WETLANDS AND SUBAQUEOUS LANDS SECTION PERMIT APPLICATION FORM

For Subaqueous Lands, Wetlands, Marina and 401 Water Quality Certification Projects

State of Delaware
Department of Natural Resources and Environmental Control
Division of Water

Wetlands and Subaqueous Lands Section

APPLICATION FOR APPROVAL OF
SUBAQUEOUS LANDS, WETLANDS, MARINA
AND WATER QUALITY CERTIFICATION PROJECTS

Last Revised on: March 28, 2017

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

Application Instructions:

1. Complete each section of this basic application and appropriate appendices as thoroughly and accurately as possible. Incomplete or inaccurate applications will be returned.

2. All applications must be accompanied by a scaled plan view and cross-section view plans that show the location and design details for the proposed project. Full construction plans must be submitted for major projects.

3. All applications must have an original signature page and proof of ownership or permitted land use agreement.

4. Submit an original and two (2) additional copies of the application (total of 3) with the appropriate application fee and public notice fee* (prepared in separate checks) to:

Department of Natural Resources and Environmental Control
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

*Application and public notice fees are non-refundable regardless of the Permit decision or application status.

5. No construction may begin at the project site before written approval has been received from this office.

Helpful Information:

1.	Tax Parcel Information:	New Castle County	(302) 395-5400
		Kent County	(302) 736-2010
		Sussex County	(302) 855-7878
2.	Recorder of Deeds:	New Castle County	(302) 571-7550
		Kent County	(302) 744-2314
		Sussex County	(302) 855-7785

3. A separate application and/or approval may be required through the Army Corps of Engineers. Applicants are strongly encouraged to contact the Corps for a determination of their permitting requirements. For more information, contact the Philadelphia District Regulator of the Day at (215) 656-6728 or visit their website at: http://www.nap.usace.army.mil/Missions/Regulatory.aspx.

4. For questions about this application or the Wetlands and Subaqueous Lands Section, contact us at (302) 739-9943 or visit our website at: http://www.dnrec.delaware.gov/wr/Services/Pages/WetlandsAndSubaqueousLands.aspx. Office hours are Monday through Friday 8:00 AM to 4:30 PM, except on State Holidays.

APPLICANT'S REVIEW BEFORE MAILING

DID YOU COMPLETE THE FOLLOWING?

X Yes	BASIC APPLICATION
X Yes	SIGNATURE PAGE (Page 3)
X Yes	APPLICABLE APPENDICES
X Yes	SCALED PLAN VIEW
X Yes	SCALED CROSS-SECTION OR ELEVATION VIEW PLANS
X Yes	VICINITY MAP
X Yes	COPY OF THE PROPERTY DEED & SURVEY
X Yes	THREE (3) COMPLETE COPIES OF THE APPLICATION PACKET
X Yes	APPROPRIATE APPLICATION FEE & PUBLIC NOTICE FEE (Separate checks made payable to the State of Delaware)

Submit 3 complete copies of the application packet to:

Department of Natural Resources and Environmental Control
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

Before signing and mailing your application packet, please read the following:

The Department requests that the contractor or party who will perform the construction of your proposed project, if other than the applicant, sign the application signature page along with the applicant in the spaces provided. When the application is signed by the contractor as well as the applicant, the Department will issue the Permit to both parties. For Leases, the contractor will receive a separate construction authorization that will make them subject to all of the terms and conditions of the Lease relating to the construction

Section 1: Applicant Identification

1. Applicant's Name: Ingram Village Development, LLC - Robert Lisle
   Mailing Address: 16255 Sussex Highway
   Bridgeville, DE 19933
   Telephone: #: 302-956-6658
   Fax #:
   E-mail: rob@insightde.com

2. Consultant's Name: James C. McCulley
   Mailing Address: 100 Biddle Street, Suite 120
   Newark, DE 19702
   Company Name: Watershed Eco, LLC.
   Telephone #: 302-750-6595
   Fax #:
   E-mail: jim@watershedeco.com

3. Contractor's Name:
   Mailing Address:
   Company Name:
   Telephone#
   E-mail:

Section 2: Project Description

4. Check those that apply:
   X New Project/addition to existing project? ☐ Repair/Replace existing structure? (If checked, must answer #16)

5. Project Purpose (attach additional sheets as necessary): The applicant proposes to construct a retaining wall to provide a 25'wide access path for maintenance of the School House Tax Ditch. The proposed retaining wall is located at the minimum distance from the property line to provide the required 25' maintenance access.

6. Check each Appendix that is enclosed with this application:

	A. Boat Docking Facilities		G. Bulkheads		N. Preliminary Marina Checklist
	B. Boat Ramps	X	H. Fill		O. Marinas
	C. Road Crossings	X	I. Rip-Rap Sills and Revetments		P. Stormwater Management
X	D. Channel Modifications/Dams		J. Vegetative Stabilization		Q. Ponds and Impoundments
	E. Utility Crossings		K. Jetties, Groins, Breakwaters		R. Maintenance Dredging
	F. Intake or Outfall Structures		M. Activities in State Wetlands		S. New Dredging

Section 3: Project Location

7. Project Site Address: Gladys Street
   Ellendale, DE 19941
   County: ☐ N.C. ☐ Kent X Sussex
   Site owner name (if different from applicant):
   Address of site owner:

8. Driving Directions: From the intersection of (113) Dupont Boulevard and Beach Road (SR16) travel east 0.5 miles on Beach Road to North Old State Road on your left. Travel north on Old State Road 0.3 miles to Gladys Street on your right.

   (Attach a vicinity map identifying road names and the project location)

9. Tax Parcel ID Number: 230-26.00-75.00 Subdivision Name: Ingram Village

WSLS Use Only: **Permit #s:**

Type **SP** ☐ **SL** ☐ **SU** ☐ **WE** ☐ **WQ** ☐ **LA** ☐ **SA** ☐ **MP** ☐ **WA** ☐

Corps Permit: SPGP 18 ☐ **20** ☐ **Nationwide Permit #:** **Individual Permit #**
Received Date: **Project Scientist:**
Fee Received? Yes ☐ **No** ☐ **Amt: $** **Receipt #:**
Public Notice #: **Public Notice Dates: ON** **OFF**

Section 3: Project Location (Continued)

10. Name of waterbody at Project Location: Cedar Creek _ waterbody is a tributary to: Delaware Bay

11. Is the waterbody: ☐ Tidal ☒ Non-tidal Waterbody width at mean low or ordinary high water 16'

12. Is the project: ☐ On public subaqueous lands? ☒ On private subaqueous lands?*
☐ In State-regulated wetlands? ☐ In Federally-regulated wetlands?

*If the project is on private subaqueous lands, provide the name of the subaqueous lands owner:
Ingram Village Development, LLC.
_____ (Written permission from the private subaqueous lands owner must be included with this application)

13. Present Zoning: ☐ Agricultural ☒ Residential ☐ Commercial ☐ Industrial ☐ Other

Section 4: Miscellaneous

14. A. List the names and complete mailing addresses of the immediately adjoining property owners on all sides of the project (attach additional sheets as necessary): See attached

B. For wetlands and marina projects, list the names and complete mailing addresses of property owners within a 1,000 foot radius of the project (attach additional sheets as necessary):

15. Provide the names of DNREC and/or Army Corps of Engineers representatives whom you have discussed the project with:

A. Have you had a State Jurisdictional Determination performed on the property? ☐ Yes ☒ No
B. Has the project been reviewed in a monthly Joint Permit Processing Meeting? ☐ Yes ☒ No
*If yes, what was the date of the meeting? _____

16. Are there existing structures or fill at the project site in subaqueous lands? ☐ Yes ☒ No
*If yes, provide the permit and/or lease number(s):

*If no, were structures and/or fill in place prior to 1969? ☐ Yes ☐ No

17. Have you applied for or obtained a Federal permit from the Army Corps of Engineers?
☐ No ☒ Pending ☐ Issued ☐ Denied Date: _____

Type of Permit: NWP18 Federal Permit or ID #: _____

18. Have you applied for permits from other Sections within DNREC?
☒ No ☐ Pending ☐ Issued ☐ Denied Date: _____ Permit or ID #: _____

Type of permit (circle all that apply): Septic Well NPDES Storm Water

Other: _____

Section 5: Signature Page

19. Agent Authorization:

If you choose to complete this section, all future correspondence to the Department may be signed by the duly authorized agent. In addition, the agent will become the primary point of contact for all correspondence from the Department.

I do not wish to authorize an agent to act on my behalf ☐

I wish to authorize an agent as indicated below ☒

I, Robert Lisle, hereby designate and authorize James C. McCulley
(Name of Applicant) (Name of Agent)
to act on my behalf in the processing of this application and to furnish any additional information requested by the Department.

Authorized Agent's Name: James C. McCulley Telephone #: 302-750-6595
Mailing Address: 100 Biddle Street, Suite 120 Fax #:
Newark, DE 19702 E-mail: jim@watershedeco.com

20. Agent's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

James McCulley 1/28/25
Agent's Signature Date

21. Applicant's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application. I grant permission to authorized Department representatives to enter upon the premises for inspection purposes during working hours.

Applicant's Signature 1/28/25
Date

Robert Lisle
Print Name

22. Contractor's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge, and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

Contractor's Name Date

Print Name

www.WatershedEco.com
Creating Value

December 28, 2023

Bohler Engineering, Inc.
18958 Coastal Highway
Rehoboth Beach, DE

Attention: Mr. Steven Fortunato, P.E.

Subject: Wetland Investigation Summary Letter
Ingram Village
Gladys Street
Ellendale, DE 19941

Dear Steve:

Watershed Eco, LLC. investigated the above referenced property on April 4, 2023, for the purpose of conducting a wetland delineation within the study area. This wetland delineation followed the criteria in the 1987 Corps Delineation Manual (Y-87-1) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain (Version 2.0). The study area consists of approximately 0.5 acres of Sussex County Tax Parcel No. 230-26.00-75.00. Prior to the site investigation, I reviewed historical aerial imagery, the National Wetland Inventory Map, National Hydrography Dataset mapping, U.S. Geological Survey mapping, and USDA Soil Survey mapping.

The historical aerial imagery (Figures 1-6) revealed the subject property was in agricultural use prior to 1954 with a hedgerow associated with a potential agricultural drainage ditch. No significant changes within the subject property are depicted from 1954 to 2012. The 2012 imagery depicts the construction of Gladys Street and the residential development to the east and realignment of the agricultural drainage ditch. The surrounding land use consists of residential dwellings to the north, south, and east and North Old State Road and agricultural land to the west.

443-206-8725
Will@WatershedEco.com

Figure 1: 1954 Aerial Photo.

Figure 2: 1961 Aerial Photo.

443-206-8725
Will@WatershedEco.com

Figure 3: 1968 Aerial Photo.

Figure 4: 1992 Aerial Photo.

Figure 5: 2012 Aerial Photo.

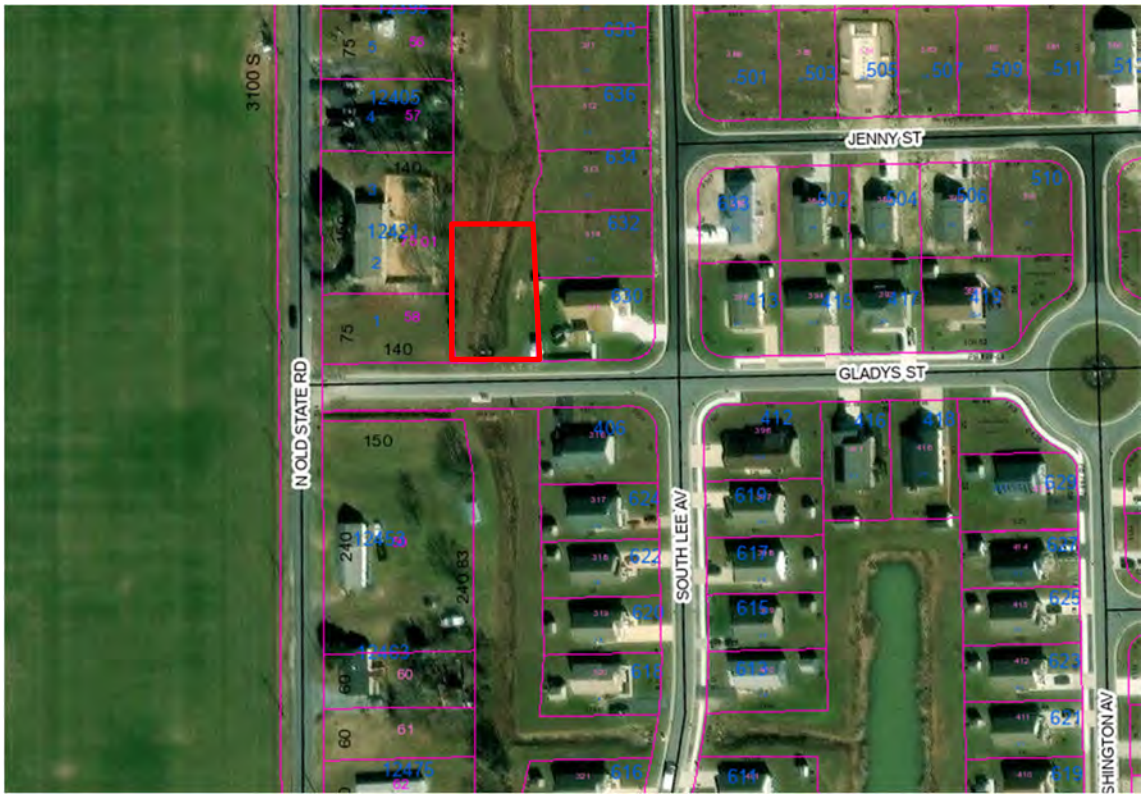


Figure 6: 2023 Aerial Photo.

The National Wetland Inventory Map depicts no wetlands or waterways within the study area.

Figure 7: NWI Map

The USGS topo map depicts an unnamed blue-line stream within the study area. The study area is relatively flat at an elevation of approximately 50 feet above sea level.

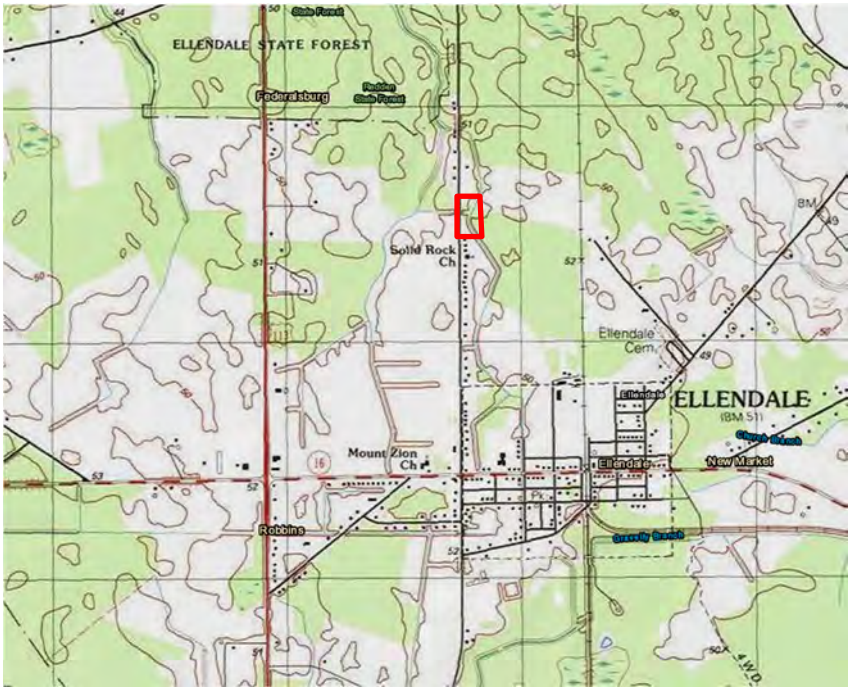


Figure 8: Topo Map

The current USDA Soil Survey Mapping (Figure 9) depicts the study area as underlain primarily with moderately well-drained Rockawalkin loamy sand (RkA).

Figure 9: Soil Map

The National Hydrography Dataset Map (Figure 10) depicts a blue-line stream in the central portion of the study area.

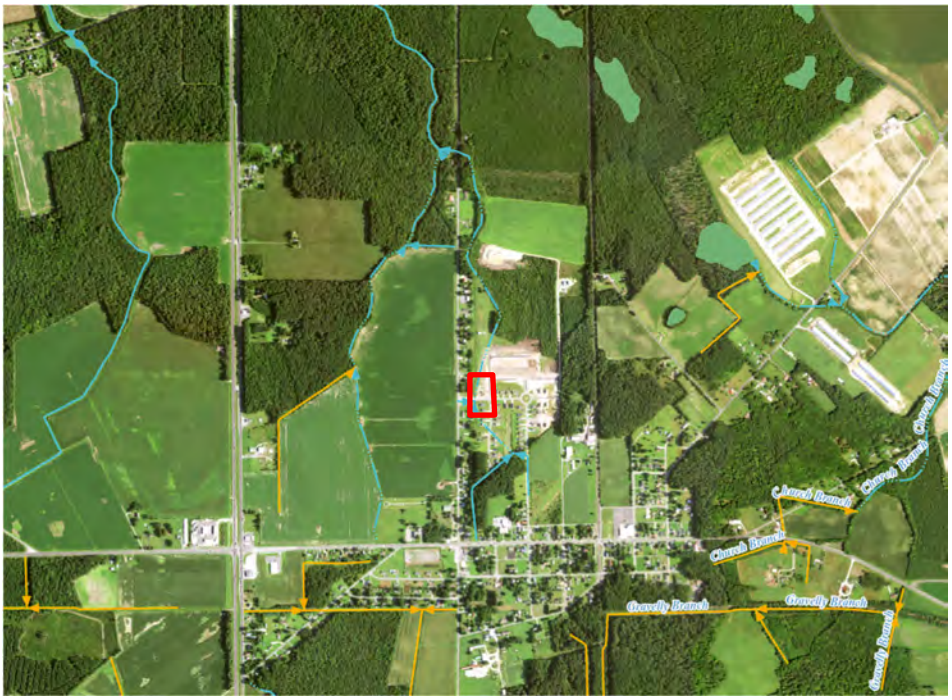


Figure 10: NHD Map

At the time of the site investigation the study area consisted of a mowed field adjacent to the ditch. Vegetation observed included red clover, narrow-leaf plantain, yellow foxtail, Virginia broomsedge, and Japanese honeysuckle. A row of arborvitae is planted along the western boundary of the study area. No dominant hydrophytic plant communities were observed within the study area.

Representative soil borings adjacent to the ditch revealed 10YR 2/2 sandy loam in the upper 2 inches followed by 10YR 4/3 sandy loam from a depth of 2 to 9 inches. From a depth of 9 to 20 inches, 10YR 4/4 sandy loam was observed. No hydric soils indicators were observed adjacent to the ditch.

The study area is relatively flat with steep slopes adjacent to the drainage ditch. Standing water was observed within the drainage ditch at the time of the site investigation. Based on the U.S. Army Corps of Engineers Antecedent Precipitation Tool, hydrologic conditions were drier than normal at the time of the site investigation. This ditch drains northerly off-site to Cedar Creek, a tributary to Delaware Bay.

In conclusion and based on the evidence above and attached, it is the professional opinion of Watershed Eco, LLC., that the unnamed drainage ditch would be regulated by both the U.S. Army Corps of Engineers as Waters of the U.S. and DNREC as Subaqueous Lands.

If you have any questions or concerns in this regard, please contact me.

Sincerely,

William S. Twupack, PWS (#2943)
Environmental Scientist

Attachments:
Site Photographs
USACE Antecedent Precipitation Tool
Wetland Datasheet
Delineation Map

Site Photographs:

Photo 1: Existing drainage ditch in the northern portion of the study area, looking north.

Photo 2: View looking south at drainage ditch towards Gladys Street.

443-206-8725
Will@WatershedEco.com

Photo 3: Drainage ditch north of Gladys Street, looking east.

Photo 4: Drainage ditch south of Gladys Street, looking south.

Coordinates	38.811984, -75.428449
Observation Date	2023-04-04
Elevation (ft)	45.474
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-04-04	2.753543	4.512205	0.964567	Dry	1	3	3
2023-03-05	2.248819	3.631496	2.598425	Normal	2	2	4
2023-02-03	2.550787	3.440551	1.885827	Dry	1	1	1
Result							Drier than Normal - 8

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GEORGETOWN-DELAWARE COASTAL AP	38.6897, -75.3625	49.869	9.166	4.395	4.165	9080	90
MILTON 3.8 SSE	38.7271, -75.287	38.058	4.822	11.811	2.227	1	0
GEORGETOWN 5 SW	38.6333, -75.45	44.948	6.121	4.921	2.785	1940	0
GEORGETOWN 5.8 W	38.6972, -75.4931	35.105	7.062	14.764	3.282	1	0
LEWES	38.7842, -75.1581	9.843	12.806	40.026	6.275	331	0

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Ingram Village | City/County: Ellendale, Sussex | Sampling Date: 4/4/2023

Applicant/Owner: Becker Morgan, Inc. | State: DE | Sampling Point: UPL-1

Investigator(s): W. Twupack | Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Mowed Field/Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 2-5

Subregion (LRR or MLRA): LRR T | Lat: 38.812059 | Long: -75.428507 | Datum: NAD 83

Soil Map Unit Name: Rockawalkin loamy sand (RkA) | NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Mowed field area in the western portion of the study area. Based on the Antecedent Precipitation Tool hydrologic conditions were drier than normal at the time of the site investigation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed at the time of the site investigation.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL-1

Tree Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size: 10 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size: 10 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 10 ft)			
1. *Andropogon virginicus*	10	no	FAC
2. *Plantago minor*	20	yes	FACU
3. *Setaria faberi*	20	yes	UPL
4. *Trifolium pratense*	30	yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Woody Vine Stratum (Plot size: 10 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UPL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					sandy loam	
2-9	10YR 4/3	100					sandy loam	
9-20	10R 4/4	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Mowed field area west of drainage ditch.

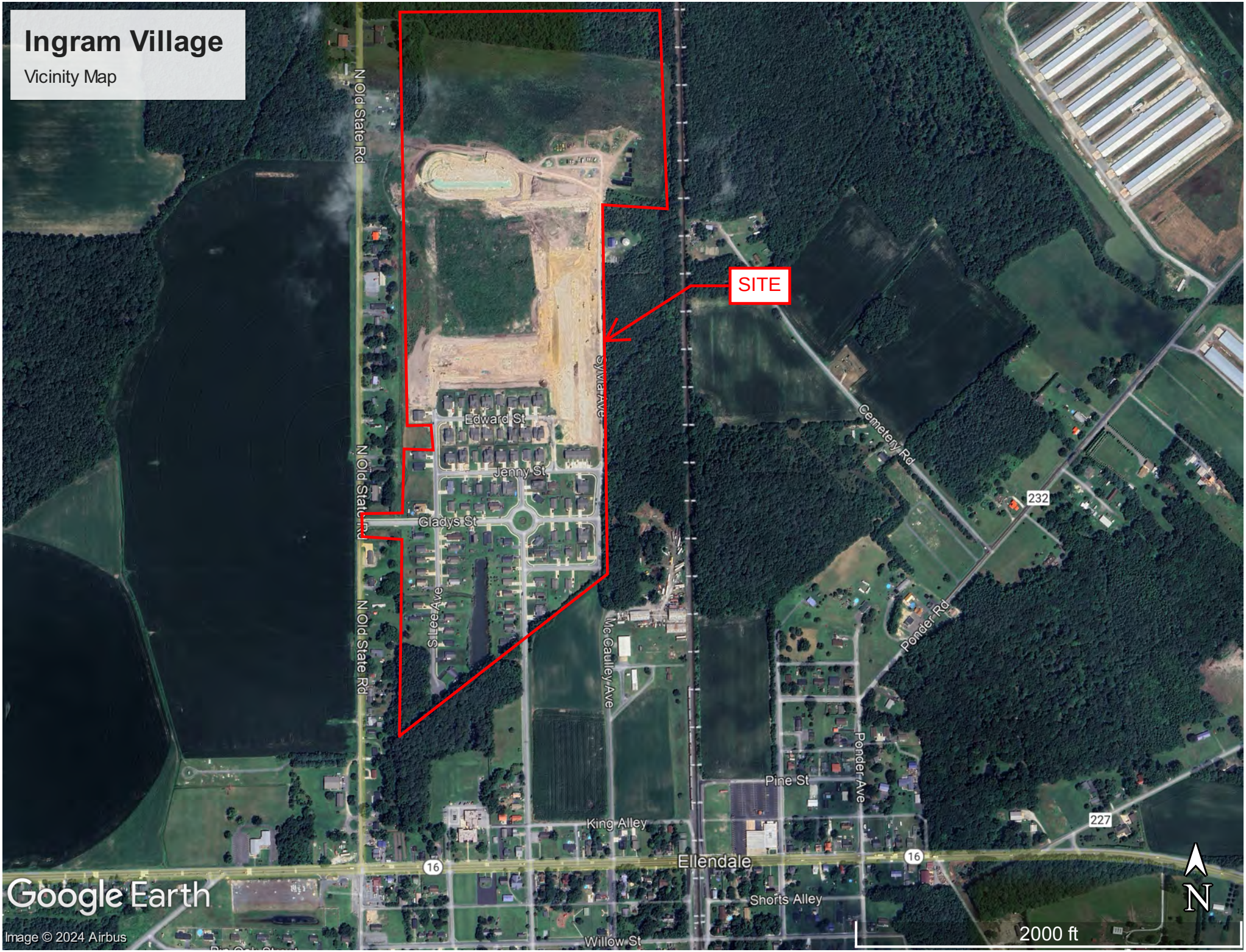
Typical soil profile observed in uplands adjacent to drainage ditch.

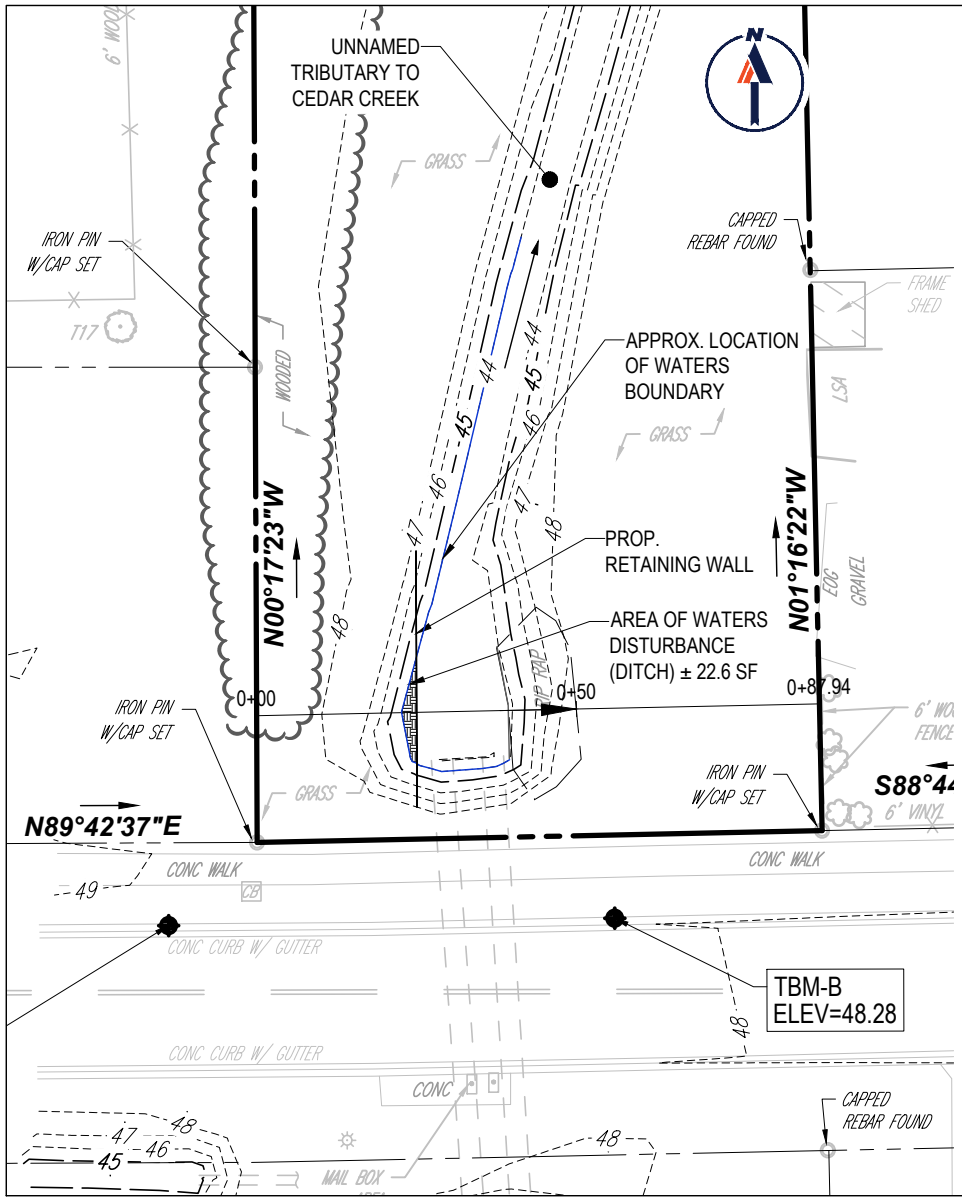
443-206-8725
Will@WatershedEco.com

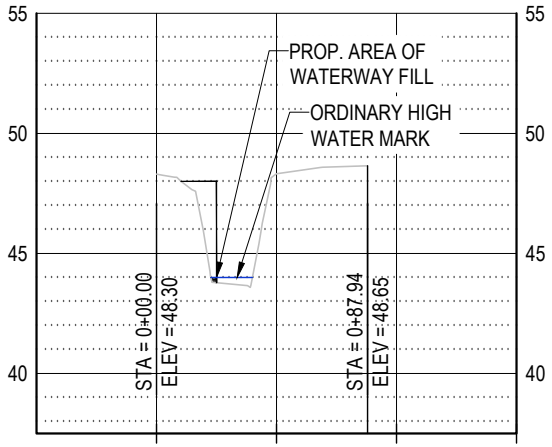
N Old State Rd
N Old State Rd
Gladys St
Gladys St

Ingram Village

Vicinity Map







TAX DITCH CROSS SECTION

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

HATCH LEGEND	
HATCH	DESCRIPTION
	PROP. AREA OF WATERWAY FILL

PROPOSED IMPACTS TO WATERS OF U.S.	
	DISTURBED AREA
TAX DITCH FILL FOR RETAINING WALL	22.62 SF (0.0005 AC)(0.18 CU. YD)

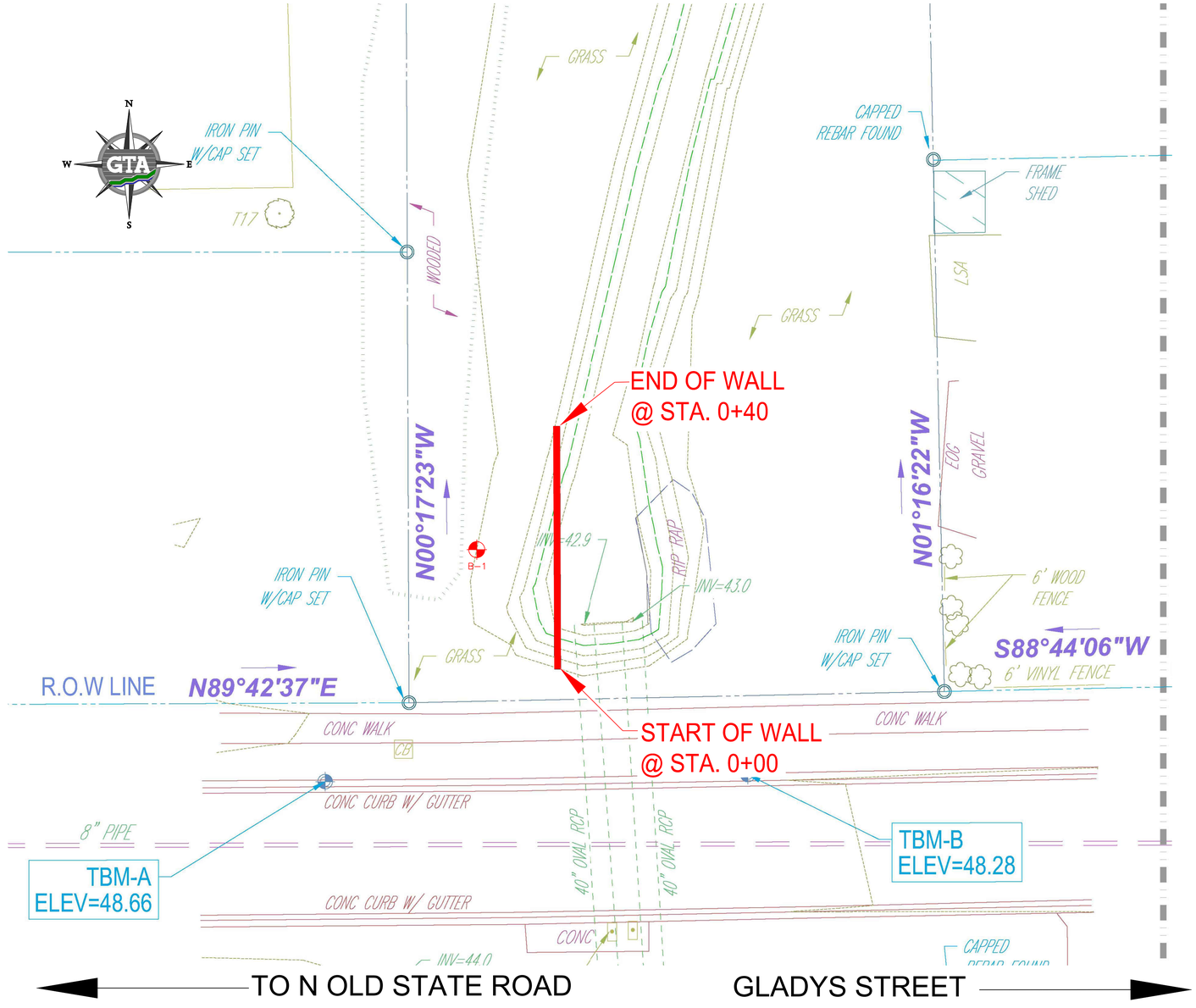
BOHLER
18958 COASTAL HWY, SUITE D
REHOBOTH BEACH, DE 19971
Phone: (302) 644-1155
Fax: (302) 703-3173
BohlerEngineering.com

TAX DITCH RETAINING WALL EXHIBIT

INGRAM VILLAGE

ELLENDALE, DE 19941 | PLAN REV. 2

08/08/24 | SLB | DEA220079.00 | Rev. 2



RETAINING WALL LOCATION PLAN

SCALE: 1" = 10'

APPROXIMATE WALL ALIGNMENT

SOURCE: BASE PLAN ADAPTED FROM AN EXISTING CAD FILE, PREPARED BY BOHLER , AND RECEIVED BY GTA ON 5/13/2024

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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GREGORY R. SAUTER
REGISTERED
NO. 13047
DELAWARE
PROFESSIONAL ENGINEER
5/17/24

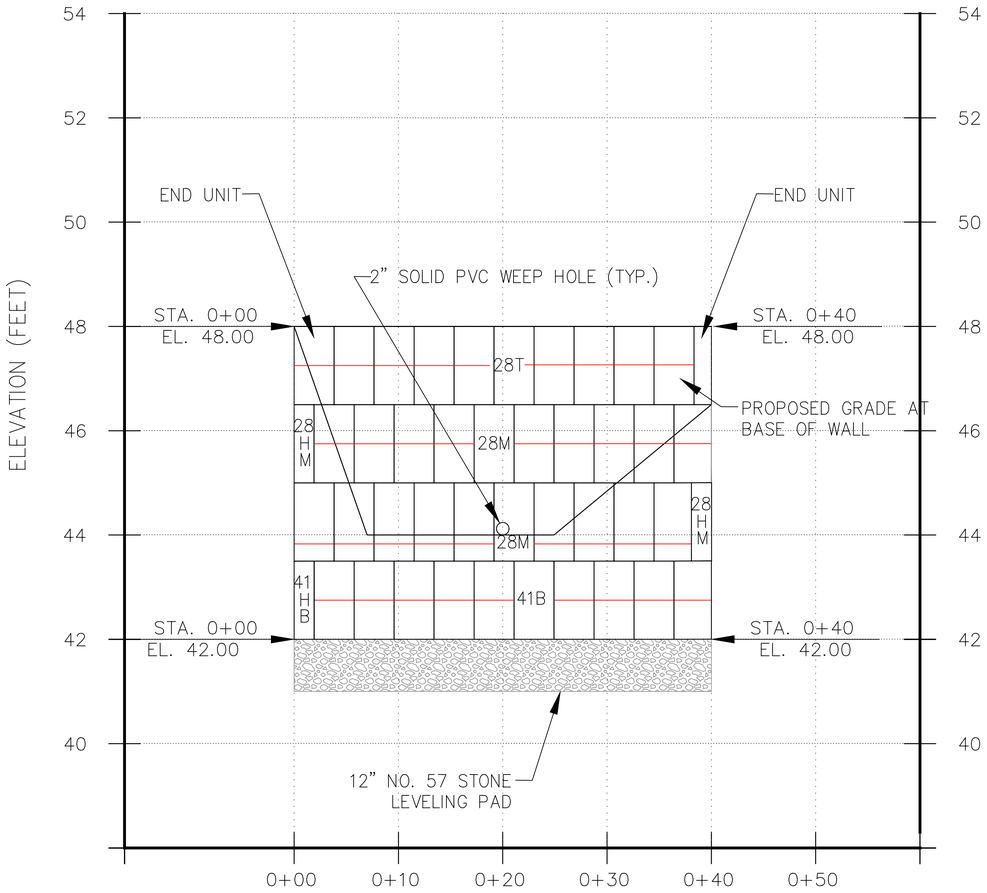
RETAINING WALL LOCATION PLAN

INGRAM VILLAGE

SUSSEX COUNTY, DELAWARE

DATE	REVISIONS
2024-05-17	● REVISED WALL PLANS

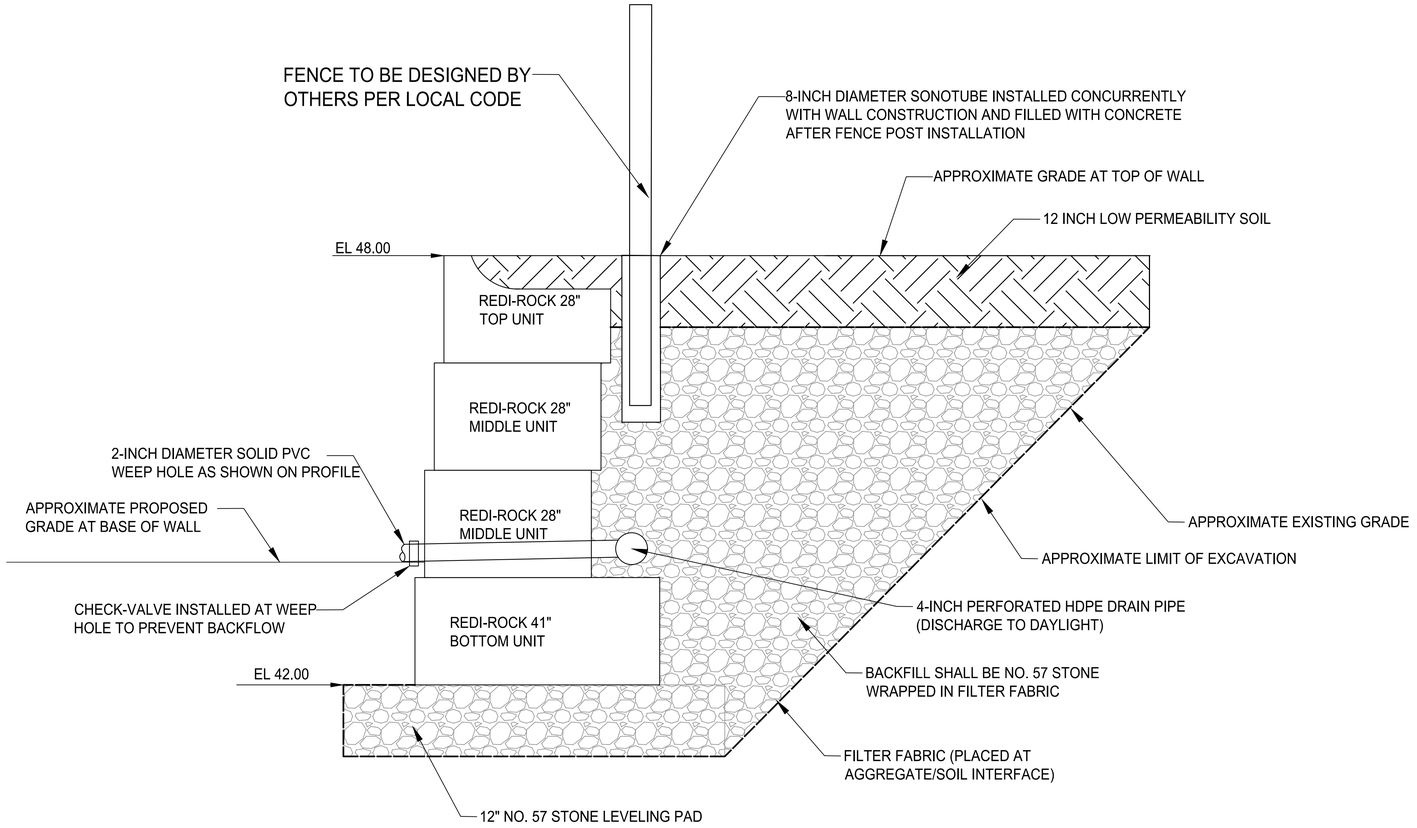
JOB NO:	31232526
SCALE:	AS SHOWN
DATE:	NOVEMBER 2023
DRAWN BY:	APS
DESIGN BY:	GRS/APS
REVIEW BY:	EBC
SHEET:	1 OF 4



RETAINING WALL PROFILE

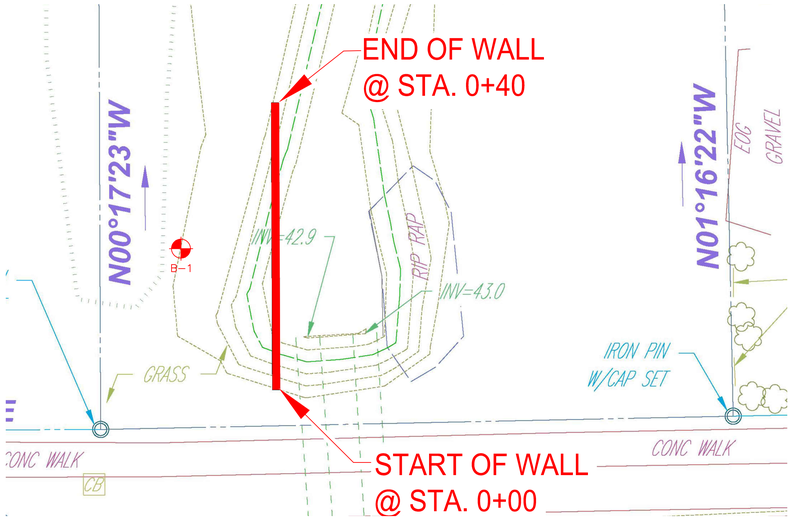
SCALE: HORZ. 1" = 10'
VERT. 1" = 2'

41 B	41" STANDARD BOTTOM UNITS
28 M	28" STANDARD MIDDLE UNITS
28 HM	28" HALF MIDDLE UNITS
41 HB	41" HALF BOTTOM UNITS
28 T	28" STANDARD TOP UNITS



RETAINING WALL CROSS SECTION VIEW @ STA. 0+20

SCALE: 1"=1'



SOURCE: BASE PLAN ADAPTED FROM A CAD FILE, PREPARED BY BOHLER , AND RECEIVED BY GTA ON 5/13/2024

RETAINING WALL LOCATION PLAN

SCALE: 1" = 10'

PROPOSED WALL ALIGNMENT

GEO-TECHNOLOGY ASSOCIATES, INC.
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GREGORY R. SAUTER REGISTERED NO. 13047 PROFESSIONAL ENGINEER DELAWARE 5/17/24

RETAINING WALL PROFILE VIEW, LOCATION PLAN, AND CROSS SECTION VIEW

INGRAM VILLAGE

SUSSEX COUNTY, DELAWARE

DATE	REVISIONS
2024-05-17	● REVISED WALL PLANS

JOB NO:	31232526
SCALE:	AS SHOWN
DATE:	NOVEMBER 2023
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REVIEW BY:	EBC
SHEET:	2 OF 4

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

WORK INCLUDES FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEOGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS PRODUCED BY BOHLER AND AS SPECIFIED HEREIN. THE CONTRACT ALSO INCLUDES THE FURNISHING AND INSTALLING OF ALL APPURTENANT MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GEOGRID REINFORCED, SEGMENTAL RETAINING WALLS. A GEOTECHNICAL EXPLORATION WAS NOT PERFORMED AT THE WALL LOCATION. GTA PERFORMED A HAND AUGER AND LIMITED LABORATORY TESTING TO AID OUR DESIGN IN NOVEMBER 2023.

1.2 REFERENCE STANDARDS

A. ASTM C-94 – STANDARD SPECIFICATION FOR READY-MIXED CONCRETE
B. ASTM C-138 – TEST METHOD FOR DENSITY (UNIT WEIGHT), YIELD, AND AIR CONTENT (GRAVIMETRIC) OF CONCRETE
C. ASTM C-143 – TEST METHOD FOR SLUMP OF HYDRAULIC-CEMENT CONCRETE
D. ASTM C-260 – SPECIFICATION FOR AIR-ENTRAINING ADMIXTURES FOR CONCRETE
E. ASTM C-494 – SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE
F. ASTM C-1611 – TEST METHOD FOR SLUMP FLOW OF SELF-CONSOLIDATING CONCRETE
G. ASTM C-1776 – STANDARD SPECIFICATION FOR WET-CAST PRECAST MODULAR RETAINING WALL UNITS
H. ASTM C-39 – STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS (AASHTO T22)
I. ASTM C-140-75 (1981 REV) – SAMPLING AND TESTING CONCRETE MASONRY UNITS.
J. ASTM C-145-75 (1981 REV) – SOLID LOAD BEARING CONCRETE MASONRY UNITS.
K. ASTM D-3034 – SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PIPE.
L. ASTM C-666 – STANDARD TEST METHOD FOR CONCRETE RESISTANCE TO RAPID FREEZING AND THAWING ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE.
M. ASTM D-4318 – STANDARD TEST METHOD FOR LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
N. ASTM D-698 – STANDARD TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD METHOD
O. ASTM C-33 – STANDARD SPECIFICATIONS FOR CONCRETE AGGREGATES (AASHTO M43)
P. ASTM D-6916 – STANDARD TEST METHOD FOR DETERMINING SHEAR STRENGTH BETWEEN SEGMENTAL CONCRETE UNITS (MODULAR CONCRETE BLOCKS)

1.3 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR SHALL CHECK THE MATERIALS UPON DELIVERY TO ASSURE THAT PROPER MATERIAL HAS BEEN RECEIVED.
B. CONTRACTOR SHALL PREVENT EXCESSIVE MUD, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY AFFIX THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
C. CONTRACTOR SHALL PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHALL NOT BE INCORPORATED INTO THE RETAINING WALL.

1.4 SUBMITTALS/CERTIFICATION

THE CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION, PRIOR TO THE START OF THE WORK, THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF ASTM C 1776 AND OTHER REQUIREMENTS SPECIFIED HEREIN. THIS CERTIFICATION SHOULD BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO WALL CONSTRUCTION.

PART 2 - PRODUCTS

2.1 DEFINITIONS

A. CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
B. BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
C. FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND FILL ZONE.

2.2 MATERIALS

THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CATALOG AND SAMPLES OF THE PROPOSED MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF SEVEN DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHOULD BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

A. CONCRETE UNITS

1. WET-CAST PRECAST MODULAR BLOCK UNITS SHALL BE REDI-ROCK UNITS MANUFACTURED BY SUSCON PRODUCTS UNDER LICENSE FROM REDI-ROCK INTERNATIONAL.
2. CONCRETE FOR SEGMENTAL UNITS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. COMPRESSIVE STRENGTH MAY BE DETERMINED FROM CYLINDERS CAST PERIODICALLY FROM BATCH CONCRETE RATHER THAN BY TESTING FULL-SIZE UNITS. CONCRETE BATCH DESIGN SHALL BE PROPORTIONED AND PRODUCED IN ACCORDANCE WITH ACI 318 AND ACI 301. MIX AND DELIVER IN ACCORDANCE WITH ASTM C94. ENTRAINED AIR CONTENT SHALL BE BETWEEN 4.5% +/- 1.5%.
3. THE MAXIMUM WATER TO CEMENT RATIO SHALL BE 0.45.
4. UNITS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C1776.
5. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM A497
6. GALVANIZED REINFORCING AND WELDED WIRE FABRIC SHALL BE HOT-DIPPED AND CONFORM TO THE REQUIREMENTS OF ASTM A767.
7. MINIMUM CLEAR COVER TO REINFORCEMENT SHALL BE 1-1/2 INCHES.
8. THE FACE PATTERN SHALL BE SELECTED FROM THE MANUFACTURER'S STANDARD MOLDS. THE COLOR OF THE UNITS SHALL BE SELECTED BY THE ARCHITECT/ENGINEER OR OWNER. A CONCRETE STAIN MAY BE FIELD APPLIED TO COLOR THE UNITS IF SPECIFIED BY THE ARCHITECT/ENGINEER OR OWNER.
9. THE UNITS SHALL PROVIDE A 1.625 DEGREES FOR STANDARD 18" TALL UNITS.

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHALL CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF ASTM #57 STONE. A COMPACTED LEVELING PAD A MINIMUM OF 12 INCHES THICK IS REQUIRED AS DETAILED IN THE DRAWINGS. LEVELING PAD SHALL EXTEND A MINIMUM OF 12 INCHES PAST THE LIMITS OF THE BOTTOM UNITS.

C. STRUCTURAL AND RETAINED FILL

CONTROLLED FILL SOIL SHALL BE SELECT IMPORT CONSISTING OF ASTM NO. 57 STONE, WHERE STRUCTURAL FILL IS REQUIRED TO ACHIEVE THE PROPOSED WALL SUBGRADE AND AT A 45 DEGREE (1 TO 1 SLOPE) FROM THE BACK OF THE LEVELING PAD THAT EXTENDS BEHIND THE WALL. IF ADEQUATE QUANTITIES ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHALL MEET THE ABOVE REQUIREMENTS AND SHALL BE APPROVED BY GTA. ALL FILL MATERIALS PROPOSED TO BE PLACED BEHIND THE UNITS AS BACKFILL SHALL BE ASTM NO. 57 STONE PLACED AS CONTROLLED FILL AND COMPACTED IN MAXIMUM 12 INCH LIFTS

D. UNIT FILL

THE UNIT FILL AND DRAINAGE LAYER SHALL CONSIST OF ASTM #57 STONE, AS APPLICABLE. STONE SHALL BE PLACED WITHIN THE BLOCK CAVITIES AS UNIT FILL.

E. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP TWO FEET OF THE WALL WHERE SPECIFIED SHALL CONSIST OF SANDY, SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, OR SC WITH A MINIMUM OF 30% PASSING THE #200 SIEVE.

F. DRAINAGE PIPE

THE DRAINAGE PIPES SHALL BE PERFORATED HDPE OR SOLID SCH40 PVC PIPE AS INDICATED.

G. FILTER FABRIC

FILTER FABRIC SHALL BE NON-WOVEN, POLYPROPYLENE GEOTEXTILE, 140N MANUFACTURED BY NICOLON MIRAFI GROUP OR APPROVED EQUIVALENT.

H. SONOTUBE

SONOTUBES SHOULD BE INSTALLED DURING WALL CONSTRUCTION AT FENCE POST HOLDERS AS SPECIFIED BY THE FENCE DESIGNER/INSTALLER.

PART 3 - EXECUTION

A. EARTHWORK

1. THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. UNDER NO CIRCUMSTANCES SHALL THE EXCAVATION LINES AND GRADES BE EXCEEDED, EXCEPT WITH OWNER'S APPROVAL. THE CONTRACTOR SHALL PROTECT THE EXCAVATION FROM SLOUGHING BY EXCAVATING TO THE APPROPRIATE GRADE FOR THE GIVEN SOIL TYPE AND COVERING THE EXCAVATED FACE WITH THE STONE DRAINAGE LAYER.
2. THE BOTTOM OF WALL EXCAVATION SHALL BE SLOPED AT A MINIMUM GRADE OF 2% TOWARDS THE WALL FACE.
3. THE CONTRACTOR IS RESPONSIBLE FOR STABILITY OF ALL EXCAVATION AND FILL SLOPES REQUIRED TO CONSTRUCT THE WALL. PERFORM ALL EXCAVATION IN ACCORDANCE WITH THE APPLICABLE OSHA AND COUNTY STANDARDS.
4. PRIOR TO RETAINING WALL CONSTRUCTION AND THE PLACEMENT OF FILL, ALL TOPSOIL AND UNSTABLE MATERIAL SHALL BE STRIPPED AND REMOVED FROM THE WALL AREA.

B. FOUNDATION SUBGRADE PREPARATION

1. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, STRUCTURAL FILL, AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
2. THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROOFROLLED. THE SURFICIAL SOFT/LOOSE SOILS, AND TOPSOIL SHALL BE REMOVED TO A STABLE SUBGRADE AS DIRECTED BY GTA.
3. ALL FILL REQUIRED TO ACHIEVE THE WALL BOTTOM ELEVATION SHALL CONSIST OF STRUCTURAL FILL THAT MEETS THE REQUIREMENTS OF PART 2, ITEM C. THE FILL SHALL BE PREPARED, PLACED, COMPACTED, AND TESTED IN ACCORDANCE WITH PART 3, ITEM E. PLACEMENT OF STRUCTURAL FILL SHALL NOT PROCEED UNTIL THE SUBGRADE HAS BEEN APPROVED BY GTA.
4. FOUNDATION SOIL SHALL BE EXAMINED BY GTA TO ENSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSUMED DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHALL BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
5. ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED STRUCTURAL FILL SHALL BE AS SPECIFIED IN PART 5, FOUNDATION SOIL.

C. LEVELING PAD

1. THE LEVELING PAD SHALL BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 12 INCHES. THE LEVELING PAD SHALL EXTEND A MINIMUM OF 12 INCHES PAST THE LIMITS OF THE BOTTOM UNITS.
2. LEVELING PAD MATERIALS SHALL BE INSTALLED ON UNDISTURBED IN-SITU SOILS OR CONTROLLED, COMPACTED BACKFILL.
3. LEVELING PAD SHALL BE PREPARED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. GAPS SHALL NOT BE ALLOWED.
4. THE LEVELING PAD SHALL BE CONSTRUCTED WITH THE MATERIALS DESCRIBED IN PART 2 ITEM B.

D. UNIT INSTALLATION

1. FIRST COURSE OF CONCRETE WALL UNITS SHALL BE PLACED ON THE LEVELING PAD. THE UNITS SHALL BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
2. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
3. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
4. CHECK UNITS TO MAINTAIN UNIT BATTER FRONT-TO-BACK.
5. FILL ALL VOIDS BETWEEN THE BLOCKS WITH NO. 57 STONE. THE UNIT FILL SHALL EXTEND A MINIMUM OF 12 INCHES BEHIND THE BLOCKS AND AS DETAILED IN THE DRAWINGS.
6. REMOVE ALL EXCESS AGGREGATE AND OTHER MATERIALS FROM THE TOP OF THE UNITS BEFORE LAYING UP THE NEXT COURSE.
7. PLACE THE NEXT COURSE OF SEGMENTAL UNITS IN RUNNING BOND WITH THE PREVIOUS COURSE. LAY EACH SUCCESSIVE COURSE MAKING SURE THAT THE BOTTOM RECESS IS IN FULL CONTACT WITH THE UNIT LOCATORS OF THE COURSE BELOW. PULL UNIT FORWARD AS FAR AS POSSIBLE.
8. CONTINUE PLACING SUCCESSIVE COURSES TO THE ELEVATIONS SHOWN ON THE PLANS. CONSTRUCT THE WALL IN LEVEL STAGES, PLACING THE UNITS AT EACH COURSE FOR THE ENTIRE LENGTH OF THE WALL, IF POSSIBLE. UNIT FILL AND BACKFILL SHALL BE PLACED TO THE LEVEL OF THE TOP OF THE FACING UNIT PRIOR TO PLACING THE NEXT COURSE.
9. AT THE END OF EACH COURSE WHERE THE WALL CHANGES ELEVATION, UNITS SHALL BE TURNED INTO THE BACKFILL. UNITS SHALL BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, A MINIMUM OF 12-INCHES SHALL BE INSTALLED INTO THE GRADE.
10. ONLY THE FRONT FACE OF THE UNITS SHALL BE VISIBLE FROM THE SIDE OF THE WALL.
11. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE FOR THE BACK OF THE RETAINING WALL DURING CONSTRUCTION.

E. PLACEMENT OF FILL AND BACKFILL

1. FILL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 INCHES IN LOOSE THICKNESS.
2. AT THE TIME OF COMPACTION, STRUCTURAL FILL MATERIALS SHALL BE WITHIN -2% TO +4% OF THE OPTIMUM MOISTURE CONTENT, AND SHALL BE COMPACTED TO A MINIMUM OF 92% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM SPECIFICATION D-1557, THE MODIFIED PROCTOR METHOD, AS APPLICABLE.
3. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
4. ALL FILL AND BACKFILL OPERATIONS SHALL BE OBSERVED ON A FULL-TIME BASIS BY A QUALIFIED SOIL TECHNICIAN TO DETERMINE IF MINIMUM COMPACTION REQUIREMENTS ARE BEING MET AND THAT MATERIALS MEETING OR EXCEEDING THE SPECIFICATION REQUIREMENTS ARE USED.
5. IN-PLACE DENSITY TESTS SHALL BE PERFORMED WITH A MINIMUM OF 1 TEST PER 2,000 SQUARE FEET OF FILL AREA FOR EACH LIFT OF FILL PLACED, AS APPLICABLE. THE ELEVATION AND LOCATION OF THE TESTS SHALL BE CLEARLY IDENTIFIED AT THE TIME OF FILL PLACEMENT.
6. THE BACKFILL MATRIX MUST BE CONSTRUCTED SO THAT FINE GRAIN SOILS DO NOT TRAP WATER.

F. DRAINAGE

1. DRAINAGE FILL SHALL BE PLACED BEHIND THE WALL TO THE LIMITS SHOWN ON THE PLANS. THE DRAINAGE FILL SHALL MEET THE REQUIREMENTS OF ASTM #57 STONE AND SHALL BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
2. POSITIVE DRAINAGE SHALL BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS THAT BECOME WET DURING CONSTRUCTION SHALL BE DRIED OR REMOVED.
3. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES IF REQUIRED, INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

G. FENCE

THE SELECTED FENCE SHALL BE INSTALLED BEHIND THE BLOCK CELLS AS SHOWN ON THE DRAWINGS AT FENCE POST HOLDER LOCATIONS IN ACCORDANCE WITH THE FENCE DESIGNER'S SPECIFICATIONS.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

A. THE RETAINING WALL SHOULD BE CONSTRUCTED UNDER THE OBSERVATION OF GTA.
B. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALLS SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM STP-399.
C. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.

PART 5 - DESIGN PARAMETERS

WALL GEOMETRY	
MAXIMUM EXPOSED WALL HEIGHT (FT.):	4.0'
ANGLE OF FACE (DEG.):	1.625
BLOCK EMBEDMENT (IN.):	MIN. 2.0'
MAXIMUM BACKFILL SLOPE ANGLE (DEG):	NO SLOPE
MAXIMUM TOE SLOPE ANGLE (DEG):	NO SLOPE
RETAINED ZONE	ASTM NO. 57 STONE
DENSITY (PCF):	115
PHI (DEG.):	38
COHESION (PSF):	0
FOUNDATION SOIL	
DENSITY (PCF):	120
PHI (DEG.):	28
COHESION (PSF):	0
LEVELING PAD:	NO. 57 STONE
ALLOWABLE BEARING PRESSURE:	2,000 PSF
MODULAR UNIT DATA	
REDI ROCK UNITS:	28" MIDDLE, 28" TOP, 41" BOTTOM AND HALF BOTTOM, AND END UNITS
UNIT FILL:	AGGREGATE, ASTM NO. 57

PART 6 - DESIGN CRITERIA

1. DESIGN PARAMETERS

MIN. F.S. FOR SLIDING:	1.5
MIN. F.S. FOR OVERTURNING:	2.0
MIN. F.S. FOR UNCERTAINTIES:	1.5
MIN. F.S. FOR GLOBAL STABILITY:	1.3
MIN. F.S. FOR BEARING	2.0
LIVE LOAD (GRASS)	100 PSF
LIVE LOAD (ROAD)	N/A
DEAD LOAD	N/A

2. THIS WALL IS LOCATED ON PRIVATE PROPERTY AND IS TO BE PRIVATELY MAINTAINED.
3. THE STRUCTURAL DESIGN OF THE FENCE IS TO BE PERFORMED BY OTHERS PER LOCAL CODE
4. STOCKPILES SHALL NOT BE PLACED AT THE BASE OF ANY RETAINING WALL WITHIN 50 FEET OF THE WALL FACE AT ANY TIME. STOCKPILE MATERIALS INCLUDE BUT ARE NOT LIMITED TO SOIL, SNOW, AND LANDSCAPING MATERIAL

PART 7 - CONSTRUCTION SEQUENCE

A. OBTAIN BUILDING PERMITS AND INSTALL SEDIMENT AND EROSION CONTROL DEVICES.
B. GRADE AREAS BELOW AND BEHIND THE WALLS.
C. CONSTRUCT LEVELING PAD.
D. CONSTRUCT WALL INCLUDING BLOCK AND RETAINED FILL.
E. INSTALL FENCE POST BEHIND BLOCK CELLS AT FENCE POST HOLDER LOCATIONS IN ACCORDANCE WITH FENCE DESIGNER'S SPECIFICATIONS.

SOURCE: BASE PLAN ADAPTED FROM A 2023 AERIAL OF SUSSEX COUNTY, DELAWARE, PRODUCED AND MAINTAINED BY GOOGLE EARTH.

VICINITY MAP
1" = 1,000'

GEO-TECHNOLOGY ASSOCIATES, INC.
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GREGORY R. SAUTER REGISTERED NO. 13047 DELAWARE PROFESSIONAL ENGINEER
5/17/24

RETAINING WALL NOTES

INGRAM VILLAGE

SUSSEX COUNTY, DELAWARE

DATE	REVISIONS
2024-05-17	● REVISED WALL PLANS

JOB NO:	31232526
SCALE:	AS SHOWN
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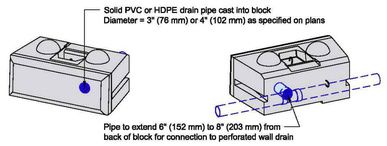
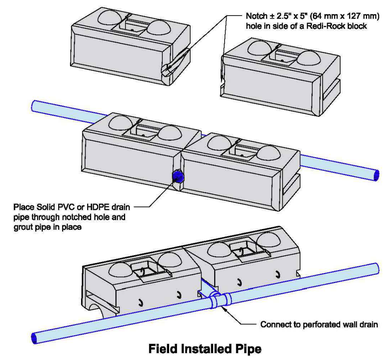
SHEET:	3 OF 4

S:2023 Project\31232526 - Ingram Village\CAD\Plot\31232526 - Ingram Village.dwg

Wall Drain Weep Hole Options



Custom Pipe Cast into Block



Field Installed Pipe

DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	06-22-2015
SHEET:	1 of 1
TITLE:	Drainage Weep Options
FILE:	5 Drainage Weep Options 062215.dwg

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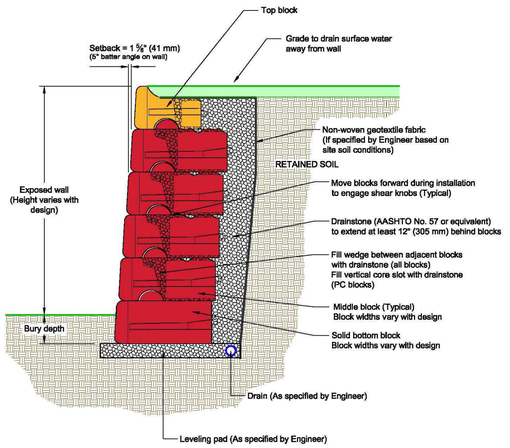
Typical Gravity Wall Section



DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	17MAR2016
SHEET:	1 of 1
TITLE:	Typical Gravity Wall Detail
FILE:	1 Typical Gravity Wall Detail 031716.dwg

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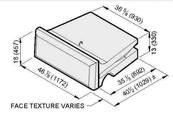
RETAINING BLOCKS

Block Library

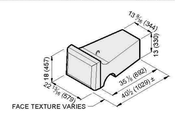
R-41T 41" (1030mm) TOP *

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	1750 lb (790 kg)	1680 lb (760 kg)
Block Volume:	12.22 ft³ (0.346 m³)	11.73 ft³ (0.332 m³)
Center of Gravity:	21.3" (540 mm)	20.6" (522 mm)



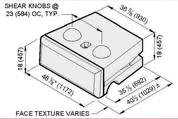
R-41HT 41" (1030mm) HALF TOP *

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	770 lb (350 kg)	740 lb (330 kg)
Block Volume:	5.38 ft³ (0.15 m³)	5.14 ft³ (0.15 m³)
Center of Gravity:	22.4" (568 mm)	21.6" (550 mm)



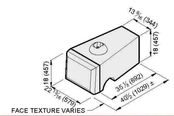
R-41M 41" (1030mm) MIDDLE

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	2310 lb (1050 kg)	2240 lb (1020 kg)
Block Volume:	16.14 ft³ (0.457 m³)	15.65 ft³ (0.443 m³)
Center of Gravity:	20.4" (518 mm)	19.8" (504 mm)



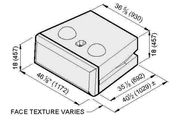
R-41HM 41" (1030mm) HALF MIDDLE

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	1020 lb (460 kg)	990 lb (450 kg)
Block Volume:	7.14 ft³ (0.20 m³)	6.90 ft³ (0.20 m³)
Center of Gravity:	21.4" (543 mm)	20.8" (528 mm)



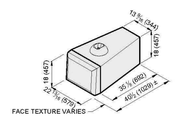
R-41B 41" (1030mm) BOTTOM

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	2440 lb (1110 kg)	2370 lb (1070 kg)
Block Volume:	17.06 ft³ (0.483 m³)	16.56 ft³ (0.469 m³)
Center of Gravity:	20.7" (527 mm)	20.2" (514 mm)



R-41HB 41" (1030mm) HALF BOTTOM

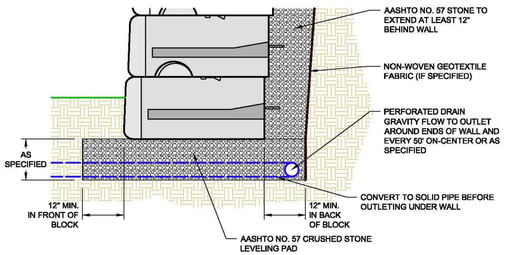
Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	1080 lb (490 kg)	1050 lb (480 kg)
Block Volume:	7.58 ft³ (0.21 m³)	7.33 ft³ (0.21 m³)
Center of Gravity:	21.7" (551 mm)	21.2" (538 mm)



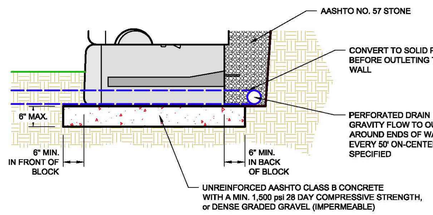
1. Units for dimensions are inches (mm), typical unless noted otherwise.
2. Block production varies with each licensed Redi-Rock manufacturer. Confirm availability before Specifying or Ordering.
3. Center of Gravity is measured from the back of block.
4. Actual block volumes and weights may vary.
5. Weights are based upon a concrete density of 143 lb/ft³ (2291kg/m³).
6. Half blocks contain a fork slot on only one side of the block.
7. Interface Shear knobs are typically 10" (254mm) diameter by 4" (102mm) tall. Smaller knob diameters are available.
8. * 41" (1030mm) Top blocks are not typical and used in limited applications.

LEVELING PAD OPTIONS FOR RETAINING WALL BLOCKS

NO SCALE



OPEN-GRADED CRUSHED STONE LEVELING PAD



CONCRETE or DENSE GRADED GRAVEL LEVELING PAD

DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	06-22-2015
SHEET:	1 of 1
TITLE:	Leveling Pad Options
FILE:	3 Leveling Pad Options 062215.dwg

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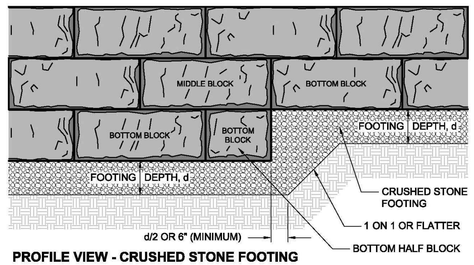
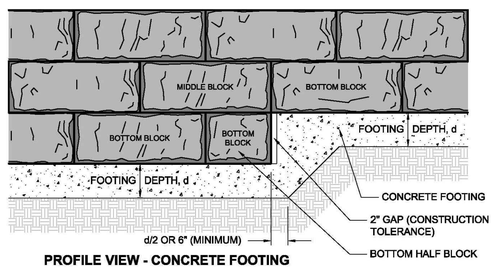
STEP FOOTING DETAILS



PROFILE VIEW - CRUSHED STONE FOOTING

(No Scale)



PROFILE VIEW - CONCRETE FOOTING

(No Scale)

DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	06-22-2015
SHEET:	1 of 1
TITLE:	Step Footing Details
FILE:	6 Step Footing Details 062215.dwg

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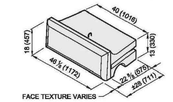
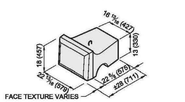
28" (710mm) TOP

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	1229 lb (557 kg)	1158 lb (525 kg)
Block Volume:	8.57 ft³ (0.243 m³)	8.07 ft³ (0.229 m³)
Center of Gravity:	14.9" (378mm)	14.2" (362mm)



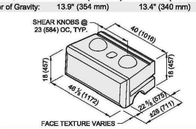
28" (710mm) HALF TOP

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	573 lb (260 kg)	538 lb (244 kg)
Block Volume:	4.01 ft³ (0.113 m³)	3.76 ft³ (0.106 m³)
Center of Gravity:	15.3" (389 mm)	14.7" (373 mm)



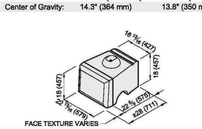
28" (710mm) MIDDLE

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	1613 lb (732 kg)	1542 lb (699 kg)
Block Volume:	11.28 ft³ (0.319 m³)	10.78 ft³ (0.305 m³)
Center of Gravity:	13.9" (354 mm)	13.4" (340 mm)



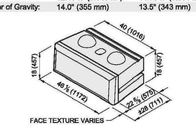
28" (710mm) HALF MIDDLE

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	748 lb (339 kg)	713 lb (323 kg)
Block Volume:	5.23 ft³ (0.148 m³)	4.98 ft³ (0.141 m³)
Center of Gravity:	14.3" (364 mm)	13.8" (350 mm)



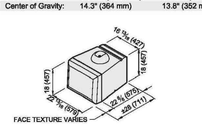
28" (710mm) BOTTOM

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	1744 lb (791 kg)	1672 lb (758 kg)
Block Volume:	12.19 ft³ (0.345 m³)	11.70 ft³ (0.331 m³)
Center of Gravity:	14.0" (355 mm)	13.5" (343 mm)



28" (710mm) HALF BOTTOM

Face Texture:	Cobble / Limestone	Ledgestone
Block Weight:	809 lb (367 kg)	774 lb (351 kg)
Block Volume:	5.66 ft³ (0.160 m³)	5.41 ft³ (0.153 m³)
Center of Gravity:	14.3" (364 mm)	13.8" (352 mm)



1. Units for dimensions are inches (mm), typical unless noted otherwise.
2. Confirm block production with licensed Redi-Rock manufacturer.
3. Center of Gravity is measured from the back of block.
4. Actual block volumes and weights may vary.
5. Weights are based upon a concrete density of 143 lb/ft³ (2291kg/m³).
6. Half blocks contain a fork slot on only one side of the block.
7. Interface Shear knobs are typically 10" (254mm) diameter by 4" (102mm) tall. Smaller knob diameters are available.

DRAWN BY:	BWL
APPROVED BY:	JRJ
DATE:	3JUN2015
SHEET:	1 of 8
TITLE:	Block Library RETAINING BLOCKS
FILE:	Redi-Rock Block Library 060315.dwg

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GREGORY R. SAUTER — REGISTERED — NO. 13047 — COMMONWEALTH OF VIRGINIA — PROFESSIONAL ENGINEER — 5/17/24

REATAING WALL DETAILS

INGRAM VILLAGE

SUSSEX COUNTY, DELAWARE

DATE	REVISIONS
2024-05-17	● REVISED WALL PLANS

JOB NO:	31232526
SCALE:	AS SHOWN
DATE:	NOVEMBER 2023
DRAWN BY:	APS
DESIGN BY:	GRS/APS
REVIEW BY:	EBC
SHEET:	4 OF 4

S:\2023 Project\31232526 - Ingram Village\CAD\Plot\31232526 - Ingram Village.dwg

CHANNEL MODIFICATIONS OR IMPOUNDMENT STRUCTURES (DAMS)

Please check applicable box(es) and complete all appropriate sections(s). Make sure answers to all of the questions in this appendix correspond to information on the application drawings

Section I. ☒ CHANNEL MODIFICATIONS Section II. ☐ IMPOUNDMENT STRUCTURES (DAMS)

I. CHANNEL MODIFICATIONS

1. What are the dimensions of the existing channel to be modified relative to mean high water (for tidal areas only) or ordinary high water (for non-tidal areas only)?

   16.67' length 0.22' depth 2.33' base width _____ top width

2. What will be the dimensions of the new or modified channel relative to mean high water (for tidal areas only) or ordinary high water (for non-tidal areas only)?

   16.67' length 0.22' depth 2.33' base width _____ top width

3. State type and approximate composition percentage of the existing stream bed (e.g. clay 10%, sand 10%, silt 45%, gravel 10%, etc.)

   80% sand, 20% silt

4. State the type and approximate composition percentage of the new or modified stream bed?

   80% sand, 20% silt.
   No change

5. What are the approximate normal discharge rate and drainage area of the existing water body.

   2 yr. 10.16 cfs 90.27 acres
   10yr. 29.29 cfs 100 yr. 99.36 cfs

6. What will be the approximate normal flow-rate and drainage area of the new or modified water body (for non-tidal areas only)?
   2 yr. 10.16 cfs 90.27 acres
   10 yr. 29.29 cfs 100 yr. 99.36 cfs

7. What will be the change (if any) in slope and cross-sectional area? Yes, cross sectional area will decrease

8. What type of material(s) will be used to stabilize the banks of the new or modified channel (e.g. rip-rap, vegetation, bulkhead, etc.)? Complete additional Appendices as necessary.

   Retaining wall

9. What will be the change in floodplain area upstream of the channel modification for a two year or ten year storm? Please indicate change in area on plans.

   10.16 cfs 2 yr. 29.29 cfs 10 yr.

II. IMPOUNDMENT STRUCTURES (DAMS)

1. What type(s) of material(s) will be used to construct the impoundment structure (e.g. earth, rock, concrete, etc.)?

2. How many cubic yards of material for the impoundment structure will be obtained from:

   a. Upland sources? _____ cubic yards
   b. Dredged material? _____ cubic yards
   c. Other? (explain below) _____ cubic yards

3. What will be the dimensions of the impoundment structure relative to mean high water (for tidal areas only) or ordinary high water (for non-tidal areas only)?

4. What will be the impoundment's?

   Storage capacity: _____ acre-feet
   Surface area: _____ acres; _____ square feet

5. What is the approximate drainage area of the water body upstream of the proposed impoundment? _____ acres
6. Have you obtained the appropriate County Conservation District office approval for an erosion and sediment control plan for your project? _____ Yes ____ No _____N/A

   If your answer is "No", contact the County Conservation District.

7. What is the approximate discharge rate from the 2, 10, 100 year frequency storm prior to construction?
   2 yr. _____ cfs
   10 yr. _____ cfs
   100 yr. _____ cfs

FILL

Please make sure answers to all of the questions in this appendix correspond to information on the application drawings.

1. How many linear feet will the fill extend channelward of the:
   a. Tidal waters: mean high water line? _____ ft.
      mean low water line? _____ ft.
   b. Non-tidal waters: ordinary high water line? 16.67 ft.

2. What is the area of fill that will be located:
   a. on subaqueous land (channelward of mean high water) 22.62 sq. ft.
   b. on vegetated wetlands? 0 sq. ft.

3. What is the source of the fill?
   _____ Hauled in from upland sources: What is the source company/location/parcel number?
   _____ Obtained from dredged material: Complete Dredging Appendix.

   Source of Fill is Unknown at this time.

4. What is the total volume of fill? 0.18 cubic yards
   a. What is the total fill per running foot of shoreline? 0.010 cubic yards

5. What method will be used to place the fill?

   Excavator assumed.

6. State the type and composition percentage of the fill material (e.g. sand 80%, silt 5%, clay 15%, etc.)

   Unknown at this time.

7. How will the fill be retained? Complete appropriate appendix.

   To be retained by wall

8. What type of vegetation or ground cover will be provided for the filled area(s) to prevent soil erosion and help keep sediment from reaching State waters?

   low permeability soil

9. Describe the type(s) of structure(s) to be erected on the filled area (if any). Complete appropriate appendix.

   fence post, 8-in dia. sonotube, 4in perforated HDPE drain pipe

Rip-Rap Sills and Revetments

Please respond to each question. Questions left blank may result in the application being returned as incomplete. In addition, the answers to all of the questions in this Appendix must correspond accurately to the information on the plan and section view drawings for the project.

1. Will the project be:
   X New Construction (un-stabilized shoreline)
   _____ Repair or Replacement of an Existing Rip-Rap Structure or Rubble
   _____ Repair or Replacement of an Existing Bulkhead
   (If repair or replacement, submit photographs of the entire existing structure).

2. How many linear feet of shoreline are proposed to be stabilized? 16.67

3. Is the project a: X Standard rip-rap revetment ___ Free-standing sill

4. Describe the existing shoreline:
   Grass slope adjacent to tax ditch.

5. What is the total number of cubic yards of rip-rap that will be used? _____

6. What is the number of cubic yards of rip-rap per running foot of shoreline? _____
   (See page 4 for a guide to calculating total cubic yards and cubic yards per running foot).

7. What will be the average weight of the stone used for the:
   Armor stone: _____ Core stone: 4,000 lbs / CY
   [If material other than stone, such as prefab geo-grid or other similar product is proposed, please describe here and include photographs or a brochure. The Department strongly discourages the use of broken concrete, cinderblocks or other materials that are less dense than stone, more apt to move off site due to currents or wave action, and/or are not aesthetically pleasing or in keeping with the natural environment.]
   Describe:
   Retaining Wall

8. For Standard Revetments answer A–F, below: (for Sill projects, skip to Question #9)
   A. How many linear feet will the structure extend channelward of:
   Mean High Water: _____Mean Low Water: _____
   Ordinary High Water: 16.25' (for non-tidal waters)

   B. How many square feet of the structure will be located:
   Channelward of Mean High Water: _____Channelward of Mean Low Water: _____
   Channelward of Ordinary High Water: 22.6 (for non-tidal waters)
   On vegetated wetlands: _____

   C. Will the revetment be backfilled? X Yes ___ No
   If yes, complete Appendix H and include it in your application.

   D. Will filter cloth be used behind the rip-rap structure? X Yes ___ No

   E. What is the average slope of the existing bank? 2:1 (50%)

   F. What is the proposed slope of the rip-rap revetment? 2:1 (50%)
   (See page 3 for a guide to calculating slopes).
9. Sill Projects:
   A. What is the base width of the proposed structure: _____
   B. What is the top width of the proposed structure: _____
   C. How many square feet of the structure will be located:

   Channelward of Mean High Water: _____ Channelward of Mean Low Water: _____
   Channelward of Ordinary High Water: _____ (for non-tidal waters)
   On vegetated wetlands: _____

   D. What will be the average height of the structure: _____
   E. How much of the structure (in inches) will extend vertically above:

   Mean High Water: _____ Ordinary High Water: _____ (for non-tidal waters)

   F. Are breaks or notches proposed in the sill to allow for greater flushing? ___ Yes___ No
   G. Will fill material be placed behind the sill? ___ Yes ___ No If yes, complete appropriate appendix.

   H. Will wetland vegetation be planted behind the sill? ___ Yes ___ No
   If yes, complete Appendix H and include it in your application.

10. Construction Techniques (Complete for both Revetment and Sill Projects):

A. Will any dredging be required? ___ Yes _X_ No

If yes, please include appropriate dredging Appendix with your application).

B. Please describe the sequence of construction and any techniques that will be utilized to minimize adverse impacts on the aquatic environment, and to preserve existing vegetation (particularly woody vegetation) along the shoreline:

1. Excavate 18" from proposed riprap apron location
2. Backfill apron with 6" - 9" riprap
3. Stabilize any additional disturbance with erosion control matting.

CALCULATIONS

RUN = Base width of the structure (in feet) RISE = Vertical height of the structure (in feet)

I. How to calculate total cubic yards:

0.5 * RUN * RISE * Linear feet of shoreline stabilized/27 = Total Cubic Yards

II. How to calculate cubic yards per running foot of shoreline:

Total # Cubic Yards/ Linear feet of shoreline = Cubic yards per running foot

III. How to calculate slope: Slope = RUN/RISE

EXAMPLE:

If we propose to stabilize 100 linear feet of shoreline with a rip-rap revetment that has a basewidth of 6 feet and a height of 3 feet:

0.5 * 6 * 3 * 100/27 = 33.33 Total Cubic Yards

II. 33.33/ 100= 0.333 Cubic Yards per running foot

III. 6/3= Slope of 2

Ingram Village NWP 18,
Ellendale, Delaware
Adjacent Property Owners

Tax Parcel: 230-26.00-58.00
Jennie Ingram
20120 Wil King Road
Lewes, DE 19958

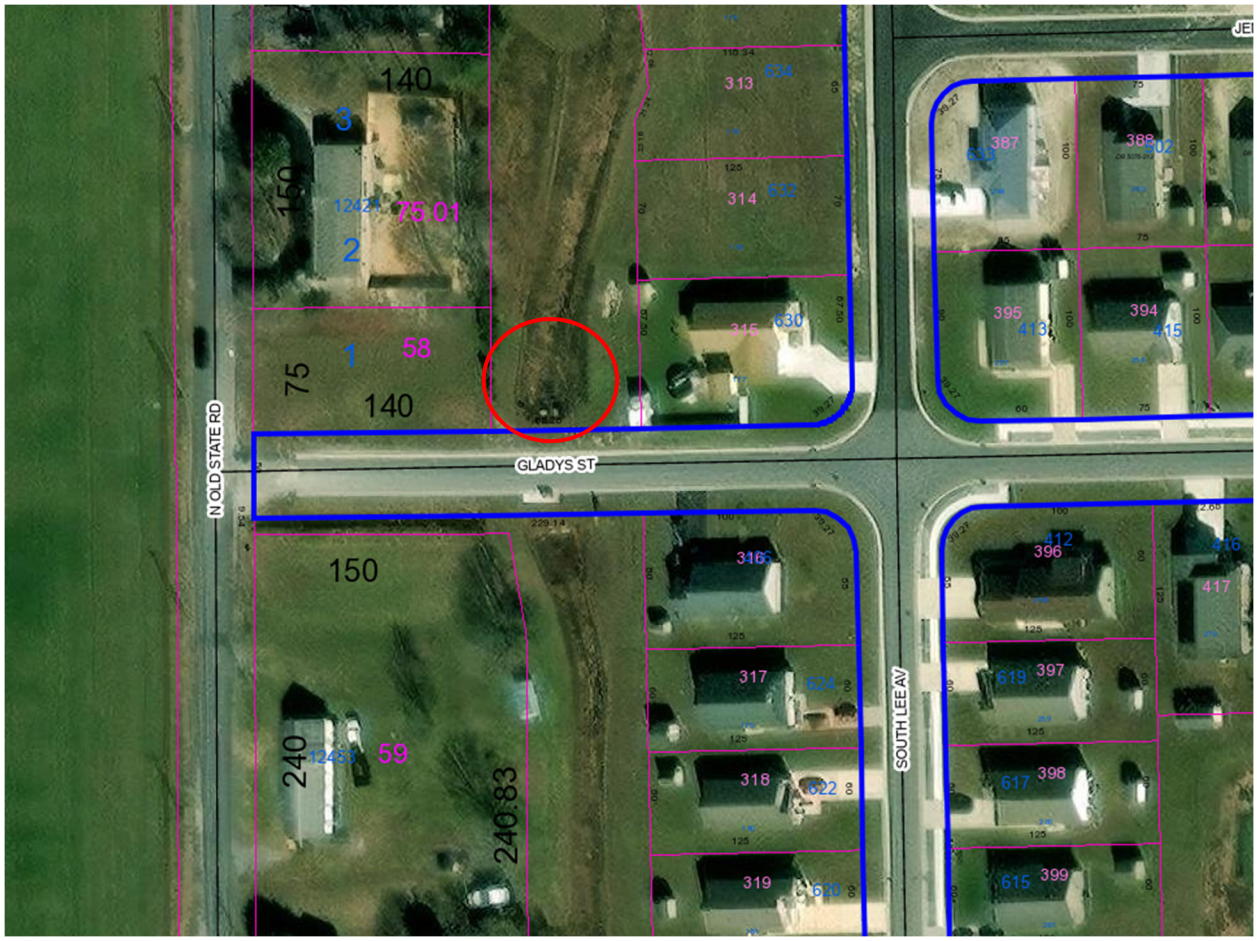
Tax Parcel: 230-26.00-75.01
Jessie Fredericksen
12421 North Old State Road
Ellendale, DE 19941

Tax Parcel: 230-26.00-314.00
16255 Sussex Highway
6992 Woodland Ferry Drive
Bridgeville, DE 19933

Tax Parcel: 230-26.00-315.00
Anthony Ottomano
630 South Lee Avenue
Ellendale, DE 19941

Tax Parcel: 230-26.00-316.00
Renaldo Thelus
406 Gladys Street
Ellendale, DE 19941

Tax Parcel: 230-26.00-59.00
Jesus Sandoval
4 Governor Tharp Court
Milford, DE 19963



Adjacent Property Owner Map (Red Circle Indicates Impact Area)

INGRAM VILLAGE DEVELOPMENT, LLC

RESOLUTION

Robert M. Lisle, in his capacity as General Manager of Ingram Village Development, LLC, a limited liability company, formed under the laws of the State of Delaware (the "LLC"), does hereby certify that the following resolutions were, or hereby are, duly adopted in accordance with the procedures set forth in the LLC's Operating Agreement (the "Operating Agreement") and applicable law, and that said resolutions have not been amended, rescinded or revoked, and are in no way in conflict with any of the provisions of the LLC's Certificate of Formation or Operating Agreement.

WHEREAS, Section 3.1(a) of the LLC's Operating Agreement provides that, "the General Manager shall have full, exclusive and complete power, authority and discretion to make all decisions affecting the business and affairs of the LLC and to take all such actions necessary or appropriate to accomplish the purposes of the LLC";

WHEREAS, Section 3.1(a) of the LLC's Operating Agreement further provides that, "The General Manager shall be responsible for managing the day-to-day affairs of the LLC and the business of the LLC and to execute, on behalf of the LLC any agreements, contracts, documents and instruments which may be necessary or desirable in connection with the development, management, maintenance and operation of the business of the LLC, including, without limitations, any and all public works agreements, deeds, contracts, leases, mortgages, deeds of trust, indemnity deed of trust, deed of trust notes, promissory notes, security agreements, financing statements, construction contracts, architectural or other professional service agreements, plats, development agreements with applicable governmental authorities, permit applications, easements, declarations and other documents pertaining to any LLC property without any necessity of obtaining the consent of the Members";

WHEREAS, as part of the LLC's operation and management of the Ingram Village subdivision project, the LLC is seeking to construct a retaining wall on Tax Map & Parcel No. 230-26.00-75.00 in Ingram Village for purposes of providing for a 25' wide tax ditch maintenance right of way for the School House Tax Ditch;

WHEREAS, the LLC is required to obtain a Wetlands and Subaqueous Lands permit and construction permit from DNREC and the Army Corps of Engineers prior to commencement of the aforementioned work; and

WHEREAS, the LLC now desires to grant execution authority to its General Manager, Robert M. Lisle, to execute any and all applications, permits, deeds, easements, agreements, consents, bonds, licenses, documents, or instruments necessary to construct the retaining wall, to provide for the 25' wide tax ditch maintenance right of way access for the School House Tax Ditch, and/or to any other action arising out of or related to these items.

RESOLVED, that Robert M. Lisle is authorized and empowered to execute, on behalf of the LLC, any and all applications, permits, deeds, easements, agreements, consents, bonds,

licenses, documents, or instruments necessary to construct the retaining wall on Tax Map & Parcel No. 230-26.00-75.00 of Ingram Village, and/or to take any other action necessary to provide for the 25' wide tax ditch maintenance right of way access for the School House Tax Ditch;

FURTHER RESOLVED, that this resolution supersedes without limiting any prior resolutions and amendments thereto regarding the granting of authority to the General Manager and individuals set forth herein; and

FURTHER RESOLVED, that the LLC and its representatives are authorized to rely upon this certification and act upon the authority of these resolutions until written revocation thereof signed by the General Manager has been received by the LLC.

The undersigned certifies that the LLC is duly organized and existing under its Certificate of Formation and the Operating Agreement, and has the power to effect the transactions and to take all actions as recited in these resolutions.

IN WITNESS WHEREOF, the undersigned has hereto set their hand and seal this 19th day of March, 2025.

INGRAM VILLAGE DEVELOPMENT, LLC

DATE 3-20-2025

BY: _____

Name: Robert M. Lisle

Title: General Manager

INGRAM VILLAGE DEVELOPMENT, LLC

RESOLUTION

Robert M. Lisle, in his capacity as General Manager of Ingram Village Development, LLC, a limited liability company, formed under the laws of the State of Delaware (the "LLC"), does hereby certify that the following resolutions were, or hereby are, duly adopted in accordance with the procedures set forth in the LLC's Operating Agreement (the "Operating Agreement") and applicable law, and that said resolutions have not been amended, rescinded or revoked, and are in no way in conflict with any of the provisions of the LLC's Certificate of Formation or Operating Agreement.

WHEREAS, Section 3.1(a) of the LLC's Operating Agreement provides that, "the General Manager shall have full, exclusive and complete power, authority and discretion to make all decisions affecting the business and affairs of the LLC and to take all such actions necessary or appropriate to accomplish the purposes of the LLC";

WHEREAS, Section 3.1(a) of the LLC's Operating Agreement further provides that, "The General Manager shall be responsible for managing the day-to-day affairs of the LLC and the business of the LLC and to execute, on behalf of the LLC any agreements, contracts, documents and instruments which may be necessary or desirable in connection with the development, management, maintenance and operation of the business of the LLC, including, without limitations, any and all public works agreements, deeds, contracts, leases, mortgages, deeds of trust, indemnity deed of trust, deed of trust notes, promissory notes, security agreements, financing statements, construction contracts, architectural or other professional service agreements, plats, development agreements with applicable governmental authorities, permit applications, easements, declarations and other documents pertaining to any LLC property without any necessity of obtaining the consent of the Members";

WHEREAS, as part of the LLC's operation and management of the Ingram Village subdivision project, the LLC is seeking to construct a retaining wall on Tax Map & Parcel No. 230-26.00-75.00 in Ingram Village for purposes of providing for a 25' wide tax ditch maintenance right of way for the School House Tax Ditch;

WHEREAS, the LLC is required to obtain a Wetlands and Subaqueous Lands permit and construction permit from DNREC and the Army Corps of Engineers prior to commencement of the aforementioned work; and

WHEREAS, the LLC now desires to grant execution authority to its General Manager, Robert M. Lisle, to execute any and all applications, permits, deeds, easements, agreements, consents, bonds, licenses, documents, or instruments necessary to construct the retaining wall, to provide for the 25' wide tax ditch maintenance right of way access for the School House Tax Ditch, and/or to any other action arising out of or related to these items.

RESOLVED, that Robert M. Lisle is authorized and empowered to execute, on behalf of the LLC, any and all applications, permits, deeds, easements, agreements, consents, bonds,

licenses, documents, or instruments necessary to construct the retaining wall on Tax Map & Parcel No. 230-26.00-75.00 of Ingram Village, and/or to take any other action necessary to provide for the 25' wide tax ditch maintenance right of way access for the School House Tax Ditch;

FURTHER RESOLVED, that this resolution supersedes without limiting any prior resolutions and amendments thereto regarding the granting of authority to the General Manager and individuals set forth herein; and

FURTHER RESOLVED, that the LLC and its representatives are authorized to rely upon this certification and act upon the authority of these resolutions until written revocation thereof signed by the General Manager has been received by the LLC.

The undersigned certifies that the LLC is duly organized and existing under its Certificate of Formation and the Operating Agreement, and has the power to effect the transactions and to take all actions as recited in these resolutions.

IN WITNESS WHEREOF, the undersigned has hereto set their hand and seal this 19th day of March, 2025.

INGRAM VILLAGE DEVELOPMENT, LLC

DATE 3-20-2025

BY: _____

Name: Robert M. Lisle

Title: General Manager

Electronically Recorded Document# 2023000042452 BK: 6018 PG: 195
Recorder of Deeds, Alexandra Reed Baker On 12/6/2023 at 12:15:08 PM Sussex County, DE
Consideration: $0.00 County/Town: $0.00 State: $0.00 Total: $0.00
Doc Surcharge Paid Town: ELLENDALE

TAX MAP AND PARCEL #: SEE ATTACHED EXHIBIT "A"
PREPARED BY & RETURN TO:
Steen, Waehler & Schrider-Fox, LLC
92 Atlantic Avenue, Unit B
Ocean View, DE 19970
File No. 23-2706/JRP

THIS DEED, made this 5th day of December, 2023.

- BETWEEN -

INSIGHT LAND COMPANY, LLC, a Delaware limited liability company, and **ROBERT M. LISLE**, of 16255 Sussex Highway, Bridgeville, DE 19933, parties of the first part,

- AND -

INGRAM VILLAGE DEVELOPMENT, LLC, a Delaware limited liability company, of 16255 Sussex Highway, Bridgeville, DE 19933, party of the second part.

WITNESSETH: That the said parties of the first part, for and in consideration of the sum of **One and 00/100 Dollars ($1.00)**, lawful money of the United States of America, the receipt whereof is hereby acknowledged, hereby grant and convey unto the party of the second part, and its successors and assigns, in fee simple, the following described lands, situate, lying and being in Sussex County, State of Delaware:

ALL THOSE CERTAIN lots, pieces and parcels of land lying and being situate in Cedar Creek Hundred and in the town of Ellendale, Sussex County, State of Delaware, being more particularly described and known as **Lots 1-22 (inclusive); 38-107 (inclusive) and 185-192 (inclusive) along with all subdivision streets, and all common areas including, but not limited to storm water management areas, pump station, open spaces, common spaces, entrances, and recreation areas in Ingram Village,** as shown on that certain plot prepared by George, Miles & Buhr, LLC, Architects and Engineers, entitled "Ingram Village Final Site Plans & Record Plats" filed for record in the Office of the recorder of Deeds in and for Sussex County at Georgetown, Delaware on September 2, 2010 in Plot Book 149, page 68 *et seq.*, as revised by that certain plot prepared by George, Miles & Buhr, LLC, Architects and Engineers entitled "Ingram Village" filed for record in the Office of the recorder of Deeds in and for Sussex County at Georgetown, Delaware on July 15, 2011 in Plot Book 160, page 40 *et seq.*, and as further revised by that certain plot prepared by George, Miles & Buhr, LLC, Architects and Engineers entitled "Ingram Village" filed for record in the Office of the recorder of Deeds in and for Sussex County at Georgetown, Delaware on May 9, 2014 in Plot Book 198, page 72 *et seq.*, and as further revised by that certain plot prepared by Vista Design, Inc. entitled "Ingram Village

Document# 2023000042452 BK: 6018 PG: 196
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Revised Record Plot" filed for record in the Office of the Recorder of Deeds in and for Sussex County at Georgetown, Delaware on December 2, 2021 in Plot Book 357, page 28 *et seq.*, and as further revised by that certain plot prepared by Bohler entitled "Revised Record Plan - Ingram Village Proposed Residential Subdivision" filed for record in the Office of the Recorder of Deeds in and for Sussex County at Georgetown, Delaware on October 13, 2023 in Plot Book 411, page 1 *et seq.*

BEING the same lands and premises conveyed to Insight Land Company, LLC and Robert M. Lisle in a Deed dated November 3, 2022 from Beaver Properties, LLC, and recorded November 7, 2022, in the Office of the Recorder of Deeds in and for Sussex County, Delaware in Deed Book 5803, Page 66.

SUBJECT to any and all restrictions, reservations, conditions, easements and agreements of record in the Office of the Recorder of Deeds in and for Sussex County, Delaware.

IN WITNESS WHEREOF, the said Insight Homes, Inc., Manager of Insight Land Company, LLC, a Delaware limited liability company, has caused its name to be hereunto set under seal by Robert M. Lisle, CEO/COB, the day and year first above written.

INSIGHT LAND COMPANY, LLC
By: Insight Homes, Inc., its Manager

Signed, Sealed and Delivered
in the presence of:

By: _____(SEAL)
Robert M. Lisle, CEO/COB

STATE OF DELAWARE, COUNTY OF SUSSEX: to-wit

BE IT REMEMBERED, that on this 5 day of December A.D. 2023, personally appeared before me, the Subscriber, a Notary Public in and for the State and County aforesaid, Robert M. Lisle, CEO/COB of Insight Homes, Inc., Manager of Insight Land Company, LLC, a Delaware limited liability company, party to this Indenture, known to me personally to be such, and acknowledged this Indenture to be his act and deed and the act and deed of said limited liability company; that the signature of the Officer for Manager is in his own proper handwriting and by his authority to act; and that the act of signing, sealing, acknowledging and delivering the said Indenture was first duly authorized by a resolution of the limited liability company.

GIVEN under my Hand and Seal of Office the day and year aforesaid.

JAMIE WILLEY
Notary Public
State of Delaware
My Commission Expires
01/18/2025

Notary Public

My Commission Expires: 01/18/2025

Document# 2023000042452 BK: 6018 PG: 197
Recorder of Deeds, Alexandra Reed Baker On 12/6/2023 at 12:15:08 PM Sussex County, DE
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IN WITNESS WHEREOF, the said Robert M. Lisle, has caused his name to be hereunto set under seal, the day and year first above written.

Signed, Sealed and Delivered
in the presence of:

_____(SEAL)
Robert M. Lisle

STATE OF DELAWARE, COUNTY OF SUSSEX: to-wit

BE IT REMEMBERED, that on this 5 day of December A.D. 2023, personally appeared before me, the Subscriber, a Notary Public in and for the State and County aforesaid, Robert M. Lisle, first party to this Indenture, known to me personally to be such, and acknowledged this Indenture to be his act and deed.

GIVEN under my Hand and Seal of Office the day and year aforesaid.

JAMIE WILLEY
Notary Public
State of Delaware
My Commission Expires
01/18/2025

_____
Notary Public

My Commission Expires: 01/18/2025

Document# 2023000042452 BK: 6018 PG: 198
Recorder of Deeds, Alexandra Reed Baker On 12/6/2023 at 12:15:08 PM Sussex County, DE
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Exhibit "A"

List of Lots

Lot No.:	Street Address:	Phase No.:	Tax Map Parcel:
1	N Lee Ave	5	230-26.00-139.00
2	N Lee Ave	5	230-26.00-140.00
3	N Lee Ave	5	230-26.00-141.00
4	N Lee Ave	5	230-26.00-142.00
5	N Lee Ave	5	230-26.00-143.00
6	N Lee Ave	5	230-26.00-144.00
7	N Lee Ave	5	230-26.00-145.00
8	Corner N Lee Ave & Douglas St	5	230-26.00-146.00
9	Douglas Street	5	230-26.00-147.00
10	Douglas Street	5	230-26.00-148.00
11	Douglas Street	5	230-26.00-149.00
12	Douglas Street	5	230-26.00-150.00
13	Douglas Street	5	230-26.00-151.00
14	Douglas Street	5	230-26.00-152.00
15	Douglas Street	5	230-26.00-153.00
16	Douglas Street	5	230-26.00-154.00
17	Douglas Street	5	230-26.00-155.00
18	Douglas Street	5	230-26.00-156.00
19	Douglas Street	5	230-26.00-157.00
20	Douglas Street	5	230-26.00-158.00
21	Douglas Street	5	230-26.00-159.00
22	Corner Douglas St & Norwood Dr	5	230-26.00-160.00
38	Corner Norwood Dr & Ingram Boulevard South	5	230-26.00-176.00
39	Norwood Drive	5	230-26.00-177.00
40	Norwood Drive	5	230-26.00-178.00
41	Norwood Drive	5	230-26.00-179.00
42	Norwood Drive	5	230-26.00-180.00
43	Norwood Drive	5	230-26.00-181.00
44	Norwood Drive	5	230-26.00-182.00
45	Norwood Drive	5	230-26.00-183.00
46	Norwood Drive	5	230-26.00-184.00
47	Norwood Drive	5	230-26.00-185.00
48	Corner Norwood Dr & Douglas St	5	230-26.00-186.00
49	Corner Douglas St & Sylvia Ave	5	230-26.00-187.00
50	Sylvia Ave	5	230-26.00-188.00

Document# 2023000042452 BK: 6018 PG: 199
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51	Sylvia Ave	5	230-26.00-189.00
52	Sylvia Ave	5	230-26.00-190.00
53	Sylvia Ave	5	230-26.00-191.00
54	Sylvia Ave	5	230-26.00-192.00
55	Sylvia Ave	5	230-26.00-193.00
56	Sylvia Ave	5	230-26.00-194.00
57	Sylvia Ave	5	230-26.00-195.00
58	Sylvia Ave	5	230-26.00-196.00
59	Corner Sylvia Ave & Ingram Blvd S	5	230-26.00-197.00
60	Corner N Lee Ave & Douglas St	5	230-26.00-198.00
61	Douglas St	5	230-26.00-199.00
62	Douglas St	5	230-26.00-200.00
63	Douglas St	5	230-26.00-201.00
64	Douglas St	5	230-26.00-202.00
65	Douglas St	5	230-26.00-203.00
66	Douglas St	5	230-26.00-204.00
67	Douglas St	5	230-26.00-205.00
68	Douglas St	5	230-26.00-206.00
69	Douglas St	5	230-26.00-207.00
70	Douglas St	5	230-26.00-208.00
71	Corner S Lee Ave & Douglas St	5	230-26.00-209.00
72	Corner S Lee Ave & Thelma St	5	230-26.00-210.00
73	Thelma St	5	230-26.00-211.00
74	Thelma St	5	230-26.00-212.00
75	Thelma St	5	230-26.00-213.00
76	Thelma St	5	230-26.00-214.00
77	Thelma St	5	230-26.00-215.00
78	Thelma St	5	230-26.00-216.00
79	Thelma St	5	230-26.00-217.00
80	Thelma St	5	230-26.00-218.00
81	Thelma St	5	230-26.00-219.00
82	Thelma St	5	230-26.00-220.00
83	Corner N Lee Ave & Thelma St	5	230-26.00-221.00
84	Corner N Lee Ave & Thelma St	5	230-26.00-222.00
85	Thelma St	5	230-26.00-223.00
86	Thelma St	5	230-26.00-224.00
87	Thelma St	5	230-26.00-225.00
88	Thelma St	5	230-26.00-226.00
89	Thelma St	5	230-26.00-227.00

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Recorder of Deeds, Alexandra Reed Baker On 12/6/2023 at 12:15:08 PM Sussex County, DE
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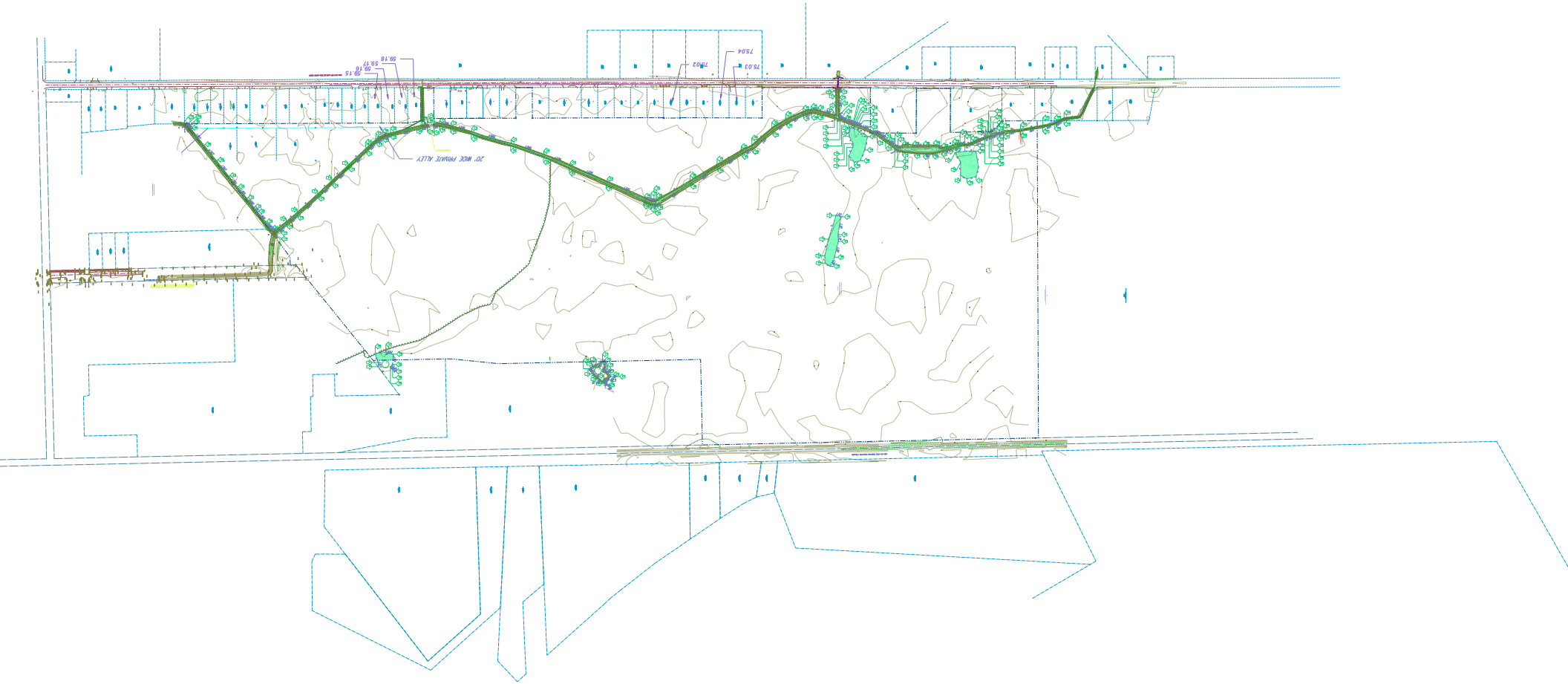
90	Thelma St	5	230-26.00-228.00
91	Thelma St	5	230-26.00-229.00
92	Thelma St	5	230-26.00-230.00
93	Thelma St	5	230-26.00-231.00
94	Thelma St	5	230-26.00-232.00
95	Corner S Lee Ave & Thelma St	5	230-26.00-233.00
96	Corner S Lee Ave & Northwood Dr.	5	230-26.00-234.00
97	Northwood Drive	5	230-26.00-235.00
98	Northwood Drive	5	230-26.00-236.00
99	Northwood Drive	5	230-26.00-237.00
100	Northwood Drive	5	230-26.00-238.00
101	Northwood Drive	5	230-26.00-239.00
102	Northwood Drive	5	230-26.00-240.00
103	Northwood Drive	5	230-26.00-241.00
104	Northwood Drive	5	230-26.00-242.00
105	Northwood Drive	5	230-26.00-243.00
106	Northwood Drive	5	230-26.00-244.00
107	Corner N Lee Ave & Northwood Dr.	5	230-26.00-245.00
185	Corner N Lee Ave & Colette St	4	230-26.00-323.00
186	Colette St	4	230-26.00-324.00
187	Colette St	4	230-26.00-325.00
188	Colette St	4	230-26.00-326.00
189	Colette St	4	230-26.00-327.00
190	Colette St	4	230-26.00-328.00
191	Colette St	4	230-26.00-329.00
192	Corner Charlotte St & Colette St	4	230-26.00-330.00
Streets	N/A	N/A	230-26.00-75.10
Pump Station	N/A	N/A	230-26.00-75.12
Rec Area	N/A	N/A	230-26.00-75.13
Open Space	N/A	N/A	230-26.00-75.00


59.78
59.75
59.77
75.02
75.03
75.04
20' WIDE PRIVATE ALLEY