# BEHIND LAKE

## HOVEY LAKE FISH & WILDLIFE AREA
## POSEY COUNTY, IN

IN COOPERATION WITH

## INDIANA DEPARTMENT OF NATURAL RESOURCES

PROJECT LOCATION MAP

### SHEET INDEX


| SHEET NUMBER | SHEET TITLE |
|---|---|
| 1 | COVER |
| 2 | SPECIFICATIONS, NOTES, AND QUANTITIES |
| 3 | SCHEDULES |
| 4 | EXISTING COND. & TOPO |
| 5 | SITE PLAN |
| 6 | PHASE 1 (UNIT 1) SITE PLAN |
| 7 | PHASE 2 (UNIT 3) SITE PLAN |
| 8 | PHASE 3 (UNIT 2) SITE PLAN |
| 9 | WELL SITE PLAN |
| 10 | HDPE PIPE PROFILES |
| 11 | DIKE ALIGNMENT TABLES |
| 12 | DITCH ALIGNMENT TABLES |
| 13 - 14 | PROFILES - DIKE 1 |
| 15 - 16 | PROFILES - DIKE 2 (BASE RD.) |
| 17 | PROFILES - DIKE 3 |
| 18 | PROFILES - DIKE 4 |
| 19 | PROFILES - DIKE 5 |
| 20 - 22 | PROFILES - UNIT 1 BORROW DITCH |
| 23 | PROFILES - UNIT 2 BORROW DITCH |
| 24 | PROFILES - UNIT 3 BORROW DITCH 1 |
| 25 | PROFILES - UNIT 3 BORROW DITCH 2 |
| 26 | PROFILES - UNIT 3 BORROW DITCH 3 |
| 27 | PROFILES - UNIT 3 BORROW DITCH 4 |
| 28 - 29 | WCS DETAILS |
| 30 | WELL PAD DETAILS |
| 31 | WELL DETAILS |
| 32 | GEN. DETAILS |


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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

COVER
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Cover and Specs

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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k:\plano c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Cover and Specs.dwg, 10/25/2022 4:43 PM, Bradley Kullmann, Cover Sheet, None

## ESTIMATED QUANTITIES

| NOTE | SPEC # | DESCRIPTION | UNIT | PHASE 1 | PHASE 2 | PHASE 3 |
|---|---|---|---|---|---|---|
| 1 | 201 | MOBILIZATION | LS | 1 | 1 | 1 |
| 2 | 202 | SITE PREPARATION - TREE REMOVAL | AC | - | - | 4 |
| 3 | 204 | EMBANKMENT CONSTRUCTION | CY | 49,291 | 18,615 | 13,465 |
| 4 | 301 | WATER CONTROL STRUCTURE - 24" | EA | 2 | - | 1 |
| 5 | 303 | CULVERT INSTALLATION - 12" | LF | - | 55 | - |
| 5 | 303 | CULVERT INSTALLATION - 24" | LF | 80 | - | - |
| ~~6~~ | ~~303~~ | ~~PIPE INSTALLATION - 14" SCHEDULE DR 11 HDPE~~ | ~~LF~~ | ~~335~~ | - | - |
| ~~7~~ | ~~304~~ | ~~CAST-IN-PLACE REINFORCED CONCRETE~~ | ~~CY~~ | ~~2~~ | - | - |
| ~~8~~ | ~~305~~ | ~~DU CLASS III RIPRAP~~ | ~~TN~~ | ~~1,477~~ | 507 | 805 |
| ~~9~~ | ~~305~~ | ~~1" MINUS BASE ROCK~~ | ~~TN~~ | ~~4~~ | 0 | - |
| ~~10~~ | ~~311~~ | ~~REMOVAL OF EXISTING CULVERTS~~ | ~~EA~~ | ~~1~~ | 1 | - |
| ~~11~~ | ~~313~~ | ~~PUMP INSTALLATION~~ | ~~EA~~ | ~~1~~ | - | - |
| ~~12~~ | ~~314~~ | ~~WATER WELL DRILLING~~ | ~~EA~~ | ~~1~~ | - | - |
| ~~13~~ | ~~315~~ | ~~SUPPLY OF ELECTRICAL POWER~~ | ~~LS~~ | ~~1~~ | - | - |
| ~~14~~ | ~~316~~ | ~~DIKE AND ACCESS ROAD SURFACING~~ | ~~TN~~ | ~~1,209~~ | 1,811 | 45 |
| 15 | 401 | SOIL EROSION AND POLLUTION CONTROL | LS | 1 | 1 | 1 |
| 16 | 402 | SEEDING AND MULCHING | AC | 8 | 4 | 3 |
| 17 | 404 | TRAFFIC MAINTENANCE AND CONTROL | LS | 1 | 1 | 1 |
| 18 | | 36"X36" W8-2 DIP WARNING SIGNS | EA | 2 | 2 | - |

## LEGEND

- SPOT ELEVATION
- HORIZONTAL & VERTICAL CONTROL
- DITCH ℄
- DIKE ℄
- MAJOR CONTOUR
- MINOR CONTOUR
- TREE LINE
- UTILITY POLE
- OVERHEAD ELECTRIC
- EXISTING FIELD BOUNDARY
- EX. BASE RD. AND EX. ACCESS ROADS
- EX. OIL RIG PLATFORM
- PROPOSED DITCH
- PROPOSED DIKE
- PROPOSED WCS AND WELL PAD
- EX. HUNTING PIT
- PROPOSED FULL SERVICE LEVEL (FSL)
- PROPOSED RIPRAP
- PROPOSED BORROW AREA
- PROPOSED DIKE AND ROAD SURFACING

## CONSTRUCTION NOTES:

1. BID ITEM FOR MOBILIZATION SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL AND EQUIPMENT TO TRANSPORT ALL NEEDED LABOR, MATERIAL AND EQUIPMENT, TO AND FROM A PROJECT SITE, TO SUCCESSFULLY COMPLETE THAT PROJECT AS SHOWN ON THE PLANS.

2. BID ITEM FOR SITE PREPARATION - TREE REMOVAL SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED FOR TREE CLEARING AND GRUBBING AS SHOWN ON THE PLANS. THE WORK SHALL INCLUDE THE REMOVAL OF ALL TREES, ROOTS, AND OTHER SURFACE LITTER IN ITS ENTIRETY.

3. BID ITEM FOR EMBANKMENT CONSTRUCTION SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO EXCAVATE, HAUL, PLACE, AND COMPACT FILL MATERIAL TO CONSTRUCT EARTHWORK, AS SHOWN ON THE PLANS AND AS STAKED IN THE FIELD. ANY MATERIAL EITHER NEEDED OR REMAINING FROM THIS OPERATION SHALL BE UTILIZED FROM THE PROPOSED BORROW AREA.

4. BID ITEM FOR WATER CONTROL STRUCTURES - 24" SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PURCHASE AND INSTALL THE WATER CONTROL STRUCTURES. ANY CONDUIT, APPURTENANCES, AND HARDWARE NEEDED FOR THE WATER CONTROL STRUCTURES ARE CONSIDERED INCIDENTAL TO THE BID ITEM WATER CONTROL STRUCTURES - 24".

5. BID ITEM FOR CULVERT INSTALLATION - 12" & 24" SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PURCHASE AND INSTALL REQUIRED CULVERTS AS SHOWN ON THE PLANS.

6. BID ITEM FOR PIPE INSTALLATION - 14" SCHEDULE DR 11 HDPE SHALL INCLUDE THE SUPPLY OF LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO PURCHASE AND INSTALL 14" SCHEDULE DR 11 HDPE PIPE AS SHOWN ON THE PLANS. THIS BID ITEM SHALL INCLUDE ALL THRUST BLOCKS, FITTINGS, HARDWARE, VALVES, AND VENTS AS SHOWN ON THE PLANS. THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO FUSE WELD, PLACE, AND BACKFILL 14" SCHEDULE DR 11 HDPE PIPE SHALL BE CONSIDERED INCIDENTAL TO BID ITEM PIPE INSTALLATION - 14" SCHEDULE DR 11 HDPE.

7. BID ITEM FOR CAST-IN-PLACE REINFORCED CONCRETE SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE CONSTRUCTION AS SHOWN IN PLANS. **[TO BE COMPLETED IN A SEPARATE CONTRACT]**

8. BID ITEM FOR DU CLASS III RIPRAP SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL BID ITEM AS SHOWN ON THE PLANS. NON-WOVEN FILTER FABRIC IS REQUIRED BENEATH ALL ROCK/RIPRAP AND SHALL BE SECURED TO SLOPES AND BOTTOMS, USING PINS AS NOTED IN SPECIFICATION 305. QUANTITY IS BASED ON TONS. CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED. **[TO BE COMPLETED BY INDIANA DNR]**

9. BID ITEM FOR 1" MINUS BASE ROCK SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL BID ITEM AS SHOWN ON THE PLANS. NON-WOVEN FILTER FABRIC IS REQUIRED BENEATH ALL ROCK/RIPRAP AND SHALL BE SECURED TO SLOPES AND BOTTOMS, USING PINS AS NOTED IN SPECIFICATION 305. QUANITY IS BASED ON TONS. CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED. PROPER ENGINEER APPROVED COMPACTION EFFORT OF 1" MINUS BASE ROCK WILL BE REQUIRED UNDER ALL SLABS AND STRUCTURES. **[TO BE COMPLETED IN A SEPARATE CONTRACT]**

10. BID ITEM FOR REMOVAL OF EXISTING CULVERTS SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT TO SUCCESSFULLY REMOVE EXISTING CULVERTS ACCORDING TO PLANS. ALL REMOVED STRUCTURES/CULVERTS SHALL BE REMOVED FROM SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR.

11. BID ITEM FOR PUMP INSTALLATION SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PURCHASE AND INSTALL PROPOSED PUMP AS SHOWN ON PLANS. **[TO BE COMPLETED IN A SEPARATE CONTRACT]**

12. BID ITEM FOR WATER WELL DRILLING SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE INSTALLATION OF THE WATER WELLS AND ASSOCIATED EQUIPMENT AS SHOWN ON THE PLANS. **[TO BE COMPLETED IN A SEPARATE CONTRACT]**

13. BID ITEM FOR SUPPLY OF ELECTRICAL POWER SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PROVIDE ELECTRICAL POWER TO WELL AS SHOWN ON PLANS. BID ITEM SHALL ALSO INCLUDE THE CONSTRUCTION OF ELEVATED PLATFORM FOR ELECTRICAL CONTROL PANELS AS SHOWN IN PLANS. PLATFORM MUST ADHERE TO IDNR AND POSEY COUNTY STANDARD CONSTRUCTION CODES. **[TO BE COMPLETED IN A SEPARATE CONTRACT]**

14. BID ITEM FOR DIKE AND ACCESS ROAD SURFACING SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO INSTALL BID ITEM AS SHOWN ON PLANS. BID ITEM FOR DIKE AND ACCESS ROAD SURFACING SHALL BE 1" MINUS CRUSHED ROCK OR ENGINEER APPROVED EQUAL. QUANTITY IS BASED ON TONS. CONTRACTORS SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED. **[TO BE COMPLETED BY INDIANA DNR]**

15. THE BID ITEM FOR SOIL EROSION AND POLLUTION CONTROL SHALL INCLUDE THE SUPPLY, INSTALLATION, AND MAINTENANCE OF ALL MATERIALS, IN COMPLIANCE WITH THE INDIANA DEPARTMENT OF NATURAL RESOURCES. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF WORK, AND WILL BE MAINTAINED UNTIL FINAL STABILIZATION OF THE SITE. CONTRACTOR SHALL MAINTAIN, INSPECT, AND PROVIDE ALL PROPER RECORDING AND REPORTING ACCORDING TO THE PERMIT REGULATIONS.

16. BID ITEM FOR SEEDING AND MULCHING SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO PURCHASE AND SPREAD SEED AND MULCH ON ALL DISTURBED AREAS. IDNR TO PROVIDE MIXTURE TYPE FOR CONTRACTOR TO PURCHASE FOR THE PROJECT.

17. BID ITEM FOR TRAFFIC MAINTENANCE AND CONTROL SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO CLOSE BASE RD. DURING CONSTRUCTION. APPROPRIATE ENGINEER APPROVED SIGNS AND TYPE III BARRICADES, WARNING OF ROAD CLOSED, SHALL BE INSTALLED AND MAINTAINED THROUGH OUT CONSTRUCTION PROJECT.

18. BID ITEM FOR 36"X36" W8-2 DIP WARNING SIGNS SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL WARNING SIGNS AS SHOWN ON PLANS. W8-2 DIP WARNING SIGNS SHALL BE RETROREFLECTIVE AND CONFORM TO MUTCD STANDARDS.

## GENERAL NOTES:

1. CONTRACTOR SHALL PLACE ALL STUMPS, TREES, AND LIMBS IN A STOCK PILE LOCATION AT DIRECTION OF INDIANA DNR. CONTRACTOR SHALL COORDINATE WITH INDIANA DNR FOR A STOCKPILE LOCATION.

2. ALL CONCRETE SHALL BE NORMAL WEIGHT, HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, 4% - 6% AIR ENTRAINMENT, AND 1" - 4" SLUMP.

3. DEWATERING AND WATER MAINTENANCE IS THE CONTRACTOR'S RESPONSIBILITY, AND IS CONSIDERED INCIDENTAL TO THE PROJECT.

4. COSTS ASSOCIATED WITH CREATING/IMPROVING AREAS FOR STAGING IS CONSIDERED INCIDENTAL TO THE PROJECT. CONTRACTOR WILL BE REQUIRED TO SEED AND MULCH ALL CREATED/IMPROVED STAGING AREAS BEFORE COMPLETION OF PROJECT.

5. CONTRACTOR(S) SHALL ROUND AND TAPER ALL DIKE AND DITCH ENDS AT CONSTRUCTION LIMITS BETWEEN PHASES.

6. THE CONTRACTOR WILL BE REQUIRED TO USE MACHINE CONTROL FOR THIS PROJECT. THE CONTRACTOR WILL BE PROVIDED WITH FINISHED GROUND SURFACES. ADDITIONAL CONTROL POINTS WILL BE ESTABLISHED IN THE FIELD AS NEEDED FOR MACHINE CONTROL USAGE PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR TYING INTO DUCKS UNLIMITED SURVEY CONTROL POINTS, EQUIP HEAVY EQUIPMENT, AND PERFORM THE WORK AS OUTLINED IN THESE PLANS.

## INDIANA DNR WATERWAY PERMIT CONDITIONS:

1. DNR PROJECT SPECIFIC PERMIT CONDITIONS

   1.1. REVEGETATE ALL BARE AND DISTURBED AREAS WITH A MIXTURE OF NATIVE GRASSES, SEDGES, WILDFLOWERS, AND ALSO NATIVE HARDWOOD TREES AND SHRUBS IF ANY WOODY PLANTS ARE DISTURBED DURING CONSTRUCTION AS SOON AS POSSIBLE UPON COMPLETION. DO NOT USE ANY VARIETIES OF TALL FESCUE OR OTHER NON-NATIVE PLANTS, INCLUDING PROHIBITED INVASIVE SPECIES (SEE 312 IAC 18-3-25).
   1.2. MINIMIZE AND CONTAIN WITHIN THE PROJECT LIMITS INCHANNEL DISTURBANCE AND THE CLEARING OF TREES AND BRUSH.
   1.3. DO NOT WORK IN THE WATERWAY FROM APRIL 1 THROUGH JUNE 30 WITHOUT THE PRIOR WRITTEN APPROVAL OF THE DIVISION OF FISH AND WILDLIFE.
   1.4. APPROPRIATELY DESIGNED MEASURES FOR CONTROLLING EROSION AND SEDIMENT MUST BE IMPLEMENTED TO PREVENT SEDIMENT FROM ENTERING THE STREAM OR LEAVING THE CONSTRUCTION SITE; MAINTAIN THESE MEASURES UNTIL CONSTRUCTION IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED.
   1.5. SEED AND PROTECT ALL DISTURBED STREAM BANKS AND SLOPES NOT PROTECTED BY OTHER METHODS THAT ARE 3:1 OR STEEPER WITH EROSION CONTROL BLANKETS THAT ARE HEAVY-DUTY, BIODEGRADABLE, AND NET FREE OR THAT USE LOOSE-WOVEN / LENO-WOVEN NETTING TO MINIMIZE THE ENTRAPMENT AND SNARING OF SMALL-BODIED WILDLIFE SUCH AS SNAKES AND TURTLES (FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR SELECTION AND INSTALLATION); SEED AND APPLY MULCH ON ALL OTHER DISTURBED AREAS.
   1.6. SUBMIT AS-BUILT PLANS, SIGNED, AND STAMPED BY A PROFESSIONAL ENGINEER, CERTIFYING THAT THE LEVEE WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND RECOMMENDATIONS TO THE DIVISION OF WATER, IDNR WITHIN 6 MONTHS OF PROJECT COMPLETION.
   1.7. NOTE: THIS APPROVAL IS ISSUED BASED ON THE TYPICAL REVIEW PROCESS PURSUANT TO INDIANA CODE 14-28-1 AND IN NO WAY IMPLIES THAT THE PROPOSED PROJECT MEETS ANY CERTIFICATION STANDARDS OR COMPLIES WITH OR IS EXEMPT FROM OTHER STATE OR FEDERAL REQUIREMENTS.
   1.8. EXCEPT FOR THE MATERIAL USED AS BACKFILL AS SHOWN ON THE PLANS SUBMITTED FOR THE PERMIT APPLICATION, PLACE ALL EXCAVATED MATERIAL LANDWARD OF THE FLOODWAY*.
   1.9. DO NOT LEAVE FELLED TREES, BRUSH, OR OTHER DEBRIS IN THE FLOODWAY*.
   1.10. UPON COMPLETION OF THE PROJECT, REMOVE ALL CONSTRUCTION DEBRIS FROM THE FLOODWAY*.
   1.11. OBTAIN THE PRIOR WRITTEN APPROVAL OF THE DEPARTMENT FOR ANY ADDITIONAL CONSTRUCTION, EXCAVATION OR FILLING IN OR ON THE FLOODWAY* BEYOND THE SCOPE OF THE PROJECT.
   1.12. NOTE: FOR REGULATORY PURPOSES, THE FLOODWAY IS DEFINED ON THE ATTACHED FLOODWAY MAP.
   1.13. PLEASE NOTE, SHOULD THE SCOPE OF THE PROJECT CHANGE TO ALTER THE LAND AND WATER CONSERVATION FUND (LWCF) SITE IN ANY WAY THAT IS NOT INTENDED FOR OUTDOOR RECREATION USE, THE DNR, DIVISION OF OUTDOOR RECREATION MUST BE CONTACTED AT 317-232-4075 OR BBRONSON@DNR.IN.GOV

2. DNR PROJECT GENERAL PERMIT CONDITIONS

   2.1. ANY MODIFICATIONS OR ADDITIONAL CONSTRUCTION BEYOND WHAT WAS SHOWN ON PLANS RECEIVED AT THE DIVISION OF WATER SHALL REQUIRE AN ADDITIONAL REVIEW AND APPROVAL FROM THE DEPARTMENT OF NATURAL RESOURCES.
   2.2. THIS PERMIT MUST BE POSTED AND MAINTAINED AT THE PROJECT SITE UNTIL THE PROJECT IS COMPLETED.
   2.3. THIS PERMIT SHALL NOT BE ASSIGNED OR TRANSFERRED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE DEPARTMENT OF NATURAL RESOURCES.
   2.4. IF ANY PREHISTORIC OR HISTORIC ARCHAEOLOGICAL ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION, DEMOLITION, OR EARTHMOVING ACTIVITIES, STATE LAW {INDIANA CODE 14-21-1-27 AND 29) REQUIRES THAT THE DISCOVERY MUST BE REPORTED TO THE DEPARTMENT OF NATURAL RESOURCES WITHIN TWO (2) BUSINESS DAYS.
   2.5. THIS PERMIT MAY BE REVOKED BY THE DEPARTMENT OF NATURAL RESOURCES FOR VIOLATION OF ANY CONDITION OR APPLICABLE STATUTE OR RULE.
   2.6. THE DEPARTMENT OF NATURAL RESOURCES SHALL HAVE THE RIGHT TO ENTER UPON THE SITE OF THE PERMITTED ACTIVITY FOR THE PURPOSE OF INSPECTING THE WORK AUTHORIZED UNDER THIS PERMIT.

*SEE PERMIT FOR ADDITIONAL ATTACHMENTS AND INFORMATION.

## SPECIFICATIONS

101 GENERAL CONDITIONS
102 SUPPLEMENTAL CONDITIONS
201 MOBILIZATION
202 SITE PREPARATION
203 EXCAVATION
204 EMBANKMENT CONSTRUCTION
301 WATER CONTROL STRUCTURES
302 STRUCTURE AND CULVERT APPURTENANCES
303 CULVERT AND PIPE INSTALLATION
304 CAST-IN-PLACE REINFORCED CONCRETE
305 RIPRAP, REVETMENT AND AGGREGATE PLACEMENT
311 REMOVAL OF EXISTING CULVERTS AND STRUCTURES
313 PUMP INSTALLATION
314 WATER WELL DRILLING
315 SUPPLY OF ELECTRICAL POWER
316 DIKE AND ROAD SURFACING
401 SOIL EROSION AND POLLUTION CONTROL
402 SEEDING AND MULCHING
404 TRAFFIC MAINTENANCE AND CONTROL

## BIDDING NOTES: PHASE 1

1. BID ITEMS DU CLASS III RIPRAP, 1" MINUS BASE ROCK, DIKE AND ACCESS ROAD SURFACING, ~~AND SEEDING AND MULCHING~~ WILL BE COMPLETED BY INDIANA DNR AND SHALL BE OMITTED FROM THE BID FOR PHASE 1.

2. BID ITEMS PIPE INSTALLATION - 14" SCHEDULE DR 11 HDPE, CAST-IN-PLACE REINFORCED CONCRETE, PUMP INSTALLATION, WATER WELL DRILLING, AND SUPPLY OF ELECTRICAL POWER WILL BE COMPLETED IN A SEPARATE CONTRACT AND SHALL BE OMITTED FROM THE BID FOR PHASE 1.

3. QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SPECIFIED ON THE PLAN SET. THE CONTRACT SHALL BE BID AS A LUMP SUM OF ALL BID ITEMS LISTED IN THE BID FOR PHASE 1.

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AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

SPECIFICATIONS, NOTES, AND QUANTITIES
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Cover and Specs
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3

## DU CLASS III RIPRAP, 1" MINUS BASE ROCK, DIKE AND ROAD SURFACING SCHEDULE

### PHASE 1

| LOCATION | DU CLASS III RIPRAP (TN) | 1" MINUS BASE ROCK - CA6 (TN) | DIKE AND ACCESS ROAD SURFACING (TN) |
|---|---|---|---|
| UNIT 1 SPILLWAY | 879 | - | 45 |
| UNIT 3 SOUTH SPILLWAY | 501 | - | - |
| UNIT 1 WCS | 17 | - | - |
| UNIT 3 WCS | 17 | - | - |
| UNIT 3 DRAINAGE DITCH 24" CULVERT | 17 | - | - |
| UNIT 1 WELL OUTLET | 17 | - | - |
| UNIT 2 WELL OUTLET | 12 | - | - |
| UNIT 3 WELL OUTLET | 17 | - | - |
| CONCRETE WELL PAD BASE | - | 4 | - |
| DIKE 2 (BASE RD.) STA 19+00 - 32+35 | - | - | 1,254 |
| PHASE 1 TOTALS | 1,477 | 4 | 1,299 |

### PHASE 2

| LOCATION | DU CLASS III RIPRAP (TN) | 1" MINUS BASE ROCK (TN) | DIKE AND ACCESS ROAD SURFACING (TN) |
|---|---|---|---|
| UNIT 3 NORTH SPILLWAY | 498 | - | - |
| UNIT 3 NORTH 12" CULVERT | 9 | - | - |
| DIKE 2 (BASE RD.) STA 0+00 - 19+00 | - | - | 1,493 |
| DIKE 5 PARKING LOT AND BOAT RAMP | - | - | 318 |
| PHASE 2 TOTALS | 507 | 0 | 1,811 |

### PHASE 3

| LOCATION | DU CLASS III RIPRAP (TN) | 1" MINUS BASE ROCK (TN) | DIKE AND ACCESS ROAD SURFACING (TN) |
|---|---|---|---|
| UNIT 2 SPILLWAY | 788 | - | 45 |
| UNIT 2 WCS | 17 | - | 0 |
| PHASE 3 TOTALS | 805 | 0 | 45 |
| PROJECT TOTALS | 2,789 | 4 | 3,155 |

*DIKE AND ACCESS ROAD SURFACING FOR UNIT 3 SPILLWAYS NORTH AND SOUTH INCLUDED IN DIKE 2(BASE RD.)

## REMOVAL OF EXISTING CULVERTS SCHEDULE

### PHASE 1

| LOCATION | Ø (INCHES) | LENGTH (FT) |
|---|---|---|
| BASE RD. STA 21+95 | 36 | 38 |

### PHASE 2

| LOCATION | Ø (INCHES) | LENGTH (FT) |
|---|---|---|
| BASE RD. STA 6+90 - 7+20 19' LT | 18 | 30 |

## CULVERT INSTALLATION SCHEDULE

### PHASE 1

| LOCATION | Ø (INCHES) | UPSTREAM INV. | DOWNSTREAM INV. | LENGTH (FT) |
|---|---|---|---|---|
| DIKE 1 STA 25+00 | 24 | 346.0' | 345.9 | 80 |

### PHASE 2

| LOCATION | Ø (INCHES) | UPSTREAM INV. | DOWNSTREAM INV. | LENGTH (FT) |
|---|---|---|---|---|
| DIKE 5 STA 1+60 | 12 | 350.2' | 350.2' | 55 |

## EMBANKMENT CONSTRUCTION SCHEDULE

### PHASE 1

| FILL LOCATION | FILL (CY) | BORROW LOCATION | EMBANKMENT CONSTRUCTION (BORROW) (CY) |
|---|---|---|---|
| DIKE 1 STA 0+00 - 26+00 | 25,949 | UNIT 1 BORROW DITCH STA 0+00 - 66+63 | 16,722 |
| DIKE 2 (BASE RD.) STA 19+00 - 32+35 | 9,521 | UNIT 1 BORROW AREA | 12,798 |
| DIKE 4 STA 0+00 - 12+38 | 5,392 | UNIT 3 BORROW DITCH 1 STA 0+00 - 15+17 | 564 |
| DIKE 2 WELL PAD | 2,000 | UNIT 3 BORROW DITCH 2 STA 0+00 - 1+75 | 79 |
| UNIT 3 DRAINAGE DITCH 24" CULVERT | 17 | UNIT 3 BORROW DITCH 3 STA 0+00 - 17+25 | 1,720 |
| - | - | UNIT 3 BORROW AREA 2 | 17,408 |
| PHASE 1 FILL TOTAL | 42,862 | PHASE 1 EMBANKMENT CONSTRUCTION (BORROW) TOTAL (CY) | 49,291 |

### PHASE 2

| FILL LOCATION | FILL (CY) | BORROW LOCATION | EMBANKMENT CONSTURCITON (BORROW) (CY) |
|---|---|---|---|
| DIKE 2 (BASE RD.) STA 0+00 - 19+00 | 4,864 | UNIT 3 BORROW DITCH 2 STA 1+75 - 22+41 | 958 |
| DIKE 3 STA 0+00 - 12+44 | 9,520 | UNIT 3 BORROW DITCH 4 STA 0+00 - 12+59 | 1,020 |
| DIKE 5 STA 0+00 - 2+56 | 720 | UNIT 3 BORROW AREA 1 | 16,637 |
| UNIT 3 DRAINAGE DITCH | 1,083 | - | - |
| PHASE 2 FILL TOTAL | 16,187 | PHASE 2 EMBANKMENT CONSTRUCTION (BORROW) TOTAL (CY) | 18,615 |

### PHASE 3

| FILL LOCATION | FILL (CY) | BORROW LOCATION | EMBANKMENT CONSTRUCTION (BORROW) (CY) |
|---|---|---|---|
| DIKE 1 STA 26+00 - 43+01 | 11,709 | UNIT 2 BORROW DITCH 0+00 - 22+35 | 1,782 |
| - | - | UNIT 3 BORROW AREA 1 | 11,683 |
| PHASE 3 FILL TOTAL | 11,709 | PHASE 3 EMBANKMENT CONTRUCTION (BORROW) TOTAL (CY) | 13,465 |
| PROJECT FILL TOTAL | 70,758 | PROJECT EMBANKMENT CONSTRUCTION TOTAL (CY) | 81,371 |

*CUT/FILL RATIO = 115%

## 36"X36" W8-2 DIP WARNING SIGNS SCHEDULE

| LOCATION | PHASE 1 | PHASE 2 | PHASE 3 |
|---|---|---|---|
| BASE RD. STA 12+00 RT | - | 1 | - |
| BASE RD. STA 14+00 LT | - | 1 | - |
| BASE RD. STA 25+00 RT | 1 | - | - |
| BASE RD. STA 30+00 LT | 1 | - | - |
| TOTAL W8-2 DIP WARNING SIGNS | 2 | 2 | 0 |

## SEEDING AND MULCHING SCHEDULE

### PHASE 1

| LOCATION | ACRES |
|---|---|
| DIKE 1 STA 0+00 - 26+00 | 5.1 |
| DIKE 2 (BASE RD.) STA 19+00 - 32+35 | 1.0 |
| DIKE 4 | 1.9 |
| PHASE TOTAL: | 8.0 (8) |

### PHASE 2

| LOCATION | ACRES |
|---|---|
| DIKE 2 (BASE RD.) STA 0+00 - 19+00 | 1.2 |
| DIKE 3 | 2.0 |
| DIKE 5 | 0.1 |
| PHASE TOTAL: | 3.3 (4) |

### PHASE 3

| LOCATION | ACRES |
|---|---|
| DIKE 1 STA 26+00 - 43+01 | 2.2 |
| PHASE TOTAL: | 2.2 (3) |

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k:\plano c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Cover and Specs.dwg, 10/25/2022 4:43 PM, Bradley Kullmann, Schedules, None

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DEXTER, MICHIGAN 48130
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AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

SCHEDULES
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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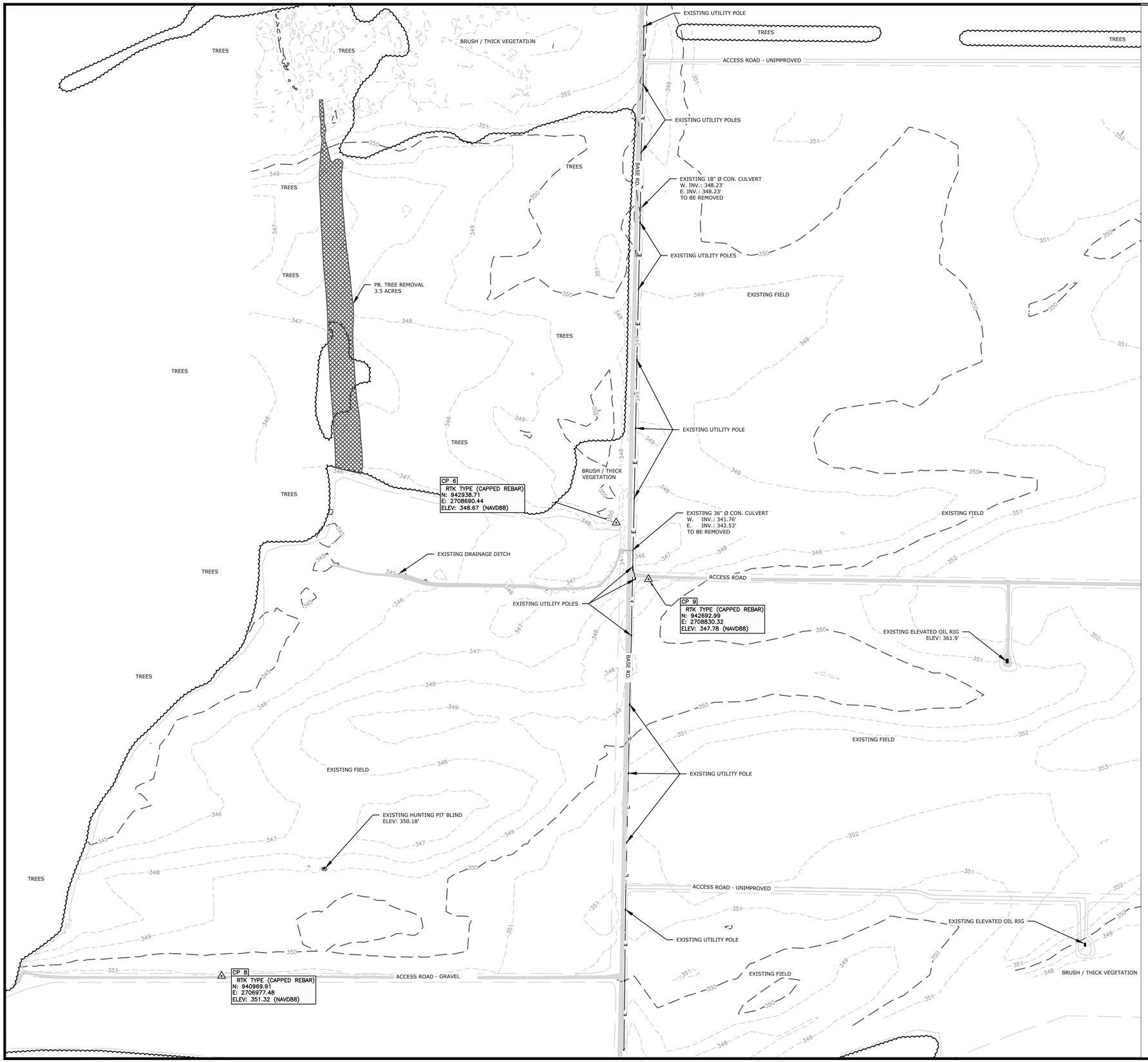
| - | - | - | - | - |

CAD FILE: IN-125-3 Cover and Specs
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3




January 31, 2022

US–IN–125–3, Behind Lake
Topographic Survey Field Book: IN–125–3 Behind Lake

HORIZONTAL AND CONTROL
Coordinates are NAD 83 (CORS 2011), Indiana State Plane East Zone 3401, and units of measurement are in U.S. Survey Feet. Raw data was collected for 18 hours on January 24–25, 2022 using a Trimble R10 GPS Base Receiver, Trimble R10 GPS Rover, and Trimble R12 GPS Rover. Coordinates are established from Trimble R10 GPS base reciever and post processed with the NGS OPUS (National Geodetic Survey, Online Positioning User Service) solution for the occupied control point 9.

VERTICAL CONTROL
Elevations established from R10 GPS Base Reciever and post processed with the NGS OPUS solution for the occupied control point number 9. Vertical Datum was observed in NAVD 88, using GEOID18.

CONTROL POINT DATA

| POINT # | ELEVATION | NORTH | EAST | DESCRIPTION |
|---|---|---|---|---|
| 6 | 348.67 | 942938.71 | 2708690.44 | SET CAPPED REBAR |
| 8 | 351.32 | 940969.91 | 2706977.48 | SET CAPPED REBAR |
| 9 | 347.78 | 942692.99 | 2708830.32 | SET CAPPED REBAR |

GRAPHIC SCALE
200 0 100 200 400 800
1 inch = 200 feet

Know what's **below.** **Call** before you dig.

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ON:

# EXISTING COND. & TOPO
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
|---|---|---|---|---|
| | | | | |

CAD FILE: IN-125-3 Existing Cond and Topo
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3



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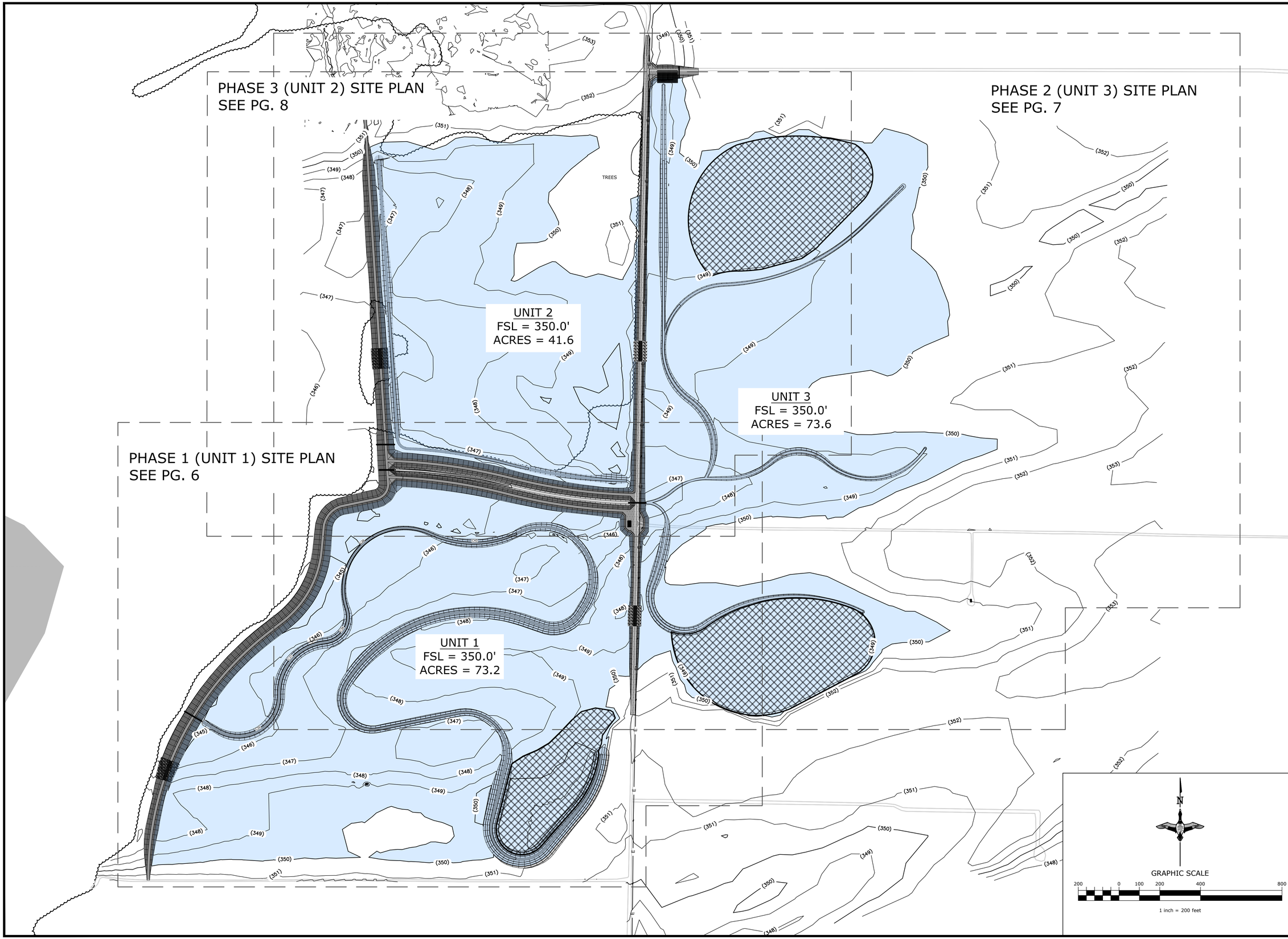
k:\giaro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Existing Cond and Topo.dwg, 10/25/2022 4:43 PM, Bradley Kollmann, EXISTING COND. & TOPO, None

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k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Site Plan.dwg, 10/25/2022 4:44 PM, Bradley Kullmann, Over All Site Plan, None

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ON:

SITE PLAN
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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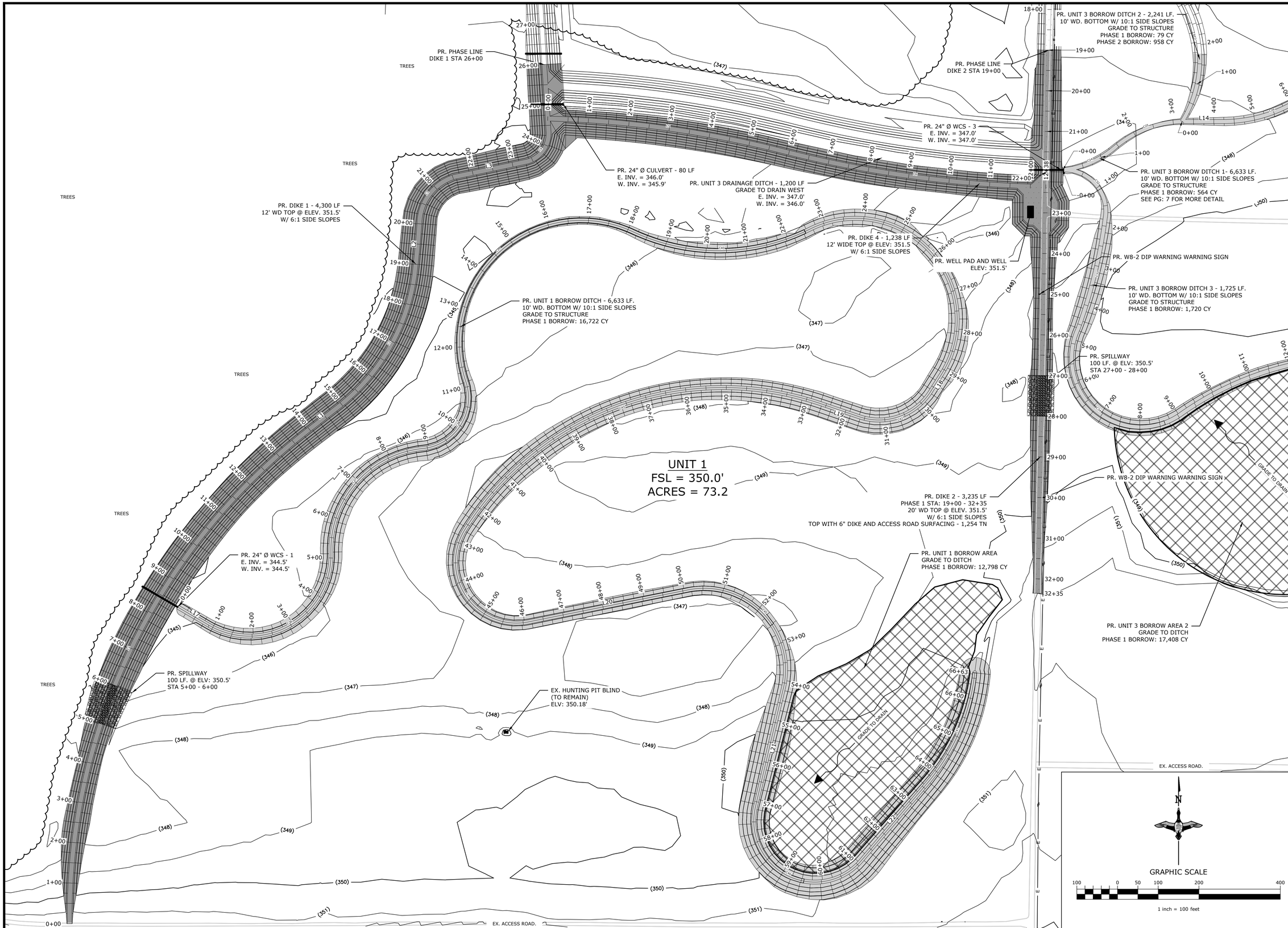
CAD FILE: IN-125-3 Site Plan
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3





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ON:

# PHASE 1 (UNIT 1) SITE PLAN
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| By | Date | Revisions | Sheet | Revision |
|---|---|---|---|---|
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CAD FILE: IN-125-3 Site Plan

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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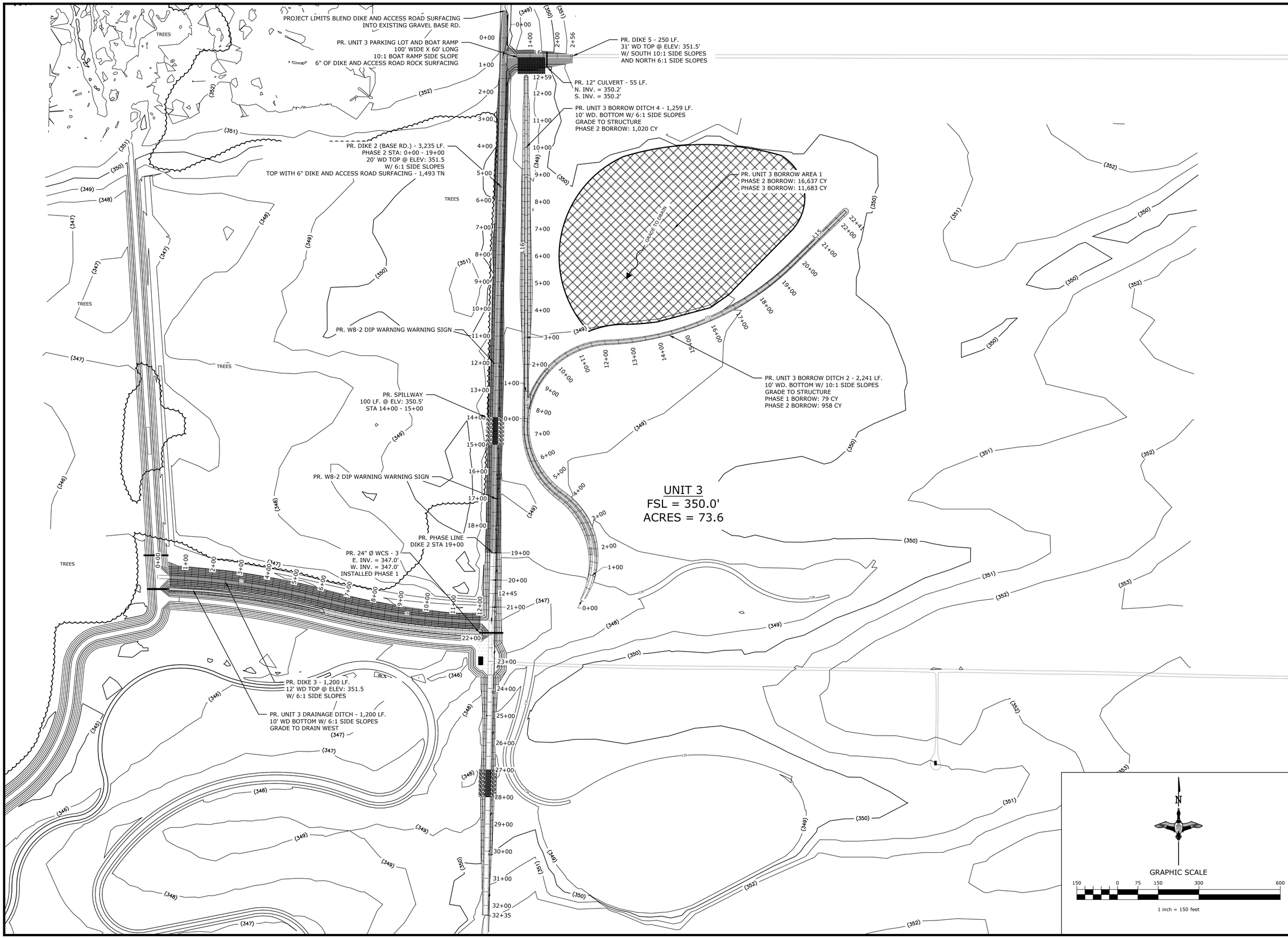



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ON:

# PHASE 2 (UNIT 3) SITE PLAN
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Site Plan

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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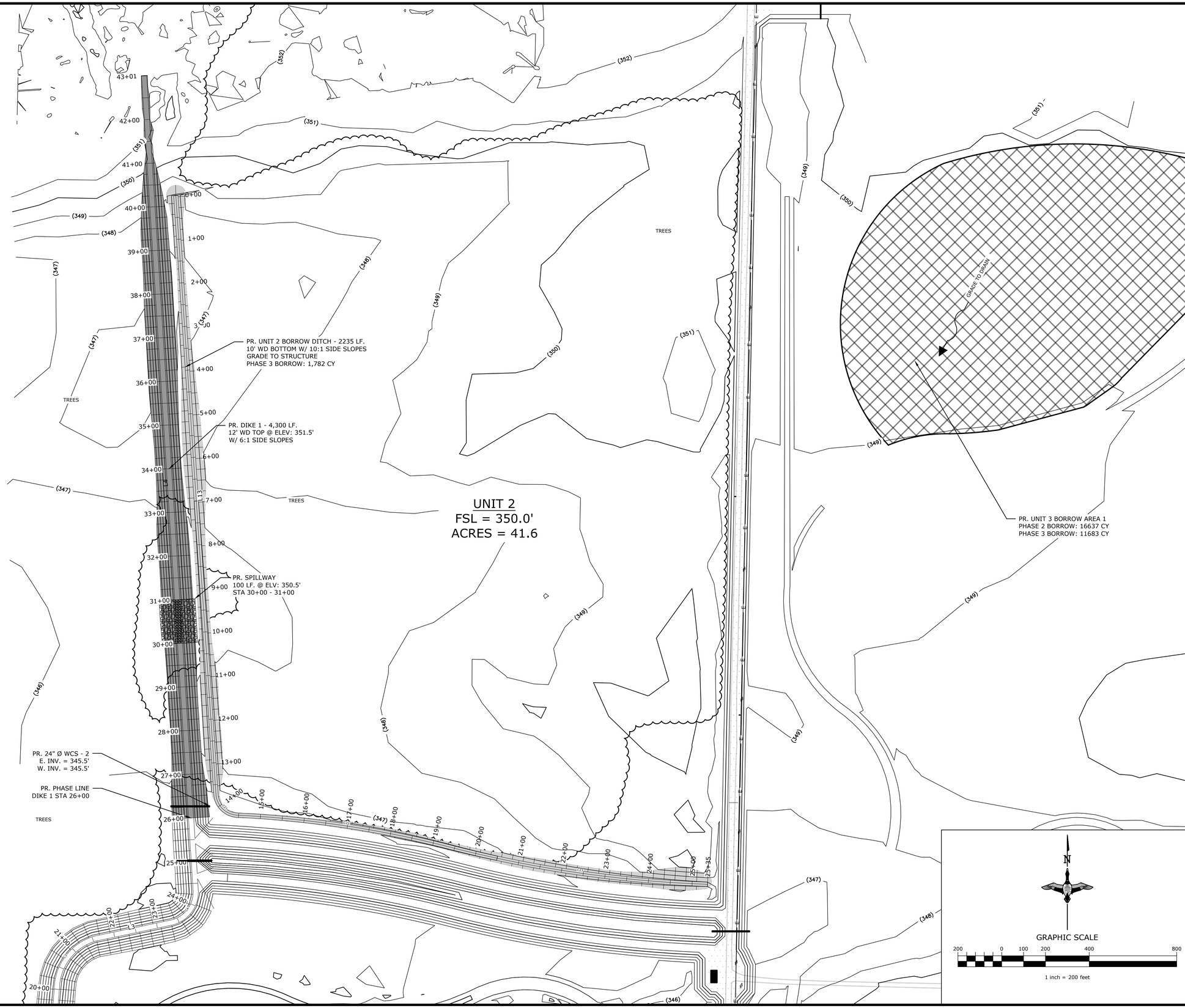
k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Site Plan.dwg, 10/25/2022 4:44 PM, Bradley Kullmann, UNIT 23, None

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ON:

# PHASE 3 (UNIT 2) SITE PLAN
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Site Plan
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3



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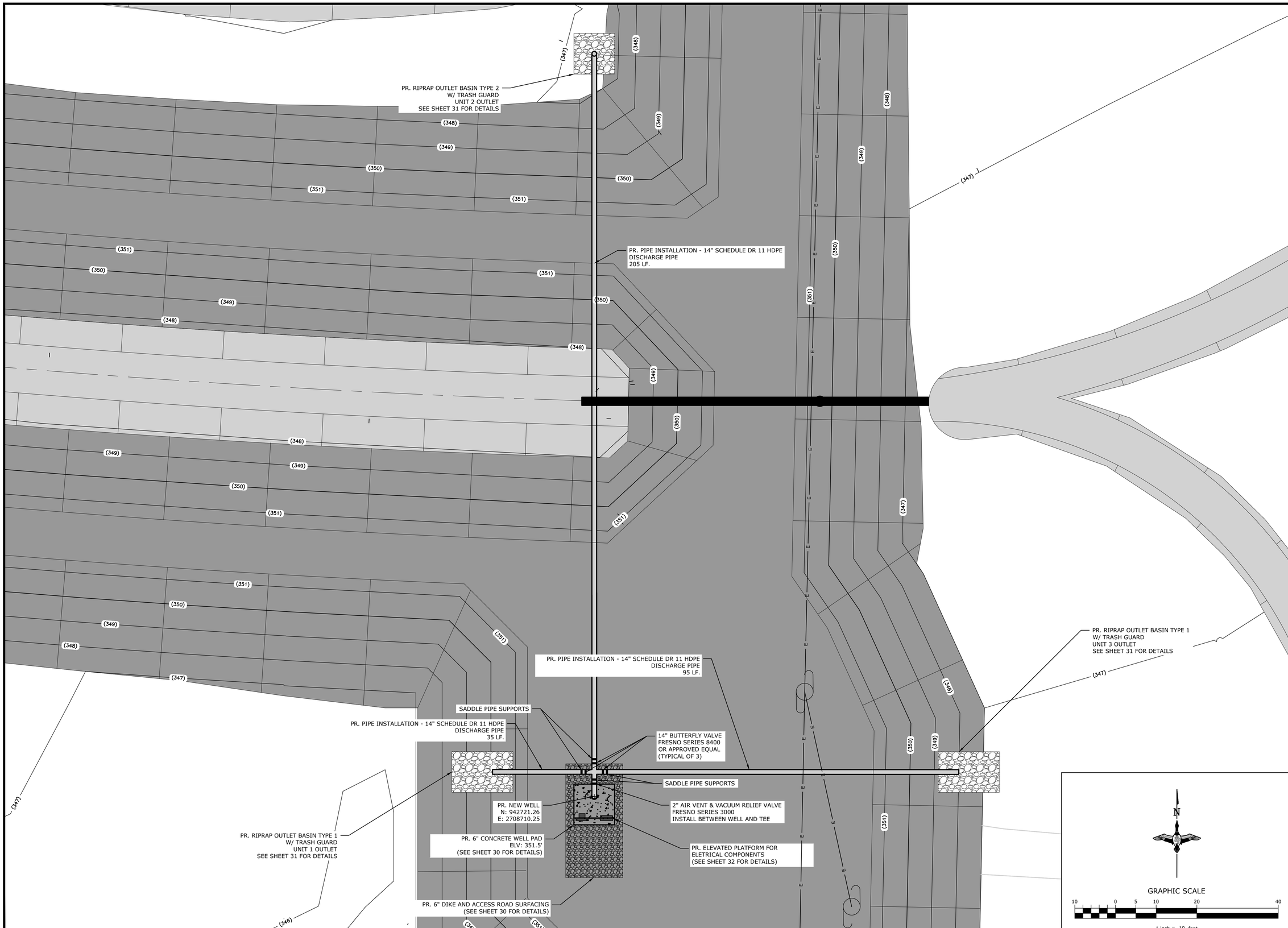
k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Site Plan.dwg, 10/25/2022 4:44 PM, Bradley Kullmann, Unit 2, None





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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

# WELL SITE PLAN
# BEHIND LAKE
# HOVEY LAKE FISH & WILDLIFE AREA
# POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
|---|---|---|---|---|
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| - | - | - | - | - |
| - | - | - | - | - |
| - | - | - | - | - |

CAD FILE: IN-125-3 Well Site Plan

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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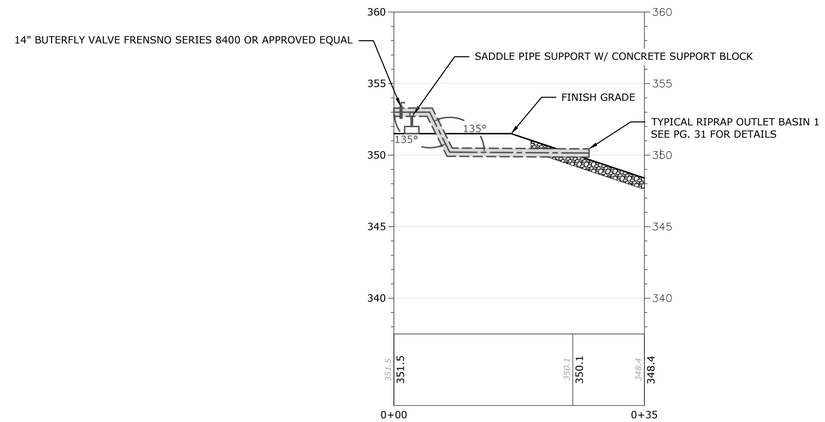
k:\gisro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Well Site Plan.dwg, 10/25/2022 4:44 PM, Bradley Kullmann, Well Site Plan, None

## PROFILE
### HDPE PIPE (WELL OUTLET – UNIT 1)



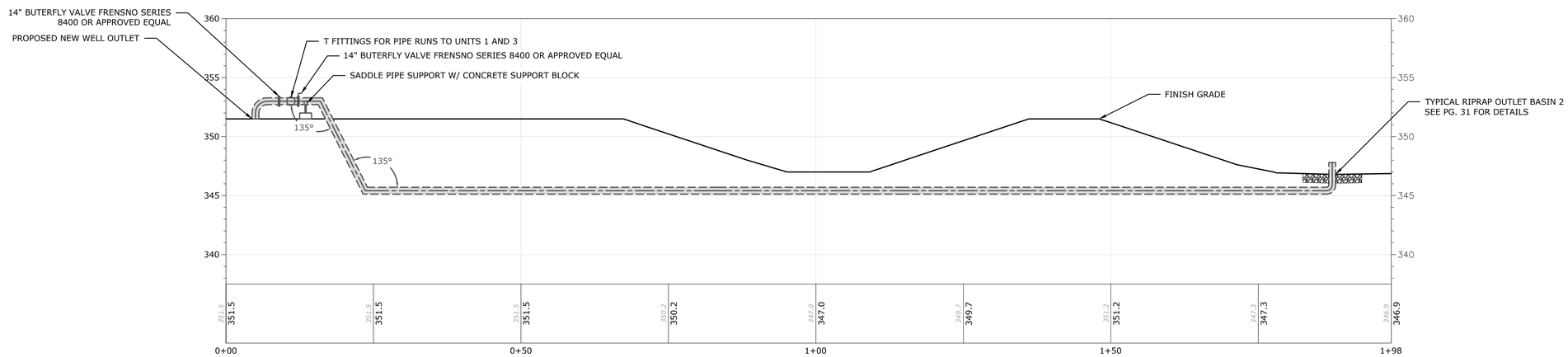

HORIZONTAL SCALE

1 inch = 10 feet

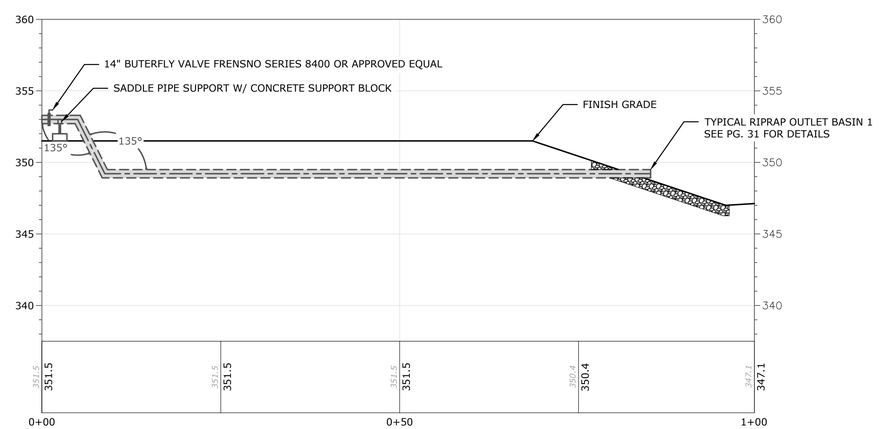
VERTICAL SCALE

1 inch = 2 feet

## PROFILE
### HDPE PIPE (WELL OUTLET – UNIT 2)




## PROFILE
### HDPE PIPE (WELL OUTLET – UNIT 3)

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k:\gis\arc c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Well Site Plan.dwg, 10/25/2022 4:44 PM, Bradley Kullmann, HDPE Profiles, None

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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

HDPE PIPE PROFILES
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
|---|---|---|---|---|
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CAD FILE:
IN-125-3 Well Site Plan

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE:
05/19/2022

PROJECT NUMBER:
US-IN-125-3

## DIKE 1 (UNIT 1 & 2 W. NS. LEVEE) CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C1 | 0+00 | N 940965.47<br>E 2706349.61 | 13+94.48 | N 942177.49<br>E 2706934.53 | N25° 45' 42.45"E<br>1345.78' | PI = 7+51.03<br>N 941716.45<br>E 2706341.67<br>Δ = 52°44'10"<br>R = 1515.06'<br>T = 751.03'<br>L = 1394.48'<br>E = 175.93' |
| L1 | 13+94.48 | N 942177.49<br>E 2706934.53 | 14+88.84 | N 942235.42<br>E 2707009.02 | N52° 07' 47.35"E<br>94.36' | |
| C2 | 14+88.84 | N 942235.42<br>E 2707009.02 | 18+97.71 | N 942584.13<br>E 2707199.96 | N28° 42' 13.53"E<br>397.57' | PI = 17+05.48<br>N 942368.40<br>E 2707180.03<br>Δ = 46°51'08"<br>R = 500.00'<br>T = 216.64'<br>L = 408.86'<br>E = 44.92' |
| L2 | 18+97.71 | N 942584.13<br>E 2707199.96 | 20+00.76 | N 942686.74<br>E 2707209.44 | N5° 16' 39.70"E<br>103.05' | |
| C3 | 20+00.76 | N 942686.74<br>E 2707209.44 | 21+52.60 | N 942801.15<br>E 2707293.98 | N36° 27' 40.08"E<br>142.25' | PI = 20+88.26<br>N 942774.23<br>E 2707210.72<br>Δ = 71°14'24"<br>R = 122.12'<br>T = 87.50'<br>L = 151.84'<br>E = 28.11' |
| L3 | 21+52.60 | N 942801.15<br>E 2707293.98 | 23+32.43 | N 942838.04<br>E 2707469.97 | N78° 09' 43.52"E<br>179.82' | |
| C4 | 23+32.43 | N 942838.04<br>E 2707469.97 | 24+34.45 | N 942912.51<br>E 2707526.64 | N37° 16' 16.51"E<br>93.58' | PI = 23+94.32<br>N 942850.74<br>E 2707530.55<br>Δ = 81°46'54"<br>R = 71.48'<br>T = 61.90'<br>L = 102.03'<br>E = 23.08' |
| L4 | 24+34.45 | N 942912.51<br>E 2707526.64 | 43+00.98 | N 944775.32<br>E 2707408.81 | N3° 37' 10.50"W<br>1866.53' | |

## DIKE 2 (BASE RD. LEVEE) CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| L5 | 0+00 | N 945012.54<br>E 2708794.71 | 32+35.49 | N 941777.72<br>E 2708728.33 | S1° 10' 31.93"W<br>3235.49' | |

## DIKE 3 (UNIT 2 S. LEVEE) CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C7 | 0+00 | N 943024.87<br>E 2707519.54 | 6+17.33 | N 942940.23<br>E 2708129.76 | S82° 06' 08.94"E<br>616.07' | PI = 3+09.93<br>N 943016.44<br>E 2707829.35<br>Δ = 12°40'39"<br>R = 2790.00'<br>T = 309.93'<br>L = 617.33'<br>E = 17.16' |
| C8 | 6+17.33 | N 942940.23<br>E 2708129.76 | 12+44.96 | N 942857.36<br>E 2708750.49 | S82° 23' 45.59"E<br>626.23' | PI = 9+32.55<br>N 942862.72<br>E 2708435.31<br>Δ = 13°15'34"<br>R = 2712.07'<br>T = 315.22'<br>L = 627.63'<br>E = 18.26' |

## DIKE 4 (UNIT 1 N. LEVEE) CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C5 | 0+00 | N 942944.70<br>E 2707524.61 | 5+92.38 | N 942862.68<br>E 2708110.09 | S82° 01' 32.99"E<br>591.20' | PI = 2+97.37<br>N 942935.81<br>E 2707821.85<br>Δ = 12°31'27"<br>R = 2710.00'<br>T = 297.37'<br>L = 592.38'<br>E = 16.27' |
| C6 | 5+92.38 | N 942862.68<br>E 2708110.09 | 12+38.24 | N 942777.40<br>E 2708748.85 | S82° 23' 43.86"E<br>644.42' | PI = 9+16.76<br>N 942782.91<br>E 2708424.51<br>Δ = 13°15'49"<br>R = 2790.00'<br>T = 324.38'<br>L = 645.87'<br>E = 18.79' |

## DIKE 5 (UNIT 3 N. LEVEE) CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| L6 | 0+00 | N 944945.11<br>E 2708793.33 | 2+56.42 | N 944945.11<br>E 2709049.74 | N90° 00' 00.00"E<br>256.42' | |

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ON:

DIKE ALIGNMENT TABLES
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
|---|---|---|---|---|
| - | - | - | - | - |
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CAD FILE: IN-125-3 Site Plan

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3

## UNIT 1 BORROW DITCH CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| L17 | 0+00 | N 941743.97<br>E 2706614.99 | 0+88.34 | N 941699.54<br>E 2706691.35 | S59° 48' 27.23"E<br>88.34' | |
| C36 | 0+88.34 | N 941699.54<br>E 2706691.35 | 5+13.34 | N 941877.86<br>E 2706991.85 | N59° 18' 56.41"E<br>349.43' | PI = 4+47.33<br>N 941519.01<br>E 2707001.63<br>Δ = 121°45'13"<br>R = 200.00'<br>T = 358.99'<br>L = 425.00'<br>E = 210.94' |
| C37 | 5+13.34 | N 941877.86<br>E 2706991.85 | 8+88.34 | N 942133.47<br>E 2707217.29 | N41° 24' 38.66"E<br>340.82' | PI = 7+46.24<br>N 942110.67<br>E 2706985.51<br>Δ = 85°56'37"<br>R = 250.00'<br>T = 232.90'<br>L = 375.00'<br>E = 91.68' |
| C38 | 8+88.34 | N 942133.47<br>E 2707217.29 | 11+13.34 | N 942298.05<br>E 2707323.42 | N32° 48' 58.94"E<br>195.83' | PI = 10+45.86<br>N 942148.89<br>E 2707374.05<br>Δ = 103°07'57"<br>R = 125.00'<br>T = 157.52'<br>L = 225.00'<br>E = 76.09' |
| C39 | 11+13.34 | N 942298.05<br>E 2707323.42 | 18+13.34 | N 942666.51<br>E 2707734.00 | N48° 05' 42.88"E<br>551.67' | PI = 18+14.81<br>N 942962.30<br>E 2707097.94<br>Δ = 133°41'25"<br>R = 300.00'<br>T = 701.48'<br>L = 700.00'<br>E = 462.93' |
| C40 | 18+13.34 | N 942666.51<br>E 2707734.00 | 22+63.34 | N 942672.90<br>E 2708168.92 | N89° 09' 26.00"E<br>434.97' | PI = 20+54.87<br>N 942564.66<br>E 2707953.01<br>Δ = 51°33'58"<br>R = 500.00'<br>T = 241.53'<br>L = 450.00'<br>E = 55.28' |
| C41 | 22+63.34 | N 942672.90<br>E 2708168.92 | 29+13.34 | N 942315.67<br>E 2708492.18 | S42° 08' 28.92"E<br>481.78' | PI = 31+63.86<br>N 943076.49<br>E 2708973.95<br>Δ = 148°58'08"<br>R = 250.00'<br>T = 900.53'<br>L = 650.00'<br>E = 684.58' |
| L18 | 29+13.34 | N 942315.67<br>E 2708492.18 | 29+63.34 | N 942273.43<br>E 2708465.43 | S32° 20' 35.33"W<br>50.00' | |
| C42 | 29+63.34 | N 942273.43<br>E 2708465.43 | 31+63.34 | N 942211.62<br>E 2708290.51 | S70° 32' 25.20"W<br>185.51' | PI = 30+81.37<br>N 942173.71<br>E 2708402.28<br>Δ = 76°23'40"<br>R = 150.00'<br>T = 118.03'<br>L = 200.00'<br>E = 40.87' |
| L19 | 31+63.34 | N 942211.62<br>E 2708290.51 | 32+63.34 | N 942243.75<br>E 2708195.81 | N71° 15' 44.93"W<br>100.00' | |
| C43 | 32+63.34 | N 942243.75<br>E 2708195.81 | 42+63.34 | N 941934.74<br>E 2707321.24 | S70° 32' 25.20"W<br>927.55' | PI = 38+53.47<br>N 942433.32<br>E 2707636.96<br>Δ = 76°23'40"<br>R = 750.00'<br>T = 590.13'<br>L = 1000.00'<br>E = 204.34' |
| C44 | 42+63.34 | N 941934.74<br>E 2707321.24 | 46+13.34 | N 941707.42<br>E 2707477.49 | S34° 30' 06.95"E<br>275.83' | PI = 46+14.08<br>N 941638.41<br>E 2707133.60<br>Δ = 133°41'25"<br>R = 150.00'<br>T = 350.74'<br>L = 350.00'<br>E = 231.47' |
| L20 | 46+13.34 | N 941707.42<br>E 2707477.49 | 50+13.34 | N 941786.12<br>E 2707869.67 | N78° 39' 10.78"E<br>400.00' | |
| C45 | 50+13.34 | N 941786.12<br>E 2707869.67 | 54+13.34 | N 941544.21<br>E 2708103.70 | S44° 03' 04.41"E<br>336.59' | PI = 53+24.82<br>N 941847.41<br>E 2708175.06<br>Δ = 114°35'30"<br>R = 200.00'<br>T = 311.48'<br>L = 400.00'<br>E = 170.16' |
| L21 | 54+13.34 | N 941544.21<br>E 2708103.70 | 57+13.34 | N 941252.19<br>E 2708034.96 | S13° 14' 40.39"W<br>300.00' | |
| C46 | 57+13.34 | N 941252.19<br>E 2708034.96 | 61+13.34 | N 941120.49<br>E 2708295.11 | S63° 08' 59.35"E<br>291.58' | PI = 63+33.10<br>N 940648.92<br>E 2707892.97<br>Δ = 152°47'19"<br>R = 150.00'<br>T = 619.76'<br>L = 400.00'<br>E = 487.65' |
| L22 | 61+13.34 | N 941120.49<br>E 2708295.11 | 63+63.34 | N 941310.72<br>E 2708457.33 | N40° 27' 20.91"E<br>250.00' | |
| C47 | 63+63.34 | N 941310.72<br>E 2708457.33 | 66+63.34 | N 941582.21<br>E 2708574.06 | N23° 16' 01.47"E<br>295.52' | PI = 65+18.01<br>N 941428.41<br>E 2708557.68<br>Δ = 34°22'39"<br>R = 500.00'<br>T = 154.67'<br>L = 300.00'<br>E = 23.38' |

## UNIT 2 BORROW DITCH CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| L13 | 0+00 | N 944500.76<br>E 2707481.32 | 13+76.14 | N 943127.70<br>E 2707573.33 | S3° 50' 01.31"E<br>1376.14' | |
| C21 | 13+76.14 | N 943127.70<br>E 2707573.33 | 14+45.23 | N 943084.06<br>E 2707620.10 | S46° 58' 53.69"E<br>63.97' | PI = 14+17.08<br>N 943087.19<br>E 2707579.28<br>Δ = 77°14'58"<br>R = 51.24'<br>T = 40.94'<br>L = 69.08'<br>E = 14.35' |
| C22 | 14+45.23 | N 943084.06<br>E 2707620.10 | 19+48.62 | N 943008.59<br>E 2708116.86 | S81° 21' 43.63"E<br>502.46' | PI = 16+97.86<br>N 943072.59<br>E 2707872.47<br>Δ = 12°04'15"<br>R = 2389.40'<br>T = 252.63'<br>L = 503.39'<br>E = 13.32' |
| C23 | 19+48.62 | N 943008.59<br>E 2708116.86 | 25+35.26 | N 942925.90<br>E 2708696.52 | S81° 52' 51.04"E<br>585.52' | PI = 22+43.06<br>N 942936.15<br>E 2708402.25<br>Δ = 12°14'47"<br>R = 2744.65'<br>T = 294.44'<br>L = 586.64'<br>E = 15.75' |

## UNIT 3 BORROW DITCH 1 CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C24 | -0+00 | N 942818.37<br>E 2708790.47 | 1+44.27 | N 942875.39<br>E 2708920.56 | N66° 19' 55.15"E<br>142.04' | PI = 0+74.47<br>N 942826.36<br>E 2708864.51<br>Δ = 35°00'52"<br>R = 236.08'<br>T = 74.47'<br>L = 144.27'<br>E = 11.47' |
| C25 | 1+44.27 | N 942875.39<br>E 2708920.56 | 3+21.81 | N 942937.43<br>E 2709083.42 | N69° 08' 48.86"E<br>174.28' | PI = 2+36.47<br>N 942934.56<br>E 2708991.27<br>Δ = 38°08'34"<br>R = 266.69'<br>T = 92.20'<br>L = 177.54'<br>E = 15.49' |
| L14 | 3+21.81 | N 942937.43<br>E 2709083.42 | 4+30.44 | N 942937.43<br>E 2709192.06 | N90° 00' 00.00"E<br>108.63' | |
| C26 | 4+30.44 | N 942937.43<br>E 2709192.06 | 6+64.74 | N 943017.85<br>E 2709407.42 | N69° 31' 20.58"E<br>229.89' | PI = 5+52.23<br>N 942939.95<br>E 2709313.81<br>Δ = 38°34'42"<br>R = 347.97'<br>T = 121.78'<br>L = 234.29'<br>E = 20.70' |
| C27 | 6+64.74 | N 943017.85<br>E 2709407.42 | 9+57.31 | N 943020.97<br>E 2709675.11 | N89° 20' 02.67"E<br>267.71' | PI = 8+43.32<br>N 943137.62<br>E 2709539.89<br>Δ = 82°54'06"<br>R = 202.20'<br>T = 178.59'<br>L = 292.57'<br>E = 67.57' |
| C28 | 9+57.31 | N 943020.97<br>E 2709675.11 | 15+17.28 | N 943084.67<br>E 2710163.24 | N82° 33' 53.58"E<br>492.26' | PI = 13+38.09<br>N 942764.72<br>E 2709956.77<br>Δ = 99°27'37"<br>R = 322.58'<br>T = 380.78'<br>L = 559.97'<br>E = 176.47' |

## UNIT 3 BORROW DITCH 2 CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C29 | 0+00 | N 942937.43<br>E 2709083.71 | 4+36.18 | N 943325.58<br>E 2709005.21 | N11° 25' 59.45"W<br>396.01' | PI = 2+71.63<br>N 943168.36<br>E 2709226.73<br>Δ = 86°24'14"<br>R = 289.24'<br>T = 271.63'<br>L = 436.18'<br>E = 107.55' |
| C30 | 4+36.18 | N 943325.58<br>E 2709005.21 | 12+10.89 | N 943889.30<br>E 2709180.28 | N17° 15' 09.89"E<br>590.28' | PI = 13+50.78<br>N 943864.19<br>E 2708266.04<br>Δ = 142°20'50"<br>R = 311.82'<br>T = 914.59'<br>L = 774.70'<br>E = 654.47' |
| C31 | 12+10.89 | N 943889.30<br>E 2709180.28 | 19+76.23 | N 944186.99<br>E 2709866.26 | N66° 32' 28.00"E<br>747.78' | PI = 16+12.28<br>N 943904.20<br>E 2709581.40<br>Δ = 42°39'47"<br>R = 1027.84'<br>T = 401.39'<br>L = 765.34'<br>E = 75.60' |
| L15 | 19+76.23 | N 944186.99<br>E 2709866.26 | 22+41.32 | N 944372.74<br>E 2710055.38 | N45° 30' 50.65"E<br>265.09' | |

## UNIT 3 BORROW DITCH 3 CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| C32 | -0+00 | N 942818.37<br>E 2708790.47 | 1+78.48 | N 942702.04<br>E 2708894.97 | S41° 55' 58.51"E<br>156.37' | PI = 1+22.55<br>N 942823.27<br>E 2708912.93<br>Δ = 100°43'03"<br>R = 101.53'<br>T = 122.55'<br>L = 178.48'<br>E = 57.61' |
| C33 | 1+78.48 | N 942702.04<br>E 2708894.97 | 4+60.08 | N 942429.00<br>E 2708828.45 | S13° 41' 32.75"W<br>281.02' | PI = 3+19.85<br>N 942561.83<br>E 2708876.85<br>Δ = 12°39'46"<br>R = 1274.15'<br>T = 141.37'<br>L = 281.60'<br>E = 7.82' |
| C34 | 4+60.08 | N 942429.00<br>E 2708828.45 | 9+11.74 | N 942220.30<br>E 2709083.99 | S50° 45' 40.10"E<br>329.94' | PI = 11+49.45<br>N 941806.23<br>E 2708532.82<br>Δ = 152°18'32"<br>R = 169.91'<br>T = 689.38'<br>L = 451.67'<br>E = 540.10' |
| C35 | 9+11.74 | N 942220.30<br>E 2709083.99 | 17+25.26 | N 942282.73<br>E 2709857.33 | N85° 23' 03.65"E<br>775.86' | PI = 13+61.55<br>N 942478.46<br>E 2709452.34<br>Δ = 60°49'11"<br>R = 766.38'<br>T = 449.81'<br>L = 813.52'<br>E = 122.25' |

## UNIT 3 BORROW DITCH 4 CENTERLINE ALIGNMENT

| Number | Start Station | Start Coordinates | End Station | End Coordinates | Tangent/Chord Bearing Length | Curve Data |
|---|---|---|---|---|---|---|
| L16 | 0+00 | N 943608.46<br>E 2708878.56 | 12+59.22 | N 944867.68<br>E 2708878.59 | N0° 00' 04.75"E<br>1259.22' | |

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7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000
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DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

DITCH ALIGNMENT TABLES
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Site Plan
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

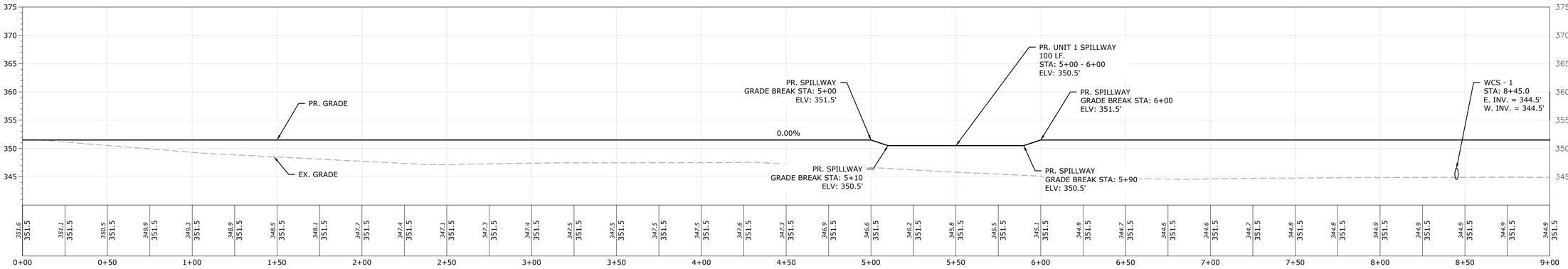
1 inch = 30 feet

VERTICAL SCALE

5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
DIKE 1 (UNIT 1 & 2 W. NS. LEVEE)

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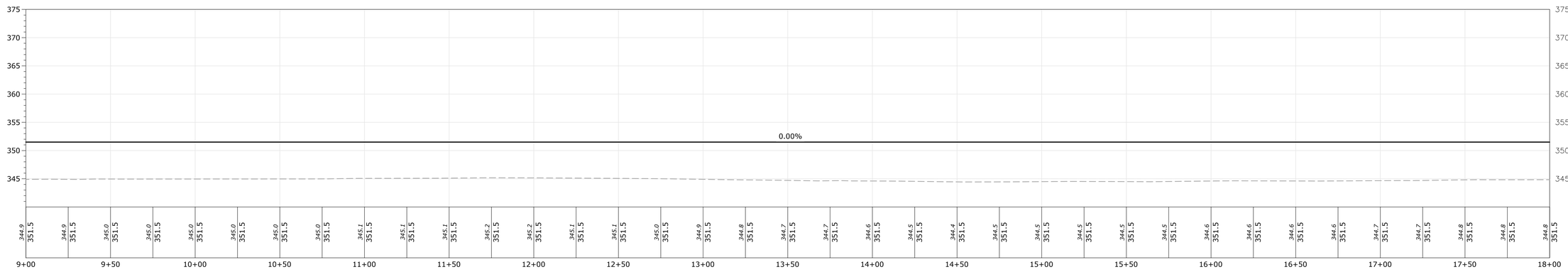
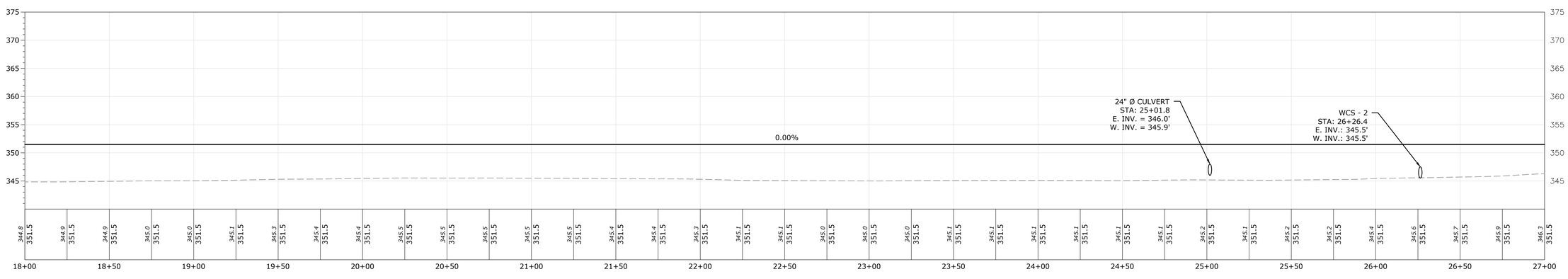
DIKE 1 (UNIT 1 & 2 W. NS. LEVEE)




## PROFILE
DIKE 1 (UNIT 1 & 2 W. NS. LEVEE)

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DEXTER, MICHIGAN 48130
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DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - DIKE 1
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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FILENAME:
VFG - DIKE 1 (UNIT 1 & 2 W. NS. LEVEE) - (1) - (1)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE:
05/19/2022

PROJECT NUMBER:
US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

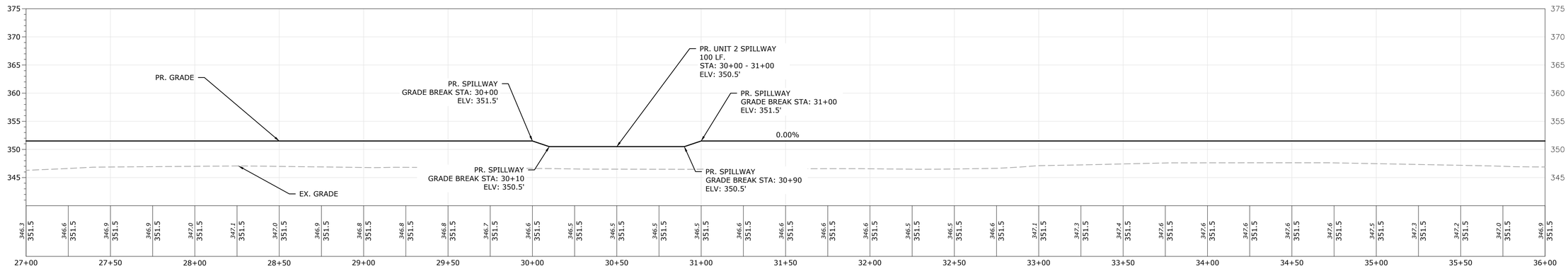
1 inch = 30 feet

VERTICAL SCALE

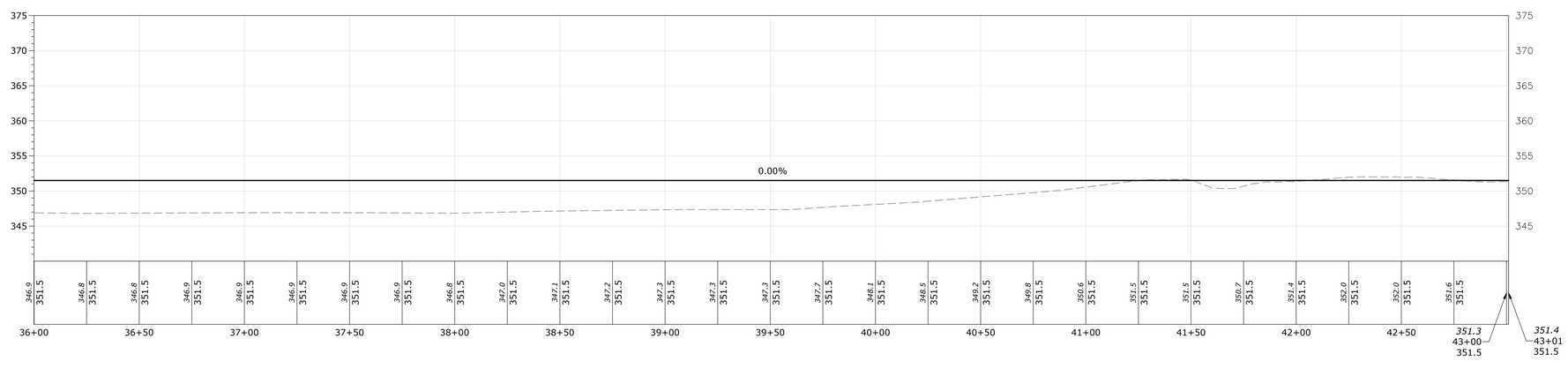
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
DIKE 1 (UNIT 1 & 2 W. NS. LEVEE)




## PROFILE
DIKE 1 (UNIT 1 & 2 W. NS. LEVEE)





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ON:

PROFILES - DIKE 1
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GRAPHIC FILE:
VFG - DIKE 1 (UNIT 1 & 2 W. NS. LEVEE) - (1) - (1)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE:
05/19/2022

PROJECT NUMBER:
US-IN-125-3




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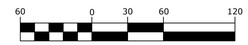
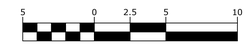
HORIZONTAL SCALE



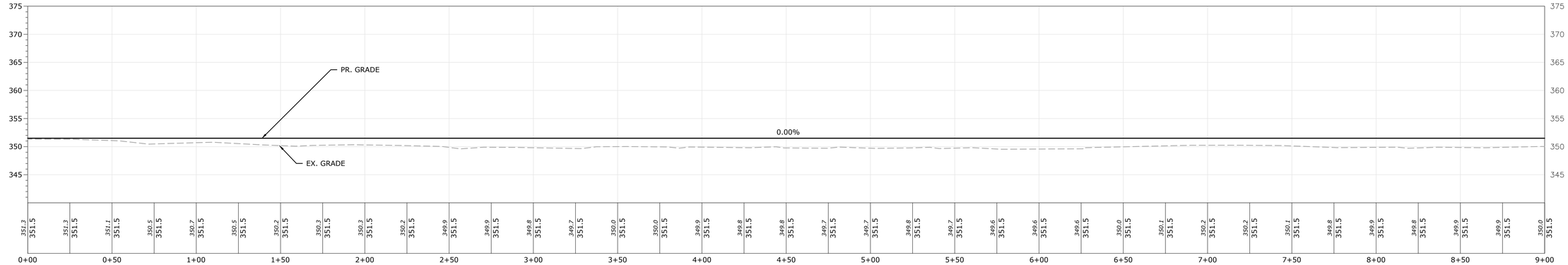

1 inch = 30 feet

VERTICAL SCALE

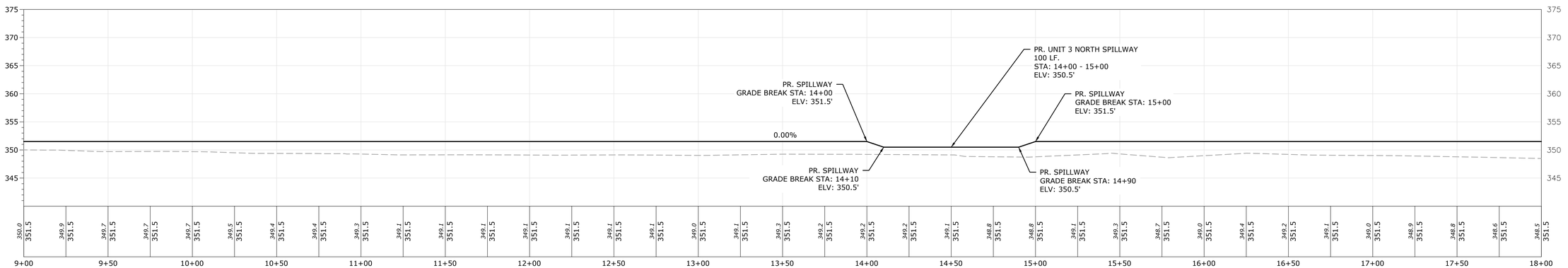



1 inch = 5 feet

## PROFILE
DIKE 2 (BASE RD. LEVEE)




## PROFILE
DIKE 2 (BASE RD. LEVEE)

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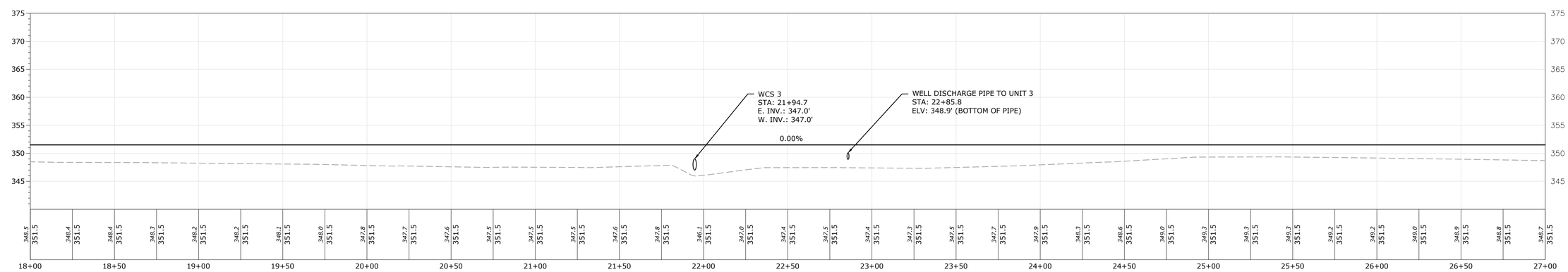
DIKE 2 (BASE RD. LEVEE)





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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - DIKE 2 (BASE RD.)
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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VFG - DIKE 2 (BASE RD. LEVEE) - (2) - (2)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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HORIZONTAL SCALE

60 0 30 60 120

1 inch = 30 feet

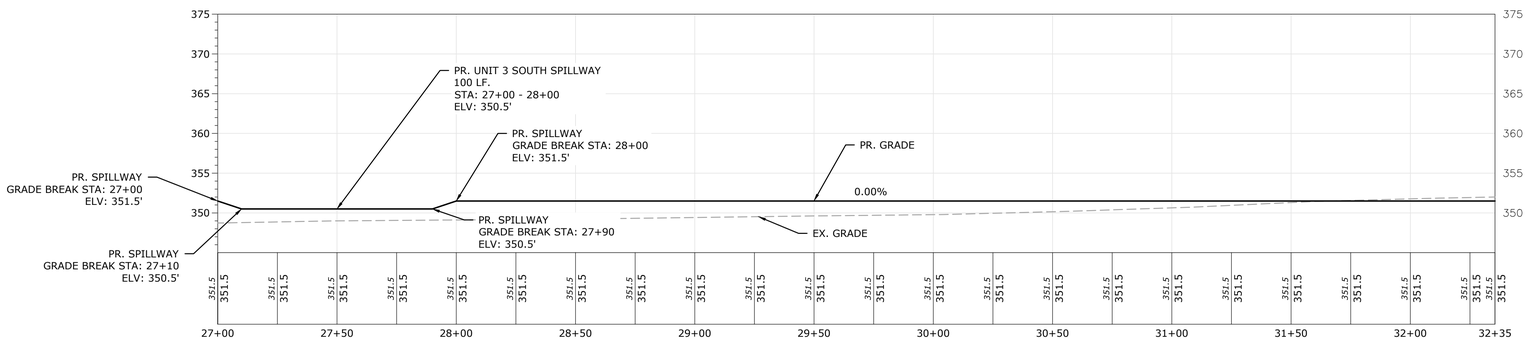
VERTICAL SCALE

5 0 2.5 5 10

1 inch = 5 feet

PROFILE

DIKE 2 (BASE RD. LEVEE)





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ON:

PROFILES - DIKE 2 (BASE RD.)
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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VFG - DIKE 2 (BASE RD. LEVEE) - (2) - (2)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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HORIZONTAL SCALE

60 0 30 60 120

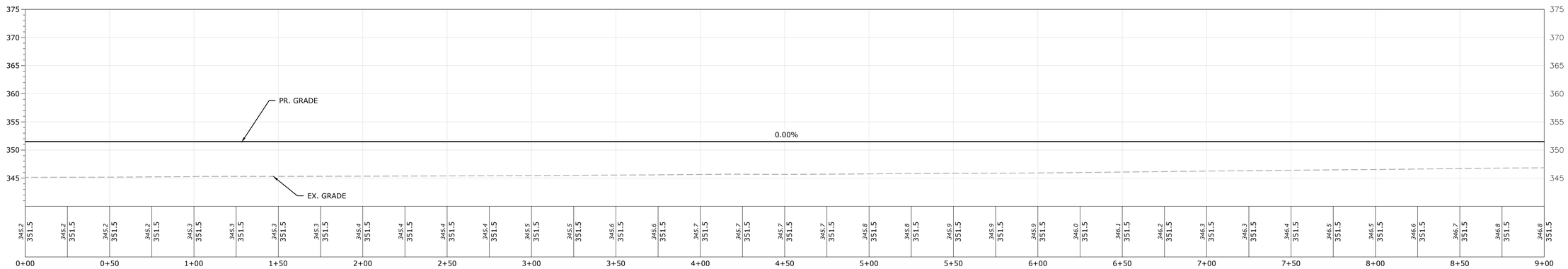
1 inch = 30 feet

VERTICAL SCALE

5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
DIKE 3 (UNIT 2 S. LEVEE)

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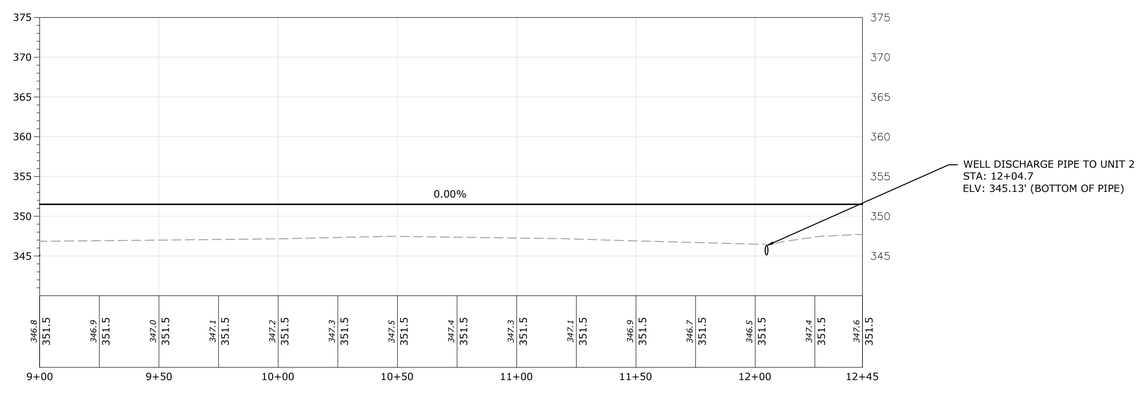
DIKE 3 (UNIT 2 S. LEVEE)

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k:\plano c3d projects\in-125-3 behind lake\c3d_drawing\VFG - DIKE 3 (UNIT 2 S. LEVEE) - (3) - (3).dwg, 10/25/2022 4:46 PM, Bradley Kullmann, Dike 3 Profile - (1), None

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7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000
www.ducks.org
DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - DIKE 3
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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VFG - DIKE 3 (UNIT 2 S. LEVEE) - (3) - (3)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

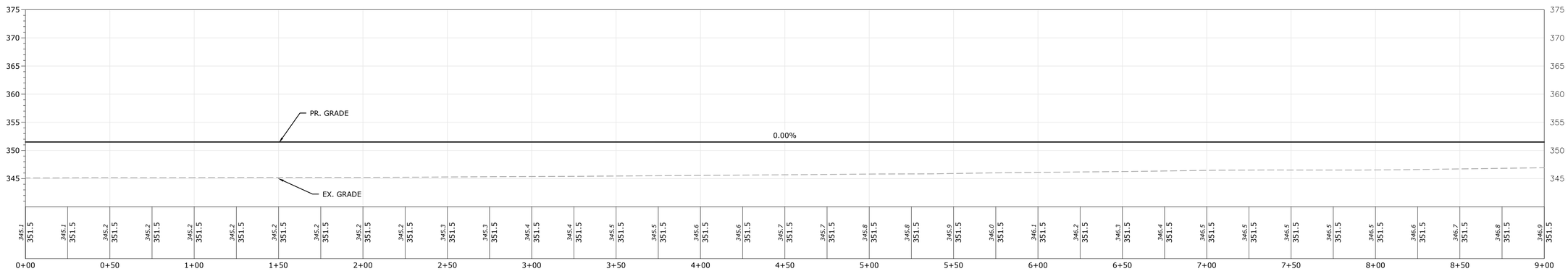
1 inch = 30 feet

VERTICAL SCALE

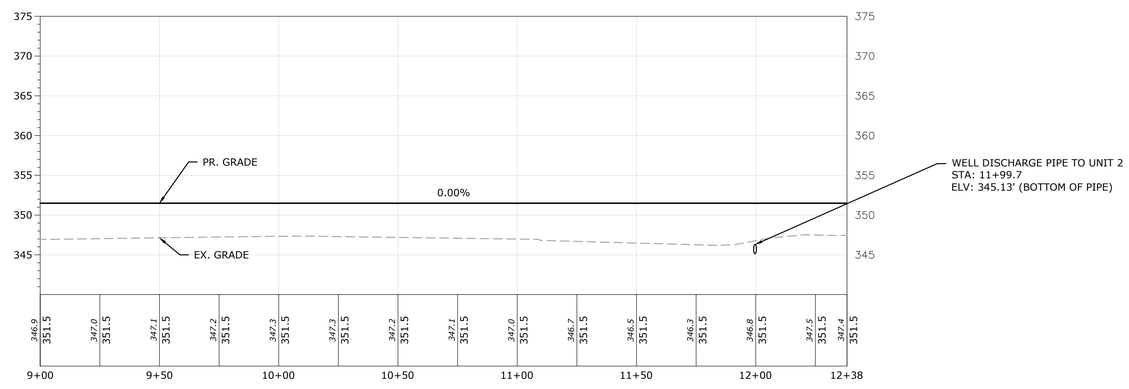
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
DIKE 4 (UNIT 1 N. LEVEE)




## PROFILE
DIKE 4 (UNIT 1 N. LEVEE)

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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - DIKE 4
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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VFG - DIKE 4 (UNIT 1 N. LEVEE) - (4) - (4)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

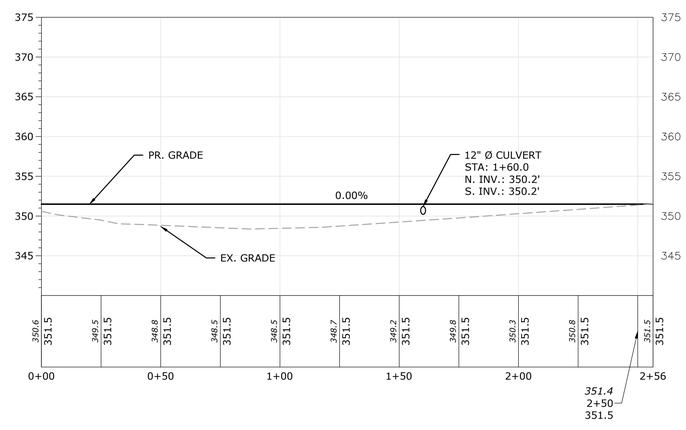
1 inch = 30 feet

VERTICAL SCALE

5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
## DIKE 5 (UNIT 3 N. LEVEE)





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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - DIKE 5
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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VFG - DIKE 5 (UNIT 3 N. LEVEE) - (5) - (5)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE:
05/19/2022

PROJECT NUMBER:
US-IN-125-3




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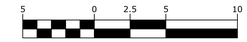
HORIZONTAL SCALE

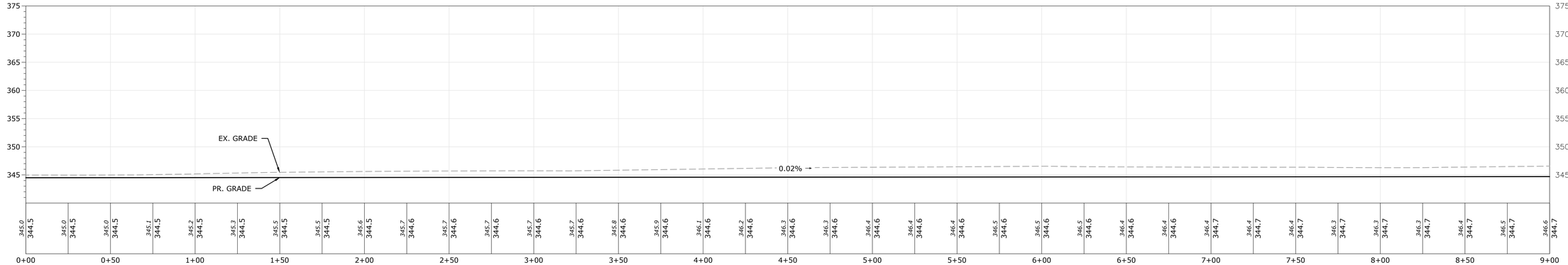
1 inch = 30 feet

VERTICAL SCALE

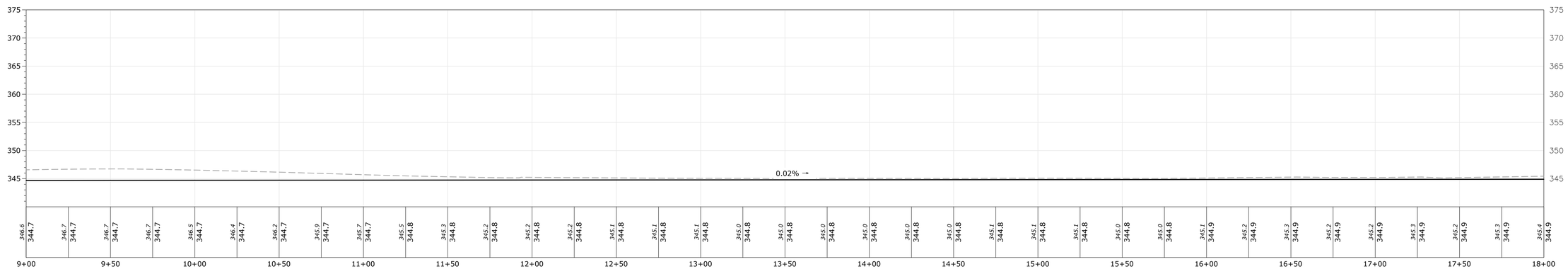



1 inch = 5 feet

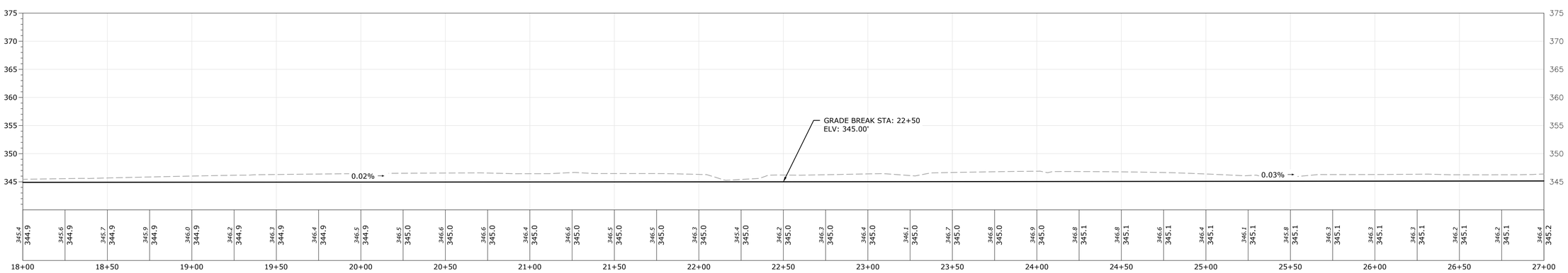
## PROFILE
UNIT 1 BORROW DITCH




## PROFILE
UNIT 1 BORROW DITCH




## PROFILE
UNIT 1 BORROW DITCH





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DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

PROFILES - UNIT 1 BORROW DITCH
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: VFG UNIT 1 BORROW - UNIT 1 BORROW DITCH - (1) - (16)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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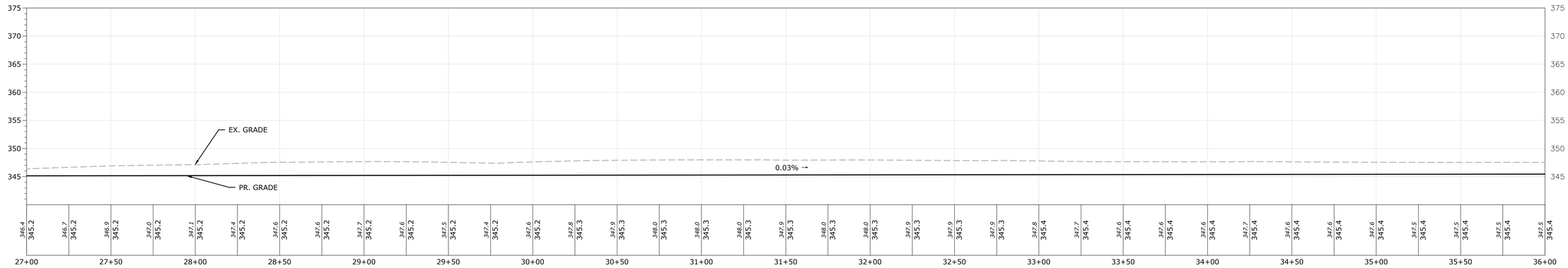
k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\VFG UNIT 1 BORROW - UNIT 1 BORROW DITCH - (1) - (16).dwg, 10/27/2022 3:51 PM, Bradley Kullmann, Sheet - (7), None

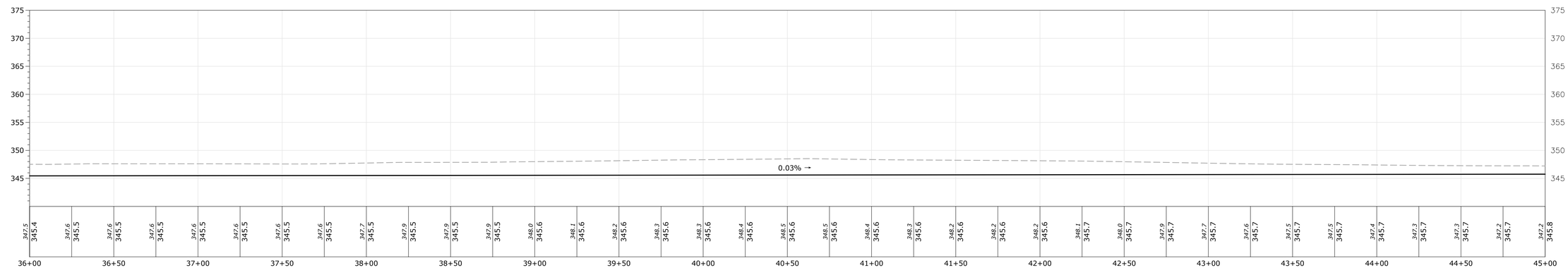
HORIZONTAL SCALE: 60 0 30 60 120 — 1 inch = 30 feet

VERTICAL SCALE: 5 0 2.5 5 10 — 1 inch = 5 feet

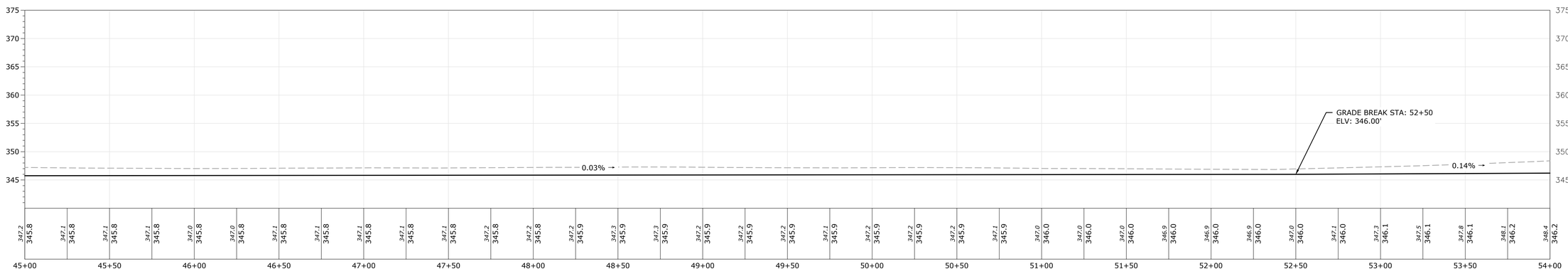
## PROFILE
UNIT 1 BORROW DITCH




## PROFILE
UNIT 1 BORROW DITCH




## PROFILE
UNIT 1 BORROW DITCH

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DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

PROFILES - UNIT 1 BORROW DITCH
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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VFG UNIT 1 BORROW DITCH - (1) - (16)

DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

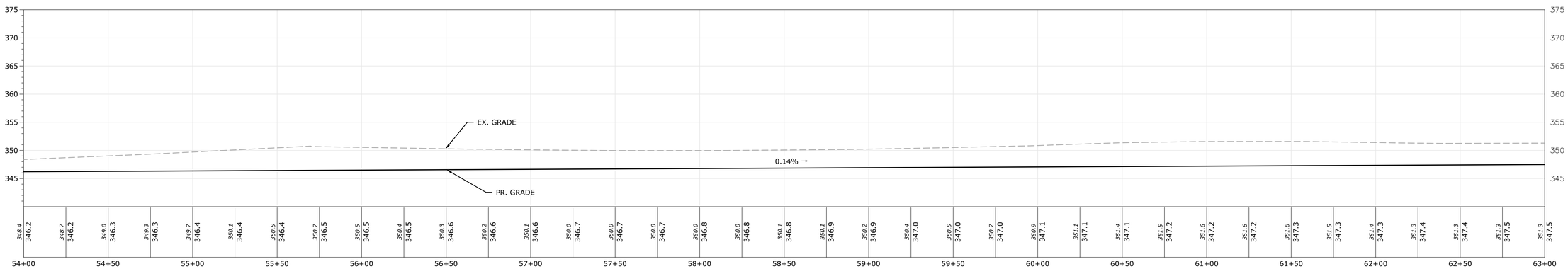
1 inch = 30 feet

VERTICAL SCALE

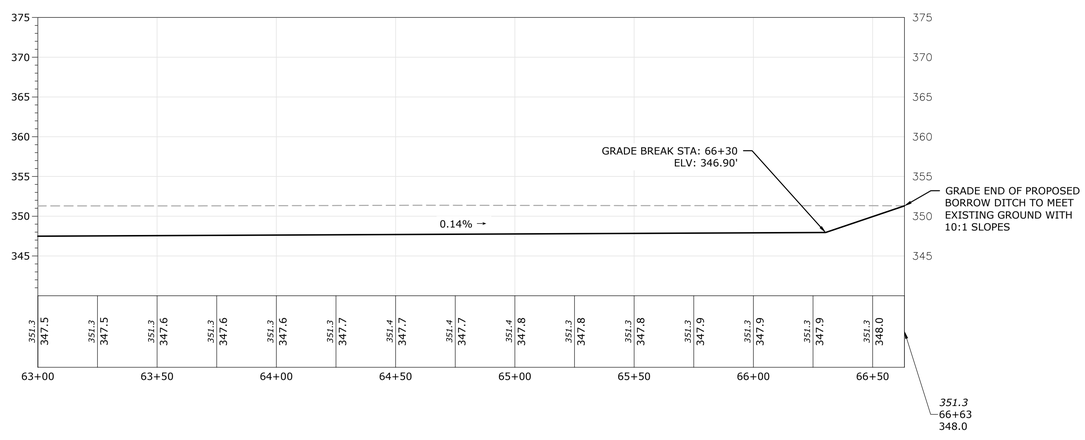
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
UNIT 1 BORROW DITCH




## PROFILE
UNIT 1 BORROW DITCH

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AFFIX SEAL: DUCKS UNLIMITED, INC.

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PROFILES - UNIT 1 BORROW DITCH
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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CAD FILE: VFG UNIT 1 BORROW - UNIT 1 BORROW DITCH - (1) - (16)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3



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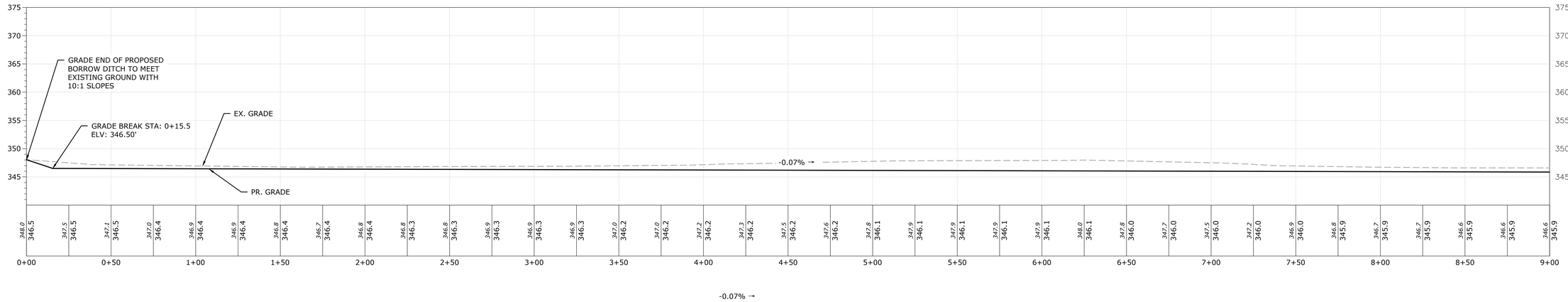
HORIZONTAL SCALE: 60 0 30 60 120 — 1 inch = 30 feet

VERTICAL SCALE: 5 0 2.5 5 10 — 1 inch = 5 feet

## PROFILE
UNIT 2 BORROW DITCH

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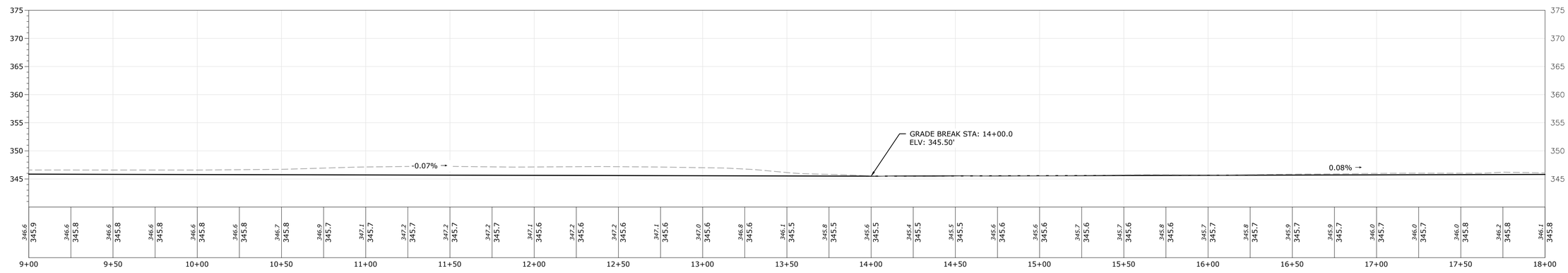
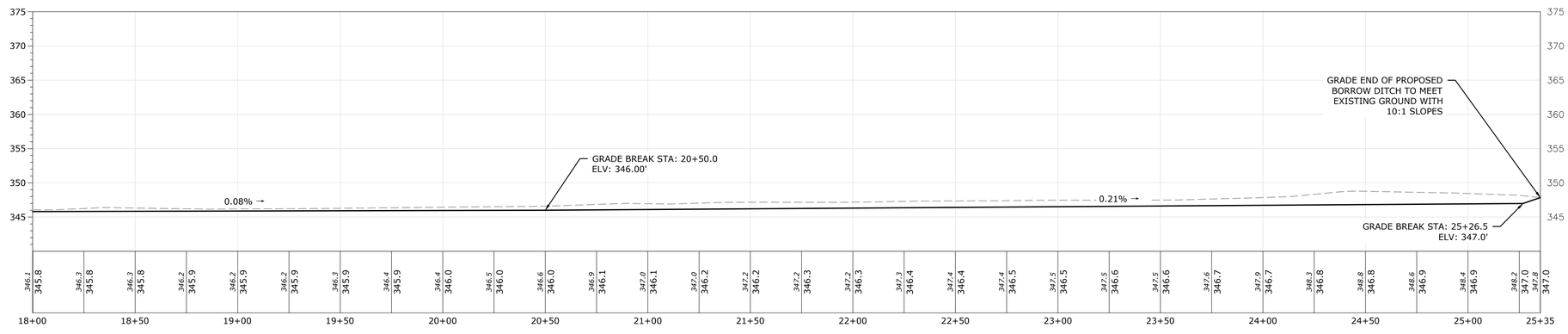
UNIT 2 BORROW DITCH




## PROFILE
UNIT 2 BORROW DITCH

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k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\VFG - UNIT 2 BORROW DITCH - (7) - (8).dwg, 10/27/2022 3:56 PM, Bradley Kullmann, Unit 2 Borrow Ditch Profiles - (1), None

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(734) 623-2000
www.ducks.org
DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

PROFILES - UNIT 2 BORROW DITCH
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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VFG - UNIT 2 BORROW DITCH - (7) - (8)

DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3

HORIZONTAL SCALE

60 0 30 60 120

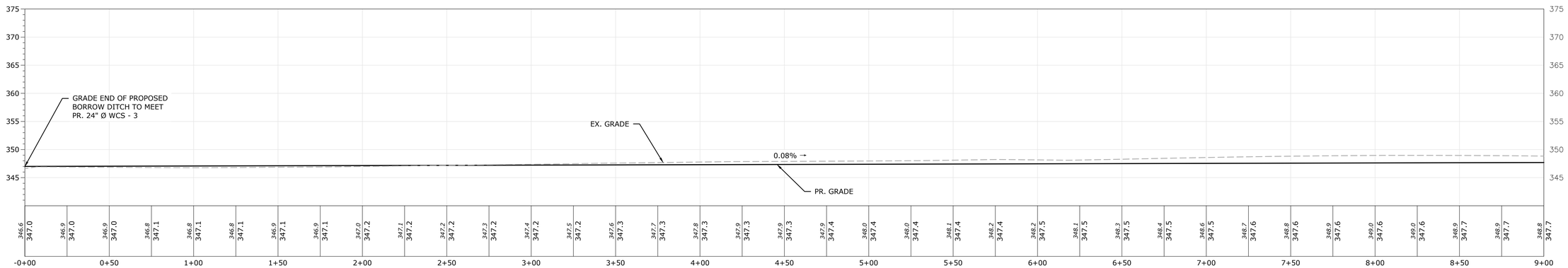
1 inch = 30 feet

VERTICAL SCALE

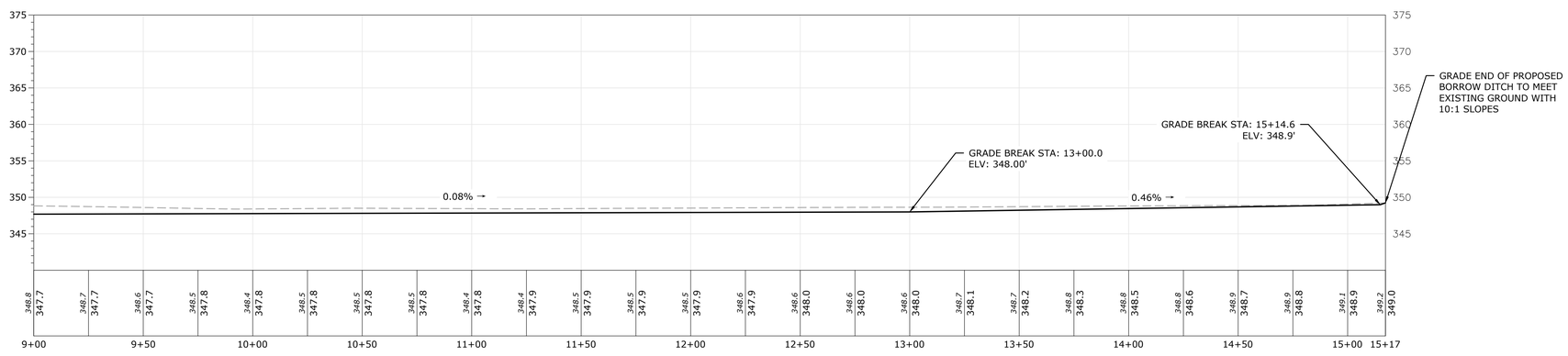
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
UNIT 3 BORROW DITCH 1




## PROFILE
UNIT 3 BORROW DITCH 1





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POSEY COUNTY, IN

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VFG - UNIT 3 BORROW DITCH 1 - (8) - (9)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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k:\plano c3d projects\in-125-3 behind lake\c3d_drawing\VFG - UNIT 3 BORROW DITCH 1 - (8) - (9).dwg, 10/25/2022 4:48 PM, Bradley Kollmann, Unit 3 Borrow Ditch 1 - (1), None

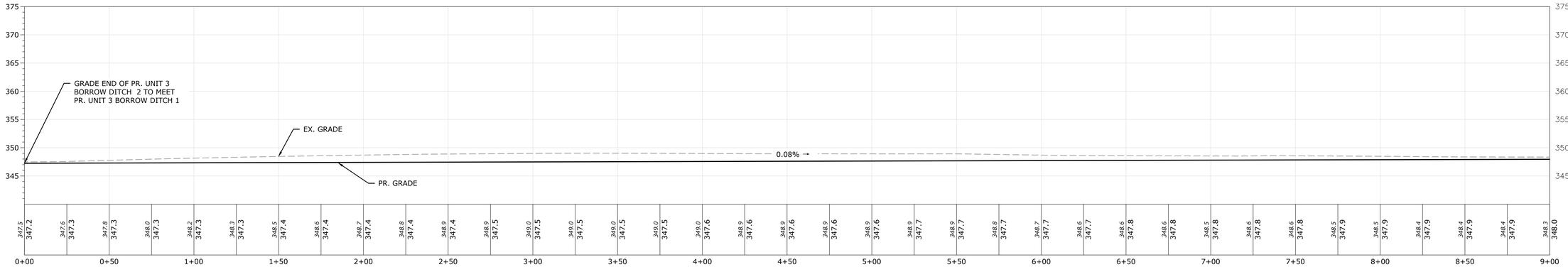
HORIZONTAL SCALE

1 inch = 30 feet

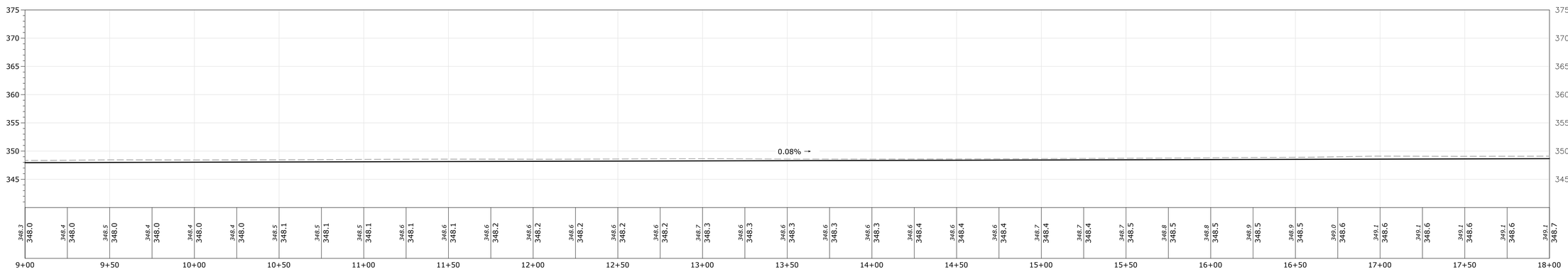
VERTICAL SCALE

1 inch = 5 feet

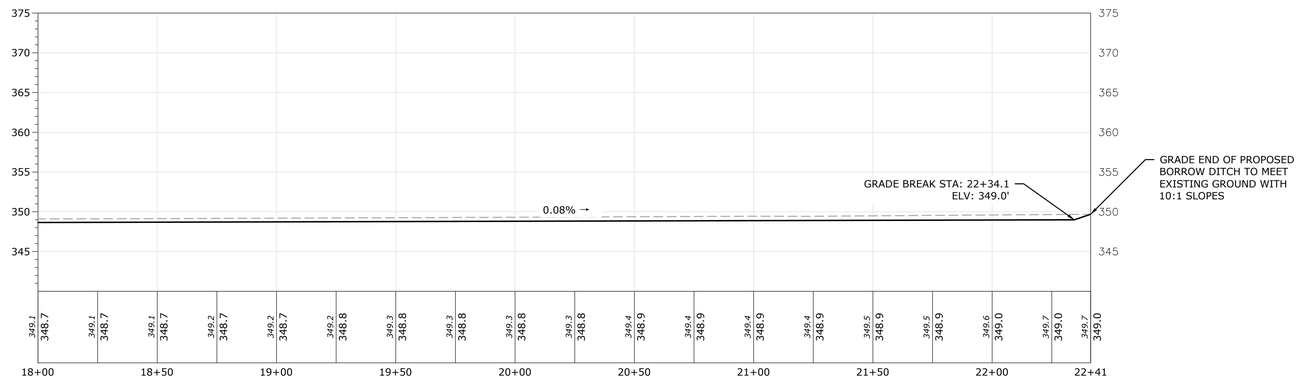
## PROFILE
UNIT 3 BORROW DITCH 2




## PROFILE
UNIT 3 BORROW DITCH 2




## PROFILE
UNIT 3 BORROW DITCH 2





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HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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VFG - UNIT 3 BORROW DITCH 2 - (9) - (10)

DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3




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HORIZONTAL SCALE

60 0 30 60 120

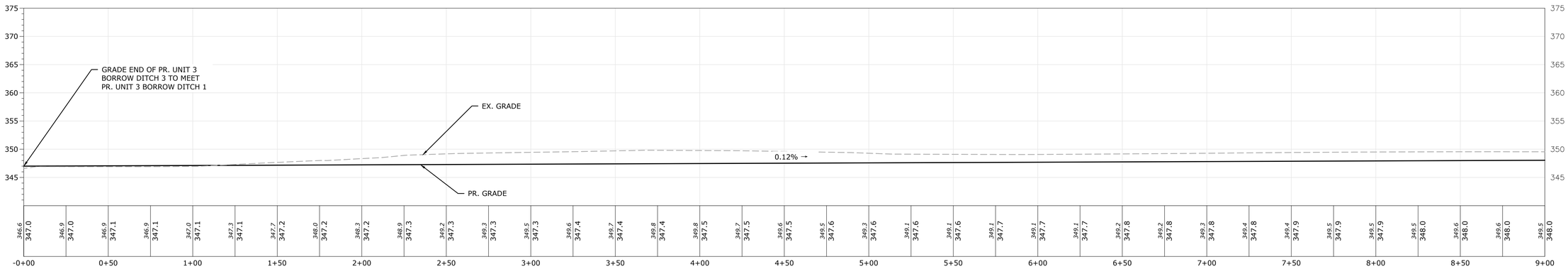
1 inch = 30 feet

VERTICAL SCALE

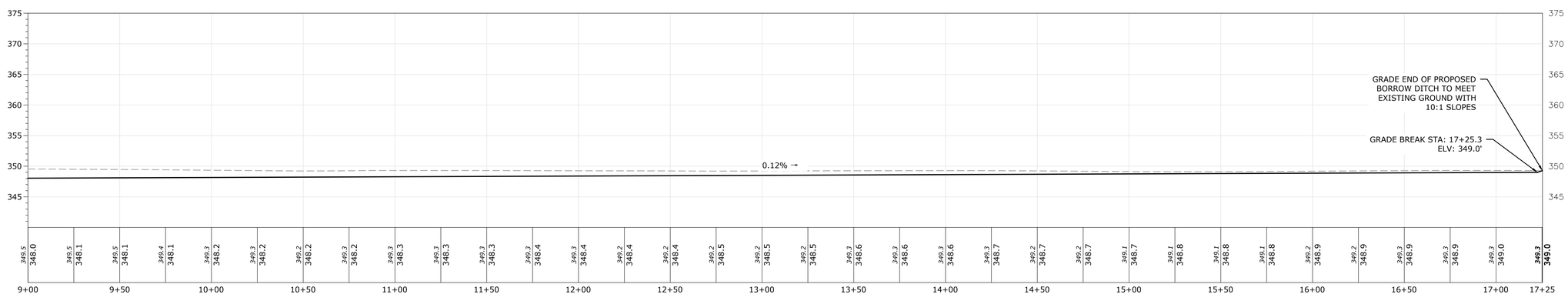
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
UNIT 3 BORROW DITCH 3




## PROFILE
UNIT 3 BORROW DITCH 3





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POSEY COUNTY, IN

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VFG - UNIT 3 BORROW DITCH 3 - (10) - (11)

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3




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HORIZONTAL SCALE

60 0 30 60 120

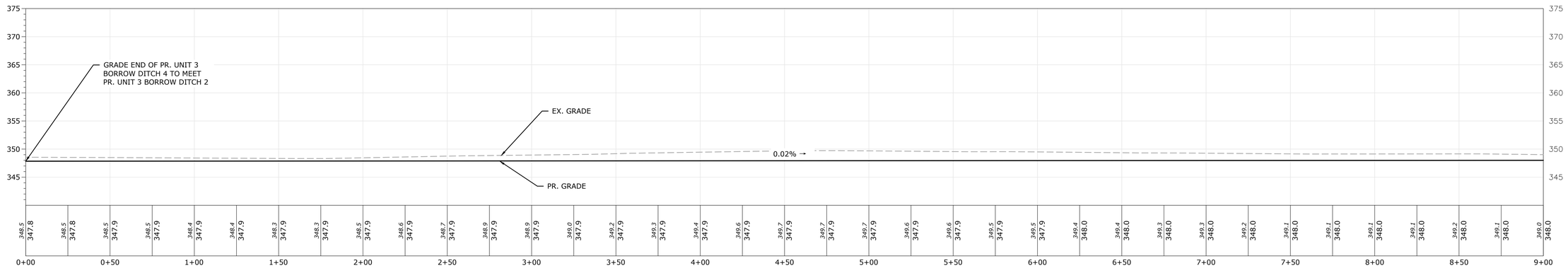
1 inch = 30 feet

VERTICAL SCALE

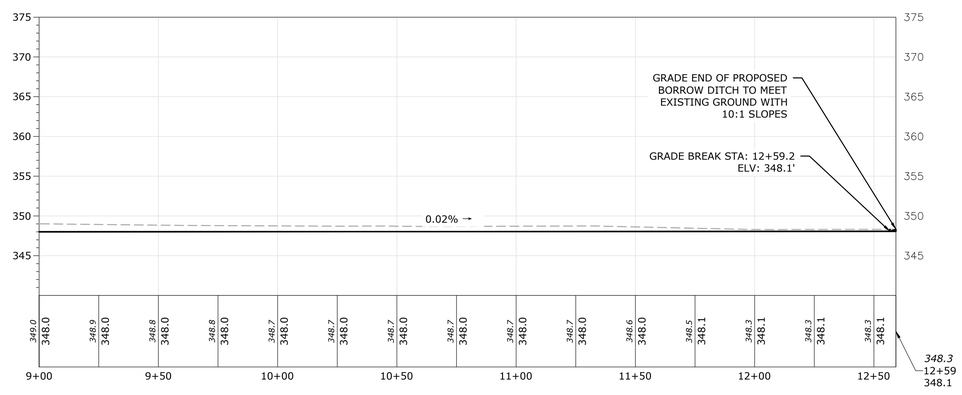
5 0 2.5 5 10

1 inch = 5 feet

## PROFILE
UNIT 3 BORROW DITCH 4




## PROFILE
UNIT 3 BORROW DITCH 4

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www.ducks.org

DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

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HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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VFG - UNIT 3 BORROW DITCH 4 - (11) - (12)

DESIGNED BY: RC

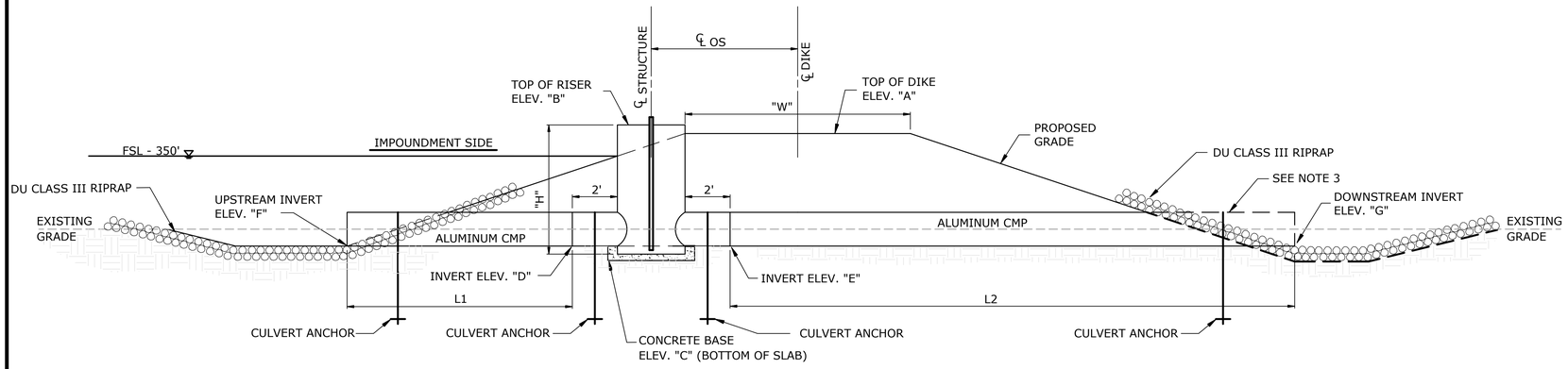
DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

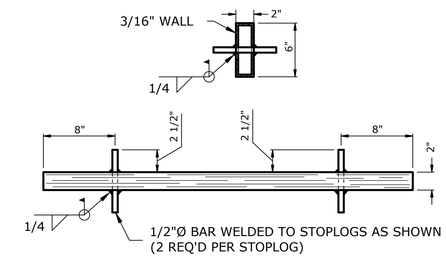
PROJECT NUMBER: US-IN-125-3




## PROFILE OF ALUMINUM CMP WATER CONTROL STRUCTURE

NOT TO SCALE

| STRUCTURE | PIPE | | RISER | | TOP OF DIKE EL. "A" | TOP OF RISER EL. "B" | CONCRETE BASE EL "C" | INLET I.E. EL. "D" | OUTLET I.E. EL. "E" | UPSTREAM INV. "F" | DOWNSTREAM INV. "G" | TOP WIDTH "W" | INLET LENGTH "L1" | OUTLET LENGTH "L2" | ℄ -℄ OFFSET | RISER HEIGHT "H" | NO. OF STOPLOGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SIZE | GA. | SIZE | GA. | | | | | | | | | | | | | |
| WCS 1 | 24" | 12 | 30" | 12 | 351.50' | 352.00' | 343.50' | 344.50' | 344.50' | 344.50' | 344.50' | 12' | 41.0' | 54.0' | 7.25' | 8.0' | 11 |
| WCS 2 | 24" | 12 | 30" | 12 | 351.50' | 352.00' | 344.50' | 345.50' | 345.50' | 345.50' | 345.50' | 12' | 33.5' | 48.5' | 7.25' | 7.0' | 9 |
| WCS 3 | 24" | 12 | 30" | 12 | 351.50' | 352.00' | 346.00' | 347.00' | 347.00' | 347.00' | 347.00' | 20' | 26.5' | 47.0' | 13.25' | 5.5' | 6 |




NOTE: 1. WELD 1/2Ø BAR IN STOPLOGS.

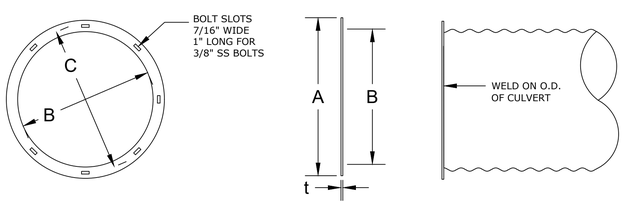
2. STOPLOGS SHALL BE 1" SHORTER THAN WIDTH BETWEEN STOPLOG GUIDES.

3. FABRICATOR TO PROVIDE 1-2" & 1-3" STOPLOG IN ADDITION TO STOPLOGS SPECIFIED.

## ALUMINUM STOPLOG DETAIL

NOT TO SCALE

NOTES:
1. "H" INCLUDES 0.5' OF RISER EMBEDDED IN CONCRETE
2. ALL METAL PIPE SHALL BE CONNECTED WITH FLANGE COUPLERS
3. DOWNSTREAM PIPE OUTLET SHALL CONFORM TO SLOPE FOR PIPE DIAMETERS 30" AND LARGER
4. INLET AND/OR OUTLET PIPES GREATER THAN 20 LF. SHALL BE FABRICATED USING MULTIPLE SECTIONS NOT TO EXCEED 20 LF., CONNECTED W/ FLANGE COUPLERS. A FULL 20' SECTION MUST BE UTILIZED AS THE END SECTION OF PIPE.
5. CONTRACTOR SHALL FIELD CHECK ALL EXISTING ELEVATIONS PRIOR TO CONSTRUCTION AND MAKE ADJUSTMENTS, IF NEEDED.

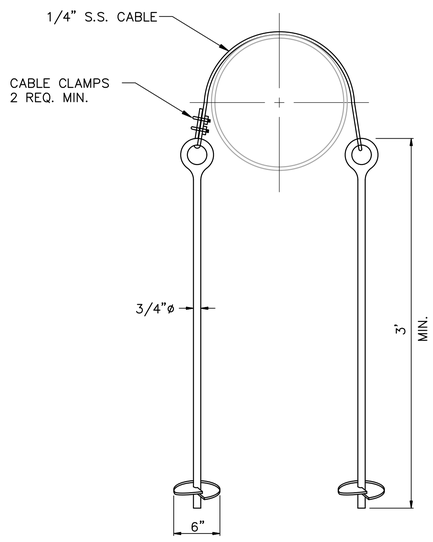



| BASIC SIZE IN. | ALUM. | O.D. (A) FLANGE | I.D. (B) FLANGE | NO. HOLES | BOLT CIR. DIA. (C) | GASKET NO SECT |
|---|---|---|---|---|---|---|
| 6 | 3/16 | 10 | 6 | 6 | 8 | 1 |
| 8 | 3/16 | 12 | 8 | 6 | 10 | 1 |
| 12 | 3/16 | 16 | 12 | 10 | 14 | 1 |
| 15 | 3/16 | 19 | 15 | 12 | 17 | 1 |
| 18 | 3/16 | 22 | 18 | 14 | 20 | 1 |
| 21 | 3/16 | 25 | 21 | 16 | 23 | 1 |
| 24 | 3/16 | 28 | 24 | 18 | 26 | 1 |
| 30 | 3/16 | 34 | 30 | 22 | 32 | 2 |
| 36 | 3/16 | 40 | 36 | 26 | 38 | 2 |
| 42 | 1/4 | 46 | 42 | 30 | 44 | 2 |
| 48 | 1/4 | 52 | 48 | 34 | 50 | 2 |

NOTES: 1. 6"- 36" FLANGES CUT FROM 3/16 ALUMINUM PLATE.
2. GASKETS DIE CUT FROM 1/8" PVC NITRILE FOAM ENSOLITE AND MATCHED TO CORRESPONDING FLANGE DIMENSIONS (BXD)(E) & NO HOLES.
3. 2 WASHERS PER SLOT.

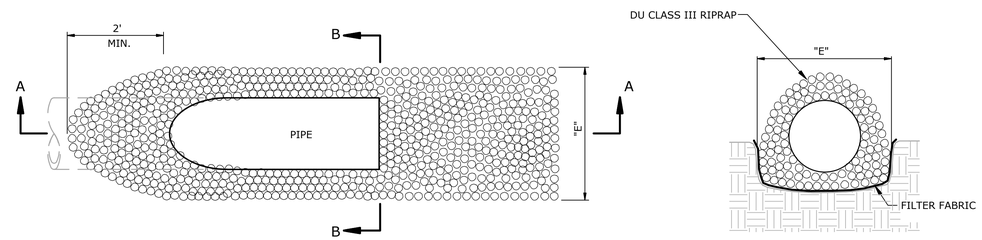
## FLANGE COUPLER DETAIL

NOT TO SCALE



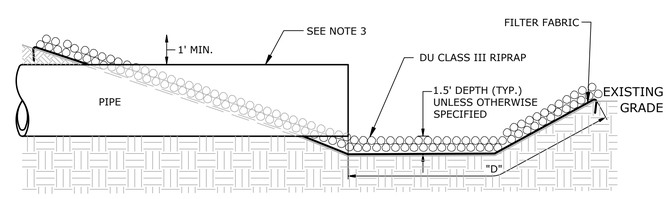

## CULVERT ANCHOR

NOT TO SCALE




PLAN VIEW

SECTION B-B




SECTION A-A

| DU CLASS III RIPRAP | | | |
|---|---|---|---|
| PIPE DIA. | D | E | TN |
| 12" | 5' | 4' | 8.6 |
| 15" | 5' | 4.25' | 9.4 |
| 18" | 5' | 4.5' | 10.4 |
| 21" | 5.5' | 5.75' | 14.8 |
| 24" | 6' | 6' | 16.4 |
| 27" | 6.5' | 6.25' | 18.6 |
| 30" | 7' | 6.5' | 20.4 |
| 36" | 8' | 7' | 24.4 |
| 42" | 9' | 7.5' | 28.6 |
| 48" | 10' | 8' | 33.0 |
| 54" | 12' | 8.5' | 39.6 |
| 60" | 12.5' | 9' | 43.6 |

NOTES:
1. IF THE RIPRAP CLASS DESIGNATION IS NOT SPECIFIED ON THE CONSTRUCTION PLANS, CLASS 1 ROCK RIPRAP SHALL BE UTILIZED. THE ROCK SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. UNLESS OTHERWISE SPECIFIED, FILTER FABRIC SHALL BE UTILIZED IN THE INSTALLATION OF RIPRAP.
3. DOWNSTREAM CMP PIPE OUTLET SHALL CONFORM TO SLOPE FOR PIPE DIAMETERS 30" AND LARGER.
4. RIPRAP SHALL BE PLACED ON INLET AND OUTLET SIDE.
5. RIPRAP QUANTITIES IN TABLE ACCOUNTS FOR INLET AND OUTLET SIDE.

## OUTLET AND RIPRAP DETAIL

NOT TO SCALE

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ON:

WCS DETAILS - 1
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Details

DESIGNED BY: RC

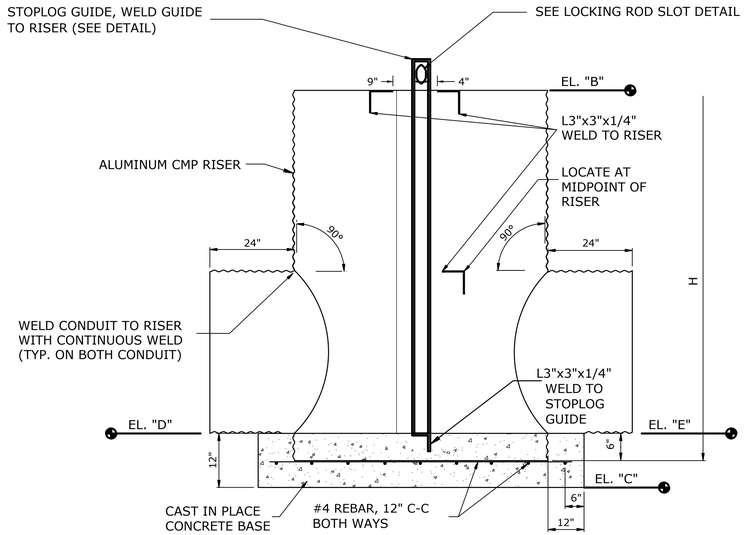
DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

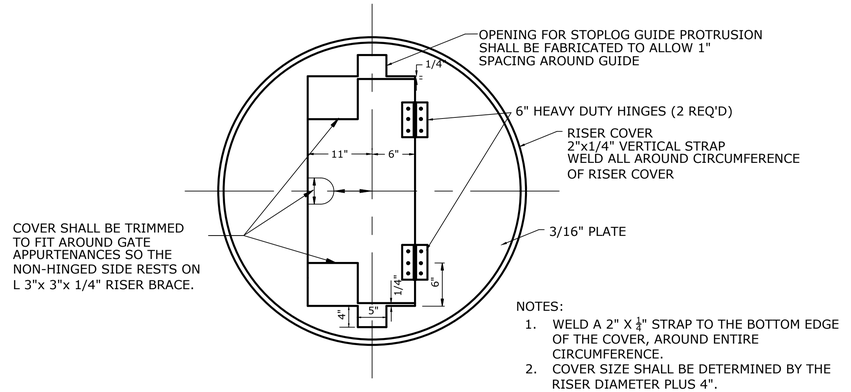
PROJECT NUMBER: US-IN-125-3




* SEE TABLE

## TYP CMP GATE CONTROL STRUCTURE

NOT TO SCALE

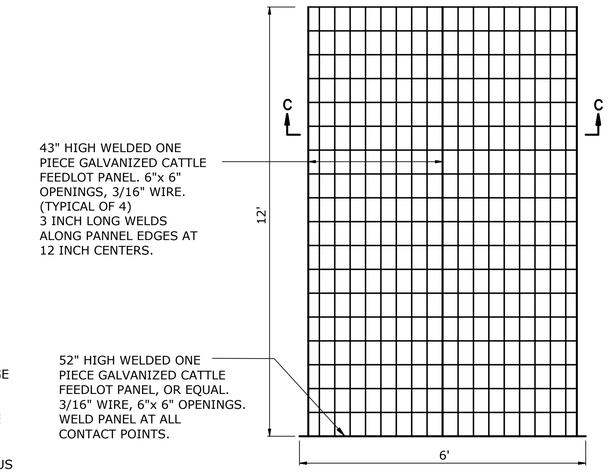



NOTES:

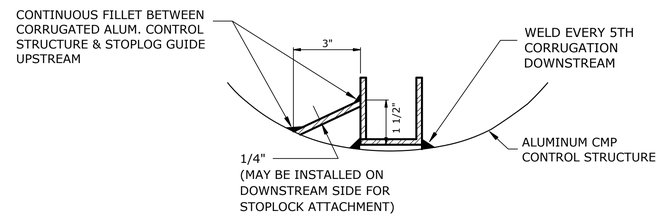
1. WELD A 2" X $\frac{1}{4}$" STRAP TO THE BOTTOM EDGE OF THE COVER, AROUND ENTIRE CIRCUMFERENCE.
2. COVER SIZE SHALL BE DETERMINED BY THE RISER DIAMETER PLUS 4".
3. HINGED DOOR LENGTH SHALL BE DETERMINED BY THE RISER DIAMETER MINUS 5" SIDE OF RISER.

## GATE RISER COVER DETAIL

NOT TO SCALE

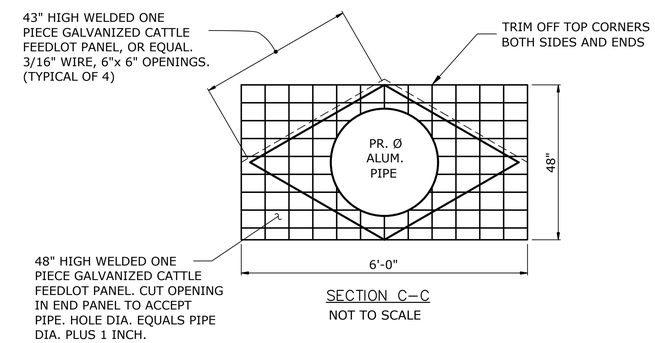



*APPLIES TO ALL WATER CONTROL STRUCTURES




## STOPLOG GUIDE DETAIL

NOT TO SCALE

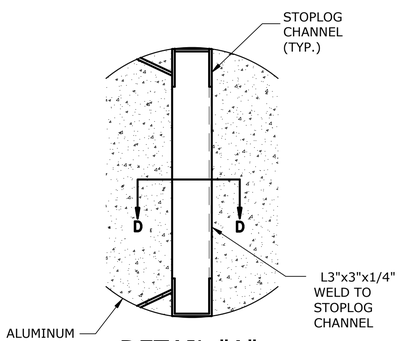



SECTION C–C

NOT TO SCALE

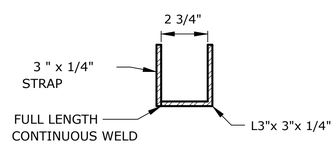
## BEAVER DETERRENT DETAIL

NOT TO SCALE



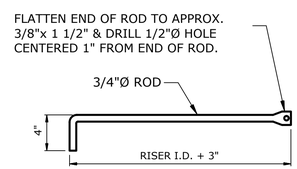

## DETAIL "A"

NOT TO SCALE



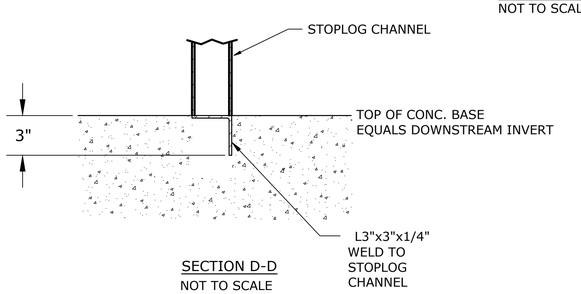

## STOPLOG CHANNEL DETAIL

NOT TO SCALE



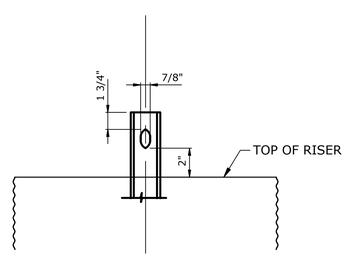

## LOCKING ROD DETAIL

NOT TO SCALE



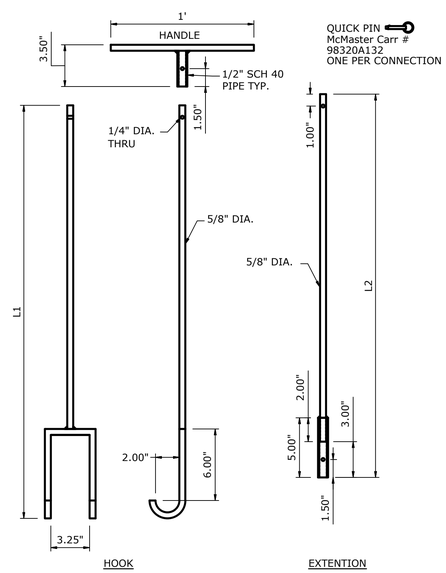

SECTION D-D

NOT TO SCALE




## LOCKING ROD SLOT DETAIL

NOT TO SCALE




## STOPLOG LIFTING HOOK DETAIL

NOT TO SCALE

NOTE: L1 AND L2 EQUAL HEIGHT OF RISER PLUS 1'
MAX LENGTH FOR EACH 5'. AFTER ADD A SECOND EXTENTION L3
2 PER STRUCTURE

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ON:

WCS DETAILS - 2
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE AREA
POSEY COUNTY, IN

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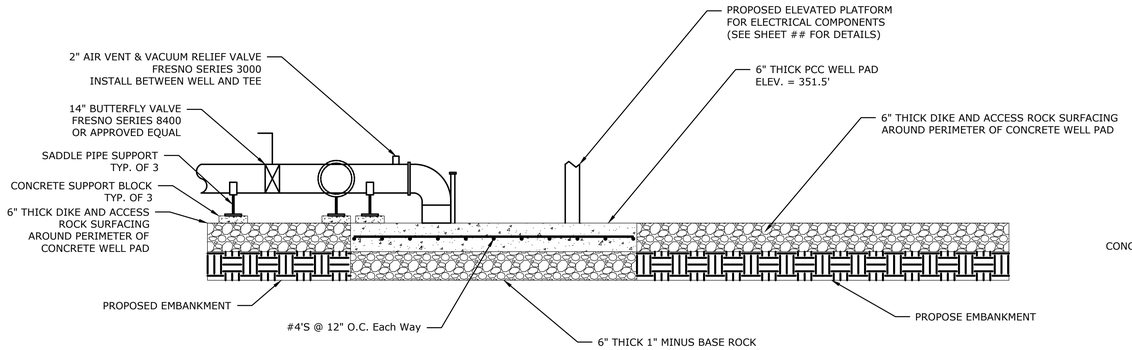
DESIGNED BY: RC
DRAWN BY: BK
SURVEYED BY: RC & BK
BIOLOGIST: DC
DATE: 05/19/2022
PROJECT NUMBER: US-IN-125-3

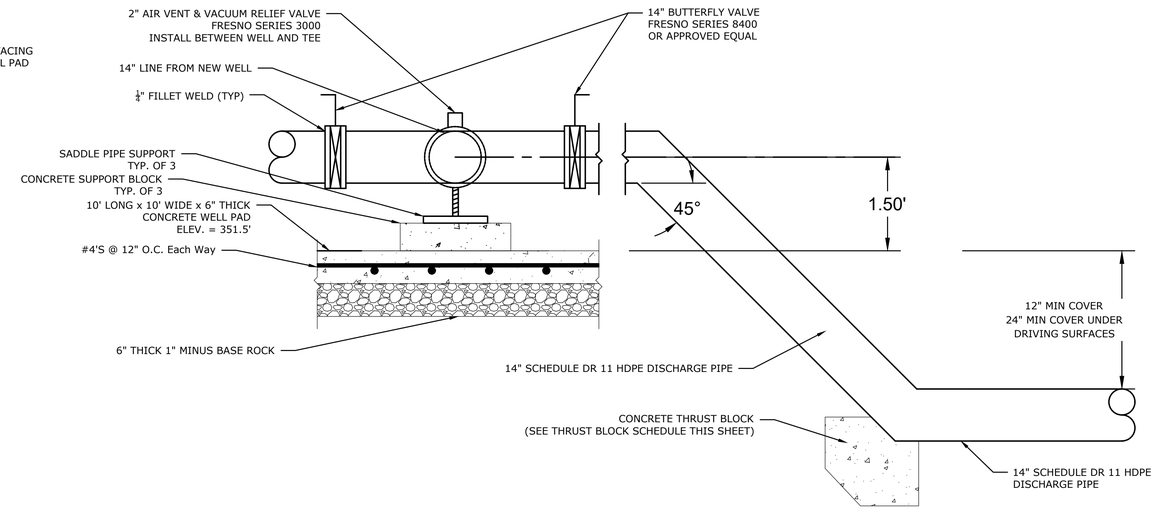



NOTES:

1. SUPPORT BLOCKS SHALL BE 14" ADJUSTABLE SADDLE PIPE SUPPORT TYPE OR ENGINEERS APPROVED EQUAL.
2. SADDLE PIPE SUPPORTS SHALL BE MOUNTED TO 24"X24"X4" CONCRETE SUPPORT BLOCKS. REINFORCEMENT WILL NOT BE REQUIRED FOR CONCRETE SUPPORT BLOCKS.

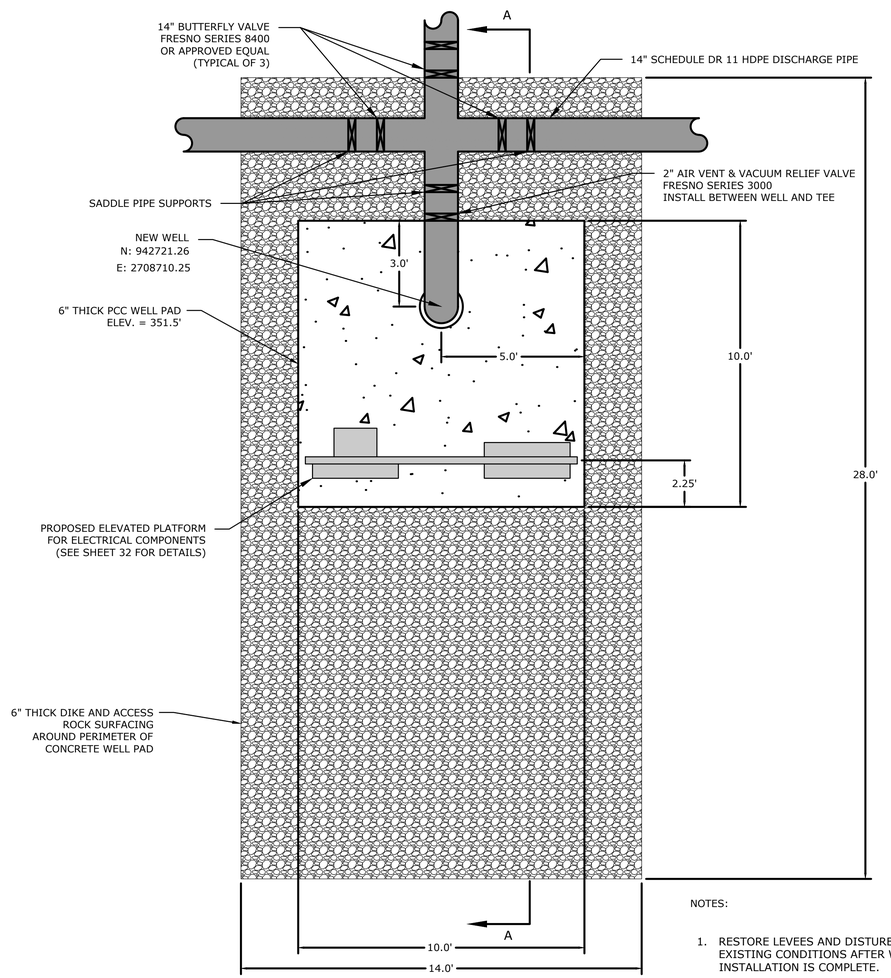
## TYPICAL WELL PAD SECTION A-A'

NOT TO SCALE




## TYPICAL DISCHARGE LINE AT WELL

NOT TO SCALE

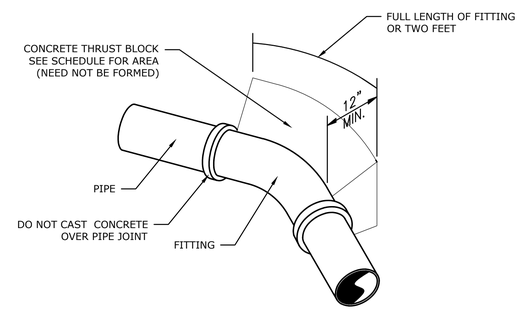



NOTES:

1. RESTORE LEVEES AND DISTURBED AREAS BACK TO EXISTING CONDITIONS AFTER WELL AND PIPE INSTALLATION IS COMPLETE.

## TYPICAL WELL PAD DETAIL

NOT TO SCALE




| THRUST BLOCK SCHEDULE<br>BEARING AREA, SQ. FT. | | | | | | | |
|---|---|---|---|---|---|---|---|
| SIZE | TEE | END CAP | CROSS | 90° | 45° | 22 1/2° | 11 1/4° |
| 24" | 14.0 | 14.0 | 14.0 | 19.0 | 10.0 | 5.6 | 2.8 |
| 18" | 8.2 | 8.2 | 8.2 | 11.6 | 6.3 | 3.1 | 1.6 |
| 16" | 6.0 | 6.0 | 6.0 | 8.5 | 4.6 | 2.4 | 1.2 |
| 14" | 4.7 | 4.7 | 4.7 | 6.1 | 3.6 | 1.8 | 0.9 |
| 12" | 3.8 | 3.8 | 3.8 | 5.4 | 2.9 | 1.5 | 0.8 |
| 10" | 2.7 | 2.7 | 2.7 | 3.8 | 2.1 | 1.1 | 0.6 |
| 8" | 1.8 | 1.8 | 1.8 | 2.5 | 1.3 | 0.7 | 0.4 |
| 4"+6" | 1.0 | 1.0 | 1.0 | 1.5 | 0.8 | 0.4 | 0.3 |

## TYPICAL CONCRETE THRUST BLOCK DETAIL

NOT TO SCALE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ON:

WELL PAD DETAILS
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

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DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE:
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PROJECT NUMBER:
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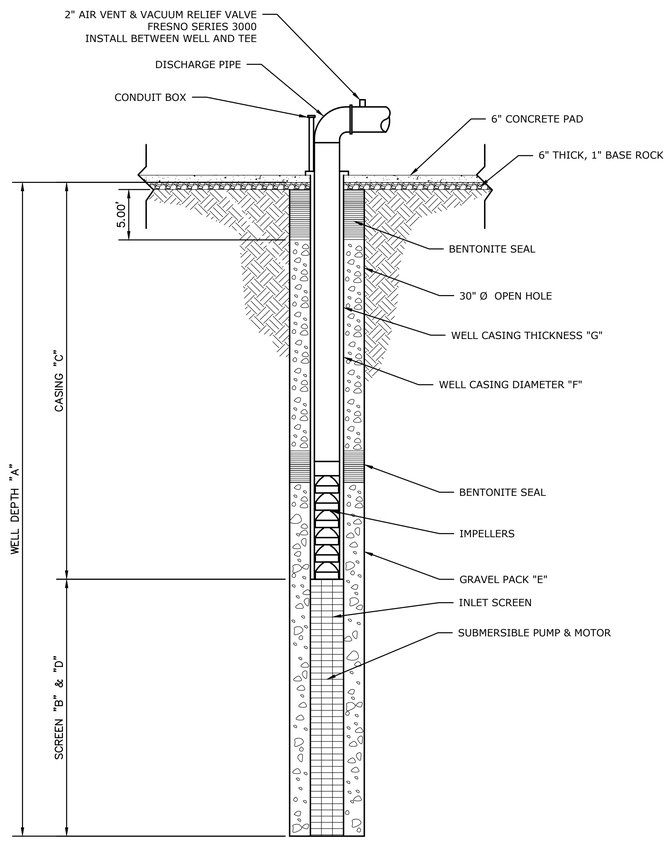


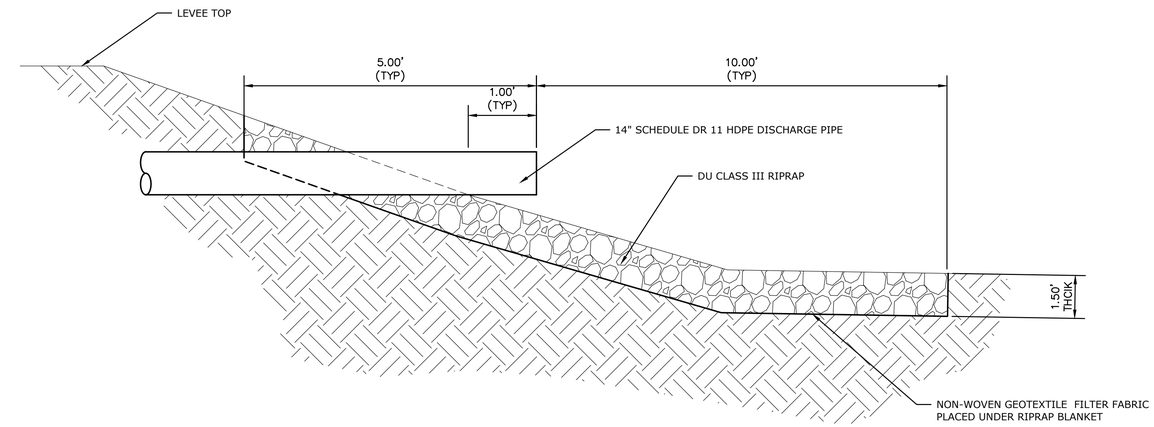

## TYPICAL WELL DETAIL

NOT TO SCALE

| WELL | DEPTH OF WELL "A" | LENGTH OF SCREEN "B" | LENGTH OF CASING "C" | STAINLESS STEEL SLOT SCREEN SIZE "D" | GRAVEL PACK "E" | WELL CASING DIAMETER "F" | WELL CASING THICKNESS "G" |
|---|---|---|---|---|---|---|---|
| MAIN WELL | 100'-120' | 30' | 70'-90' | TBD | TBD | 24" | 0.375" |

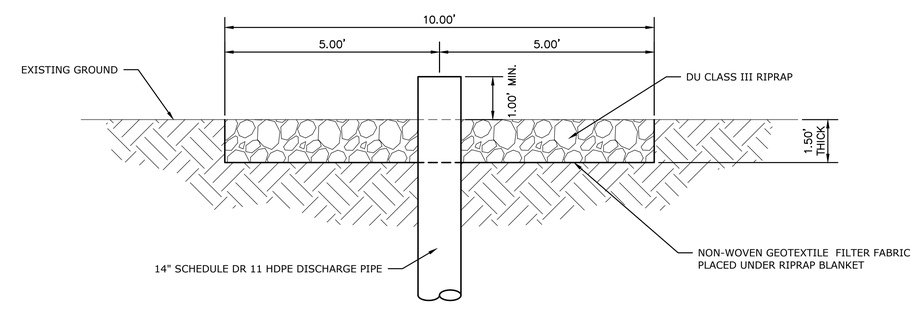
NOTES:

1. RESTORE LEVEES AND DISTURBED AREAS BACK TO EXISTING CONDITIONS AFTER WELL AND PIPE INSTALLATION IS COMPLETE.
2. CONTRACTOR SHALL SECURELY MOUNT GROUT PLATE TO CONCRETE AND DISCHARGE HEAD TO GROUT PLATE PER MANUFACTURERS WRITTEN SPECIFICATIONS.
3. CONTRACTOR SHALL PURCHASE AND INSTALL DISCHARGE PIPE AND APPURTENANCES TO EACH POOL AS SHOWN ON PLANS.
4. QUANTITIES & DIMENSIONS ARE TO BE DETERMINED AND VERIFIED BY WELL DRILLER AND TEST WELL.




## TYPICAL RIPRAP OUTLET BASIN 1

NOT TO SCALE




## TYPICAL RIPRAP OUTLET BASIN 2

NOT TO SCALE

NOTES:

1. WIDTH OF TYPICAL RIPRAP OUTLET BASINS 1 & 2 = 10FT

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ON:

WELL DETAILS
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DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

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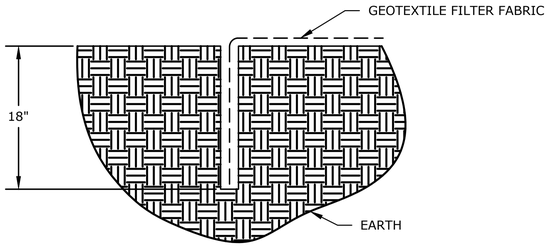
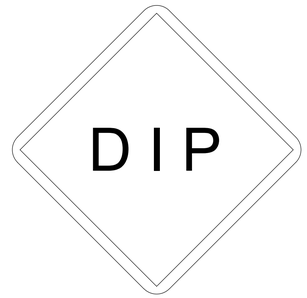



NOTES:

1. GEOTEXTILE FILTER FABRIC IS TO BE TRENCHED 18" DEEP ON ENDS. TRENCH IS TO BE FILLED WITH EXCAVATED MATERIAL AND COMPACTED.
2. GEOTEXTILE FILTER FABRIC SHALL BE A NON-WOVEN POLYESTER OR POLYPROPYLENE GEOTEXTILE.
3. GEOTEXTILE FILTER FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 150 POUNDS AS DETERMINED BY ASTM D4632.
4. GEOTEXTILE FILTER FABRIC SHALL HAVE A MAXIMUM OPENING SIZE EQUIVALENT TO A #70 U.S. STANDARD SIEVE.
5. CONTRACTOR SHALL SUPPLY ALL PINS AND OTHER ITEMS NECESSARY TO FASTEN THE FILTER FABRIC TO THE GROUND SO IT WILL NOT SLIDE OR FORM GAPS.

## TYPICAL GEOTEXTILE FILTER FABRIC DETAIL

NOT TO SCALE




## 36"X36" W8-2 DIP WARNING SIGN

NOT TO SCALE

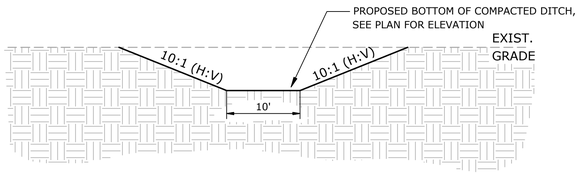
NOTES:

1. DIP WARNING SIGNS SHALL BE 36"X36" PER MUTCD TABLE 2C-2.
2. DIP WARNING SIGNS SHALL BE INSTALLED 200 LF FROM WARNED ALIGNMENT CHANGE (SPILLWAYS).
3. DIP WARNING SIGNS SHALL BE INSTALLED ON 4X4 POSTS WITH BREAK AWAY HOLES AT BASE (OR ENGINEERS APPROVED SUBSTITUTE) AND 8 FT FROM EDGE OF TRAVEL LANE.
4. DIP WARNING SIGNS SHALL BE INSTALLED AT A MINIMUM HEIGHT OF 5' MEASURED FROM BOTTOM OF SIGN TO THE ELEVATION OF THE NEAR EDGE OF PAVEMENT,

## TYPICAL PUMP CONTROL PANEL VIEW

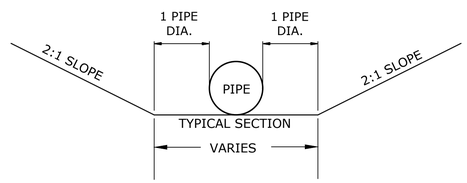
NOTES:

1. CONTRACTOR SHALL CONSTRUCT SIMILAR PLATFORM FOR PUMP CONTROLS PANEL.
2. MINIMUM ELEVATION OF ELECTRICAL PLATFORM = 381.5' (30' ABOVE GROUND LEVEL)



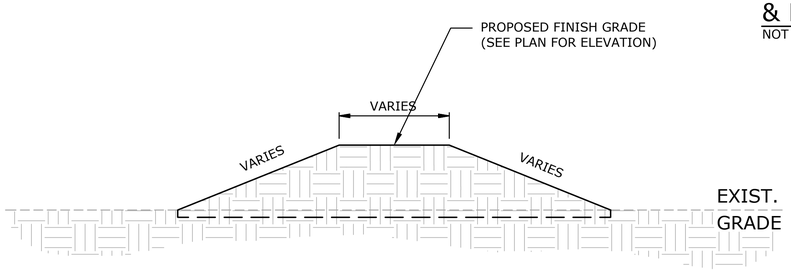

## TYPICAL DITCH SECTION

NOT TO SCALE



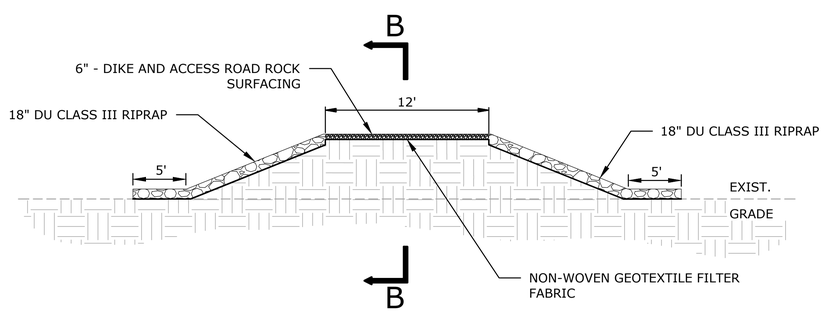

## PIPE INSTALLATION & REMOVAL DETAIL

NOT TO SCALE



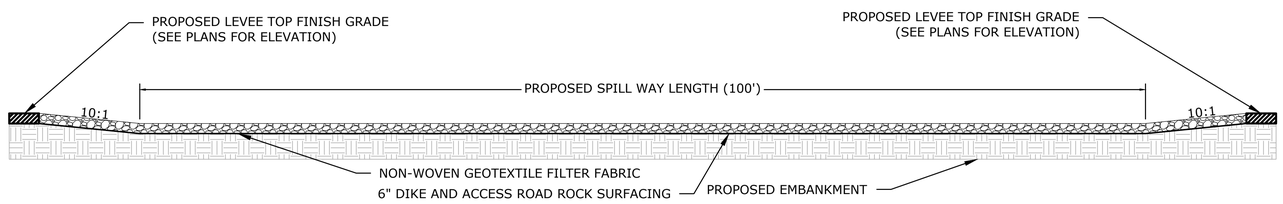

## TYPICAL DIKE SECTION

NOT TO SCALE




## TYPICAL SPILLWAY SECTION

NOT TO SCALE




## TYPICAL SPILLWAY SECTION VIEW B-B

NOT TO SCALE

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DUCKS UNLIMITED, INC. SHALL NOT ASSUME ANY RESPONSIBILITY FOR THE SAFETY OF THE WORK PERFORMED, PERSONS ENGAGED IN THE WORK, NEARBY STRUCTURES, OR OF OTHER PERSONS ON-SITE. PERSONS ENGAGED IN THE WORK, OR OTHERS, MAY USE THIS MATERIAL, DATA AND INFORMATION ONLY FOR THE PURPOSE AUTHORIZED BY DUCKS UNLIMITED, INC. THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. AND MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION IS AT THE USERS SOLE RISK. BY USING ANY OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF. IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

k:\glaro c3d projects\in-125-3 behind lake\c3d_drawing\IN-125-3 Details.dwg, 10/25/2022 4:49 PM, Bradley Kollmann, Gen Details, None

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DUCKS UNLIMITED

AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

GEN. DETAILS
BEHIND LAKE
HOVEY LAKE FISH & WILDLIFE
AREA
POSEY COUNTY, IN

| Revision | Sheet | Revisions | Date | By |
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CAD FILE: IN-125-3 Details

DESIGNED BY: RC

DRAWN BY: BK

SURVEYED BY: RC & BK

BIOLOGIST: DC

DATE: 05/19/2022

PROJECT NUMBER: US-IN-125-3