING NEW CONSTRUCTION OPERATIONS SHALL EREPLACED WITH A PAVEMENT EQUIVALENT TO THE EXISTING PAVEMENT, REGARDLESS OF THE SURFACE MATERIAL USED ELSEWHERE. THE PAVEMENT DESIGN SHALL BE AS SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER. 14. THE RADII ON COUNTY OR SECONDARY ROADS SHALL NOT BE LESS THAN 25' MEASURED TO THE INSIDE EDGE OF THE SURFACE EACH ADDITIONAL FOOT OF SURFACE WIDTH WILL REQUIRE AN ADDITIONAL FOOT OF PIPE. KENTUCKY DEPARTMENT OF HIGHWAYS 15. PIPE ILLUSTRATION IS BASED ON THE USE OF 15" PIPE, LARGER SIZES MAY BE INSTALLED WITH APPROPRIATE MODIFICATIONS. PIPES SMALLER THAN 15" DIAMETER ARE NOT TO BE USED EXCEPT IN SPECIAL CASES, WHEN SPECIFICALLY AUTHORIZED. ENTRANCES AND MAIL BOX TURNOUT 16. IN CUT SECTION, SIGHT DISTANCE SHALL BE PROVIDED ON ENTRANCES AND APPROACHES BY DAYLIGHTING THE CUT FROM THE POINTS WHERE THE RADII BEGINS, TO POINTS NOT LESS THAN 100' ON EACH OF THE INTERSECTING ROADWAY. 17. ZZZZ MINIMUM PAVED AREAS FOR ENTRANCES AND APPROACHES. THESE PAVED AREAS MAY BE EXTENDED TO TOUCHDOWN OR TIE-DOWN POINT PROVIDED THE EXISTING IS PAVED. STANDARD DRAWING NO. RPM-110-0 SUBJECT CONTROL | 12-0|-15 Sept. | 12-0| (B) MAXIMUM GRADE FOR ENTRANCES 50' OR GREATER IN LENGTH: MOUNTAINOUS TERRAIN - 20%, ROLLING TERRAIN - 16% AND FLAT TERRAIN - 12%.

FLEXIBLE PAVEMENT

APPROACHES, ENTRANCES, AND MAIL BOX TURNOUT 2





CURB AND GUTTER, CURBS AND VALLEY GUTTER DETAIL,

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REVISION(S) DESCRIPTION BY CHK APPD DESCRIPTION DATE AMANDA M. PALM 5339 |02/10/2021 | ISSUED FOR AS-BUILT |JXV|CEB|EPM|AREA CODE 04/17/2020 ACCOUNT NUMBER | V8191 KENTUCKY PROJECT NUMBER | G7UL02PH1 SEAL 33142 DRAWING BY JXV STATION ID AMP 02/12/2020

SCALE: NTS



PRINCIPAL

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UL60 PIPELINE - PHASE 1 ACCESS DRIVE DETAILS BOONE COUNTY, KY ERLANGER, KY

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INSTALLATION:

- AASHTO #1 (1.5-3.5 INCH) STONE OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT A MINIMUM 6-INCH THICKNESS FOR LIGHT DUTY USE OR AT LEAST 10-INCH THICKNESS FOR HEAVY-DUTY USE.
- THE ENTRANCE SHALL BE AS LONG AS REQUIRED TO STABILIZE HIGH TRAFFIC AREAS (30-FT MINIMUM ON A SINGLE RESIDENTIAL LOT; 70-FT MINIMUM ELSEWHERE).
- A GEOTEXTILE SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE. IT SHALL BE COMPOSED OF STRONG ROT-PROOF POLYMERIC FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:

MINIMUM TENSILE STRENGTH	200 lbs.
MINIMUM PUNCTURE STRENGTH	80 psi.
MINIMUM TEAR STRENGTH	50 lbs.
MINIMUM BURST STRENGTH	320 psi.
MINIMUM ELONGATION	20%
EQUIVALENT OPENING SIZE	EOS < 0.6 mm
PERMEABILITY	1X10-3 cm/sec

- IF NEEDED, A PIPE OR CULVERT SHALL BE CONSTRUCTED UNDER THE ENTRANCE TO PREVENT SURFACE WATER FROM FLOWING ACROSS THE ENTRANCE OUT ONTO PAVED SURFACES.
- IF NEEDED, A WATER BAR SHALL BE CONSTRUCTED TO PREVENT SURFACE WATER FROM FLOWING ALONG THE LENGTH OF THE ENTRANCE UT ONTO PAVED SURFACE.

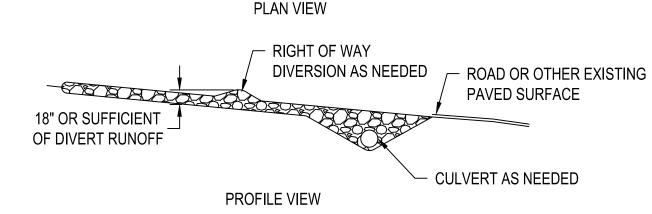
MAINTENANCE:

- TOP DRESS WITH ADDITIONAL STONE AS SITE CONDITIONS DEMAND.
- 2. REMOVE MUD TRACKED ONTO PUBLIC STREETS IMMEDIATELY VIA SCRAPING OR SWEEPING.
- ENSURE THE ENDS OF A TEMPORARY CULVERT PIPE (IF UTILIZED) ARE NOT BLOCKED AND THAT THE PIPE IS FREE OF DEBRIS THROUGHOUT.

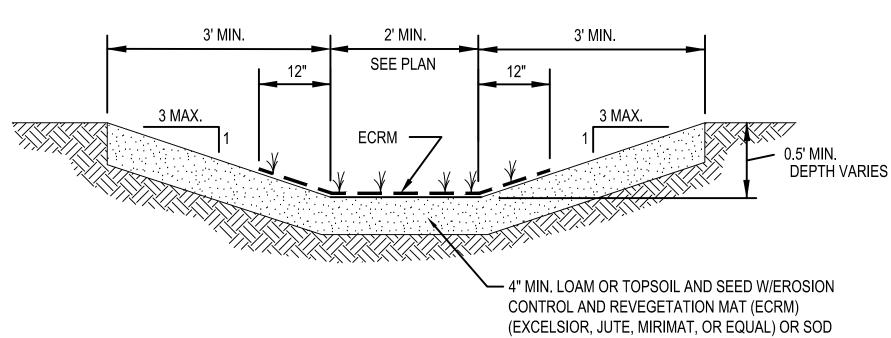
REMOVAL:

- THE ENTRANCE SHALL REMAIN IN PLACE UNTIL THE DISTURBED AREA IS STABILIZED OR REPLACED WITH A PERMANENT ROADWAY OR ENTRANCE.
- 2. PULL OUT ALL CONSTRUCTION ENTRANCE MATERIAL AND PROPERLY DISPOSE OF OFF-SITE. STONE CAN BE BLENDED INTO THE SURROUNDING LANDSCAPE AS SITE CONDITIONS ALLOW.
- RE-GRADE THE AREA AS NECESSARY AND ESTABLISH VEGETATION ON ANY RESULTING DISTURBED AREAS.

(OR 30' FOR ACCESS TO INDIVIDUAL HOUSE LOT) 14' MIN & NOT LESS THAN WIDTH OF INGRESS -**RIGHT OF WAY** OR EGRESS DIVERSION AS NEEDED ROAD OR OTHER EXISTING PAVED SURFACE



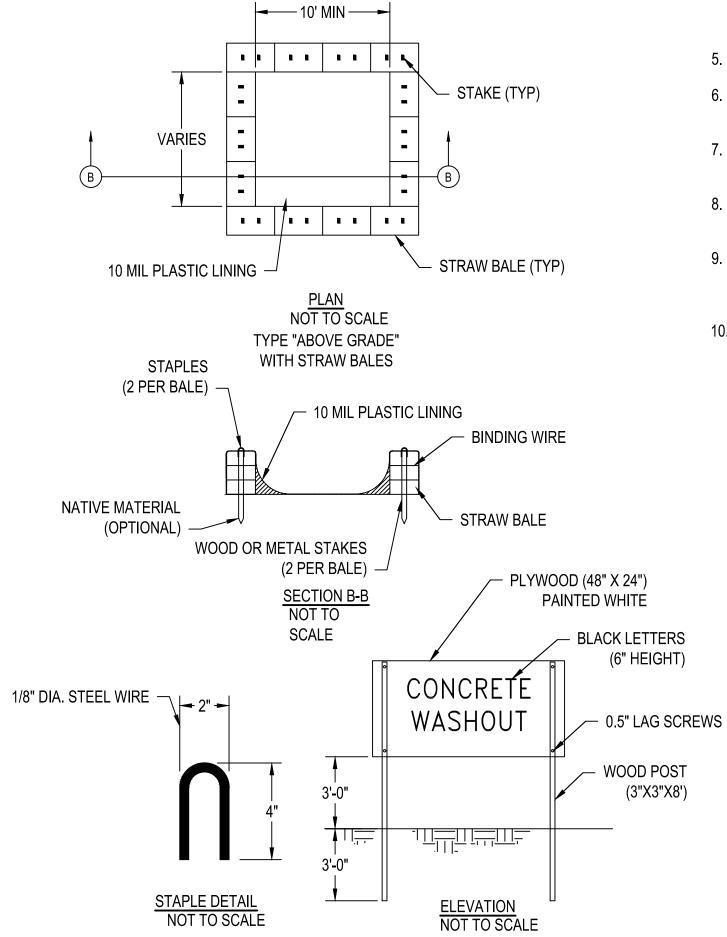
STABILIZING CONSTRUCTION ENTRANCE



SWALE CROSS SECTION

NOTES:

- CONCRETE WASHOUT WATER SHALL NOT BE ALLOWED TO FLOW TO STREAMS, DITCHES, STORM DRAINS, OR ANY OTHER WASHOUT CONVEYANCE.
- THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED ADJACENT TO THE TEMPORARY CONCRETE WASHOUT FACILITY.
- WASHOUT PIT MUST BE INSPECTED FREQUENTLY TO ENSURE LINER IS INTACT.
- ONCE 75% OF ORIGINAL PIT VOLUME IS FILLED OR LINER IS TORN. MATERIAL MUST BE REMOVED AND PROPERLY DISPOSED OF ONCE HARDENED. LINER SHALL BE REPLACED IF TORN.



CONCRETE WASHOUT AREAS

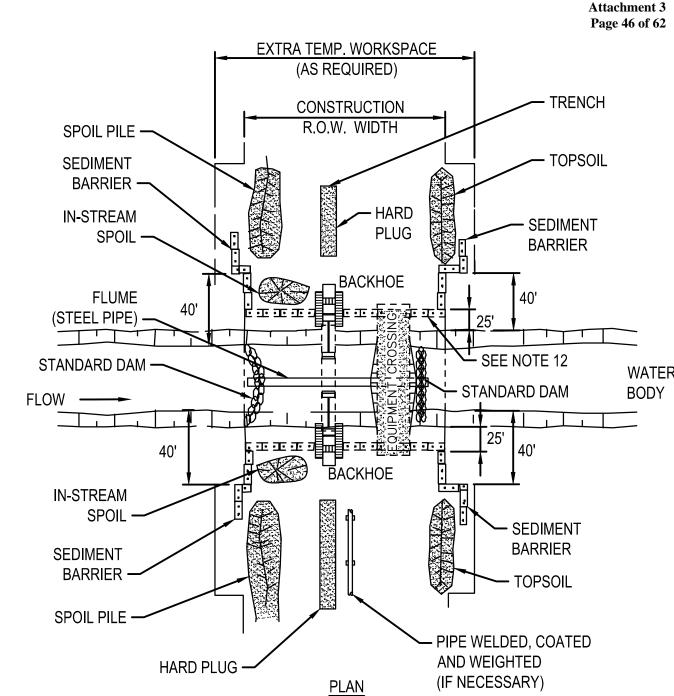
NOTES:

- 1. METHOD APPLIES TO WATERBODIES WHERE DOWNSTREAM SILTATION MUST BE AVOIDED. FLUMES ARE GENERALLY NOT RECOMMENDED FOR USE ON WATERBODIES WITH A BROAD UNCONFINED CHANNEL. PERMEABLE SUBSTRATE. EXCESSIVE DISCHARGE, OR WHERE A SIGNIFICANT AMOUNT OF BED OR BANK ALTERATION IS REQUIRED TO INSTALL FLUMES OR DAMS.
- 2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
- COMPLETE ALL WATERCOURSE ACTIVITIES AS EXPEDIENTLY AS POSSIBLE.
- 4. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF WATERBODY. REFUEL STATIONARY
- EQUIPMENT AS PER SPCC PLAN. INSTALL TEMPORARY EQUIPMENT CROSSING.
- 6. IN AGRICULTURAL LAND. STRIP TOPSOIL FROM SPOIL STORAGE AREA.
- 7. IN-STREAM SPOIL TO BE STORED ON BANKS A MINIMUM OF 10 FEET FROM TOP OF THE BANK.
- LEAVE HARD PLUGS AT THE STREAM BANK EDGE UNTIL JUST PRIOR TO PIPE INSTALLATION.
- SIZE FLUME TO HANDLE 150% ANTICIPATED FLOWS. INSTALL FLUME IN WATERCOURSE AND MAINTAIN CORRECT ALIGNMENT UNTIL REMOVED.
- 10. CONSTRUCT UPSTEAM DAM FOLLOWED BY DOWNSTREAM DAM. INSTALL A FLANGE ON UPSTREAM END OF FLUME AND SEAL TO SUBSTRATE WITH SANDBAGS AND POLYETHYLENE LINER WHERE NECESSARY TO ENSURE A WATER TIGHT BARRIER. "KEY" DAMS INTO BANKS OR CONSTRUCT SECONDARY DAM, IF NECESSARY.

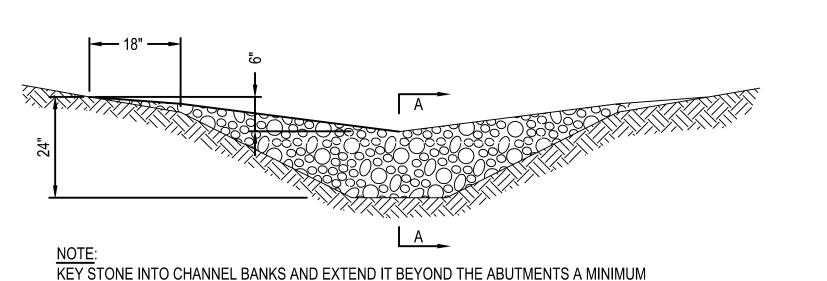
- PUMP STREAM CHANNEL BETWEEN DAMS, IF NECESSARY. DISCHARGE WATER THROUGH A DEWATERING STRUCTURE AND ONTO A STABLE WELL VEGETATED AREA TO PREVENT EROSION AND SEDIMENTATION. NO HEAVILY SILT-LADEN WATER MAY BE DISCHARGED IN THE STREAM.
- CONSTRUCT SEDIMENT BARRIERS (FILTER SOCK AND/ OR SILT FENCE) TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERCOURSE. CONSTRUCTED SEDIMENT BARRIERS SHALL EXTEND ALONG THE SIDES OF THE STOCKPILES AND THE ENDS OF DAMS. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
- COMPLETE PREFABRICATION OF IN-STREAM PIPE SECTION AND WEIGHT PIPE AS NECESSARY PRIOR TO COMMENCEMENT OF IN-STREAM ACTIVITY.
- TRENCH THROUGH WATERCOURSE. INSTALL TEMPORARY (SOFT) PLUGS, IF NECESSARY, TO CONTROL WATER FLOW AND TRENCH SLOUGHING.
- MAINTAIN STREAM FLOW, IF PRESENT, THROUGH FLUME THROUGHOUT CROSSING CONSTRUCTION.
- LOWER-IN PIPE, INSTALL TRENCH PLUG AND
- BACKFILL WITH NATIVE MATERIAL.

BACKFILL IMMEDIATELY.

- RESTORE WATERCOURSE CHANNEL TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
- RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

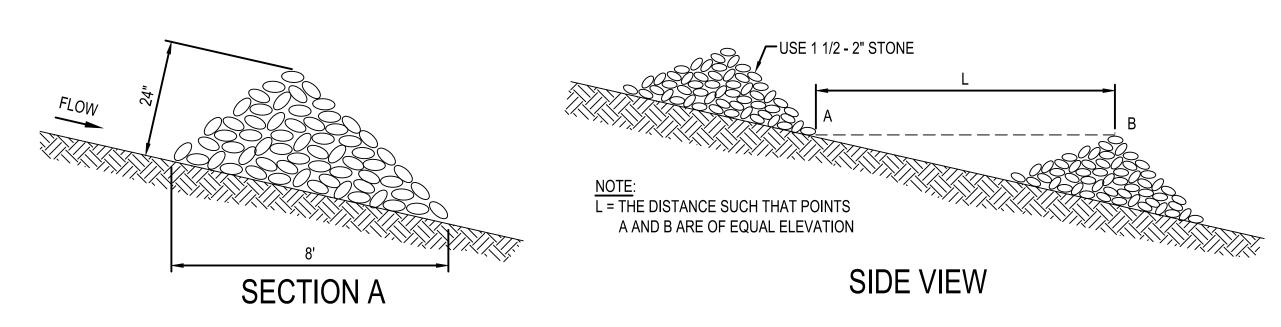


OPEN CUT DRY FLUME SCALE:N.T.S.



VIEW LOOKING UPSTREAM

OF 18" TO PREVENT FLOW AROUND THE DAM.



ROCK DITCH CHECK

BURNS & MCDONNELL

STATE LICENSE #43

04/17/2020

KENTUCKY

SEAL 33142

AMANDA M. PALM

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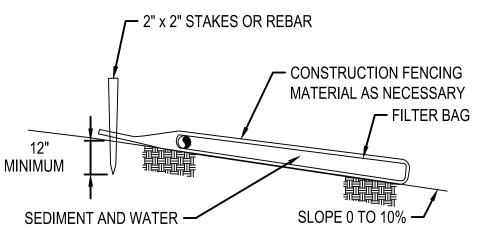
UL60 PIPELINE - PHASE 1 EROSION & SEDIMENT CONTROL DETAILS 1 BOONE COUNTY, KY

ERLANGER, KY

SHEET(S) 1 OF 3 DWG SCALE DWG DATE 04/18/2019 | SUPERSEDED DRAWING NUMBER PNG -C-043-0001099 C\ERLANGER/UL60

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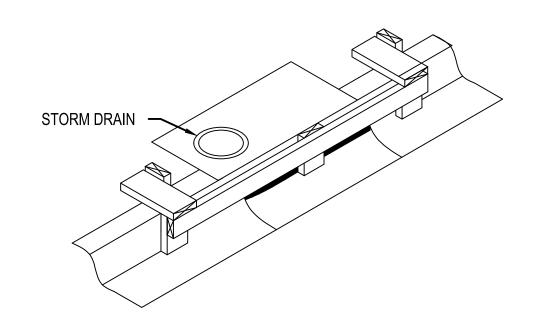
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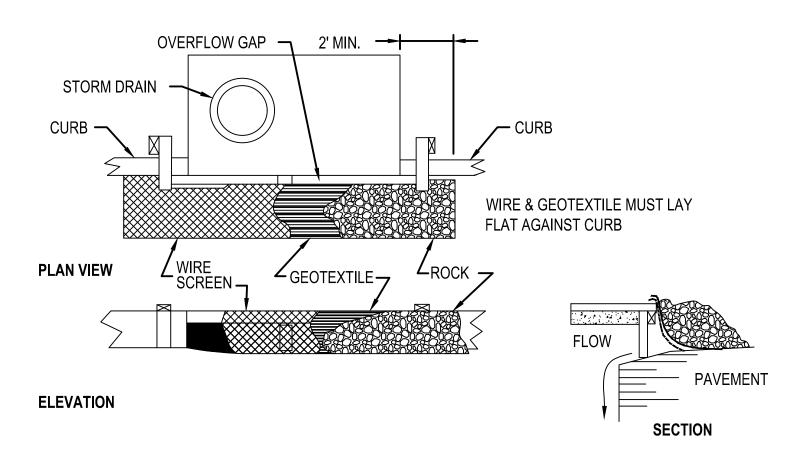


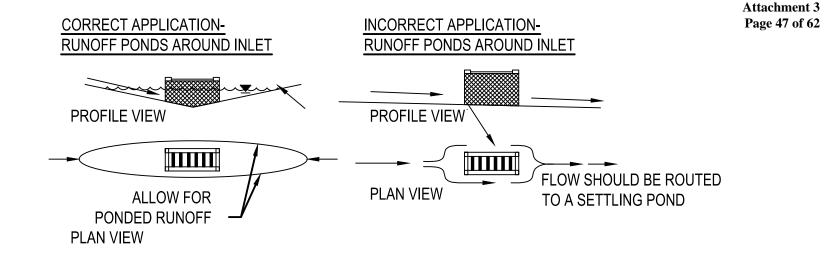
SECTION "A-A"

SECTION

- INSTALL A DEWATERING GEOTEXTILE FILTER BAG AS DIRECTED BY THE COMPANY'S INSPECTOR TO PREVENT THE FLOW OF HEAVILY SILT LADEN WATER INTO WATERBODIES OR WETLANDS.
- DISCHARGE SITE SHALL BE WELL VEGETATED AND THE TOPOGRAPHY OF THE SITE SUCH THAT WATER WILL FLOW AWAY FROM ANY WORK AREAS. THE AREA DOWN SLOPE FROM THE DEWATERING SITE MUST BE REASONABLY PLANE OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
- 3. TO ATTACH THE DISCHARGE HOSE, CUT A CORNER OF THE BAG, INSERT DISCHARGE HOSE, AND SECURE THE HOSE TO THE BAG.
- 4. A SINGLE FILTER BAG SHOULD NOT BE USED FOR FLOWS GREATER THAN 600 GALLONS PER MINUTE.
- REPLACE FILTER BAG BEFORE IT IS COMPLETELY FILLED WITH SEDIMENT. MONITOR DISCHARGE TO AVOID OVER PRESSURING DUE TO PLUGGING. WHICH MAY RESULT IN RUPTURE.
- 6. DISPOSE OF USED FILTER BAG AND SEDIMENT AT A SITE APPROVED BY THE COMPANY'S INSPECTOR.







INLET PROTECTION FOR CURB DRAINS & YARD DRAINS SITUATED ON A SLOPE:

INSTALLATION:

- REMOVE THE GRATE FROM THE CATCH BASIN.
- INSERT THE FILTRATION SACK INTO OPENING OF CATCH BASIN. SOME PRODUCTS REQUIRE THE FILTRATION SACK BE SLIPPED OVER THE CATCH BASIN GRATE FIRST
- REINSERT GRATE INTO CATCH BASIN WHILE ENSURING ALL NECESSARY SUPPORT STRAPS TO PROVIDE SUPPORT AND ENSURE THE FILTRATION SACK DOES NOT FALL INTO CATCH BASIN AS IT FILLS WITH SEDIMENT.

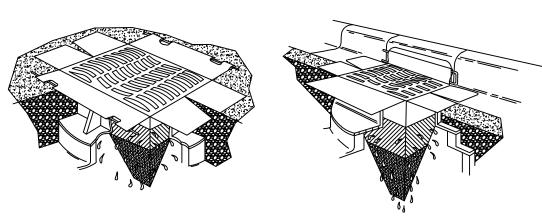
MAINTENANCE:

- THE FILTRATION SACK MUST BE EMPTIED WHEN IT IS 1/3RD FULL OF SEDIMENT AND DEBRIS.
- SACKS ARE TYPICAL MANUFACTURED WITH LIFTING STRAPS AND DUMPING STRAPS. 2. TO EMPTY THE SACK, REMOVE THE GRADE, LIFT THE SACK OUT OF THE CATCH BASIN VIA THE LIFTING STRAPS AND HAUL IT TO AN APPROPRIATE AREA. TURN IT INSIDE OUT WITH THE DUMPING STRAPS PROVIDED.
- 3. THE FILTRATION SACK MUST BE REPLACED IF IT IS TORN, OTHERWISE THE SAME SACK CAN BE USED MULTIPLE TIMES.

REMOVAL:

- 1. PULL OUT ALL INLET PROTECTION MATERIAL AND PROPERLY DISPOSE OF OFF-SITE.
- 2. RE-GRADE AREA WHERE ACCUMULATED SEDIMENT HAS BEEN PLACED AS NECESSARY AND ESTABLISH VEGETATION ON ANY RESULTING DISTURBED AREAS.

THE FOLLOWING DIAGRAMS PROVIDE A GENERAL IDEA OF HOW TO INSTALL AND MAINTAIN A VARIETY OF MANUFACTURED STORM DRAIN INLET PROTECTION PRACTICES. BE SURE TO IMPLEMENT FILTRATION SACKS THAT ARE APPROPRIATE FOR EITHER CURB INLETS OR FOR YARD DRAIN INLETS. MANUFACTURER'S SPECIFICATIONS FOR THE PRODUCT OF CHOICE SHOULD BE FOLLOWED.



TYPICAL GEOTEXTILE FILTER BAG FOR DEWATERING SCALE:N.T.S.

INSTALLATION:

CONSTRUCT PRIOR TO UPSLOPE LAND DISTURBANCE.

- CONSTRUCT WOODEN FRAME FROM 2"X4" LUMBER. DRIVE POSTS 1' INTO THE GROUND AT EACH CORNER DIRECTLY AGAINST THE CONCRETE BOX AND ASSEMBLE THE TOP FRAME WITH AN OVERLAP JOINT SHOWN BELOW. THE TOP FRAME SHALL BE SET AT AN ELEVATION THAT DOES NOT CAUSE PONDED WATER TO BACKUP INTO UNWANTED AREAS.
- 3. THE WIRE MESH AND GEOTEXTILE SHALL BE TIGHTLY STRETCHED AND FASTENED TO THE FRAME.
- 4. THE GEOTEXTILE SHALL OVERLAP ACROSS ONE SIDE OF THE INLET SO THE ENDS OF THE CLOTH ARE NOT FASTENED TO THE SAME POST.
- 5. BACKFILL SHALL BE PLACED IN THE 18" TRENCH AROUND THE INLET IN COMPACTED 6" LAYERS UNTIL THE ELEVATION OF THE TOP OF THE GRATE IS REACHED.

MAINTENANCE:

- REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF THE HEIGHT OF THE PRACTICE. THE REMOVED SEDIMENT MUST BE STABILIZED AND SHOULD NOT BE PLACED WHERE IT COULD EVENTUALLY BE CONVEYED BACK TO THE INLET VIA SURFACE RUNOFF.
- REPLACE AND PROPERLY DISPOSE OF DAMAGED SILT FENCE MATERIAL.
- 3. AREA WHERE SURFACE FLOW HAS CUT UNDER THE SILT FENCE MATERIAL WITHIN THE TRENCH SHALL BE RE-COMPACTED WITH APPROPRIATE MATERIAL (I.E. HIGH CLAY CONTENT)

REMOVAL:

- 1. PULL OUT ALL SILT FENCE MATERIAL AND STAKES AND PROPERLY DISPOSE OF OFF-SITE.
- 2. RE-GRADE AREA SEDIMENT HAS ACCUMULATED AS NECESSARY AND ESTABLISH VEGETATION ON ANY RESULTING DISTURBED AREAS.

ALTERNATIVE MANUFACTURED YARD DRAIN INLET PROTECTION PRODUCTS ARE AVAILABLE AND CAN BE USED, SUBJECT TO PRIOR APPROVED BY THE COMMUNITY ENGINEER.

DROP INLET PROTECTION

SCALE:N.T.S.

GEOTEXTILE OVER

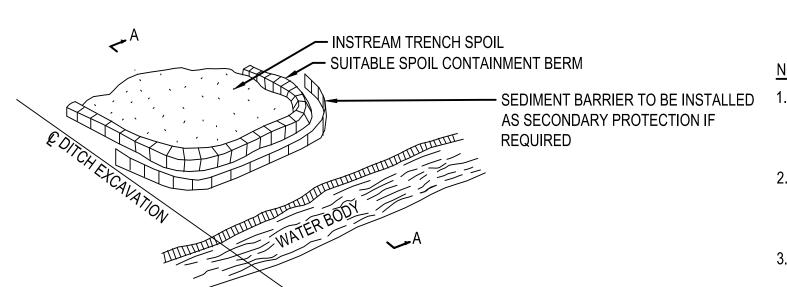
COMPACT BACKFILL

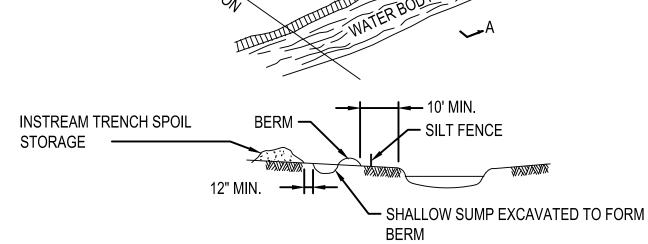
AROUND INLET

WIRE MESH BACKING



SCALE:N.T.S.





SECTION A-A

NOTES:

- SOIL CONTAINMENT BERMS ARE TO BE USED WHERE INSTREAM TRENCH SPOIL COULD REENTER THE WATERCOURSE DIRECTLY OR INDIRECTLY AND WITH SIMULTANEOUS UTILIZATION OF SEDIMENT BARRIERS IF REQUIRED.
- 2. MATERIAL USED FOR THE CONTAINMENT BERM SHOULD BE A MINIMUM OF 10 FT. FROM THE WATERS EDGE. IT SHOULD BE KEPT TO A HEIGHT WHICH REMAINS STABLE DURING THE CONSTRUCTION PERIOD.
- CARE SHOULD BE TAKEN THAT THE SPOIL PILE DOES NOT OVERTOP THE CONTAINMENT BERM.
- 4. THE CONTAINMENT BERM SHOULD BE DISMANTLED AND THE SITE RESTORED TO THE ORIGINAL CONDITION UPON COMPLETION OF THE WATER CROSSING.
- 5. WHERE POSSIBLE, RIPARIAN VEGETATION SHALL BE LEFT IN PLACE.
- STAGED MOVEMENT OF INSTREAM SPOIL MAY BE REQUIRED IF QUANTITIES ARE EXCESSIVE.
- 7. CARE AND ATTENTION MUST BE TAKEN TO ENSURE SPOIL CONTAINMENT BERMS ARE MAINTAINED.
- 8. FULL CONSIDERATION FOR OVERALL SLOPE STABILITY IS REQUIRED WHEN SELECTING A SPOIL CONTAINMENT LOCATION.

TYPICAL TEMPORARY SOIL CONTAINMENT BERM FOR WATERBODY TRENCH SPOILS

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AMANDA M. PALM 04/17/2020 KENTUCKY SEAL 33142

BURNS & MCDONNELL

STATE LICENSE #43

BY CHK APPD DATE **REVISION(S) DESCRIPTION** DESCRIPTION **APPROVALS** 02/10/2021 ISSUED FOR AS-BUILT JXV CEB EPM AREA CODE 5339 REGIONAL **ENGINEER** ACCOUNT NUMBER | V8191 PROJECT NUMBER | G7UL02PH1 MGR TECH REC & STD DRAWING BY JXV STATION ID **PRINCIPAL** AMP 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER CHECKER INITIALS | CEB





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REF. DWG(S) PNG-G-043-0001022 SHEET(S) 2 OF 3 DWG SCALE NONE DWG DATE 04/18/2019 | SUPERSEDED DRAWING NUMBER PNG -C-043-0001100 C\ERLANGER/UL60

INSTALLATION:

- CONSTRUCT PRIOR TO UPSLOPE LAND DISTURBANCE.
- PLACE CONTINUOUS LENGTHS OF SILT FENCE ALONG A CONSISTENT CONTOUR SO AS TO PREVENT THE CONCENTRATION OF RUNOFF AT LOW POINTS IN THE FENCE.
- 3. TO PREVENT FLOW AROUND ENDS, EXTEND EACH OF A CONTINUOUS LENGTH OF SILT FENCE UPSLOPE (90° TO THE CONTOUR)
- SO THE ENDS ARE AT A HIGHER ELEVATION OR 20-FEET IN HORIZONTAL DISTANCE, WHICHEVER IS ACHIEVED FIRST. AT A MINIMUM, THE BOTTOM 8-INCHES OF THE SILT FENCE MATERIAL MUST BE PLACED IN A TRENCH (MINIMUM 6-INCH DEPTH) THAT IS CUT WITH A TRENCHER, CABLE LAYING MACHINE, OR OTHER SUITABLE DEVICE. THE TRENCH SHALL NOT BE CONSTRUCTED WITH THE TILT BLADE OF A BULLDOZER.
- THE TRENCH MUST BE BACKFILLED WITH SOIL AND PROPERLY COMPACTED. WHEN AGGRESSIVELY PULLED UPWARD
- BETWEEN TWO CONSECUTIVE STAKES, THE MATERIAL SHOULD NOT PULL OUT OF THE GROUND. STAKES (MIN. 32-INCH LENGTH, 2"X2" HARDWOOD OF GOOD QUALITY) MUST BE PALCED ON THE DOWNSLOPE SIDE OF THE SILT
- FENCE MATERIAL. SILT FENCE MATERIAL MUST BE PULLED TIGHT BETWEEN CONSECUTIVE STAKES TO ENSURE THE FENCE DOES NOT SAG.
- WHEN IT IS NECESSARY TO JOIN TWO SEPARATE LENGTHS OF SILT FENCE TO FORM A CONTINUOUS RUN, THE END OF TWO SEPARATE LENGTHS MUST BE JOINED TOGETHER BY FIRST OVERLAPPING THEM AND THEN TWISTING THEM TOGETHER AT LEAST 180° PRIOR TO DRIVING THE STAKES INTO THE GROUND.

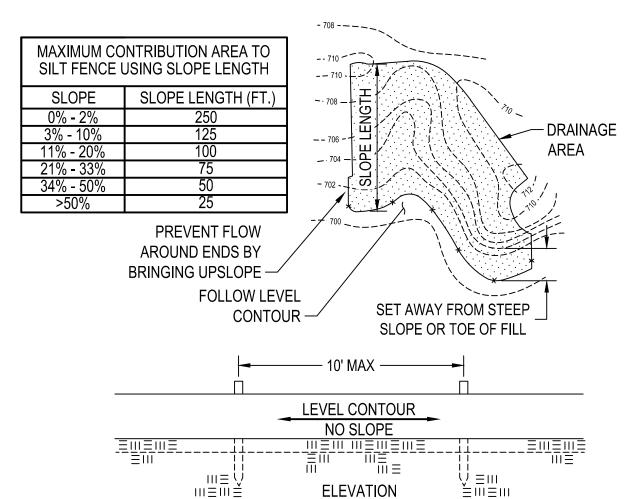
MAINTENANCE:

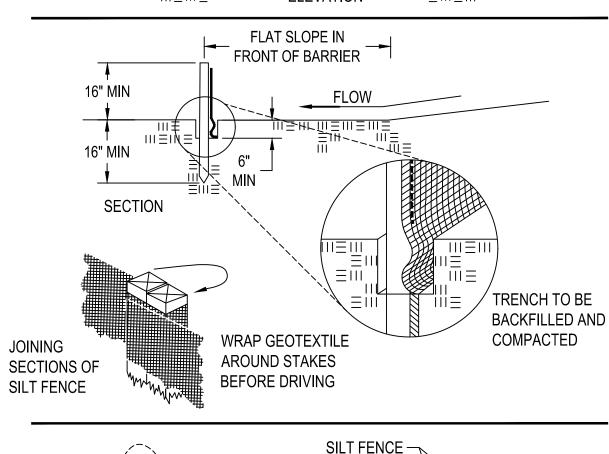
REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3RD THE HEIGHT OF THE SILT FENCE. THE REMOVED SEDIMENT MUST BE STABILIZED AND SHOULD NOT BE PLACED WHERE IT COULD EVENTUALLY BE CONVEYED BACK TO THE SILT FENCE VIA SURFACE RUNOFF.

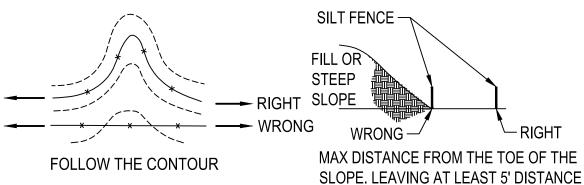
- REPLACE AND PROPERLY DISPOSE OF DAMAGED SILT FENCE MATERIAL.
- AREAS WHERE SURFACE FLOW HAS CUT UNDER THE SILT FENCE MATERIAL WITHIN THE TRENCH SHALL BE RE-COMPACTED WITH APPROPRIATE MATERIAL (I.E. HIGH CLAY CONTENT).

DISTURBED AREAS.

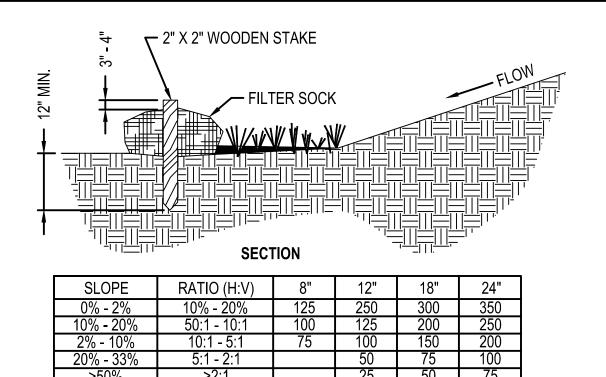
PULL OUT ALL SILT FENCE MATERIAL AND STAKES AND PROPERLY DISPOSE OF OFF-SITE. RE-GRADE AREA WHERE SEDIMENT HAS ACCUMULATED AS NECESSARY AND ESTABLISH VEGETATION IN ANY RESULTING







SILT FENCE SCALE: N.T.S.



- 1. MATERIALS COMPOST USED FOR FILTER SOCKS SHALL BE WEED, PATHOGEN AND INSECT FREE AND FREE OF ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH. THEY SHALL BE DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER AND CONSIST OF A PARTICLES RANGING FROM 3/8" TO 2".
- 2. FILTER SOCKS SHALL BE 3 OR 5 MIL CONTINUOUS, TUBULAR, HDPE 3/8" KNITTED MESH NETTING MATERIAL, FILLED WITH COMPOST PASSING THE ABOVE SPECIFICATIONS FOR COMPOST PRODUCTS.

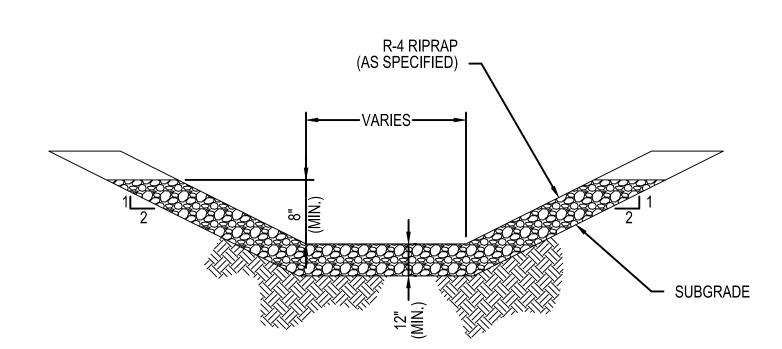
INSTALLATION:

- 1. FILTER SOCKS WILL BE PLACED ON A LEVEL LINE ACROSS SLOPES, GENERALLY PARALLEL TO THE BASE OF THE SLOPE OR OTHER AFFECTED AREA. ON SLOPES APPROACHING 2:1. ADDITIONAL SOCKS SHALL BE PROVIDED AT THE TOP AND AS NEEDED MID-SLOPE.
- 2. FILTER SOCKS INTENDED TO BE LEFT AS A PERMANENT FILTER OR PART OF THE NATURAL LANDSCAPE, SHALL BE SEEDED AT THE TIME OF INSTALLATION FOR ESTABLISHMENT OF PERMANENT VEGETATION.
- 3. FILTER SOCKS ARE NOT TO BE USED IN CONCENTRATED FLOW SITUATIONS OR IN RUNOFF CHANNELS.

MAINTENANCE:

- 1. ROUTINELY INSPECT FILTER SOCKS AFTER EACH SIGNIFICANT RAIN, MAINTAINING FILTER SOCKS IN A FUNCTIONAL CONDITION AT ALL TIMES.
- 2. REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE FILTER SOCKS WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE PRACTICE.
- 3. WHERE THE FILTER SOCK DETERIORATES OR FAILS, IT WILL BE REPAIRED OR REPLACED WITH A MORE EFFECTIVE ALTERNATIVE.
- 4. REMOVAL FILTER SOCKS WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED IN SUCH AS WAY AS TO FACILITATE AND NOT OBSTRUCT SEEDINGS.

FILTER SOCK



RIPRAPPED CHANNEL

SCALE: N.T.S.

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AMANDA M. PALM 04/17/2020 KENTUCKY SEAL 33142

PROFESSIONAL ENG/ARCH STAMP

DATE BY CHK APPD **DESCRIPTION REVISION(S) DESCRIPTION** JXV CEB EPM AREA CODE 02/10/2021 | ISSUED FOR AS-BUILT REGIONAL ACCOUNT NUMBER | V8191 ENGINEER PROJECT NUMBER G7UL02PH1 MGR TECH REC & STD DRAWING BY STATION ID PRINCIPAL 02/12/2020 ENGINEER CHECKER INITIALS | CEB



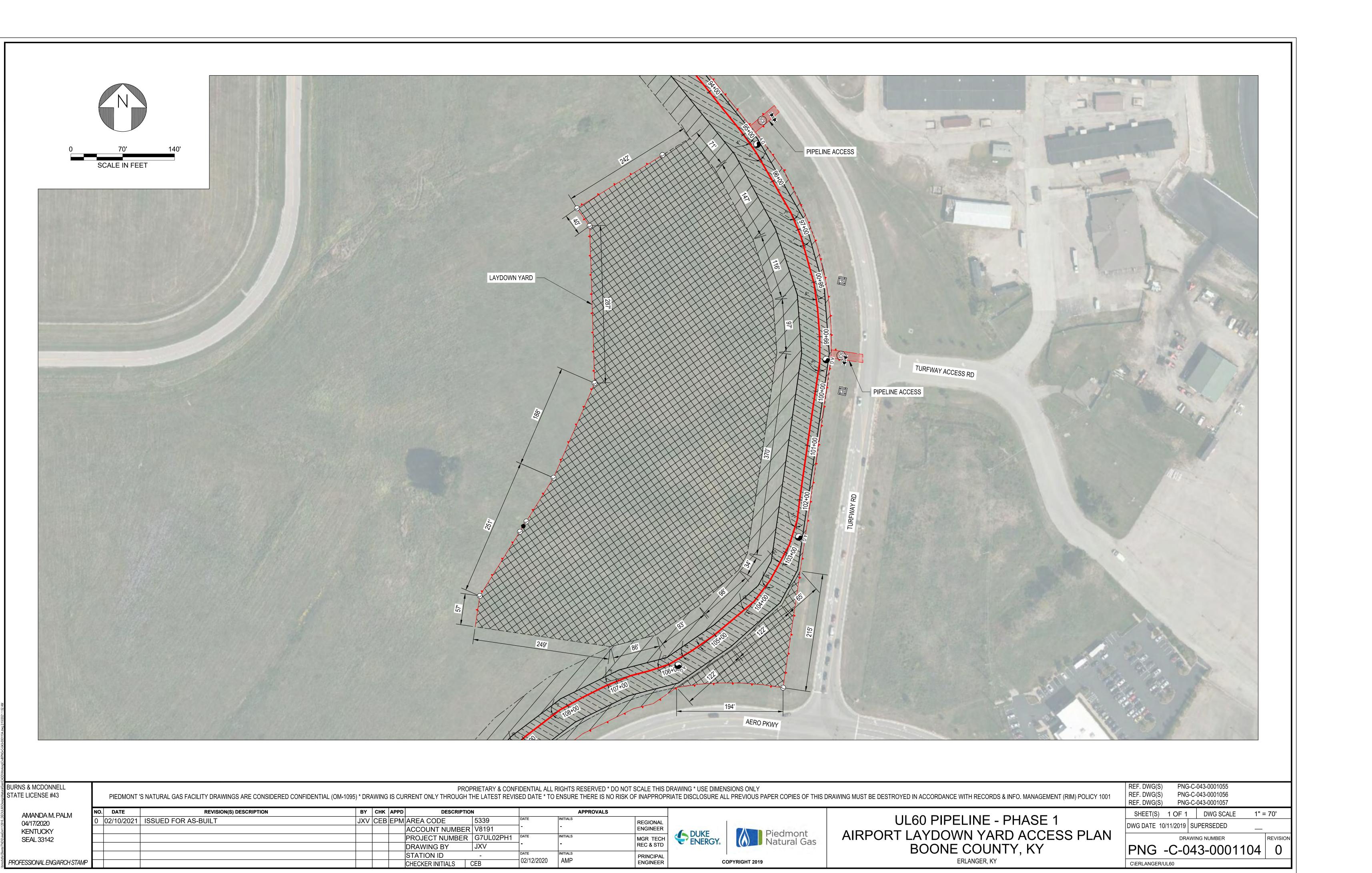


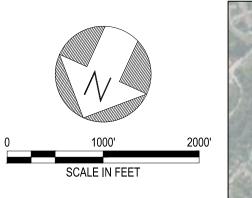
UL60 PIPELINE - PHASE 1 EROSION & SEDIMENT CONTROL DETAILS 3 BOONE COUNTY, KY ERLANGER, KY

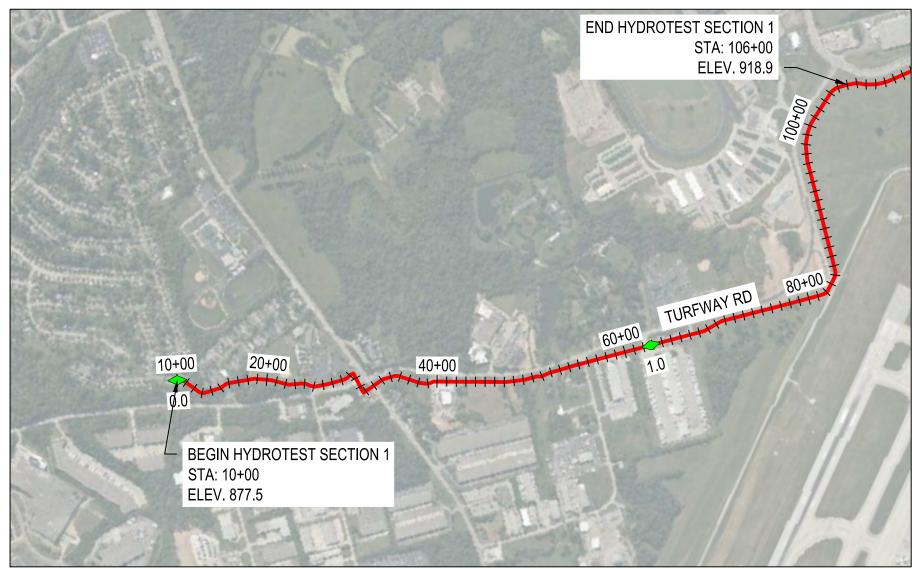
REF. DWG(S) PNG-G-043-0001022 SHEET(S) 3 OF 3 DWG SCALE DWG DATE 04/18/2019 | SUPERSEDED PNG -C-043-0001101

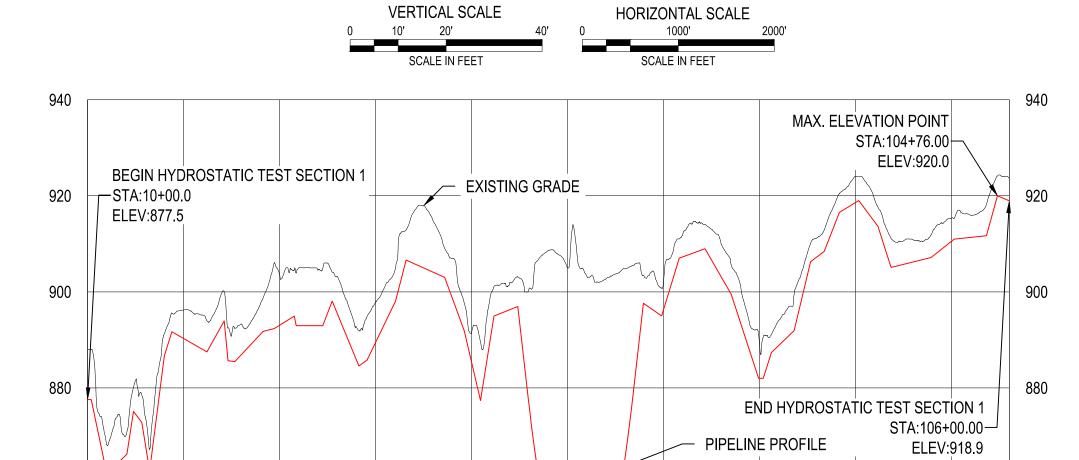
C\ERLANGER/UL60

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- PIPELINE PROFILE

MIN. ELEVATION POINT

90+00

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100+00 106+00

-STA:61+50.00 ELEV:842.0

HYDROTEST SECTION 1

HYDROTEST SECTION 1 INFORMATION: COMPONENTS WERE TESTED WITH TEST V8191-V8351-20201009-1 FOR 8.13 HOURS WITH WATER TO A MINIMUM PRESSURE OF 1549.7 PSI TO A MAXIMUM PRESSURE OF 1552.8 PSI.

ERLANGER, KY

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PRINCIPAL

ENGINEER

50+00

40+00

20+00

STATION ID

CHECKER INITIALS CEB

PROFESSIONAL ENG/ARCH STAMP

30+00

04/17/2020

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ELEV:918.9 **EXISTING GRADE** 900 900 880 880 860 PIPELINE PROFILE 840 820 800 **END HYDROSTATIC TEST SECTION 2** STA:247+79.65-780 ELEV:798.9-760 MIN. ELEVATION POINT STA:245+45.0-ELEV:755.8 106+00110+00 200+00 210+00

HYDROTEST SECTION 2

VERTICAL SCALE

SCALE IN FEET

BEGIN HYDROTEST SECTION 3

END HYDROTEST SECTION 3

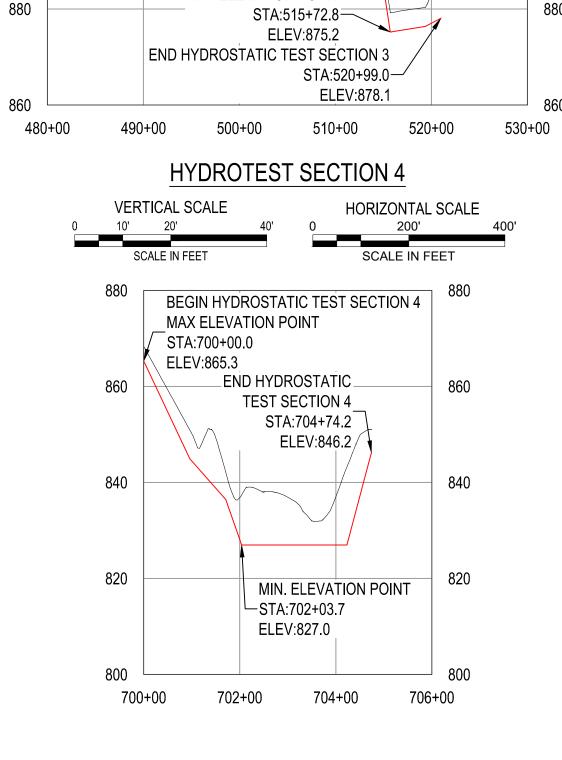
STA: 520+99 ELEV. 878.1

STA: 500+00

ELEV. 888.0

HORIZONTAL SCALE

SCALE IN FEET



END HYDROTEST SECTION 4

STA: 247+79

VERTICAL SCALE

SCALE IN FEET

MAX ELEVATION POINT

-BEGIN HYDROSTATIC-

TEST SECTION 3

STA:500+00.0

ELEV:888.0

STA:505+03.8-

ELEV:897.2

MIN. ELEVATION POINT

ELEV. 798.9

END HYDROTEST SECTION 2

HYDROTEST SECTION 3

HORIZONTAL SCALE

920

900

SCALE IN FEET

STA: 704+74 ELEV. 846.2

BEGIN HYDROTEST SECTION 4

920

STA: 700+00

ELEV. 865.3

V8191-20201017-1 FOR 8.03 HOURS WITH WATER TO A MINIMUM PRESSURE OF 1550.2 PSI TO A MAXIMUM PRESSURE OF 1551.5 PSI. COMPONENTS AFTER THE MLV WERE TESTED WITH TEST V8351-20201026-1 FOR 8 HOURS WITH WATER FROM A MINIMUM

PRESSURE OF 1544.9 PSI TO A MAXIMUM PRESSURE OF 1549.5 PSI.

HYDROTEST SECTION 3 INFORMATION: COMPONENTS UP TO THE INSULATOR WERE TESTED WITH TEST V8191-20201001-1 FOR 10.67 HOURS WITH WATER TO A MINIMUM PRESSURE OF 1543.9 PSI TO A MAXIMUM PRESSURE OF 1556.9 PSI. COMPONENTS AFTER THE INSULATOR WERE TESTED WITH TEST V8351-20200902 FOR 8.25 HOURS WITH WATER FROM A MINIMUM

PRESSURE OF 1544,9 PSI TO A MAXIMUM PRESSURE OF 1572,3 PSI.

COMPONENTS WERE TESTED WITH TEST V8191-20200924-1 FOR 8

HOURS WITH WATER TO A MINIMUM PRESSURE OF 1540 PSI TO A

COMPONENTS UP TO THE MLV WERE TESTED WITH TEST

HYDROTEST SECTION 2 INFORMATION:

HYDROTEST SECTION 4 INFORMATION:

MAXIMUM PRESSURE OF 1570 PSI.

Page 51 of 62

MAX. ELEVATION POINT

-STA:106+00.0

BEGIN HYDROSTATIC TEST SECTION 2

─STA:110+16.6

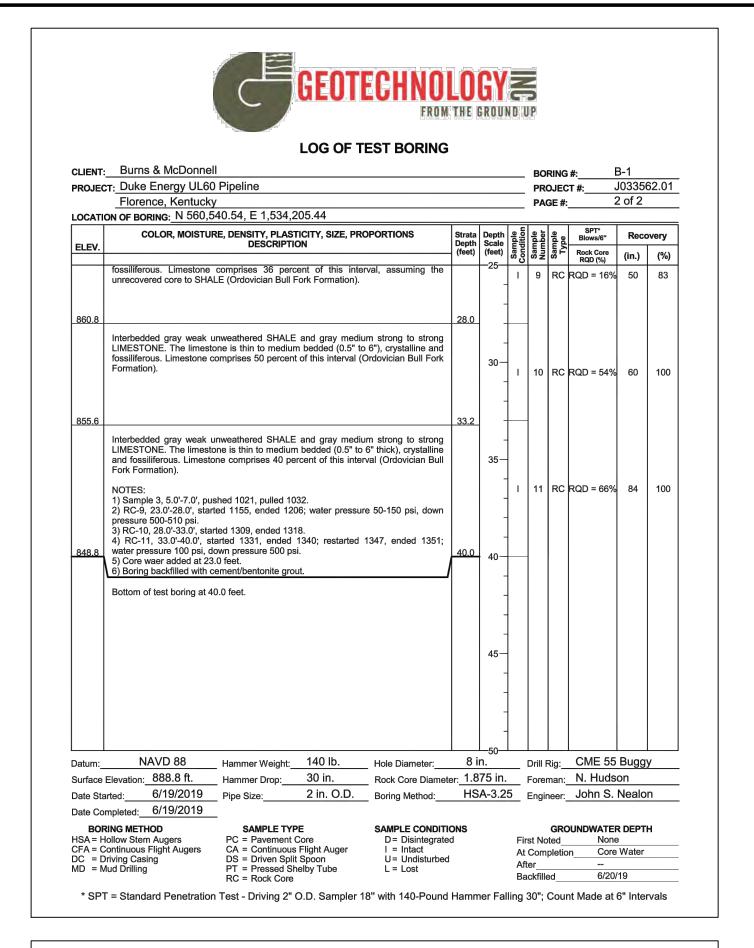
ELEV:922.0

920

BEGIN HYDROTEST SECTION 2

STA: 106+00

ELEV. 918.9



CLIENT:	Burns & McDonnell	I						BO	RING	#- F	3-2	
	T: Duke Energy UL60								OJEC		0335	62
	Florence, Kentucky										of 2	
LOCATI	ON OF BORING: N 560,5	00.38, E 1,534,22	6.87									
	COLOR, MOISTUR	RE, DENSITY, PLASTIC		OPORTIONS	Strata Depth	Depth Scale (feet)	ple	ple ber	ple Se	SPT* Blows/6"	Reco	ove
ELEV . 890.4		DESCRIPTION Ground Surface			(feet) 0.0	(feet)	Sam	Sam	Sample Type	Rock Core RQD (%)	(in.)	
890.1	TOPSOIL				0.0	0-	٦					Н
	Brown very moist soft to n	nedium stiff FAT CLA	/, little topsoil (fill).	1	-		1A 1B	DS	2-1-3	18	1
888.7 888.0	Brown moist stiff LEAN CI	LAY (glacial drift).			1.7 2.4	-						
000.0	Daddish busun ta busun n	aniat atiff I FAN OLAY	(alasial drift) (21.)	2.7	1.	U	2	PT		13	,
	Reddish brown to brown n	noist still LEAN CLAY	(giaciai driit) (JL).			ਁ	~	l		10	`
885.9					4.5	-						
	Brown and gray moist to	o very moist stiff FA	T CLAY with	oxide stains, trace		5-	<u> </u>					Ι.
	bedding (residual).					-	┤	3	DS	3-4-7	18	1
883.4					7.0	-	-					
	Brown, trace gray mois	t stiff LEAN CLAY	with oxide sta	ains, trace bedding			١.		D.C.	247	40	١,
	(residual) (CH).					Ι.	Ľ	4	DS	3-4-7	18	1
880.9				- — — — — –	9.5							
	Interbedded brown mois					10-	١.	5	DC	42 42 46	40	1
	medium strong to strong L	TIMES LONE (OLGONICI	an Bull Fork Fo	rmation).		-	Ľ	٦	DS	13-13-16	18	
874.4	Interbedded olive brown medium strong to strong L	moist extremely we	eak weathered	SHALE and gray	16.0	15-		6A 6B	DS	8-50/5"	12	1
872.9	medium strong to strong t		an bull fork fo	ormation). 	17.5	-	1					
	Interbedded gray slightly	moist extremely weak	to weak unwe	athered SHALE and		-	-					
	gray medium strong to str				1	-	-					
870.4					20.0	20-						
	Interbedded gray mediun											
	weak unweathered SHAL and fossiliferous. Limesto						1	7	RC	RQD = 23%	35	
967 4	unrecovered core to be sh				23.0	-	1					
867.4	Introduced (Co. 1997)	t (/		AEOTONE - :	∠3.0	1 -		1				
	Interbedded gray mediun weak unweathered SHAL	E. The limestone is the	nin to medium	bedded (0.5" to 8"),		-		-				
	crystalline and fossiliferou	•	•			L ₂₅ _				0115 55		
Datum:_	NAVD 88	_ Hammer Weight:	140 lb.	_ Hole Diameter:	8 i			Drill I	-	CME 55		<u>y</u> _
	Elevation: 890.4 ft.	_ Hammer Drop:	30 in.	_ Rock Core Diamet			_		man:	N. Hudse		_
Date Sta	0/00/0040	Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	<u> </u>	Engi	neer:_	John S.	iveaio	<u>n</u>
	mpleted: 6/20/2019	-										
	RING METHOD Iollow Stem Augers	SAMPLE TYPE PC = Pavement Co		SAMPLE CONDITI D= Disintegrate			Fir	st No		UNDWATER None		Н
CFA = C	Continuous Flight Augers Priving Casing	CA = Continuous F DS = Driven Split S	light Auger	I = Intact U= Undisturbed					pletio		Water	
n - ۲				u – unaisturbea	ı		Aft					

CLIENT:	T: Duke Energy UL60	l Pipeline	LOG OF 1	EST BORING			_	PRO	OJEC	T#:	3-2 J0335	62.(
OCATIO	Florence, Kentucky	cky P 0,500.38, E 1,534,226.87									2 of 2				
	<u></u>	RE, DENSITY, PLAST		OPORTIONS	Strata	Depth Scale	e e	e e	و ۾	SPT* Blows/6"	Reco	over			
ELEV.		DESCRIPTIO	N		Depth (feet)	Depth Scale (feet)	Samp	Samp	Samp	Rock Core	(in.)	(%			
	assuming the unrecovered	d core to be shale (Or	rdovician Bull Fo	rk Formation).		-25 - - - - - - 30-		8		RQD (%)	98	9			
857.9					32.5	-									
847.9	Interbedded gray mediur weak unweathered SHAL and fossiliferous. Limest unrecovered core to be s LIMESTONE and gray we NOTES: 1) Sample 2, 2.0'-4.0', put 2) RC-7, 20.0'-23.0', star down pressure 490 psi. 3) RC-8 started at 0844 Sloughed debris enterec removed; new tools retric coring of RC-8 at 1254, 6 psi. 4) RC-9, 32.5'-42.5', star pressure 500 psi. 5) Hole dry when core wa 6) Boring backfilled with c	E. The limestone is to the comprises 51 per hale Interbedded gray hale Interbedded gray hale SHALE (Ordovicial shed 1451, pulled 150 ted 0813, ended 082 on 6/20/19. Lost sea to borehole and seize hale from drill shop; hended 1318; water propertied 1335, ended 13 ter added at 24.0 feet ter added at 24.0 feet some some price of the sea of th	hinly bedded (0. ercent of this int of strong to very: in Bull Fork Form 19, 6/19/19. 22, 6/20/19. Wat all at base of augered to 24.0 essure 150 psi, 352; water pressure 150.	5" to 4"), crystalline erval assuming the strong unweathered nation). er pressure 75 psi, gers during coring. Tools and augers of the tools and resumed down pressure 500	42.5	35— - - - - 40—		9	RC	RQD = 70%	118	91			
	Bottom of test boring at 4:	2.5 feet.				45—									
Datum:_	NAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 i			Drill F	Rig:_	CME 55	Bugg	у			
	Elevation: 890.4 ft.	_ Hammer Drop:	30 in.	Rock Core Diamete		75 in.	_	Forer		N. Huds					
Date Sta	0/00/00/10	Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	5_	Engir	neer:_	John S.	Nealo	n			
BOF HSA = H CFA = C DC = D	mpleted: 6/20/2019 RING METHOD follow Stem Augers continuous Flight Augers ctriving Casing fud Drilling	PC = Pavement Core D = Dis CA = Continuous Flight Auger I = Int DS = Driven Split Spoon U = Ur		D= Disintegrate I = Intact	U= Undisturbed					None					

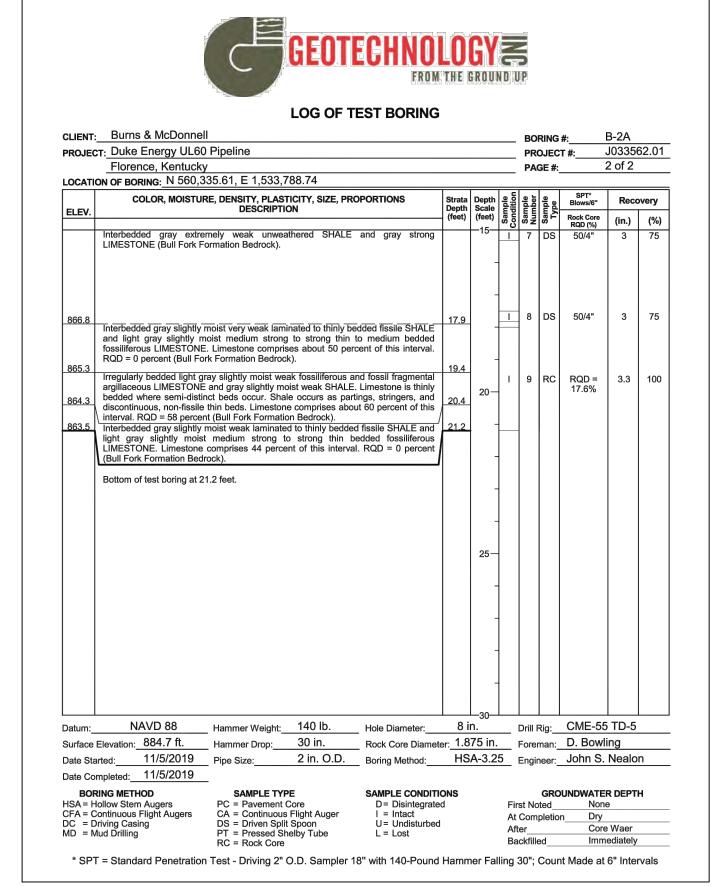
Page 52 of 62

				ECHNO FROM			ND U	ΙP				
		Para	LOG OF T	EST BORING								
CLIENT:								во	RING		B-2A	
PROJEC	T: Duke Energy UL60								OJEC		J0335	62.01
OCATI	Florence, Kentuck ON OF BORING: N 560,3		788 74					PA	GE #:		1 of 2	
LOCATI	<u>'</u>	RE, DENSITY, PLAS		OPORTIONS	Strata	Depth	o u	9 5	0	SPT*	Poc	very
ELEV.	OCEON, MOIOTO	DESCRIPTION			Depth (feet)	Scale (feet)	ampl	amb	Sample Type	Blows/6" Rock Core		Ť
884.7	TOPSOIL (4 inches)	Ground Surf	ace		0.0	0-	တိ ပိ	ΰŽ	w.	RQD (%)	(in.)	(%)
	TOT GOIL (4 mones)						١. ا			WOLLO 4	40	
						-	'	1	DS	WOH-2-4	10	56
883.2	Brown and gray moist sti	ff LEAN CLAY, trace	sand and roots (fill).	1.5							
						-						
881.7					3.0							
001.7	Brown, trace gray moist	atiff to your atiff EAT	F CLAV with trav	as hadding and with	3.0	-	١	_				
	oxide stains (residual) (C		I CLAT WITH ITAG	ce bedding and with			U	2	PT	500 psi	13	54
						_						
						5-						
						"	1	3	DS	4-6-6	16	89
						_						
						-						
876.9					7.8							
0/0.9	Introduced Code become	As allow horses made		-1. -1 -1.	1.0	-						
	Interbedded light brown SHALE (CL) and gray m						U	4	PT	800 psi	19	79
	Bedrock).					-						
						10-		5	DS	9-32-16	18	100
							'	ľ		0 02 .0		
						-						
872.7					12.0							
U. E./	Interbedded gray slight	ly majet extremely	weak weathered	SHALE and gray		1 -						
	medium strong to strong					_	ı	6	DS	28-50/3"	9	100
						_						
870.2					14.5							
						L ₁₅ —						
Datum:_	NAVD 88	_ Hammer Weight:_	140 lb.	_ Hole Diameter:	8 i			Drill I		CME-55		
	Elevation: 884.7 ft.	_ Hammer Drop:	30 in.	_ Rock Core Diamete			_		man:		_	<u> </u>
Date Sta	44/5/0040	_ Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	ວ_	Engi	neer:	John S.	ivealo	n
		- CAMPIE TO)E	CAMPI E COURTE	ONO				000	NINDAY-TE	D DES-	ш
HSA = H	RING METHOD Iollow Stem Augers	SAMPLE TYPE PC = Pavement	Core	D= Disintegrate			Fin	st No		DUNDWATE None		Н
	ontinuous Flight Augers riving Casing	CA = Continuous DS = Driven Split		I = Intact U= Undisturbed			At	Com	pletic		147	
	lud Drilling	PT = Pressed Sh		L = Lost			Aft Ba	_			Waer ediately	

BURNS & MCDONNELL

PROFESSIONAL ENG/ARCH STAMP

* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals



CHECKER INITIALS | CEB

			LOG OF T	EST BORING	THE							
	Burns & McDonnel							ВО	RING	"·	B-3	
PROJEC	ст: Duke Energy UL60	•							DJEC.		J0335	62.01
	Florence, Kentucky ON OF BORING: N 560,0		72 14				_	PAG	3E #:_		1 of 1	
OCAII				PORTIONS	Ī., ,	- ·	۵ 5	a -		SPT*	Τ_	
ELEV.	COLOR, MOISTUR	RE, DENSITY, PLAST DESCRIPTIO	ICITY, SIZE, PRO N	PORTIONS	Depth	Depth Scale	Sample Condition	mple	mple	Blows/6"	Reco	overy
900.5		Ground Surfa	ce		(feet) 0.0	(feet)	Son	Sa N	Sa	Rock Core RQD (%)	(in.)	(%)
900.3/	TOPSOIL Brown, little gray moist	to very moist med	um stiff to stiff	LEAN CLAY with	\0.37	J			DS	2-3-4	18	100
000 5	limestone floaters, some of	organics (roots) (fill).	0 10 0111	will	, ,	-		1B			"	.50
898.5					2.0	-						
	Gray very moist soft F. fragments and charred wo		ne sand, limest	one floaters, brick		-		2	DS	2-2-1	18	100
896.0		. ,			4.5	-				•		
550.0	Dork brown and	and arms males to a	noff to the LEA	N CLAV	7.0	5-						
	Dark brown and gray to day stains, sand, limestone flo						1	3	DS	2-4-2	18	100
							\dashv					
						-	1	4	DS	3-4-1	18	100
891.0	L				9.5	-						
	Gray wet soft FAT CLAY,					10-						
	,	(····)	•			_	1	5	DS	1-1-1	18	100
						_	\dashv					
887.5					13.0							
	Gray very moist to wet s											
	fragments (fill).		🖵 🗤 🕬	TABLES SING BILOR		-						
						15—	\dashv	_				,
						-	1	6	DS	3-4-9	18	100
						-						
882.5	<u> </u>				18.0	_						
	Gray very moist to wet sof	t FAT CLAY with cha	rred organics (fil).		_						
	NOTES:					00						
	1) Encountered steel trud					20-	\neg	7	DS	1-1-1	18	100
879.0	John Nealon spoke with Me the boring could be ten	minated at 21.5 fee	t. Boring backf	illed with hydrated	21.5	-		'	03	1-1-1	'6	100
	bentonite chips after takir out by seepage water.	ng two tubs of cemer	nt/bentonite grou	t that were washed	1	-						
	2) Shelby tube PT-8 recov	ered from offset hole	at 5.0-7.0 feet. I	Recovery 15 inches		-						
	(62%).					-						
	Bottom of test boring at 2	1.5 feet.				L ₂₅ _						
Datum:_	NAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 i	n.		Orill F	Rig:	CME 55		<u>y</u>
Surface	Elevation: 900.5 ft.	Hammer Drop:	30 in.	Rock Core Diamet			_	orer	nan:_	N. Huds		
Date Sta		Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	<u>5</u> E	Engir	neer:_	John S.	Nealo	n
Date Co	empleted: 6/25/2019	-										
	RING METHOD	SAMPLE TYP		SAMPLE CONDITI			F:-	d ki.		UNDWATE		Н
CFA = C	Hollow Stem Augers Continuous Flight Augers	PC = Pavement C CA = Continuous	Flight Auger	D= Disintegrate				t No Com	ted_ pletior	5.0 f n 21.5		
	Driving Casing Mud Drilling	DS = Driven Split PT = Pressed She		U= Undisturbed L = Lost			Afte				y 21.5	ft.

	D 0 14 D		LOG OF I	EST BORING								
	Burns & McDonnell	Dinalina								<i>"</i> '	3-4	62.01
PROJEC	т: <u>Duke Energy UL60</u> Florence, Kentucky	ripeline						J033562.01 1 of 1				
LOCATION	ON OF BORING: N 559,73	36.20, E 1,532,5	58.68				_	FAC	JL #.			
		E, DENSITY, PLAST	ICITY, SIZE, PRO	PORTIONS	Strata Depth	Depth Scale (feet)	ple	ple ber	ple	SPT* Blows/6"	Reco	overy
905.8		Ground Surfa			(feet) 0.0	(feet)	Sam	Sam	Sam	Rock Core RQD (%)	(in.)	(%)
905.7	TOPSOIL				0.0	-0-	_	1A	DS	2-4-4	3	17
903.8	Brown and dark brown moi	ist stiff LEAN CLAY	with topsoil, trace	sand (fill).	2.0	-	<u>'</u>	1B	וסט	2-4-4	3	''
	Brown and gray moist to ve	ery moist stiff FAT C	LAY, trace sand	(glacial drift) (CH).		_		2	DS	3-3-4	18	100
901.3					4.5	-	<u> </u>		00	J-J -4	10	100
	Brown and gray very mo	ist verv stiff FAT C	LAY with limest	one floaters trace		5-						
	bedding (residual).	,				-	U	3	PT		9	38
897.9					7.9							
	Interbedded brown moist			SHALE and gray		_		4A 4B	DS	7-12-21	16	89
	medium strong to strong L	IMESTONE (bedrock	<).	- •		10-			_			_
						-		5	DS	20-33-22	14	78
						-	_					
004.5								6	DS	6-12-12	18	100
891.3					14.5	15—		_		40 50/0"	_	400
	Interbedded olive brown medium strong to strong L			SHALE and gray			-	7	DS	49-50/2"	9	100
888.8		- — — <u>`</u> —	<u> </u>		17.0	-		8	DS	50/2"	1	50
	Interbedded gray slightly medium strong to strong L	moist extremely we	eak unweathered	SHALE and gray		-	Ш	٥	ופטן	30/2	'	30
885.8	medium suong to suong L		V·		20.0	20-						
	Interbedded gray slightly	moist weak unwea	athered SHALF	and gray medium			_	9		RQD = 75%	21	72
883.4	strong to strong LIMEST crystalline and fossiliferon	ONE. The limestor	e is thinly bed	ded (1/2" to 1.5"),	22.4	-	_ '	פ	\C	NQD - 15%	21	'2
	assuming the unrecovered				1	-						
	Interbedded gray slightly	moist weak unwes	athered SHALE	and grav medium		-						
	strong to strong LIMESTO	NE. The limestone is	thin to medium	bedded (1/2" to 8"),		25-						
	crystalline and fossiliferor (Ordovician Bull Fork Form		prises 38 perce	eric of this interval		_		10	RC	RQD = 100%	96	100
	-	-				_				10070		
						-						
875.3					30.5	30-						
	Bottom of test boring at 30	.5 feet.										
	Note: Shelby tube pushe	d in offset hole fro	om 2.5'-4.5'. Bo	ring backfilled with		-						
	cement/bentonite grout.					-						
Datum:	NAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 ii	<u></u> 35— n.		Drill F	ia.	CME 55	0X	
_	Elevation: 905.8 ft.	Hammer Drop:	30 in.	Rock Core Diameter		75 in.		Forer		N. Huds		
Date Sta	0/40/0040	Pipe Size:	2 in. O.D.	Boring Method:		A-3.2	_	Engir	_	John S.		n
	mpleted: 9/10/2019	pc 0.26	OID!	_ Donning Method				Ligil		22 9.		
	RING METHOD	SAMPLE TYP	F	SAMPLE CONDITI	ONS				GRO	UNDWATER	S DEDT	н
HSA = H	Iollow Stem Augers	PC = Pavement C	ore	D= Disintegrate			Fir	st No		None)	••
	Continuous Flight Augers Priving Casing	CA = Continuous DS = Driven Split		I = Intact U= Undisturbed				Com	pletio		Water	
	1ud Drilling		DS = Driven Split Spoon U= Undisturbed PT = Pressed Shelby Tube L = Lost				Aft Ba	ter			ediately	

BURNS & MCDONNELL STATE LICENSE #43	PIEDMONT 'S NATURAL	GAS FACILITY DRAWINGS ARE CONSIDERED CONFI	DENTIAL (OM-1095) * DR	AWING IS CURRENT OF			RIGHTS RESERVED * DO ENSURE THERE IS NO R				MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY
AMANDA M. PALM	NO. DATE	REVISION(S) DESCRIPTION	ВҮ	CHK APPD	DESCRIPTION		APPROVALS				
8 04/17/2020	0 02/10/2021 ISSUED	FOR AS-BUILT	JXV	CEB EPM AREA C	CODE 5339	DATE	INITIALS	REGIONAL			UL60 PIPELINE - PHASE 1
KENTUCKY				ACCOU	INT NUMBER V8191	-	-	ENGINEER	6 DUIVE	Piodmont	
SEAL 33142				PROJEC	CT NUMBER G7UL02PH	1 DATE	INITIALS	MGR TECH REC & STD	FNFRGY	Natural Gas	GEOTECH BORE LOG 1
NT/S/TM				DRAWI	NG BY JXV	-	-	REC & STD	C LIALKOIS	Natural Gas	BOONE COUNTY, KY
ds)(die				STATIO	N ID -	DATE	INITIALS	PRINCIPAL			,
PROFESSIONAL FNG/ARCH STAMP				CHECKE	DINITIALS CER	02/12/2020	AMP	ENGINEER	CO	OPYRIGHT 2019	ERLANGER, KY



ENGINEER



COPYRIGHT 2019

SHEET(S)	1 OF 3		DWG SCALE	NO	NE
DWG DATE 0	1/06/2020	Sl	JPERSEDED		
	DRA	WI	NG NUMBER		REVISIO
PNG	-B-0	4	3-000100	1	0
C\ERLANGER	'UL60				

* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals

LOG OF TEST BORING

BORING #: B-6
PROJECT #: J033562.01

PAGE #: 3 of 4

I 12 RC RQD = 97% 120 100

I 13 RC RQD = 91% 120 100

GROUNDWATER DEPTH

At Completion Core Water

CLIENT: Burns & McDonnell

PROJECT: Duke Energy UL60 Pipeline

Florence, Kentucky

LOCATION OF BORING: N 558,653.20, E 1,530.499.20

interval (Ordovician Bull Fork Formation).

Started RC-12 at 1413, ended 1431.

Date Completed: 7/10/2019

HSA = Hollow Stem Augers CFA = Continuous Flight Augers

BORING METHOD

DC = Driving Casing
MD = Mud Drilling

B PROFESSIONAL ENG/ARCH STAMP

COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS

nterbedded gray slightly moist weak unweathered SHALE and gray medium

strong to strong LIMESTONE. The limestone is thinly bedded (1/2" to 2") crystalline and fossiliferous. Limestone comprises approximately 36 percent of this

Interbedded gray slightly moist weak unweathered SHALE and gray medium strong to strong LIMESTONE. The limestone is thin to medium bedded (1/2" to 9"), crystalline and fossiliferous. Limestone comprises approximately 42 percent of this interval (Ordovician Bull Fork Formation).

Interbedded gray slightly moist weak unweathered SHALE and gray medium strong to strong LIMESTONE. The limestone is thin to medium bedded (1/2" to 835.1 1.5"), crystalline, fossiliferous, and comprises approximately 42 percent of this 73.6

PC = Pavement Core CA = Continuous Flight Auger

DS = Driven Split Spoon PT = Pressed Shelby Tube

RC = Rock Core

NAVD 88 Hammer Weight: 140 lb. Hole Diameter: 8 in. Drill Rig: TD-4 CME 850X

SAMPLE CONDITIONS

D= Disintegrated I = Intact

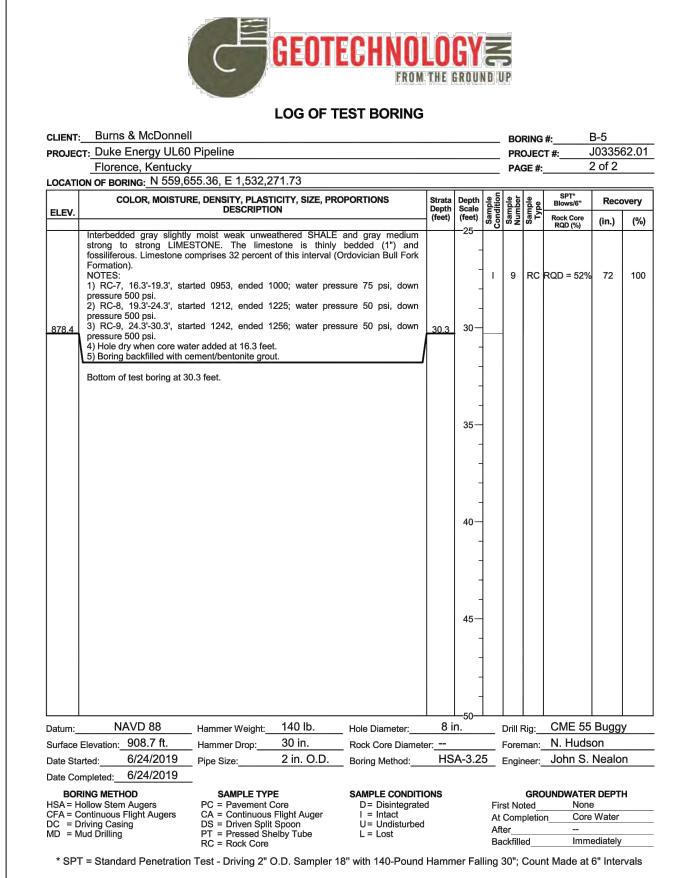
L = Lost

Surface Elevation: 908.7 ft. Hammer Drop: 30 in. Rock Core Diameter: 1.875 in. Foreman: L. Wanstrath

Date Started: 7/10/2019 Pipe Size: 2 in. O.D. Boring Method: HSA-3.25 Engineer: John S. Nealon

* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals

Started RC-13 at 1515, ended 1532. Water pressure now 200 psi.

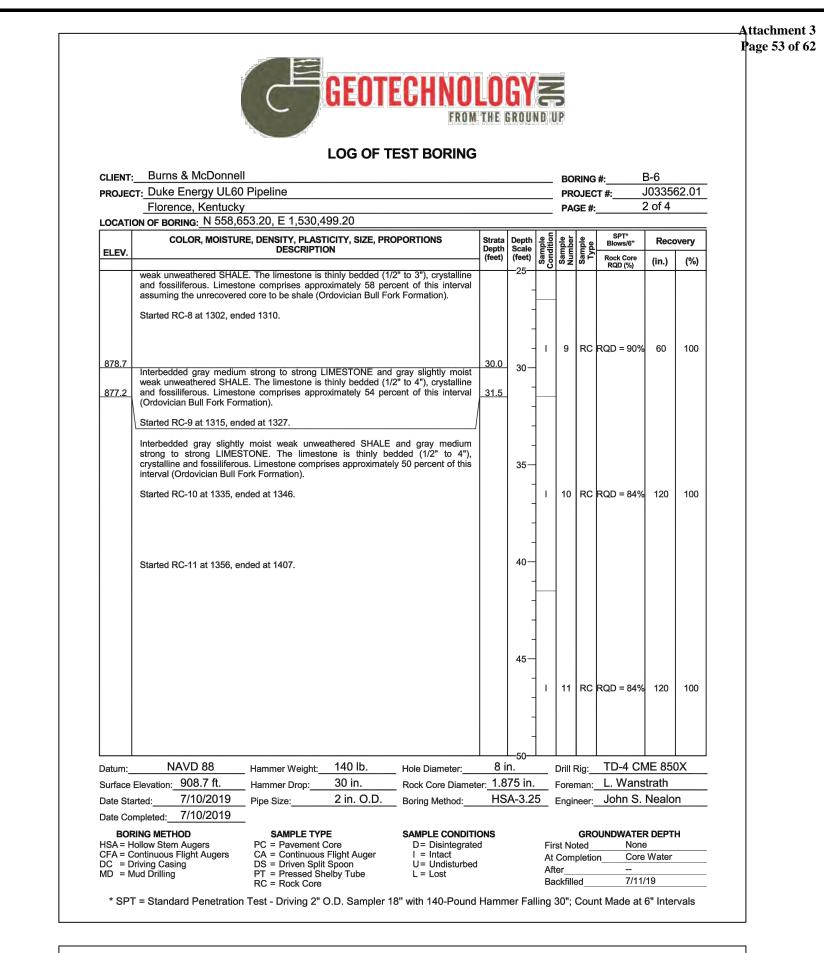


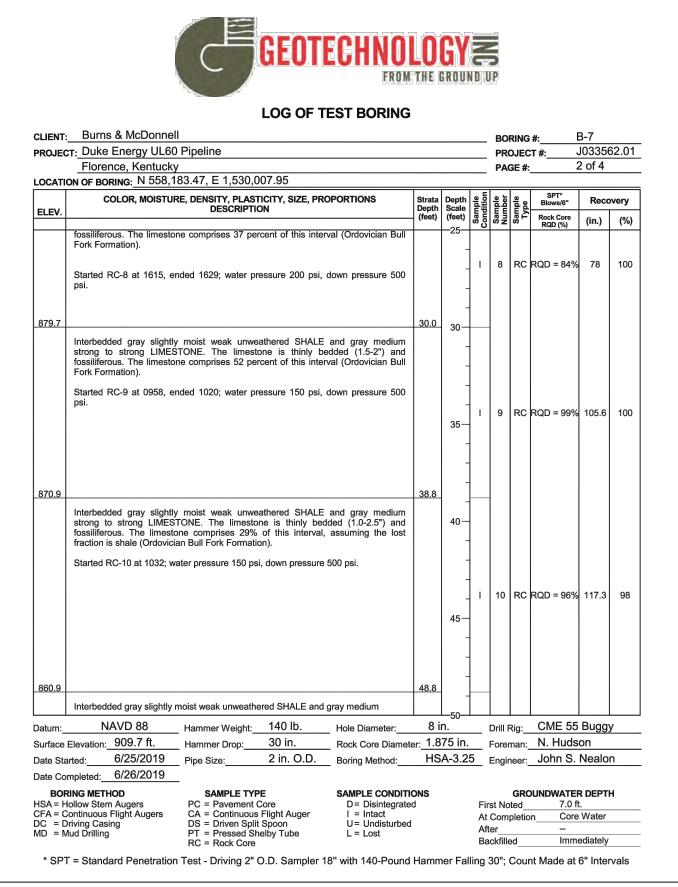
				CHNO FROM EST BORING	THE							
	Burns & McDonnel							во	RING	···	B-6	
PROJEC	ст: Duke Energy UL60 Florence, Kentucky								OJEC		J0335 4 of 4	62.01
LOCATI	ON OF BORING: N 558,6	, 53.20, E 1,530,4	99.20					PA	GE #:		7 01 7	
		RE, DENSITY, PLAST	ICITY, SIZE, PRO	PORTIONS	Strata	Depth	ple	ple	e de	SPT* Blows/6"	Rec	overy
ELEV.		DESCRIPTION	ON		(feet)	Depth Scale (feet)	Sam	Sam	Sam	Rock Core RQD (%)	(in.)	(%)
	Irregularly bedded gray r moist weak unweathered comprises approximately of Grant Lake Limestone I	SHALE. The limesto 60 percent of this ir	ne is fossiliferous	argillaceous, and		-75- -			RC	RQD = 100%	120	100
	Started at RC-14 at 1538, Note: Started boring		at 1550. Boring	j backfilled with		80-						
827.2	cement/bentonite grout.				81.5		-					
						90-						
Datum:	NAVD 88	Hammer Weight:_	140 lb.	Hole Diameter:	8 i	^L 100— n.		Drill F	LLLI Rig:_	TD-4 CI	ME 85	0X
Surface	Elevation: 908.7 ft.	Hammer Drop:	30 in.	Rock Core Diamete				Fore	man:_	L. Wans	strath	
Date Sta	7/40/0040	Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	25_ 1	Engir	neer:_	John S.	Nealc	n
BOI HSA = F CFA = C DC = E	ompleted: 7/10/2019 RING METHOD Hollow Stem Augers Continuous Flight Augers Driving Casing Mud Drilling	SAMPLE TYP PC = Pavement C CA = Continuous DS = Driven Split PT = Pressed Sh RC = Rock Core	Core Flight Auger Spoon	SAMPLE CONDITION D = Disintegrate I = Intact U = Undisturbed L = Lost	d		At Aft		ted_ pletio	Non Core	e Water	Ή

CHECKER INITIALS | CEB

			LOG OF T	EST BORING								
CLIENT:	Burns & McDonnel							во	RING	i#:	B-6	
PROJEC	т: Duke Energy UL60							PR	OJEC		J0335	62.0
	Florence, Kentucky ON OF BORING: N 558,6		100 20					PA	GE #:	:	1 of 4	
LOCATIO	·	RE, DENSITY, PLAST		OPOPTIONS	Strata	Depth	- 5	ه ه	Г ф	SPT*	Page	
ELEV.	COLOR, MOISTON	DESCRIPTION		or oknows	Depth (feet)		Sample Condition	amp mp	Sample Type	Blows/6"		overy
908.7	TOPSOIL	Ground Surf	ace		`0.0	0	တ္က လ	ΰź	ις,	RQD (%)	(in.)	(%
\ <u>908.4</u> /	Brown moist stiff LEAN C	_AY, trace sand, with	n oxide stains (gla	acial drift).	↓0.3 ∕	- -	 -	1A 1B	DS	5-5-4	12	67
						-		2	DS	2-1-3	18	10
904.2				- — — — —	4.5	5-						
	Reddish brown and gray drift) (CL).	very moist stiff LEA	AN CLAY, trace	oxide stains (glacial				3	DS	1-1-2		
902.0				- — — — —	6.7							
	Brown and gray moist to oxide stains (glacial drift)		Γ CLAY, little lim	estone floaters with		_	U	4	PT		14	58
						10	I	5	DS	4-7-6	18	10
893.2					15.5	- 15—	ı	6A 6B	DS	23-50/4"	10	10
891.2	Interbedded brown to oli medium strong to strong L	ve brown extremely IMESTONE (bedroo	weak weathereck).	d SHALE and gray	17.5	_		OB				
	Interbedded gray extreme strong LIMESTONE (bedr		SHALE and gra	y medium strong to		-						
888.7 887.2	Interbedded gray mediun weak unweathered SHA crystalline and fossiliferou interval (Ordovician Bull F	LE. The limestone s. Limestone compr	e is thinly bedo	led (1/2" to 2.5"),	20.0	20-		7	RC	RQD = 47%	18	10
	Started RC-7 at 1249, er psi. Hole dry when core w	nded 1253; water pr		down pressure 475		-						
	Interbedded gray medium	strong to strong LIM	IESTONE and gr	ay slightly moist		25-	Ľ	8	RC	RQD = 40%	58	97
Datum:_	NAVD 88	Hammer Weight:_	140 lb.	_ Hole Diameter:	8 i			Drill	Rig:_	TD-4 CN	ИЕ 85	0X
Surface	Elevation: 908.7 ft.	Hammer Drop:	30 in.	_ Rock Core Diamete					man:			
	mpleted: 7/10/2019	Pipe Size:	2 in. O.D.	_ Boring Method:		A-3.2	5_	Engi		John S.		
BOR HSA = H CFA = C DC = D	mpleted: //10/2019 RING METHOD Iollow Stem Augers continuous Flight Augers riving Casing Iud Drilling	SAMPLE TYP PC = Pavement (CA = Continuous DS = Driven Split PT = Pressed Sh	Core Flight Auger Spoon	SAMPLE CONDITION D = Disintegrate I = Intact U = Undisturbed L = Lost	d		At Aft		oted_ pletic	DUNDWATEI None on Core 7/11/	e Water	Н

				Li bazārila	THE			5 P				
	Burns & McDonne	11	LOG OF T	EST BORING	ì						- -	
	T: Duke Energy UL60								RING		B-7 J0335	62.01
NOOLC	Florence, Kentucky										1 of 4	
LOCATION	ON OF BORING: N 558,1	83.47, E 1,530,0	07.95									
ELEV.	COLOR, MOISTUI	RE, DENSITY, PLAST DESCRIPTION		OPORTIONS	Strata Depth	Scale	mple	Sample Number	mple ype	SPT* Blows/6"	Rec	overy
909.7		Ground Surfa	ace		(feet) 0.0	(feet)	လ လ လ	Sa	s –	Rock Core RQD (%)	(in.)	(%)
909.4/	TOPSOIL Brown and gray moist me	edium stiff to stiff LEA	N CLAY, trace g	ravel (fill).	∤0.3 ∠	j .		1A 1B	DS	2-3-2	18	100
907.7	Brown to orangish brown stains (glacial drift) (CH).		— — — — f to very stiff FA	T CLAY with oxide	2.0	- -		2	DS	2-3-6	18	100
902.5					7.2	5-	U	3	PT		15	63
900.2	Reddish brown and gray trace bedding (residual).	moist medium stiff to	stiff LEAN CLA	Y with oxide stains,	9.5	-	-	4	DS	6-4-8	18	100
	Interbedded brown mois medium strong to strong					10- - -		5	DS	28-53-29	18	100
895.7					14.0							
893.7	Interbedded gray slightly strong to strong LIMESTO	y moist weak unwe ONE (Ordovician Bull	athered SHALE Fork Formation)	and gray medium	16.0	15-		6	DS	50/3"	3	100
	Interbedded gray slightly strong to strong LIMEST fossiliferous. The limesto Fork Formation).	TONE. The limeston	e is thinly bedd	ed (1.25-1.75") and		-						
	Started RC-7 at 1547, e psi. Core water added at		essure 200 psi,	down pressure 500		20-		7	RC	RQD = 62%	90	100
886.2					23.5	-	-	_				
	Interbedded gray slightly strong to strong LIMESTO											
Datum:_	NAVD 88	_ Hammer Weight:_	140 lb.	_ Hole Diameter:	8 i			Drill F		CME 55		<u>y</u>
	Elevation: 909.7 ft.	_ Hammer Drop:	30 in.	_ Rock Core Diame						N. Huds		
Date Sta Date Co	arted: 6/25/2019 mpleted: 6/26/2019	_ Pipe Size:	2 in. O.D.	_ Boring Method:	HS	A-3.2	5_	Engir	neer:_	John S.	Nealo	n
BOF	RING METHOD Hollow Stem Augers	- SAMPLE TYP PC = Pavement (SAMPLE CONDIT D= Disintegrate			E:-	st No		OUNDWATEI 7.0 f		н
CFA = C	Continuous Flight Augers	CA = Continuous	Flight Auger	I = Intact				Com			Water	
	Priving Casing Mud Drilling	DS = Driven Split PT = Pressed Sh		U= Undisturbed L = Lost	נ			ter		-	ediately	





BURNS & MCDONNELL STATE LICENSE #43	PIEDMONT 'S NATURA	AL GAS FACILITY DRAWINGS ARE CONSIDERED CONFID	DENTIAL (OM-1095) * DR	RAWING IS CU				LL RIGHTS RESERVED * DO TO ENSURE THERE IS NO R				MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICE
AMANDA M. PALM	NO. DATE	REVISION(S) DESCRIPTION	BY	CHK APPI	D DESCRIPTION	ON		APPROVALS				
04/17/2020	0 02/10/2021 ISSUE	D FOR AS-BUILT	JX\	/ CEB EPN	MAREA CODE	5339	DATE	INITIALS	REGIONAL			UL60 PIPELINE - PHASE 1
KENTUCKY					ACCOUNT NUMBER	R V8191	<u>-</u>	-	ENGINEER	C DUIVE	Diadmont	
SEAL 33142					PROJECT NUMBER	G7UL02PH1	1 DATE	INITIALS	MGR TECH	DUKE	Natural Gas	GEOTECH BORE LOG 2
					DRAWING BY	JXV	-	-	REC & STD	C LINEKOI.	Matural Gas	BOONE COUNTY, KY
118					STATION ID	-	DATE	INITIALS	PRINCIPAL			,
PROFESSIONAL ENG/ARCH STAMP					CHECKED INITIALS	CER	02/12/2020) AMP	ENGINEER	C	OPYRIGHT 2019	ERLANGER, KY



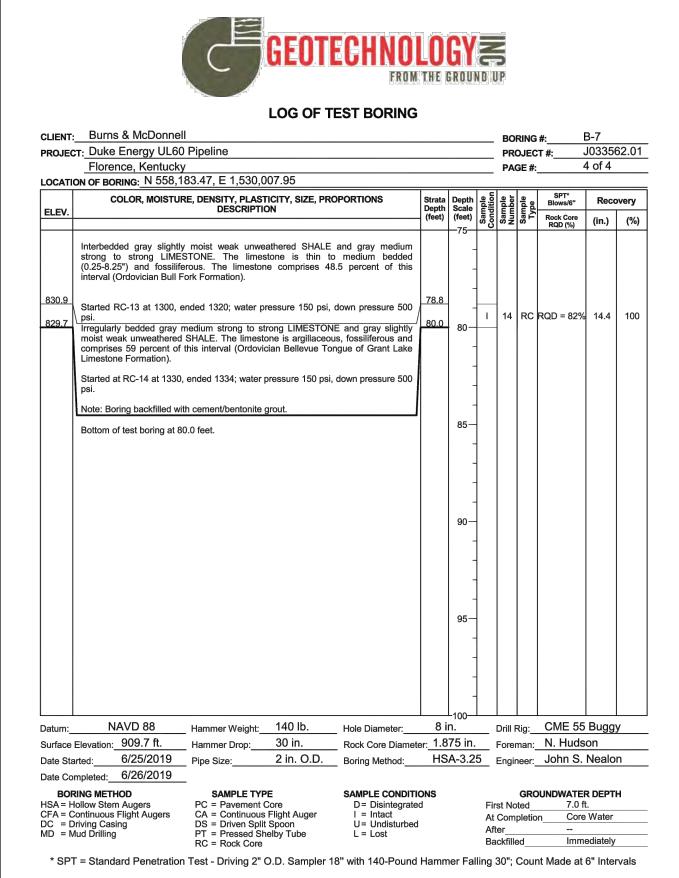
ENGINEER



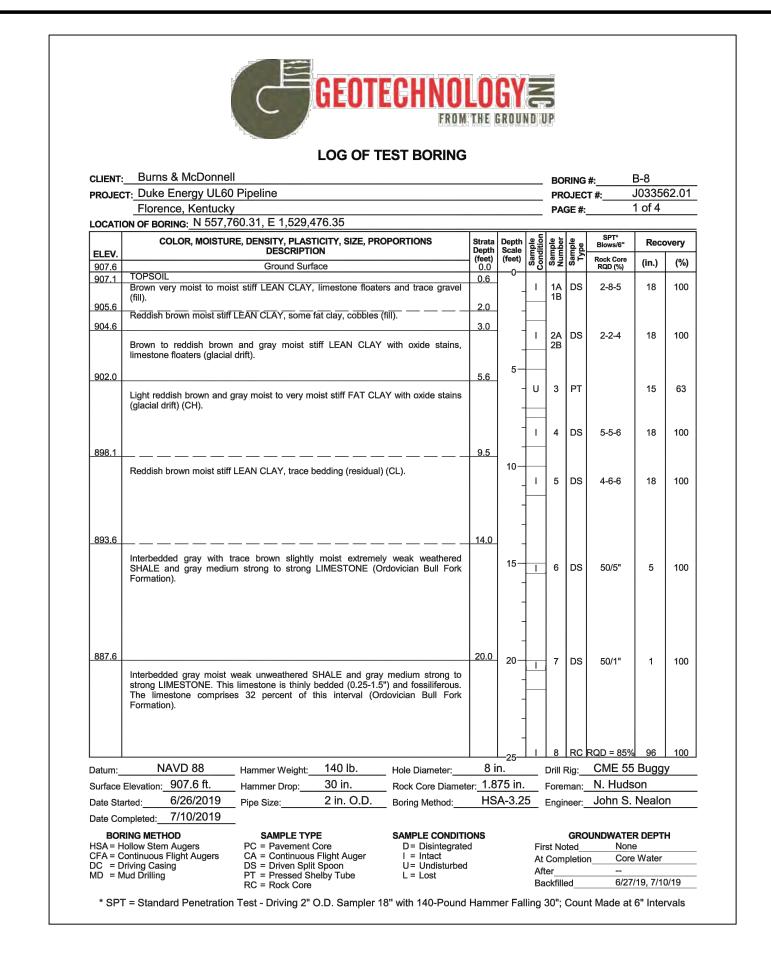
SHEET(S) 2 OF 3 DWG SCALE NONE DWG DATE 01/06/2020 | SUPERSEDED PNG -B-043-0001002 0

			LOG OF 1	EST BORING								
	Burns & McDonne							воі	RING	" -	3-7	
ROJEC	T: Duke Energy UL60	<u> </u>							DJEC		03356	52.01
OCATI	Florence, Kentucky ON OF BORING: N 558,1		77 95					PAG	3E #:		of 4	
.OCATIC		RE, DENSITY, PLAST		ODODTIONS	Strata	Depth	a 5	o 5	Φ.	SPT*	Dane	
ELEV.	COLOR, MOISTOI	DESCRIPTIO		OPORTIONS	Depth (feet)	Scale (feet)	Sample Condition	mple	ype	Blows/6"	Reco	
	-t tt I IMEO:	TONE The Proceeding	- !- 4b!-b. b.d	ded (4.5.0.05ll)d	(reet)	—50—	တ္မွ် လူ	Š	Sa	Rock Core RQD (%)	(in.)	(%)
	strong to strong LIMES fossiliferous. The limesto lost fraction is shale (Order	one comprises 23 per	rcent of this int			-						
	Started RC-11 at 1059, e	anded 1115: water on	esure 150 nei	down pressure 500		_						
	psi.	silded 1110, water pro	533016 100 psi,	down pressure 500		_		11	DC.	RQD = 97%	110 2	99
						-	'	"	INC.	NQD - 97 /0	110.5	33
						55—						
						-						
						-						
						-						
850.9					58.8	_						
	Interbedded gray moist of strong to strong LIME (0.25-6.75") and fossilife (Ordovician Bull Fork For	STONE. The limest erous. The limestone	one is thin t	o medium bedded		60 —						
	Started RC-12 at 1123, e	ended 1255: water nr	essure 200 nsi	down pressure 500		_						
	psi.	Silded 1200, Water pro	500010 200 poi,	down prosoure coo		_						
						_		12	RC	RQD = 98%	120	100
						0.5						
						65—						
						-						
						-						
840.9					68.8	-						
640.9					00.0	-						
	Interbedded gray slightly strong to strong LIME	STONE. The limest	one is thin t	o medium bedded		70-						
	(0.25-8.25") and fossilife interval (Ordovician Bull F		e comprises 4	8.5 percent of this		-						
						_						
	Started RC-13 at 1300, e	ended 1320; water pr	essure 150 psi,	down pressure 500		_						
	psi.					_		13	RC	RQD = 88%	120	100
						75						
atum:_	NAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 i	n.		Drill F	Rig:	CME 55	Bugg	y
_	Elevation: 909.7 ft.	_ Hammer Drop:	30 in.	Rock Core Diamete	er:_1.8	75 in.		Forer		N. Huds	on	
ate Sta	0/05/00/0	Pipe Size:	2 in. O.D.	Boring Method:		A-3.2	5	Engir	eer:	John S.	Nealo	n
	npleted: 6/26/2019									·		

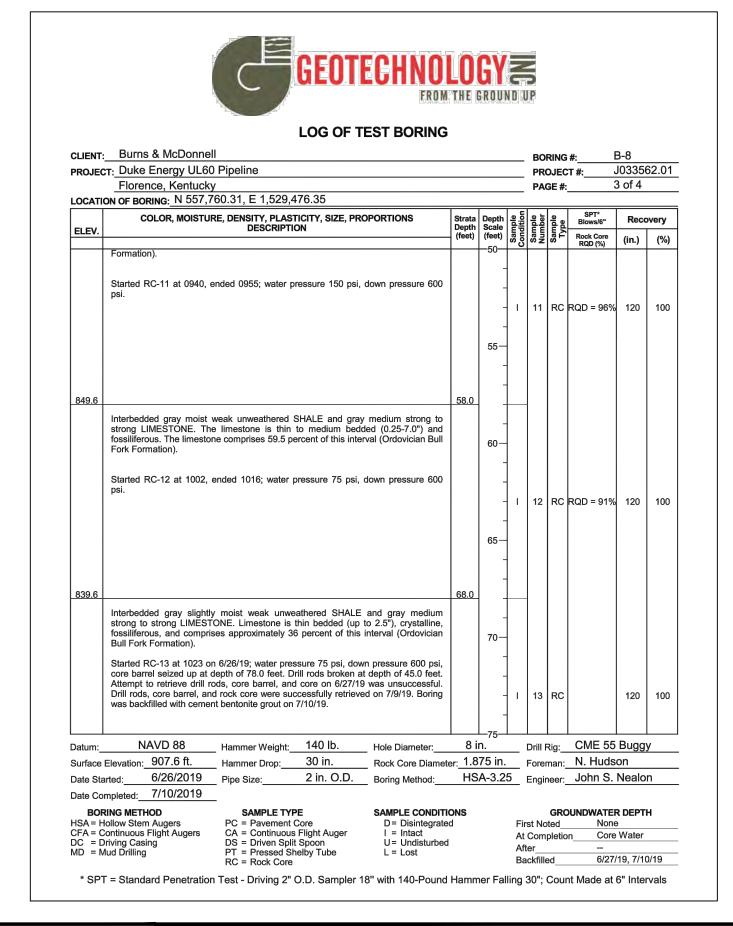
* SPT = Standard Penetration Test - Driving 2" O.D. Sampler 18" with 140-Pound Hammer Falling 30"; Count Made at 6" Intervals



				ECHNO FROM	THE							
	Burns & McDonnel	II	LOG OF 1	EST BORING	•						Б.О	
	ET: Duke Energy UL60						_		RING OJEC	···	B-8 J0335	62.01
FROJEC	Florence, Kentucky								GE #:		4 of 4	<u> </u>
LOCATI	ON OF BORING: N 557,7	60.31, E 1,529,4	76.35									
	COLOR, MOISTUR	RE, DENSITY, PLAST DESCRIPTION	TICITY, SIZE, PRO	OPORTIONS	Strata	Depth Scale	ition	ple	ple	SPT* Blows/6"	Reco	overy
ELEV.		DESCRIPTION	JN		(feet)	(feet)	Sample Condition	Sam	Sam	Rock Core RQD (%)	(in.)	(%)
						_/3						
						-						
829.6					78.0	-	\vdash					
	Bottom of test boring at 7					-						
	Note: Boring backfilled wi	th cement/bentonite	grout.			80-						
						-	-					
						-	-					
						-	- 1					
						-	-					
						85-	-					
						-	- 1					
						-	-					
						-	-					
						-	-					
						90-	-					
						-	-					
						-	-					
						-	-					
						-	-					
						95-						
						-						
						-						
						-						
						-						
	NIAN/ID 00		140 lb		0:	L ₁₀₀ —			<u>Ш</u> 	CME 55	. D ~ ~	
Datum:_ Surface	NAVD 88 Elevation: 907.6 ft.	_ Hammer Weight:_ Hammer Drop:	140 lb. 30 in.	Hole Diameter:Rock Core Diame	8 i			Orill F Fore	Rig: man:	CME 55		у
Date Sta	0/00/00/0	_ Pipe Size:	2 in. O.D.	Boring Method:		A-3.2			_	John S.		n
	mpleted: 7/10/2019	- · · · · · · · · · · · · · · · · · · ·		- -					_			_
	RING METHOD	SAMPLE TYP		SAMPLE CONDIT						UNDWATE		н
CFA = C	Hollow Stem Augers Continuous Flight Augers	PC = Pavement (CA = Continuous	Flight Auger	D= Disintegrate				st No Com	ted_ pletio	None n Core	e Water	
	Driving Casing Mud Drilling	DS = Driven Split PT = Pressed Sh	Spoon	U= Undisturbe	a		Afte			_		



			LOG OF T	EST BORING									
CLIENT:								во	RING	i#:E	3-8		
PROJEC	т: Duke Energy UL60								OJEC		10335	62.01	
LOCATI	Florence, Kentucky ON OF BORING: N 557,7		76 35					PA	GE #:		2 of 4		
LOCATI				DODTIONS	Strata	Depth	- S	ے م	σ.	SPT*			
ELEV.	COLOR, WOISTON	RE, DENSITY, PLAST DESCRIPTIO	N	PORTIONS	Depth (feet)	Scale (feet)	Sample	Sample	Sample Type	Blows/6" Rock Core RQD (%)	(in.)	(%)	
879.6	Interbedded gray moist v strong LIMESTONE. This The limestone comprise Formation).	limestone is thinly b	edded (0.25-1.5	") and fossiliferous.	28.0	25 - - -				(1)			
	Started RC-8 at 0816, er psi. Hole dry when core w	nded 0836; water pro ater added at 21.5 fe	essure 150 psi, et.	down pressure 700		-							
	Interbedded gray moist v strong LIMESTONE. The The limestone comprises Formation).	limestone is thinly b	edded (0.25-1.0	") and fossiliferous.		30-							
	Started RC-9 at 0848, er psi.	nded 0903; water pro	essure 100 psi, o	down pressure 700		-	1	9	RC	RQD = 87%	120	100	
						35— -							
869.6					38.0	-		-					
	Interbedded gray slightly medium strong to strong I and fossiliferous. The lime Bull Fork Formation).	IMESTONE. The lim	estone is thinly l	pedded (0.25-1.25")		40— -							
	Started RC-10 at 0912, e psi.	nded 0930; water pr	essure 100 psi,	down pressure 600		- -	I	10	RC	RQD = 79%	120	100	
						45— -							
859.6	Interbedded gray moist v	weak unweathered S	SHALE and grav	medium strong to	48.0	-							
	strong LIMESTONE. The The limestone comprises	limestone is thinly b	edded (0.25-2.0	") and fossiliferous.		-							
Datum:_	NAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 i	—50— n		Drill F	Rig:_	CME 55	Bugg	у	
_	Elevation: 907.6 ft.	Hammer Drop:	30 in.	Rock Core Diamet	er:_1.8	75 in.	_	Fore	man:				
	arted: 6/26/2019	Pipe Size:	2 in. O.D.	Boring Method:	110	A-3.2	_		neer:	John S.	Niaala	n	1



PROFESSIONAL ENG/ARCH STAMP

PROJEC	τ: Duke Flore	s & McDonnel Energy UL60 nce, Kentucky	Pipeline					<u> </u>	PRO	RING OJEC GE #:	т#:	B-8 J0335 4 of 4	62.01
LOCATION		"	60.31, E 1,529,4						_				
ELEV.	C	COLOR, MOISTUR	RE, DENSITY, PLAST DESCRIPTIO	TCITY, SIZE, PR ON	OPORTIONS	Strata Depth	Depth Scale	nple	nple	nple /pe	SPT* Blows/6"	Rec	overy
ELEV.						(feet)	Depth Scale (feet)	Sar	Sar	Sar	Rock Core RQD (%)	(in.)	(%)
							-	-					
							-	-					
829.6						78.0	-	-					
		of test boring at 7					-	1					
	Note: Bo	oring backfilled wi	th cement/bentonite g	grout.			80-	1					
							-	1					
							-	1					
							-	1					
							-	1					
							85-	1					
							-	1					
							-	1					
							-	1					
							-	1					
							90-	1					
							-	1					
							-	1					
							-	1					
							-	1					
							95-	1					
							-	1					
							-	1					
							-	1					
							-	1					
Datum:	N	IAVD 88	Hammer Weight:	140 lb.	Hole Diameter:	8 i	[∟] 100— n.		Drill F	ىـــــا Rig:	CME 55	Bugg	y y
_		907.6 ft.	Hammer Drop:	30 in.	_ Rock Core Diamete				Forer		N. Huds		
Date Sta	ırted:	6/26/2019	Pipe Size:	2 in. O.D.	Boring Method:	HS	A-3.2	5_	Engir	neer:_	John S.	Nealo	n
	mpleted:_	7/10/2019	_	_									
HSA = H	RING METI Iollow Ster	m Augers	SAMPLE TYP PC = Pavement C	Core	SAMPLE CONDITION D= Disintegrate			Fir	st No		UNDWATE Non		H
DC = D	riving Cas	Flight Augers sing	CA = Continuous DS = Driven Split	Spoon	I = Intact U= Undisturbed			At Aft		pletio	n Core	Water	
40	lud Drilling	1	PT = Pressed Sh	elby Tube	L = Lost			Ba				/19, 7/1	

CHECKER INITIALS | CEB

BURNS & MCDONNELL STATE LICENSE #43	PIEDMONT	Γ'S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIDI	ENTIAL (OM-1095) * DRAWING						RAWING * USE DIMENSIONS ONLY NATE DISCLOSURE ALL PREVIOUS PAPER (COPIES OF THIS DRAWING MUS	ST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY
AMANDA M. PALM	NO. DATE	REVISION(S) DESCRIPTION	ВУ СНК	APPD DESCRIPTION	ON		APPROVALS				
04/17/2020	0 02/10/202	I ISSUED FOR AS-BUILT	JXV CEB	EPM AREA CODE	5339	DATE	INITIALS	REGIONAL			UL60 PIPELINE - PHASE 1
KENTUCKY				ACCOUNT NUMBER	R V8191]-	-	ENGINEER	C DUVE	dmont	
SEAL 33142				PROJECT NUMBER	G7UL02PH1	DATE	INITIALS	MGR TECH REC & STD	DUKE Piece National Piece	ural Gas	GEOTECH BORE LOG 3
				DRAWING BY	JXV]-	-	REC & STD	C LIVEROIS IVAL	turar Gas	BOONE COUNTY, KY
				STATION ID	-	DATE	INITIALS	PRINCIPAL			,
PROFESSIONAL ENG/ARCH STAMP				CHECKED INITIALS	CER	02/12/2020	AMP	ENGINEER	COPYRIGHT 2019		ERLANGER, KY

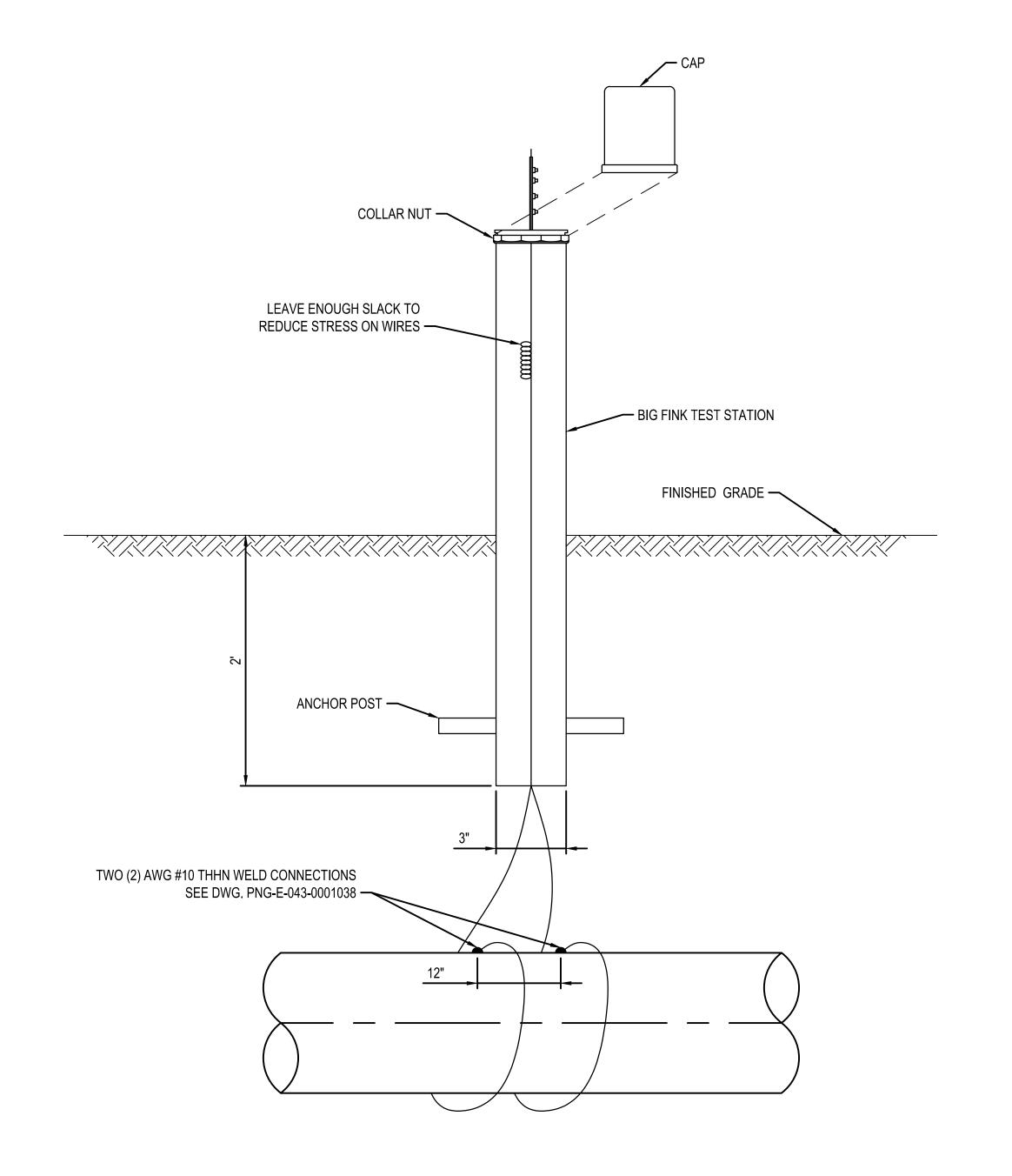


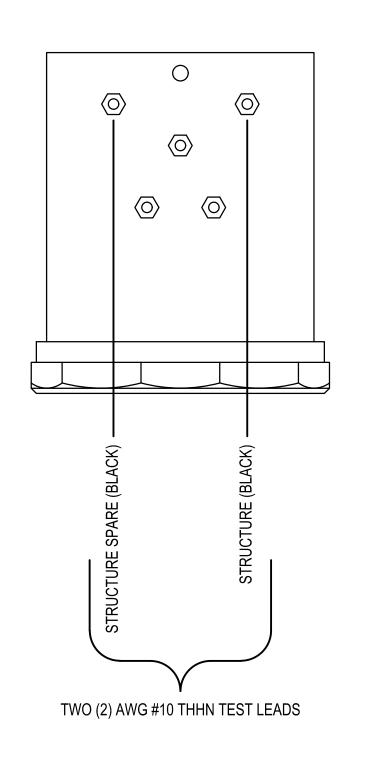
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SHEET(S) 3 OF 3 DWG SCALE NONE DWG DATE 01/06/2020 | SUPERSEDED PNG -B-043-0001003





TEST STATION HEAD

TWO WIRE TEST STATION

DETAIL 1
SCALE: NOT TO SCALE

BURNS & MCDONNELL

STATE LICENSE #43 PIEDMONT 'S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIDENTIAL (OM-1095) * DRAWING IS CURI

PIEDMONT 'S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIDENTIAL (OM-1095) * DRAWING IS CURRENT ONLY THROUGH THE LATEST REVISED DATE * TO ENSURE THERE IS NO RISK OF INAPPROPRIATE DISCLOSURE ALL PREVIOUS PAPER COPIES OF THIS DRAWING MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY 1001

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BY CHK APPD NO. DATE REVISION(S) DESCRIPTION DESCRIPTION AMANDA M. PALM 02/10/2021 ISSUED FOR AS-BUILT JXV CEB EPM AREA CODE 04/17/2020 REGIONAL ENGINEER ACCOUNT NUMBER V8191 KENTUCKY PROJECT NUMBER G7UL02PH1 SEAL 33142 MGR TECH REC & STD DRAWING BY STATION ID PRINCIPAL 02/12/2020 PROFESSIONAL ENG/ARCH STAMP CHECKER INITIALS CEB ENGINEER





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UL60 PIPELINE - PHASE 1
TWO WIRE TEST STATION
BOONE COUNTY, KY
ERLANGER, KY

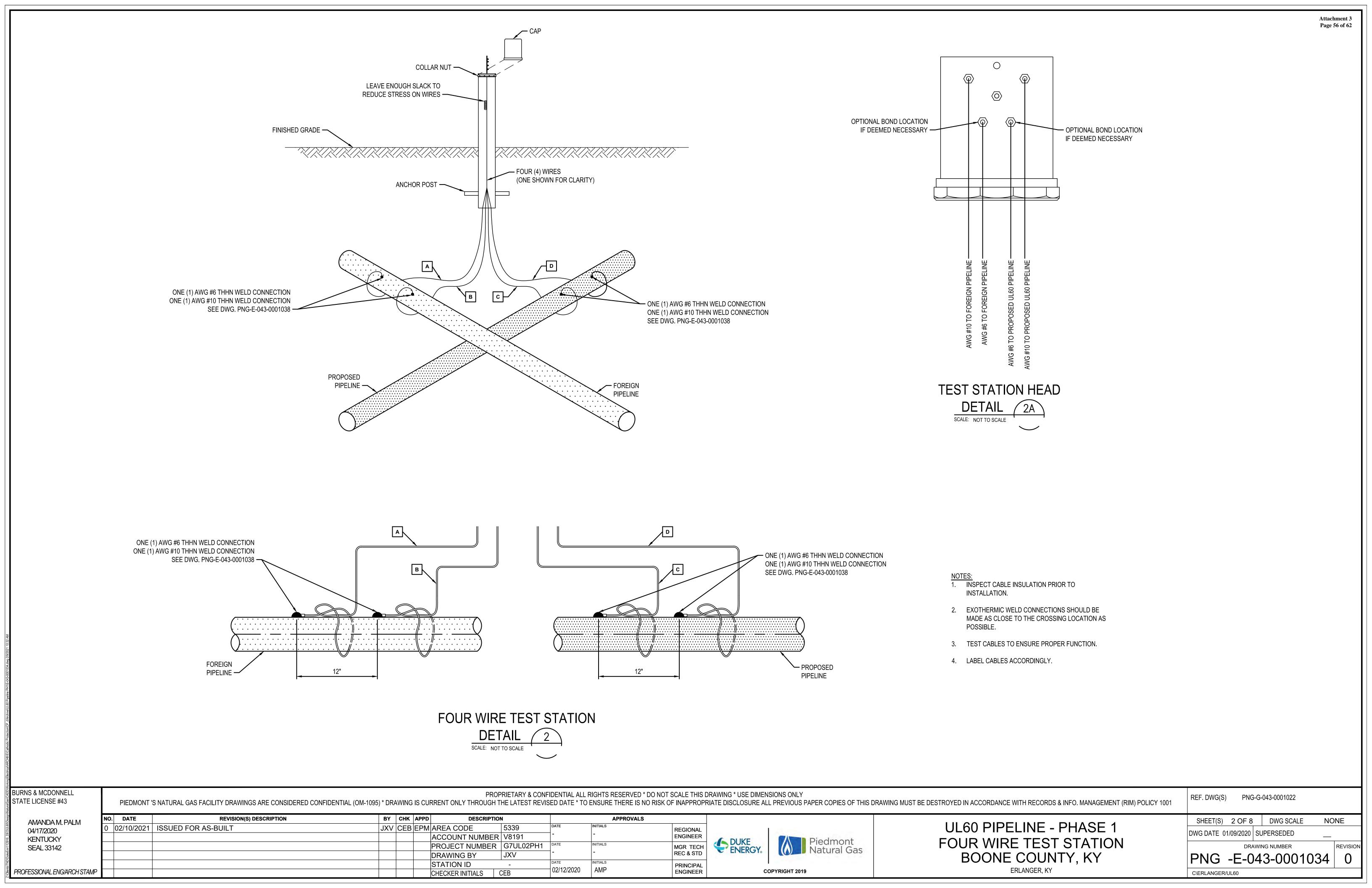
SHEET(S) 1 OF 8 DWG SCALE NONE

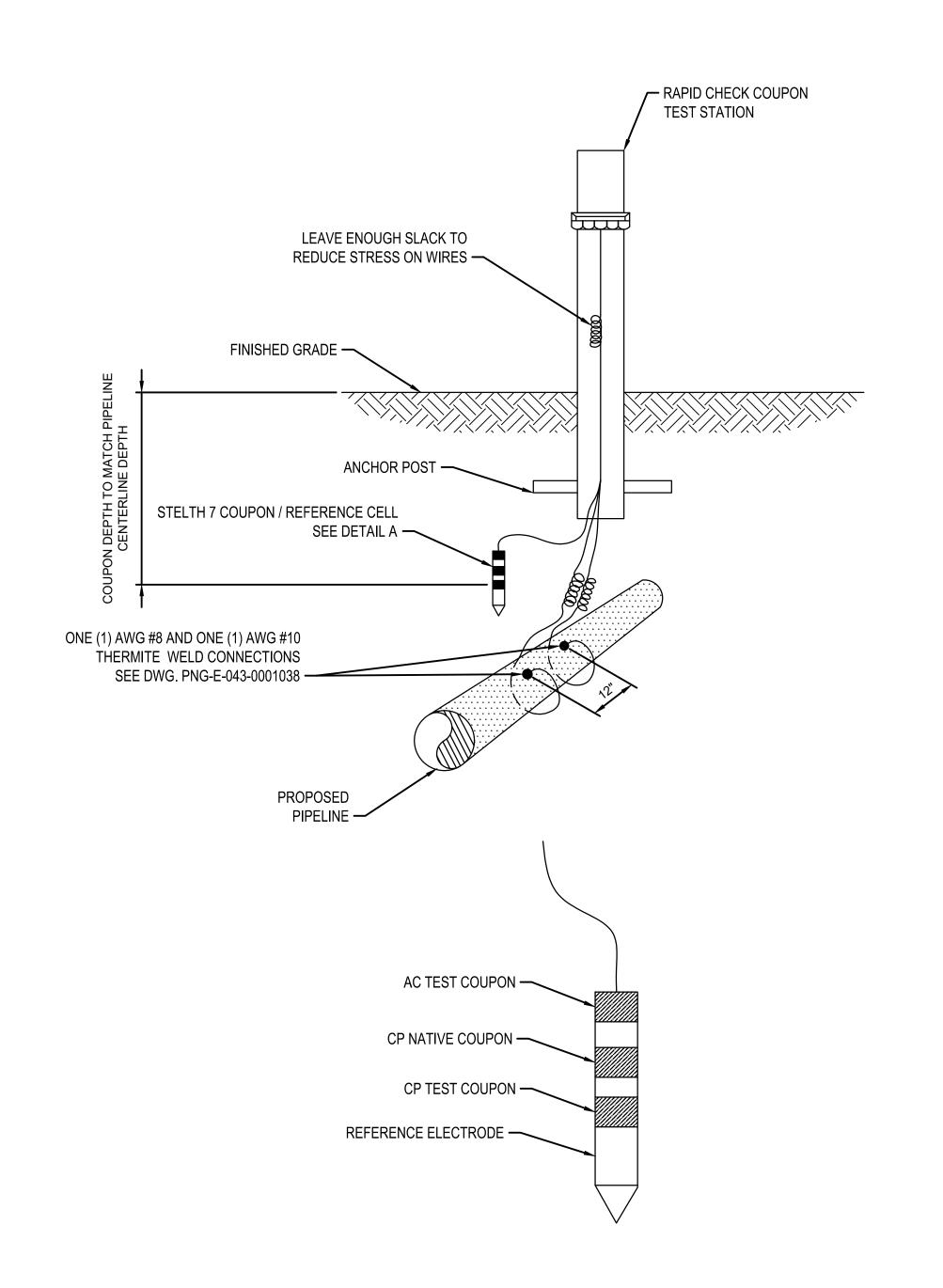
DWG DATE 01/09/2020 SUPERSEDED

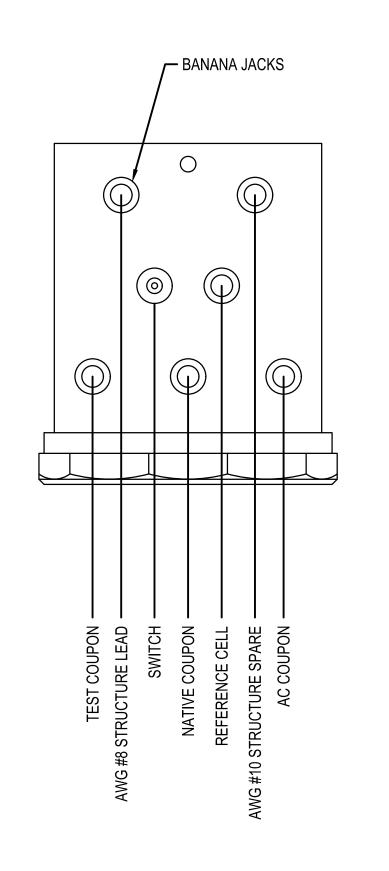
DRAWING NUMBER REVISIO

PNG -E-043-0001033 0

REF. DWG(S) PNG-G-043-0001022







- 1. INSTALL AND TERMINATE COUPON TEST STATION ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
- 2. COUPON TO BE INSTALLED ON OPPOSITE SIDE OF PIPE FROM COPPER AC GROUNDING CABLES.
- 3. WET SOIL AT COUPON INSTALLATION LOCATION WITH WATER PRIOR TO BACKFILL.
- 4. BACKFILL COUPON WITH NATIVE SOIL.
- 5. INSTALL COUPON AT PIPE DEPTH.
- 6. INSTALL COUPON WITHIN 12" OF PIPE.

AC COUPON TEST STATION



ממעי	BURNS & MCDONNELL
200	BURNS & MCDONNELL STATE LICENSE #43 AMANDA M. PALM 04/17/2020
3	
5	
	AMANDA M. PALM
	04/17/2020

KENTUCKY

SEAL 33142

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DATE REVISION(S) DESCRIPTION BY CHK APPD DESCRIPTION **APPROVALS** 0 02/10/2021 ISSUED FOR AS-BUILT JXV CEB EPM AREA CODE REGIONAL ACCOUNT NUMBER V8191 ENGINEER PROJECT NUMBER G7UL02PH1 MGR TECH REC & STD JXV DRAWING BY STATION ID PRINCIPAL 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER

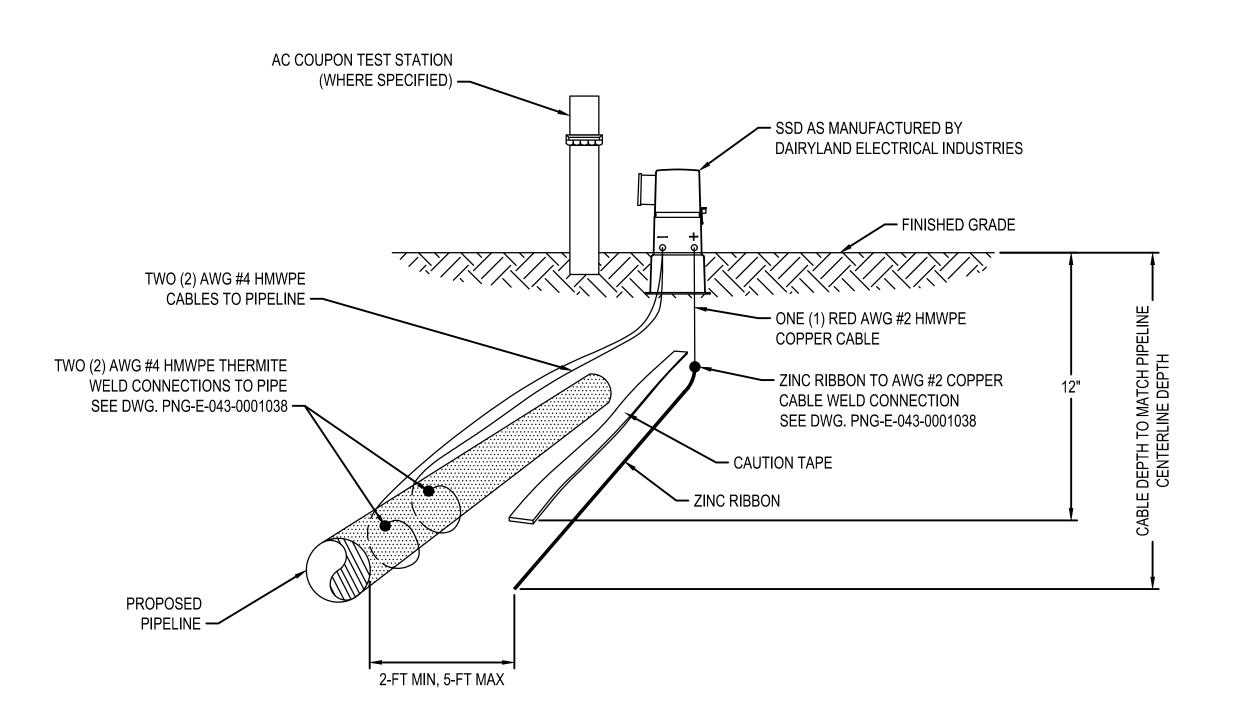




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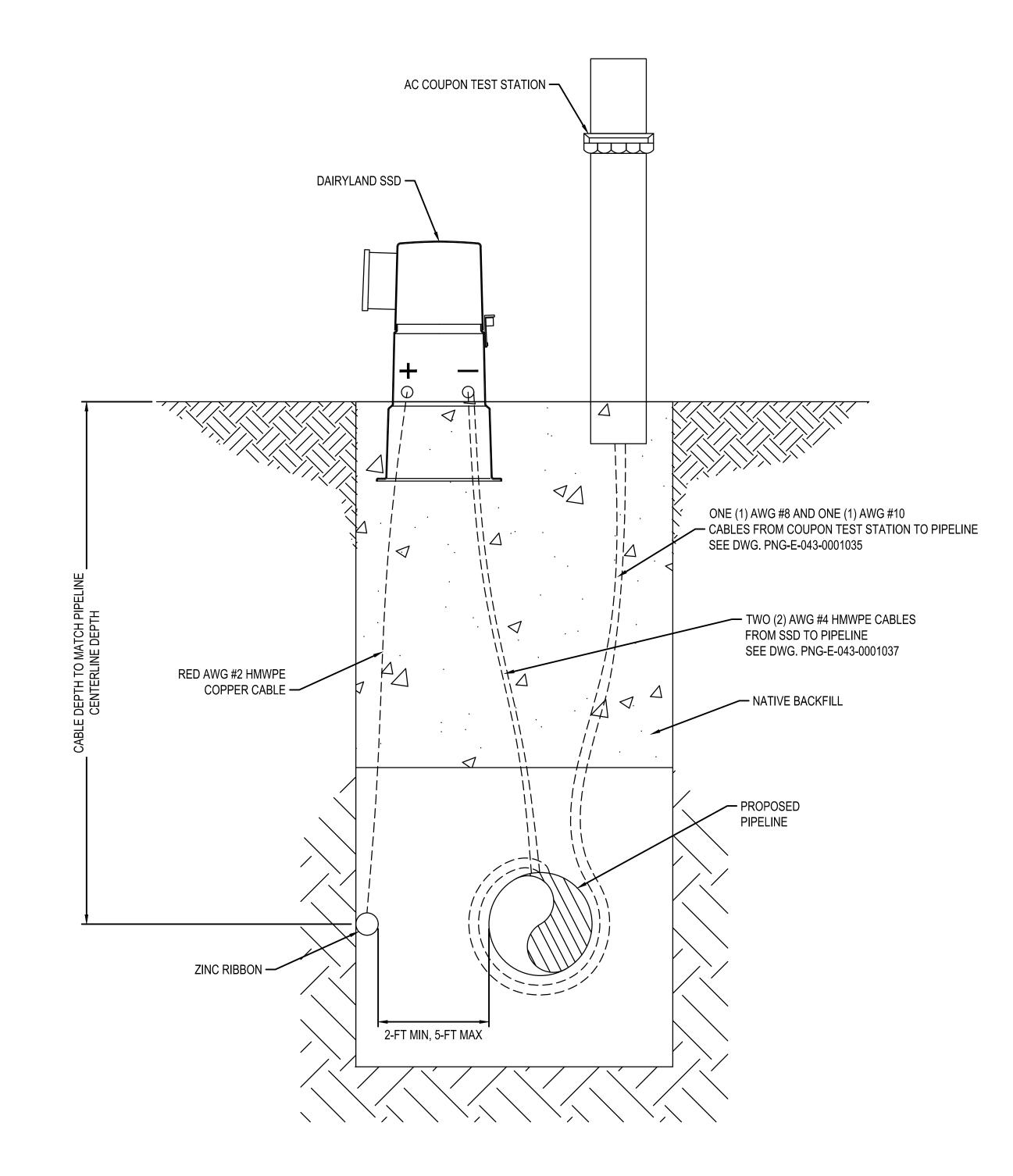
UL60 PIPELINE - PHASE 1 AC COUPON TEST STATION BOONE COUNTY, KY ERLANGER, KY

REF. DWG(S)	PNG	i-G-	043-0001022		
SHEET(S)	3 OF 8		DWG SCALE	NO	NE
DWG DATE 01	/09/2020	SU	PERSEDED		
	DRA	NWI	NG NUMBER		REVISIO
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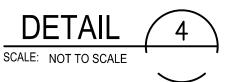
INSTALLATION NOTES:

- 1. GROUNDING CABLE MUST NOT COME IN CONTACT WITH PIPELINE .
- 2. INSPECT CABLE INSULATION PRIOR TO INSTALLATION.
- 3. TEST CABLES TO ENSURE PROPER FUNCTION.
- 4. GROUNDING CABLE TO BE INSTALLED A MINIMUM OF 3' BELOW GRADE.
- 5. INSTALL GROUNDING CABLE BETWEEN POWERLINE AND PIPELINE.
- 6. COUPON TO BE INSTALLED ON OPPOSITE SIDE OF PIPE FROM AC GROUNDING CABLE.
- 7. INSTALL CAUTION TAPE ABOVE GROUNDING CABLE WITH 12" DEPTH OF COVER (DOC).
- 8. ALL PIPE CONNECTIONS TO BE WRAPPED AROUND PIPE AND TIES WITH HALF-HITCH KNOT.



PARALLEL AC GROUNDING CABLE

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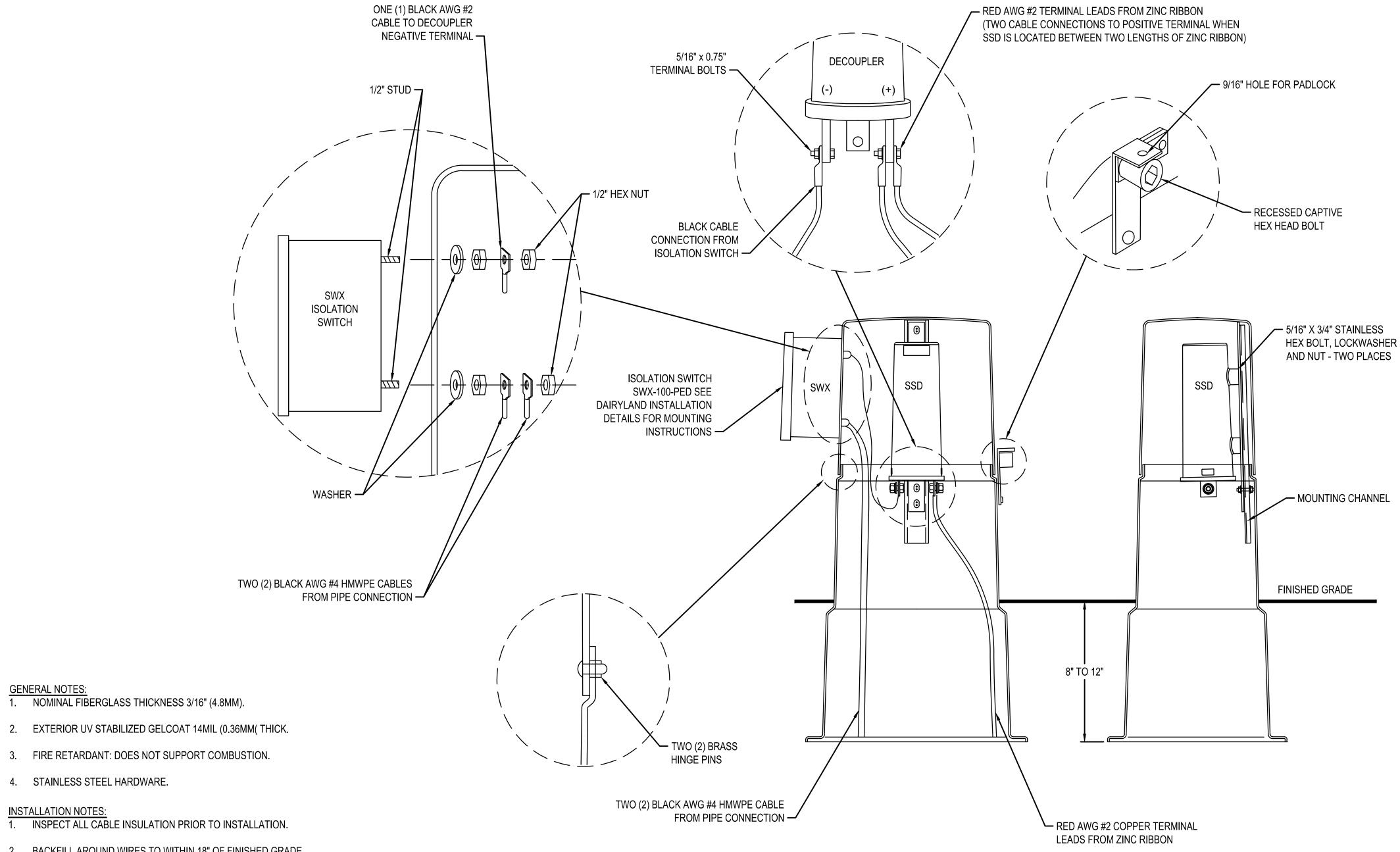


STATE LICENSE #43	PIEDMONT '	S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIDE	ENTIAL (OM-1095) * DRA	AWING IS					RIATE DISCLOSURE ALL PREVIOUS PAPER COPIES OF THIS DRA	AWING MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY 10
AMANDA M. PALM	NO. DATE	REVISION(S) DESCRIPTION	ВҮ	CHK AP	PD DESCRIPTION		APPROVALS			
04/17/2020	0 02/10/2021	ISSUED FOR AS-BUILT	JXV	CEB EF	PM AREA CODE 5339	DATE	INITIALS	REGIONAL		UL60 PIPELINE - PHASE 1
KENTUCKY					ACCOUNT NUMBER V8191		-	ENGINEER	Piedmont	AC CDOUNDING CARLE
SEAL 33142					PROJECT NUMBER G7UL02	PH1 DATE	INITIALS	MGR TECH	ENERGY. Natural Gas	AC GROUNDING CABLE
					DRAWING BY JXV	-	-	REC & STD	Tracarar Sas	BOONE COUNTY, KY
					STATION ID -	DATE 02/12/2020	INITIALS	PRINCIPAL		,
PROFESSIONAL ENG/ARCH STAMP					CHECKER INITIALS CEB	02/12/2020	AMP	ENGINEER	COPYRIGHT 2019	ERLANGER, KY

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REF. DWG(S) PNG-G-043-0001022 SHEET(S) 4 OF 8 DWG SCALE NONE DWG DATE 01/09/2020 | SUPERSEDED PNG -E-043-0001036 0



INSTALLATION NOTES: 1. INSPECT ALL CABLE INSULATION PRIOR TO INSTALLATION.

2. BACKFILL AROUND WIRES TO WITHIN 18" OF FINISHED GRADE.

3. TAMP A 2'X2' AREA AND PLACE THE PEDESTAL OVER THE WIRES.

4. BACKFILL CAREFULLY AROUND THE PEDESTAL TO KEEP LEVEL. 5. REMOVE THE TOP PORTION OF PEDESTAL TO INSTALL SSD.

6. FILL THE INSIDE OF PEDESTAL WITH 12" OF NATIVE SOIL.

7. USE THE SUPPLIED HARDWARE TO MOUNT SSD AS SHOWN.

8. TYPICAL BURIAL DEPTH 8" TO 12".

9. ISOLATION SWITCH TO BE MOUNTED ON OUTSIDE OF FIBERGLASS PEDESTAL OPPOSITE SIDE OF 9/16" HOLE FOR PADLOCK.

10. LABEL THE RUNNING DIRECTION OF EACH AC GROUNDING CABLE BROUGHT ABOVE GRADE.

SOLID STATE DECOUPLER

DETAIL 5

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aloasi	BURNS & MCDONNELL STATE LICENSE #43

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AMANDA M. PALM 04/17/2020 KENTUCKY SEAL 33142

\Desig	AMANDA M. PALM	NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK APPD	DESCRIPTION	N		APPROVALS	
ONL60	04/17/2020	0	02/10/2021	ISSUED FOR AS-BUILT	JXV	CEB EPM	AREA CODE	5339	DATE	INITIALS	REGIONAL
116_DE	KENTUCKY						ACCOUNT NUMBER	V8191] -	-	ENGINEER
nr\1129	SEAL 33142						PROJECT NUMBER	G7UL02PH1	DATE		MGR TECH
/DukeE							DRAWING BY	JXV	-	-	REC & STD
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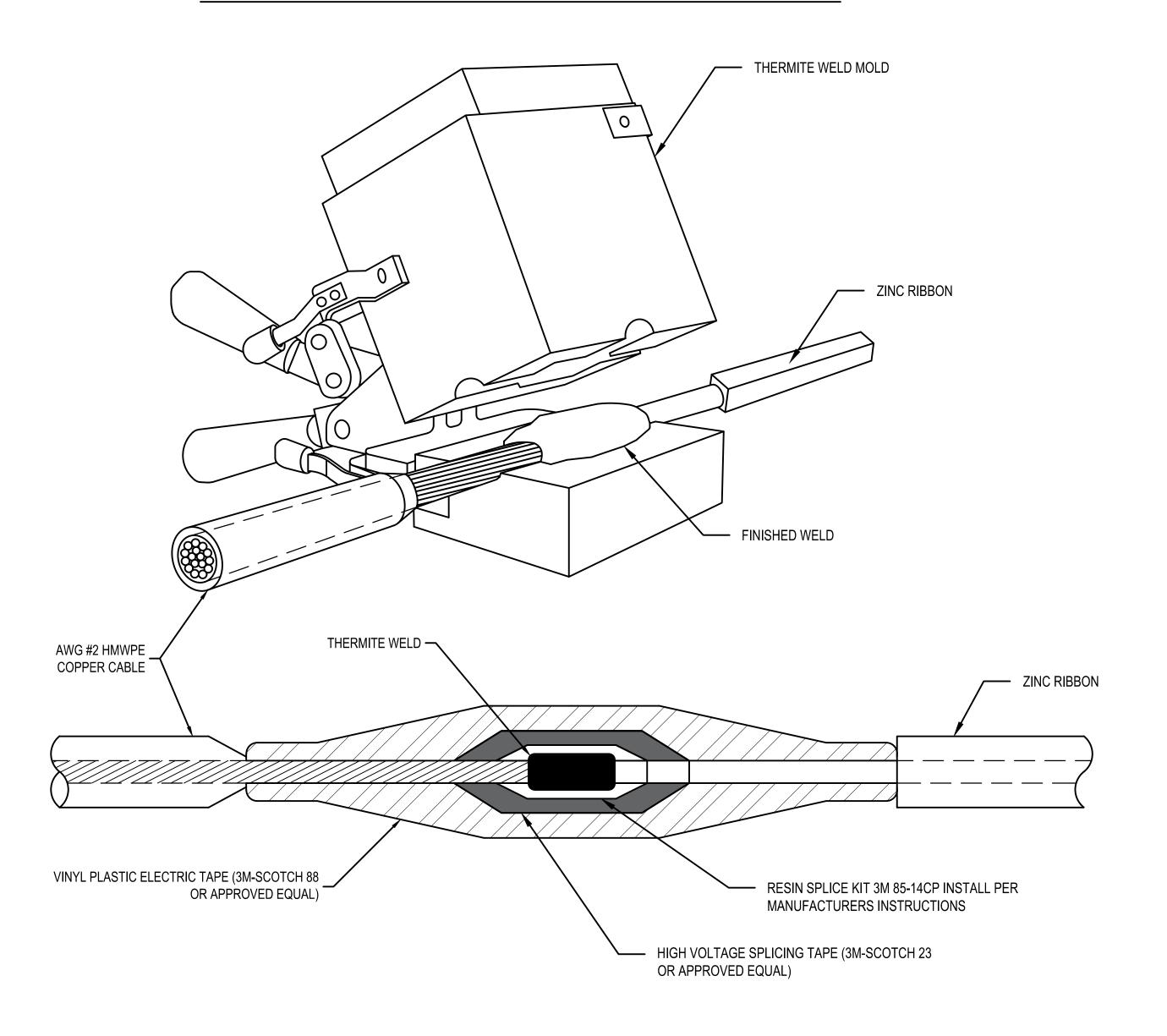
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UL60 PIPELINE - PHASE 1 SOLID STATE DECOUPLER BOONE COUNTY, KY ERLANGER, KY

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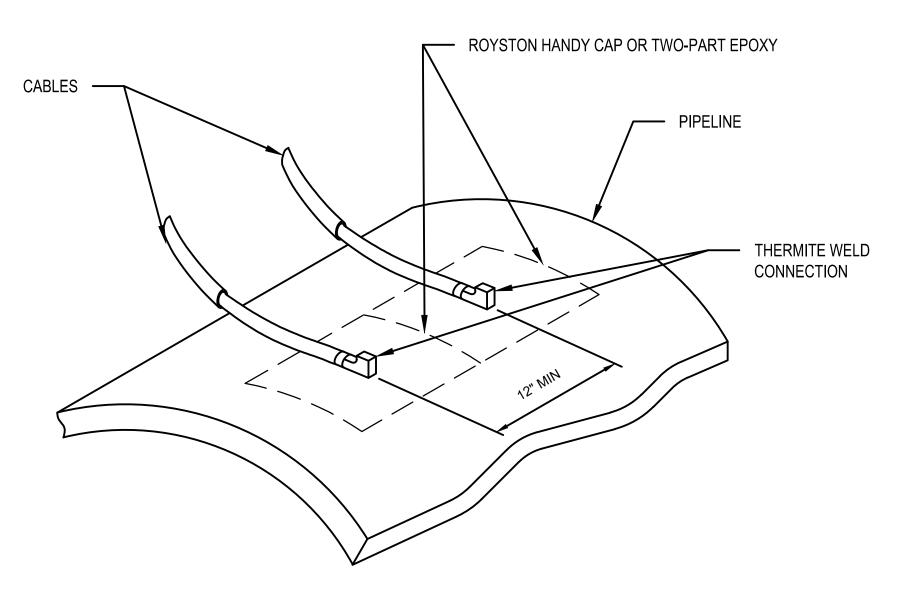
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ZINC RIBBION TO AWG #2 COPPER CABLE WELD CONNECTION



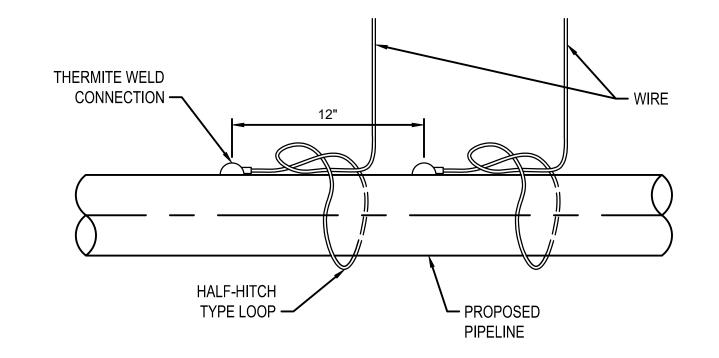
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HORIZONTAL PIPELINE CONNECTIONS

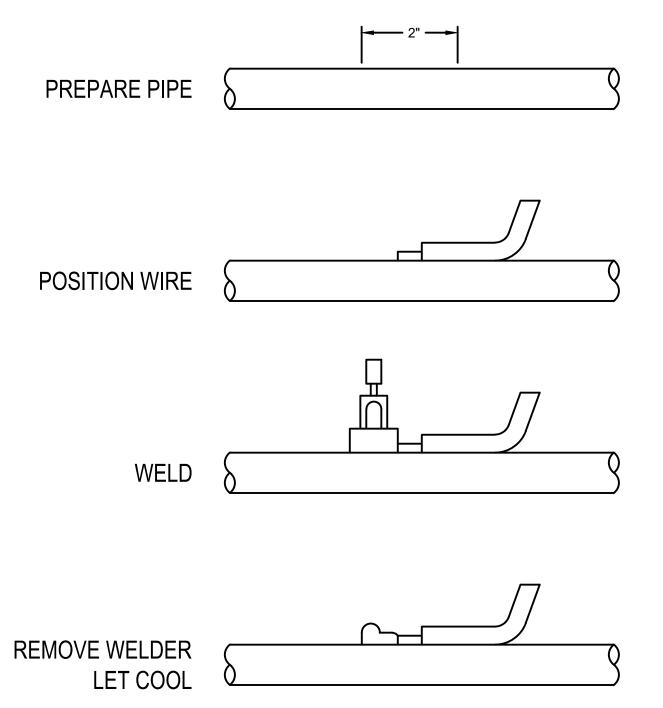


WELDER DETAIL FLINT GUN -GRAPHITE COVER STARTING POWDER - METAL POWDER COPPER SLEEVE — COPPER WIRE -- GRAPHITE MOLD ► METAL DISC METAL SURFACE —

TEST WIRE ROUTING DETAIL



WELDING STEPS



STEPS FOR PREPARING PIPE

INSPECT AND

COAT WELD

- 1. REMOVE A 2" SQUARE SECTION OF COATING, FILE SURFACE TO BRIGHT METAL AND DRY.
- 2. PIPE MUST BE TESTED FOR WALL LAMINATIONS PRIOR TO WELDING. ULTRASONIC WALL THICKNESS MEASUREMENTS MUST BE TAKEN AT THE LOCATION OF ALL WELDS, TO VERIFY ADEQUATE WALL THICKNESS.
- 3. WRAP TEST WIRE AROUND THE PIPE OR LEAVE ENOUGH SLACK ON THE WIRE TO REDUCE STRAIN ON WELD. NEVER WRAP CASING WIRE AROUND PIPELINE.
- 4. STRIP INSULATION FROM WIRE, SLIP ON COPPER SLEEVE (#8 WIRE AND SMALLER) AND CRIMP. PLACE WIRE AGAINST METAL SURFACE.
- 5. PLACE PREPARED WELDER OVER WIRE AND HOLD FIRMLY WHILE MAKING CONNECTION. APPLY SPARK TO SIDE OF WELDER WITH FLINT GUN.
- 6. REMOVE MOLD AND LET COOL.
- 7. AFTER WELD HAS COOLED, HIT WELD SEVERAL TIMES WITH HAMMER TO ENSURE WELD IS
- 8. PROTECT WELDMENT AS REQUIRED.

STEPS FOR PREPARING WELDER

- 1. PLACE METAL DISC IN BOTTOM OF GRAPHITE MOLD.
- 2. OPEN CARTRIDGE AND POUR CHARGE IN MOLD USE MAXIMUM 15 GRAM CHARGE.
- 3. SQUEEZE BASE OF CARTRIDGE AND REMOVE STARTING POWDER.
- 4. CLOSE COVER AND PLACE WELDER OVER WIRE.

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BY CHK APPD DATE REVISION(S) DESCRIPTION DESCRIPTION **APPROVALS** AMANDA M. PALM JXV CEB EPM AREA CODE 5339 02/10/2021 ISSUED FOR AS-BUILT REGIONAL 04/17/2020 ACCOUNT NUMBER | V8191 ENGINEER KENTUCKY PROJECT NUMBER G7UL02PH1 SEAL 33142 MGR TECH REC & STD DRAWING BY JXV STATION ID PRINCIPAL AMP 02/12/2020 PROFESSIONAL ENG/ARCH STAMP ENGINEER





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UL60 PIPELINE - PHASE 1 WELDING DETAILS BOONE COUNTY, KY ERLANGER, KY

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	ZONE	SITE	STA.	FEATURE(S)	LOCATION	ZINC RIBBION LENGTH (FT)	AWG #4 WELDS	AWG #8 WELDS	AWG #10 WELDS	NOTES
	1	1	17+94	SSD	West of Queens Ct, North of baseball fields	1150	2			
	<u>'</u>	2	28+77	SSD & AC Coupon Test Station	East of intersection of Donaldson Hwy and Turfway Rd	1150	2	1	1	Point of Inflection
		3	67+22	SSD & AC Coupon Test Station	South of Averitt trucking facility	1.450	2	1	1	West end of HDD
	2	4	81+42	SSD	North of Turfway Rd, east of airport	1450	2			90° bend in road
		5	102+01	SSD	North of intersection of Turfway Rd and Aero Pkwy	2000	2			
$A \subset MITIC ATIONI INICTALL ATIONIC$	3	6	122+09	SSD & AC Coupon Test Station	Field north of Aero Pkwy	2000	2	1	1	
AC MITIGATION INSTALLATIONS		7	159+01	SSD	North of Aero Pkwy, East of electrical substation	-	2			
	4	8 173+98		SSD & AC Coupon Test Station	North of Aero Pkwy, South of electrical substation	1550	2	1	1	
		9	188+97 SSD		North of Aero Pkwy, West of electrical substation	1550	2			
		10	218+83	SSD & AC Coupon Test Station	North of intersection of Aero Pkwy and Burlington Pike	-	2	1	1	
	5	11	222+79	SSD	Intersection of Aero Pkwy and Burlington Pike	450	2			HVAC line crossing
		12	236+20	SSD	North of Creek Rd	1350	2			Edge of private driveway
	6	13 704+51 AC Coupon 7		AC Coupon Test Station	8" Lateral South of Burlington Pike	_		1	1	West of AC substation

CATHODIC PROTECTION TE	ST STATIONS

	STA.	FEATURE(S)	LOCATION	AWG #6 WELDS	AWG #10 WELDS	NOTES
	10+41	2-Wire Test Station	West side of Peach Tree Ln	-	2	
	15+68	2-Wire Test Station	West side of Queens Ct	_	2	
	30+88	2-Wire Test Station	North of intersection of Donaldson Hwy and Turfway Rd	-	2	Point of Inflection
	33+19	4-Wire Test Station	West side of intersection of Donaldson Hwy	2	2	Connection to existing 8" Gas Line at (33+07)
<u> </u>	33+38	4-Wire Test Station	West side of intersection of Donaldson Hwy	2	2	Connection to existing 10" Gas Line at (33+27)
	53+57	2-Wire Test Station	East side of OHara Rd	_	2	
	82+54	2-Wire Test Station	West of Turfway Rd just south of access road	-	2	90° bend in road
	166+49	2-Wire Test Station	North of intersection of Aero Pkwy and Zig-Zag Rd	-	2	West fence line
	242+86	2-Wire Test Station	West side of Limaburg Creek Dr	_	2	
	510+90	2-Wire Test Station	8" Lateral	<u>-</u>	2	8" steel lateral to Wendell Ford Station
	703+51	4-Wire Test Station	South side of Burlington Pike	2	2	Connection to existing 8" Gas Line at (703+53)

0	BURNS & MCDONNELL STATE LICENSE #43		PIEDMONT '	'S NATURAL GAS FACILITY DRAWINGS ARE CONSIDERED CONFIDENTIAL	OM-1095) * DRAWING	i IS Cl					RAWING * USE DIMENSIONS ONLY ATE DISCLOSURE ALL PREVIOUS PAPER COPIES OF THIS DRAWI	NG MUST BE DESTROYED IN ACCORDANCE WITH RECORDS & INFO. MANAGEMENT (RIM) POLICY 1001
Design	AMANDA M. PALM	NO.	DATE	REVISION(S) DESCRIPTION	ву снк	APPE	DESCRIPTION		APPROVALS			
OUL60	04/17/2020	0	02/10/2021	ISSUED FOR CONSTRUCTION	JXV CEB	EPM	AREA CODE 5339	9 DATE	INITIALS	REGIONAL		UL60 PIPELINE - PHASE 1
16_DE	KENTUCKY						ACCOUNT NUMBER V819	91	-	ENGINEER	C DUVE Diadmont	
nr/1129	SEAL 33142						PROJECT NUMBER G7U	JL02PH1 DATE	INITIALS	MGR TECH	DUKE Piedmont Natural Gas	EQUIPMENT SCHEDULES
DukeE	<u> </u>						DRAWING BY JXV		-	REC & STD	Indicated Gas	BOONE COUNTY, KY
S/TND/							STATION ID -	DATE	INITIALS	PRINCIPAL		,
Client	PROFESSIONAL ENG/ARCH STAMP						CHECKER INITIALS CEB	02/12/2020	AMP	ENGINEER	COPYRIGHT 2019	ERLANGER, KY



REF. DWG(S) PNG-G-043-0001022 SHEET(S) 7 OF 8 DWG SCALE DWG DATE 01/09/2020 SUPERSEDED PNG -E-043-0001039 0

TEM NO	EST QTY	UOM	AS-BUILT QTY	DESCRIPTION	MAXIMO PART X	NOTES	MODEL NO	MATERIAL SOURC
				CAD WELDS & CONNECTIONS				
1	4	PKG	4	CA-15 WELD METAL (20/PACK)	NON-STOCK	WELD METAL, CABLE TO PIPE CONNECTIONS	CA-15	ERICO
2	1	PKG	1	CA-32 WELD METAL (20/PACK)	NON-STOCK	WELD METAL, AWG #2 TO ZINC RIBBON CONNECTIONS	CA-32	ERICO
3	1	EA	1	CASST-1V, AWG #2 STRANDED CABLE WELDER	NON-STOCK	AWG #2 CABLE TO ZINC RIBBON CONNECTION	CASST-1V	ERICO
4	1	EA	1	CAHAA-1L, AWG #4 STRANDED CABLE WELDER	NON-STOCK	AWG #4 CABLE TO PIPE CONNECTION	CAHAA-1L	ERICO
5	1	EA	1	CAHAA-1H, AWG #6 STRANDED CABLE WELDER	NON-STOCK	AWG #6 CABLE TO PIPE CONNECTION	CAHAA-1H	ERICO
6	10	EA	10	CAB-133-1L, ADAPTER SLEEVE FOR AWG #8, FOR USE IN AWG #4 WELDER	NON-STOCK	AWG #8 CABLE TO PIPE CONNECTION	CAB-133-1L	ERICO
7	30	EA	30	CAB-133-1H, ADAPTER SLEEVE FOR AWG #10, FOR USE IN AWG #6 WELDER	NON-STOCK	AWG #10 CABLE TO PIPE CONNECTION	CAB-133-1H	ERICO
8	1	EA	1	FLINT IGNITOR FOR THERMITE WELDING, T320	NON-STOCK	CADWELD IGNITOR	T320	ERICO
9	70	EA	70	ROYSTON HANDY CAP	1552880	CABLE TO PIPE WELD PROTECTION		ROYSTON
10	15	EA	15	SPLICE KIT, 85-14CP	NON-STOCK	AWG#2 TO ZINC RIBBON WELD PROTECTION	85-14CP	3M
11	2	EA	2	SUPER 88 TAPE, 66FT ROLL	NON-STOCK	AWG#2 TO ZINC RIBBON WELD PROTECTION		3M
12	2	EA	2	SCOTCH 23 HIGH VOLTAGE TAPE	NON-STOCK	AWG#2 TO ZINC RIBBON WELD PROTECTION		3M
13	4	PKG	4	COMPRESSION RING TERMINAL, AWG #2 WITH 1/2"HOLE, YAD2CM12E12 (5/PACK)	NON-STOCK	AWG #2 TO SSD CONNECTION	YAD2CM12E12	BRUNDY
14	6	PKG	6	COMPRESSION RING TERMINAL, AWG #4 WITH 1/2" HOLE, YAD4CM12E12 (5/PACK)	NON-STOCK	PIPE TO SSD CONNECTION	YAD4CM12E12	BRUNDY
				WIRE				
15	900	FT	900	BLACK AWG #10, THHN COATED SOLID COPPER WIRE	NON-STOCK	TEST STATION TO PIPE CONNECTION		GENERIC
16	200	FT	200	BLACK AWG #8, THHN COATED STRANDED COPPER WIRE	NON-STOCK	TEST STATION TO PIPE CONNECTION		GENERIC
17	100	FT	100	BLACK AWG #6, THHN COATED STRANDED COPPER WIRE	NON-STOCK	TEST STATION TO PIPE CONNECTION		GENERIC
18	700	FT	700	BLACK AWG #4, HMWPE COATED STRANDED COPPER WIRE	NON-STOCK	SSD TO PIPE CONNECTION		GENERIC
19	400	FT	400	RED AWG #2, HMWPE COATED STRANDED COPPER WIRE	NON-STOCK	ZINC RIBBON TO SSD CONNECTION		GENERIC
				TEST STATIONS & JUNCTION BOXES				
20	11	EA	11	BIG FINK 5 TERMINAL TEST STATION WITH 3" DIA. SUPPORT POST, 6' HEIGHT, YELLOW POST, YELLOW TEST HEAD	1555422	CP TEST STATION	300-B5C-Y/Y	COTT
21	6	EA	6	RAPID CHECK AC COUPON TEST STATION, YELLOW	NON-STOCK	AC COUPON TEST STATION		FARWEST
22	6	EA	6	BORIN STELTH 7 ELECTRODE WITH 20FT AWG #14 LEAD WIRE	NON-STOCK	AC/DC COUPON	STELTH 7	BORIN
				AC GROUNDING / DECOUPLERS				
23	12	EA	12	SSD-2/2-5.0-100-R	NON-STOCK	SOLID STATE DECOUPLER (SSD)	SSD-2/2-5.0-100-R	DAIRYLAND
24	12	EA	12	MECHANICAL ISOLATION SWITCHES, SWX-100-PED	NON-STOCK	SSD EXTERNAL DISCONNECT SWITCH	SWX-100-PED	DAIRYLAND
25	12	EA	12	MTL LEAD KIT FOR ISOLATION SWITCH, MTL-2/0-12-A	NON-STOCK	SSD TO SWITCH CONNECTION	MTL-2/0-12-A	DAIRYLAND
26	12	EA	12	36" FIBERGLASS PEDESTAL FOR SSD MOUNTING, MTP-36	NON-STOCK	SSD PEDESTAL	MTP-36	DAIRYLAND
27	9500	FT	9500	ZINC RIBBON, STANDARD 1/2" x 9/16": (1) 450-FT, (1) 1150-FT, (1) 1350-FT, (1) 1450-FT, (2) 1550-FT, (1) 2000-FT	NON-STOCK	AC GROUNDING CABLE		PLATTLINE
28	9500	FT	9500	CAUTION TAPE, YELLOW, 6" WIDE	1552996	CAUTION TAPE		GENERIC

NOTE: CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS PARTS TO COMPLETE PROJECT PER CONTRACT DRAWINGS, CONTRACT SPECIFICATIONS, ELECTRICAL DISTRIBUTION COMPANY REQUIREMENTS. PARTS INCLUDE, BUT ARE NOT LIMITED TO, WIRING AND MOUNTING MATERIALS, METER SOCKET, DISCONNECT EQUIPMENT, ENCLOSURES, TRANSIENT VOLTAGE SURGE SUPPRESSORS, AC MAIN BUSS TERMINATION, CIRCUIT BREAKERS, AND OTHER ELECTRICAL EQUIPMENT REQUIRED. ACTUAL LENGTH WIRING IS DEPENDENT ON DISTANCE FROM INSTALLATION.

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AMANDA M. PALM 04/17/2020 KENTUCKY SEAL 33142

PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	СНК	APPD	DESCRIPTIO	N		APPROVALS	
0	02/10/2021	ISSUED FOR AS-BUILT	JXV	CEB	EPM	AREA CODE	5339	DATE	INITIALS	REGIONAL
						ACCOUNT NUMBER	V8191]-	-	ENGINEER
						PROJECT NUMBER	G7UL02PH1	DATE	INITIALS	MGR TECH
						DRAWING BY	JXV]-	-	REC & STD
						STATION ID	-	DATE	INITIALS	PRINCIPAL
						CHECKER INITIALS (CEB	02/12/2020	AMP	ENGINEER





REF. DWG(S) PN	G-G-043-0001022	
SHEET(S) 8 OF	8 DWG SCALE	NONE
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