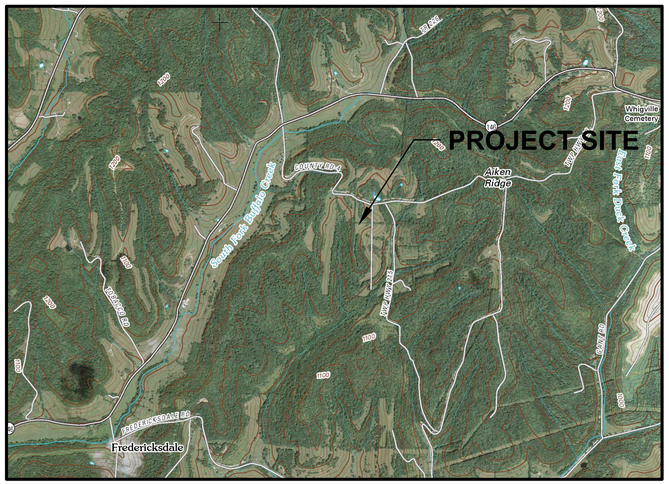
CONSOL ENERGY
COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DECEMBER 2013



OHIO UTILITIES PROTECTION SERVICE
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811 OR 1-800-362-2764

PRELIMINARY
NOT FOR CONSTRUCTION

DRAWING LIST	
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GENERAL NOTES:

1. PROJECT SITE IS LOCATED ALONG COUNTY ROAD 4 IN MARION TOWNSHIP, NOBLE COUNTY, OHIO
2. THE TOPOGRAPHY SHOWN IS BASED UPON OGRIP MAP LIDAR DATA COMBINED WITH FIELD SURVEY PERFORMED BY MS CONSULTANTS IN NOVEMBER 2013.
3. THIS SITE IS NOT LOCATED WITHIN A FLOOD PLAIN.
4. IN OCTOBER 2013, AS PER THE NATIONAL WETLANDS INVENTORY MAPPING, AND WETLAND WALKS PERFORMED BY OTHERS, IT HAS BEEN DETERMINED THAT THERE ARE WETLANDS LOCATED WITHIN THE AREA OF INVESTIGATION OF THE SITE. NO WETLANDS WILL BE DISTURBED DURING CONSTRUCTION ON THIS SITE. A MAP DEPICTING THE AREA OF INVESTIGATION HAS BEEN PROVIDED IN THE WETLAND REPORT.
5. EXISTING STRUCTURES, TREE LINES, AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY PUBLISHED BY OGRIP.
6. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION PRIOR TO EXCAVATION BY NOTIFYING THE OHIO UTILITIES PROTECTION SERVICE AT LEAST TWO (2) DAYS IN ADVANCE BY CALLING 800-362-2764.
7. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE ON THE CONTRACTOR'S WORK SHALL BE REPAIRED IMMEDIATELY AND COMPLETELY AT HIS EXPENSE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWNS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A COPY OF ALL PERMITS RELATED TO THE CONSTRUCTION SHOWN ON THESE PLANS ON THE JOB SITE AT ALL TIMES.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ZONE TRAFFIC SAFETY AS MANDATED BY ODOT, OSHA, AND OTHER AGENCIES.
11. CONTRACTORS SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. MONUMENTS AND SURVEY MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
13. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS USING MECHANICAL MEANS. WASHING OF ROADWAYS IS PROHIBITED.
14. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC AND TRAFFIC CONTROL DEVICES DURING CONSTRUCTION.
15. TEMPORARY STABILIZATION
    a. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OR EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL IMMEDIATELY BE SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.
    b. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING:
    i. A MINIMUM UNIFORM COVERAGE OR MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION.
    ii. AN ACCEPTABLE BMP WHICH TEMPORARILY MINIMIZES ACCELERATED EROSION AND SEDIMENTATION.

ms consultants, inc.
2221 Schrock Road
Columbus, Ohio 43229

FOR PERMIT PURPOSES ONLY

KENNETH W. RICKER REG-NO. E-54524 DATE

REVISIONS			
△	DATE	DESCRIPTION	
			DRAWN BY: IA
			CHECKED BY: JCM
			DATE: 12/20/2013
			SCALE: AS NOTED
			PROJECT NUMBER: 66-48003-10
			DRAWING NUMBER: G-1

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IMPOUNDMENT DAM CONSTRUCTION NOTES:

1. THE DESIGN, CONSTRUCTION AND REMOVAL OF DAMS ASSOCIATED WITH IMPOUNDMENTS OF OIL AND GAS WELLS MUST BE ACCOMPLISHED IN SUCH A MANNER AS TO PROTECT THE HEALTH AND SAFETY OF THE PEOPLE, THE NATURAL RESOURCES, AND THE ENVIRONMENT. IMPOUNDMENT DAMS SHALL BE DESIGNED, CONSTRUCTED AND MAINTAIWED TO BE STRUCTURALLY SOUND AND REASONABLY PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES AND COMPLY WITH ODNR DAM SAFETY REGULATIONS.
2. SOILS FOR EARTHEN EMBANKMENT SHALL BE LIMITED TO TYPES GC, GM, SM, CL, OR ML (ASTOO-2487 - UNIFIESD SOILS CLASSIFICATION). SOILS MUST CONTAIN A MINIMUM OF 20% OF PLUS NO. 200 SIEVE MATERIALS. A MINIMUM OF THREE SAMPLES SHALL BE CLASSIFIED.
3. FOUNDATION FOR EARTHEN EMBANKMENT SHALL BE STRIPPED AND GRUBBED TO A MINIMUM DEPTH OF 2 FEET PRIOR TO PLACEMENT OF COMPACTED FILL MATERIAL.
4. ANY SPRINGS ENCOUNTERED WITHIN THE FOUNDATION AREA SHALL BE DRAINED TO THE OUTSIDE/DOWNSTREAM TOE OF EMBANKMENT. CONSTRUCTED DRAIN SECTION SHALL BE AN EXCAVATED 2' X 2' TRENCH AND BACK FILLED WITH SAND, COMPACTED BY HAND TAMPER. NO GEOTEXTILES SHALL BE USED TO LINE TRENCH. THE LAST 3' OF DRAIN AT THE DOWNSTREAM END SHALL BE CONSTRUCTED WITH AASHTO #8 MATERIAL.
5. EARTHEN EMBANKMENT SHALL BE COMPACTED BY SHEEPSFOOT OR PAD ROLLER, MAXIMUM LOOSE LIFT THICKNESS SHALL BE 8” WITH MAXIMUM PARTICLE SIZE LESS THAN 6”, EMBANKMENT SHALL BE COMPACTED TO A MINIMUM OF VISIBLE NON-MOVEMENT.
6. EMBANKMENT TOP SHALL BE A MINIMUM OF 25' IN WIDTH.
7. MAXIMUM OUTSIDE AND INSIDE EMBANKMENT (FILL) SLOPES SHALL BE 3H:1V.
8. ALL EXPOSED EMBANKMENT SLOPES SHALL BE LIMED, FERTILIZED, SEEDED AND MULCHED. PERMANENT VEGETATIVE GROUND COVER IN COMPLIANCE WITH ODNR BEST MANAGEMENT PRACTICES SHALL BE ESTABLISHED UPON COMPLETION OF IMPOUNDMENT CONSTRUCTION. EMBANKMENTS SHALL BE MAINTAINED WITH A GRASSY VEGETATIVE COVER AND FREE OF BRUSH AND/OR TREES.
9. A MINIMUM OF 2' OF FREEBOARD SHALL BE MAINTAINED AT ALL TIMES DURING THE OPERATION OF THE IMPOUNDMENT.
10. ALL LINER MATERIALS SHALL MEET MINIMUM REQUIREMENTS OF ODNR. LINERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
11. ALL EMBANKMENT CONSTRUCTION AND COMPACTION TESTING SHALL BE UNDER DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER.

CONSTRUCTION NOTES:

1. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT ODOT STANDARDS AND SPECIFICATIONS.
2. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE APPLICANT MUST BE AVAILABLE AT ALL TIMES.
3. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO ENSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
4. NOTIFICATION SHALL BE GIVEN TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPE LINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.
5. THE LOCATION OF THE EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.
6. THE APPLICANT WILL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRICTION PROJECT WITHIN OR CONTIGUOUS TO THE EXISTING RIGHT-OF-WAY.
7. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.
8. THE APPLICANT WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.
9. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVE SITES. GRAVE SITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVE SITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.
10. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND NOTIFY THE ENGINEER AND OWNER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN.
11. CONTROLLED FILLS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER STANDARD ASTM-0698. DENSITY SHALL BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER. (SEE GEOTECHNICAL REPORT PREPARED FOR THIS PROJECT)
12. CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.
13. CONTRACTOR TO PROVIDE TEMPORARY DEWATERING DURING CONSTRUCTION OF IMPOUNDMENT IF PERCHED GROUNDWATER IS PRESENT DURING MASS EXCAVATIONS OR EXCAVATIONS FOR THE EMBANKMENT. IF WATER SEEPAGE OR GROUNDWATER IS ENCOUNTERED DURING MASS EXCAVATION, LARGE SUMP PITS AND PUMPS WILL BE REQUIRED. CONTRACTOR SHALL EXCAVATE SURFACE TRENCHES FROM ANY OBSERVED WATER SEEPAGE TO A SUMP PIT AND PUMP AS SOON AS WATER SEEPAGE IS OBSERVED TO AVOID SATURATION OF SUBGRADES. TEMPORARY DEWATERING SYSTEM SHALL REMAIN IN PLACE UNTIL ALL SUBGRADES ARE APPROVED AND GROUND WATER DEWATERING SYSTEM IS IN PLACE.

IMPOUNDMENT LINER NOTES:

1. THE DESIGNED IMPROVEMENT FACILITY SHALL BE FULLY LINED WITH A GEOSYNTHETIC LINER SYSTEM. ALL LINER MATERIALS SHALL MEET MINIMUM REQUIREMENTS OF ODNR. LINERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
2. THE IMPOUNDMENT AREA TO BE LINED SHALL BE DRAINED AND FULLY DRY PRIOR TO THE INSTALLATION OF THE DESIGNED LINER SYSTEM. THE SUBGRADE FOUNDATION AREA SHALL BE A MINIMUM OF 6 INCHES OF SMOOTH COMPACTED SOIL AND FREE OF ALL PROJECTIONS OR OTHER HARD MATERIALS THAT MAY DAMAGE THE LINER SYSTEM. CUT AND FILL SLOPES SHALL BE NO STEEPER THAN 3H:1V.
3. THE LINER SYSTEM SHALL CONSIST OF A 60 MIL LINER THAT MEETS ALL ODNR GUIDELINES AND A GEOTEXTILE LAYER FOR GAS RELEASE BELOW THE LINER SYSTEM.
4. AN ANCHOR TRENCH SHALL BE EXCAVATED COMPLETELY AROUND THE PERIMETER OF THE IMPOUNDMENT AREA AT THE PLANNED ELEVATION OF THE TOP OF THE LINING. THE TRENCH SHALL BE A MINIMUM 24 INCHES DEEP AND 24 INCHES WIDE.
5. ALL ELEMENTS OF THE LINER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. ALL SEAMS SHALL BE SEALED AND TESTED IN A METHOD APPROVED OF BY THE MANUFACTURER.
6. GAS RELIEF VENTS SHALL BE PROVIDED ALONG THE TOP OF THE LINER AND WITHIN ONE FOOT OF THE PERIMETER OF THE IMPOUNDMENT TO ALLOW GASES TO ESCAPE FROM UNDER THE GEOMEMBRANE.

ms consultants, inc.
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REVISIONS

△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

GENERAL NOTES

COWGILL CENTRALIZED IMPOUNDMENT
MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
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DRAWING NUMBER:	G-2

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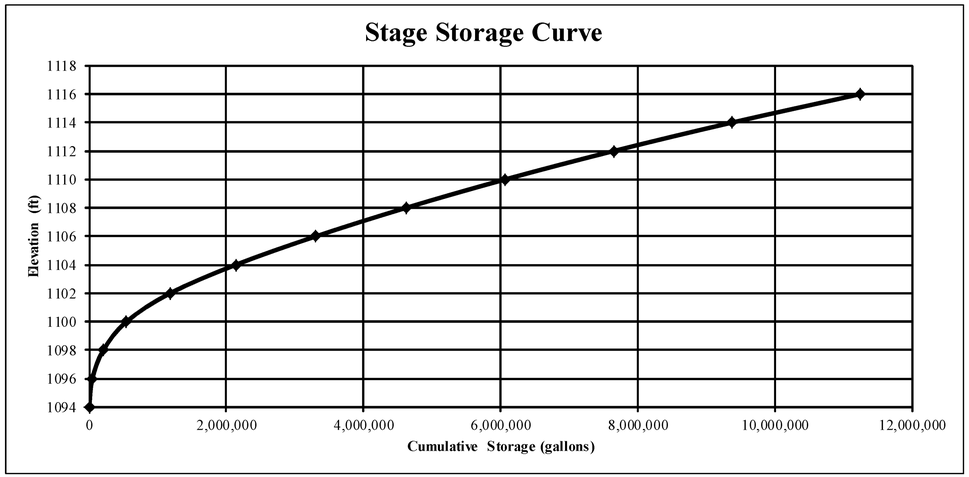
Stage Storage Curve

Elevation (ft)	Storage Depth (ft)	Area (sf)	Storage (cf)	Storage (gallons)	Storage (barrels)	Cummulative Storage (gallons)	Cummulative Storage (barrels)	Volume per Foot Depth (gal/ft)	Volume per Foot Depth (barrels/ft)
1094	0.0	0	0	0	0	0	0	0	0
1096	2.0	6,248	6,248	46,738	1,113	46,738	1,113	23,369	556
1098	4.0	15,137	21,385	159,971	3,809	206,709	4,922	79,985	1,904
1100	6.0	30,031	45,168	337,880	8,045	544,589	12,966	168,940	4,022
1102	8.0	55,189	85,220	637,490	15,178	1,182,079	28,145	318,745	7,589
1104	10.0	72,720	127,909	956,826	22,782	2,138,905	50,926	478,413	11,391
1106	12.0	83,390	156,110	1,167,784	27,804	3,306,689	78,731	583,892	13,902
1108	14.0	92,145	175,535	1,313,093	31,264	4,619,782	109,995	656,547	15,632
1110	16.0	101,160	193,305	1,446,022	34,429	6,065,804	144,424	723,011	17,215
1112	18.0	110,514	211,674	1,583,432	37,701	7,649,236	182,125	791,716	18,850
1114	20.0	120,087	230,601	1,725,015	41,072	9,374,251	223,196	862,508	20,536
1116	22.0	129,917	250,004	1,870,160	44,528	11,244,411	267,724	935,080	22,264



DESCRIPTION	UNITS	QUANTITY
1.) CLEARING AND GRUBBING		
1a.) MOWING	AC	
2.) COMPOST FILTER SOCK	LF	
3.) AGGREGATE SURFACING		
3a.) IMPOUNDMENT #304 STONE (4")	TONS	
3b.) IMPOUNDMENT ACCESS ROAD #304 STONE (4")	TONS	
3c.) GEOTEXTILE	SY	
3d.) PAD CEMENT STABILIZATION (12" DEEP, ASSUME 6% MOISTURE)	CY	
3e.) ROAD CEMENT STABILIZATION (12" DEEP, ASSUME 6% MOISTURE)	CY	
4.) SLOPE MATTING	SY	
5.) SEED & MULCH	AC	
6.) DITCH LINING		
6a.) DITCH FABRIC	SY	
6b.) R-4	TONS	
7.) EXCAVATION		
7a.) IMPOUNDMENT (CUT W/ NO SWELL)	CY	
7b.) IMPOUNDMENT ACCESS ROAD (CUT W/ NO SWELL)	CY	
7c.) TOPSOIL (ASSUME 12")	CY	
8.) PIT LINING		
8a.) PIT LINER	SY	
9.) DITCH LENGTH	LF	
10.) ROCK FILTER	EA	
11.) RIP RAP APRON	EA	
12.) GATE	EA	
13.) RIP RAP LINED CHANNEL	LF	
14.) TOE BENCH		
14a.) KEYWAY EXCAVATION (TOE LENGTH X 12" WIDTH X 8" DEPTH)	CY	
14b.) TOE BENCH DRAIN	LF	
15.) CULVERTS		
15a.) 18" HDPE CULVERT	LF	
15b.) 24" HDPE CULVERT	LF	
16.) SUMP WITH OUTLET		
16a.) 4'x4'x4' CONCRETE SUMP INLET WITH STEEL GRATE	EA	
16b.) 8" GATE VALVE & CURB STOP	EA	
16c.) 8" DISCHARGE PIPES	LF	

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CONSOL ENERGY

120 INDUSTRY ROAD
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DRAWING TITLE & PROJECT NAME

QUANTITIES AND STAGE STORAGE

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	G-3

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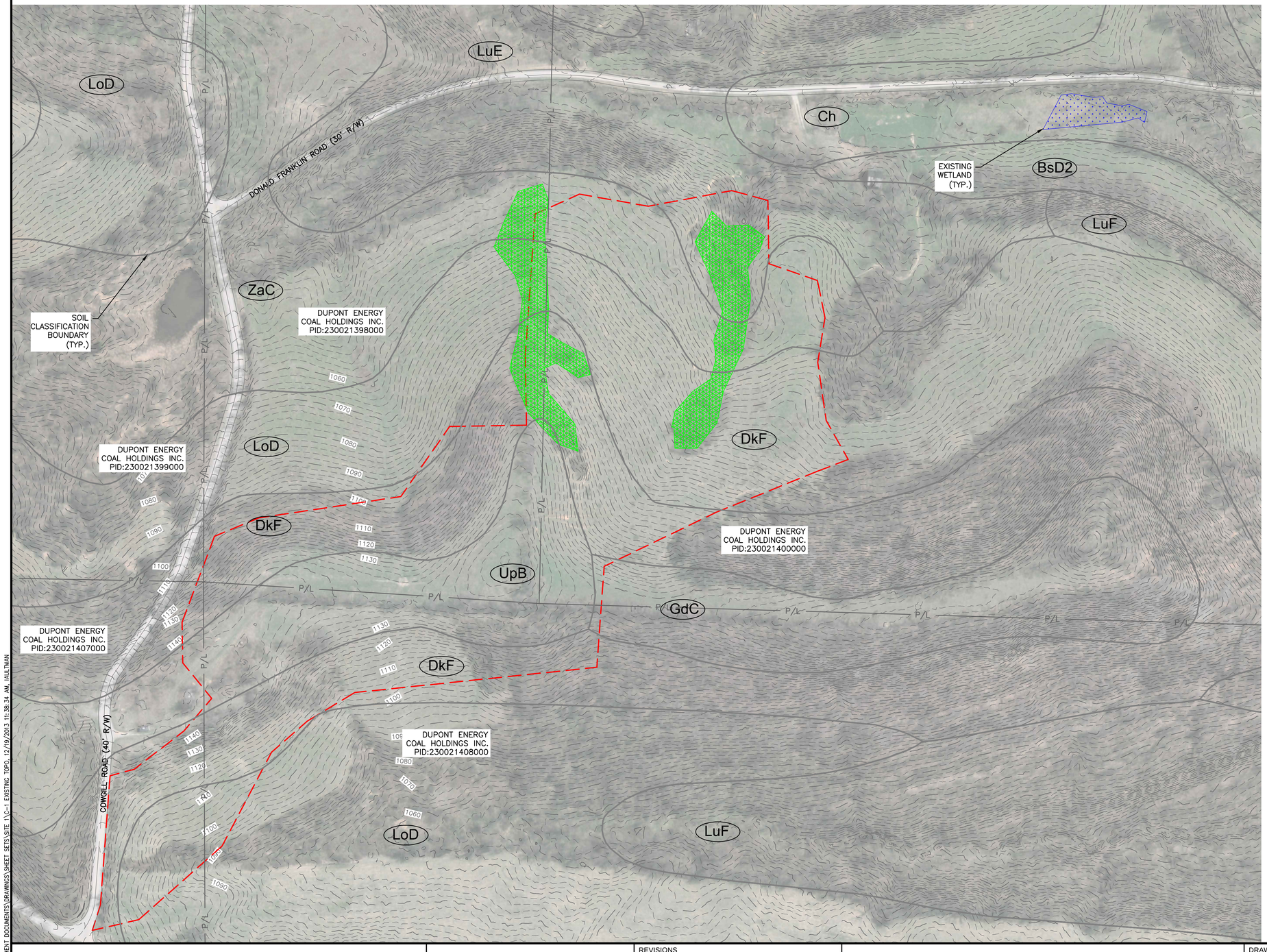

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LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY ℄	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	POTENTIAL BAT TREES	
	LIMIT OF DISTURBANCE	

SOIL CLASSIFICATIONS

BsD2 - BROOKSIDE SILT LOAM, 15 TO 25% SLOPES, ERODED

Ch - CHAGRIN SILT LOAM, OCCASIONALLY FLOODED

DkE - DEKALB CHANNERY LOAM, 25 TO 40% SLOPES

DkF - DEKALB CHANNERY LOAM, 40 TO 70% SLOPES

GdC - GILPIN SILT LOAM, 8-15% SLOPES

GdD - GILPIN SILT LOAM, 15-25% SLOPES

Lod - LOWELL SILT LOAM, 15 TO 25% SLOPES

LuF - LOWELL-GILPIN SILT LOAMS, 15 TO 25% SLOPES

UpB - UPSHUR SILT LOAM. 3 TO 8% SLOPES

ZaC - ZANESVILLE SILT LOAM, 6 TO 15% SLOPES

NOTE:

SOIL CLASSIFICATIONS AND APPROXIMATE BOUNDARY SHOWN ARE DERIVED FROM THE SOIL SURVEY OF COLUMBIANA COUNTY.

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EXISTING CONDITIONS

COWGILL CENTRALIZED IMPOUNDMENT

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SCALE:	1"=100'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-1

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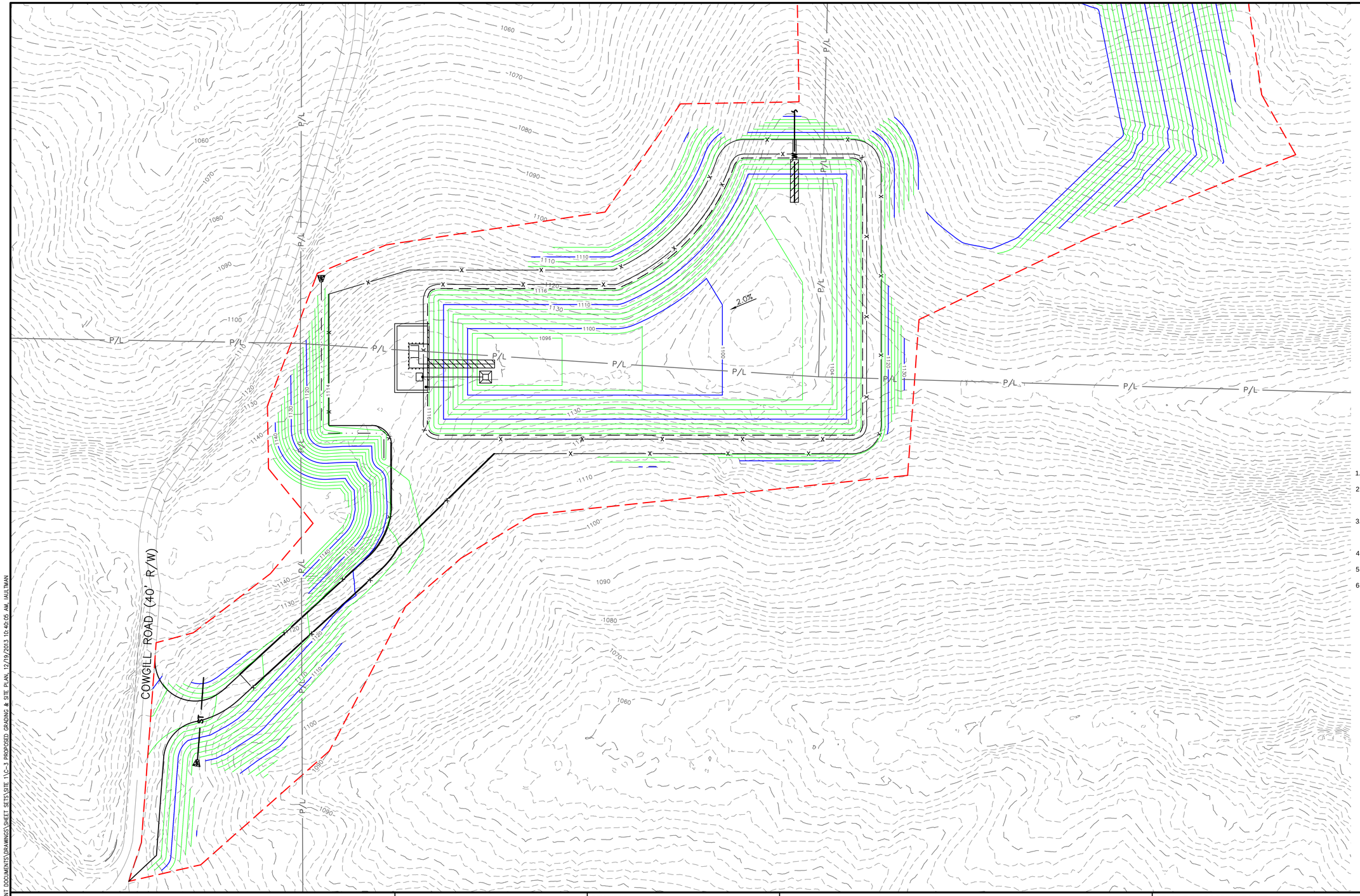

0 60' 120'

LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY $\mathcal{L}$	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	LIMIT OF DISTURBANCE	

NOTES:

1. AREA OF DISTURBANCE = 16.50 Ac.
2. INSTALL NORTH AMERICAN GREEN S75 EROSION CONTROL MATTING OR EQUIVALENT ON ALL SLOPES 3:1 OR GREATER UNLESS OTHERWISE NOTED.
3. DO NOT DISTURB EXISTING UTILITIES DURING CONSTRUCTION. PROVIDE PROTECTION AND/OR STABILIZATION WHERE NECESSARY.
4. FOR SOIL DATA, SEE SHEET C1.
5. ALL CUT SLOPES WITHIN THE IMPOUNDMENT ARE 3:1.
6. ALL OTHER CUT SLOPES ARE 2:1 AND FILL SLOPES ARE 3:1 UNLESS OTHERWISE NOTED.

SITE DATA

ACCESS ROAD CUT VOLUME: 7,126 CY
ACCESS ROAD FILL VOLUME: 7,414 CY
ACCESS ROAD LENGTH: 528 LF
ACCESS ROAD AREA: 11,616 SF

IMPOUNDMENT CUT VOLUME: 200,283 CY
IMPOUNDMENT FILL VOLUME: 1,279 CY

*EXCESS MATERIAL DOES NOT TAKE INTO ACCOUNT THE SUBBASE MATERIAL FOR THE ACCESS ROAD AND IMPOUNDMENT.

1. NO CUT OR FILL FACTORS WERE USED IN THESE CALCULATIONS.
2. TOPSOIL INCLUDED IN CUT/FILL VOLUME CALCULATIONS.

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△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

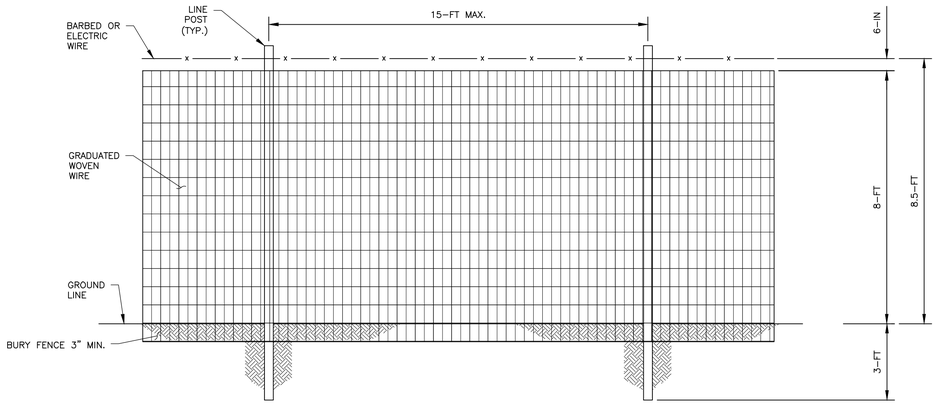
PROPOSED GRADING & SITE PLAN

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	1"=60'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-2

N:\66-48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\C-2 PROPOSED GRADING & SITE PLAN, 12/19/2013 10:46:05 AM, IAULTMAN



NOTES:

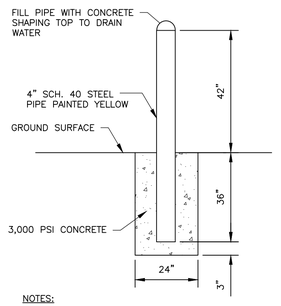
1. WIRE MESH SHALL BE GRADUATED 3" X6".
2. WOVEN WIRE SHALL NE ASTM CLASS 3 GALVANIZED. TOP AND BOTTOM OF WIRES MIN. 12 GAUGE. INTERMEDIATE STAY WIRES MIN. 12 1/2 GAUGE.
3. LINE POSTS (WOODEN): MIN. 4 INCH DIAMETER OR 4 INCH SQUARE.
   LINE POSTS (STEEL): STUDDED OR PUNCHED T, U, OR Y SHAPED, WITH ANCHOR PLATES. MIN. WEIGHT 1.3 LBS/FT (EXCLUDING ANCHOR PLATE).

FOR FENCE POSTS:				
CCA	ACQ	CBA-A	CA-B	MICRO CA
0.40	0.40	0.41	0.21	0.14

CCA – CHROMATED COPPER ARSENATE
ACQ – ALKALINE COPPER QUAT
CBA-A – COPPER BORON AZOLE TYPE A
CA-B – COPPER AZOLE TYPE B
MICRO-CA – DISPERSED COPPER AZOLE OR MICRONIZED COPPER AZOLE

(PRESSURE TREATMENT FOR ALL WOOD ARE TAKEN FROM AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) TABLE 5C "SAWN PRODUCTS – COMMODITY SPECIFICATION A". EXCEPT CBA-A WHICH IS THE RECOMMENDATION OF SIMPSON STRONG TIE COMPANY.)

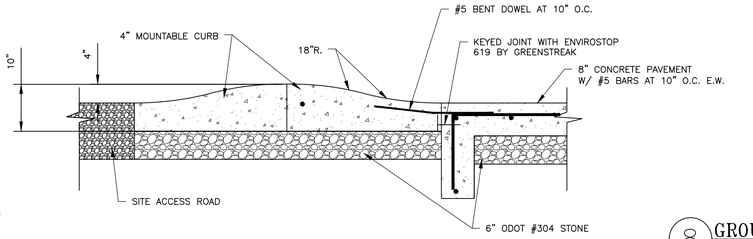
1 IMPOUNDMENT FENCING
N.T.S.



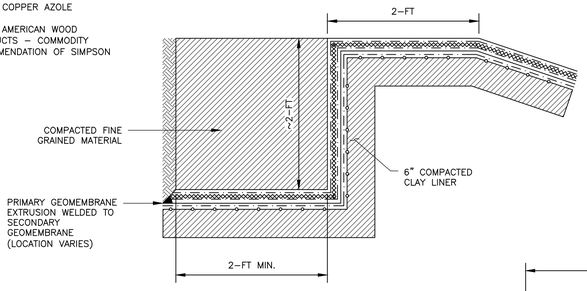
NOTES:

1. BOLLARDS TO BE SPACED AT A MAXIMUM 7' SPACING AND TO ALLOW ACCESS TO MANIFOLD FLANGE CONNECTIONS.
2. ALTERNATE BOLLARD DESIGN OR APPROVED EQUAL SHALL BE APPROVED BY THE OWNER.

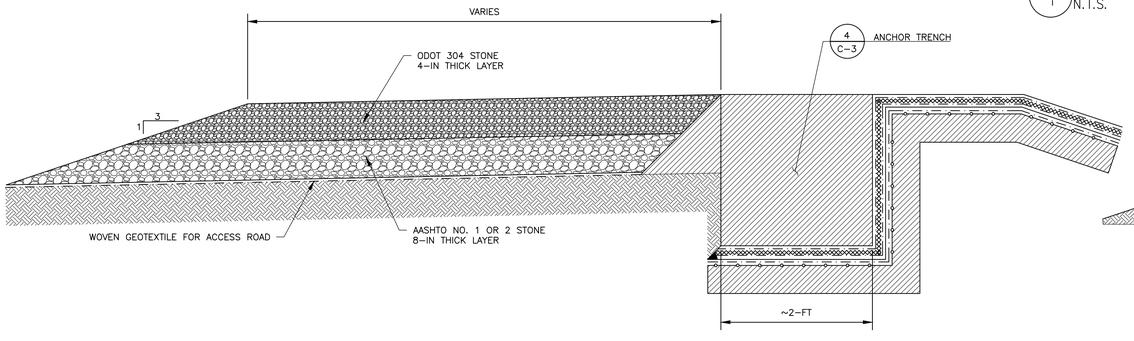
2 PIPE BOLLARD
N.T.S.



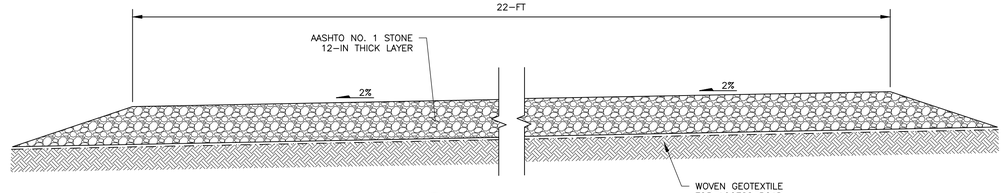
3 SECONDARY CONTAINMENT CURB AND PAVEMENT
N.T.S.



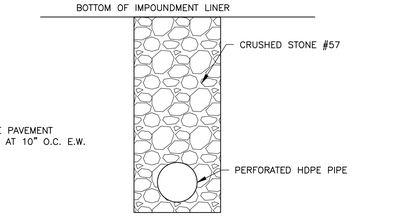
4 ANCHOR TRENCH
N.T.S.



6 IMPOUNDMENT PERIMETER ROAD
N.T.S.

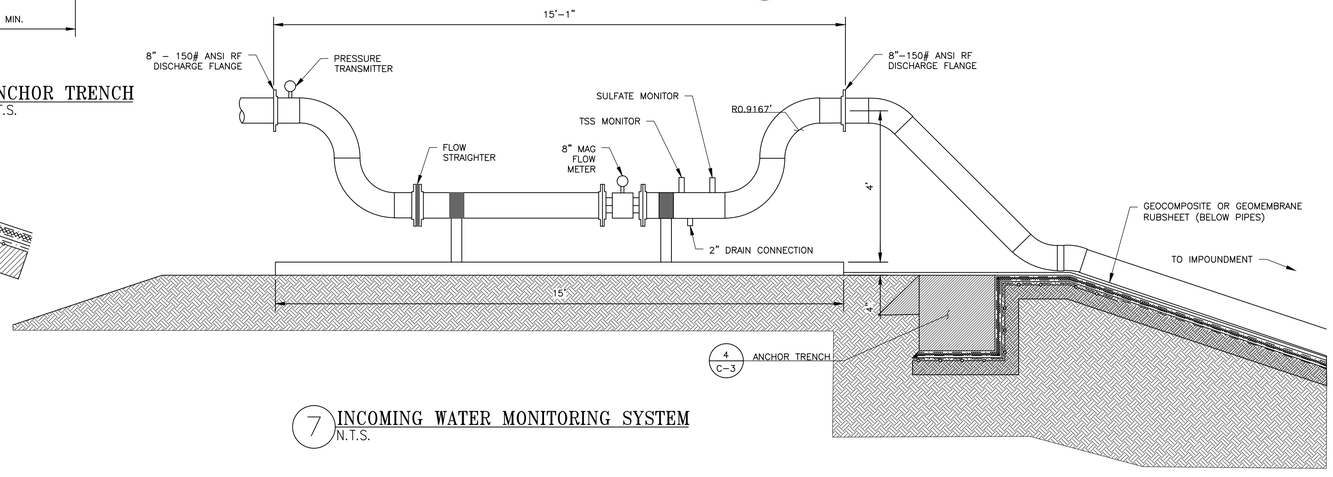


5 SITE ACCESS ROAD
N.T.S.



NOTE:
UNDERDRAIN DEWATERING SYSTEM TO BE DESIGNED BY ENGINEER IF NEEDED

8 GROUNDWATER DEWATERING TRENCH
N.T.S.



7 INCOMING WATER MONITORING SYSTEM
N.T.S.

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REVISIONS		
△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

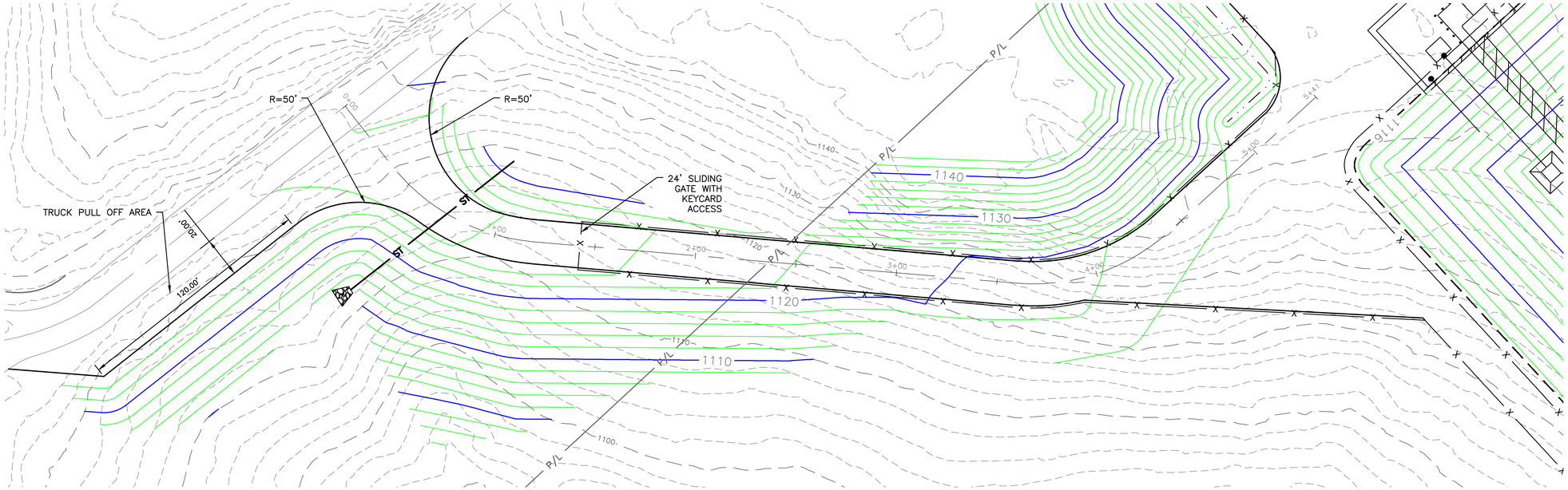
ACCESS ROAD TYPICAL SECTION & SITE DETAILS

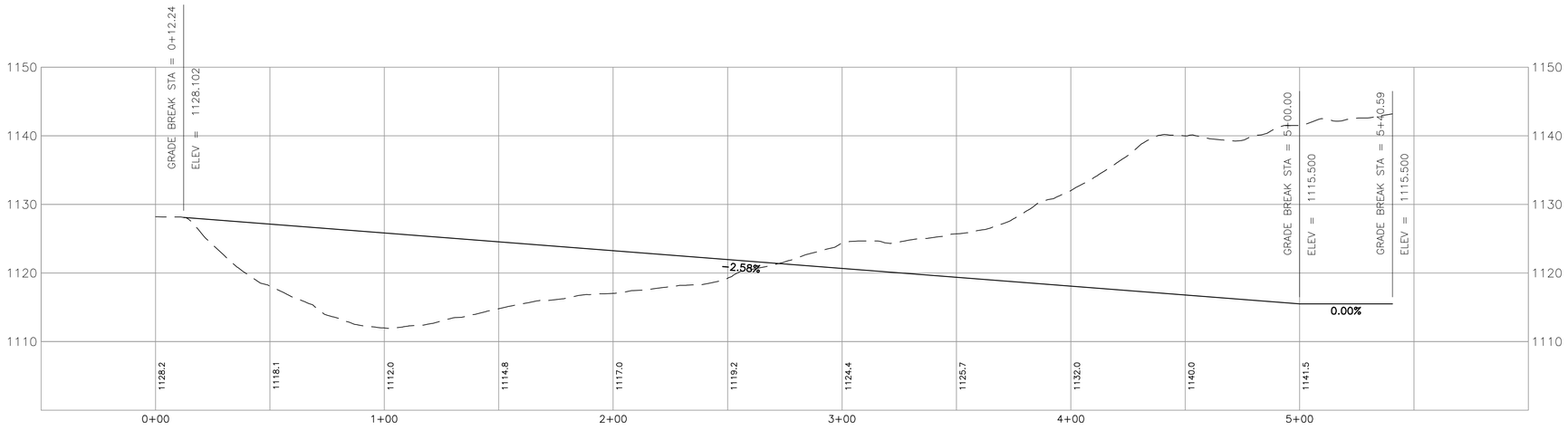
COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-3

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\IMPOUNDMENT DETAILS, 12/19/2013 10:41:48 AM, IA/LTMAN





ACCESS ROAD

VERTICAL (IN FEET)
1" =10 ft.

HORIZONTAL (IN FEET)
1" = 30 ft.

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CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

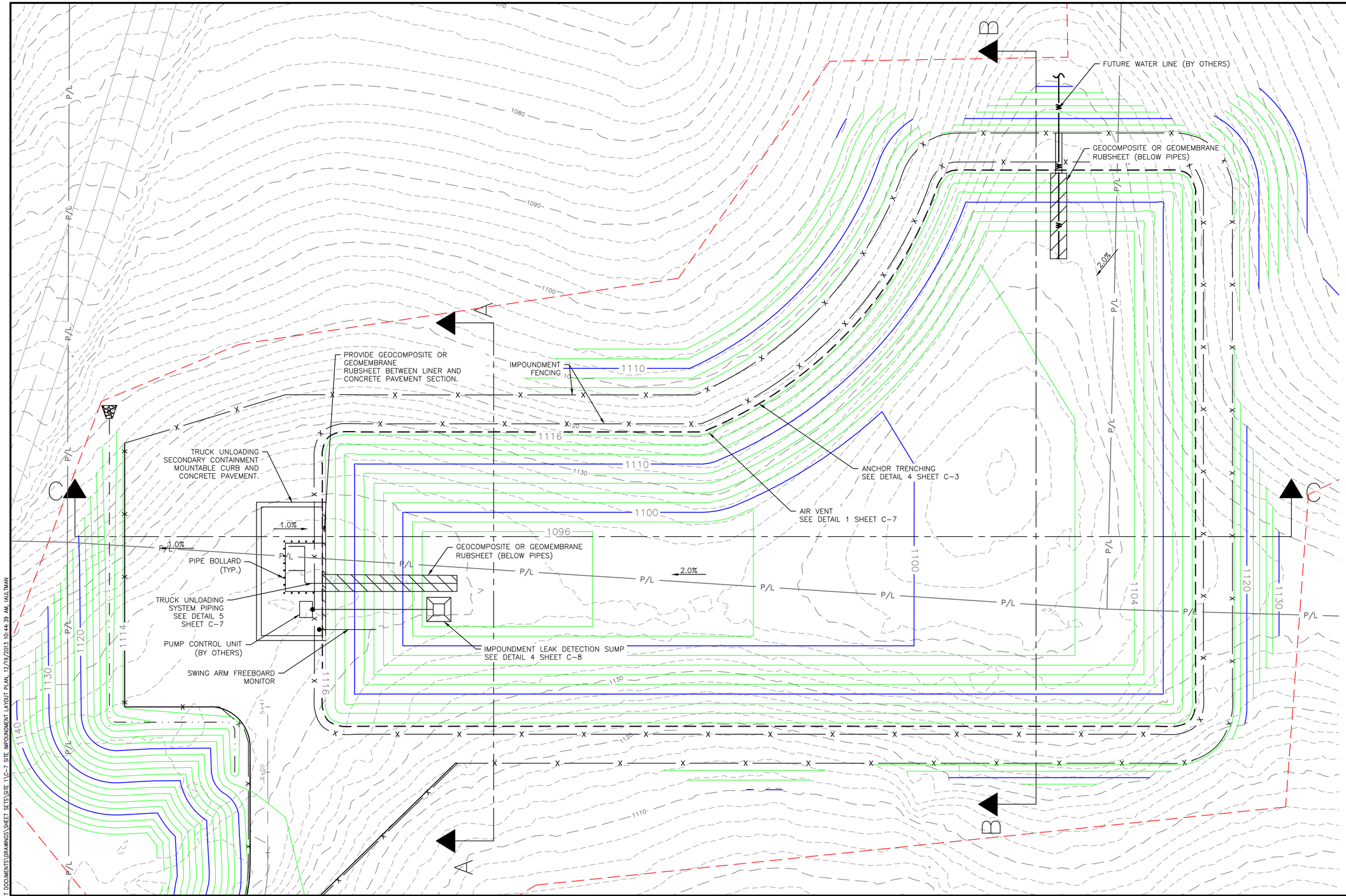
ACCESS ROAD PLAN & PROFILE

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-4

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\C-5 ACCESS ROAD PLAN & PROFILES, 12/19/2013 11:16:16 AM, IAULTMAN



0 30' 60'

LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY $\mathcal{L}$	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	LIMIT OF DISTURBANCE	

NOTES:

1. TOP OF IMPOUNDMENT ELEV. = 1116.0
2. BOTTOM OF IMPOUNDMENT ELEV. = 1094.0
3. STORAGE VOLUME AT CREST ELEV. = 11,244,411 GALLONS
4. OPERATING STORAGE VOLUME WITH 2' OF FREEBOARD 9,374,251 GALLONS

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REVISIONS		
△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

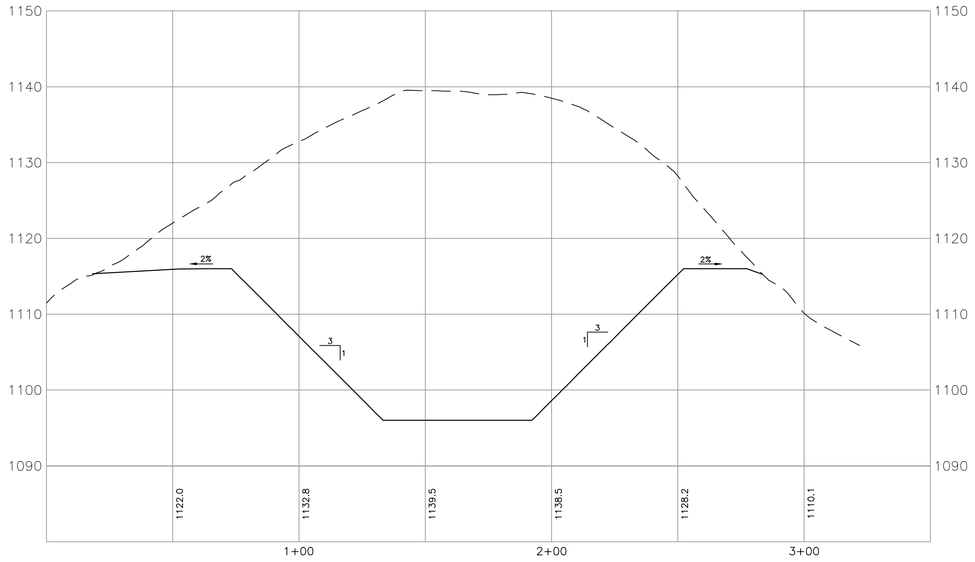
IMPOUNDMENT LAYOUT PLAN

COWGILL CENTRALIZED IMPOUNDMENT

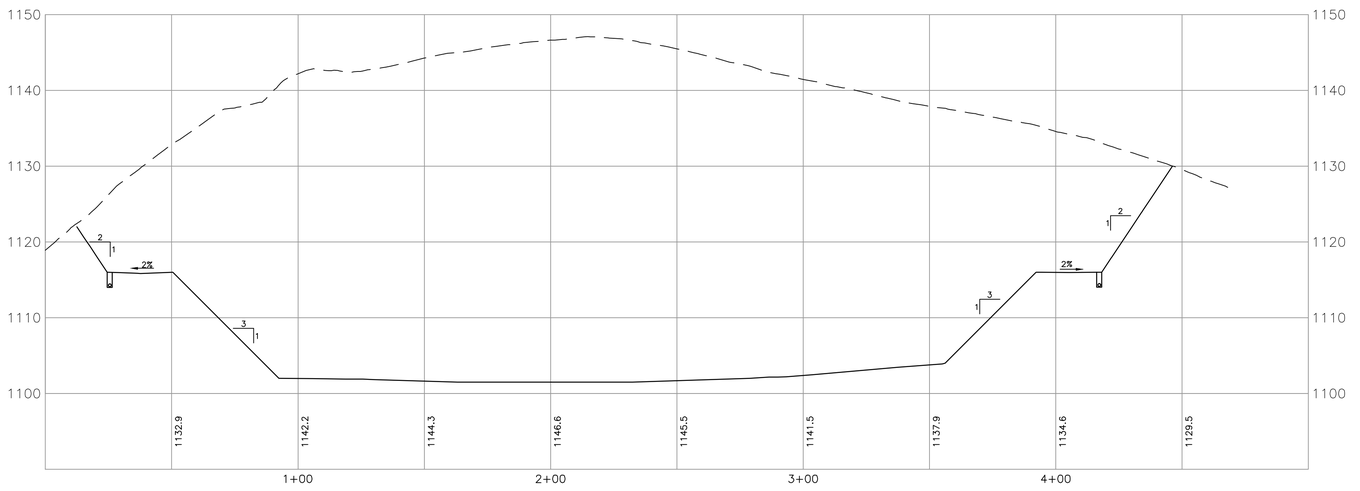
MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	1"=30'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-5

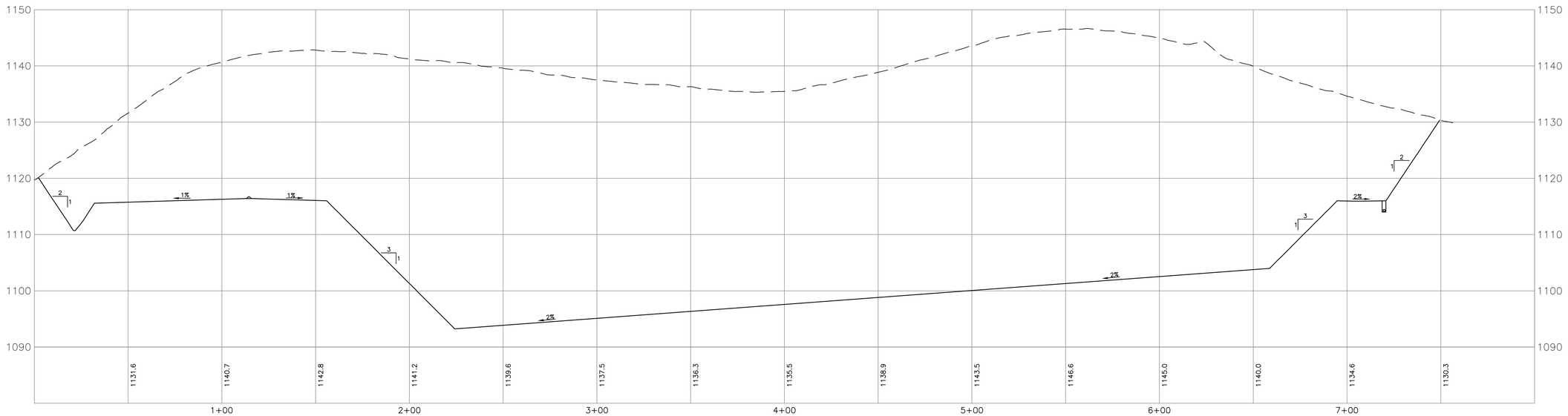
N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\C-7 SITE IMPOUNDMENT LAYOUT PLAN, 12/19/2013 10:44:39 AM, IAULTMAN



SECTION A–A



SECTION B–B



SECTION C–C

VERTICAL (IN FEET)
1" =10 ft.

HORIZONTAL (IN FEET)
1" = 30 ft.

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LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

IMPOUNDMENT SECTIONS

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-6

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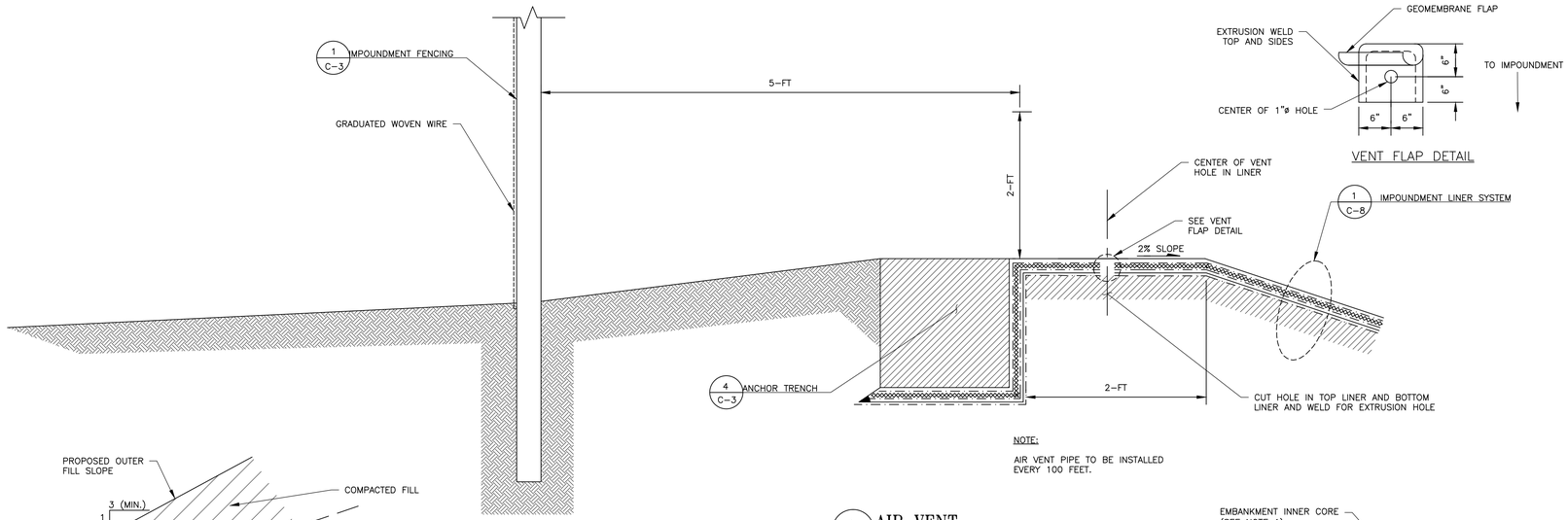
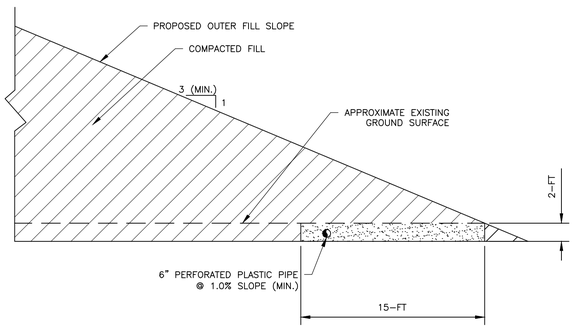


NOTE:

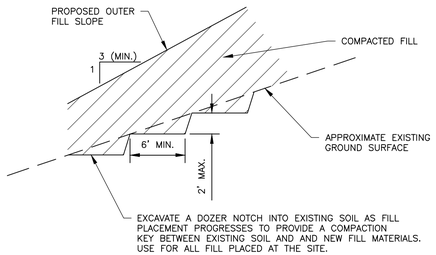
AIR VENT PIPE TO BE INSTALLED EVERY 100 FEET.

1 AIR VENT
N.T.S.

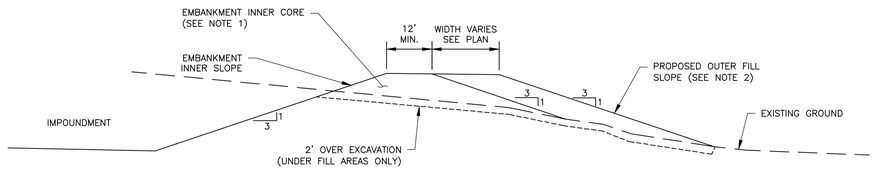
VENT FLAP DETAIL



2 TYPICAL FILL FOUNDATION KEY
N.T.S.

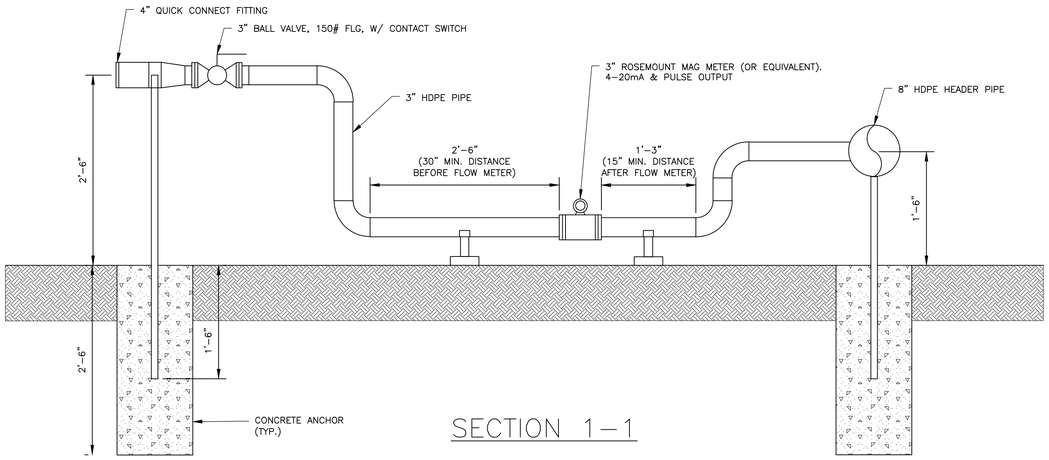


3 TYPICAL COMPACTION KEY
N.T.S.



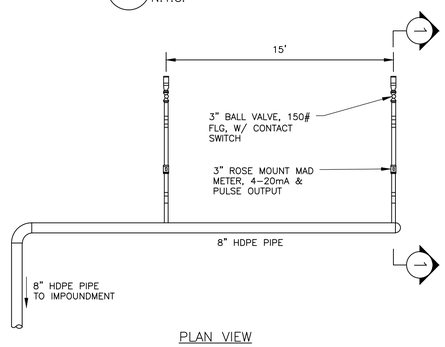
NOTES:

1. THE EMBANKMENT SHALL BE CONSTRUCTED USING SOILS CLASSIFIED AS GC, CM, SC, SM, CC, OR MC IN ACCORDANCE WITH USCS, 100% MINUS 6-INCH PARTICLE SIZE, AND A MINIMUM OF 20% OF PLUS (LARGER THAN) NO. 200 SIEVE.
2. EMBANKMENT OUTER SLOPE SECTION MAY CONTAIN SOILS THAT DID NOT MEET THE CLASSIFICATION AND PARTICLE SIZE CRITERIA SPECIFIED.



SECTION 1-1

4 IMPOUNDMENT EMBANKMENT DETAIL
N.T.S.



PLAN VIEW

5 TRUCK UNLOADING SYSTEM PIPING
N.T.S.

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CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

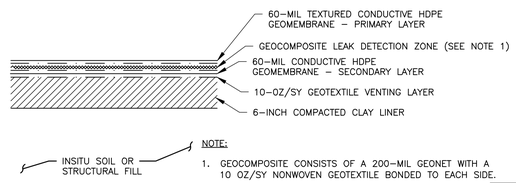
IMPOUNDMENT DETAILS

COWGILL CENTRALIZED IMPOUNDMENT

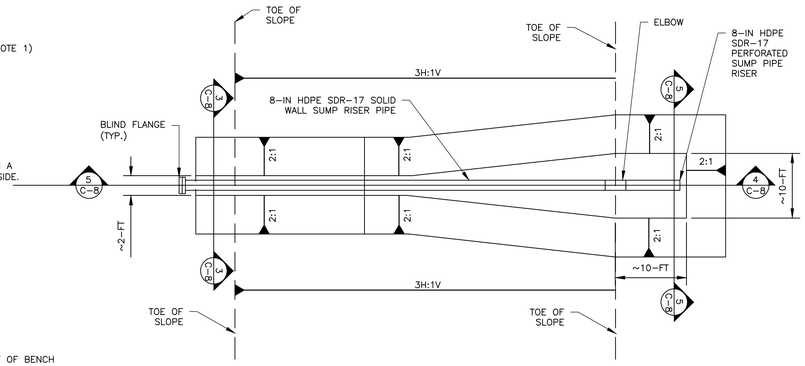
MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-7

N:\66-48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\IMPOUNDMENT DETAILS, 12/19/2013 10:49:56 AM, JAULTMAN

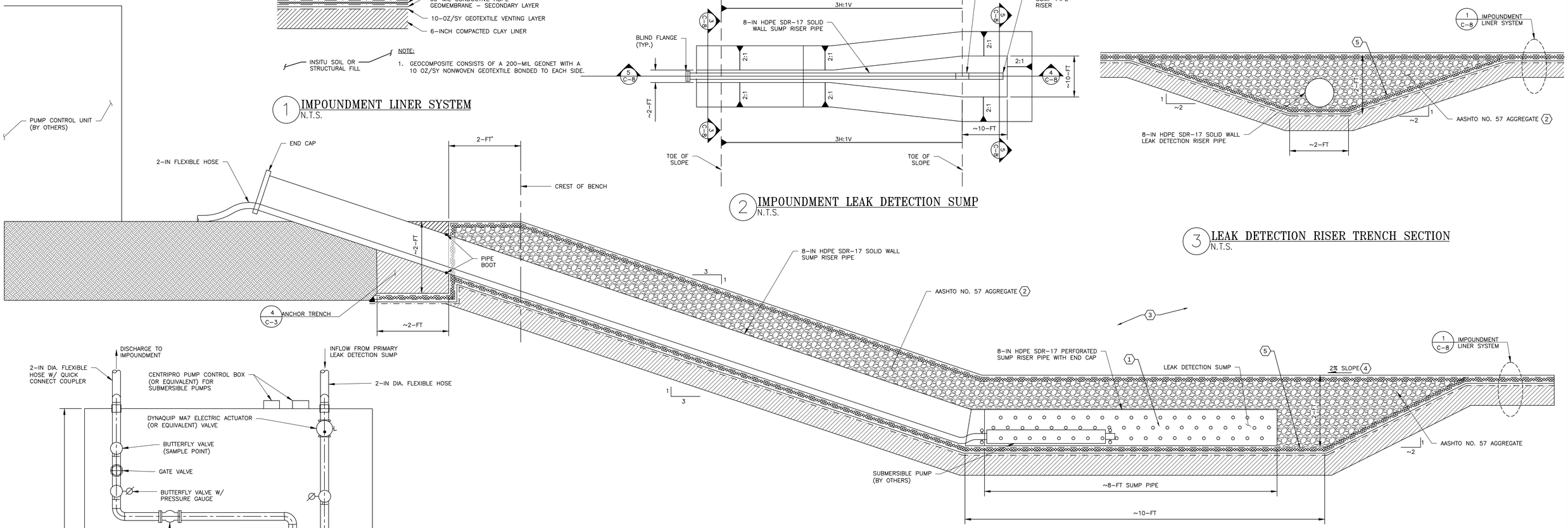


1 IMPOUNDMENT LINER SYSTEM
N.T.S.

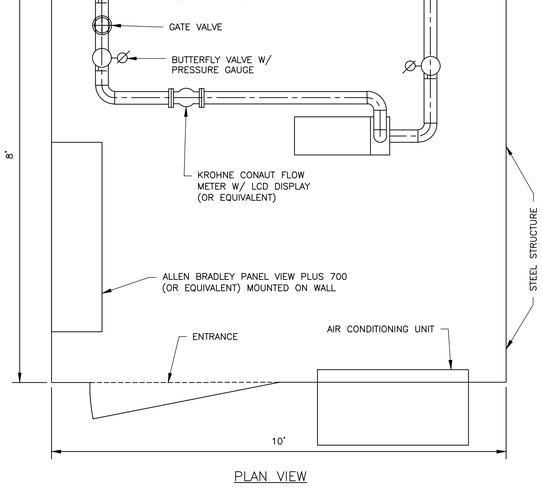


2 IMPOUNDMENT LEAK DETECTION SUMP
N.T.S.

3 LEAK DETECTION RISER TRENCH SECTION
N.T.S.

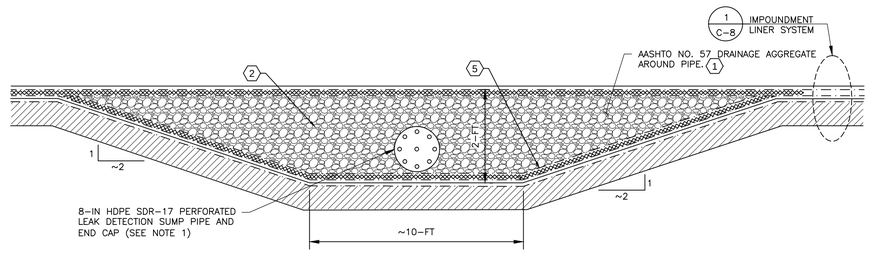


4 LEAK DETECTION SUMP SECTION
N.T.S.



PLAN VIEW

6 PUMP CONTROL UNIT
N.T.S.



5 LEAK DETECTION SUMP SECTION
N.T.S.

KEYED NOTES:

1. PERFORATION PATTERN OF SUMP PIPE SHALL BE 8 ROWS OF 3/8-INCH DIAMETER (MAX) SPACED AT 3-INCH ON CENTERS AND OFFSET AT 45 DEGREES.
2. AGGREGATE SHALL BE ROUNDED AND NON-CARBONATE.
3. THE LEVEL OF THE IMPOUNDMENT SHALL BE MONITORED USING A SWING ARM FREEBOARD MONITOR WITH ULTRASONIC LEVEL TRANSMITTER,
4. IMPOUNDMENT FLOOR SHALL BE GRADED TOWARDS THE LEAK DETECTION SUMP.
5. GEOCOMPOSITE IS A CUSHION LAYER FOR RISER AND SUMP PIPE.

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DRAWING TITLE & PROJECT NAME

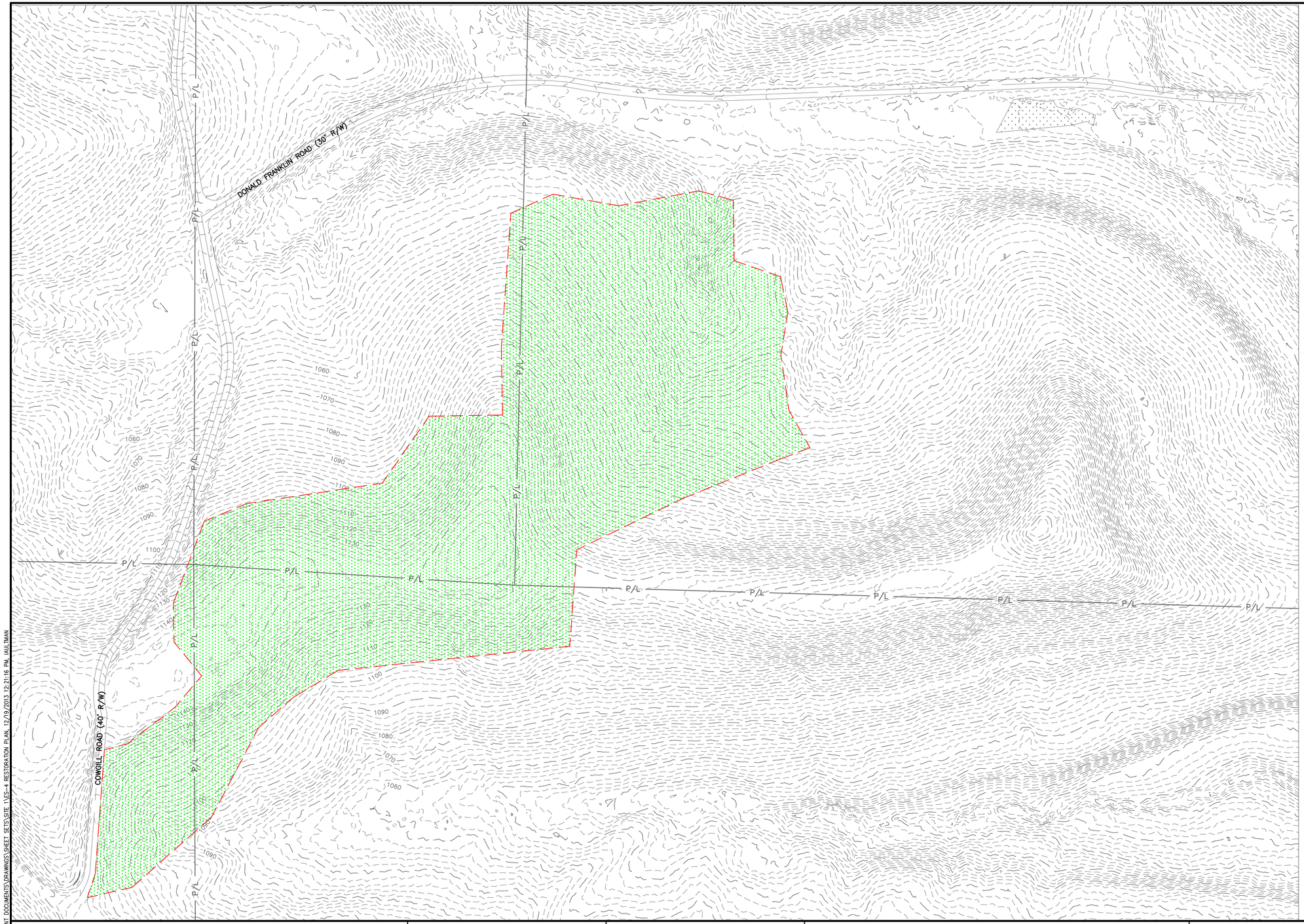
IMPOUNDMENT LEAK DETECTION SYSTEM DETAILS

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-8

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\IMPOUNDMENT DETAILS, 12/19/2013 10:50:24 AM, IAULTMAN



0 100' 200'

LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY ℄	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	LIMIT OF DISTURBANCE	

RESTORATION LEGEND

RESTORATION AREA

NOTES:

1. SCARIFY, SPREAD TOPSOIL, SEED AND MULCH DISTURBED AREA WHEN OPERATIONS HAVE BEEN COMPLETED.
2. UPON COMPLETION OF OPERATIONS REMOVE GRAVEL PAD SURFACE, REGRADE SITE BACK TO ORIGINAL CONTOURS, SPREAD STOCKPILED TOPSOIL EVENLY OVER DISTURBED AREA, APPLY PERMANENT SEED MIXTURE & MULCH FOR STABILIZATION. E&S BMP'S SHALL REMAIN IN PLACE UNTIL 70% VEGETATIVE COVER HAS BEEN ESTABLISHED.

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△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

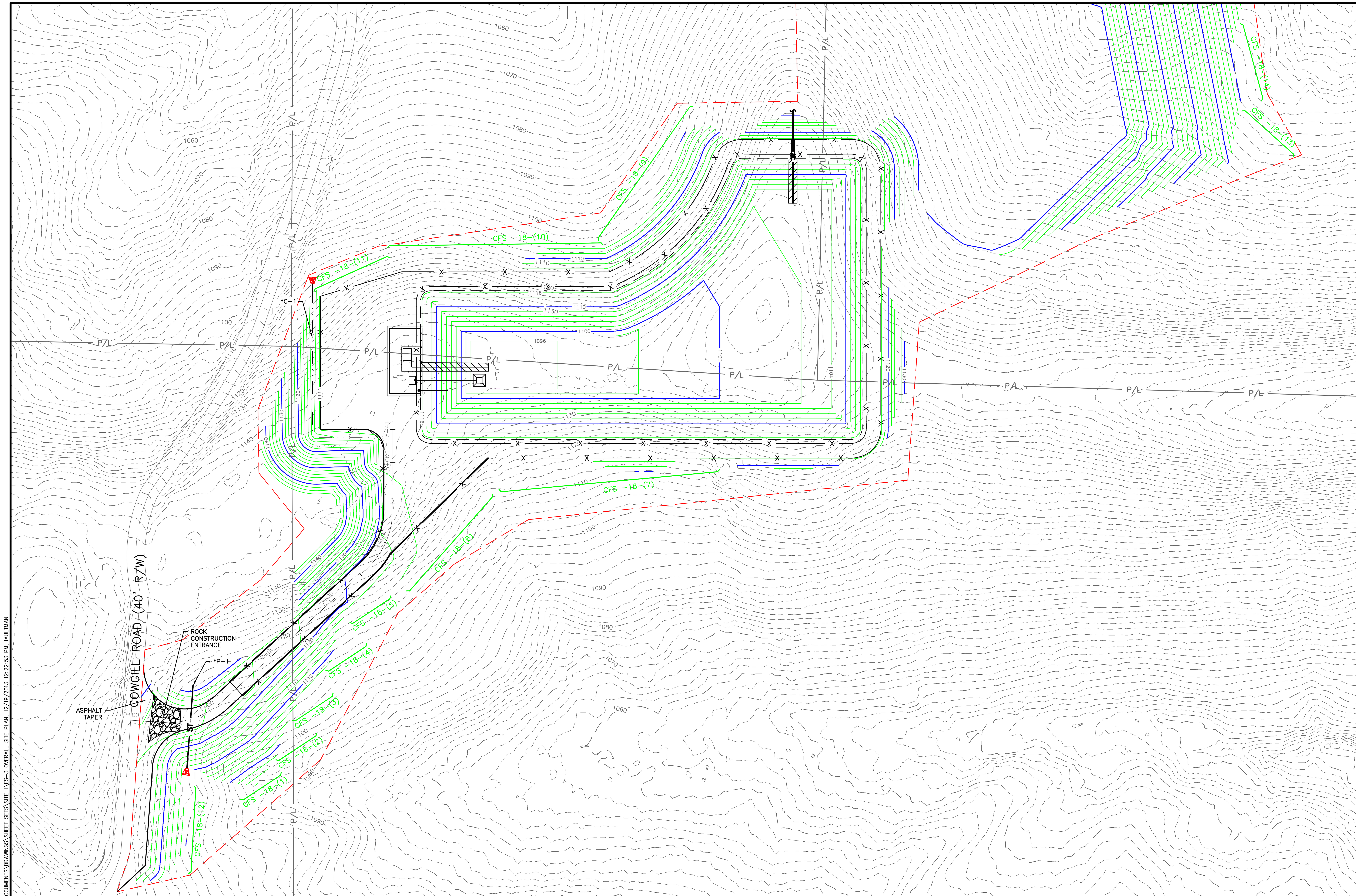
RESTORATION PLAN

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	1"=100'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	C-9

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\ES-4 RESTORATION PLAN, 12/19/2013 12:21:16 PM, IAULTMAN



0 60' 120'

LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY ℄	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	LIMIT OF DISTURBANCE	

EROSION AND SEDIMENT CONTROL

CFS -18-(1)	COMPOST FILTER SOCK
	RIP RAP

NOTES:

1. INSTALL NORTH AMERICAN GREEN S75 EROSION CONTROL MATTING OR EQUIVALENT ON ALL SLOPES 3:1 OR GREATER UNLESS OTHERWISE NOTED.
2. FOR SOIL DATA, SEE SHEET C-1.

*SEE SHEETS ES-3 AND ES-4 FOR PIPE AND CHANNEL AND OUTLET PROTECTION INFORMATION.

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REVISIONS

△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

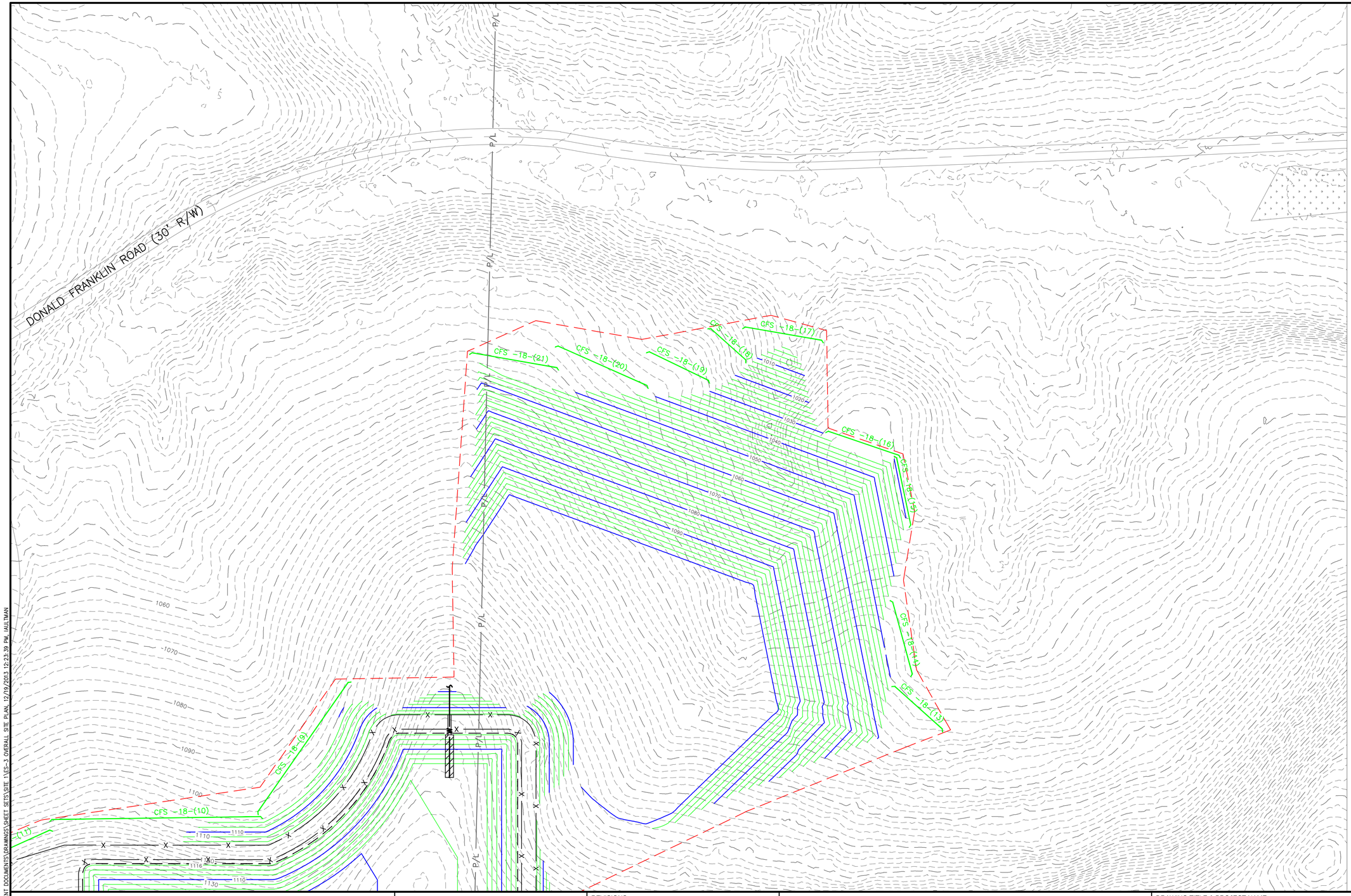
EROSION AND SEDIMENT CONTROL SITE PLAN

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	1"=60'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	ES-1

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\ES-3 OVERALL SITE PLAN, 12/19/2013 12:22:53 PM, IAULTMAN



0 60' 120'

LEGEND AND SYMBOLS

EXISTING	ITEM	PROPOSED
P/L	PROPERTY LINE	
	ROADWAY ℄	
R/W	APPROXIMATE R / W LINE	
	EDGE OF ROAD	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	STORM PIPE	ST
	STREAM/DITCH	
	WETLAND	
	LIMIT OF DISTURBANCE	

EROSION AND SEDIMENT CONTROL

CFS -18-(1) COMPOST FILTER SOCK

RIP RAP

NOTES:

1. INSTALL NORTH AMERICAN GREEN S75 EROSION CONTROL MATTING OR EQUIVALENT ON ALL SLOPES 3:1 OR GREATER UNLESS OTHERWISE NOTED.
2. FOR SOIL DATA, SEE SHEET C-1.
3. FILL VOLUME: 192,500 CY.

*SEE SHEETS ES-4 AND ES-5 FOR PIPE AND CHANNEL AND OUTLET PROTECTION INFORMATION.

N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\ES-3 OVERALL SITE PLAN, 12/19/2013 12:23:39 PM, IAULTMAN

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LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

FILL AREA EROSION AND SEDIMENT CONTROL PLAN

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	1"=60'
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	ES-2

EROSION AND SEDIMENT CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE CONSTRUCTION AND POST CONSTRUCTION PERIOD TO PREVENT SOIL EROSION, SEDIMENTATION, AND OTHER POLLUTANTS FROM ENTERING STREAMS, NEIGHBORING PROPERTY, ROADS, ETC. THESE MEASURES INCLUDE FILTER SOCKS, TOPSOIL STOCKPILES, ROCK CONSTRUCTION ENTRANCE, ETC. AS SHOWN ON THE DRAWINGS.
   THE CONTRACTOR WILL BE REQUIRED TO INCORPORATE ALL APPLICABLE EROSION AND SEDIMENTATION CONTROL FEATURES INTO THE PROJECT AT THE EARLIEST PRACTICAL TIME.

TEMPORARY EROSION CONTROL MEASURES

1. REVIEW AND AUTHORIZATION BY OHIO DEPARTMENT OF NATURAL RESOURCES SHALL BE OBTAINED PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCE ACTIVITIES.
2. TEMPORARY VEGETATION SHALL BE ESTABLISHED ON ANY SLOPES, ON STOCKPILED TOPSOIL, AND ON ALL DISTURBED AREAS LEFT UNSTABILIZED, OR DISCONTINUED EARTHMOVING ACTIVITY, WILL BE IMMEDIATELY STABILIZED.
3. DURING CONSTRUCTION THE AMOUNT OF DISTURBED SOILS SHALL BE KEPT TO A MINIMUM AND, WHENEVER POSSIBLE, A SUITABLE VEGETATIVE BUFFER WILL BE MAINTAINED AROUND ALL CONSTRUCTION AREAS.
4. ALL EARTHMOVING ACTIVITIES SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE THE AMOUNT OF DISTURBED AREA.
5. RESPONSIBILITY FOR IMPLEMENTING EROSION AND SEDIMENTATION CONTROL SHALL BE DESIGNATED TO A MINIMUM OF ONE INDIVIDUAL WHO WILL BE PRESENT AT THE PROJECT SITE DAILY.
6. ALL SOIL STOCKPILES ARE TO BE IMMEDIATELY SEEDED WITH A TEMPORARY GRASS COVER.
7. WHENEVER POSSIBLE, PLACE ALL EXCAVATED MATERIAL UPSLOPE FROM DISTURBED AREAS. STOCKPILES SHALL BE SET PARALLEL TO GRADE TO REDUCE RUNOFF.
8. UPON GENERAL COMPLETION OF THE FINAL GRADING, TOPSOIL SHALL BE PLACED AND FINAL-GRADING PASSES SHALL BE MADE PERPENDICULAR TO THE COMPLETION OF THE RUNOFF.
9. RE-SEED AND REESTABLISH ANY BARREN DISTURBED AREAS NOT HAVING ESTABLISHED GROUND COVER.
10. FILTER SOCK TO BE PLACED AT CRITICAL EROSION AREAS, AS SHOWN ON THE PLAN, IN ORDER TO PREVENT SEDIMENT FROM ENTERING INTO ADJACENT PROPERTIES, ROADWAYS, AND WATERWAYS.
11. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY, OR TOWNSHIP DUST CONTROL MEASURE.
12. WHERE DUST OR WIND EROSION IS A PROBLEM, THE UNSTABLE SURFACE(S) SHALL BE SPRINKLED WITH WATER OR OTHER SUITABLE DUST SUPPRESSOR; HOWEVER, WASHING OF ROADWAYS IS NOT PERMITTED.
13. THE CONTRACTOR SHALL EMPLOY MEASURES DURING CONSTRUCTION TO PREVENT SPILLS OF FUELS OR LUBRICANT. IF A SPILL OCCURS, IT SHALL BE CONTROLLED IMMEDIATELY TO PREVENT TO ENTRY INTO NEARBY WATERWAYS.
14. ANY TEMPORARY EROSION CONTROL MEASURE APPLIED TO EXPOSED SOIL SURFACES SHALL REMAIN FUNCTIONAL UNTIL VEGETATED COVER IS SUFFICIENTLY ESTABLISHED.
15. SHOULD ANY ADDITIONAL EROSION OR SEDIMENTATION OCCUR DURING CONSTRUCTION, OR QUESTIONS REGARDING THE MAINTENANCE CONTROL PRACTICES ARISE, CONTACT THE ODNR FIELD REPRESENTATIVE.
16. PERMANENT SEEDING AND MULCHING WILL BE INCORPORATED INTO THE CONSTRUCTION PHASES DURING THE APPROVED PLANTING SEASON.
17. ALL AREAS DISTURBED BY CONSTRUCTION, OTHER THAN THOSE RECEIVING STONE, GRAVEL, OR IMPERMEABLE LINER, SHALL BE STABILIZED BY APPLYING A SEED MIXTURE TO ESTABLISH AN EROSION RESISTANT STAND OF VEGETATION. TEMPORARY SEEDING SPECIFICATIONS ARE CONTAINED IN THESE PLANS.
18. STOCKPILE MUST NOT EXCEED 35 FEET. SLOPES MUST BE 2:1 OR FLATTER.

PERMANENT EROSION CONTROL MEASURES

1. PERMANENT SOIL PROTECTION WILL BE COMPLETED AS EARLY AS PRACTICAL.
2. ALL SEDIMENT CONTROL DEVICES ARE TO REMAIN UNTIL ALL DISTURBED AREAS ARE FULLY STABILIZED.
3. TEMPORARY AND PERMANENT SEEDING SHALL ADHERE TO THE SPECIFICATIONS PROVIDED IN THIS PLAN.
4. ALL EROSION AND SEDIMENTATION CONTROLS WILL BE INSPECTED WEEKLY AND AFTER ALL RUNOFF EVENTS.
5. THE PERMITEE AND CO-PERMITEE SHALL TAKE ALL REASONABLE STEPS TO MINIMIZE OR PREVENT ANY DISCHARGE IN VIOLATION OR THIS PERMIT THAT HAS A REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT.

SCHEDULE OF MAINTENANCE OF EROSION & SEDIMENT CONTROLS

1. THE SOIL EROSION AND SEDIMENTATION CONTROLS UTILIZED IN THE DEVELOPMENT OF THIS PLAN SHALL BE MAINTAINED AND REPAIRED IN ORDER TO KEEP THEM IN EFFECTIVE CONDITION UNTIL PERMANENT STABILIZATION OCCURS. THE CONTRACTOR SHALL PERFORM CERTAIN PERIODIC DUTIES IN ORDER TO ASSURE PROPER FUNCTION. MAINTENANCE OF THE CONTROLS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING MAINTENANCE PROCEDURES FOR UTILIZED CONTROLS:
2. MAINTENANCE MUST INCLUDE INSPECTIONS OF AL EROSION AND SEDIMENTATION BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS BY A QUALIFIED PERSON TRAINED AND EXPERIENCED IN EROSION AND SEDIMENTATION CONTROL, TO ASCERTAIN THAT THE BMP'S ARE OPERATIONAL AND EFFECTIVE IN PREVENTING POLLUTION TO THE WATERS OF THE STATE. A WRITTEN REPORT OF EACH INSPECTION SHALL BE KEPT AND INCLUDE: A SUMMARY OF SITE CONDITIONS, BMP'S, AND COMPLIANCE, AND THE DATE, TIME, AND THE NAME OF THE PERSON CONDUCTING THE INSPECTION. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE INCLUDING THE COMPLIANCE, ACTIONS, DATE, TIME, AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE MADE AVAILABLE TO THE DEPARTMENT UPON REQUEST.
3. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, RE-SEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY.
4. MISCELLANEOUS ADJUSTMENTS AND CORRECTIONS SHALL BE MADE TO ANY EROSION CONTROL STRUCTURE AS DEEMED NECESSARY BY THE ENGINEER, OR ODNR REPRESENTATIVE IN ORDER TO CORRECT UNFORESEEN PROBLEMS CAUSED BY A STORM PRIOR TO STABILIZATION.

FILTER SOCK

1. THE FILTER SOCK SHALL BE INSPECTED AFTER EVERY RUNOFF EVENT AND WEEKLY. ANY NECESSARY REPAIRS WILL BE MADE IMMEDIATELY.
2. ACCUMULATED SEDIMENT WILL BE REMOVED AS REQUIRED TO KEEP THE FILTER SOCK FUNCTIONAL. IN ALL CASES, REMOVE DEPOSITS WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF FILTER SOCK.
3. ADHERE TO ANY MANUFACTURER'S RECOMMENDATIONS FOR REPLACING FILTER SOCK.
4. ACCUMULATED SEDIMENT REMOVED FROM FILTER SOCKS SHALL BE SPREAD, SEEDED, AND MULCHED IN AN AREA NOT SUBJECT TO EROSION.

ROCK CONSTRUCTION ENTRANCE

1. THE STRUCTURE'S THICKNESS WILL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSION BY ADDING ROCK. A STOCKPILE WILL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS WILL BE REMOVED AND RETURNED TO THE SITE. WASHING THE ROADWAYS IS NOT PERMITTED.
2. STABILIZED CONSTRUCTION ENTRANCES SHALL BE CLEANED AND REDRESSED WHEN VOIDS BECOME CHOCKED WITH MUD AND SEDIMENT.
3. FILTER FABRIC WILL BE INSTALLED UNDER ALL ROCK ENTRANCES.

CHANNEL

1. THE CHANNEL SHALL BE INSPECTED AFTER EACH RUNOFF EVENT AND WEEKLY. ANY NECESSARY SHAPING OR REPAIRS TO THE CHANNEL AND LINEAR SHALL BE MADE IMMEDIATELY.

ROCK FILTER

1. ROCK FILTERS SHOULD BE CONSTRUCTED ACCORDING TO THE SPECIFICATION SHOWN IN THE DETAIL.
2. A ONE FOOT THICK LAYER OF ODOT #57 OR SMALLER STONE SHOULD BE PLACED ON THE UPSTREAM SIDE OF THE FILTER.
3. ROCK FILTERS SHOULD BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
4. CLOGGED FILTER STONE (ODOT #57) SHOULD BE REPLACED.
5. NEEDED REPAIRS SHOULD BE INITIATED IMMEDIATELY AFTER THE INSPECTION.

CONSTRUCTION SEQUENCE NOTES

1. AT LEAST 7 DAYS BEFORE STARTING ANY EARTHMOVING ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED WITH THOSE ACTIVITIES, THE LANDOWNER, THE EROSION AND SEDIMENTATION CONTROL PLAN PREPARER AND A REPRESENTATIVE FROM THE OHIO DEPARTMENT OF NATURAL RESOURCES TO AN ONSITE MEETING. ALSO, AT LEAST 2 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE OHIO UTILITIES PROTECTION SERVICES AT 800-362-2764 FOR BURIED UTILITIES LOCATIONS.
2. ALL EARTH DISTURBANCE ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE THE FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
3. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
4. BEFORE IMPLEMENTING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN (OR REVISIONS TO OTHER PLANS THAT WILL AFFECT THE EFFECTIVENESS OF THE APPROVED E&S PLAN) THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISION FROM THE PLAN PREPARER AND ODNR FIELD REPRESENTATIVE.

SEQUENCE

1. THE CONTRACTOR SHALL FIELD MARK THE LIMITS OF DISTURBANCE FOR CONSTRUCTION ACTIVITIES.
2. FIELD MARK DELINEATED WETLANDS AND PLACE CONSTRUCTION FENCE TO PROTECT WETLANDS.
3. INSTALL THE ROCK CONSTRUCTION ENTRANCE AT THE PROPOSED ACCESS DRIVE. ALL VEHICLES ENTERING AND EXITING THE SITE SHALL DO SO VIA THIS ROCK CONSTRUCTION ENTRANCE. ALL MUD AND SEDIMENT TRACKED ONTO THE EXISTING ROADWAY SHALL BE REMOVED BY THE SITE CONTRACTOR AT THE END OF EACH WORKDAY. WASHING OF THE ROADWAY IS NOT PERMITTED.
4. THE CONTRACTOR IS TO VERIFY THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. CONFLICTS SHALL BE IDENTIFIED AND ANY RELOCATION REQUIRED SHALL BE COORDINATED WITH THE UTILITY OWNER(S).
5. INSTALL ALL THE PERIMETER FILTER SOCKS AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
6. STRIP TOPSOIL WITHIN THE REMAINDER OF THE LIMITS OF DISTURBANCE. ALL TOPSOIL SHALL BE STORED AT THE PLAN SPECIFIED LOCATIONS. ALL TOPSOIL WINDROWS SHALL BE IMMEDIATELY STABILIZED WITH SEED AND MULCH AND EROSION CONTROL LINING (AS SPECIFIED IN THE DETAIL).
7. BEGIN GRADING OF THE PROPOSED SITE, ACCESS ROAD, AND REMAINING CHANNELS AND INSTALL REMAINING CROSS DRAINS. THE ROAD SHALL BE STABILIZED WITH STONE. ALL CHANNELS AND SPECIFIED SLOPES PER THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE SEEDED, MULCHED, AND STABILIZED WITH THE APPROPRIATE LINING MATERIAL. ROCK FILTERS SHALL BE INSTALLED PER THE EROSION AND SEDIMENTATION CONTROL PLAN.
8. SEED AND MULCH ANY REMAINING DISTURBED AREAS (PROPOSED TO BE VEGETATED).
9. UNTIL SUCH TIME AS THE SITE IS PERMANENTLY STABILIZED, ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE MAINTAINED IN WORKING ORDER. MAINTENANCE SHALL INCLUDE THE INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES AFTER EACH RUNOFF EVENT, AS WELL AS ON A WEEKLY BASIS.
10. UPON COMPLETION OF ALL EARTHWORK ACTIVITIES AND THE STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE OHIO DEPARTMENT OF NATURAL RESOURCES TO COORDINATE THE REMOVAL OF THE SEDIMENT BMP CONTROLS.
11. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER NON-VEGETATIVE COVER WITH A UNIFORM DENSITY TO RESIST ACCELERATED EROSION AND SUBSURFACE CHARACTERISTICS RESISTANT TO SLIDING AND OTHER MOVEMENTS.

PCSM BMP NOTES

1. IT SHALL BE UNLAWFUL TO ALTER OR REMOVE ANY PERMANENT STORM WATER CONTROLS AND BMPS REQUIRED BY AN APPROVED STORM WATER CONTROL AND BMP OPERATIONS AND MAINTENANCE PLAN OR TO ALLOW THE PROPERTY TO REMAIN IN A CONDITION WHICH DOES NOT CONFORM TO AN APPROVED STORM WATER CONTROL AND BMP OPERATIONS AND MAINTENANCE PLAN.
2. THE OWNER/OPERATOR SHALL MONITOR AND MAINTAIN THE POST CONSTRUCTION BMP TO ENSURE PROPER OPERATION AND/OR ESTABLISHMENT. THIS INCLUDES MONITORING OF THE SEEDING TO ENSURE THE SEED CONTINUES TO MATURE.
3. ALL BMPS SHALL BE INSPECTED AFTER EACH MEASURABLE RAINFALL EVENT AND ON A WEEKLY BASIS FOR THE DURATION OF THE PROJECT. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY TO ENSURE EFFECTIVENESS AND EFFICIENT OPERATION.

CLEAN FILL

1. THE OPERATOR OF THE SITE WILL PERFORM ENVIRONMENTAL DUE DILIGENCE ON ALL IMPORTED SOILS THAT WILL BE UTILIZED ON THE PROJECT SITE.
2. ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATION TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS.
3. ANALYTIC TESTING IS REQUIRED FOR FILL MATERIAL SUSPECTED OF BEING SUBJECTED TO A SPILL OR RELEASE OF A REGULATED SUBSTANCE BASED UPON COMPLETION OF VISUAL INSPECTION AND/OR REVIEW OF PAST LAND USES AS PART OF ENVIRONMENTAL DUE DILIGENCE. FILL MATERIAL DETERMINED TO NOT QUALIFY AS CLEAN FILL THROUGH ANALYTICAL TESTING IS CONSIDERED REGULATED FILL AND MUST BE MANAGED AS A WASTE IN ACCORDANCE WITH APPLICABLE MUNICIPAL OR RESIDUAL WASTE REGULATIONS OF THE DEPARTMENT.
4. CLEAN FILL IS DEFINED AS: UNCONTAMINATED NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT SOLID. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIALS, USED ASPHALT, AND BRICK, BLOCK, OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE STATE UNLESS OTHERWISE AUTHORIZED.

SEEDING NOTES

1. ODNR'S BEST MANAGEMENT PRACTICES FOR OIL AND GAS WELL SITE CONSTRUCTION (2005) SHALL BE FOLLOWED FOR ALL SEEDING/MULCHING ACTIVITIES.

FOR TEMPORARY CONTROL MEASURES:

1. APPLY FORMULA IN ACCORDANCE WITH SEEDING TABLE 7 & 9 IN ODNR BMP MANUAL.
2. SEEDING TO BE PERFORMED BETWEEN MARCH 15 AND NOVEMBER 15.
3. APPLY HAY OR STRAW MULCH AT 3 TONS PER ACRE MINIMUM.
   NOTE: LIMESTONE AND FERTILIZER MUST BE APPLIED PRIOR TO FINAL SEEDING MEASURES.

FOR FINAL MEASURES:

1. APPLY PULVERIZED AGRICULTURAL LIMESTONE @ 1653-2066 LBS. PER 1000 SQ. YD. (4.0-5.0T./AC.)
2. APPLY 10-20-20 ANALYSIS COMMERCIAL FERTILIZER @ 207.7 LBS. PER 1000 SQ. YD. (1000 LB./AC.)
3. APPLY SEED AT RATES PROVIDED IN TABLES 8 & 10 OF ODNR BMP MANUAL.
4. APPLY HAY OR STRAW MULCH AT 3 TONS PER ACRE.
5. PERFORM SEEDING BETWEEN MARCH 15 TO JUNE 1 AND AUGUST 1 TO OCTOBER 15.

MULCHING SPECIFICATION

1. HAY OR STRAW - AIR DRIED, FREE OF SEED AND COURSE MATERIAL. INSTALLATION RATE FOR PERMANENT AND TEMPORARY STABILIZATION IS THREE (3) TONS PER ACRE.
2. THE MULCHING WILL BE UTILIZED AT ALL AREAS PROPOSED FOR SEED.
3. THE DISTURBED AREAS WILL BE SEEDED WITHIN THE FIRST WEEKS OF THE DESIGNATED GROWING SEASON, OR BEFORE, OF THE WEATHER IS FAVORABLE.
4. STRAW MULCH SHALL BE APPLIED AT THE RATE OF 3.0 TONS PER ACRE, ON STEEP SLOPES OF 3:1 OR GREATER, MULCH SHALL BE ANCHORED THROUGH THE USE OF JUTE NETTING OR MIXING WITH ASPHALT AT THE RATE OF 100 GALLONS PER 3 TONS OF STRAW MULCH.

RESTORATION NOTES:

1. PRIOR TO INITIALIZATION OF FINAL SITE RESTORATION, RE-INSTALL ORIGINAL SEDIMENT CONTROL BMPS.
2. RESTORATION PROCEDURE
   a. SPREAD 6 INCHES OF APPROVED TOPSOIL ON LOOSE SUBSOIL. TILL ADDED SOIL INTO EXISTING SOIL WITH A ROTARY TILLER. ADD ADDITIONAL TOPSOIL, AS NEEDED, TO BRING THE AREA UP TO GRADE.
   b. PERMANENTLY SEED WITH MIXTURE #2.
   c. INSTALL MATTING TO ALL SLOPES GREATER THAN 3:1 SLOPES.
3. DECOMMISSION THE SEDIMENT TRAPS. REMOVE SEDIMENTS AND DISPOSE OF BY SPREADING ON UPSLOPE VEGETATED AREAS. REMOVE SEDIMENT TRAPS, SWALES, AND DIVERSIONS.
4. REMOVE ALL REMAINING COMPOST FILTER SOCKS AND THE ROCK CONSTRUCTION ENTRANCE WHEN PERMANENT CONTROLS ARE ESTABLISHED AND SITE STABILIZATION IS ACHIEVED. THE SITE SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A MINIMUM, 70% UNIFORM VEGETATIVE COVER OF EROSION RESIST PERENNIAL SPECIES EXISTS ON ALL DISTURBED AREAS.

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REVISIONS

△	DATE	DESCRIPTION

CONSOL ENERGY

120 INDUSTRY ROAD
LEETONIA, OH 44431

DRAWING TITLE & PROJECT NAME

EROSION & SEDIMENT CONTROL NOTES

COWGILL CENTRALIZED IMPOUNDMENT

MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	ES-3

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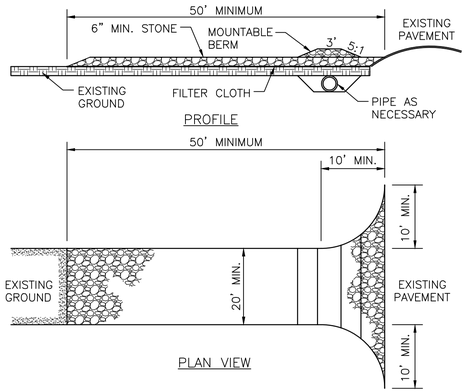
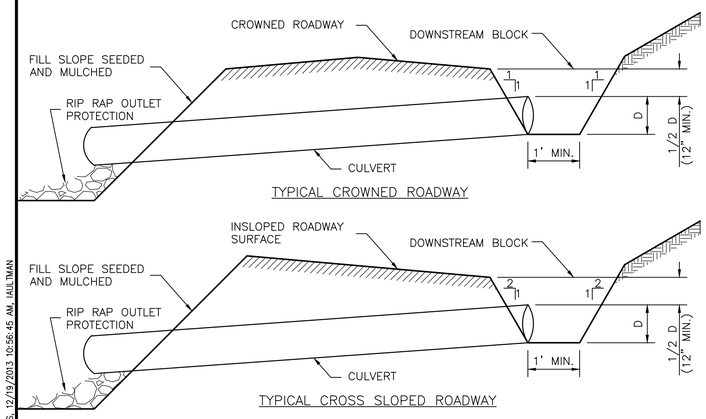


NOTES:

1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – AS REQUIRED, BUT NOT LESS THAN 50 FEET.
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – TWENTY (20) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. WHEREVER PIPE IS USED, APPLY PROPER COVER AS SPECIFIED BY MANUFACTURER. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
7. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
8. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACK OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
9. WASHING – WHEELS SHALL BE CLEANED TO REMOVED SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
10. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

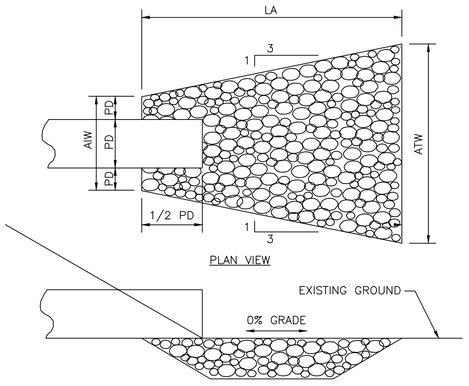
ROCK CONSTRUCTION ENTRANCE
NTS



NOTES:

1. CUT AND FILL SLOPES SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF ROADWAY GRADING. THESE AREAS SHALL BE BLANKETED WHEREVER THEY ARE LOCATED WITHIN 50 FEET OF A SURFACE WATER OR WITHIN 100 FEET OF A SURFACE WATER WHERE A SUITABLE VEGETATIVE FILTER STRIP DOES NOT EXIST.
2. A DURABLE TOP DRESSING SHALL BE PROVIDED FOR SOILS HAVING LOW STRENGTH.
3. ROADSIDE DITCHES SHALL BE PROVIDED WITH ADEQUATE PROTECTIVE LINING.
4. ADEQUATELY SIZED CULVERTS OR OTHER SUITABLE CROSS DRAINS SHALL BE PROVIDED AT ALL SEEPS, SPRINGS, AND DRAINAGEWAYS. DITCH RELIEF CULVERTS SHALL BE PROVIDED AT THE REGULAR INTERVALS.
5. ROADWAYS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED ROADWAYS, DITCHES OR CROSS DRAINS SHALL BE REPAIRED IMMEDIATELY.

CROWNED/INSLOPED ROADWAY
NTS



OUTLET NUMBER	PIPE/CHANNEL DIAMETER	RIP RAP		APRON		
		SIZE (R–__)	THICK RT (IN)	LENGTH LA (FT)	INITIAL WIDTH AIW (FT)	TERMINAL WIDTH ATW (FT)
P–1	18	4	18	10	5	15
C–1	12	4	18	10	5	15

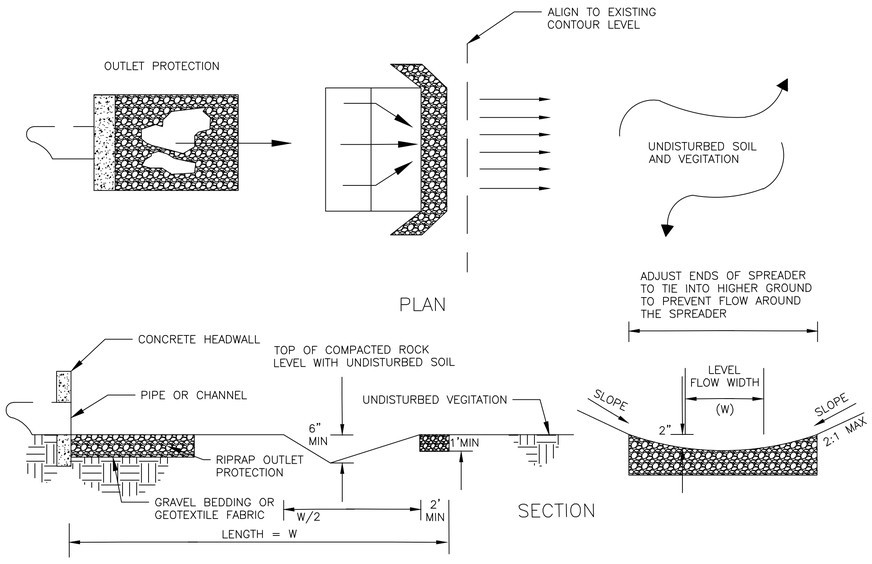
NOTES:

1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIP RAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.
3. EXTEND RIP RAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.

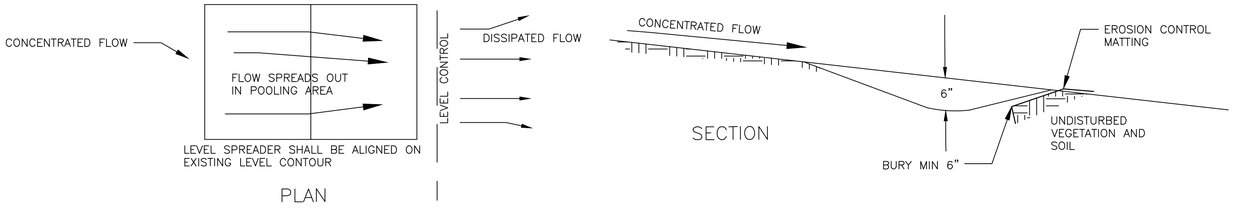
RIP RAP OUTLET PROTECTION
NTS

NOTES:

1. CONSTRUCT LEVEL SPREADER ON A LEVEL GRADE TO ENSURE UNIFORM SPREADING OF STORM RUNOFF.
2. LEVEL SPREADERS MUST BE CONSTRUCTED ON UNDISTURBED SOIL, NOT ON FILL.
3. THE LEVEL SPREADER MUST OUTLET TO EROSION–RESISTANT AREAS WITH ESTABLISHED EXISTING
4. VEGETATION.
5. ROCK SHALL BE ODOT TYPE D WHERE 50% OF THE MATERIAL BY WEIGHT IS LARGER THAN 6 INCHES, AND 85% OF THE MATERIAL BY WEIGHT IS LARGER THAN 3 INCHES, BUT LESS THAN 12 INCHES.
6. ROCK IN LEVEL SPREADER SHALL BE COMPACTED WITH AT LEAST TWO PASSES OF HEAVY MACHINERY TO PREVENT FURTHER SETTLING. SPREAD GRAVEL OR SOIL OVER TOP OF THE PLACED RIPRAP SURFACE TO FILL THE VOIDS AND INTERLOCK THE RIPRAP TOGETHER.
7. FERTILIZING, SEEDING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPLICABLE VEGETATIVE SPECIFICATION.
8. VEGETATED LIP SPREADERS SHALL BE PROTECTED USING AN EROSION CONTROL BLANKET INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. THE BLANKET SHALL START A MINIMUM OF 4 FEET ABOVE THE LIP AND EXTEND AT LEAST 1 FOOT DOWNSTREAM OVER THE SPREADER LIP, SECURED WITH HEAVY–DUTY STAPLES AND THE DOWNSTREAM AND UPSTREAM ENDS BURIED AT LEAST 6 INCHES IN A VERTICAL TRENCH.



RIGID LIP LEVEL SPREADER
NTS



VEGETATED LEVEL SPREADER
NTS

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OHIO UTILITIES PROTECTION SERVICE
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REVISIONS		
△	DATE	DESCRIPTION

CONSOL ENERGY

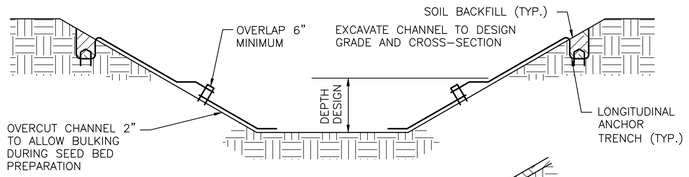
120 INDUSTRY ROAD
LEETONIA, OH 44431

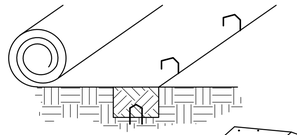
DRAWING TITLE & PROJECT NAME

EROSION & SEDIMENT CONTROL DETAILS
COWGILL CENTRALIZED IMPOUNDMENT
MARION TOWNSHIP, NOBLE COUNTY, OHIO

DRAWN BY:	IA
CHECKED BY:	JCM
DATE:	12/20/2013
SCALE:	AS NOTED
PROJECT NUMBER:	66-48003-10
DRAWING NUMBER:	ES-4

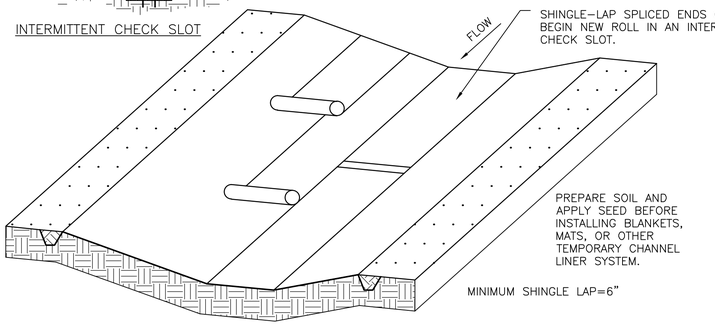
N:\66\48003\10 CONSOL WATER IMPOUNDMENT DOCUMENTS\DRAWINGS\SHEET SETS\SITE 1\ES–6 EROSION & SED. CONTROL DETAILS, 12/19/2013 10:56:45 AM, IAULTMAN



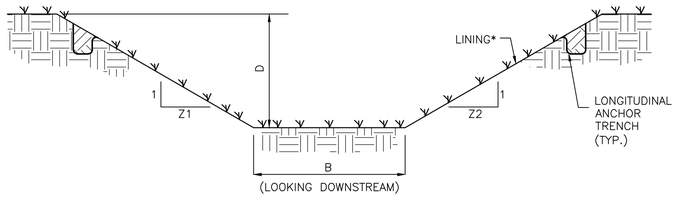


INTERMITTENT CHECK SLOT

LONGITUDINAL ANCHOR TRENCH



ISOMETRIC VIEW



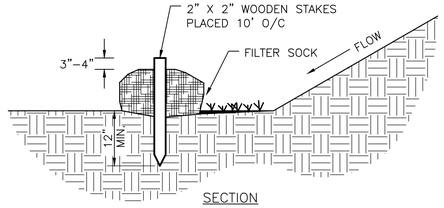
CHANNEL CROSS-SECTION

SWALE SCHEDULE							
CHANNEL NUMBER	STATIONS	BOTTOM WIDTH B (FT)	TOP WIDTH W (FT)	DEPTH D (FT)	Z1 (FT)	Z2 (FT)	LINING*
C-1	ALL	1	5	2	2	2	S75

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, AND VEGETATIVE STABILIZATION SPECIFICATIONS FOR SOIL AMENDMENTS, SEED MIXTURES, AND MULCHING INFORMATION.

NOTES:
1. ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.
2. CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO THE CHANNEL WITHOUT FURTHER DAMAGE.
3. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

VEGETATIVE CHANNEL
NTS



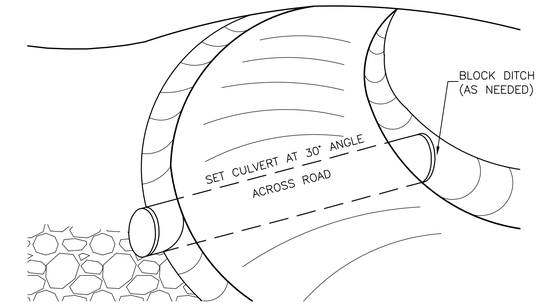
SECTION

GENERAL NOTES:
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 NOTES:
1. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
2. 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.
3. 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 OR PERMANENT VEGETATION.
4. FILTER SOCKS ARE NOT TO BE USED IN CONCENTRATED FLOW SITUATIONS OR IN RUNOFF CHANNELS.

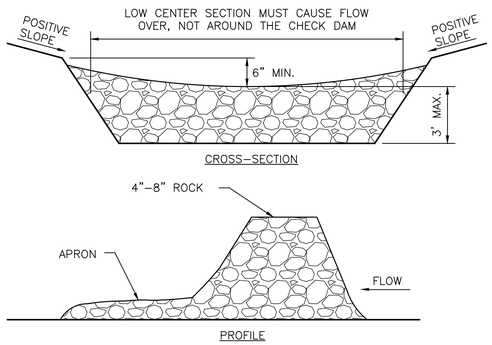
MAINTENANCE NOTES:
1. ROUTINELY INSPECT FILTER SOCKS AFTER EACH SIGNIFICANT RAIN, MAINTAINING FILTER SOCK IN A FUNCTIONAL CONDITION AT ALL TIMES.
2. REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE FILTER SOCKS WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE PRACTICE.
3. WHERE THE FILTER SOCK DETERIORATES 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
NTS



TYPICAL CROSS DRAIN CULVERT
NTS

PIPE SCHEDULE					
PIPE NUMBER	PIPE DIAMETER (IN)	INVERT IN ELEVATION (FT)	INVERT OUT ELEVATION (FT)	LENGTH (FT)	MATERIAL
P-1	18	1130.0	1124.0	100	HDPE
HDPE = SMOOTH WALL HIGH DENSITY POLYETHYLENE					



NOTES:
1. THE CHECK DAM SHALL BE CONSTRUCTED OF 4-8 INCH DIAMETER STONE, PLACED SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL. ODOT TYPE D STONE IS ACCEPTABLE, BUT SHOULD BE UNDERLAIN WITH A GRAVEL FILTER CONSISTING OF ODOT NO. 3 OR 4 OR SUITABLE FILTER FABRIC.
2. MAXIMUM HEIGHT OF CHECK DAM SHALL NOT EXCEED 3.0 FEET.
3. THE MIDPOINT OF THE ROCK CHECK DAM SHALL BE A MINIMUM OF 6 INCHES LOWER THAN THE SIDES IN ORDER TO DIRECT ACROSS THE CENTER AND AWAY FROM THE CHANNEL SIDES.
4. THE BASE OF THE CHECK DAM SHALL BE ENTRENCHED APPROXIMATELY 6 INCHES.
5. SPACING OF CHECK DAMS SHALL BE IN A MANNER SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM.
6. A SPLASH APRON SHALL BE CONSTRUCTED WHERE CHECK DAMS ARE EXPECTED TO BE IN USE FOR AN EXTENDED PERIOD OF TIME, A STONE APRON SHALL BE CONSTRUCTED IMMEDIATELY DOWNSTREAM OF THE CHECK DAM TO PREVENT FLOWS FROM UNDERCUTTING THE STRUCTURE. THE APRON SHOULD BE 6 INCHES THICK AND ITS LENGTH TWO TIMES THE HEIGHT OF THE DAM.
7. STONE PLACEMENT SHALL BE PERFORMED EITHER BY HAND OR MECHANICALLY AS LONG AS THE CENTER OF THE CHECK DAM IS LOWER THAN THE SIDES AND EXTENDS ACROSS THE ENTIRE CHANNEL.
8. SIDE SLOPES SHALL BE A MINIMUM OF 2:1.

ROCK CHECK DAM
NTS

ms consultants, inc.
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