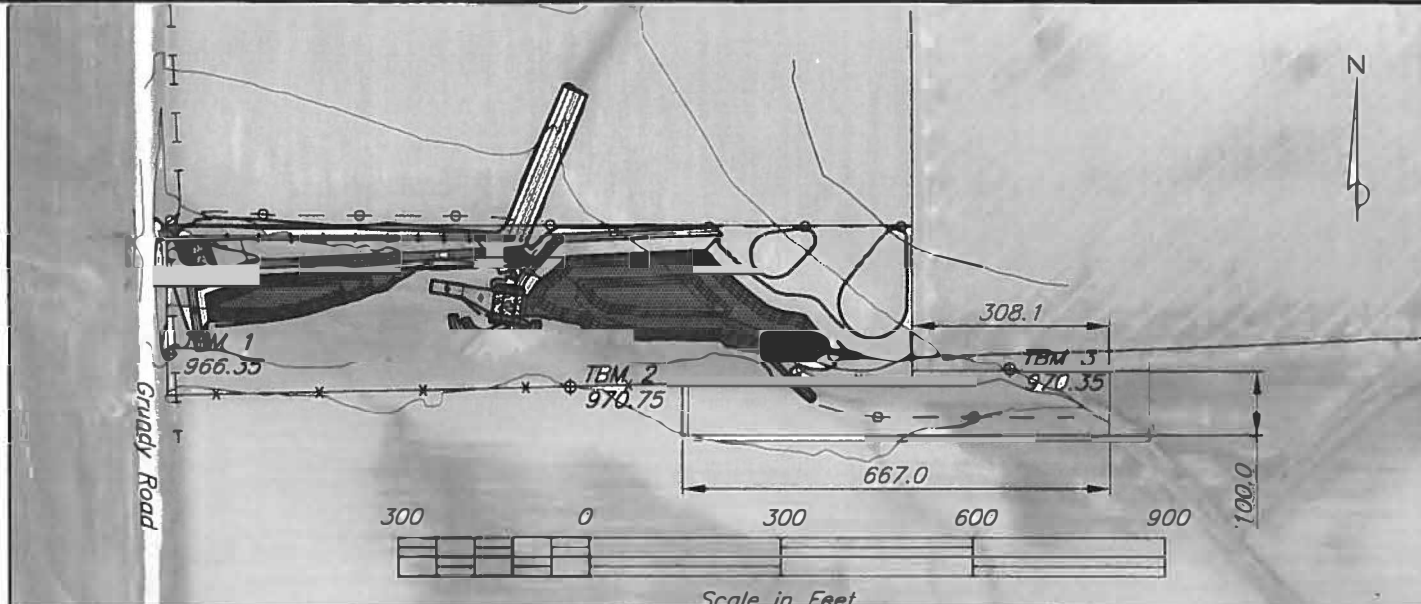
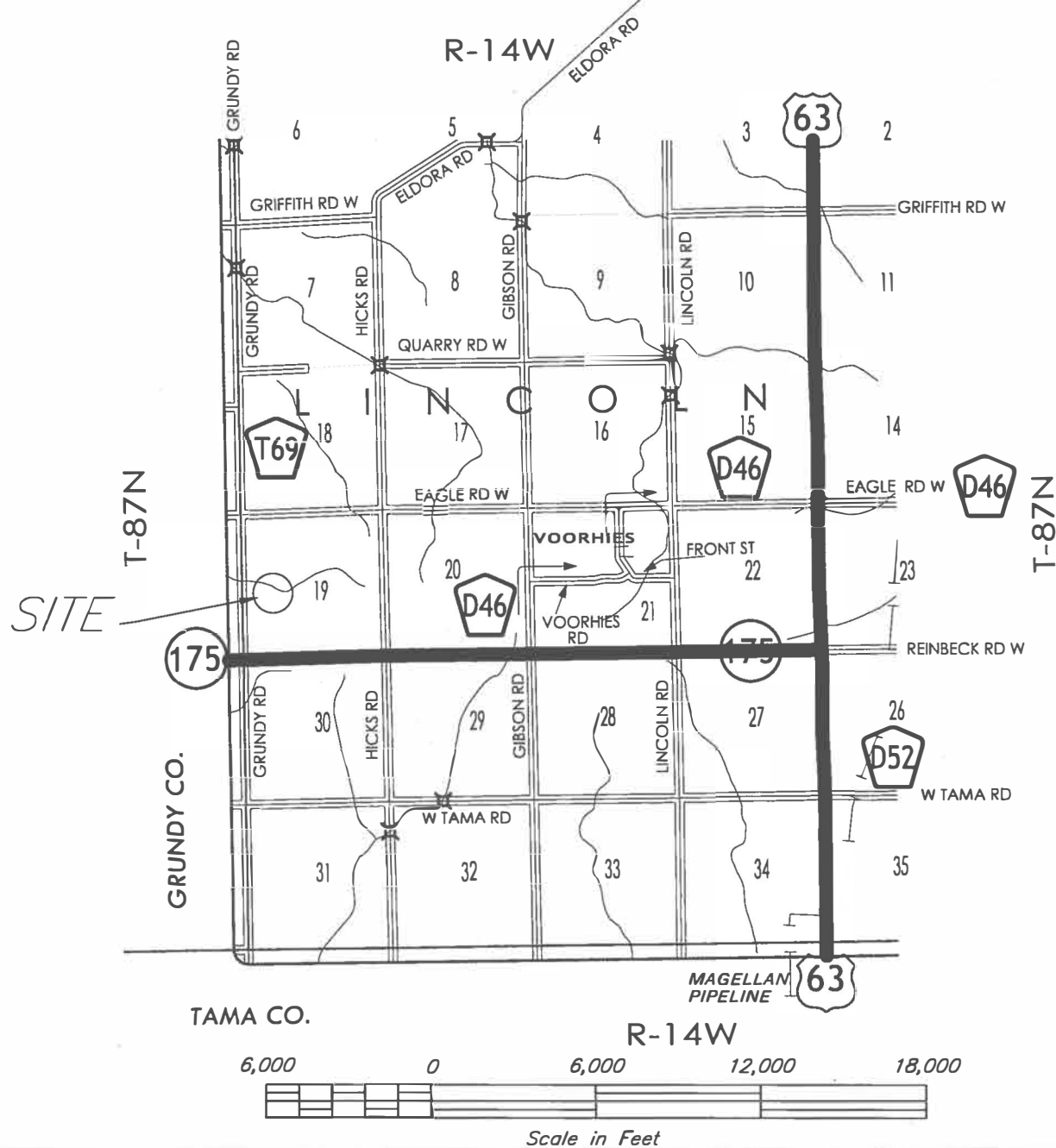




LOCATION MAP
BLACK HAWK county



PLAN CONTENTS

- Plan View and Location Map
- Site Plan
- Detailed Plan View East Shallow Water Excavation
- Detailed Plan View West Shallow Water Excavation
- Profile Day-lighted Tile thru Outlet Structure
- Profiles Water Level Control Structures
- Profile North Interception Tile Line 1
- Profile Interception Tile Line 2
- Profiles MAIN and South Interception Tile Lines 3 & 4
- Cross Sections TCBM Inlets Stations 16+50 & 21+32
- Cross Sections Outlet Channel Stations 19+00 & 20+40
- Cross Sections Outlet Channel Stations 21+00 & 22+00
- Cross Sections Outlet Channel Stations 23+00 & 24+00
- Cross Section Outlet Channel Station 24+80
- Detailed Profiles Tied Concrete Block Mat Chutes
- Detailed Cross Sections Tied Concrete Block Mat Chutes
- TIED CONCRETE BLOCK MAT CHUTE DETAILS East
- TIED CONCRETE BLOCK MAT CHUTE DETAILS West
- Seeding and Mulching Plan
- Profile & Cross Sections Auxiliary Spillway
- Profile East Dike & Plan View
- Cross Sections East Dike
- Profile West Dike & Plan View
- Cross Sections West Dike

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- Sheet 2
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- Sheet 8
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- Sheet 12
- Sheet 13
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- Sheet 16
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- Sheet 18
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- Sheet 20
- Sheet 21
- Sheet 22
- Sheet 23
- Sheet 24
- Sheet 25

ENGINEERING JOB CLASS III

Contractor is required to follow Iowa One Call law.
IowaOneCall.com or Call 811
Ticket # _____

I have reviewed and agree with the content of the plans and specifications prepared by the NRCS.

Landowner: _____ Date: _____

I certify that this practice has been constructed in accordance with the plans and specifications.

NRCS Rep.: _____ Date: _____

BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM 1	966.35	Top of steel rered with yellow 'NRCS survey' cap located 55 feet north of southwest field access next to right-of-way edge Grundy Road.
TBM 2	970.75	Top of steel rered with yellow 'NRCS survey' cap located 630 feet east of southwest access along south property line fence of field.
TBM 3	970.35	Top of steel rered with yellow 'NRCS survey' cap located 152 feet east of property line north of drainage way.

Construction Specifications

- IA-5 Pollution Control
- IA-6 Seeding & Mulching for Protective Cover
- IA-9 Subsurface Drain Investigation, Removal, and Repair
- IA-21 Excavation
- IA-23 Earthwork
- IA-45 Plastic (PVC, PE) Pipe
- IA-46 Tile Drains for Land Drainage
- IA-61 Loose Rock Riprap
- IA-95 Geotextile

Material List

- 10,448 cubic yards - excavation (includes 1282 cu.yds. core trench & 866 cu.yds. stripping)
- 6296 cubic yards - earthfills; dikes, spoil piles
- 100 feet - 15" dual-wall HDPE non-perforated corrugated pipe with rodent guard
- 20 feet - 12" dual-wall HDPE non-perforated corrugated pipe with rodent guard
- 280 feet - 12" perforated HDPE corrugated tubing
- 170 feet - 10" perforated HDPE corrugated tubing
- 20 feet - 10" galvanized CMP pipe with rodent guard
- 580 feet - 8" perforated HDPE corrugated tubing
- 20 feet - 6" galvanized CMP pipe with rodent guard
- 542 feet - 4" perforated HDPE corrugated tubing
- 280 feet - 4" non-perforated HDPE corrugated tubing
- 194 feet - 12" PVC schedule 40 pipe (plus 2 rodent guards & 2 trash guards)
- 2 number -12"; 45 degree elbows PVC, schedule 40
- 2 number -12"; 90 degree elbows PVC, schedule 40
- 23 tons - rock riprap 8" erosion stone (rock checks)
- 5480 square feet - Tied Concrete Block Mats (5 -12'x50'; 3 -12'x30'; 2 -10'x50'; 1 -8'x50')
- 360 feet length - 4 ft.-wide underlayment, use Recyclex or equivalent NRCS approved
- 198 number - 18" U anchors #3 rebar

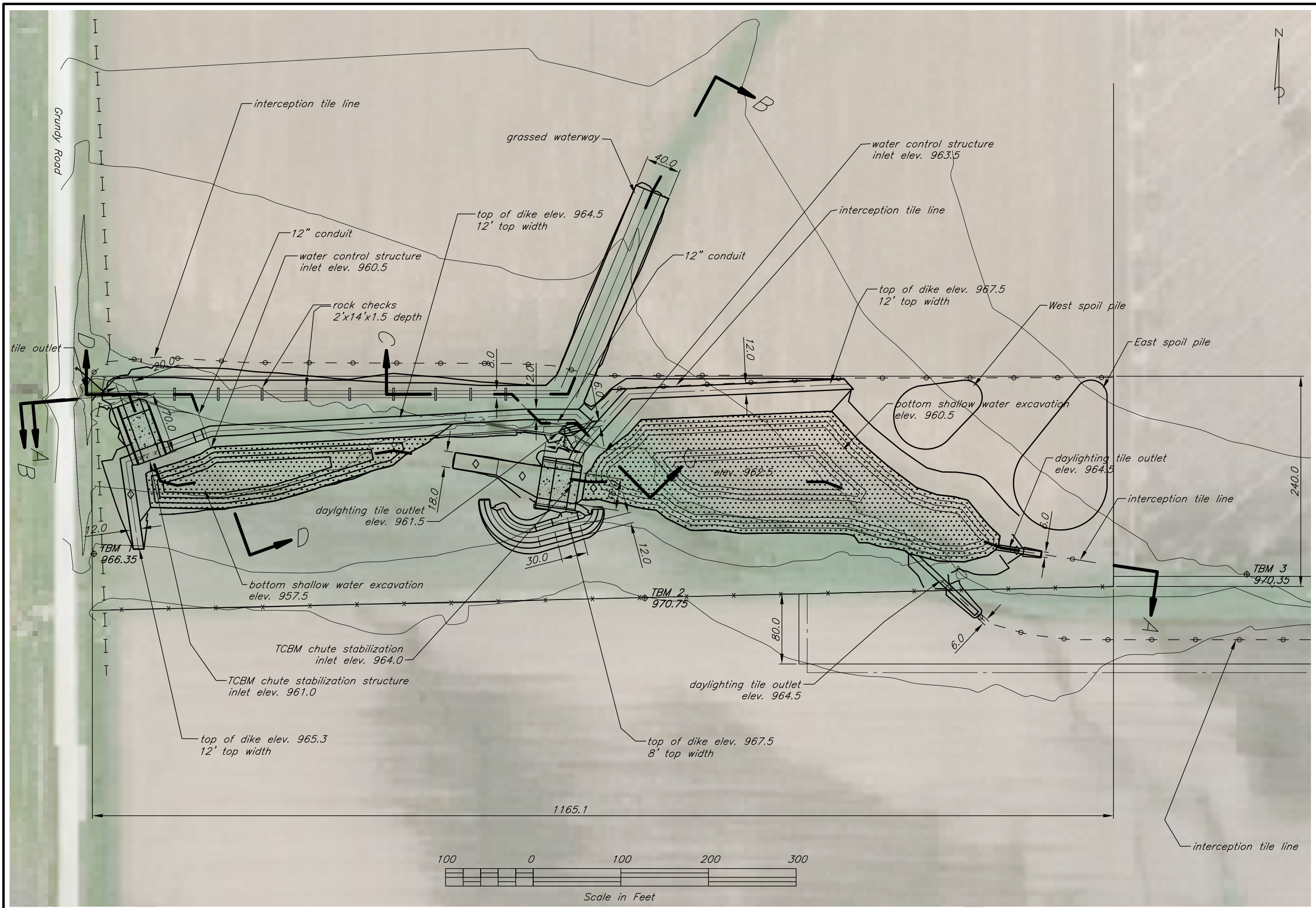
If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Date 7/2022
Designed Jeff A. Lutz
Drawn Jeff A. Lutz
Checked GS
Approved [Signature] 8/10/22

Schildroth Bros. t8799
Shallow Water Wetland for Tile Day-lighting Outlet Treatment
PLAN VIEW & LOCATION MAP



File No. Schildroth Bros. t8799
shallow water wetland BLACK HAWK.dwg



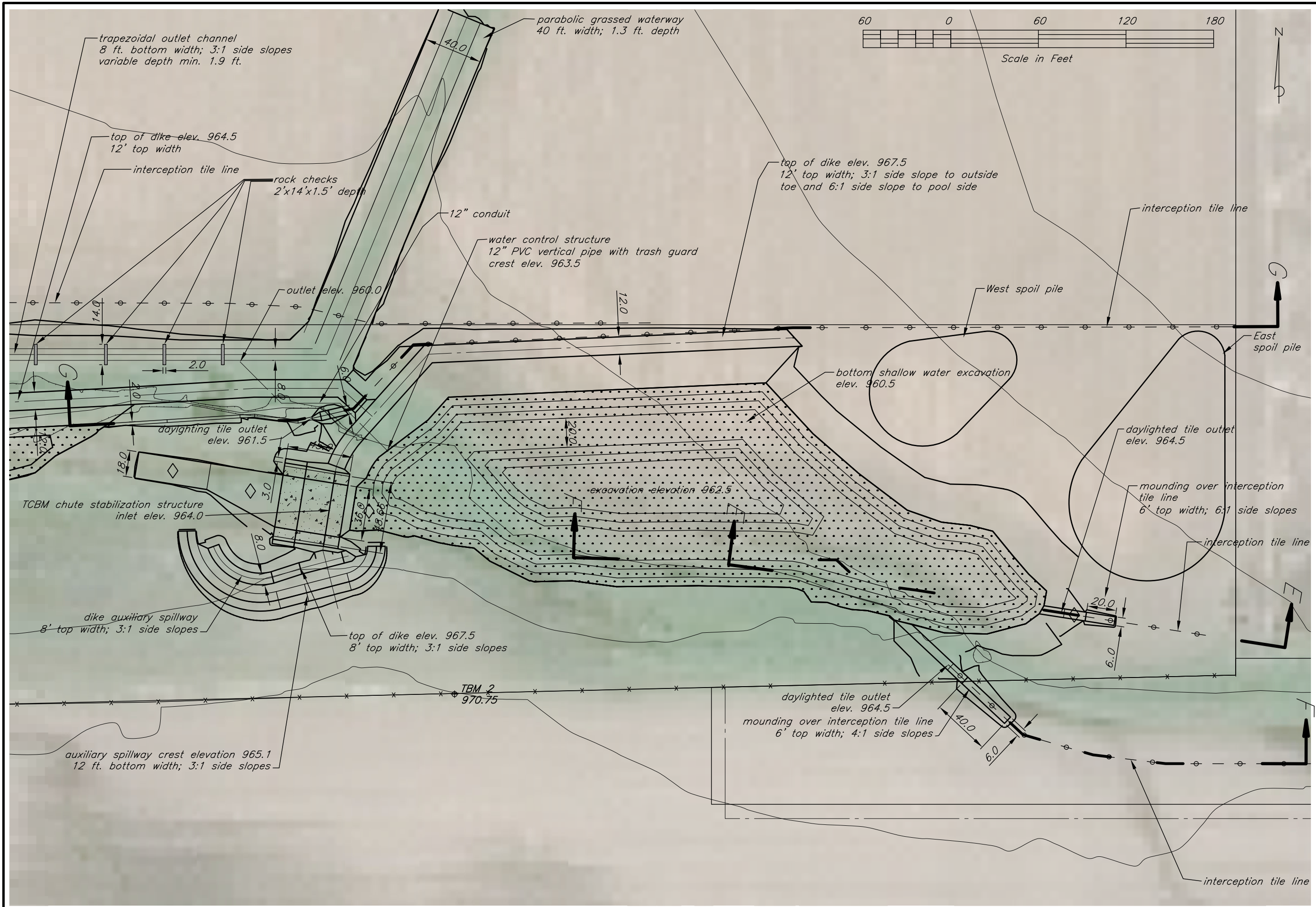
Date	7/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 SITE PLAN
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

United States Department of Agriculture
USDA
 Natural Resources Conservation Service

File No. Schildroth Bros. t8799 shallow water wetland BACK HAWK.dwg

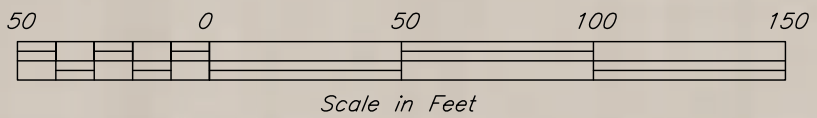
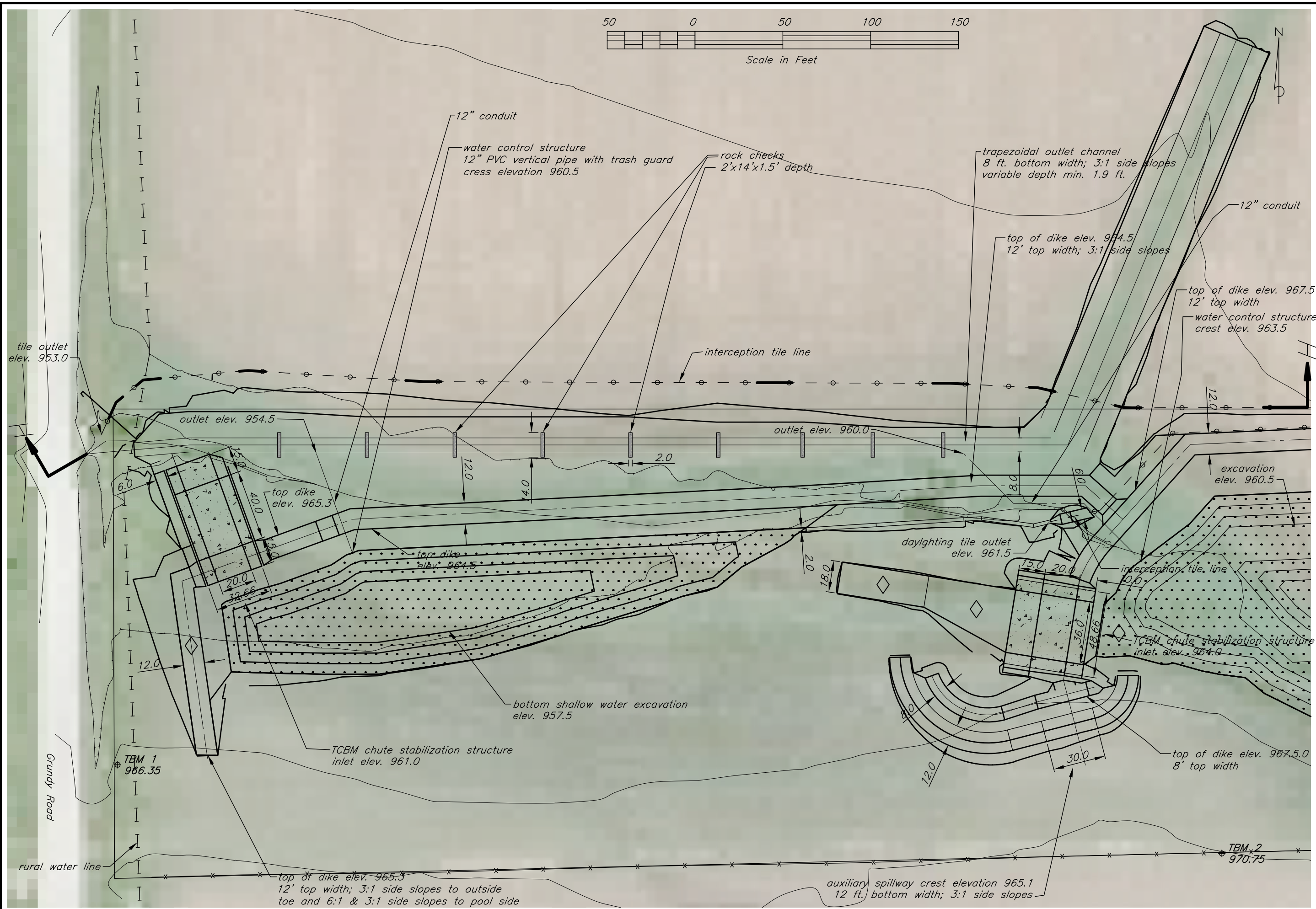
Sheet 2 of .



Date 7/2022
 Designed Jeff A. Lutz
 Drawn Jeff A. Lutz
 Checked
 Approved

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 DETAILED PLAN VIEW EAST SHALLOW WATER EXCAVATION
 S1 SW1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA

United States Department of Agriculture
 Natural Resources Conservation Service
 File No. Schildroth Bros. t8799 shallow water wetland BLACK HAWK.dwg
 Sheet 3 of .

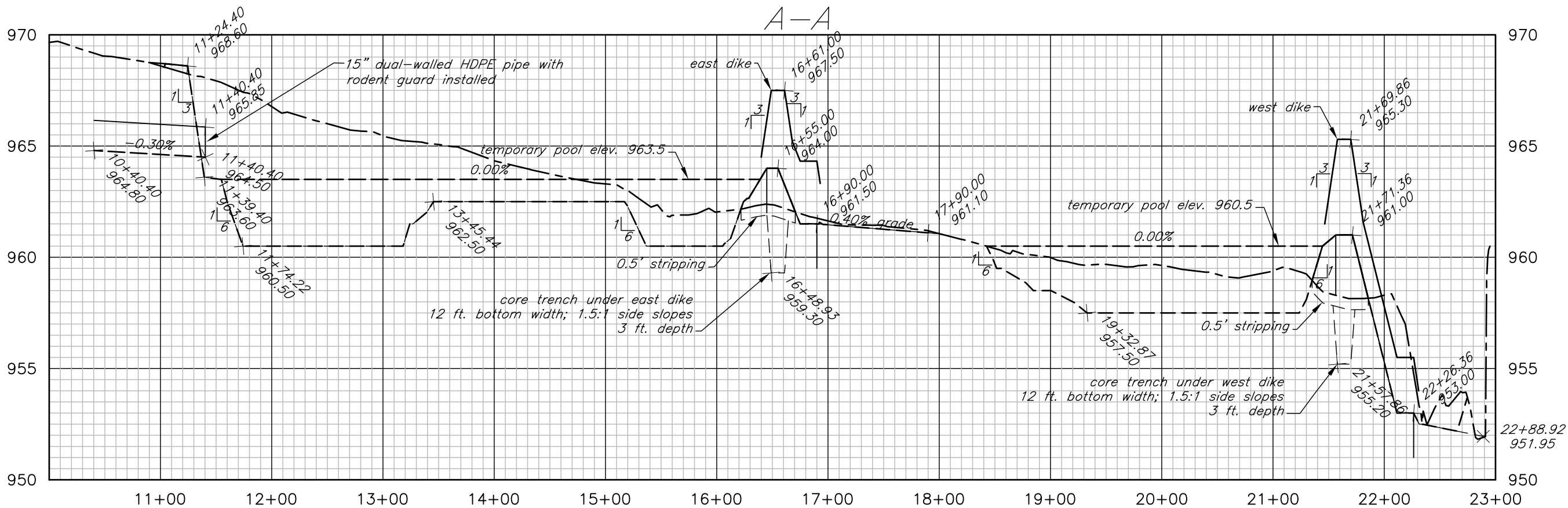


Date	7/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 DETAILED PLAN VIEW WEST SHALLOW WATER EXCAVATION
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

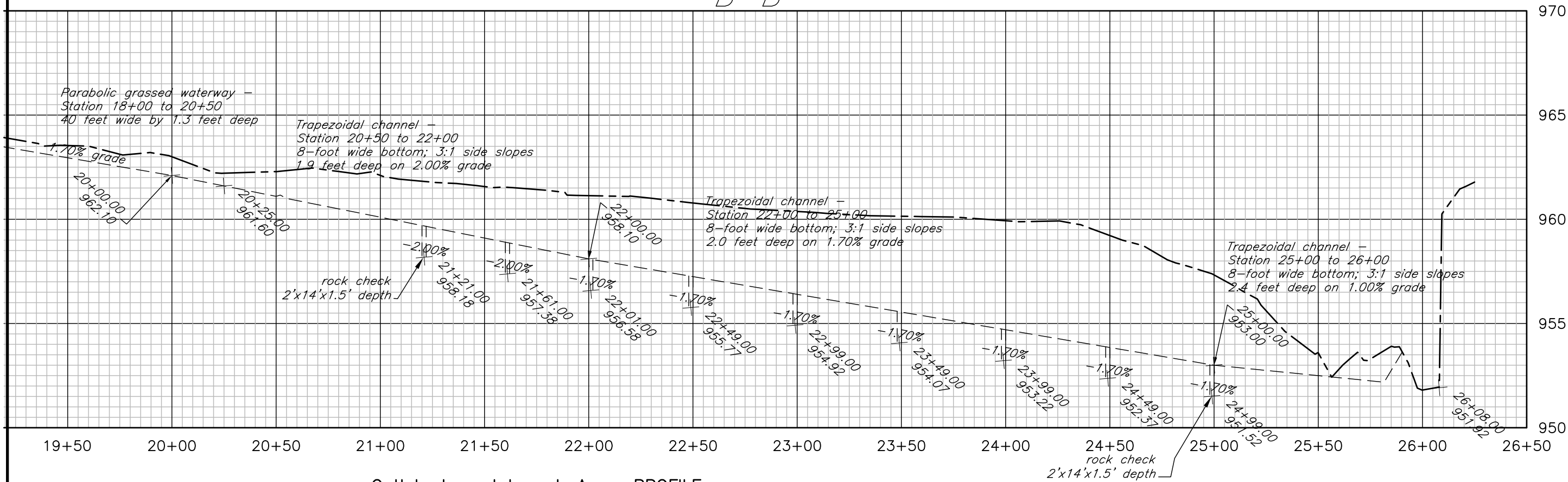


File No.
 Schildroth Bros. t8799
 shallow water wetland
 BACK HAWK.dwg



Day lighted tile East swe West swe 2 PROFILE

B-B



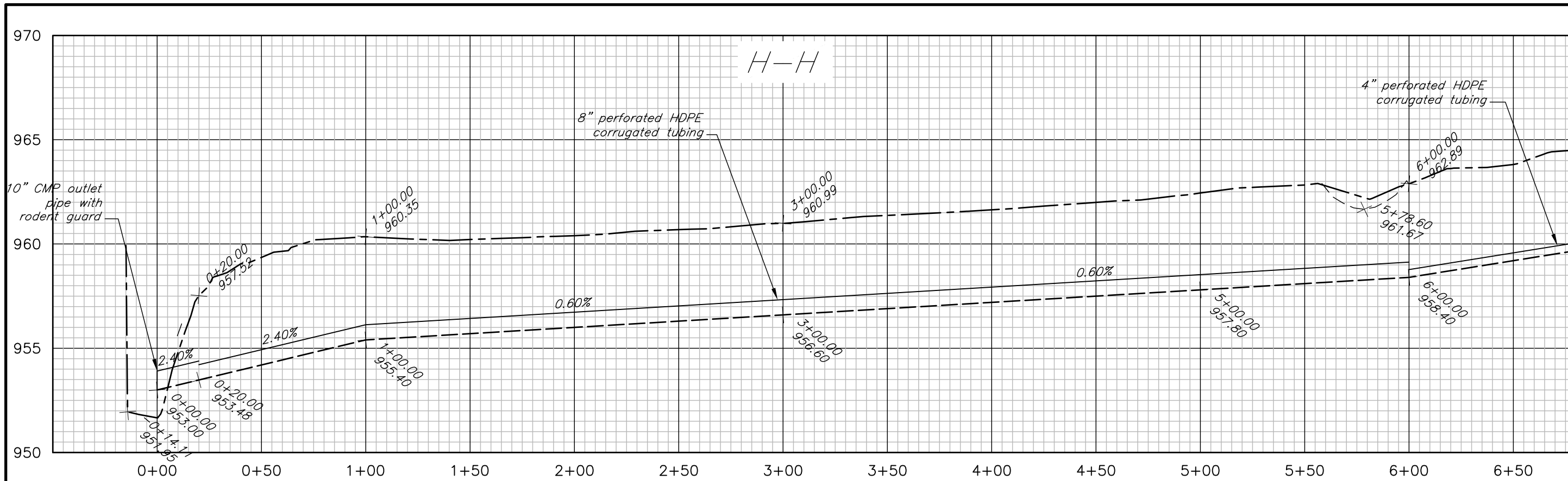
Outlet channel branch A ww PROFILE

Date	7/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

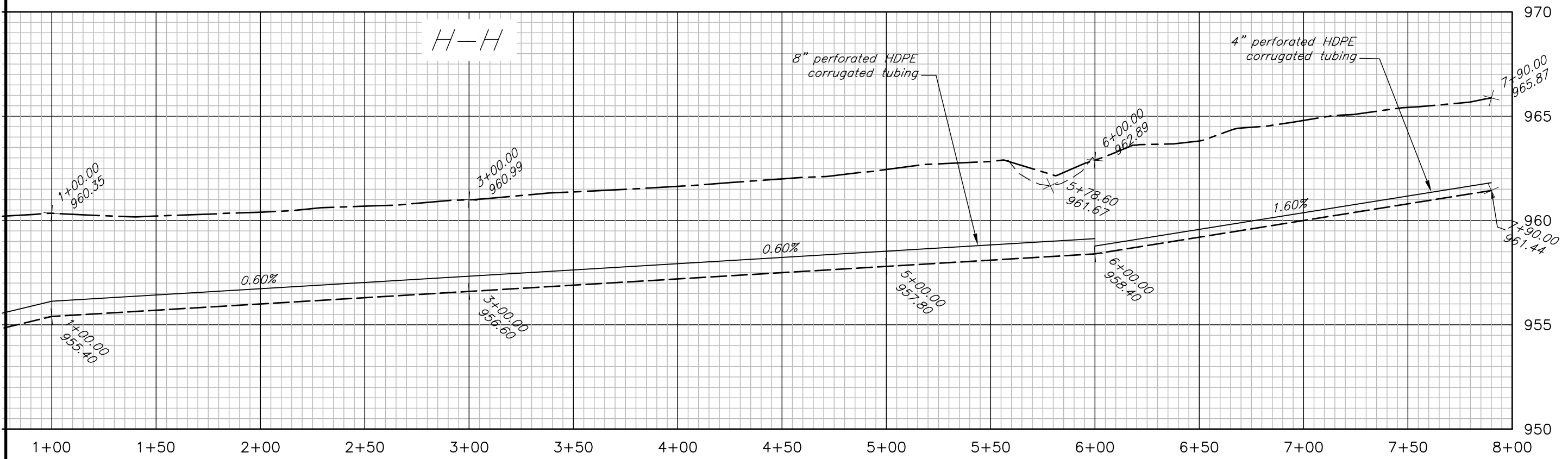
Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 PROFILE Daylighted Tile thru Outlet Structure
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA



File No. Schildroth Bros. t8799
 shallow water wetland
 HAWK.dwg



North interception tile line 1 PROFILE



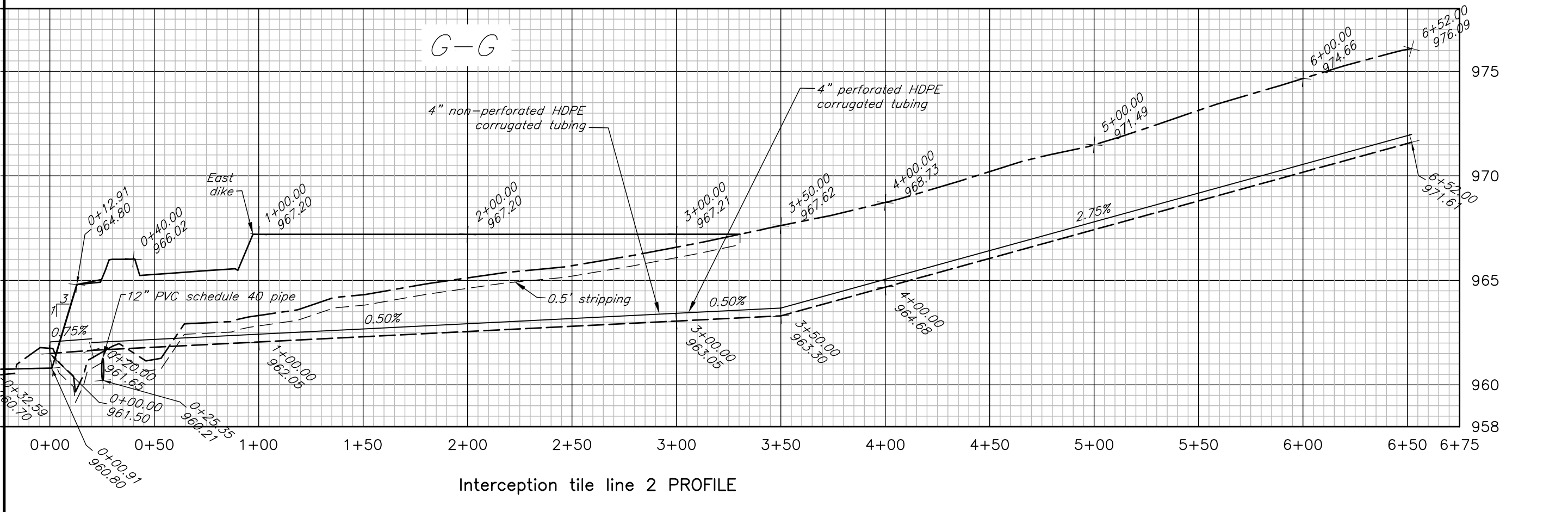
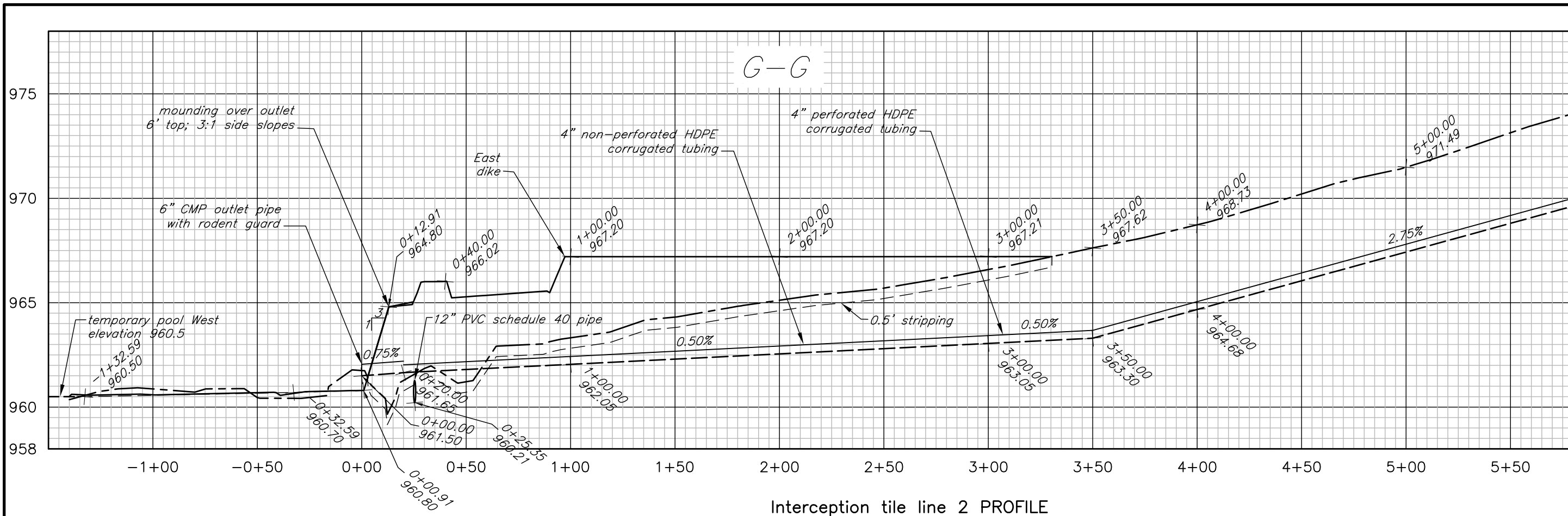
North interception tile line 1 PROFILE

Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 PROFILE North Interception Tile Line 1
 S¹/₄ SW¹/₄ NW¹/₄ sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA



File No.
 Schildroth Bros. t8799
 shallow water
 wetland BACK
 HAWK.dwg



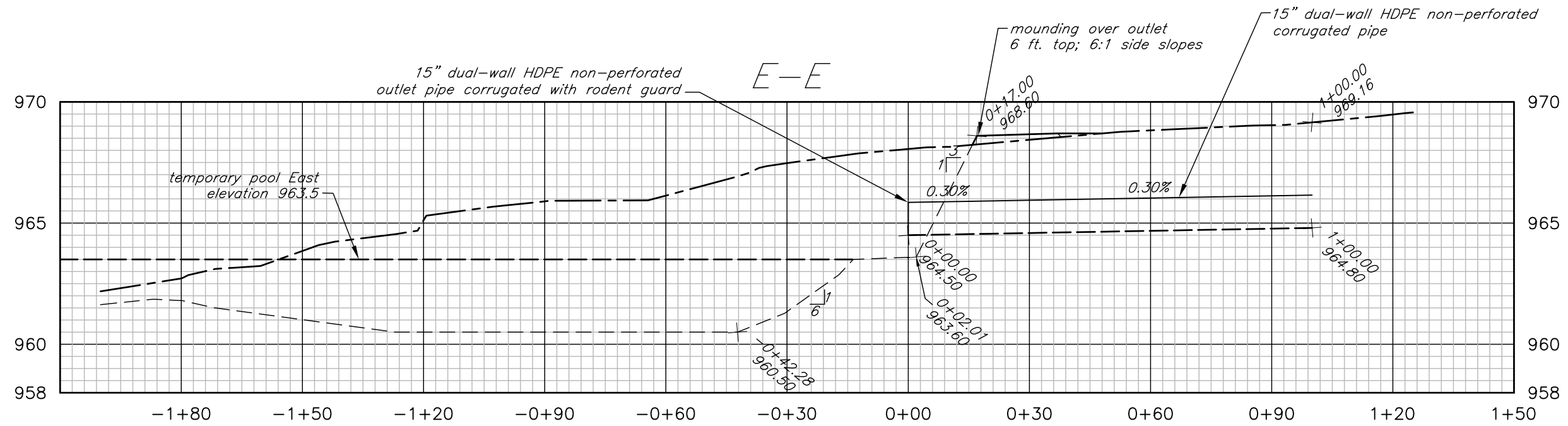
Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 PROFILE Interception Tile Line 2
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

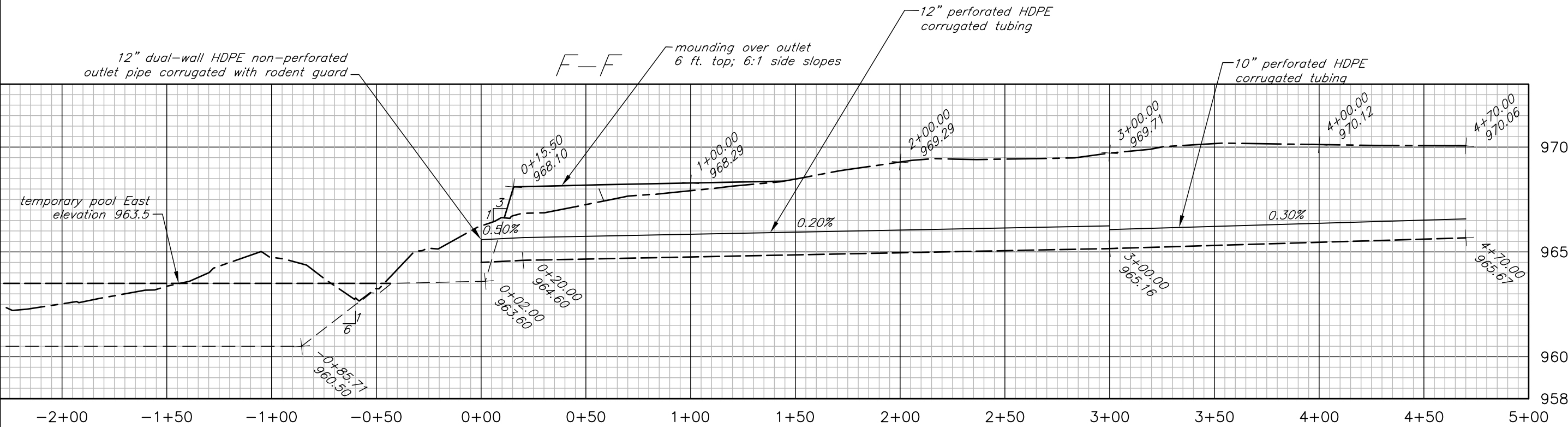
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USDA
 Natural Resources Conservation Service

File No. Schildroth Bros. t8799
 shallow water wetland
 HAWK.dwg

Sheet 8 of .



MAIN interception tile line 3 PROFILE



South interception tile line 4 PROFILE

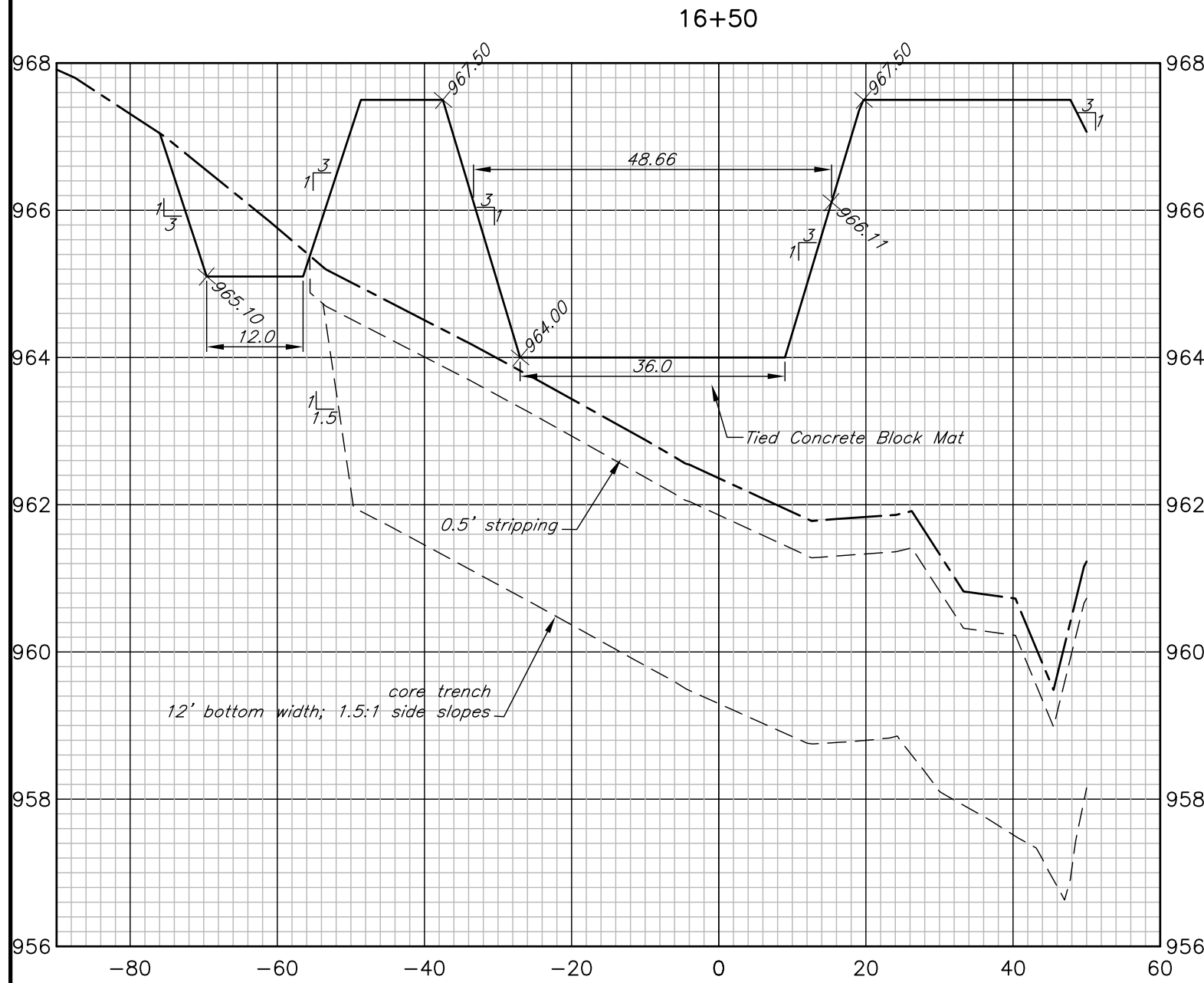
Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 PROFILES MAIN and SOUTH INTERCEPTION TILE LINES 3 & 4
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

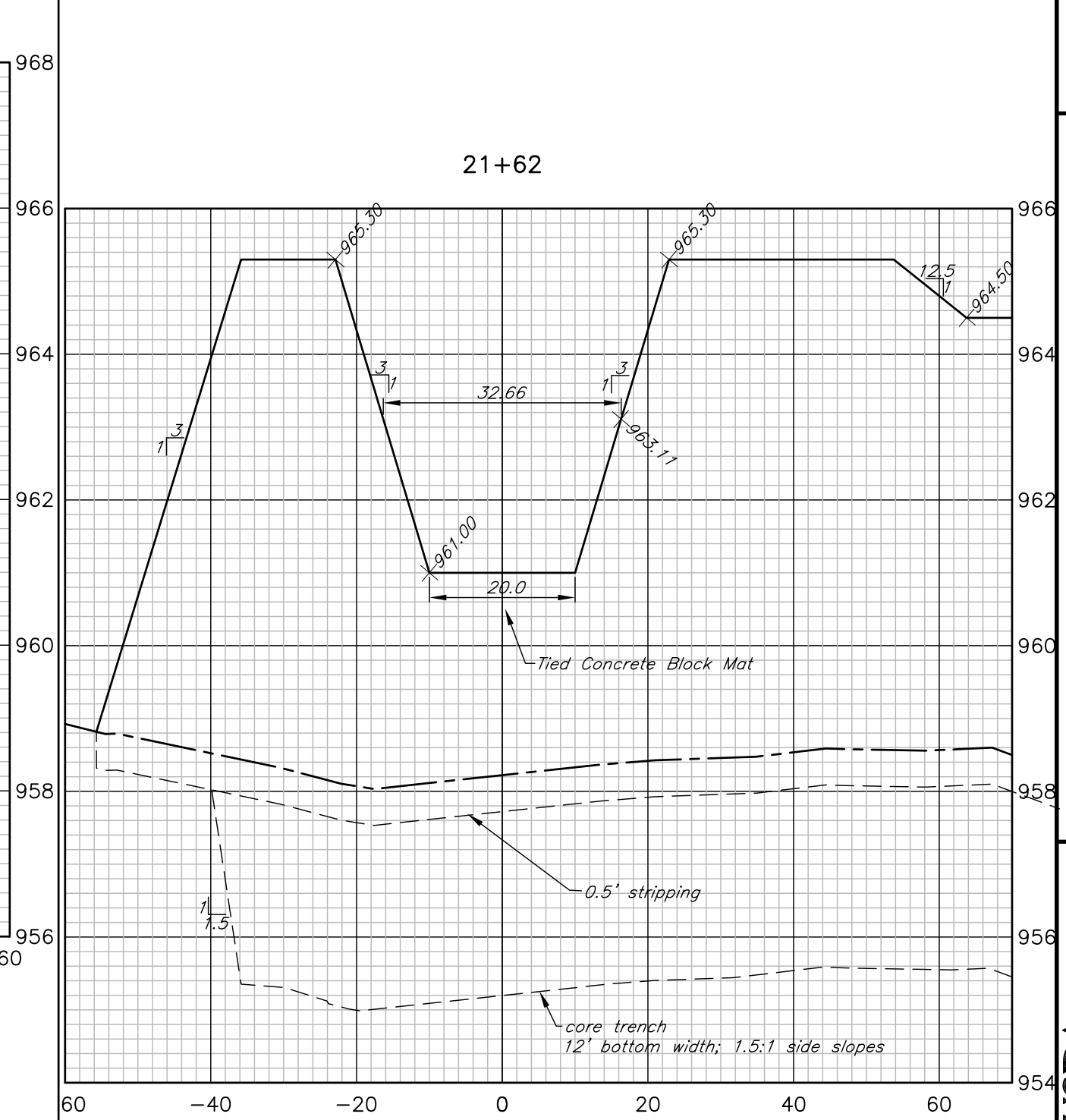


File No.
 Schildroth Bros. t8799
 shallow water wetland
 HAWK.dwg

Section thru inlet Tied Concrete Block Mat chute East site



Section thru inlet Tied Concrete Block Mat chute West site

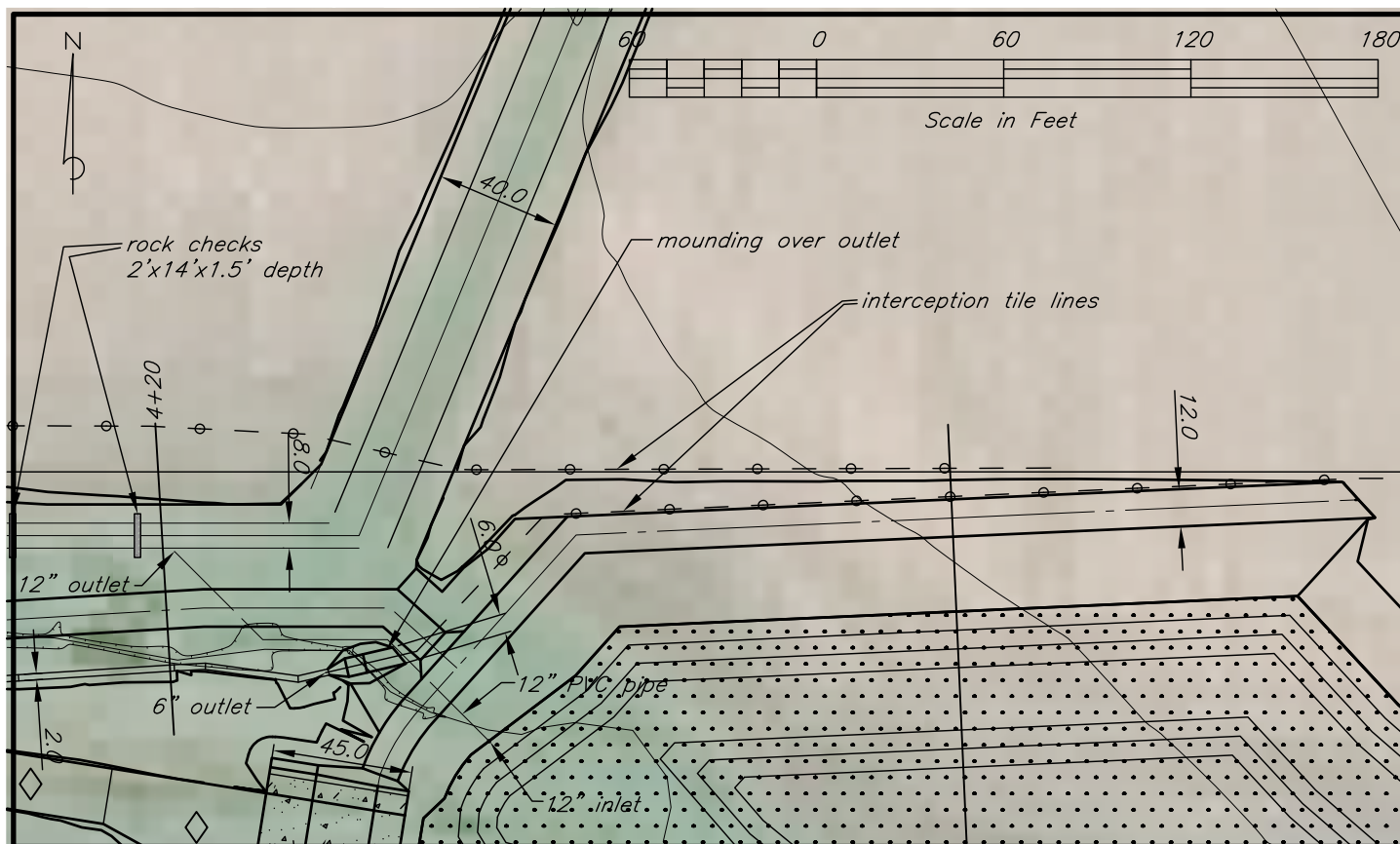


Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

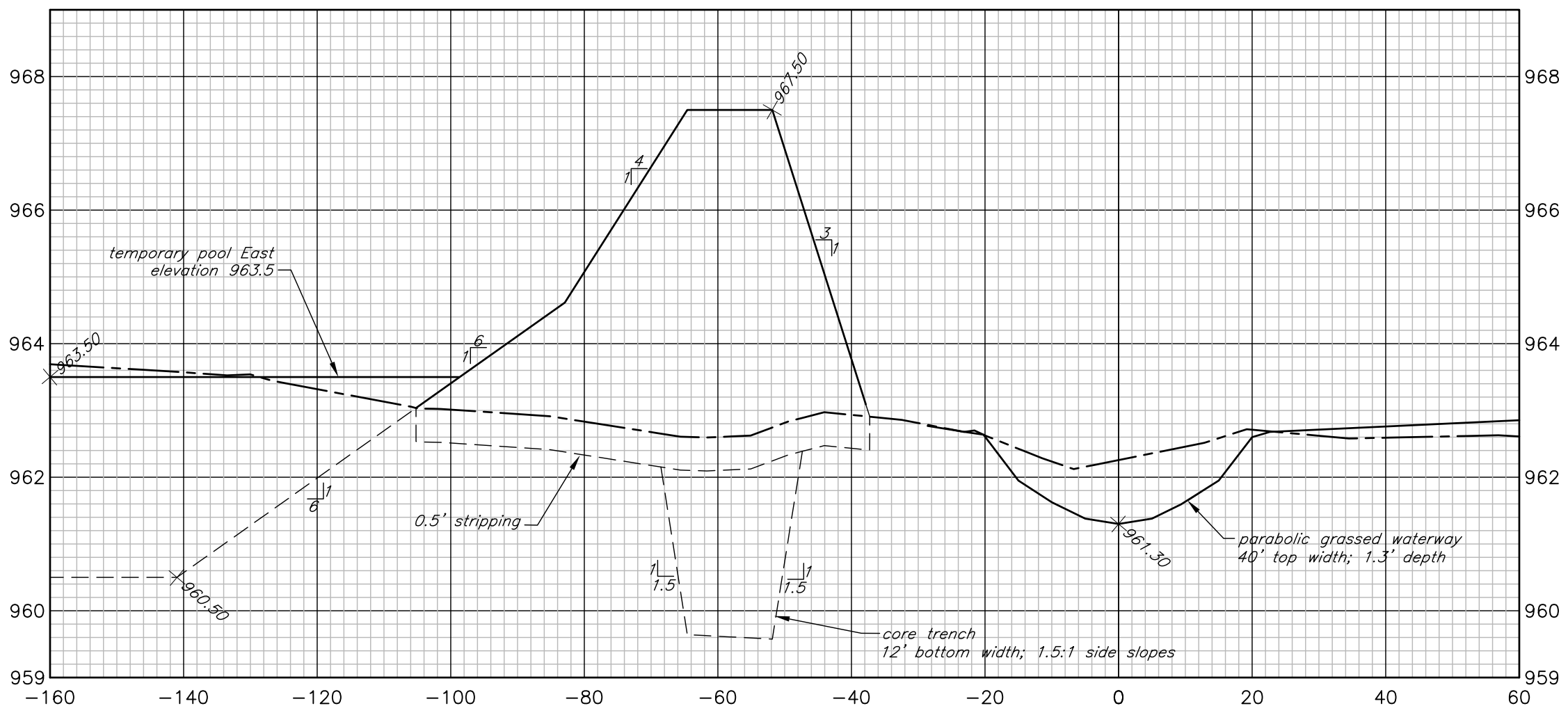
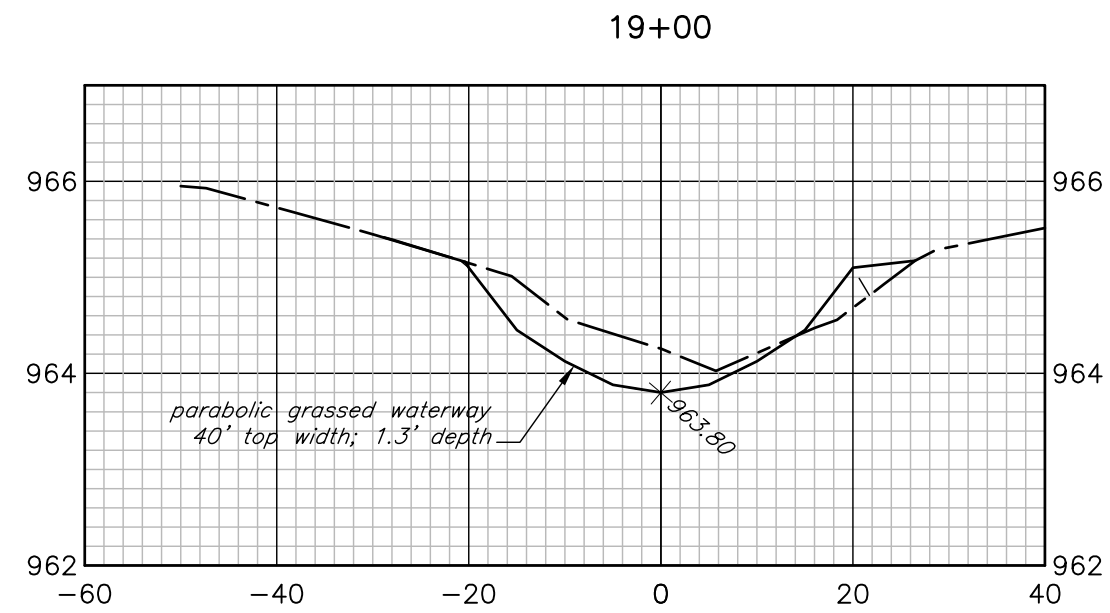
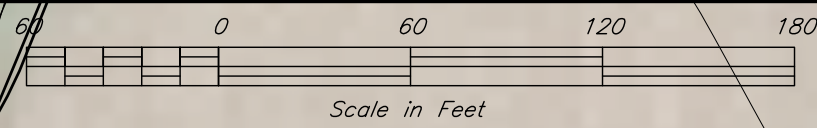
Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 CROSS SECTIONS
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA



File No.
 Schildroth
 Bros. t8799
 shallow water
 wetland
 HAWK.dwg



TIED CONCRETE
BLOCK MAT chute

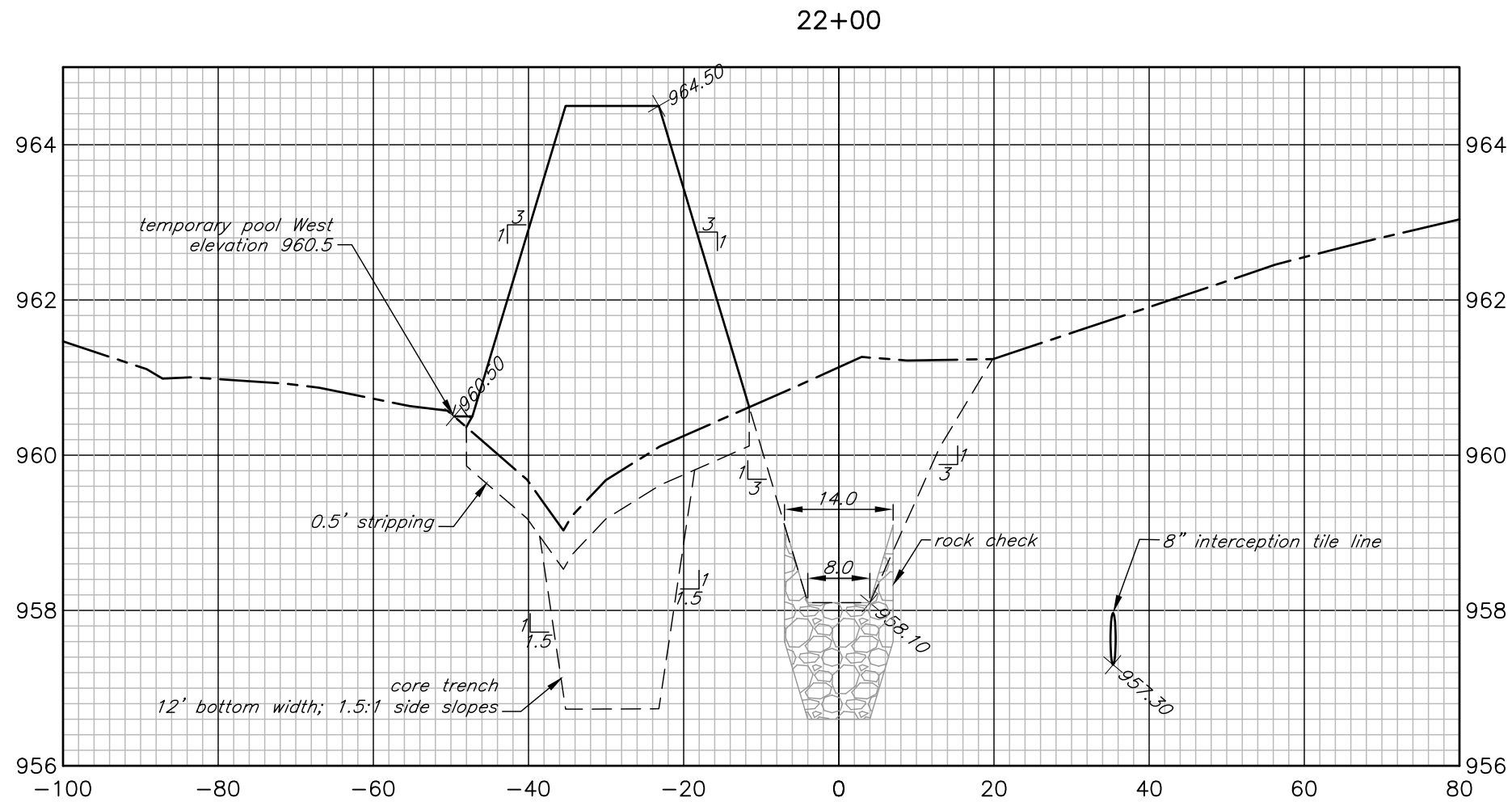
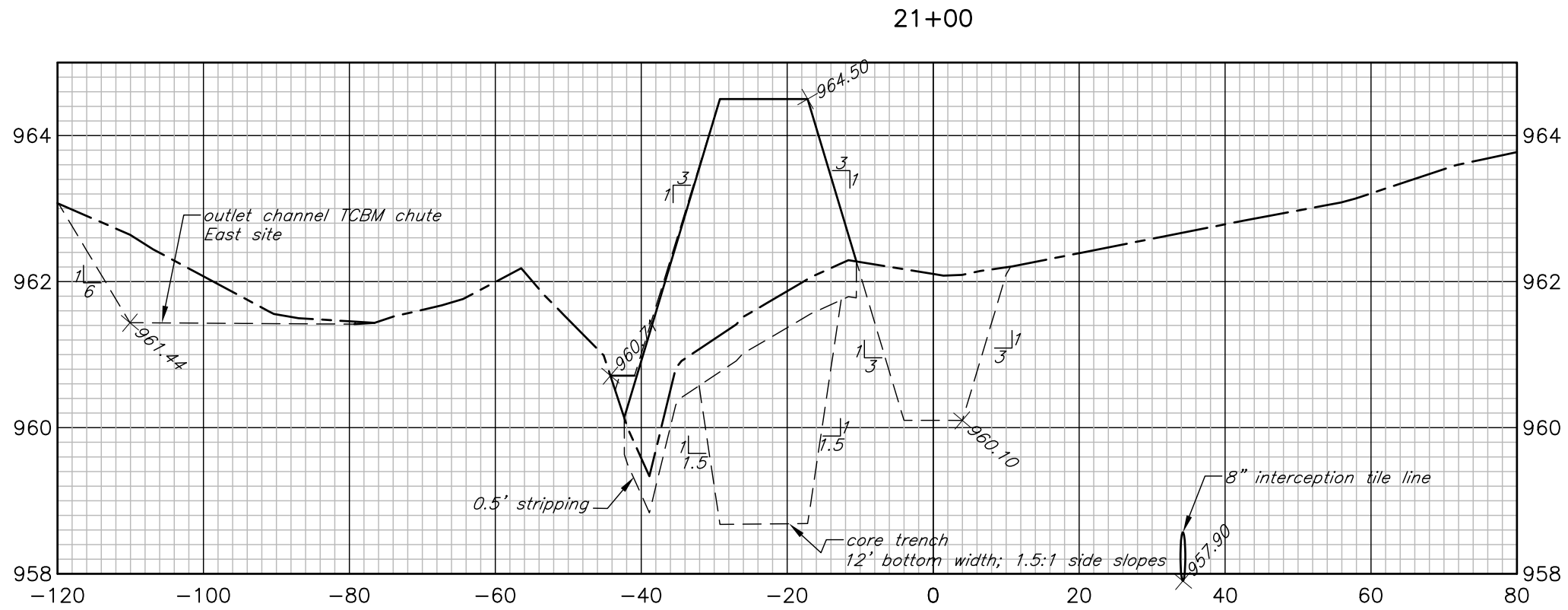


Date	7/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 CROSS SECTIONS
 S1/4 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

United States Department of Agriculture
USDA
 Natural Resources Conservation Service

File No.
 Schildroth Bros. t8799
 shallow water wetland BACK HAWK.dwg



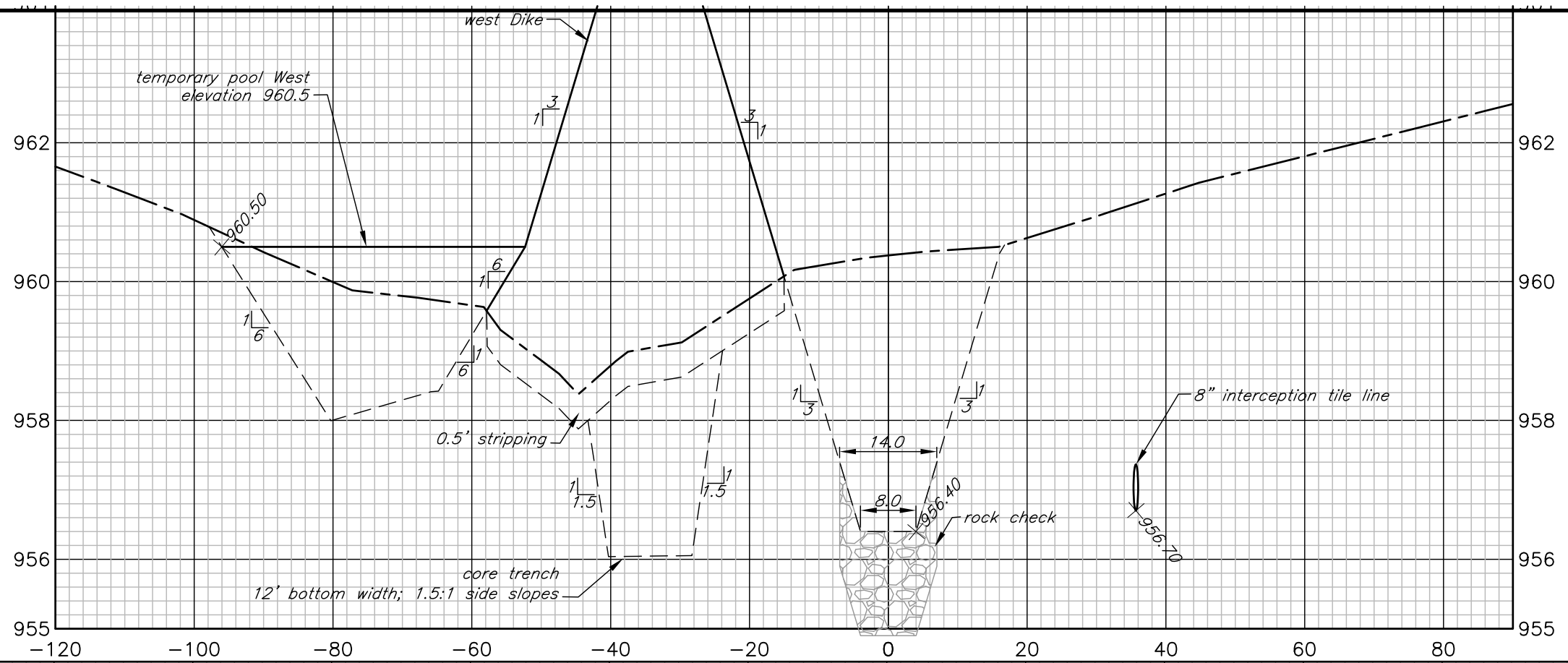
Date: 7/2022
 Designed: Jeff A. Lutz
 Drawn: Jeff A. Lutz
 Checked: _____
 Approved: _____

Schidroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 CROSS SECTIONS
 S¹/₄ SW¹/₄ NW¹/₄ sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

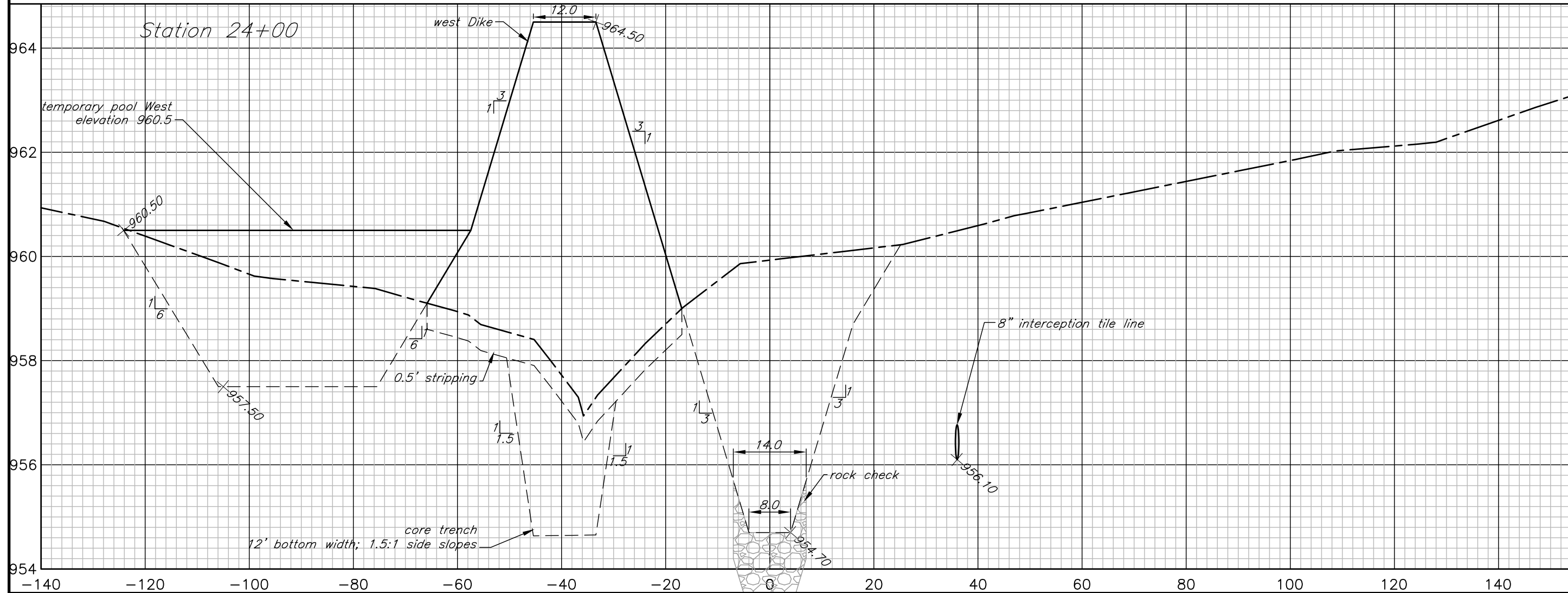


File No. Schildroth Bros. t8799
 shallow water wetland BACK HAWK.dwg

Station 23+00



Station 24+00

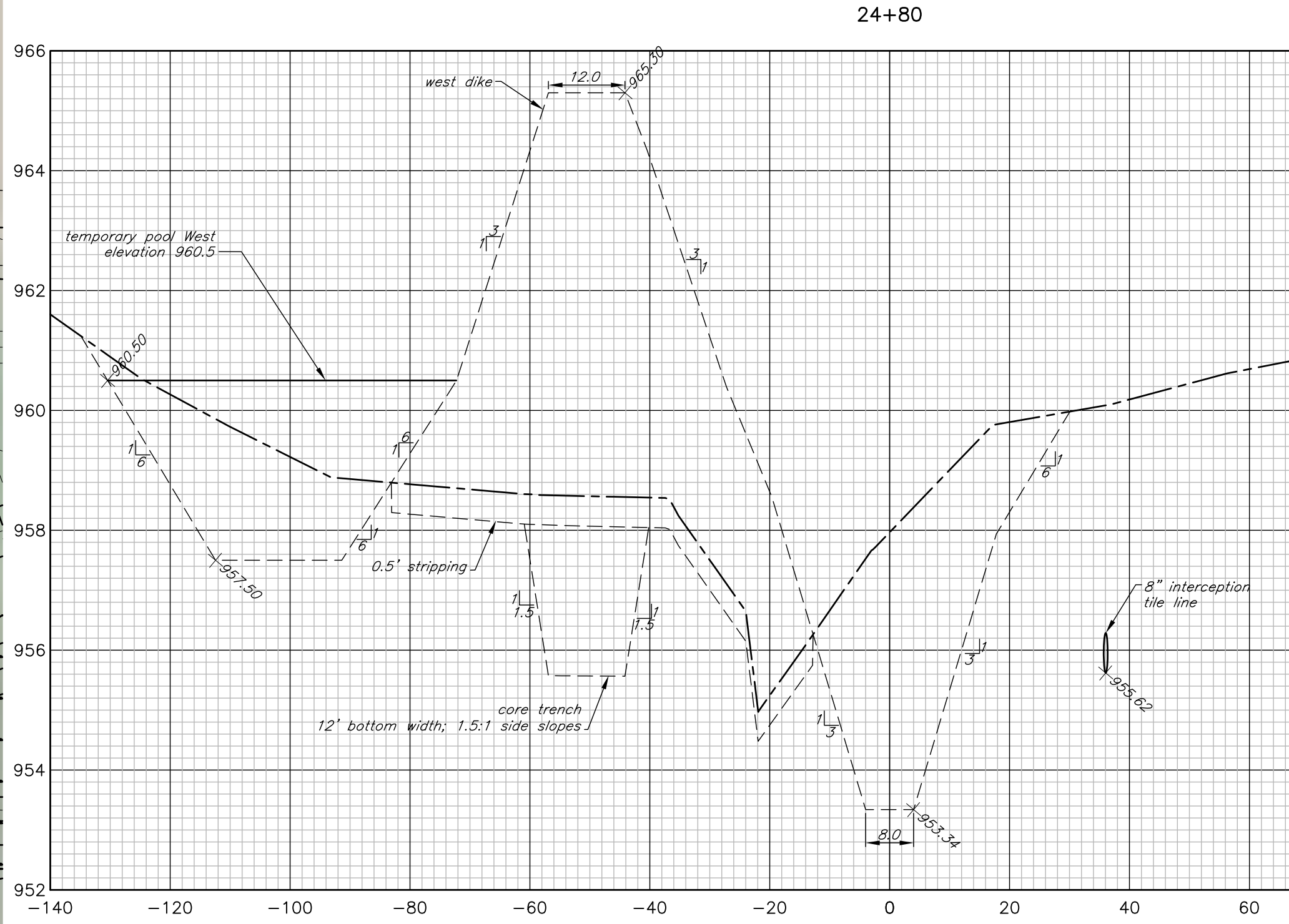


Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 CROSS SECTIONS
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA



File No.
 Schildroth
 Bros. t8799
 shallow water
 wetland
 HAWK.dwg



Designed	Jeff A. Lutz	Date	7/2022
Drawn	Jeff A. Lutz	Checked	
Approved			

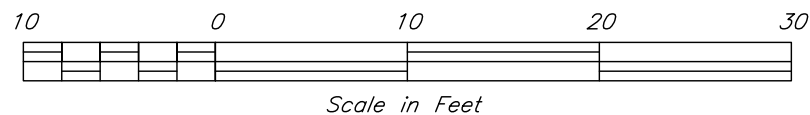
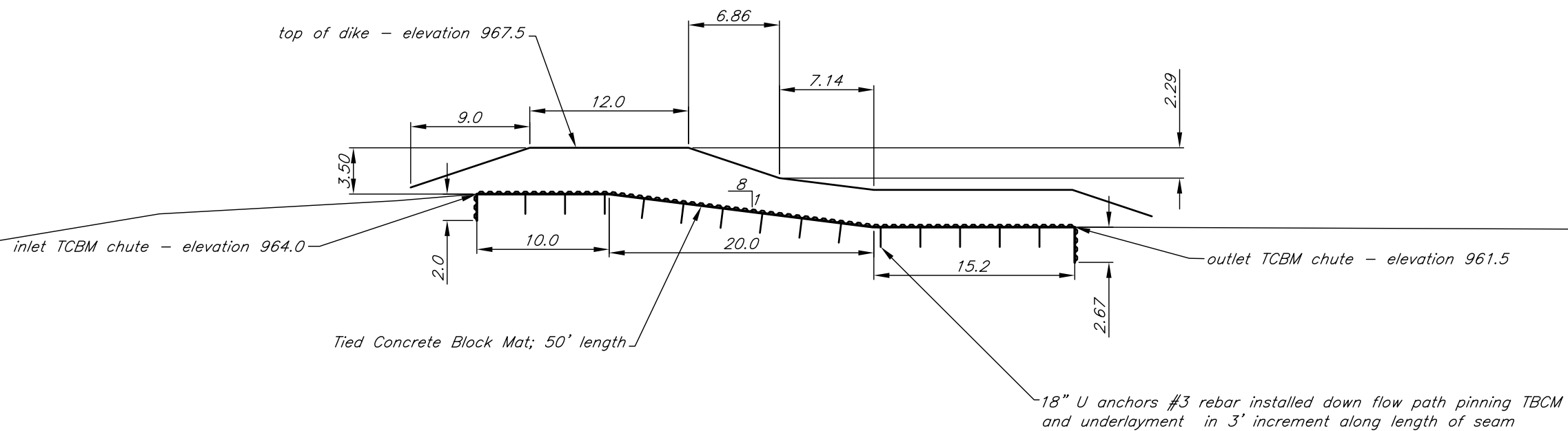
Schildroth Bros. t8799
Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 CROSS SECTION & PLAN VIEW West site
 S1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

United States Department of Agriculture
USDA
 Natural Resources Conservation Service

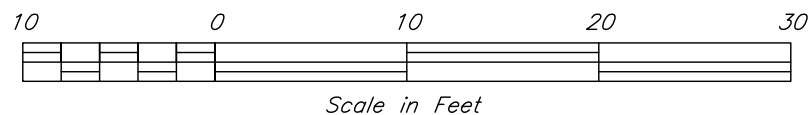
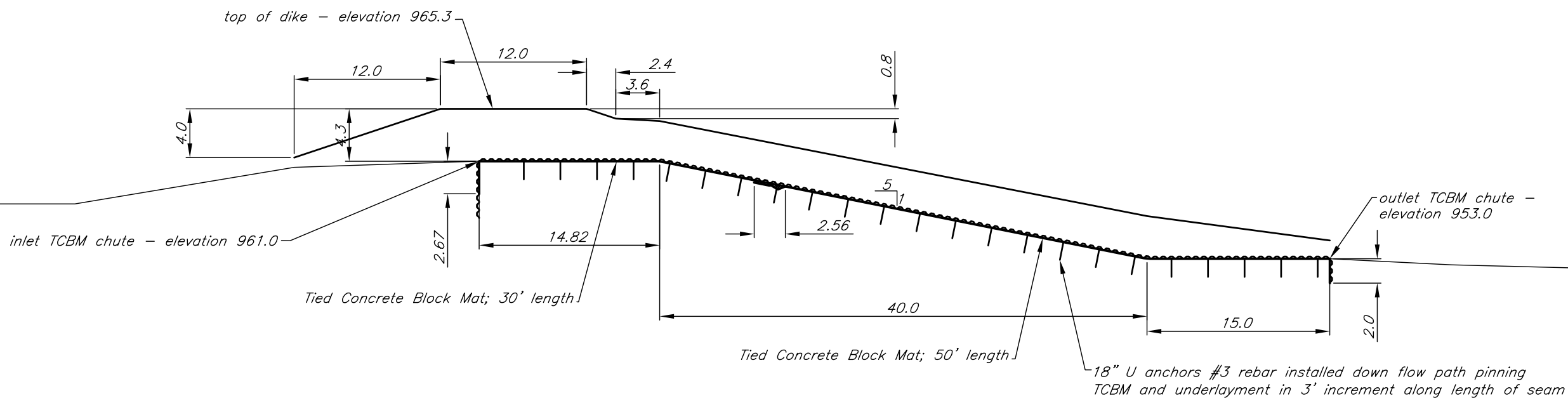
File No. Schildroth Bros. t8799 shallow water wetland BACK HAWK.dwg

Sheet 14 of .

East - Tied Concrete Block Mat chute



West - Tied Concrete Block Mat chute



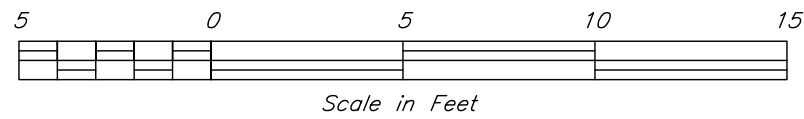
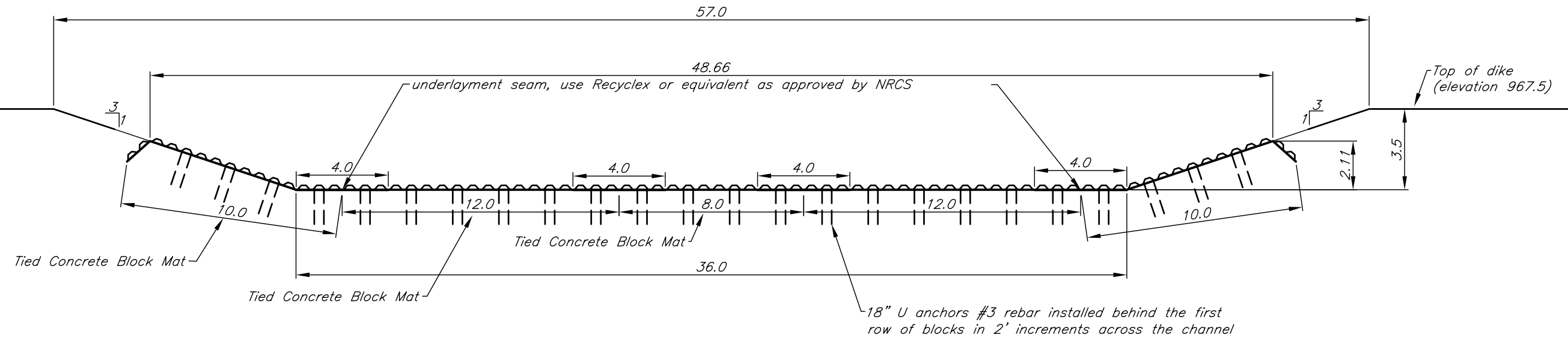
Date	7/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 PROFILES TIED CONCRETE BLOCK MAT Chutes
 S1 SW 1/4 NW 1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA

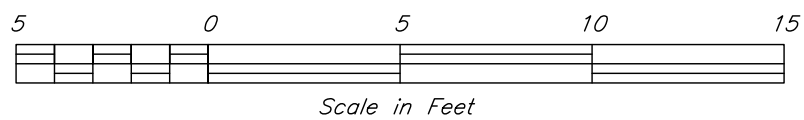
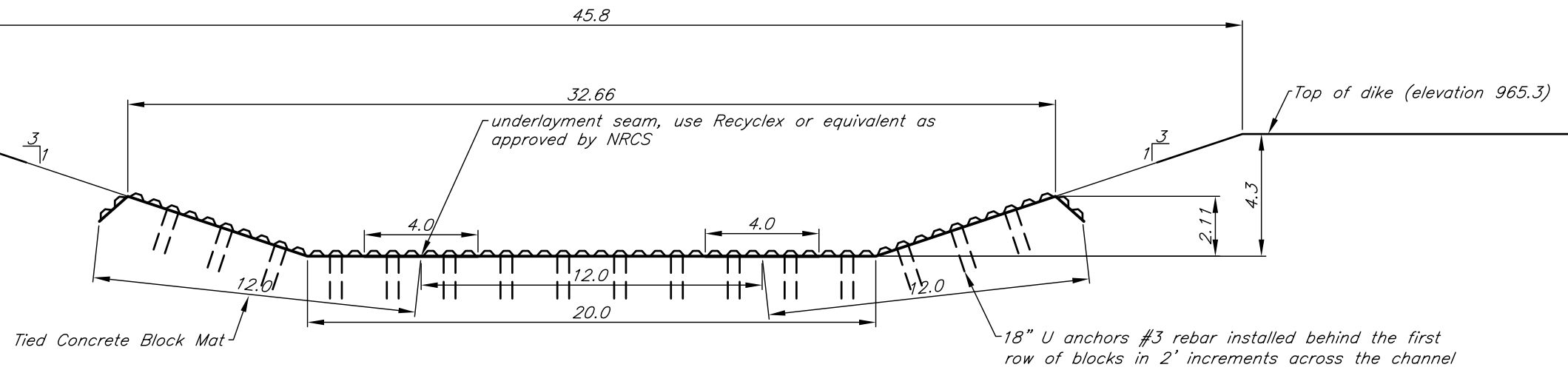


File No.
 Schildroth Bros. t8799
 shallow water
 wetland BACK
 HAWK.dwg

East - Tied Concrete Block Mat chute
Inlet section



West - Tied Concrete Block Mat chute
Inlet section



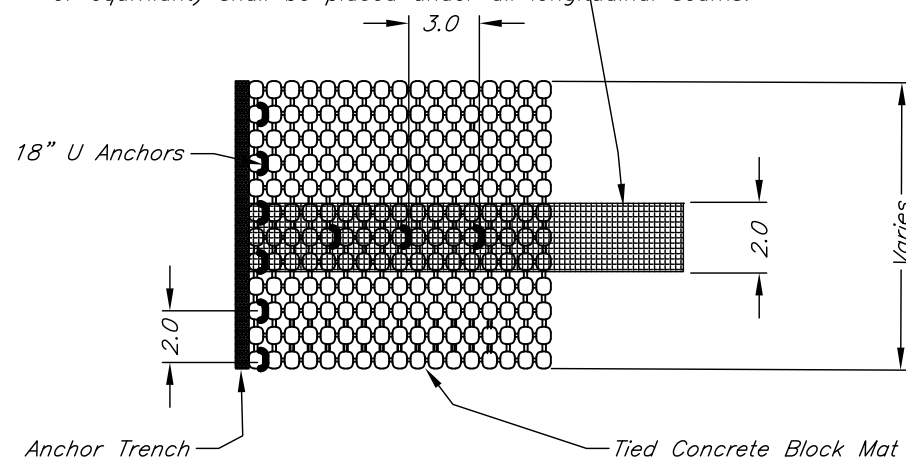
Date	7/2021
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
Shallow Water Wetland for Tile Day-lighting Outlet Treatment
SECTIONS TIED CONCRETE BLOCK MAT CHUTE Inlets
S1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA

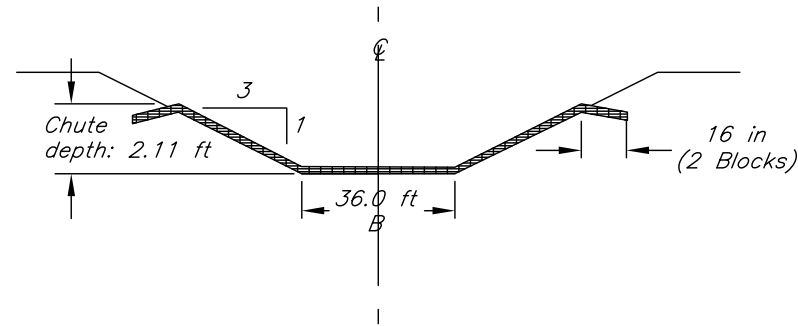


File No.
Schildroth
Bros.t8799
shallow water
wetland BACK
HAWK.dwg

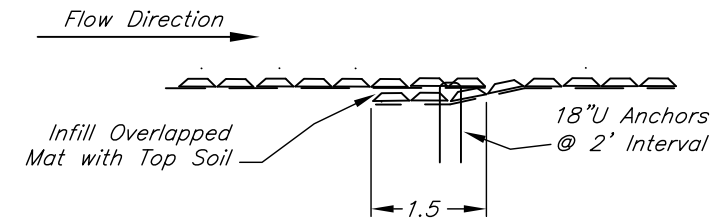
4 ft width of synthetic turf reinforcement mat (recyclax or equivalent) shall be placed under all longitudinal seams.



PLAN VIEW (LONGITUDINAL SEAM)



TYPICAL CROSS SECTION



PROFILE VIEW (PERPENDICULAR OVERLAP)

NOTES:

1. The maximum chute slope in the direction of flow shall be 3:1. The maximum side slopes of the chute shall be 2:1.
2. The outlet section shall be flat (0% grade).
3. Apply seed and fertilizer prior to placing Tied Concrete Block Mat (TCBM), and after TCBM is placed.
4. Longitudinal seams shall be anchored every 3 ft.
5. 4 ft width of synthetic turf reinforcement mat (recyclax or equivalent) shall be placed under all longitudinal seams.
6. Anchor leading and downstream edge of TCBM in a minimum 16" deep (sized for two rows of blocks) trench. Trench should be backfilled with suitable material and compacted.

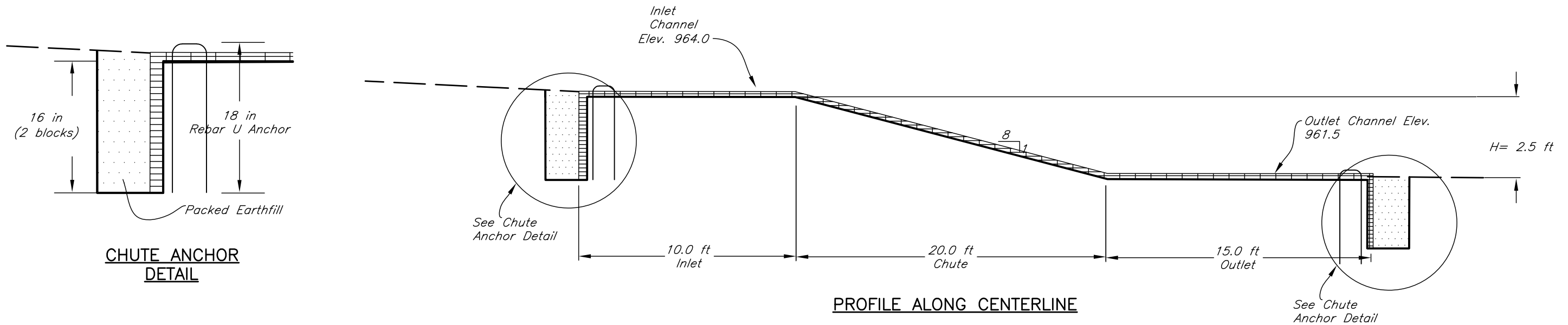
TABLE OF QUANTITIES		
Item	Quantity	Unit
Tied Concrete Block Mat	2600	sq.ft.
Underlayment	400	sq.ft.
Excavation	100	cu.yd.
Earthfill	1846	cu.yd.
Seeding	1.1	acres
Rebar Anchors	104	No.

NOTES Cont.:

7. Recess two outside blocks 16" into subgrade along each edge of structure.
8. On perpendicular lap, and at anchor trenches, 18" U anchors are installed in 2' increments across overlap seam. Install anchor behind first row of blocks so that anchor is tight with subgrade.
9. Downstream rolls of TCBM and underlayment are shingled under upstream roll.

EAST site - SE $\frac{1}{2}$ SW $\frac{1}{2}$ SW $\frac{1}{2}$ NW $\frac{1}{2}$ sec. 19
Lincoln twp. Black Hawk county

NOT TO SCALE



CHUTE ANCHOR DETAIL

PROFILE ALONG CENTERLINE

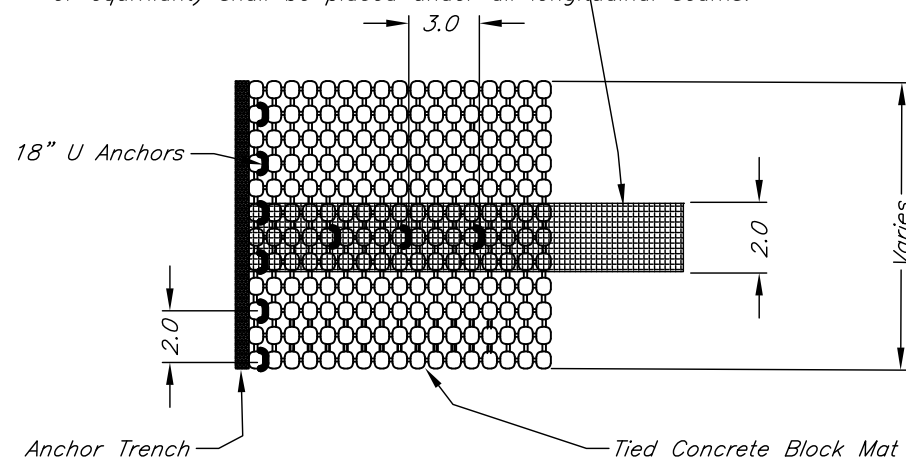
Date 1/2020
Designed N. Klingenberg
Drawn N. Klingenberg
Checked
Approved

TIED CONCRETE BLOCK MAT CHUTE DETAILS
Schildroth Bros. t8799 wetlands structure

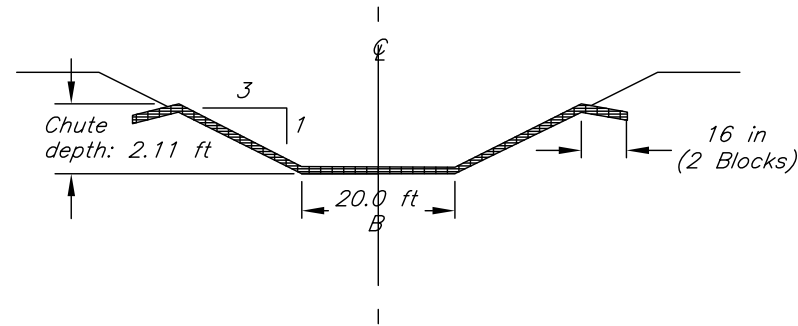
United States Department of Agriculture
USDA
Natural Resources Conservation Service

File No.
Drawing No.

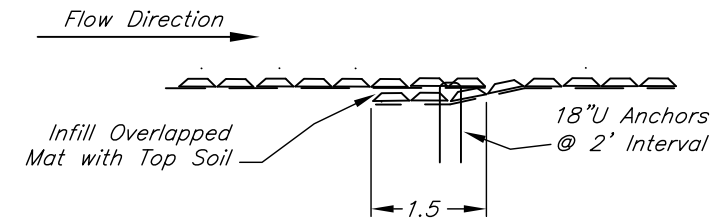
4 ft width of synthetic turf reinforcement mat (recyclax or equivalent) shall be placed under all longitudinal seams.



PLAN VIEW (LONGITUDINAL SEAM)



TYPICAL CROSS SECTION



PROFILE VIEW (PERPENDICULAR OVERLAP)

NOTES:

1. The maximum chute slope in the direction of flow shall be 3:1. The maximum side slopes of the chute shall be 2:1.
2. The outlet section shall be flat (0% grade).
3. Apply seed and fertilizer prior to placing Tied Concrete Block Mat (TCBM), and after TCBM is placed.
4. Longitudinal seams shall be anchored every 3 ft.
5. 4 ft width of synthetic turf reinforcement mat (recyclax or equivalent) shall be placed under all longitudinal seams.
6. Anchor leading and downstream edge of TCBM in a minimum 16" deep (sized for two rows of blocks) trench. Trench should be backfilled with suitable material and compacted.

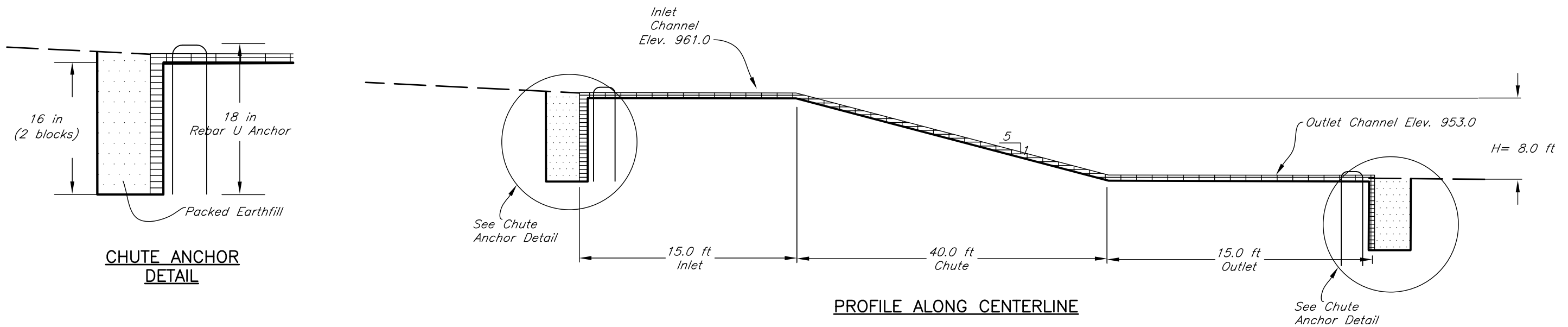
TABLE OF QUANTITIES		
Item	Quantity	Unit
Tied Concrete Block Mat	2880	sq.ft.
Underlayment	320	sq.ft.
Excavation	120	cu.yd.
Earthfill	2918	cu.yd.
Seeding	1.2	acres
Rebar Anchors	94	No.

NOTES Cont.:

7. Recess two outside blocks 16" into subgrade along each edge of structure.
8. On perpendicular lap, and at anchor trenches, 18" U anchors are installed in 2' increments across overlap seam. Install anchor behind first row of blocks so that anchor is tight with subgrade.
9. Downstream rolls of TCBM and underlayment are shingled under upstream roll.

WEST site - SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19
Lincoln twp. Black Hawk county

NOT TO SCALE

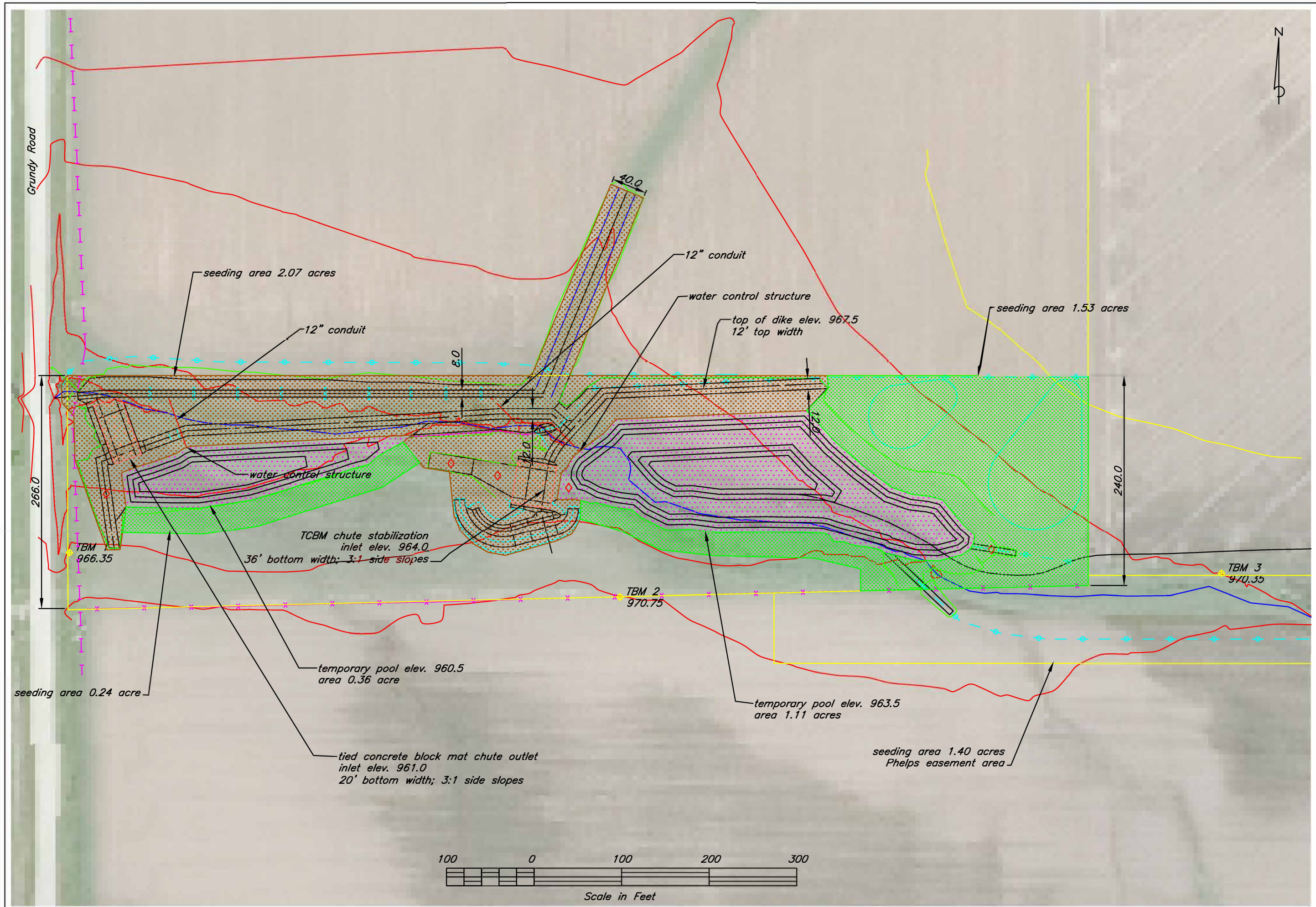


Date 1/2020
Designed N. Klingenberg
Drawn N. Klingenberg
Checked
Approved

TIED CONCRETE BLOCK MAT
CHUTE DETAILS
Schildroth Bros. t8799 wetlands structure

United States Department of Agriculture
USDA
Natural Resources Conservation Service

File No.
Drawing No.
Sheet 18 of 25



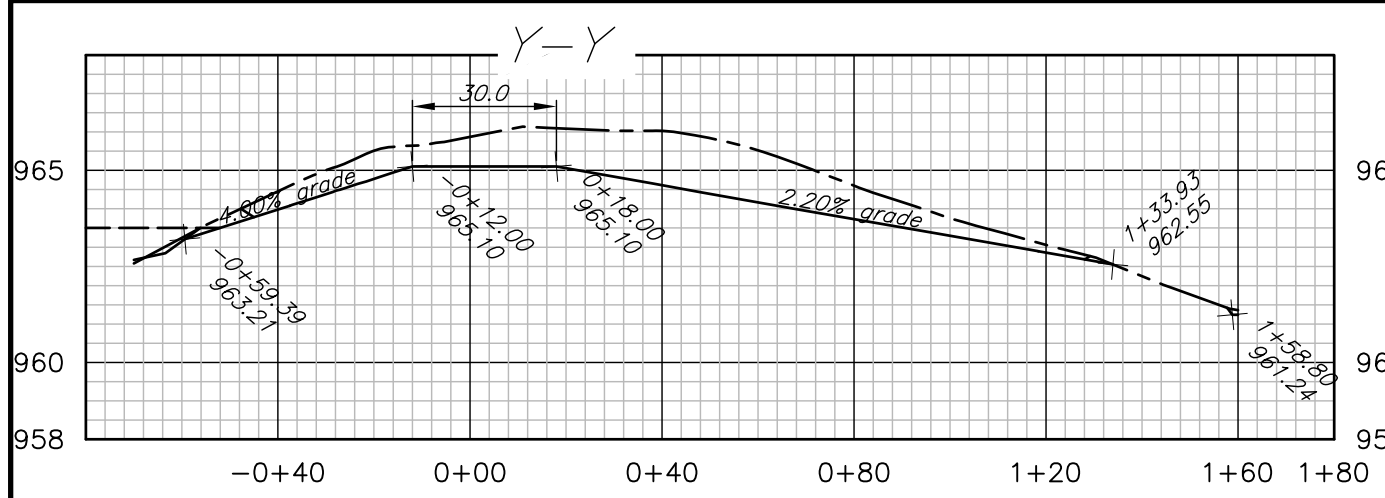
Designed	Jeff A. Lutz	Date	7/2022
Drawn	Jeff A. Lutz	Checked	
Approved			

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 Plan View seeding areas
 S1/4 SW1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA

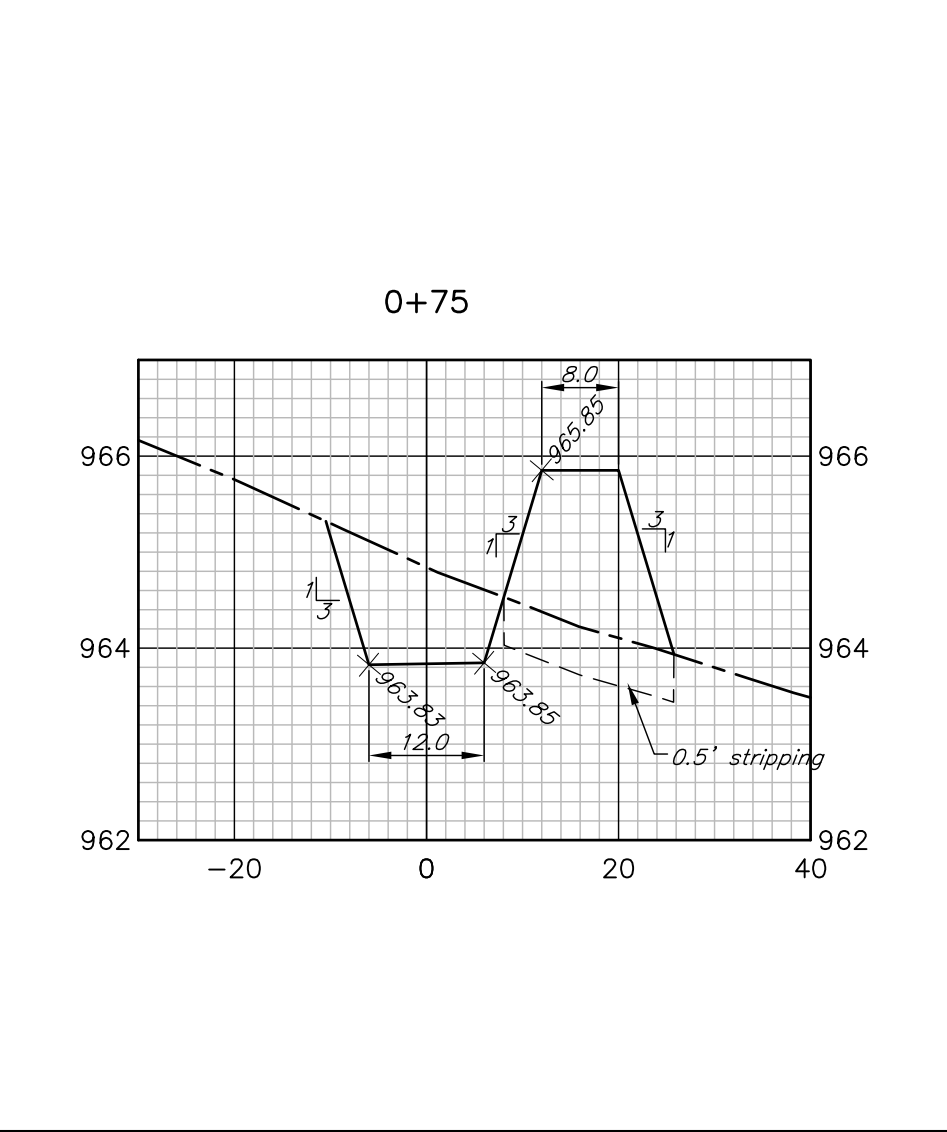
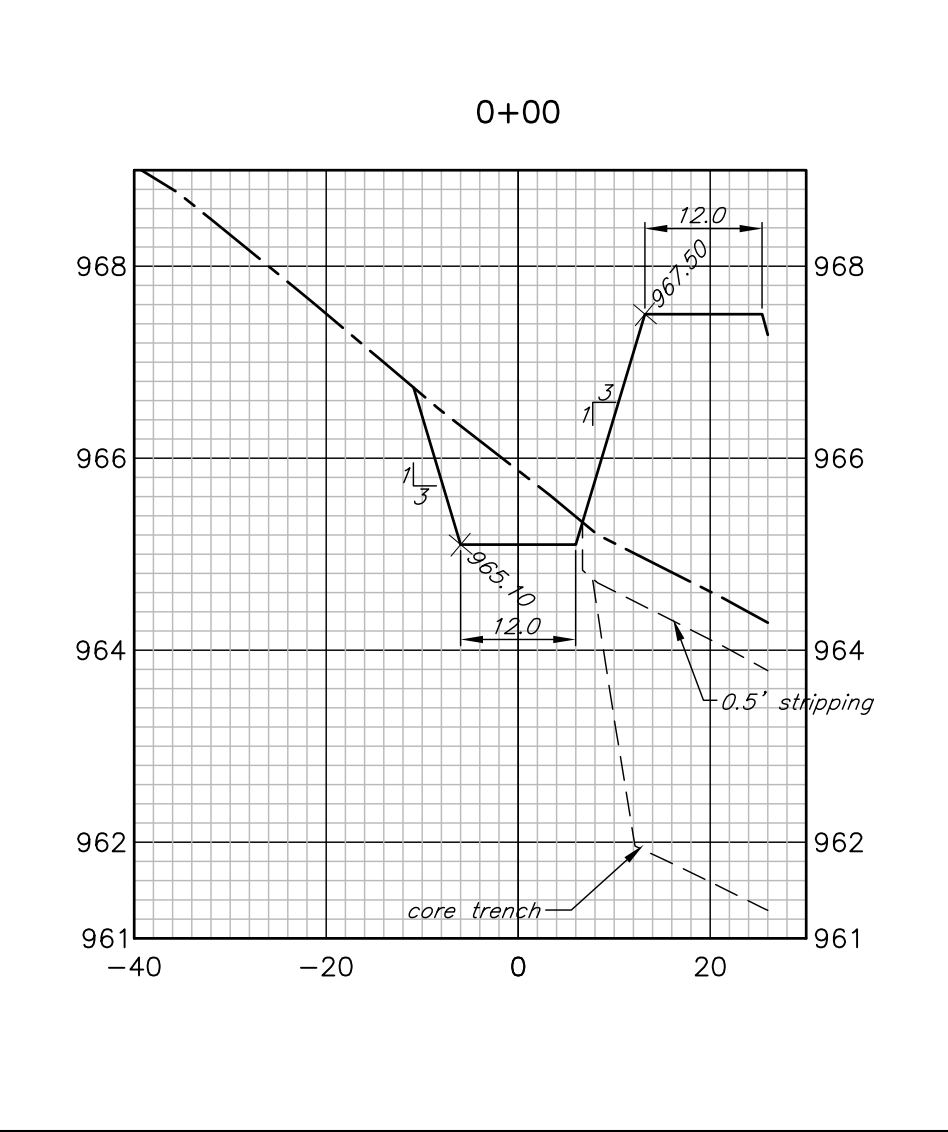
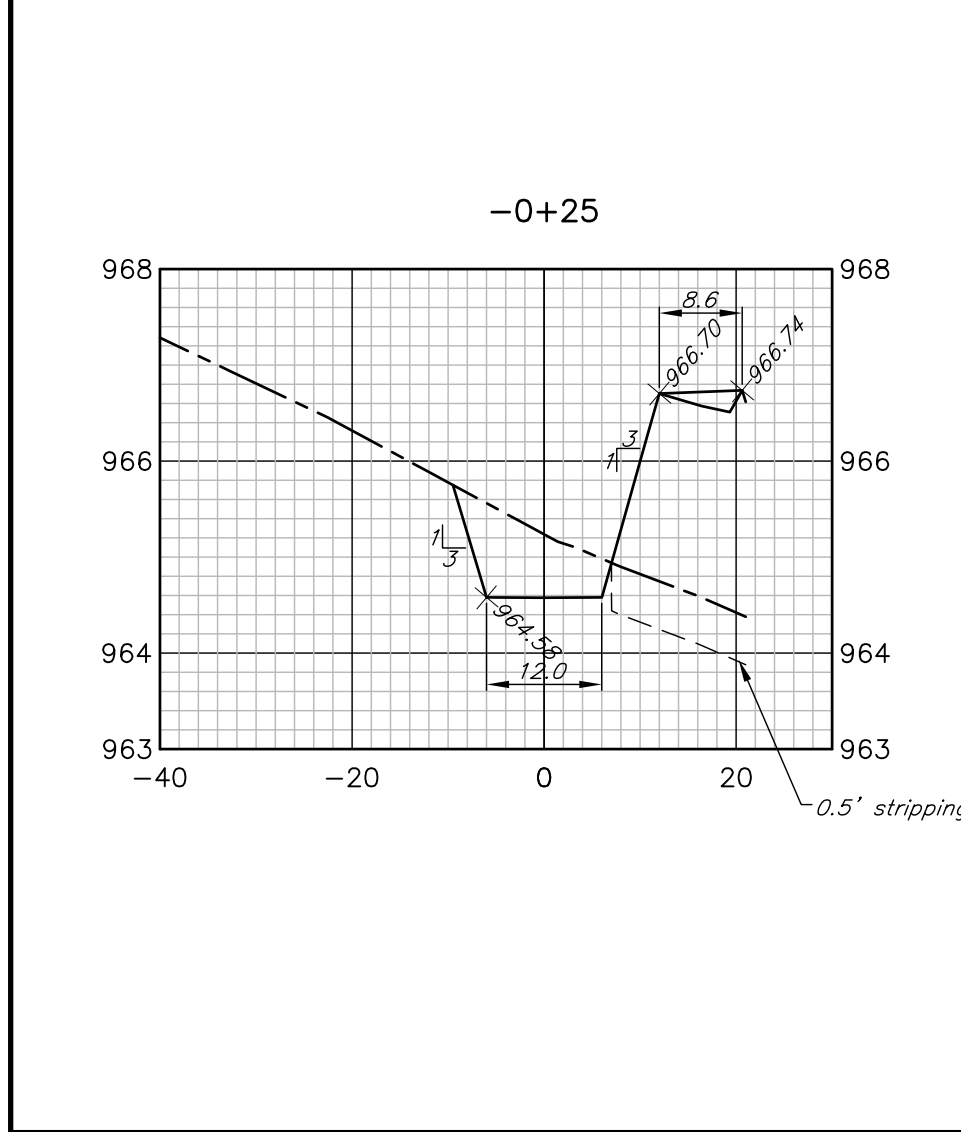
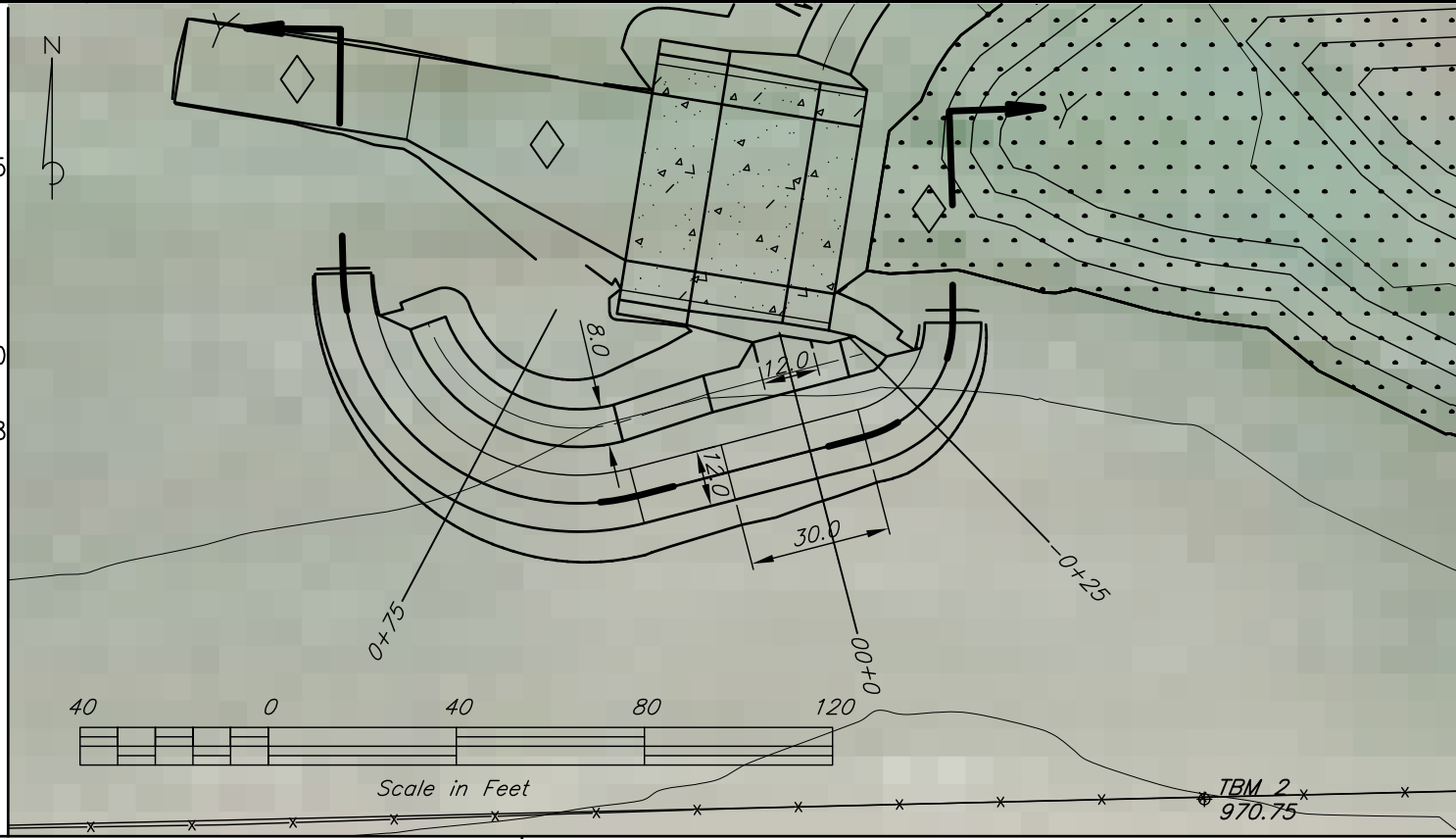
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File No. Schildroth Bros. t8799
 shallow water wetland
 Drawing BACK HAWK.dwg

Sheet 19 of .

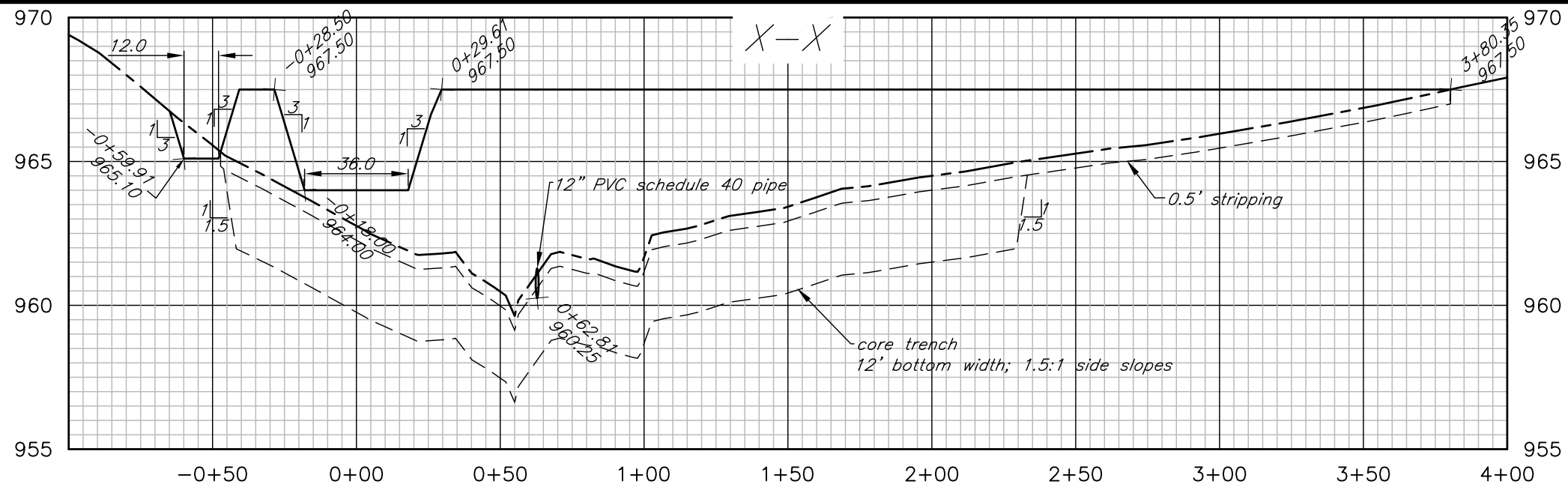


Auxiliary Spillway centerline PROFILE

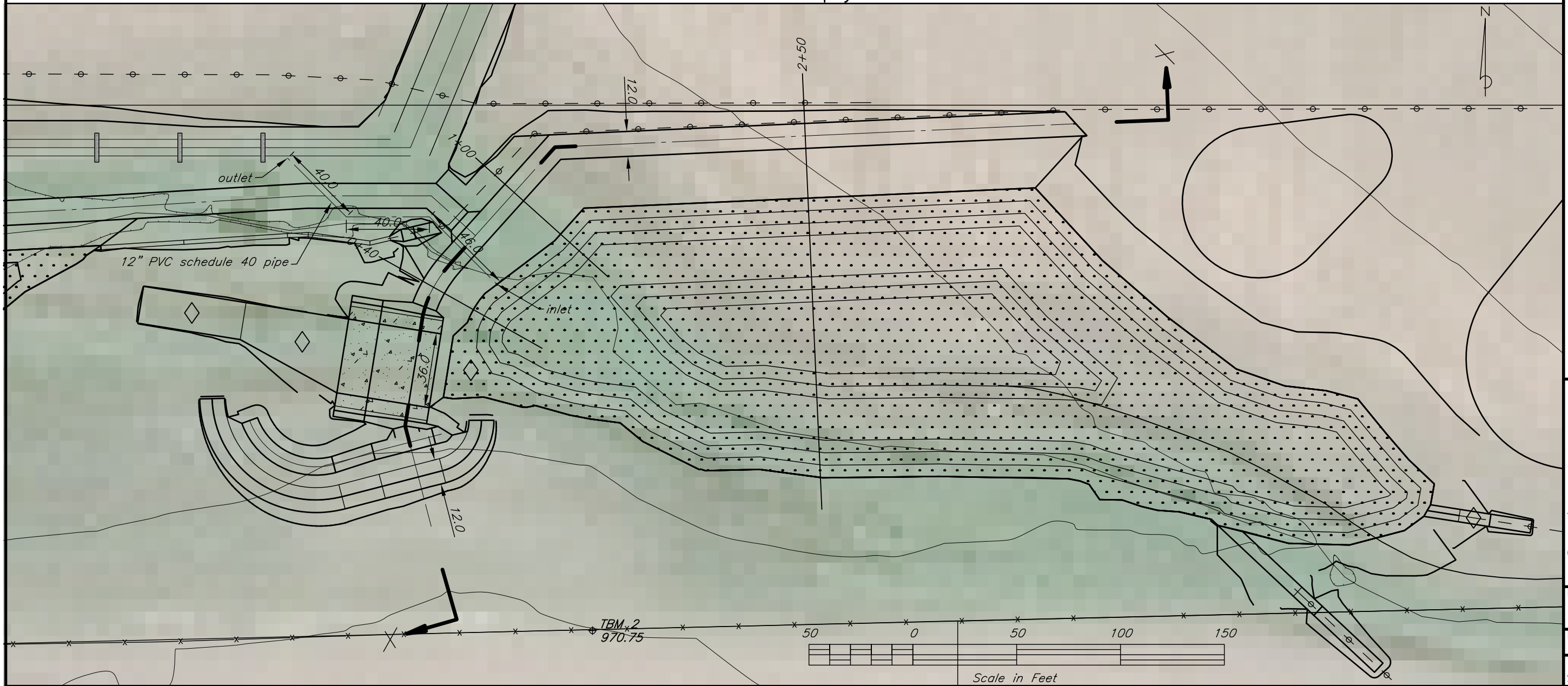


Date	1/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 Profile & Cross Sections Auxiliary Spillway
 S1 SW1/4 NW1/4 sec. 19 T.87N.-R.14W. Lincoln twp. Black Hawk County, IA



East dike with Aux Spwy PROFILE



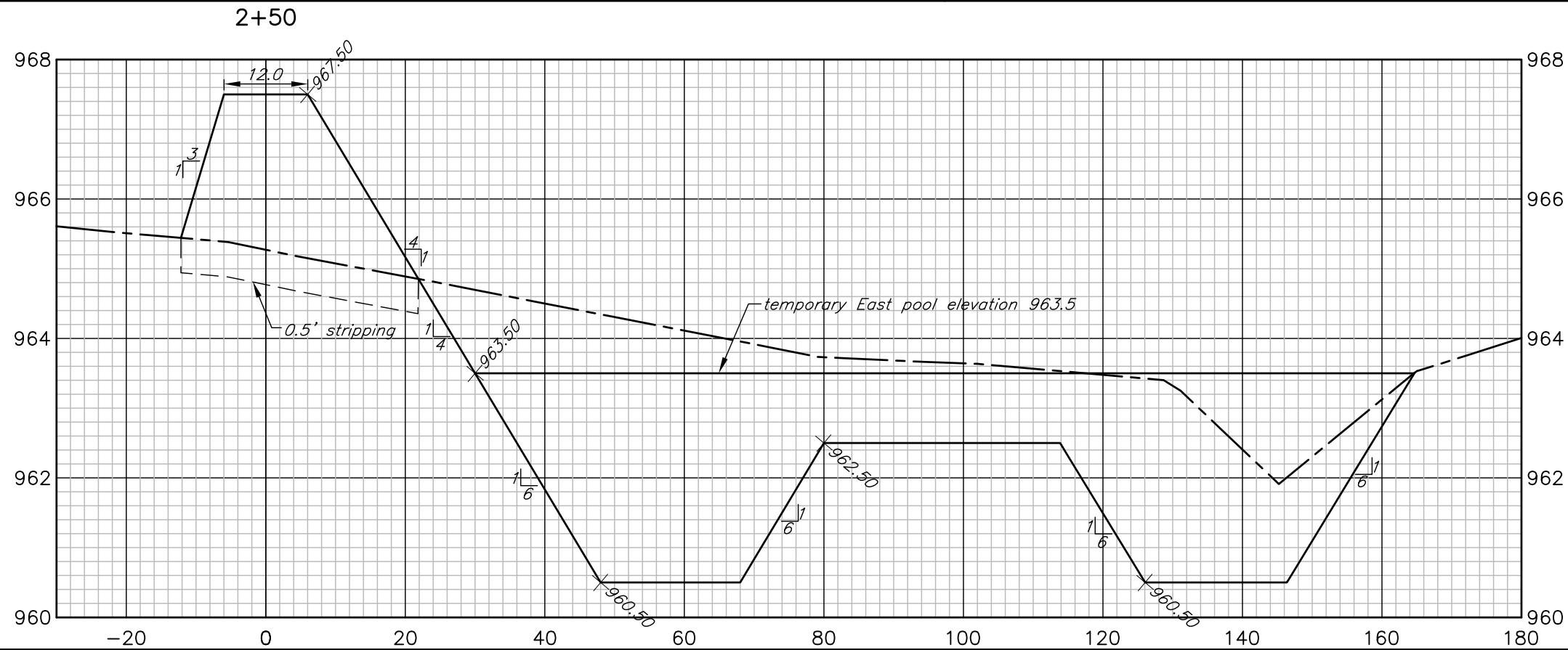
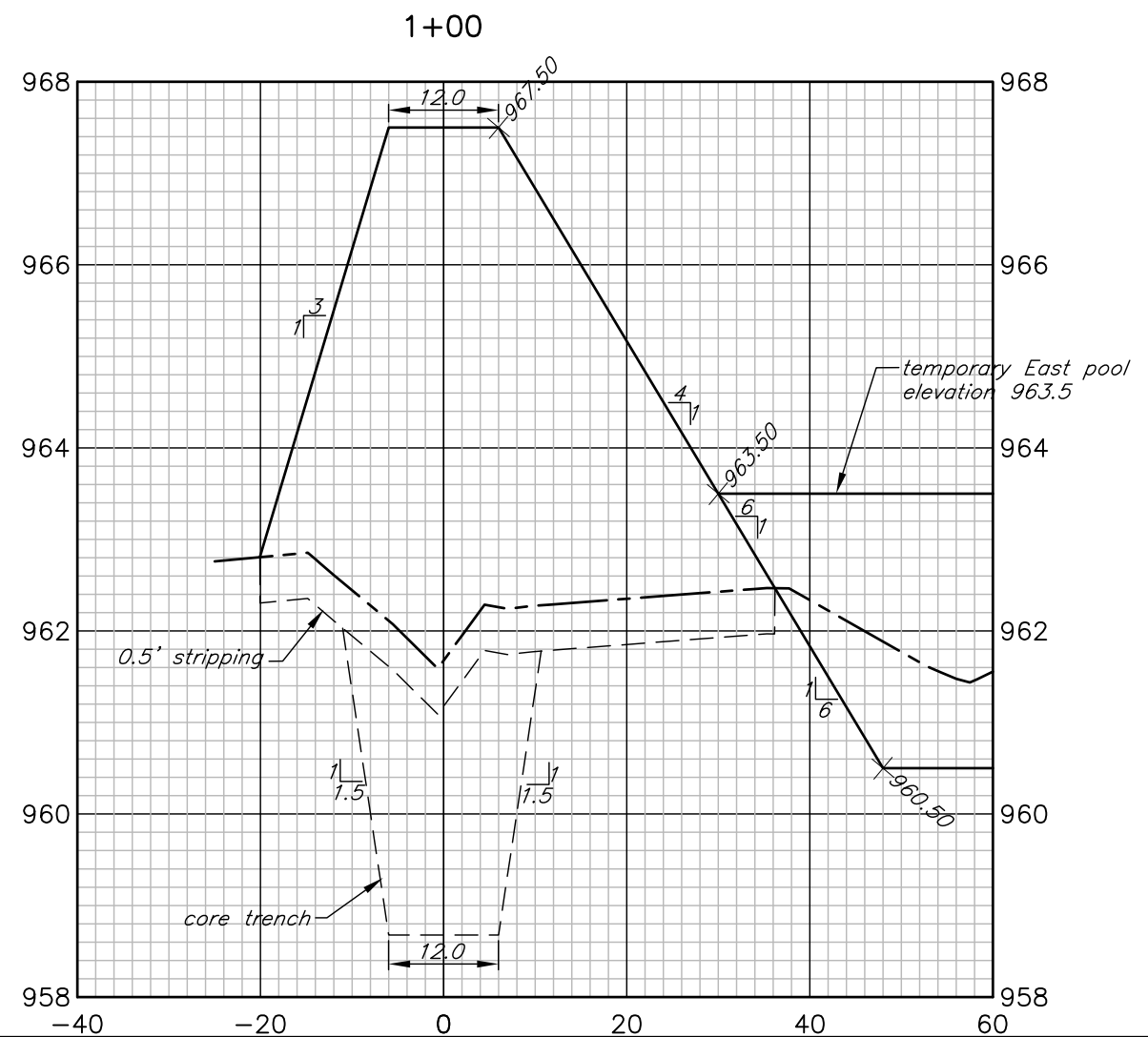
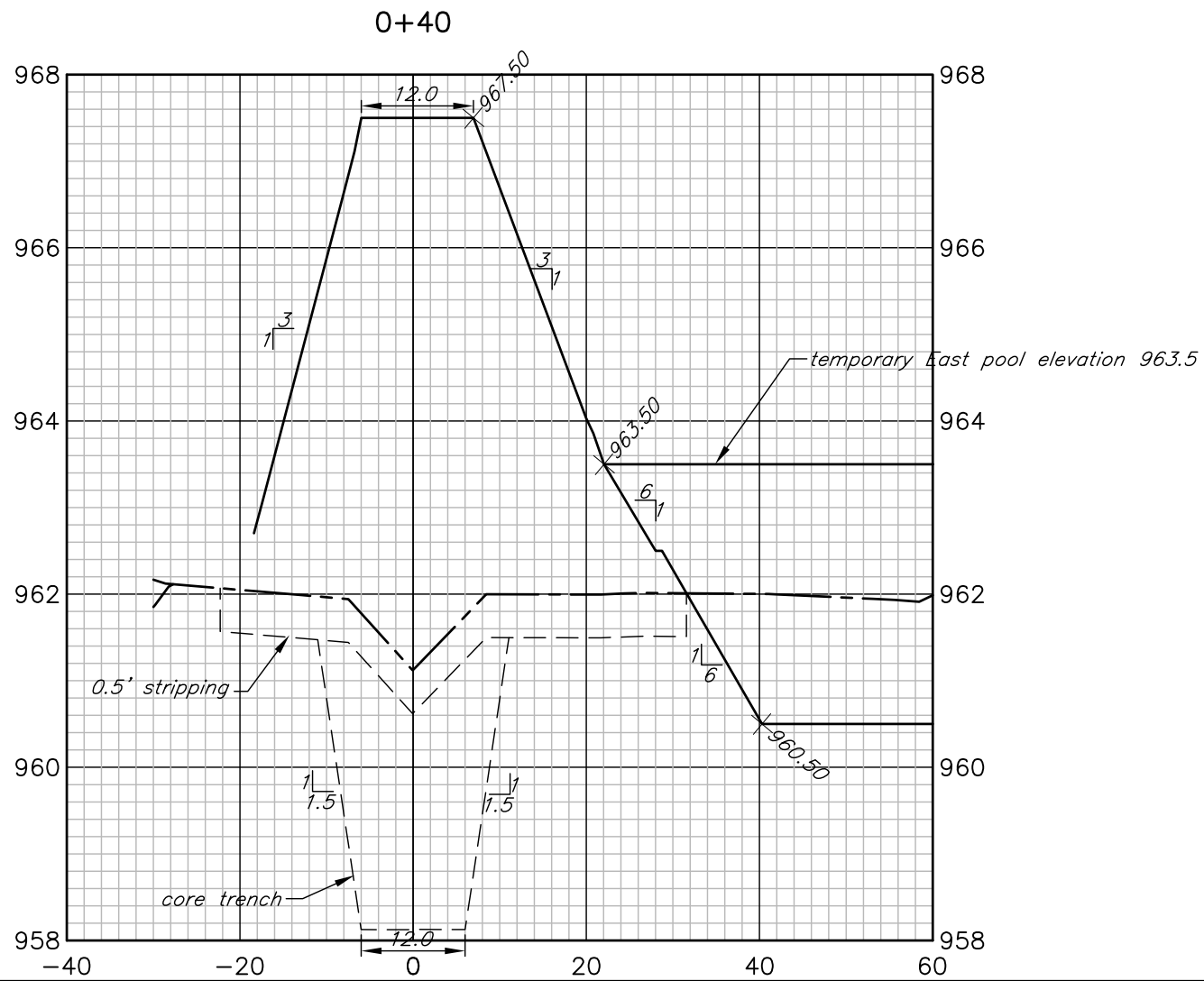
Date	1/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment

Profile East Dike & Plan View
 S1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA



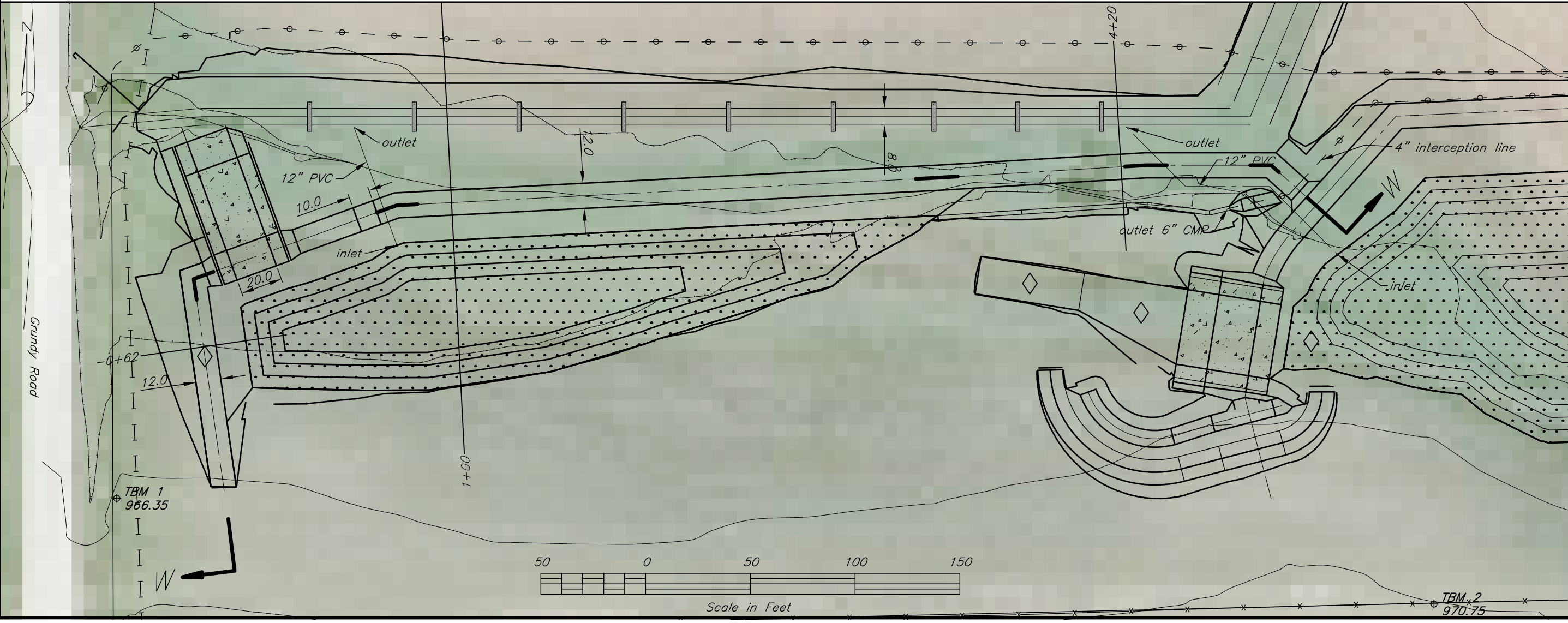
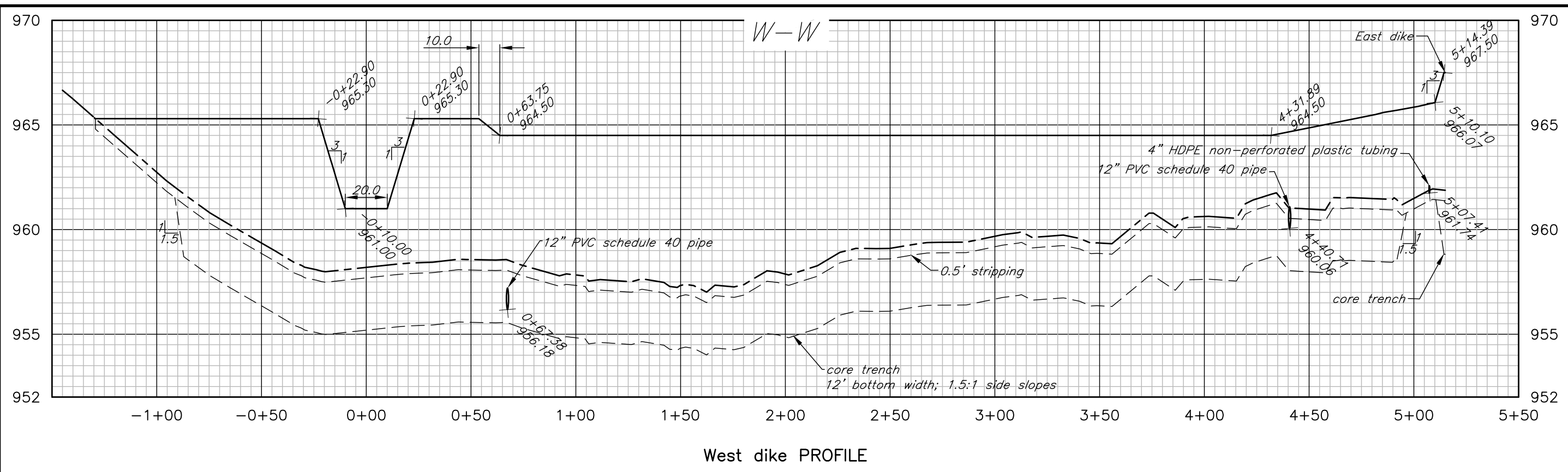
File No.
 Schildroth
 Bros. t8799
 shallow water
 wetland BACK
 HAWK.dwg



Date 1/2022
 Designed Jeff A. Lutz
 Drawn Jeff A. Lutz
 Checked
 Approved

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 Cross Sections East Dike
 S1 SW1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA

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 File No. Schildroth Bros. t8799
 shallow water wetland BACK HAWK.dwg
 Sheet 22 of .



Date	1/2022
Designed	Jeff A. Lutz
Drawn	Jeff A. Lutz
Checked	
Approved	

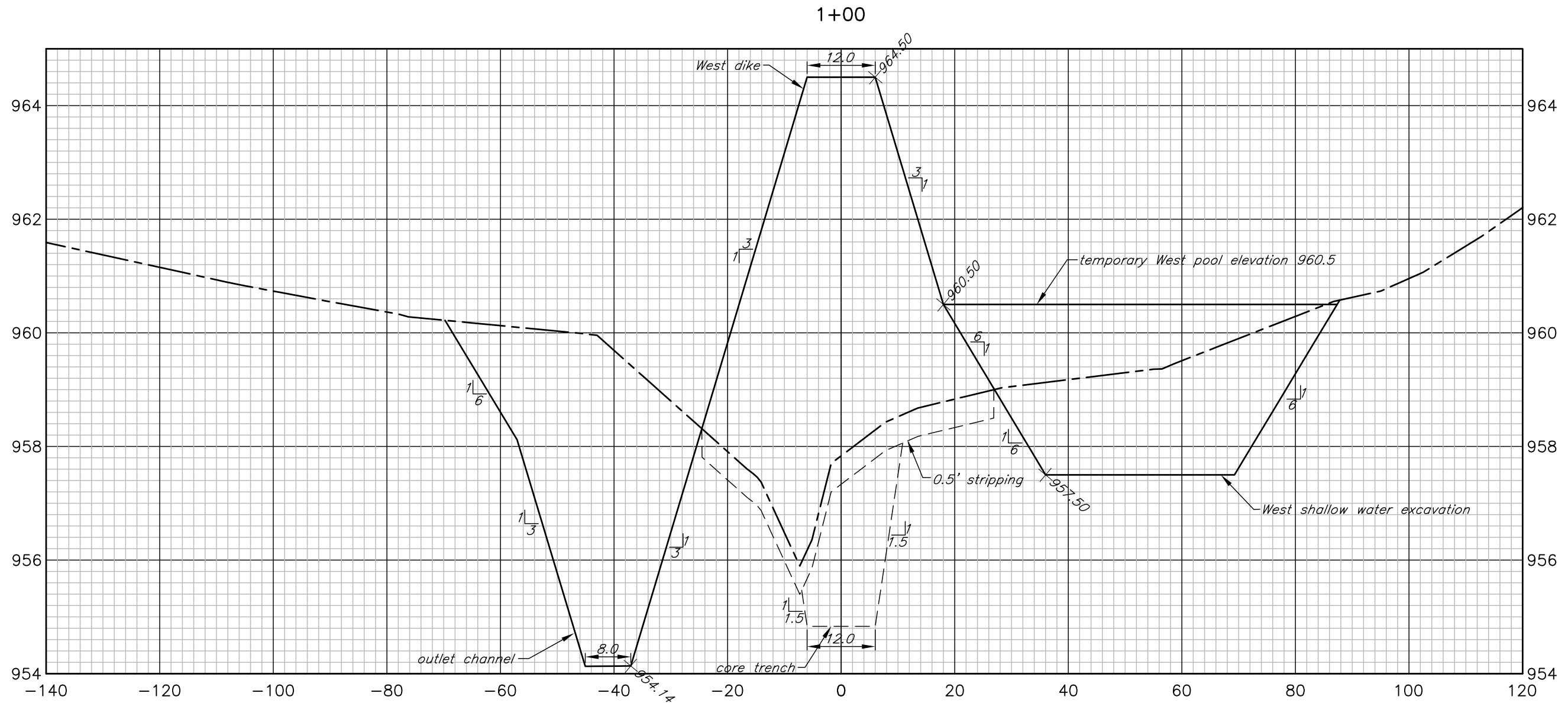
Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 Profile West Dike & Plan View
 S1 SW1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA

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File No.
 Schildroth
 Bros. t8799
 shallow water
 wetland
 HAWK.dwg

TBM 1
 966.35
 TBM 2
 970.75

Sheet 23 of .

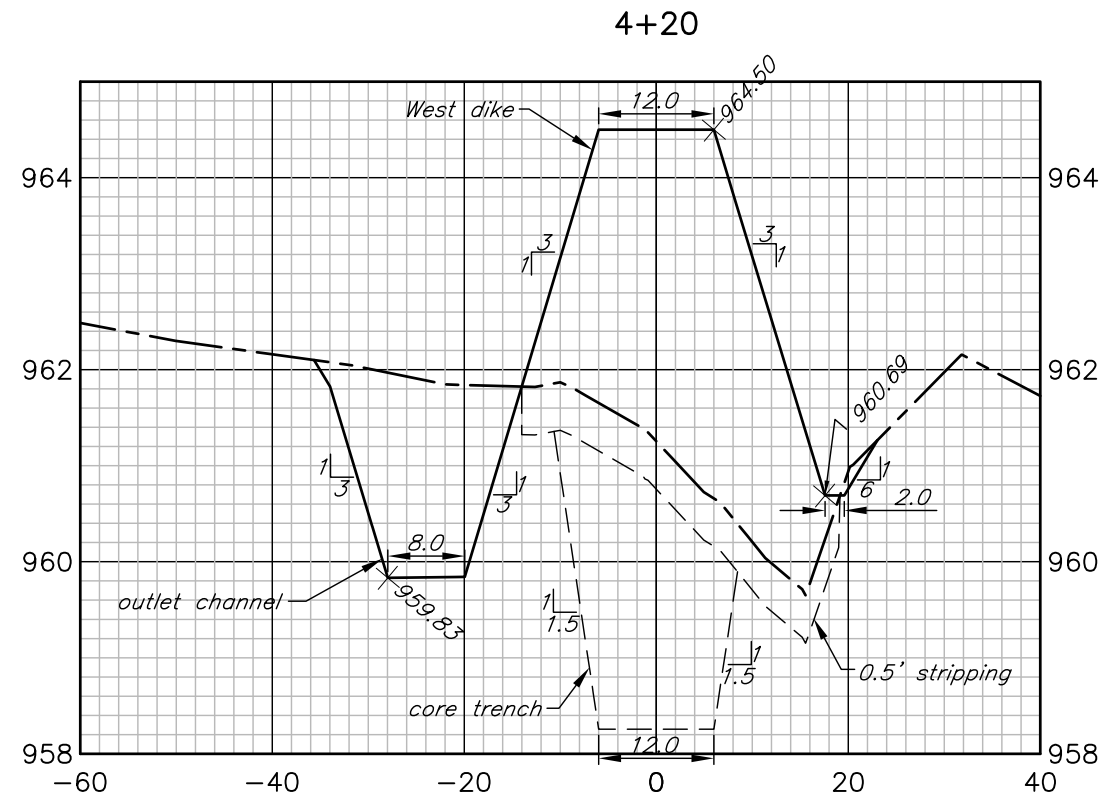
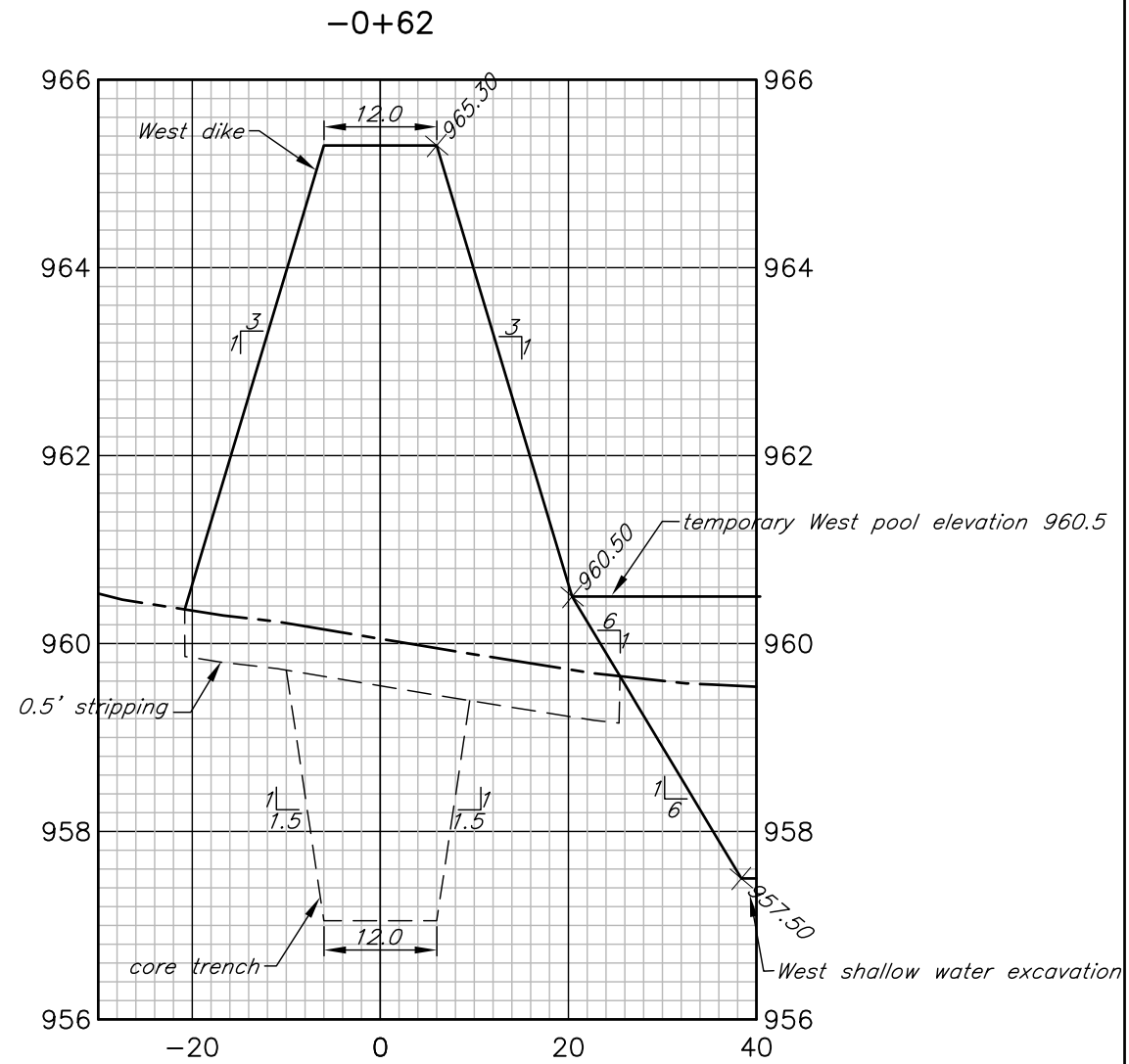


Date: 1/2022
 Designed: Jeff A. Lutz
 Drawn: Jeff A. Lutz
 Checked: _____
 Approved: _____

Schildroth Bros. t8799
 Shallow Water Wetland for Tile Day-lighting Outlet Treatment
 Cross Sections West Dike
 S1 SW1/4 NW1/4 sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA



File No. Schildroth Bros. t8799
 shallow water wetland BACK HAWK.dwg



Date: 1/2022
 Designed: Jeff A. Lutz
 Drawn: Jeff A. Lutz
 Checked: _____
 Approved: _____

Schildroth Bros. t8799
Shallow Water Wetland for Tile Day-lighting Outlet Treatment

Cross Sections West Dike
 S₁ SW₁ NW₁ sec. 19 T.87N. -R.14W. Lincoln twp. Black Hawk County, IA



File No.
 Schildroth
 Bros. t8799
 shallow water
 wetland BACK
 HAWK.dwg