

**Mack Drainage Project
#21-04**

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See Accompanying Booklet For:
 Natural Resources Conservation Service
 CONSTRUCTION AND MATERIAL SPECIFICATIONS

Contractor Name: _____
 Date Work Started: _____
 Date Completed: _____
 Final Contract Value: _____

Construction Approval
 The practices shown on these plans have been installed in accordance with the plans and specifications, and meets NRCS practice standards.

Construction Approved: _____
 Date Completed: _____

JOB CLASS IV

CONTRACTOR OUPS REF. NO. _____

UNDERGROUND UTILITIES AT EXCAVATION SITE				
OHIO811 I.D.# _____ On File _____				
UTILITY INFORMATION				OHIO811 MEMBER & LIMITED BASIS PARTICIPANT
NAME	ADDRESS	PHONE NO.	NO REPLY	
Defiance County Eng			X	X
Frontier Com	12769 Eagleville Rd North Baltimore, OH 45872	1-800-778-9140		X
Village of Ney			X	X

Notes:
 Frontier Communications map shows buried telephone cable on north side of State Route 15.

2 WORKING DAYS - 2 CALLS
BEFORE YOU DIG
 CALL TOLL FREE **800-362-2764** or **811**
OHIO UTILITIES PROTECTION SERVICE

NOTICE TO LANDOWNER AND EXCAVATOR

Landowners or operators, sponsoring organizations, and contractors are liable for any damage resulting from disruption of a utility service caused by construction activities. NRCS makes no representation on the existence or non-existence of utilities on this site.

Excavator must notify all utilities at least 48 hours, and not more than 10 days, prior to the planned commencement of excavation.

Call OHIO811 (800-362-2764 or 811) for a listing of OUPS and OGPUPS members and limited basis participant members.

APPROVAL

 COUNTY ENGINEER 4/14/2022
DATE

4/18/2022
DATE

 COUNTY COMMISSIONERS 4/18/2022
DATE

Date _____ 01-22
 Designed _____ Jason Roehrig
 Drawn _____ Jason Roehrig
 Checked _____ Mike Boiff
 Approved _____ *Justin S. Linn, P.E.* 2/10/22
 For ODA-DSWC

MACK DRAINAGE PROJECT #21-04
 COVER SHEET

Defiance County, Ohio
 Washington Township, Section 22

United States Department of Agriculture
 Natural Resources Conservation Service

CAD File I.D. MackDrainProj.DWG
 Drawing No. OH-1-76-22-01
 Sheet 1 of 19

LANDOWNERS

Map #	Parcel_Number	Landowner	Ac. Owned	Ac. Drained
1	L15-0022-0-001-00	NUSBAUM NEIL E & JUDITH R	73.444	27.41
2	L15-0022-0-001-02	WYGANT WESLEY A & JUDITH	5.000	0.39
3	L15-0022-0-012-00	GRANT WILLIAM E JR & DEBRA K	1.607	1.18
4	L15-0022-0-012-01	SCHINDLER NATHAN D & CHRISTINA M	37.589	15.75
5	L15-0022-0-013-00	HALL COLBY W	1.000	0.40
6	L15-0022-0-014-00	YARLOTT DAVID B & BRENDA A	80.000	75.00
7	L15-0022-0-015-00	YARLOTT DAVID B & BRENDA A	77.000	59.72
8	L15-0022-0-015-01	YARLOTT DAVID B & BRENDA A	2.010	1.51
9	L15-0022-0-016-00	HALL COLBY W	78.900	71.90
10	L15-0022-0-017-00	SCHINDLER NATHAN D & CHRISTINA M	1.474	1.47
11	L15-0022-0-018-02	GRINNELL KRISTINA C	4.000	0.20
12	L15-0022-0-019-00	NUSBAUM NEIL E & JUDITH R CO TRUSTEES	39.735	26.42
13	L15-0022-0-020-00	NUSBAUM NEIL E & JUDITH R CO TRUSTEES	40.000	27.00
N/A	MULLIGANS BLUFF RD	WASHINGTON TWP TRUSTEES	0.000	0.29
N/A	SR 15	ODOT	0.000	5.84

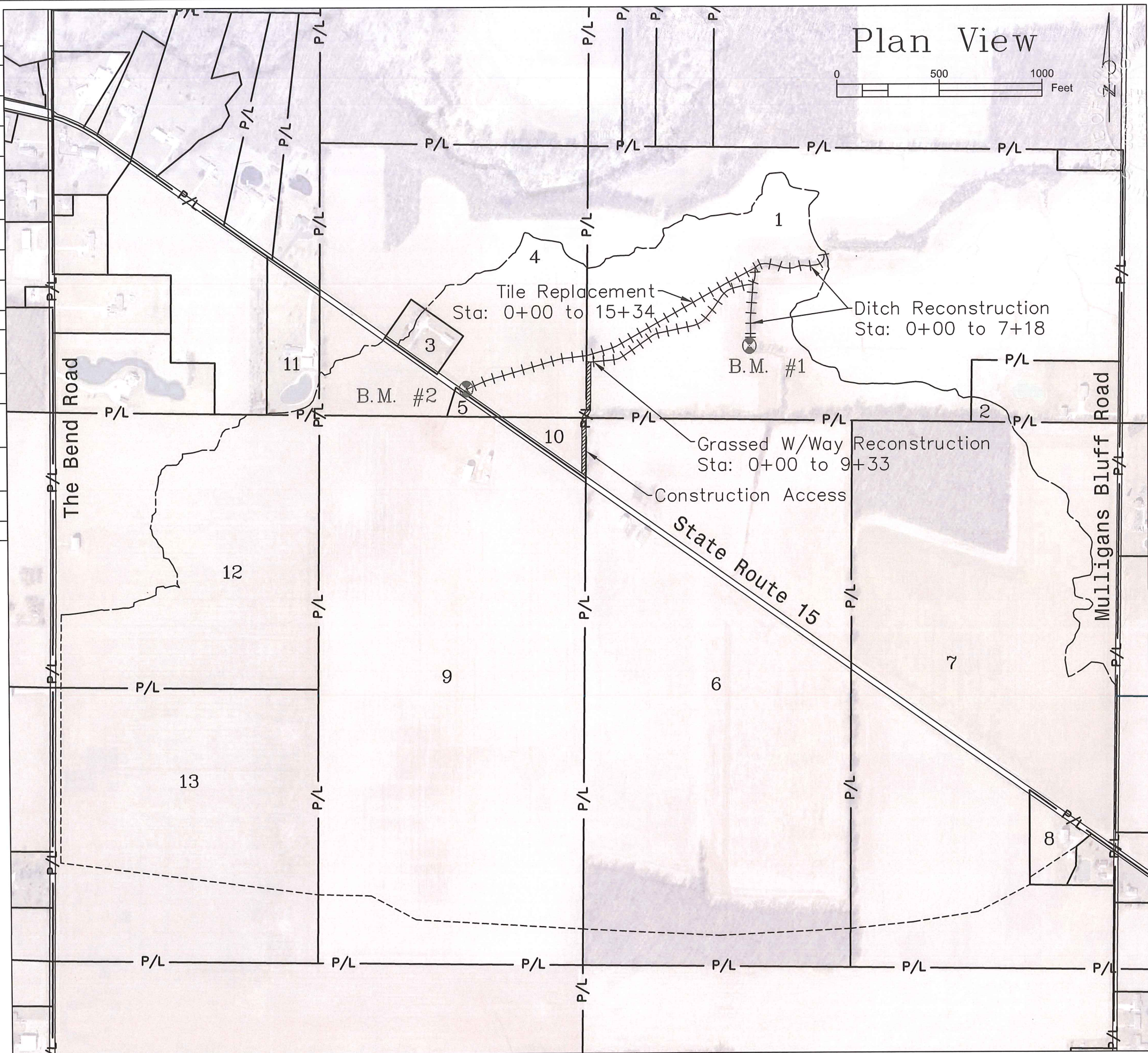
LEGEND

Roads	
Project Alignment	
Property Lines	
Watershed Line	
Stationing	0+00
Parcel ID	8
Benchmarks	

BENCHMARKS

BM#1: Top, third rib from end, of 30-inch CPTS on south side of field drive to south of grassed waterway outlet.
ELEV: 708.79

BM#2: Top, north end of 24-inch concrete pipe under SR 15 at top end of tile.
ELEV. 713.48



Date	01-22
Designed	Jason Roebig
Drawn	Jason Roebig
Checked	Mike Roff
Approved	Justin S. W., P.E. 2/19/22

MACK DRAINAGE PROJECT #21-04
PROJECT PLAN VIEW

Washington Township, Section 22
Defiance County, Ohio

For ODA-DSUC

United States Department of Agriculture
Natural Resources Conservation Service

CAD File I.D.	MackDrainProj.DWG
Drawing No.	OH-1-76-22-01
Sheet	2 of 19

LANDOWNERS

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1	L15-0022-0-001-00	NUSBAUM NEIL E & JUDITH R	73.444	27.41
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4	L15-0022-0-012-01	SCHINDLER NATHAN D & CHRISTINA M	37.589	15.75
5	L15-0022-0-013-00	HALL COLBY W	1.000	0.40
6	L15-0022-0-014-00	YARLOTT DAVID B & BRENDA A	80.000	75.00
7	L15-0022-0-015-00	YARLOTT DAVID B & BRENDA A	77.000	59.72
8	L15-0022-0-015-01	YARLOTT DAVID B & BRENDA A	2.010	1.51
9	L15-0022-0-016-00	HALL COLBY W	78.900	71.90
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N/A	MULLIGANS BLUFF RD	WASHINGTON TWP TRUSTEES	0.000	0.29
N/A	SR 15	ODOT	0.000	5.84

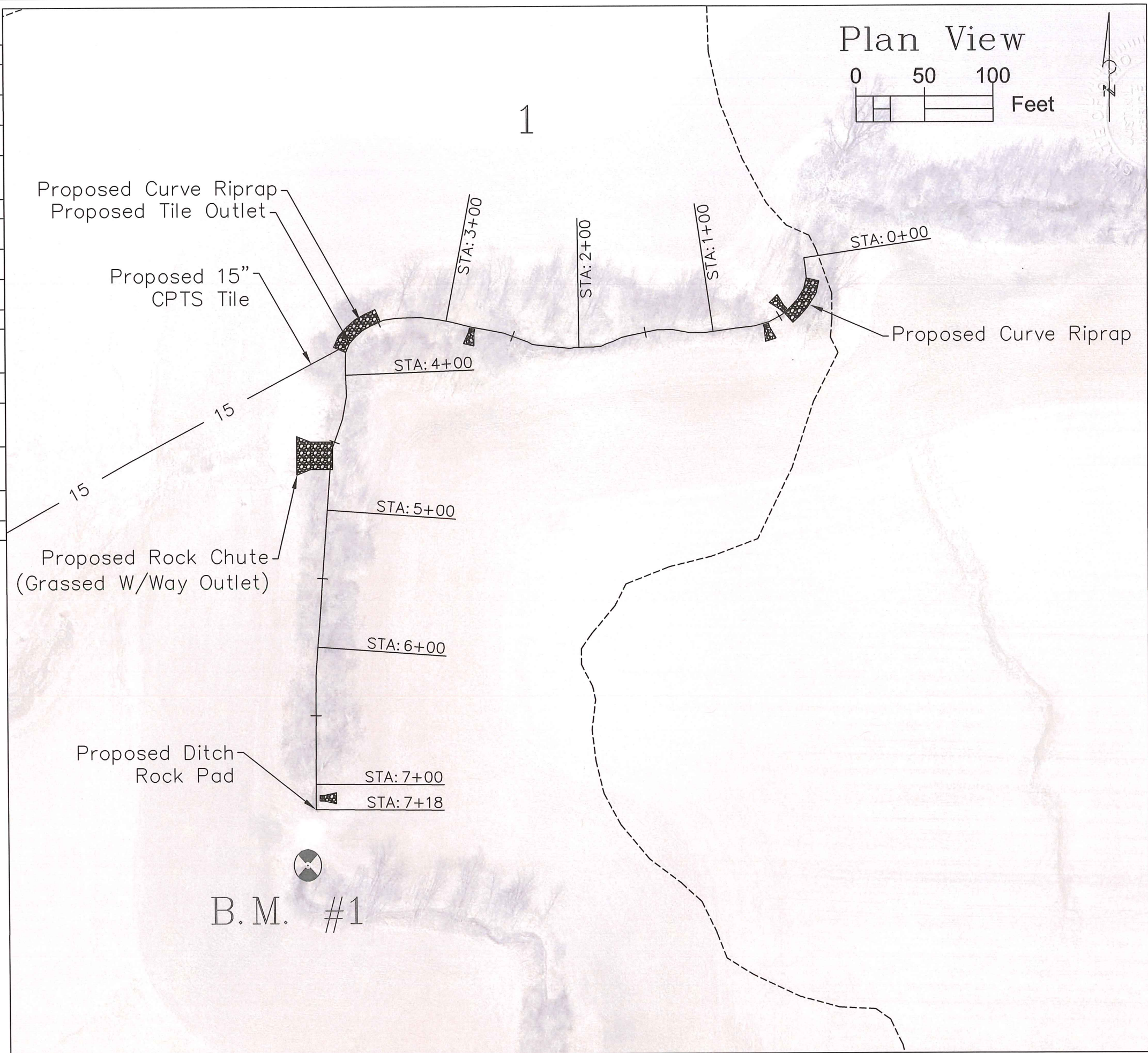
LEGEND

Roads	
Ditch Centerline	
Property Lines	
Watershed Line	
Stationing	0+00
Parcel ID	8
Benchmarks	
Mini Rock Chute	

BENCHMARKS

BM#1: Top, third rib from end, of 30-inch CPTS on south side of field drive to south of grassed waterway outlet.
ELEV: 708.79

BM#2: Top, north end of 24-inch concrete pipe under SR 15 at top end of tile.
ELEV: 713.48

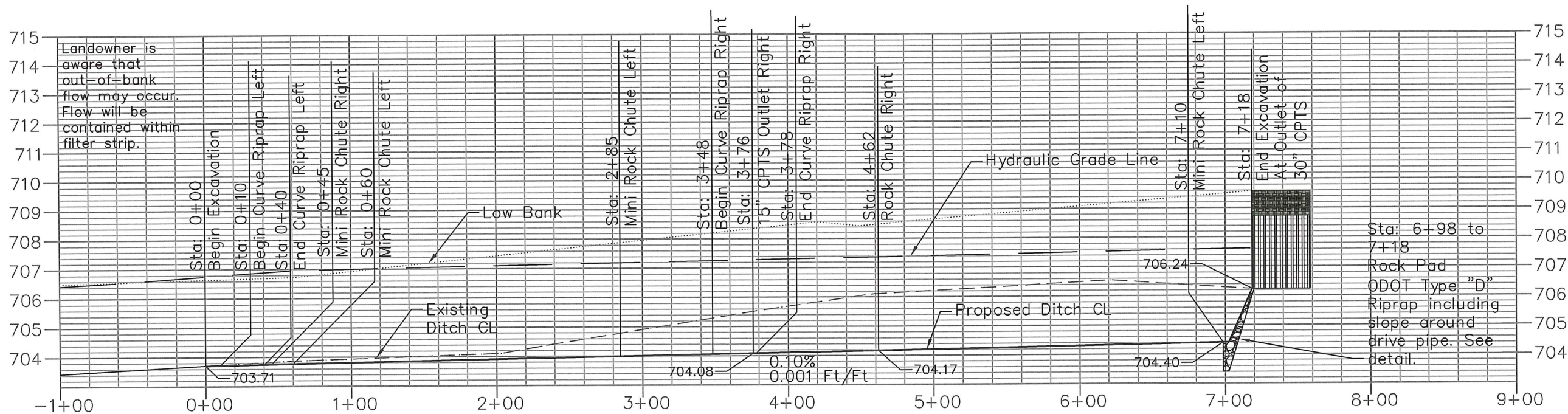


Date	01-22
Designed	Jason Roehrig
Drawn	Jason Roehrig
Checked	Mike Boif
Approved	John S. [Signature] P.E. 2/10/22

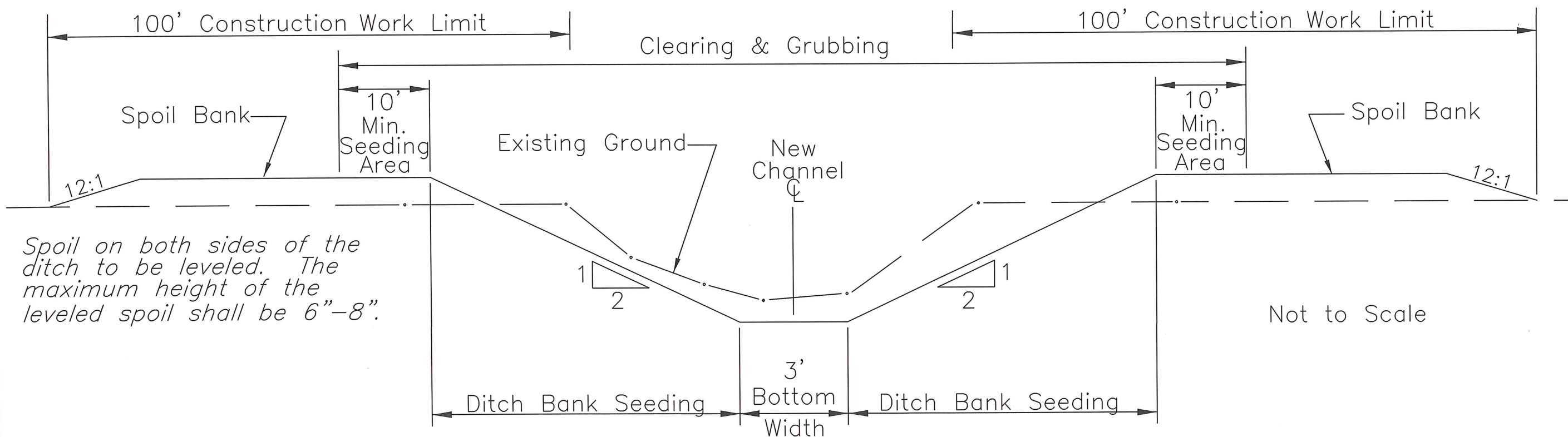
MACK DRAINAGE PROJECT #21-04
DITCH PLAN VIEW
Washington Township, Section 22
Defiance County, Ohio
For ODA-95WC

United States Department of Agriculture
USDA
Natural Resources Conservation Service

Mack Ditch Profiles Sta: 0+00 to 7+18



Typical Two-Sided Cross Section (Clearing, Grubbing, Leveling & Seeding) Station 0+00 - 7+18

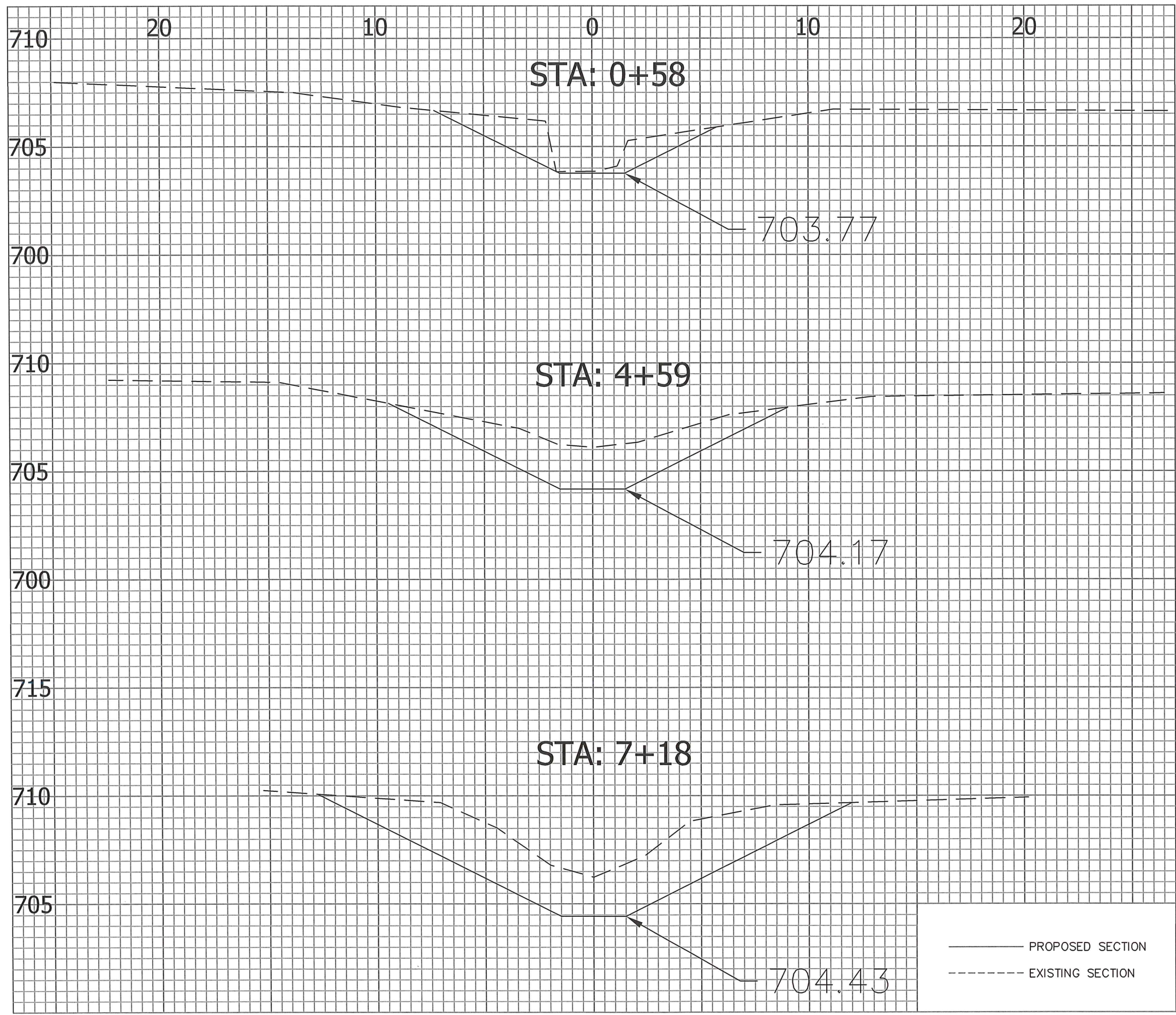


Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Roff
 Approved *[Signature]* 2/10/22
 For ODA-BWC

MACK DRAINAGE PROJECT #21-04
 DITCH PROFILES/TYPICAL X-SECTION

Washington Township, Section 22
 Defiance County, Ohio
 United States Department of Agriculture
 Natural Resources Conservation Service

CAD File I.D. MackDrainProj.DWG
 Drawing No. OH-1-76-22-01
 Sheet 4 of 19



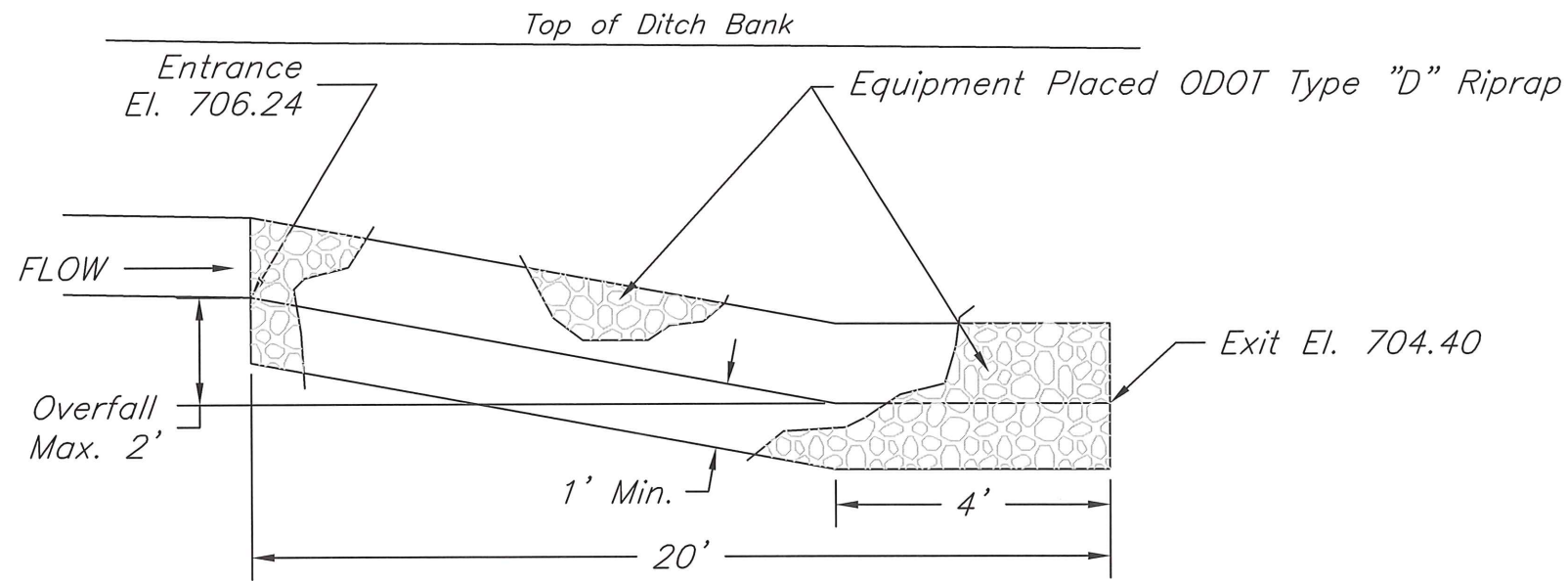
Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved *[Signature]* P.E. 2/10/22
 For O&M-DSW

MACK DRAINAGE PROJECT #21-04
 DITCH X-SECTIONS
 Washington Township, Section 22
 Defiance County, Ohio

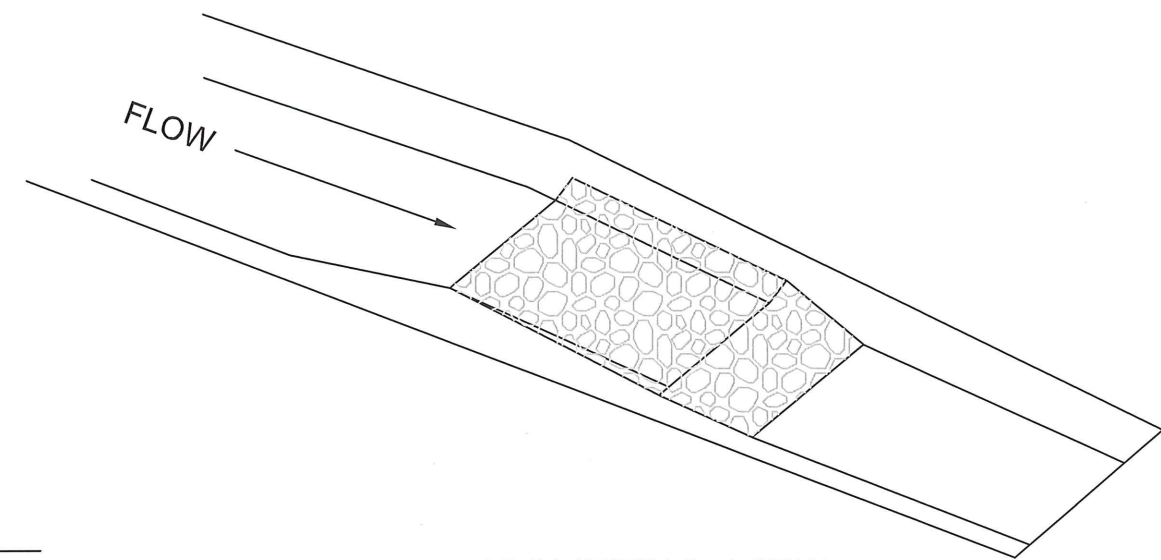
United States
 Department of
 Agriculture
USDA
 Natural Resources
 Conservation Service

CAD File I.D.
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 Drawing No.
 OH-1-76-22-01
 Sheet 5 of 19

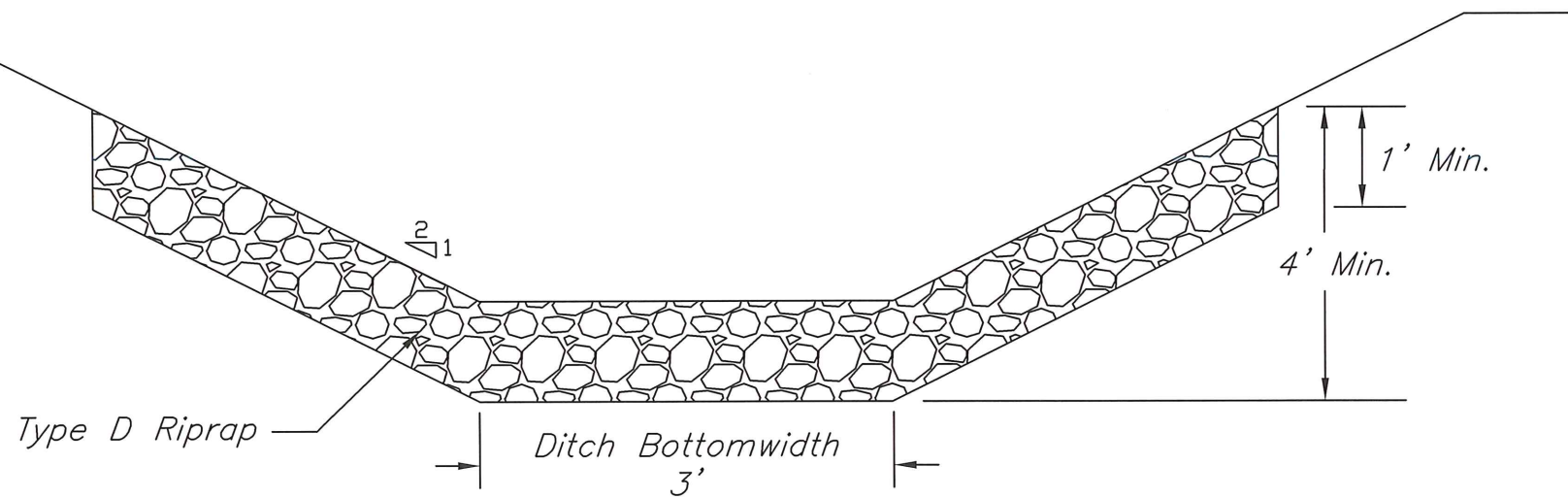
Ditch Sta: 6+98



Profile Along CL of Rock Pad
(NOT TO SCALE)



ISOMETRIC VIEW
(NOT TO SCALE)



Typical Cross Section
(NOT TO SCALE)

MATERIALS LIST	
24 Tons ODOT Type D Riprap	

- CONSTRUCTION NOTES**
1. All rock shall be machine placed and compacted to minimize settlement.
 2. The finished surface of the rock pad shall conform to the shape of the ditch.
 3. Ditch seed may be broadcast over the finished rock pad.

Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved *[Signature]* P.E. 2/10/22
 For ODA-DW6

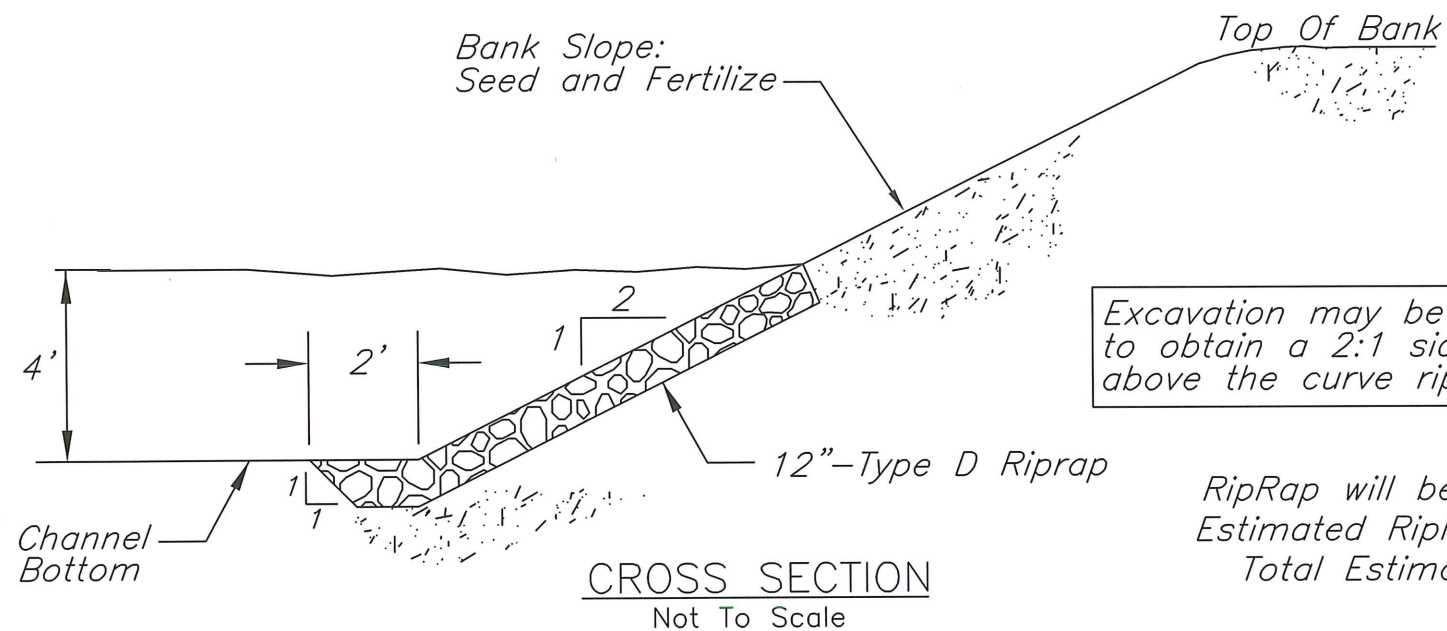
MACK DRAINAGE PROJECT #21-04
 DITCH ROCK PAD DETAIL
 Washington Township, Section 22
 Defiance County, Ohio



DITCH CURVE RIPRAP DETAIL

STA. 0+10 - 0+40

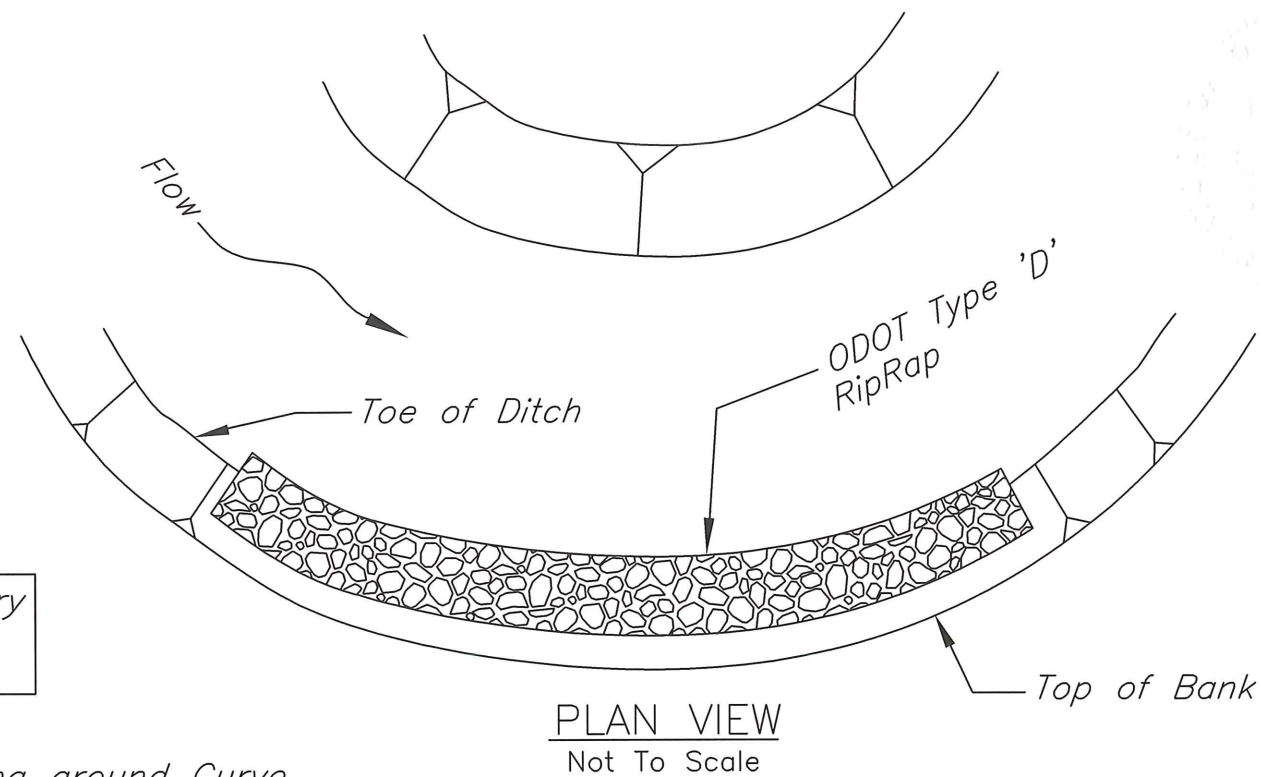
STA. 3+48 - 3+78



Excavation may be necessary to obtain a 2:1 sideslope above the curve riprap.

NOTE:

RipRap will be 30' Long around Curve.
Estimated RipRap per curve = 17 Tons
Total Estimated RipRap = 34 Tons

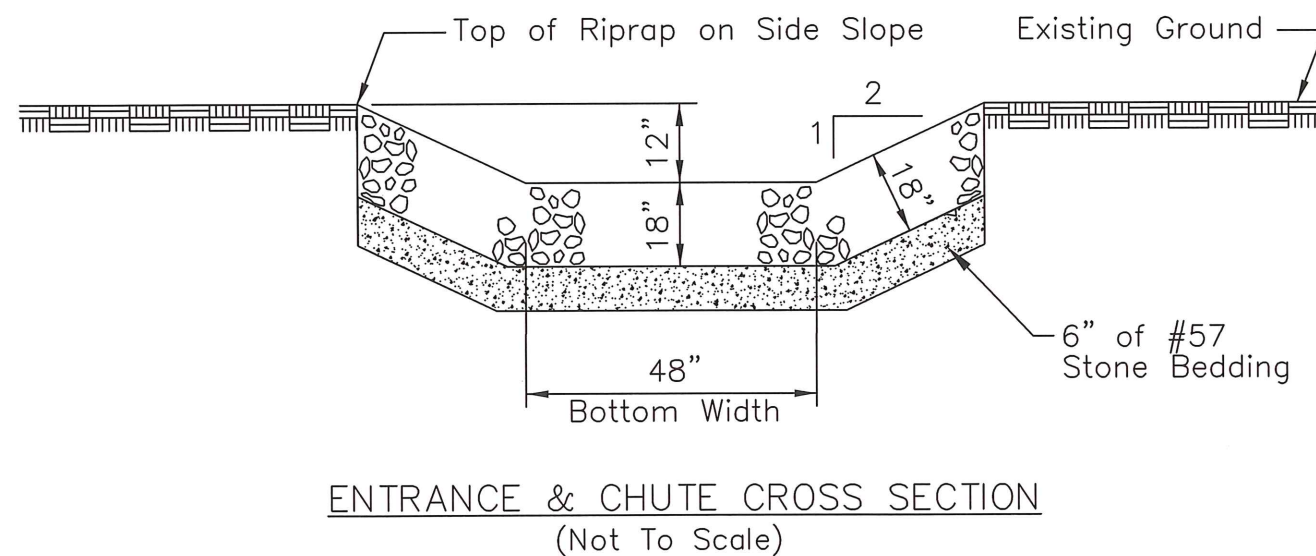
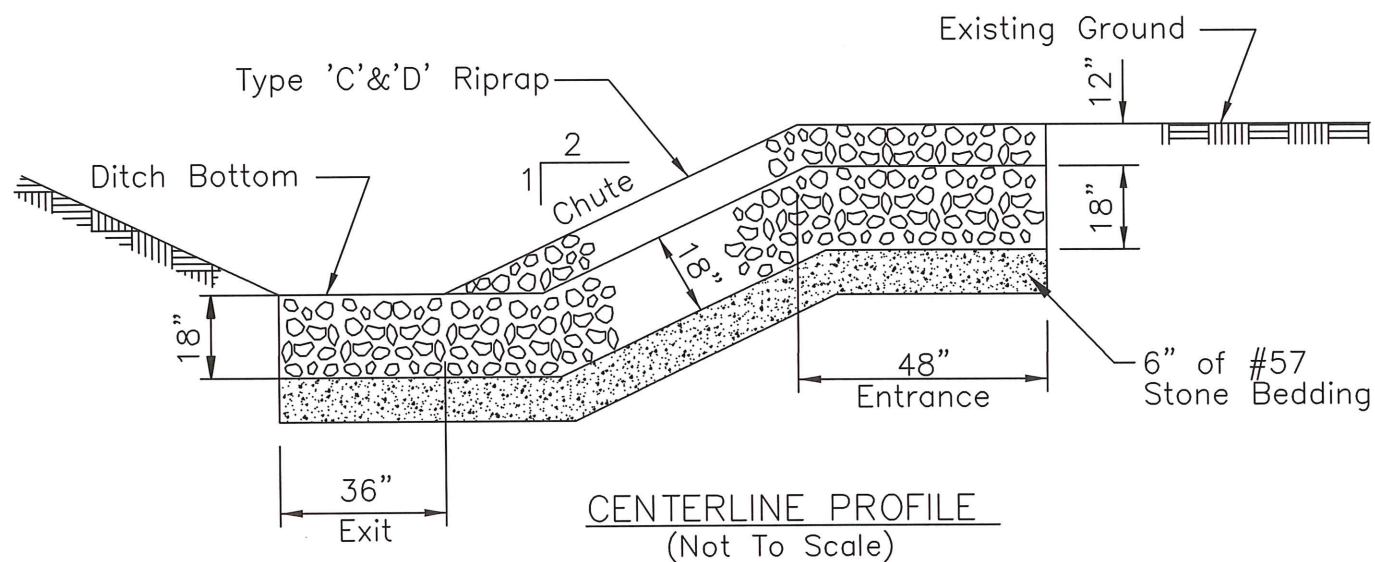


MINI ROCK CHUTE DETAIL

LOCATIONS:

0+45 North Side 0+60 South Side
2+85 South Side 7+10 East Side

Use a mix of:
50% ODOT Type "D" RipRap
and 50% ODOT TYPE "C" RipRap.



Date 01-22
Designed Jason Roehrig
Drawn Jason Roehrig
Checked Mike Boff
Approved *[Signature]* P.E. 2/10/12
For ODA-DWC

MACK DRAINAGE PROJECT #21-04
CURVE RIPRAP/
MINI ROCK-CHUTE DETAILS
Washington Township, Section 22
Defiance County, Ohio

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

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Sheet 7 of 19

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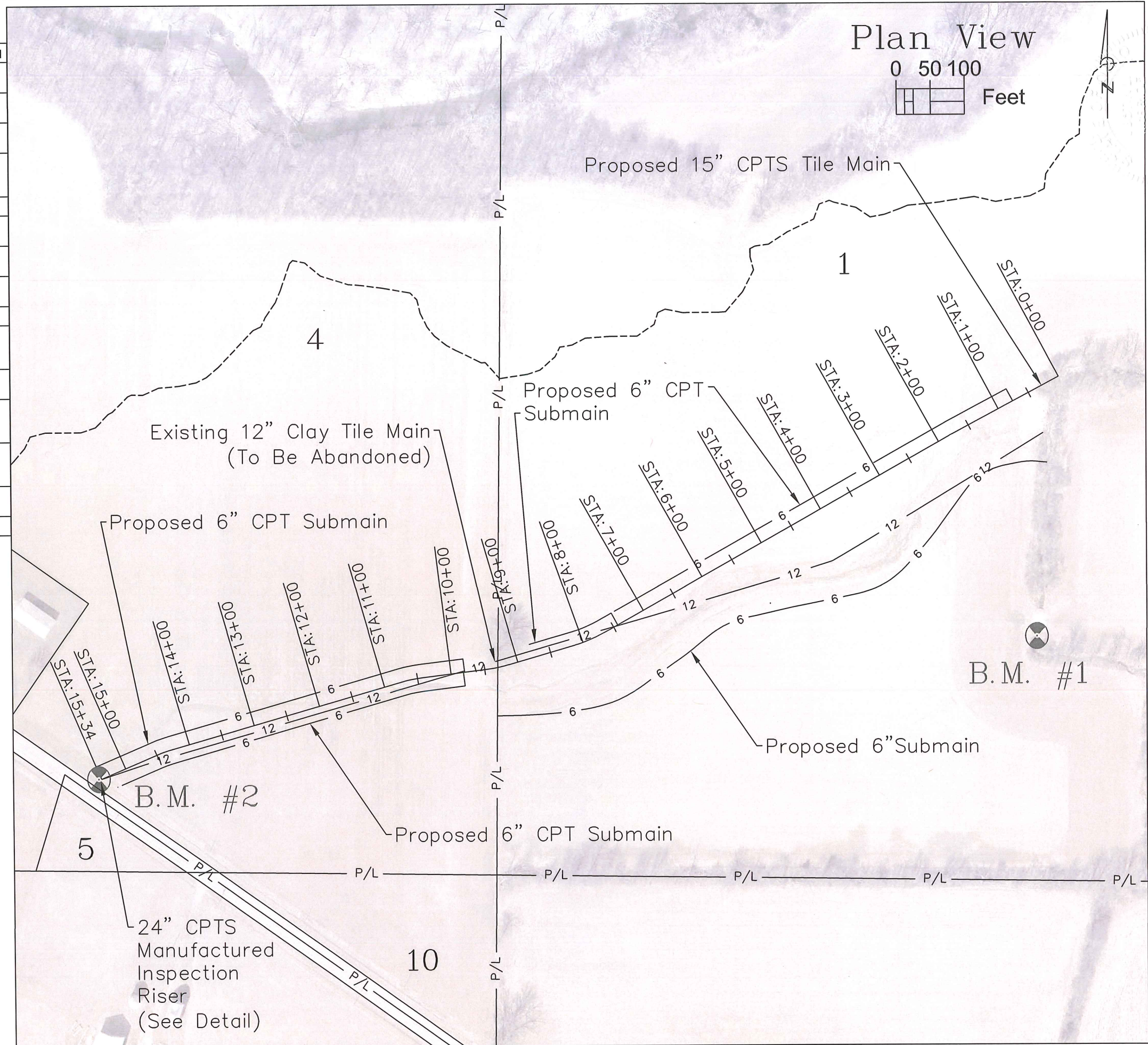
LEGEND

Roads	====
Tile Alignment	—+—+—+—
Property Lines	— P/L —
Watershed Line	- - - - -
Stationing	0+00
Parcel ID	8
Benchmarks	⊗

BENCHMARKS

BM#1: Top, third rib from end, of 30-inch CPTS on south side of field drive to south of grassed waterway outlet.
ELEV: 708.79

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ELEV. 713.48



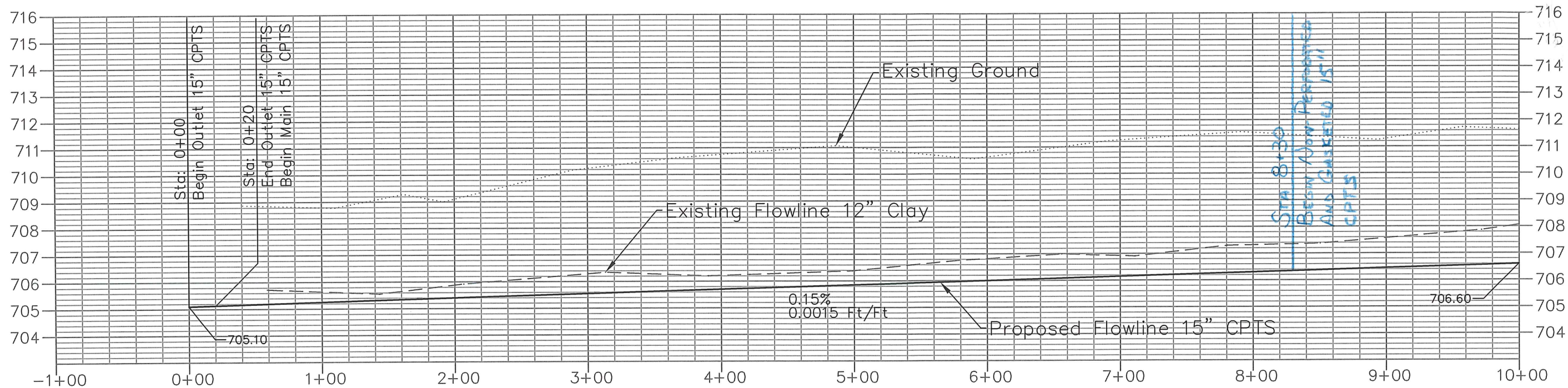
Date 01-22
 Designed Jason Roshig
 Drawn Jason Roshig
 Checked Mike Boff
 Approved *[Signature]* P.E. 2/10/22
 For *[Signature]* DWG

MACK DRAINAGE PROJECT #21-04
 TILE PLAN VIEW
 Defiance County, Ohio
 Washington Township, Section 22

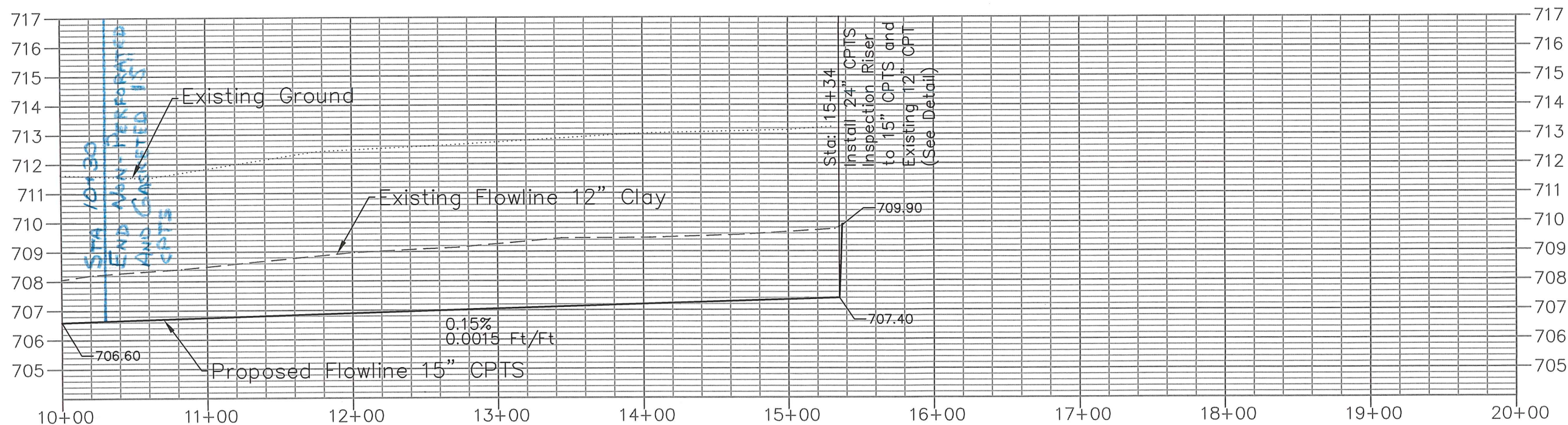


CAD File I.D.
 MackDrainProj.DWG
 Drawing No.
 OH-1-76-22-01
 Sheet 8 of 19

Mack 15" CPTS Tile Profiles Sta: 0+00 to 10+00



Mack 15" CPTS Tile Profiles Sta: 10+00 to 15+34



Date	01-22
Designed	Jason Roehrig
Drawn	Jason Roehrig
Checked	Mike Boff
Approved	John S. W.P.E. 2/10/22

MACK DRAINAGE PROJECT #21-04

TILE PROFILES

Washington Township, Section 22

Defiance County, Ohio

For ODA-DSWC



United States
Department of
Agriculture

Natural Resources
Conservation Service

CAD File I.D.
MackDrainProj.DWG

Drawing No.
OH-1-76-22-01

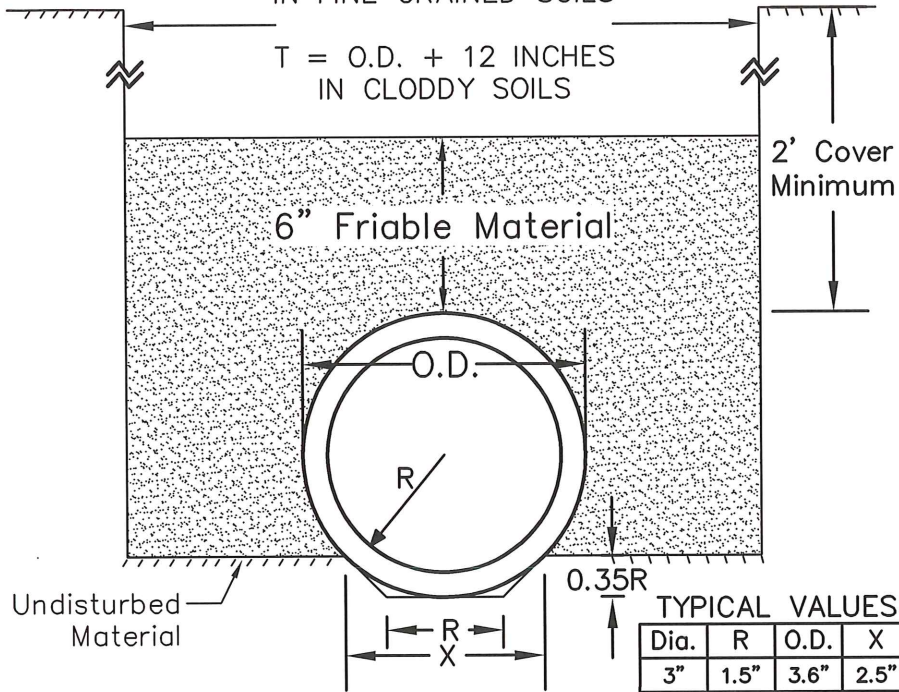
Sheet 9 of 19

PLOW/WHEEL MACHINE INSTALLED TILE DETAIL

8" TO 24" PLASTIC PIPE ONLY

T = O.D. + 6 INCHES
IN FINE GRAINED SOILS

T = O.D. + 12 INCHES
IN CLODDY SOILS



TYPICAL VALUES

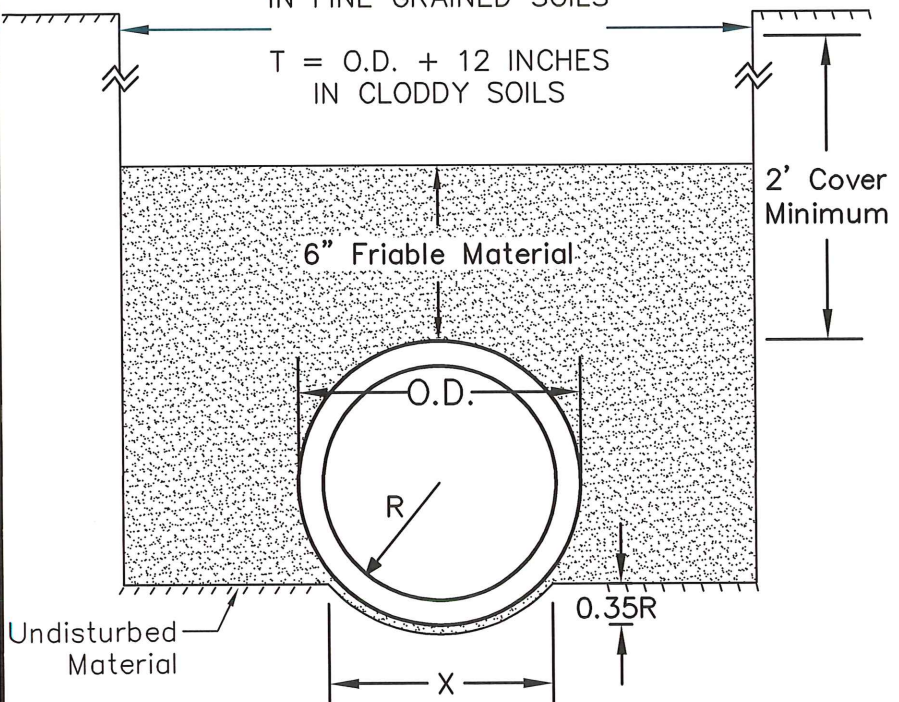
Dia.	R	O.D.	X
3"	1.5"	3.6"	2.5"
4"	2.0"	4.7"	3.4"
5"	2.5"	5.8"	4.2"
6"	3.0"	7.0"	5.0"
8"	4.0"	9.5"	6.7"
10"	5.0"	12.0"	8.5"
12"	6.0"	14.5"	10.2"
15"	7.5"	18.0"	12.7"
18"	9.0"	22.0"	15.4"
24"	12.0"	28.0"	20.0"

PLOW/WHEEL MACHINE INSTALLED TILE DETAIL

3" TO 24" PLASTIC OR CONCRETE/CLAY PIPE

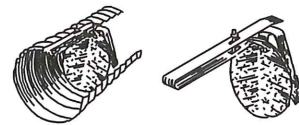
T = O.D. + 6 INCHES
IN FINE GRAINED SOILS

T = O.D. + 12 INCHES
IN CLODDY SOILS



ANIMAL GUARD DETAILS

TYPE 1



FLAPPER TYPE GUARD

TYPE 2



BAR TYPE GUARD

Minimum Length of Outlet Pipe Sections

Outlet Pipe Diameter	Minimum Outlet Pipe Length	Outlet Pipe Material	Outlet Protection Material
6" or Less	10'	Dual Wall PE OR PVC (Sch. 40 or SDR 35)	#1 Stone
8"	10'		ODOT Type D Rock
10" - 12"	12'		
15" - 18"	16'		
Larger than 18"	20'		

DETAIL NOTES

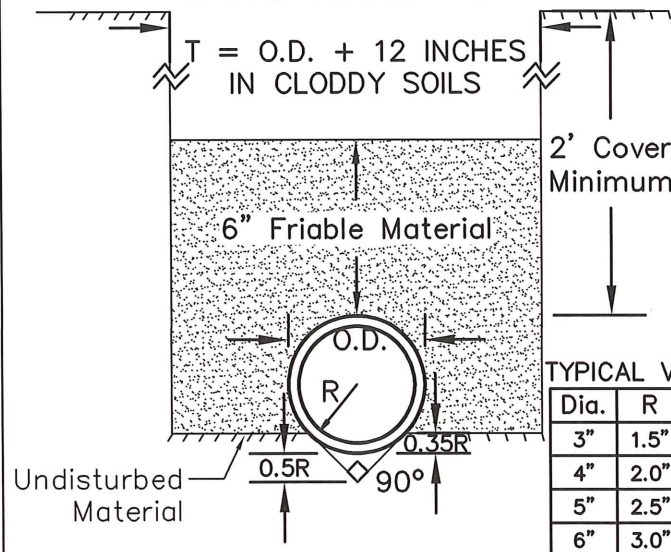
- This detail applies where one of the following occurs:
 - An excavator or backhoe is used to install pipe.
 - 2 feet of cover on top of the pipe cannot be achieved.
- USCS Coarse Grained Soils include: GW, GP, SW, SP, GW-GC, SP-SM, GM, GC, SM, and SC.
- Soft Foundations are all muck soils and any soil saturated enough such that footprints are created in the foundation when walked on.

PLOW/WHEEL MACHINE INSTALLED TILE DETAIL

3" TO 6" PLASTIC PIPE ONLY

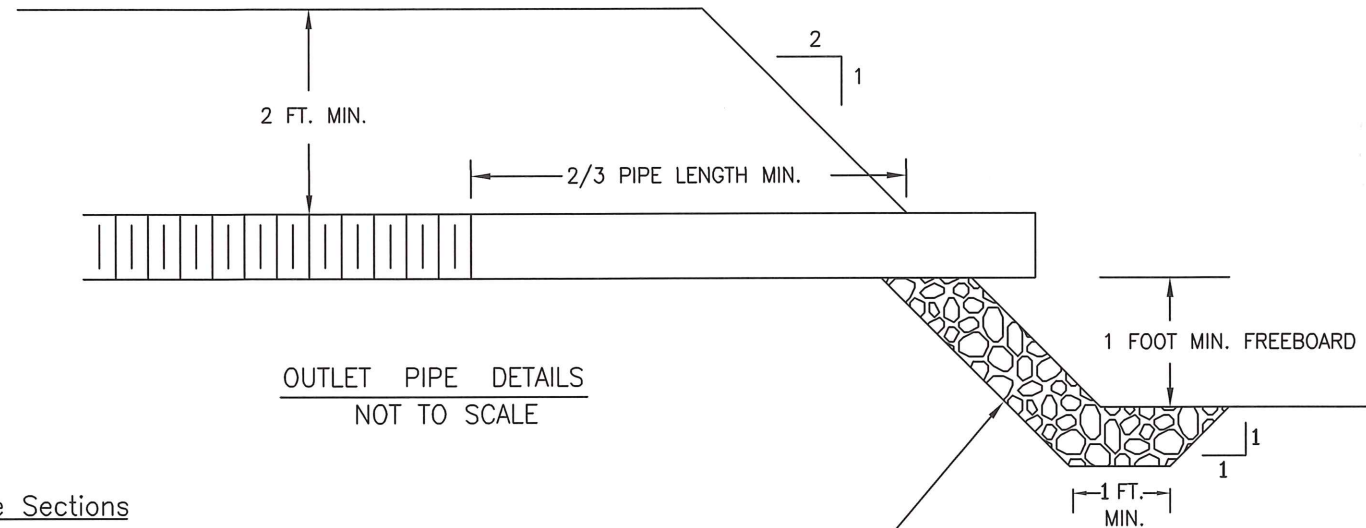
T = O.D. + 6 INCHES
IN FINE GRAINED SOILS

T = O.D. + 12 INCHES
IN CLODDY SOILS



TYPICAL VALUES

Dia.	R	O.D.
3"	1.5"	3.6"
4"	2.0"	4.7"
5"	2.5"	5.8"
6"	3.0"	7.0"



OUTLET PIPE DETAILS
NOT TO SCALE

RIPRAP
WIDTH = PIPE DIAM. + 1 FOOT EACH SIDE
DEPTH = 1.0 FT. FOR TYPE "D" AND 9 IN. FOR NO. 1 STONE

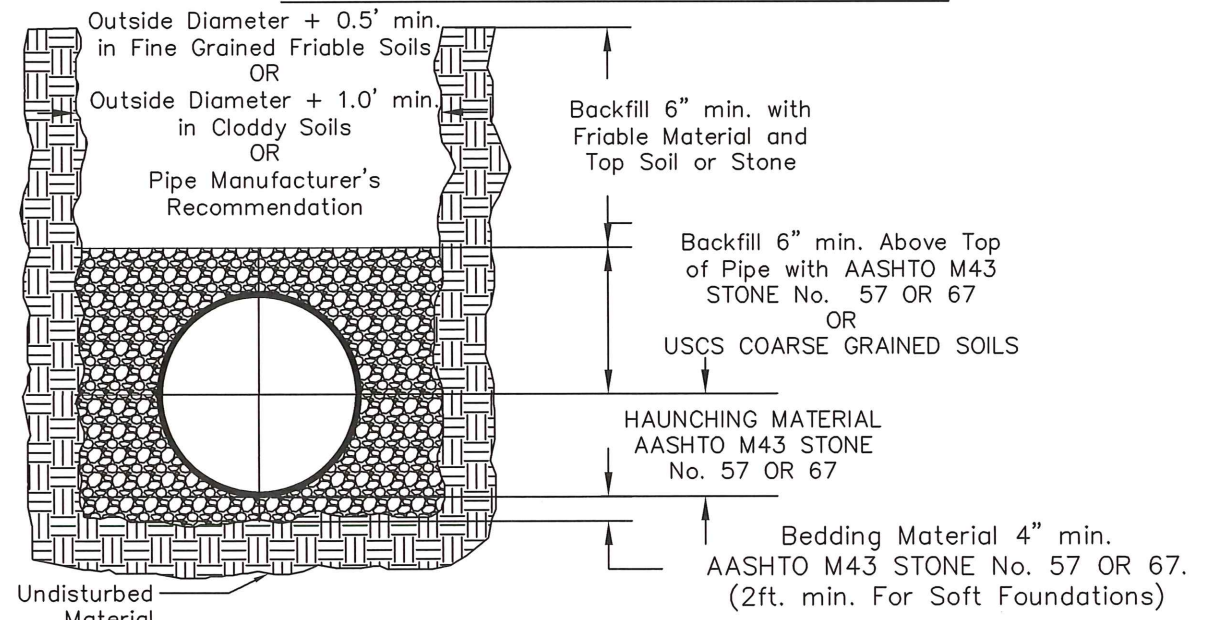
OUTLET PIPE NOTES:

- All pipes shall have outlet protection as shown in the detail above.
- Any alternative method of outlet protection shall be approved by the NRCS representative prior to placement.
- All outlet pipes shall meet the appropriate material specification as required in the attached NRCS conservation practice standard, "Subsurface Drain - 606".
- All outlet pipes shall be non-perforated.
 - The animal guard may be commercially manufactured type or constructed from 3/8 inch diameter bolts spaced at 2 inches on center.

CONSTRUCTION NOTES

- Start by placing the 4" layer of bedding material and grade the material per the design.
- Lay pipe on bedding material and check grade while placing the haunching material.
- Work in the haunching material between the bedding and the underside of the pipe to be sure there are no voids before placing the remainder of the embedment in the pipe zone.
- Carefully place stone backfill or USCS Coarse Grained Soils on top of haunching material to a minimum depth of 6 inches above the top of the pipe.
- The total cover above the top of the pipe shall be a minimum of 1 foot.

EXCAVATOR/BACKHOE INSTALLED PIPE DETAIL



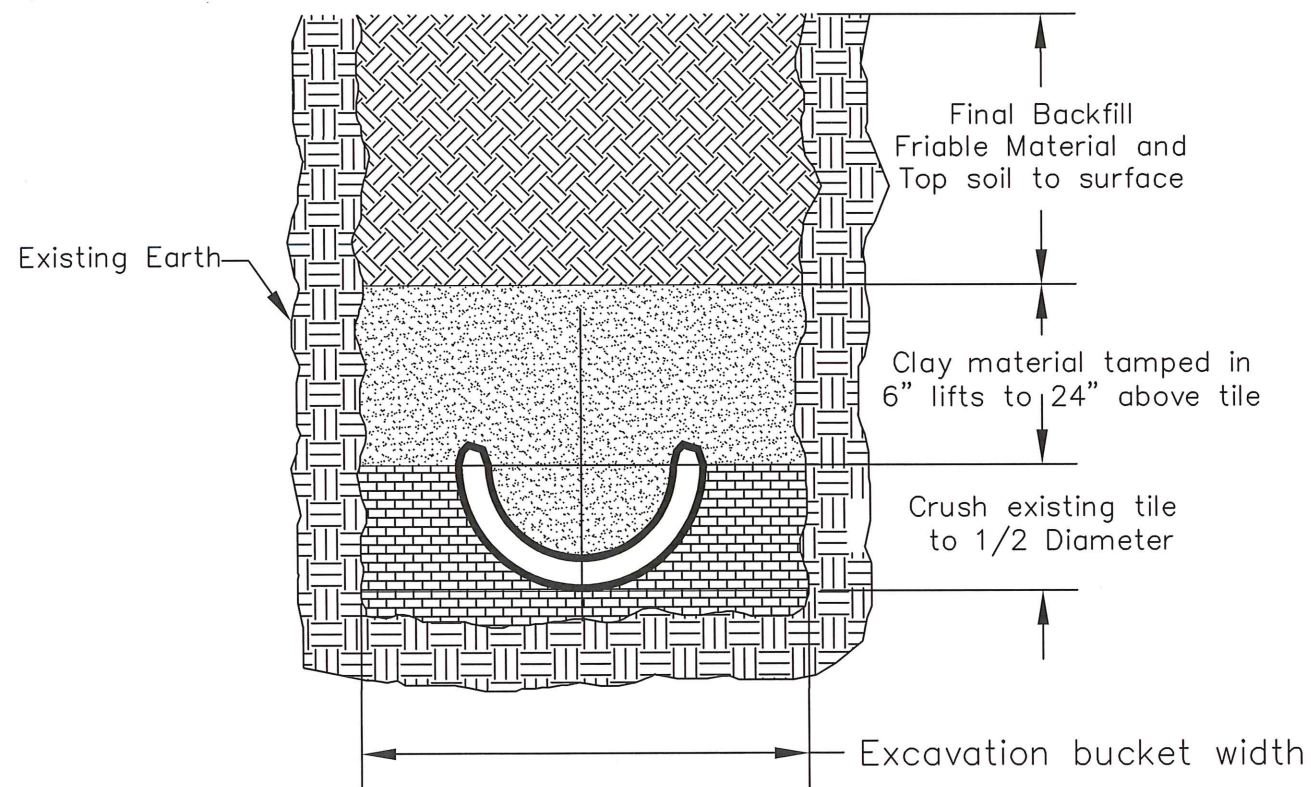
Date: 01-22
Designed: Jason Roehrig
Drawn: Jason Roehrig
Checked: Mike Boff
Approved: [Signature]
For: 01A-08a-c

MACK DRAINAGE PROJECT #21-04
TILE INSTALLATION/OUTLET PIPE DETAILS
Washington Township, Section 22
Defiance County, Ohio

Tile Destruction

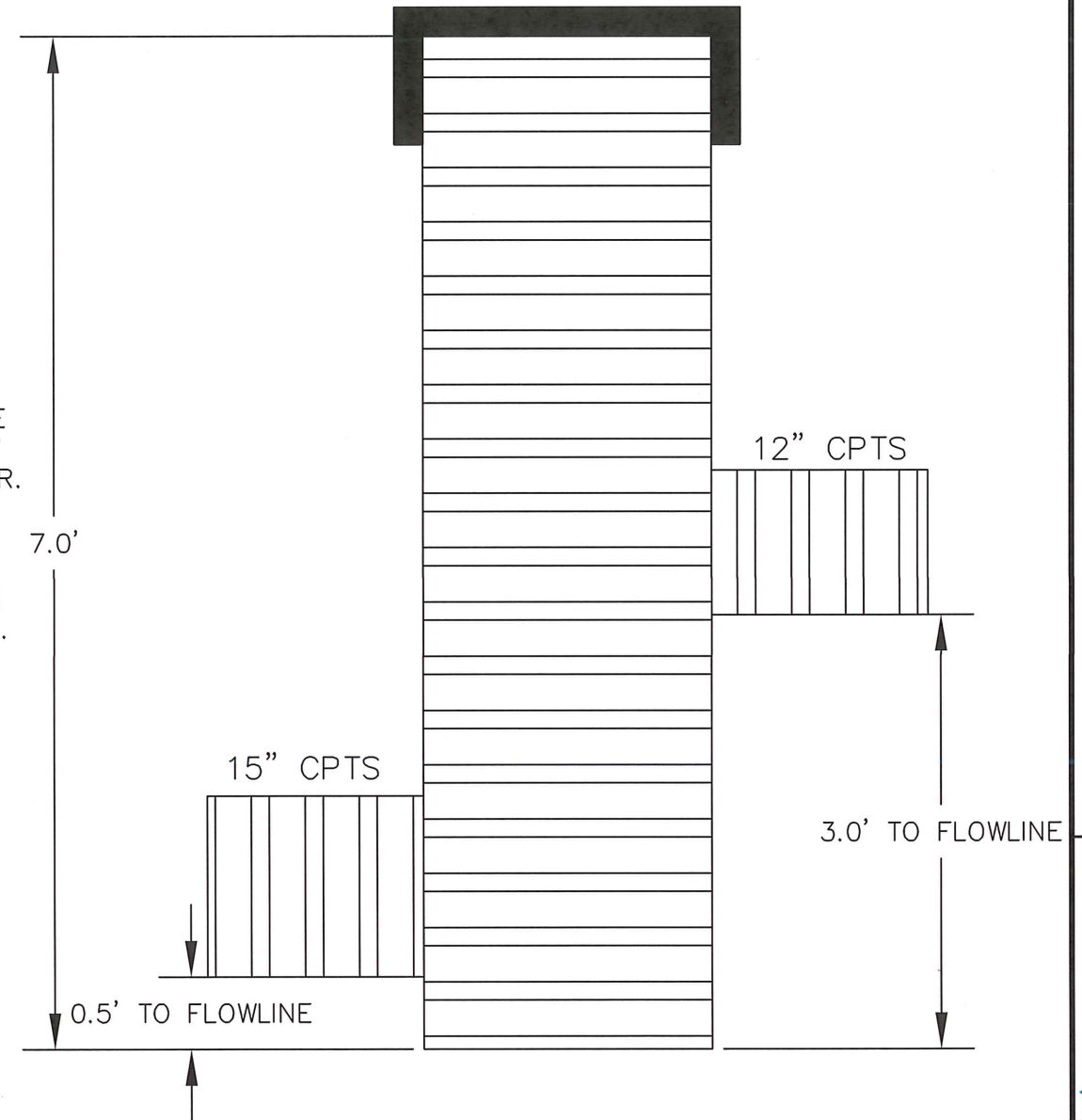
Existing 12" clay tile to be broken down every 50 feet for a length of 5 feet outside of the grassed waterway. All clay tile are to be entirely destroyed within the grassed waterway. Earthfill in the tile break trench within the grassed waterway must be placed and compacted in layers not more than 4 inches thick. Earth backfill shall be compacted to a density equivalent to that of the surrounding in-place earth material. Compaction shall be accomplished by hand tamping or manually directed power tampers. Earthfill must be compacted to the design surface elevation within the grassed waterway.

1. Crush tile completely
2. Compact clay in 6" lifts until 24" above tile. Earthfill to be compacted to the design surface elevation within the grassed waterway.
3. Backfill remainder of trench with excavated material.



TILE RISER DETAIL STA. 15+34

24" CPTS (DUAL WALL) RISER WITH CAP



RISER TO BE CONSTRUCTED FROM MANUFACTURED COMPONENTS AS SHOWN IN DETAIL.

TILE STUBS TO BE ORIENTED AT 180° FROM EACH OTHER.

2-80# BAGS OF MIXED CONCRETE TO BE POURED IN BOTTOM OF RISER.

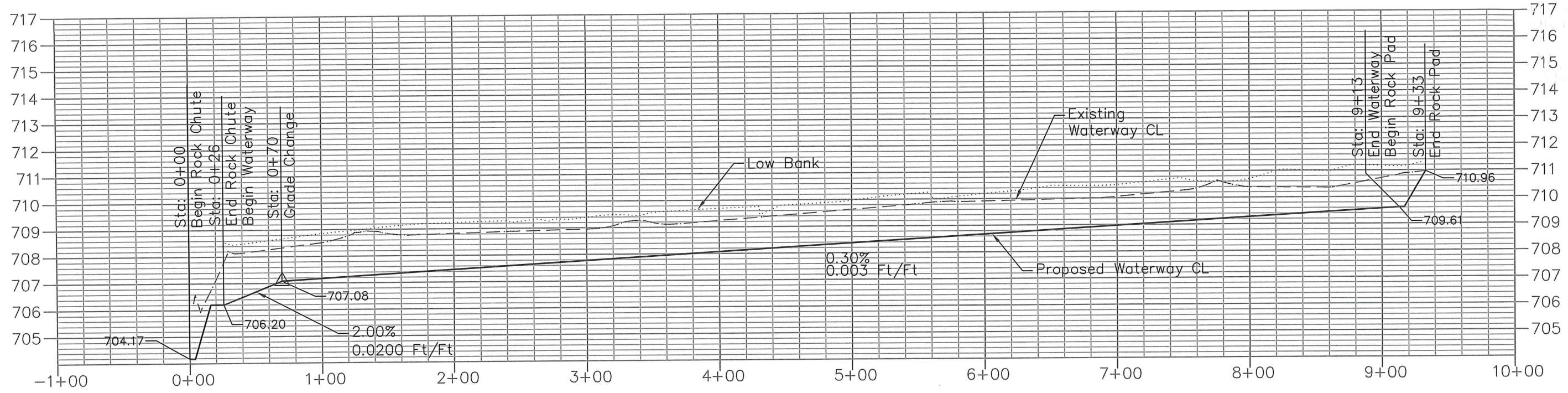
RISER AND CONNECTIONS TO STUBS TO BE ENTIRELY BEDDED IN #57 OR #67 GRAVEL. 5 TONS OF #57 OR #67 REQUIRED.

Date	01-22
Designed	Jason Roehrig
Drawn	Jason Roehrig
Checked	Mike Boff
Approved	Paul J. MacPhee, P.E.
	2/10/22

MACK DRAINAGE PROJECT #21-04
TILE BREAKDOWN/RISER DETAILS
Washington Township, Section 22
Defiance County, Ohio
For 00A-0006

United States Department of Agriculture
USDA
Natural Resources Conservation Service

Mack Waterway Profiles Sta: 0+00 to 9+33



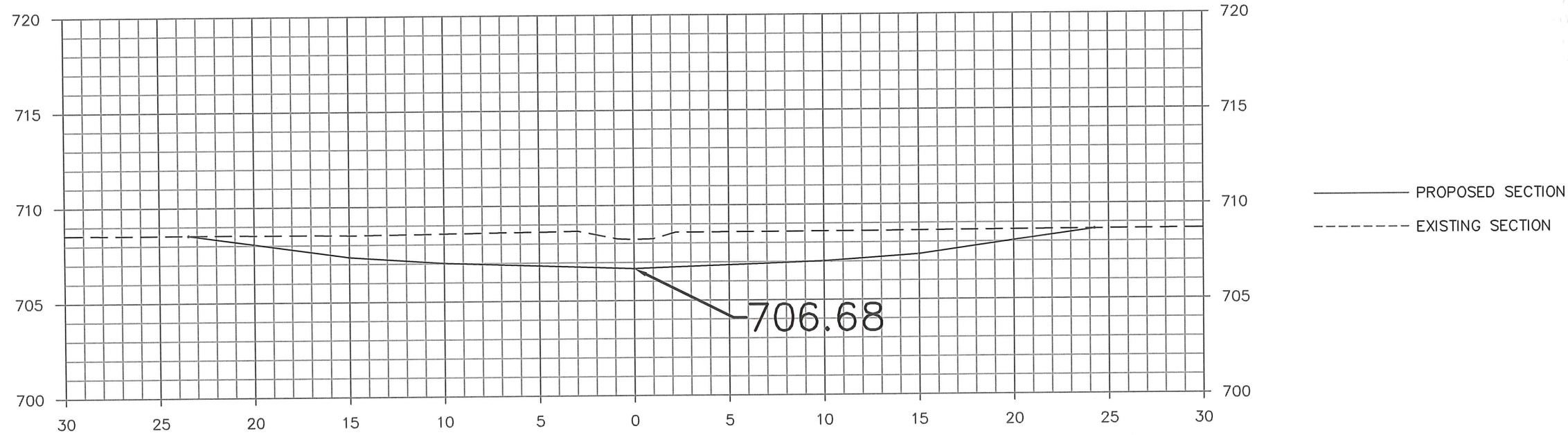
Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved Mike Boff
 For ODA-05wc

MACK DRAINAGE PROJECT #21-04
 GRASSED W/WAY PROFILES
 Defiance County, Ohio
 Washington Township, Section 22

United States
 Department of
 Agriculture
USDA
 Natural Resources
 Conservation Service

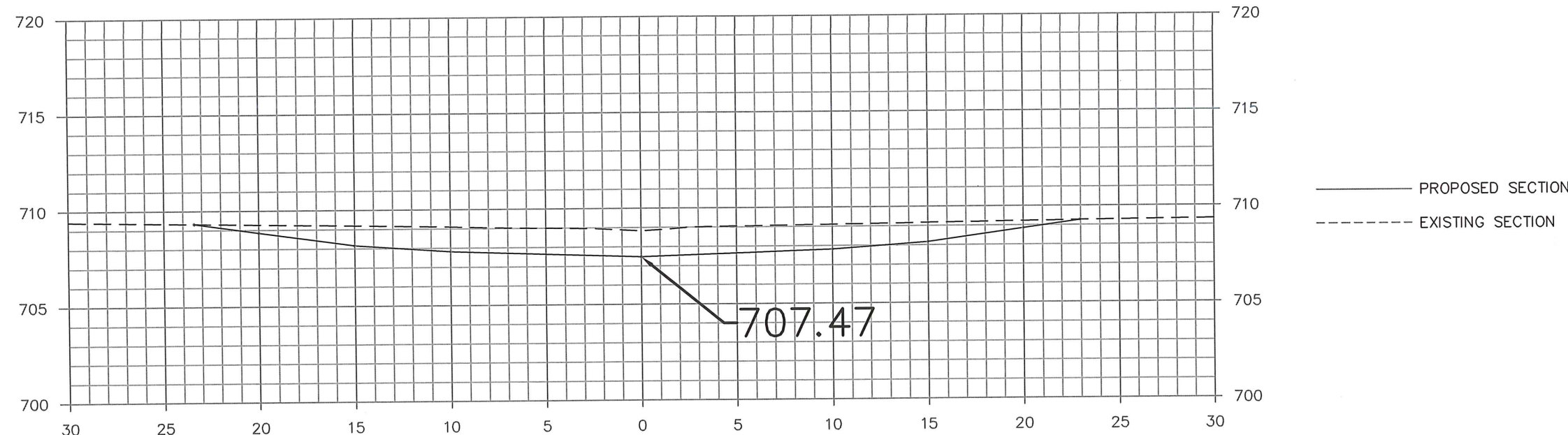
CAD File I.D.
 MackDrainProj.DWG
 Drawing No.
 OH-1-76-22-01
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Cross Section Sta. 0+50 (Looking Upstream)



Construction Width = 48' Seeding Width = 45'

Cross Section Sta. 2+00 (Looking Upstream)



Construction Width = 46' Seeding Width = 45'

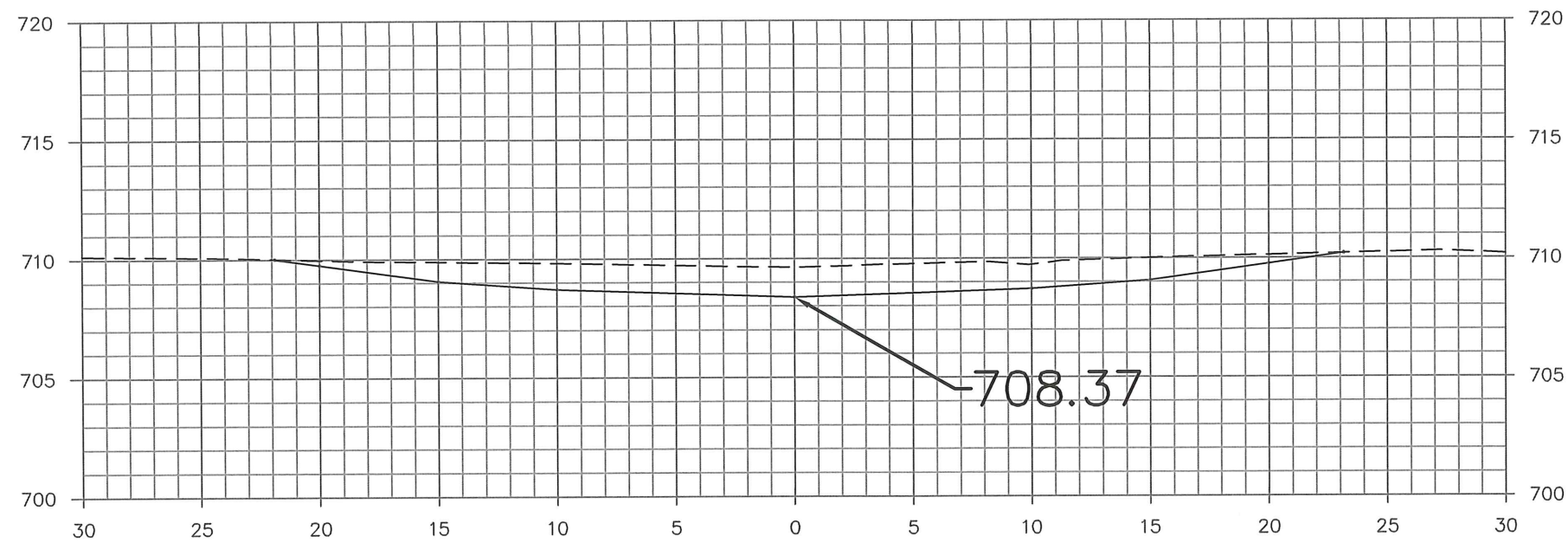
Date: 01-22
 Designed: Jason Roehrig
 Drawn: Jason Roehrig
 Checked: Mike Boff
 Approved: *Julia E. Murphy, P.E.* 2/10/22
 For ODA-DSWC

MACK DRAINAGE PROJECT #21-04
 GRASSED W/WAY X-SECTIONS
 Defiance County, Ohio
 Washington Township, Section 22

United States Department of Agriculture
 Natural Resources Conservation Service

CAD File I.D.: MackDrainProj.DWG
 Drawing No.: OH-1-76-22-01
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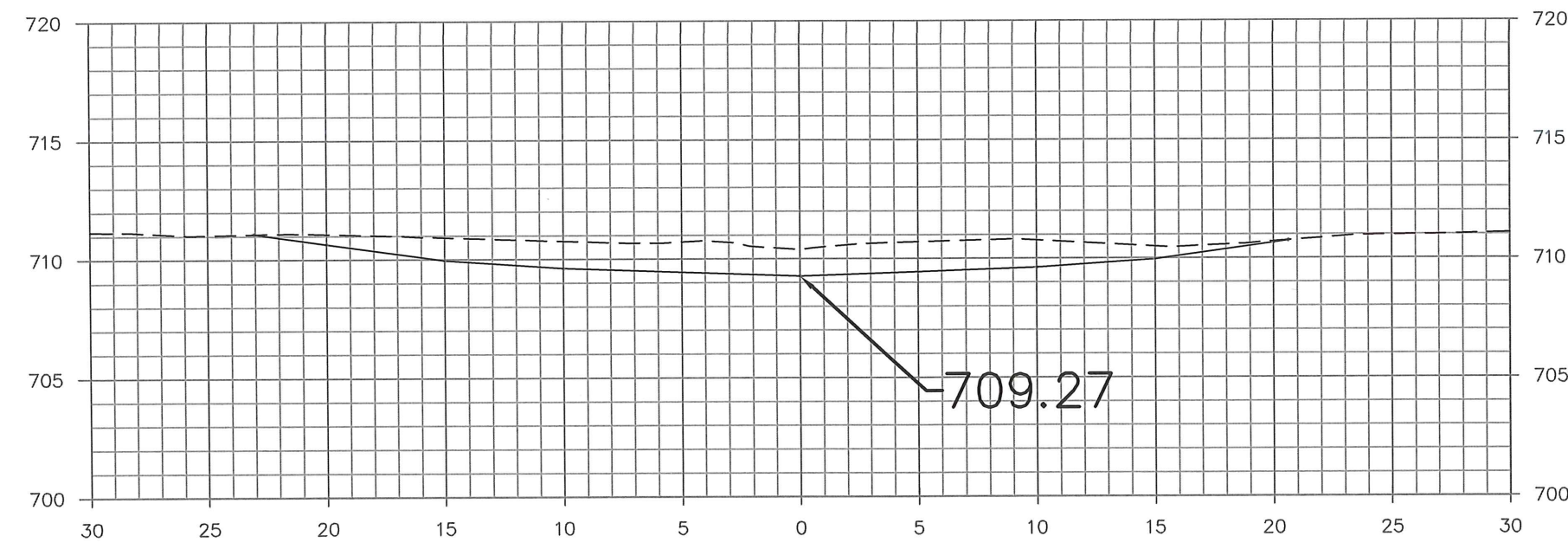
Cross Section Sta. 5+00 (Looking Upstream)



Construction Width = 45' Seeding Width = 45'

— PROPOSED SECTION
 - - - EXISTING SECTION

Cross Section Sta. 8+00 (Looking Upstream)



Construction Width = 44' Seeding Width = 45'

— PROPOSED SECTION
 - - - EXISTING SECTION

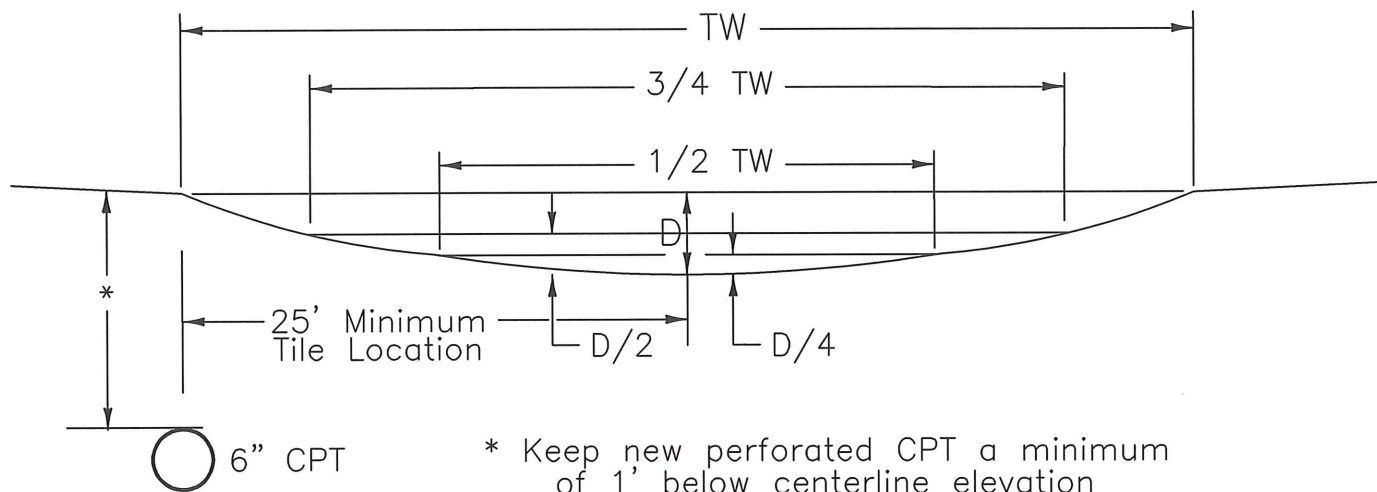
Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved [Signature] P.E. 2/10/22
 For ODA-DSWC

MACK DRAINAGE PROJECT #21-04
 GRASSED W/WAY X-SECTIONS
 Washington Township, Section 22
 Defiance County, Ohio

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PARABOLIC SHAPE CROSS SECTION



* Keep new perforated CPT a minimum of 1' below centerline elevation & maintain minimum of 2' of cover

WATERWAY DESIGN DATA

Reach Stationing	0+26 - 0+70	0+70 - 9+13
Slope (%)	2.00	0.30
Shape	Parabolic	Parabolic
Depth - D(ft.)	0.78	1.38
Top Width - T(ft.)	40	40
Depth		
4 D/4 (ft.)	0.20	0.35
Top Width		
2 T/2 (ft.)	20	20
Length (ft.)	44	843
Seeding Width (ft.)	45	45
Seeding Area (sq. ft.)	1,980	37,935
Seeding Area (ac.)	0.05	0.87

Total Seeding Area (ac.) = 0.92

SEEDING AREA = 0.92 ACRES			
MATERIALS	TYPE	RATE	TOTAL LBS.
SEED	Kentucky Bluegrass	65 LB. / AC.	60 LBS.
	Turf-Type Fescue	87 LB. / AC.	80 LBS.
	Perennial Ryegrass	65 LB. / AC.	60 LBS.
FERTILIZER	19-19-19 / EQUAL	300 LB. / AC.	276 LBS.
LIME	AG LIME	N/A	N/A
MULCH	STRAW MULCH	2 TONS / AC.	3,680 LBS.

The applicable seeding time for this job is:

March 15-May 31 OR August 1-September 15

All seeding rates are based on Pure Live Seed (PLS). If PLS is not used then the seeding rate shall be increased as directed by the Conservation Plan.

Seedbed Preparation:

1. Till and level ground if needed using plow, chisel and/or light disk and/or field cultivator (or similar tool).
2. Apply the necessary lime and fertilizer.
3. Prepare a firm seedbed with a disk or similar equipment.
4. Culti-pack if possible to firm seedbed.
5. Plant using a drill designed for the type of seed being used OR broadcast the seed on the surface and culti-pack again.
6. Mulch the seeded area within 48 hours of seeding.

NOTE: The contractor is responsible to use all appropriate Best Management Practices to minimize the likelihood of site erosion and offsite sediment transport. When final site stabilization cannot be completed within 14 days of the commencement of construction, an Ohio EPA NPDES permit may be required (landowner is responsible for obtaining this if required).

NOTE: Manure will not be allowed as a substitute for straw mulch.

NOTE: Grass on waterway will be mowed and kept at less than 6" of height at all times to reduce the amount sedimentation within the waterway.

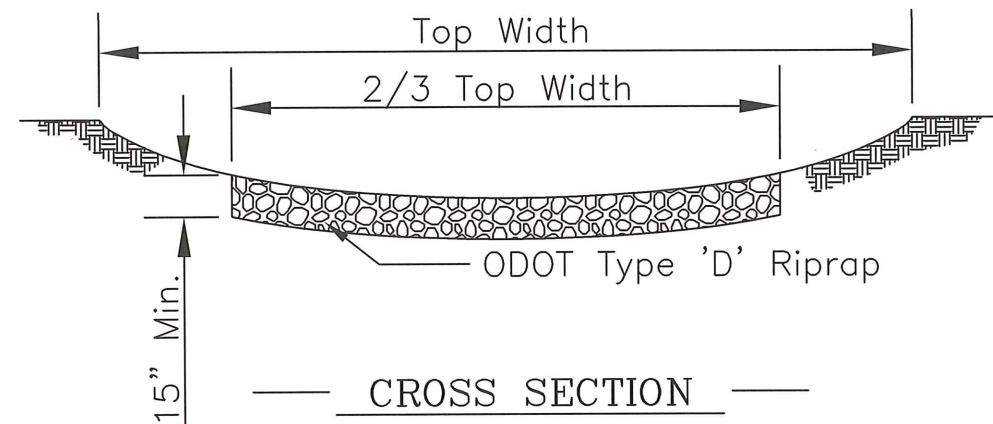
Date: 01-22
 Designed: Jason Roehrig
 Drawn: Jason Roehrig
 Checked: Mike Boff
 Approved: *[Signature]* P.E. 2/10/22
 For ODA-DSWC

MACK DRAINAGE PROJECT #21-04
 GRASSED W/WAY TYPICAL X-SECTION/
 DESIGN DATA
 Defiance County, Ohio
 Washington Township, Section 22

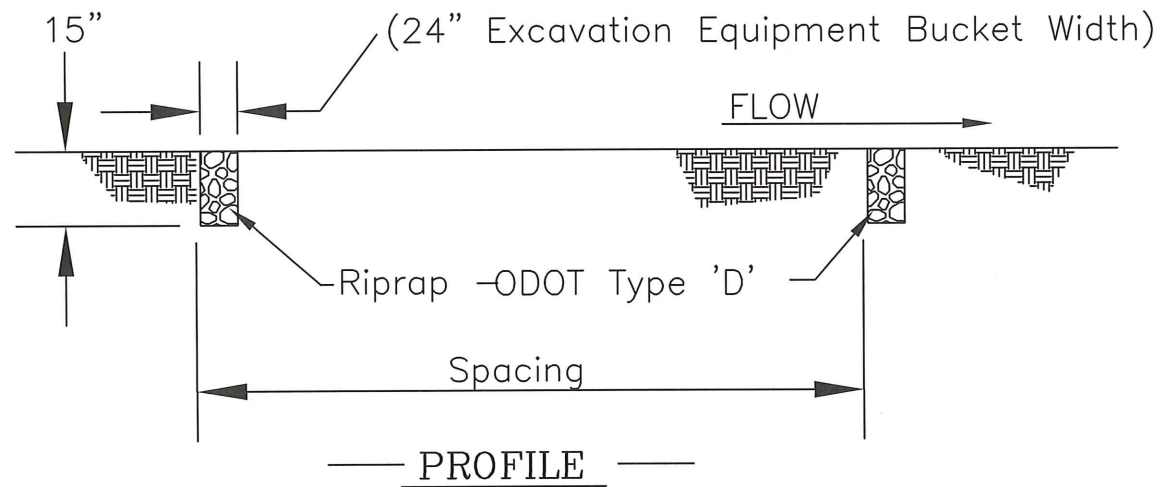
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 Drawing No.
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Rock Check



Not To Scale



CONSTRUCTION NOTES:

1. COMPACT ENTIRE SURFACE OF EACH ROCK CHECK. A MINIMUM OF ONE PASS OVER THE ENTIRE SURFACE SHALL BE MADE WITH EITHER TRACKED OR RUBBER TIRED EQUIPMENT.
2. FINISHED ROCK SURFACE MUST BE FLUSH WITH THE CONSTRUCTED WATERWAY BOTTOM.

% GRADE MAX SPACING

0-1.5	100 ft.
1.5-3.0	75 ft.
>3.0	50 ft.

Grass Lined Channel Specifications

1. The channel shall be excavated and shaped to the proper grade and cross section.
2. Fill material used in the construction of the channel shall be well compacted to prevent unequal settlement.
3. Earth removed and not needed in construction shall be graded and sloped or disposed of so that it will not restrict flow to the channel or interfere with its functioning.
4. Stabilization shall be done according to the appropriate specifications for seeding, vegetative practices, sod and matting.
5. Construction shall be sequenced so that channels are stabilized prior to becoming operational or without delays after the channel becomes operational.
6. Gullies that may form in the channel or other erosion damage that occurs before the grass lining becomes established shall be repaired without delay.

MATERIALS SUMMARY

Crushed Limestone Aggregate: ODOT SIZE Type 'D'
Assuming a 2' Bucket Width
3.75 TONS Each

CHECK LOCATIONS

Spacing is to be as shown

W/WAY

- Sta. 0+70
- Sta. 1+70
- Sta. 2+70
- Sta. 3+70
- Sta. 4+70
- Sta. 5+70
- Sta. 6+70
- Sta. 7+70
- Sta. 8+70

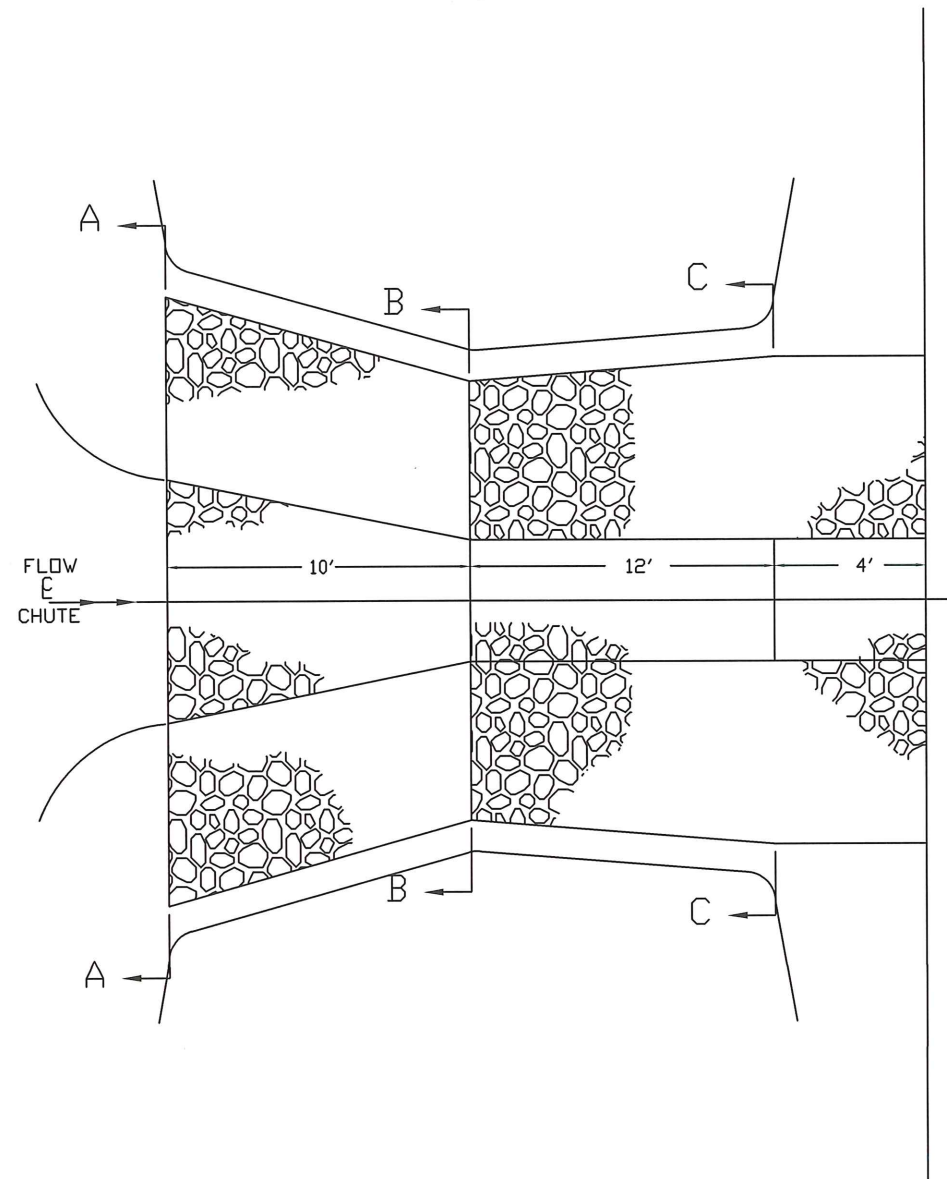
Date 01-22
Designed Jason Roehrig
Drawn Jason Roehrig
Checked Mike Boff
Approved Mike Boff
For ODA-DSUC

MACK DRAINAGE PROJECT #21-04
GRASSED W/WAY ROCK CHECK DETAIL
Washington Township, Section 22
Defiance County, Ohio

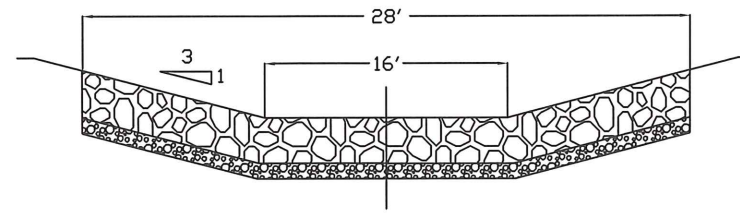
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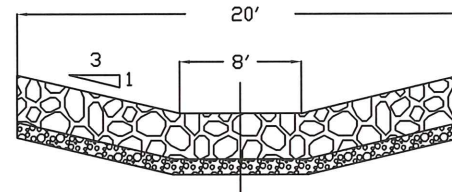
Open Ditch Sta: 4+62



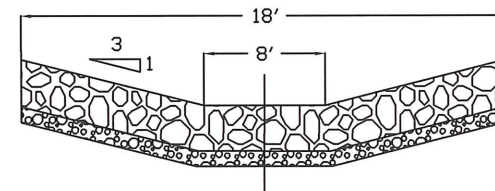
PLAN VIEW



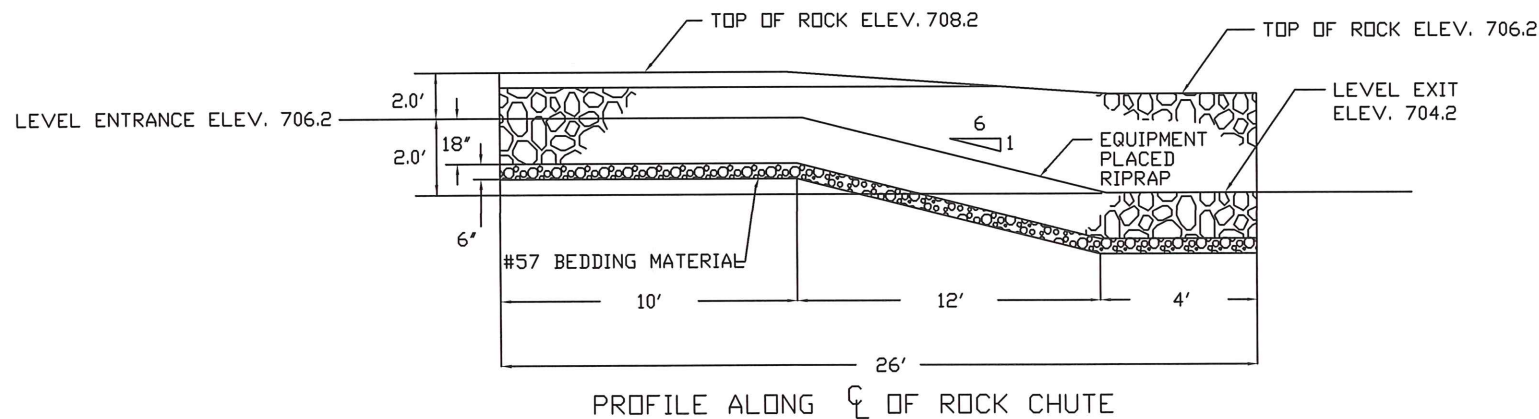
SECTION A-A



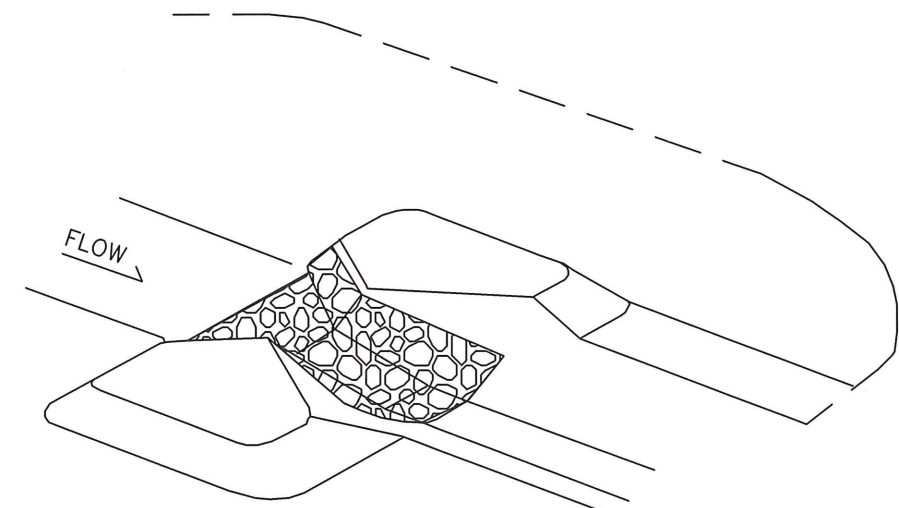
SECTION B-B



SECTION C-C



PROFILE ALONG C-C OF ROCK CHUTE



ISOMETRIC VIEW

RIPRAP	43 TONS		
GRAVEL BEDDING	16 TONS		
MATERIAL GRADATIONS RIPRAP			
WEIGHT OF INDIVIDUAL PIECES (lbs)	PERCENT OF NUMBER OF PIECES		
150-200	4		
100-150	6		
50-100	20		
10-50	30		
0-10	40		
GRAVEL BEDDING (Equivalent to No. 57)			
SIZE (inches)	PERCENT PASSING		
1 1/2	100		
1	95 - 100		
1/2	25 - 60		
no. 4	0 - 10		
no. 8	0 - 5		
EQUIVALENT ROCK SIZES (165 pcf)			
WEIGHT (lbs)	TYPICAL DIMENSIONS (inches)	COMMON SIZE (inches)	
200	8 x 15 x 18	15	
150	8 x 12 x 16	12	
100	7 x 10 x 14	10	
50	6 x 8 x 11	8	
10	3 x 6 x 6	6	
ROCK CHUTE SEEDING QUANTITIES-0.10 ACRES			
Kentucky Bluegrass	65 lbs/acre	6.5 lbs	
Turf-Type Fescue	87 lbs/acre	8.7 lbs	
Perennial Ryegrass	65 lbs/acre	6.5 lbs	
FERTILIZER 12-12-12	420 lbs/AC	42.0 lbs	
LIME	-	-	
MULCH	STRAW	2 TON / AC	400 lbs
SEEDING PERIOD <u>MARCH 15 TO MAY 31</u>			
<u>AUGUST 1 TO SEPTEMBER 15</u>			
NOTES: ALL FILL SHALL BE COMPACTED IN 12" LAYERS WITH 2 PASSES OF HEAVY WHEELED EQUIPMENT OVER ALL THE SURFACE OF THE LAYER. BEDDING AND RIPRAP SHALL BE DENSE DURABLE, ANGULAR ROCK. BEDDING SHALL BE PLACED AND INSPECTED BEFORE PLACING RIPRAP. RIPRAP SHALL BE PLACED TO A UNIFORM DEPTH			

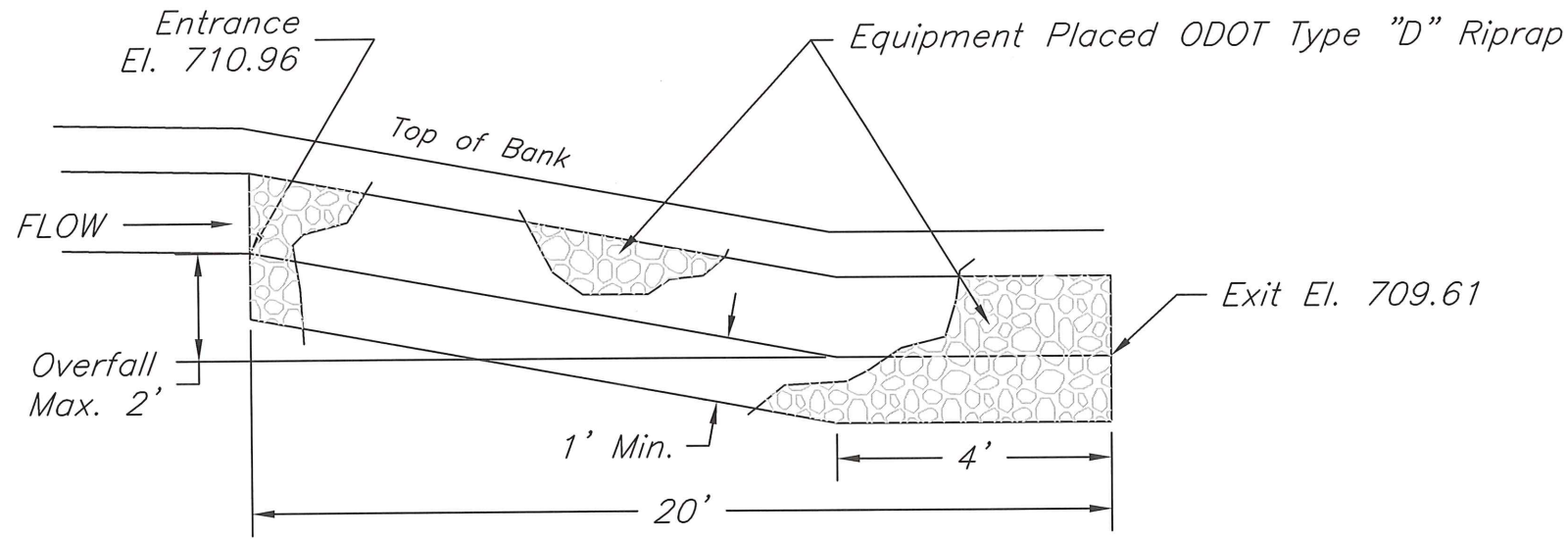
Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved John S. Wray, P.E. 2/10/22
 For ODA-BSWC

MACK DRAINAGE PROJECT #21-04
 ROCK CHUTE DETAIL
 Defiance County, Ohio
 Washington Township, Section 22

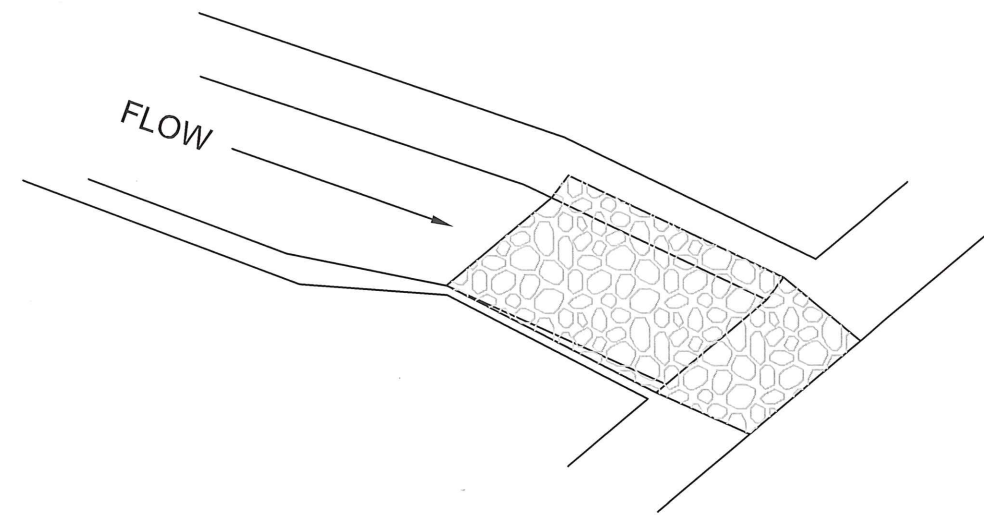
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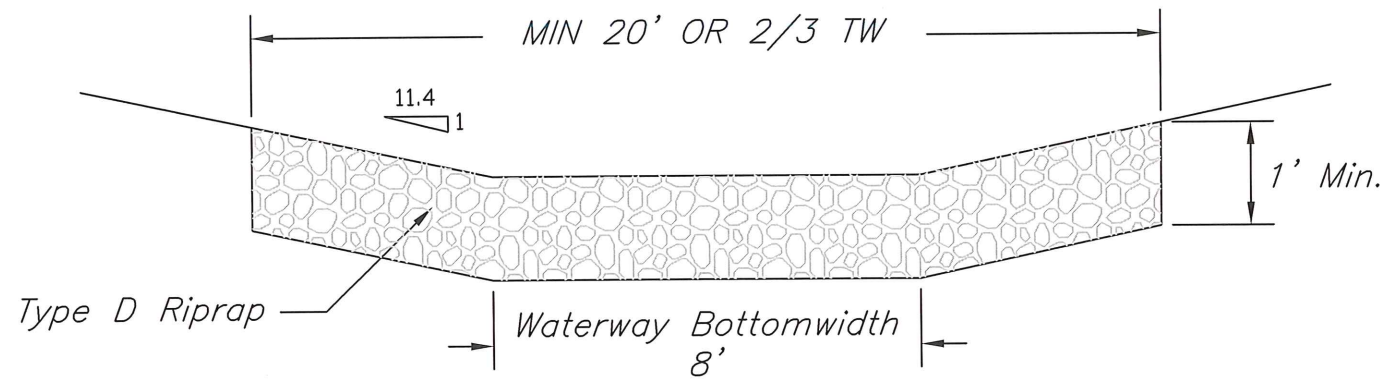
Grassed W/Way Sta: 9+13



Profile Along CL of Rock Pad
(NOT TO SCALE)



ISOMETRIC VIEW
(NOT TO SCALE)



Typical Cross Section
(NOT TO SCALE)

MATERIALS LIST	
30 Tons ODOT Type D Riprap	

- CONSTRUCTION NOTES**
1. All rock shall be machine placed and compacted to minimize settlement.
 2. The finished surface of the rock pad shall conform to the shape of the waterway.
 3. Waterway seed may be broadcast over the finished rock pad.

Date 01-22
 Designed Jason Roehrig
 Drawn Jason Roehrig
 Checked Mike Boff
 Approved [Signature] 2/10/22
 For ODA-0546

MACK DRAINAGE PROJECT #21-04
 GRASSED W/WAY ROCK PAD DETAIL
 Washington Township, Section 22
 Defiance County, Ohio

