



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

J.R. "JOEY" HOPKINS  
SECRETARY

May 22, 2024

**COUNTY:** Wake  
**SUBJECT:** Application for Driveway Entrance onto SR 2053  
Permit Number D051-092-23-00187  
Jones Dairy Storage Facility

Timmons Group - Garret Frank  
5410 Trinity Road  
Raleigh, NC 27606

Dear Sir or Madam,

Attached for your file is a copy of the Driveway Permit which you requested.

This permit is approved with the understanding the applicant is responsible for the proper construction of the above drive in accordance with the permit application, approved plans and the attached Standard and Special Provisions.

**FOR ACCESS ONLY**

**A PERFORMANCE AND INDEMNITY BOND IN THE VALUE OF \$350,000.00 IS REQUIRED AND SHALL BE POSTED WITH THE DISTRICT OFFICE PRIOR TO THE START OF WORK. THE BOND SHALL DISPLAY THE DRIVEWAY PERMIT NUMBER.**

Should you have any questions, please contact the District Engineers Office at (919) 814-6115.

Sincerely,

Daniel T. Boulware, P.E.

DTB/mvs  
Attachment

cc: Mr. B. H. Jones, P. E., Division Engineer  
Town of Rolesville

*Mailing Address:*  
NC DEPARTMENT OF TRANSPORTATION  
DIVISION 5 – DISTRICT 1  
1575 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1575

*Telephone:* (919) 814-6115  
*Fax:* (919) 715-5778  
*Customer Service:* 1-877-368-4968

*Website:* [www.ncdot.gov](http://www.ncdot.gov)

*Location:*  
4009 DISTRICT DRIVE  
RALEIGH, NC 27607

## Driveway Permit Special Provision

1. NCDOT WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM:
  - A. Effective July 1, 2010, all flagging operations within NCDOT Right of Way require qualified and trained Work Zone Flaggers.
  - B. Effective July 1, 2011, qualified and trained Work Zone Traffic Control Supervisors will be required on Significant Projects.
  - C. Training for this certification is provided by NCDOT approved training sources and by private entities that have been pre-approved to train themselves. If you have questions, contact our web site at <http://www.ncdot.org/doh/preconstruct/wztc/WZTCTrainingProgram/default.html>, or contact Kenneth Thornewell, PE with NCDOT Work Zone Traffic Control Unit at (919) 662-4338.
2. Before work begins, please forward the contact information of the general contractor to the Senior Assistant District Engineer, Montel Sparrow at [mvsparrow@ncdot.gov](mailto:mvsparrow@ncdot.gov). Include contact name, emergency phone number and email.
3. Current and future state projects take precedence over this driveway.
4. Approval is for one full access driveway onto SR 2053 (Jones Dairy Road) located approximately 815 feet east of the intersection with SR 4403 (Winter Spring Drive).
5. NCDOT reserves the right to further restrict this/these access/accesses at the expense of the encroaching party if/when accident history exists and/or operational issues occur.

NCDOT reserves the right to revise, restrict, suspend and/or void this driveway permit if the execution and/or operation of said permit is found to be a hazard to the traveling public.
6. The roadway improvements, as shown on the plans, shall be constructed under an encroachment agreement E051-092-23-01269.
7. Roadway improvements shall be required as shown on the attached plans.
8. A \$350,000.00 Performance and Indemnity Bond shall be executed and posted with the District Office at 4009 District Drive, Raleigh, North Carolina 27607, prior to beginning any work in the Right of Way. When the project has been completed and upon written request by the Permittee to the District Office, an inspection and review will be performed by NCDOT, and if all work is found to be satisfactory, the bond will be released.
9. All lots/outparcels shall be served internally, with no additional accesses onto SR 2503 (Jones Dairy Road). This shall be conveyed in any buy, sell or lease agreement.
10. Any future development or attachment will require review and approval by NCDOT. Additional roadway improvements and/or further restriction of existing access points may be required. This will be determined by the traffic conditions at the time of the future development.
11. Approval of the driveway permit does not constitute review and approval of streets for NCDOT maintenance. If addition of streets to the state system is desired, plans for review and a petition for addition shall be submitted to the District Engineer's office. For further information, contact the District Engineer's Office, at (919) 814-6115.
12. This driveway agreement only covers work within NCDOT Right-of-Way and Control Access Right-of-Way as shown on the attached plans received in the District Office.

13. Notify the Town of Rolesville prior to beginning work.
14. Any personnel or equipment working within five feet of a travel lane shall require a full lane closure. No lane of traffic shall be closed or restricted between the hours of 6:00 AM to 9:00 AM and 4:00 PM to 7:00 PM Monday thru Friday, during any time of inclement weather, or upon District Engineers' directive. Traffic shall be maintained at all times. Any violation of these hours will result in termination of the Driveway Permit and liquidated damages in the amount of \$2,000.00 per hour or any portion thereof will be assessed by the District Engineers Office.
15. Sight distance shall be free and clear of any debris, foliage and/or earth material for a minimum AASHTO sight distance shown in the plans. Vegetation removal and/or grading may be necessary to achieve the required sight distance. If the sight distance requirement is not achieved NCDOT reserves the right to deny/close/restrict this/these access(es)
16. Pavement pre-markings shall be approved by the District Office before thermoplastic is placed.
17. All (cast-in-place and/or pre-cast) splice boxes, handholes, manholes, drainage structures and other appurtenances within NCDOT Right of Way shall be of a NCDOT approved design for traffic bearing, HS-20 loading, and shall be flush mounted. Manholes, handholes and vaults shall not be placed in the ditch-line, side slopes of the ditch or in the pavement.  
  
All frames, grates, rings, covers, etc. are to be manufactured in accordance with the requirements of Section 106-1B - "Domestic Steel". Foreign castings are not approved for use within NCDOT Right of Way.
18. The Permittee shall contact the District Office at (919) 814-6115 for inspection of forms or grade line prior to placing concrete for curb and gutter. Please provide 48 hours notification for inspections. All storm drainage grates and frames shall be on site at the time of the inspection.
19. All bare and disturbed areas must have a sufficient stand of vegetation. Address any erosion issues that may arise during time of construction. Monitor these areas as needed to assure this requirement is satisfied.
20. The roadway shall be kept free of silt, mud and debris at all times.

## Driveway Permit Standard Provision

1. An executed copy of this driveway access permit, and any associated encroachment permits, will be present at the construction site at all times during construction. NCDOT reserves the right to stop all work unless evidence of approval can be shown.
2. NCDOT reserves the right to further restrict this access at the expense of the encroaching party if/when accident history exists and/or operational issues occur.
3. NCDOT reserves the right to revise, restrict, suspend and/or void this driveway permit if the execution and/or operation of said permit is found to be a hazard to the traveling public.
4. This driveway permit only covers work within NCDOT Right-of-Way. The encroacher is responsible for verifying all right of way. NCDOT does not guarantee the right of way on this road. If the right of way was not obtained by the fee simple method, it is the responsibility of the encroacher to obtain permission from the underlying property owner/owners.

Encroacher shall be responsible for obtaining all necessary permanent and/or temporary construction, drainage, utility and/or sight distance easements. All Right of Way and easements necessary for construction and maintenance shall be dedicated to NCDOT with proof of dedication furnished to the District Engineer prior to beginning work.

5. Please note that approval of the driveway permit does not constitute review or approval of utilities or sidewalk by NCDOT. Plans and a completed encroachment agreement shall be submitted to the District Engineer's office for review and approval.
6. The encroacher is responsible for any claim for damages brought by any property owner by reason of the installation.
7. Notify the District Engineer's Office at (919) 814-6115 or at 4009 District Drive, Raleigh, NC 27607, prior to beginning and after completion of work.
8. The Encroacher shall notify the public, including all adjacent property owners and businesses, a minimum of 2 weeks prior to beginning work.
9. Driveway radii and widths shall be as shown on the attached approved plans.
10. Any and all changes noted in red on the plans shall be incorporated into and made part of the approved permit.
11. The encroaching party shall comply with all applicable local, state and federal environmental regulations, and shall obtain all necessary state and federal environmental permits, including but not limited to, those related to sediment control, storm water, wetland, streams, endangered species, and historical sites.
12. All materials and construction shall be in accordance with NCDOT standards and specifications, including but not limited to, the latest version of NCDOT Standard Specifications for Roads and Structures, the NCDOT Roadway Standards Drawings, and NCDOT's Utilities Accommodation Manual.

13. The encroacher shall provide traffic control devices, lane closures, road closures, positive protection and/or any other warning or positive protection devices necessary for the safety of road users during construction and any subsequent maintenance. This shall be performed in conformance with the latest NCDOT Roadway Standard Drawings and Standard Specifications for Roads and Structures and Amendments or Supplements and MUTCG thereto. When there is no guidance provided in the Roadway Standard Drawings or Specifications, comply with the Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. No work shall be performed in the Right of Way unless this requirement is satisfied. NCDOT reserves the right to require a written traffic control plan for encroachment operations.

Sidewalk closures shall be installed as necessary. Pedestrian traffic shall be detoured around these closures and shall be signed appropriately and in accordance with The American with Disabilities Act Accessibility Guidelines.

14. No parking or material storage shall be allowed along the shoulders of any NCDOT roadways.
15. Two-way traffic shall be maintained at all times.
16. No lane closures shall be permitted between the hours of 6:00 AM to 9:00 AM and 4:00 PM to 7:00 PM, Monday through Friday unless otherwise specified in the Special Provisions of this encroachment agreement.
17. At the end of each working day, equipment shall be parked outside of the clear recovery zone in order to avoid any obstruction to the travelling public. This clear recovery zone is measure from the edge of the nearest travel lane.
18. Work shall not be performed on both sides of the road simultaneously within the same area.
19. Ingress and egress shall be maintained to all businesses and dwellings at all times.
20. The paving of this roadway shall be in accordance with the latest version of NCDOT's Standard Specifications, Sections 610, 1012 and 1020. The Contractor shall follow all procedures of the attached Quality Management System (QMS) for asphalt pavement - Maintenance Version. The Contractor must adhere to all testing requirements and quality control requirements specified. The Contractor shall contact the NCDOT Division 5 QA Supervisor at (910) 562995-6198 prior to producing plant mix and make the Supervisor aware that the mix is being produced for a future NCDOT road. Only NCDOT approved mix designs will be acceptable. A quality control plan shall be submitted to the District Engineer's Office prior to asphalt production. Use form QMS-MV1 for the Quality Control Plan submittal. Failing mixes and/or densities are subject to penalties including monetary payments or removal and replacement.
21. Roadway certification reports sealed by a Professional Engineer shall be submitted to the North Carolina Department of Transportation at 4009 District Drive, Raleigh, North Carolina, indicating the following:
  - \* Pavement thickness by type
  - \* Pavement density, core and/or test locations
  - \* Base thickness
  - \* Base density
  - \* Subgrade densityTest frequency and method shall be in conformance with the NCDOT "Materials and Tests" Manual. Test must be performed by a Certified Technician including name and Certification number on report.
22. Any existing driveways, pavement, sidewalk, curb and gutter or drainage structures that are damaged during construction shall be repaired to their original condition.
23. When surface area in excess of one acre will be disturbed, the Encroacher shall submit a Sediment and Erosion Control Plan which has been approved by the appropriate regulatory agency or authority prior to beginning any work on the Right of Way. Failure to provide this information shall be grounds for suspension of operations.

24. All erosion control devices and measures shall be constructed, installed, maintained, and removed by the Encroacher in accordance with all applicable Federal, State, and Local laws, regulations, ordinances, and policies. All earth areas shall be regraded and seeded in accordance with NCDOT Standards Specifications for Roads and Structures 1995. Seeding rates per acre shall be the following:
  - \* Year Round Mixture: 50# Pensacola Bahia Grass; 50# KY 31 Tall Fescue; 5# Centipede; 500# 10-20-20 Fertilizer; 4000# Limestone;
  - \* 2:1 Slopes Standard Mix: Use Year Round Mixture (Delete Centipede); Add 25# Service Lespedeza;
  - \* If Using Crown Vetch on 2:1 Slope (September-May): Use Year Round Mixture; Add Crown Vetch 15 lbs./Ac.; (Delete Centipede and Bahia)
25. The applicant is responsible for identifying project impacts to waters of the United States (wetlands, intermittent streams, perennial streams and ponds) located within the NCDOT right-of-way. The discharge of dredged or fill material into waters of the United States requires authorization from the United States Army Corps of Engineers (USACE) and certification from the North Carolina Division of Water Quality (NCDWQ). The applicant is required to obtain pertinent permits or certification from these regulatory agencies if construction of the project impacts waters of the United States within the NCDOT right-of-way. Additional information can be obtained by contacting the USACE or NCDWQ.
26. The applicant is responsible for avoiding impacts to federally protected species during project construction. Bald eagle, Michaux's sumac, smooth coneflower, dwarf wedge mussel, harperella, red-cockaded woodpecker and tar spiny mussel are federally protected species that have been identified within NCDOT right-of-way in Durham, Person, Granville, Wake, Franklin, Vance, and Warren counties. Additional information can be obtained by contacting the North Carolina Natural Heritage Program or the United States Fish and Wildlife Services.
27. The applicant is responsible for complying with the Neuse and Tar-Pamlico Riparian Buffer Rule as regulated by the NCDWQ. The Rule regulates activity within a 50-foot buffer along perennial streams, intermittent streams and ponds. Additional information can be obtained by contacting the NCDWQ.
28. Existing drainage patterns shall be maintained at all times throughout the proposed construction. The encroacher shall keep the roadway clean of dirt and debris at all times throughout the duration of the project.
29. All proposed landscaping and plantings located within the NCDOT right of way shall be approved by the Division Roadside Environmental Engineer at (919) 317-4700.

In the event these plants require relocation or removal for highway construction, reconstruction, or maintenance of safety, such removal or relocation will be done immediately by the permittee upon notification by the NCDOT entirely at the expense of the permittee.
30. The Division Traffic Engineer, shall be notified at (919) 536-4000 prior to any excavation within 500 feet of a signalized intersection or if there are existing NCDOT signs in or near the proposed work zone. All traffic signal or detection cables must be located prior to excavation. All signal work and traffic signs shall be coordinated with the Division Traffic Engineer. Costs to relocate, replace, or repair NCDOT signs, signals, or associated equipment shall be the responsibility of the Encroacher.
31. All temporary and final pavement markings, reflective pavement markings, raised pavement markers, non-cast iron snowplowable pavement markers and signage are the responsibility of the Encroacher. All final pavement markings shall be thermoplastic. Any pavement markings/markers that are damaged or obliterated shall be restored at no expense to NCDOT.
32. All Traffic signs moved shall be reinstalled as soon as possible to meet NCDOT specifications.
33. Strict compliance with the Policies and Procedures in the NCDOT's Utilities Accommodation Manual shall be required.

34. It shall be the responsibility of the Encroacher to determine the location of other utilities within the encroachment area. The Encroacher shall be responsible for notifying other utility owners and providing protection and safeguards to prevent damage or interruption to existing facilities and to maintain accessibility to existing utilities.
35. All earth areas disturbed shall be regraded and reseeded in accordance with Division of Highways Standards and Specifications.
36. The Encroacher shall remove all trees, stumps and vegetative material from the right of way and dispose of in a licensed landfill or disposal site.
37. Excavated material shall not be placed on the roadway at any time.
38. Trenching, bore pits and/or other excavations shall not be left open or unsafe overnight. The Contractor shall comply with all OSHA requirements and provide a competent person on site to supervise excavation at all times.
39. All excavations inside the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation wall should be made in accordance with the following conditions. Traffic should be moved to a travel lane outside the limits of a theoretical one-to-one slope from the bottom of the nearest trench wall to the pavement surface. Active excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by an engineer registered in North Carolina. Trench boxes shall not be accepted as shoring. The trench backfill material should meet the Statewide Borrow Criteria.
40. Excavated areas adjacent to pavement having more than a 2 inch drop shall be made safe with a 6:1 or flatter slope and shall be designated by appropriate delineation during periods of construction inactivity, including, but not limited to, night and weekend hours.
41. Backfill material is to be placed at a maximum of 6 inch loose layers and each layer thoroughly compacted. All embankment backfill shall be compacted to 95% density and all subgrade to 100% density in accordance with AASHTO T-99 as modified by NCDOT. They shall be signed by a Professional Engineer and sent to the District Engineers Office at 4009 District Drive, Raleigh, NC 27607.
42. No commercial advertising shall be allowed within NCDOT Right of Way.
43. Guardrail shall be installed where warranted and in accordance with the guidelines shown in the 2018 Highway Design Branch Roadway Standard Drawings.  
  
Guardrail removed or damaged during construction shall be replaced or repaired to their original condition.
44. Poles shall be located/relocated at or as near as possible to the right-of-way line, shall be set outside the Clear Recovery Area as outlined by AASHTO and outside sight distance triangles.  
  
Poles located within guardrail sections shall be installed a minimum of 5 feet behind any guardrail. When applicable, poles shall be placed behind sidewalk.  
  
Any associated guy wires to ground anchors and stub poles shall not be placed between a pole and the travel way and should be located outside the clear recovery area.  
  
Minimum vertical clearance shall be 18' for aerial crossings over NCDOT roadways and 15'-6" for installations parallel to the roadway.
45. Fire Hydrants shall be of the break-away type. Hydrants shall be placed a maximum of one foot inside the right of way in ditch sections or a minimum of 6 feet behind the curb in curb and gutter sections.



46. Retaining walls or other vertical structures shall not be permitted inside NCDOT right of way.

47. Current and future state projects take precedence over this encroachment.



APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION	
Driveway Permit No.	Date of Application	STREET AND DRIVEWAY ACCESS PERMIT APPLICATION	
County: WAKE			
Development Name: JONES DAIRY STORAGE FACILITY			
LOCATION OF PROPERTY:			
Route/Road: SR-2053 / JONES DARIY ROAD			
Exact Distance	815	<input type="checkbox"/> Miles <input checked="" type="checkbox"/> Feet	N <input type="checkbox"/> S <input type="checkbox"/> E <input checked="" type="checkbox"/> W <input type="checkbox"/>
From the Intersection of Route No. SR-2053 and Route No. SR-4403 Toward SR-4478			
Property Will Be Used For: <input type="checkbox"/> Residential /Subdivision <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Educational Facilities <input type="checkbox"/> TND <input type="checkbox"/> Emergency Services <input type="checkbox"/> Other			
Property: <input checked="" type="checkbox"/> is <input type="checkbox"/> is not within <u>Town of Rolesville</u> City Zoning Area.			
AGREEMENT			
<ul style="list-style-type: none"> <li>I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.</li> <li>I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.</li> <li>I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.</li> <li>I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.</li> <li>I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.</li> <li>I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.</li> <li>I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".</li> <li>I agree to pay a \$50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.</li> <li>I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.</li> <li>I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.</li> <li>I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.</li> <li>I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.</li> <li>I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.</li> <li>The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.</li> <li>I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.</li> <li><b>I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.</b></li> </ul>			
2004-07	NOTE: Submit Four Copies of Application to Local District Engineer, N.C. Department of Transportation		TEB 65-04rev. 61-03419

**SIGNATURES OF APPLICANT**

PROPERTY OWNER (APPLICANT)		WITNESS	
COMPANY	Rivercrest Realty Investors, LLC	NAME	Brian Holder
SIGNATURE		SIGNATURE	
ADDRESS	8816 SIX FORKS ROAD, SUITE 201 RALEIGH, NC 27615 Phone No. (919) 846-4046	ADDRESS	8816 Six Forks Rd. RALEIGH NC 27615

AUTHORIZED AGENT		WITNESS	
COMPANY	_____	NAME	_____
SIGNATURE	_____	SIGNATURE	_____
ADDRESS	_____	ADDRESS	_____
	Phone No. _____		_____

**APPROVALS**

APPLICATION RECEIVED BY DISTRICT ENGINEER

\_\_\_\_\_  
SIGNATURE DATE

APPLICATION APPROVED BY LOCAL GOVERNMENTAL AUTHORITY (when required)

Meredith A. Gruber Planning Director 10/26/2023  
SIGNATURE TITLE DATE

APPLICATION APPROVED BY NCDOT

\_\_\_\_\_  
SIGNATURE TITLE DATE

INSPECTION BY NCDOT

\_\_\_\_\_  
SIGNATURE TITLE DATE

COMMENTS:

**SUMMARY OF PROBABLE CONSTRUCTION COSTS**  
**Road Improvements (Non-Utility Related; 2-Party Road Widening)**

**Project Name: Jones Dairy Storage**  
 Rolesville, NC

25-Jan-24

<b>OFF-SITE IMPROVEMENTS</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
<i>General Conditions</i>				
General Conditions, Bonding & Layout	10	%	\$ 2,641	\$ 26,408
<i>Erosion Control</i>				
Erosion Control	1	LS	\$ 7,500	\$ 7,500
<i>Traffic Control</i>				
Flaggers and Barricades	15	Days	\$ 1,500	\$ 22,500
<i>Demolition</i>				
Mill Tapers on Each End	2	EA	\$ 1,500.00	\$ 3,000
<i>Grading</i>				
Earthwork (Cut & Fill)	500	CY	\$ 10.00	\$ 5,000
Fine Grading	20000	SF	\$ 1.00	\$ 20,000
Final Shoulder Backfill	1200	LF	\$ 1.00	\$ 1,200
<i>Site Improvements</i>				
Asphalt Pvmt. - 1.5" Overlay	1760	SY	\$ 25.00	\$ 44,000
Asphalt Pvmt. - NCDOT Full Depth Widening	870	SY	\$ 128.00	\$ 111,360
Asphalt Pvmt. - Asphalt Side path	290	SY	\$ 45.00	\$ 13,050
Curb & Gutter - 30"	280	LF	\$ 24.00	\$ 6,720
Conc Driveway Aprons	100	SY	\$ 85.00	\$ 8,500
Conc. ADA Ramps	2	EA	\$ 2,500.00	\$ 5,000
15-in RCP Storm Sewer	50	LF	\$ 75.00	\$ 3,750
15-in Conc. FES	4	EA	\$ 500.00	\$ 2,000
Thermo Pavement Markings	1	EA	\$ 2,500.00	\$ 2,500
Mailbox Relocations	1	LS	\$ 1,000.00	\$ 1,000
<i>Landscaping</i>				
Seeding & Cleanup	20000	SF	\$ 0.25	\$ 5,000
<i>Allowances</i>				
Unsuitable Soil Allowance	20	CY	\$ 100	\$ 2,000
			<b>Subtotal :</b>	<b>\$ 290,488</b>
			10% Contractors OH&P	\$ 29,049
			5% Misc. Contingency	\$ 14,524
<b>ROAD IMPROVEMENT COST TOTAL:</b>				<b>\$ 334,061</b>



Timmons Group's Opinion of Probable Construction Cost (OPCC) is based on best judgment, experience and being qualified professionals generally familiar with the construction industry. Because Timmons Group has no control over the cost of labor, materials, equipment, services furnished by others, or over competitive bidding or market conditions, Timmons Group cannot guarantee that actual construction costs will not vary from the OPCC presented.

# DRIVEWAY PERMIT INVESTIGATION REPORT

Local Authority: Rolesville

D051-092-23-00 187  Residential Subdivision  Commercial  Other North / South

Driveway 1: SR 2053 Speed Limit 45

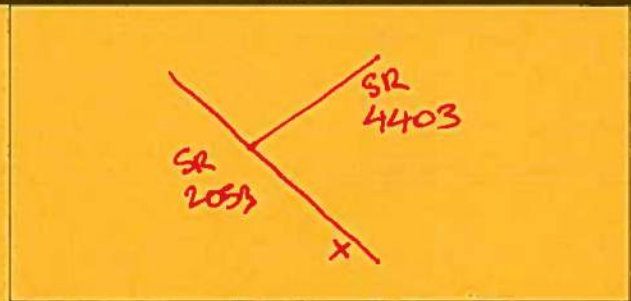
Road Name Jones Dairy Rd

**Existing Cross Section:**

<u>2</u> Lanes	<u>10'</u> Feet
(No / <u>Striped</u> / Concrete) Median	<u>3.5</u> Feet
	___ Feet
Total Paved Width	<u>27</u> Feet

**Proposed Cross Section:**

___ Lanes	___ Feet
(No / Striped / Concrete / Planted ) Median	___ Feet
	___ Feet
Total Paved Width	___ Feet



SD = 1.47*V*t t=(f)+ lanes*.5	Design Speed (V)	Time Gap (t)	SD
Left Turn (6.5)			
Right Turn		6.5	
Measured from 18' behind EOT			

**Proposed Access:** Right In Right Out Left In Left Out

**Sight Distance:** 1215' Looking Left (Right Turn) 2650' Looking Right (Left Turn)

**Required Sight Distance:** \_\_\_ Looking Left (Right Turn) \_\_\_ Looking Right (Left Turn)

Ditch (Yes / No) Depth: 1.5' Crosslines (Yes / No) Size: \_\_\_ Location: \_\_\_ Pavement Condition: Fair

Notes: \_\_\_\_\_

Driveway 2: SR \_\_\_\_\_ Speed Limit \_\_\_\_\_

Road Name \_\_\_\_\_

**Existing Cross Section:**

___ Lanes	___ Feet
(No / Striped / Concrete) Median	___ Feet
	___ Feet
Total Paved Width	___ Feet

**Proposed Cross Section:**

___ Lanes	___ Feet
(No / Striped / Concrete) Median	___ Feet
	___ Feet
Total Paved Width	___ Feet

SD = 1.47*V*t t=(f)+ lanes*.5	Design Speed (V)	Time Gap (t)	SD
Left Turn (6.5)			
Right Turn (5.5)		6.5	
Measured from 18' behind EOT			

**Proposed Access:** Right In Right Out Left In Left Out

**Sight Distance:** \_\_\_ Looking Left (Right Turn) \_\_\_ Looking Right (Left Turn)

**Required Sight Distance:** \_\_\_ Looking Left (Right Turn) \_\_\_ Looking Right (Left Turn)

Ditch (Yes / No) Depth: \_\_\_ Crosslines (Yes / No) Size: \_\_\_ Location: \_\_\_ Pavement Condition: \_\_\_

Notes: \_\_\_\_\_

Driveway 3: SR \_\_\_\_\_ Speed Limit \_\_\_\_\_

Road Name \_\_\_\_\_

Existing Cross Section:

_____ Lanes	_____ Feet
(No / Striped / Concrete) Median	_____ Feet
_____	_____ Feet
Total Paved Width	_____ Feet

Proposed Cross Section:

_____ Lanes	_____ Feet
(No / Striped / Concrete / Planted ) Median	_____ Feet
_____	_____ Feet
Total Paved Width	_____ Feet



$SD = 1.47 * V * t$	Design	Time	SD
$t = (f) + lanes * .5$	Speed (V)	Gap (t)	
Left Turn (6.5)			
Right Turn (5.5)		6.5	

Measured from 18' behind EOT

Proposed Access: Right In Right Out Left In Left Out

Sight Distance: \_\_\_\_\_ Looking Left (Right Turn) \_\_\_\_\_ Looking Right (Left Turn)

Required Sight Distance: \_\_\_\_\_ Looking Left (Right Turn) \_\_\_\_\_ Looking Right (Left Turn)

Ditch (Yes / No) Depth: \_\_\_\_\_ Crosslines (Yes / No) Size: \_\_\_\_\_ Location: \_\_\_\_\_ Pavement Condition: \_\_\_\_\_

Notes: \_\_\_\_\_

Driveway 4: SR \_\_\_\_\_ Speed Limit \_\_\_\_\_

Road Name \_\_\_\_\_

Existing Cross Section:

_____ Lanes	_____ Feet
(No / Striped / Concrete) Median	_____ Feet
_____	_____ Feet
Total Paved Width	_____ Feet

Proposed Cross Section:

_____ Lanes	_____ Feet
(No / Striped / Concrete) Median	_____ Feet
_____	_____ Feet
Total Paved Width	_____ Feet



$SD = 1.47 * V * t$	Design	Time	SD
$t = (f) + lanes * .5$	Speed (V)	Gap (t)	
Left Turn (6.5)			
Right Turn (5.5)		6.5	

Measured from 18' behind EOT

Proposed Access: Right In Right Out Left In Left Out

Sight Distance: \_\_\_\_\_ Looking Left (Right Turn) \_\_\_\_\_ Looking Right (Left Turn)

Required Sight Distance: \_\_\_\_\_ Looking Left (Right Turn) \_\_\_\_\_ Looking Right (Left Turn)

Ditch (Yes / No) Depth: \_\_\_\_\_ Crosslines (Yes / No) Size: \_\_\_\_\_ Location: \_\_\_\_\_ Pavement Condition: \_\_\_\_\_

Notes: \_\_\_\_\_

Name: Vishal Jayaraman Signature: [Signature] Date: 12/01/2023

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**TIMMONS GROUP**  
1001 Boulders Pkwy., Suite 300  
North Chesterfield, Virginia 23225  
(804) 200-6500 Fax (804) 560-1016  
FED I.D.# 54-1301413

**TOWNE BANK**

68-894/514

93850

October 23, 2023

PAY

Fifty and 00/100 Dollars

**TIMMONS GROUP**

TO THE  
ORDER  
OF

North Carolina Department of Transportation (NCDOT)  
NCDOT Division 5, District 1  
Driveway Permit Review  
4009 District Drive  
Raleigh, NC 27607

\$50.00

*Walter P. H. [Signature]*



THIS DOCUMENT CONTAINS HEAT SENSITIVE INK. TOUCH OR PRESS HERE - RED IMAGE DISAPPEARS WITH HEAT.

⑈093850⑈ ⑆051408949⑆ 0281001456⑈



# VERIFICATION OF COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

(Check Appropriate Box)

- Permits from the N.C. Department of Environmental Quality and the U.S. Army Corp of Engineers are not required for this project. However, all applicable federal and state regulations have been followed.
- The required permits from the N.C. Department of Environmental Quality and the U.S. Army Corp of Engineers have been obtained for this project. Copies of the permits are attached.
- All applicable NPDES Stormwater Permit requirements have been or will be met for this project.
- The project is in compliance with all applicable sedimentation and erosion control laws and regulations.

Project Name: Jones Dairy Storage Facility

Township: Rolesville

County: Wake

Project Engineer: Garrett Frank

Phone Number 919-866-4503

Project Contact: Garrett Frank

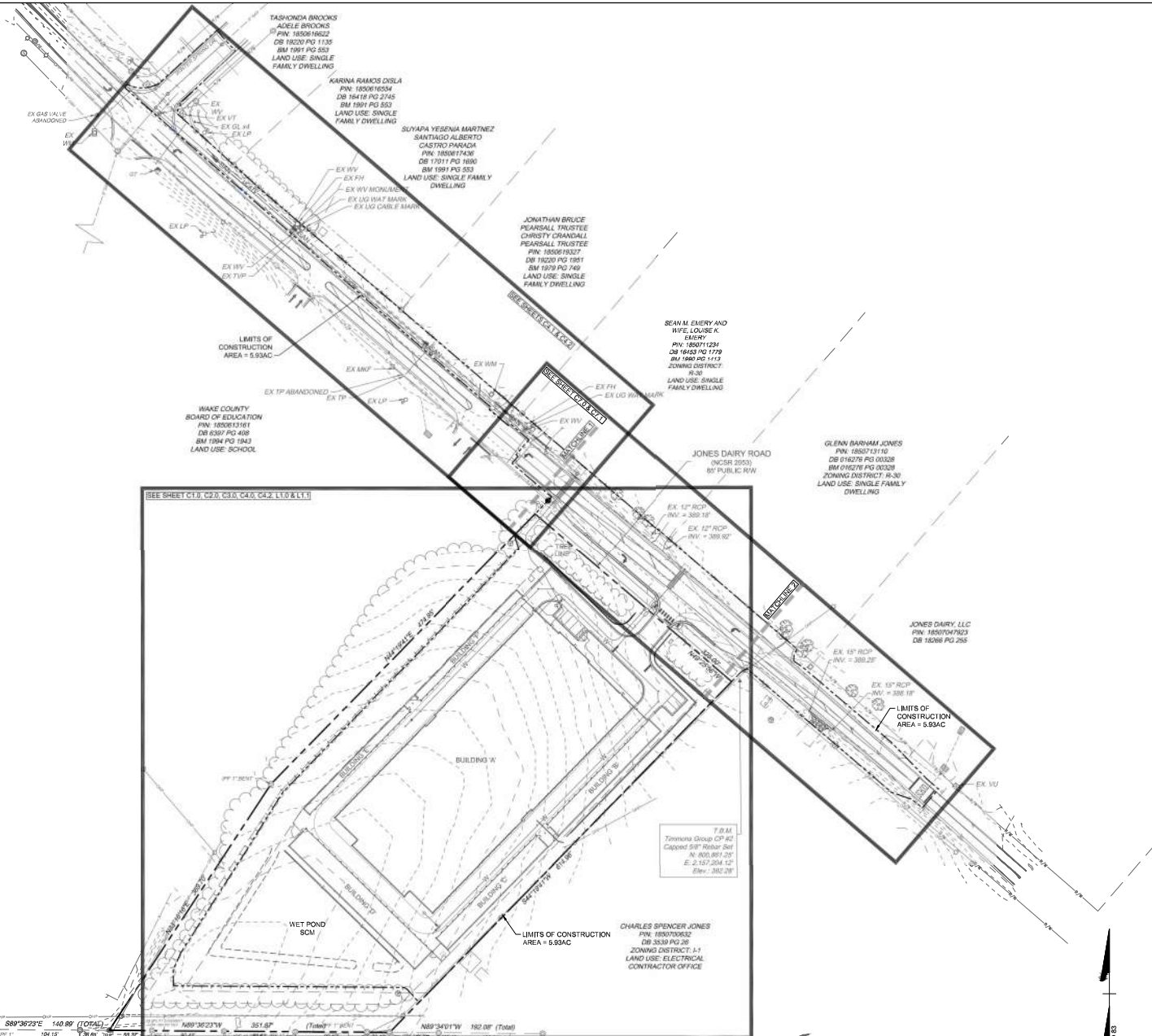
Applicant's Name: Rivercrest Realty Associates, LLC

Date Submitted: 10/27/2023









<p>889°36'23" 140.89' (TOTAL)</p> <p>STEVEN WAYNE SMITH &amp; KIMBERLY ROSE SMITH          PIN: 1850603353          DB: 15062 PG 1743          BM: 2007 PG 2000          LAND USE: SINGLE FAMILY DWELLING</p>	<p>TRAVIS A EDWARDS          PIN: 1850601333          DB: 16456 PG 2371          BM: 2007 PG 2000          LAND USE: SINGLE FAMILY DWELLING</p>	<p>ARTHUR G. DOYLE &amp; PATRICIA A. DOYLE          PIN: 1850603443          DB: 15033 PG 1118          BM: 2007 PG 2000          LAND USE: SINGLE FAMILY DWELLING</p>	<p>ROBERT C. MINOR &amp; ANNY C. MINOR          PIN: 1850606333          DB: 15206 PG 17          BM: 2007 PG 2000          LAND USE: SINGLE FAMILY DWELLING</p>	<p>ALICIA KNOWLES &amp; WILBERT KNOWLES          PIN: 1850603293          DB: 17402 PG 2680          BM: 2007 PG 2000</p>	<p>QUINN STANTON &amp; EMILY LAUREN STANTON          PIN: 1850608313          DB: 14106 PG 610          BM: 2007 PG 2000</p>	<p>THE PETTIT HAMILTON TRUST AGREEMENT          PIN: 1850609303          DB: 18080 PG 336          BM: 2007 PG 2000</p>
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 RALEIGH, NC 27606  
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DATE	REVISION DESCRIPTION
06/07/2023	ADMITTED TOWN OF ROLESVILLE COMMISSIONERS
07/07/2023	ADMITTED TOWN OF ROLESVILLE COMMISSIONERS
07/07/2023	ADMITTED TOWN OF ROLESVILLE COMMISSIONERS

DATE: 04/05/2023  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

# TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

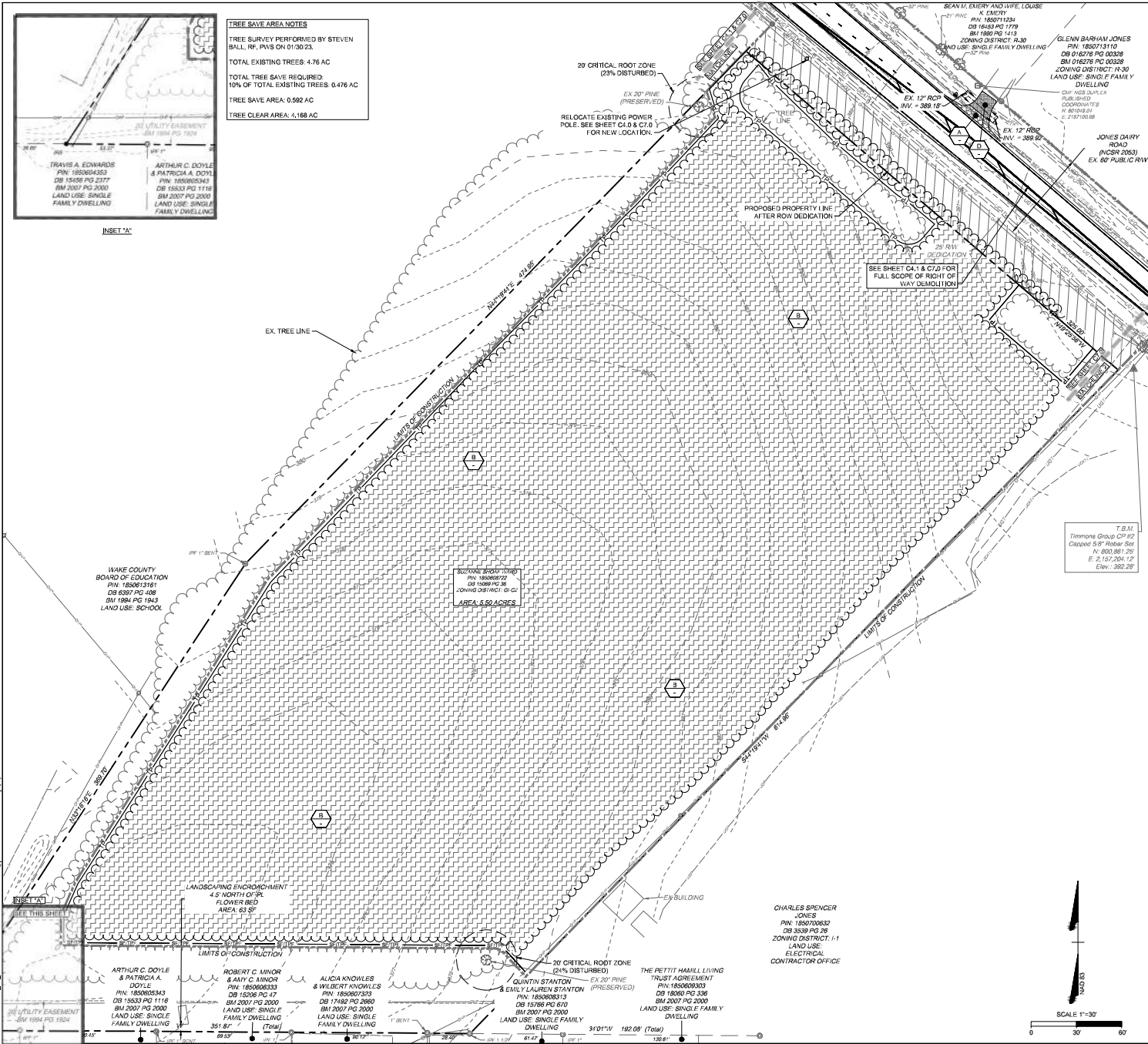
## JONES DAIRY STORAGE FACILITY

TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

### OVERALL SITE PLAN & KEY MAP

JOB NO. 54832  
 SHEET NO. C0.1

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**TREE SAVE AREA NOTES**

TREE SURVEY PERFORMED BY STEVEN BALL, R.F. PAYS ON 01/30/23.

TOTAL EXISTING TREES: 4.76 AC

TOTAL TREE SAVE REQUIRED: 10% OF TOTAL EXISTING TREES: 0.476 AC

TREE SAVE AREA: 0.592 AC

TREE CLEAR AREA: 4.168 AC

**DEMOLITION NOTES**

- ALL UTILITIES OR STRUCTURES NOT INDICATED FOR REMOVAL OR MODIFICATION ARE TO REMAIN AND BE PROTECTED FROM DAMAGE.
- ALL WASTE MATERIAL GENERATED FROM CLEARING AND DEMOLITION ACTIVITIES SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS. CONTRACTOR SHALL SALVAGE ALL SIGNAGE, METERS, ETC. TO OWNER. COORDINATE WITH OWNER PRIOR TO DEMOLITION.
- CLEAR AND GRUB AS NEEDED WITHIN CONSTRUCTION LIMITS PER SPECIFICATIONS AND DRAWINGS. EXISTING TREES, SHRUBS OR OTHER LANDSCAPE MATERIAL WHICH WILL CONFLICT WITH NEW CONSTRUCTION SHALL BE REMOVED (WHETHER OR NOT SHOWN ON THE DRAWINGS) FOLLOWING APPROVAL OF ENGINEER. BY SUBMITTING A BID, CONTRACTOR ACKNOWLEDGES THAT THE SITE HAS BEEN INVESTIGATED TO DETERMINE THE SIZE AND QUANTITY OF CLEARING REQUIRED FOR CONSTRUCTION.
- ALL PAVEMENT OR CONCRETE TO BE REMOVED SHALL BE SAW CUT TO PROVIDE A STRAIGHT AND UNIFORM JAW WITH NEW CONSTRUCTION. ANY EXISTING PAVEMENT, SIDEWALK, CURB & GUTTER, ETC. THAT MUST BE REMOVED TO ALLOW NEW CONSTRUCTION SHALL BE REMOVED AND REPAIRED PER THE SPECIFICATIONS AND DETAILS OR TO MATCH EXISTING CONDITIONS (WHETHER OR NOT SHOWN ON THE DRAWINGS) TO BE REMOVED. UTILITY INSTALLATIONS MAY UTILIZE OPEN CUT OF PAVEMENTS UNLESS INDICATED OTHERWISE. TRENCH IN EXISTING ASPHALT SHALL BE PATCHED PER PAVEMENT REPAIR DETAIL. PROTECT ALL ADJACENT PROPERTIES, THE GENERAL PUBLIC AND ALL OF THE OWNER'S FACILITIES. SHOULD DAMAGES OCCUR, NOTIFY ENGINEER IMMEDIATELY.
- THE CONTRACTOR SHALL EMPLOY A QUALIFIED UTILITY LOCATOR SERVICE TO LOCATE ALL UNDERGROUND UTILITIES INCLUDING BUT NOT LIMITED TO ELECTRICAL, TELEPHONE, GAS, CABLE, FIBER OPTIC) WITHIN THE LIMITS OF CONSTRUCTION.
- VERIFY ALL ILLUSTRATED KNOWN UNDERGROUND ELEMENTS. EXERCISE REASONABLE EFFORTS TO PROTECT ANY UNKNOWN UNDERGROUND ELEMENTS. NOTIFY THE ENGINEER IMMEDIATELY IF UNKNOWN ELEMENTS ARE DISCOVERED THAT WOULD NECESSITATE MODIFICATION TO THE PROPOSED DESIGN.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND OSHA REGULATIONS.
- EXISTING MANHOLES, VALVE BOXES, VAULTS, CLEANOUTS, UTILITY PITS, ETC. TO REMAIN WITHIN THE GRADING LIMITS SHALL BE ADJUSTED AS NEEDED TO FUNCTION PROPERLY WITH THE PROPOSED FINISHED GRADES (WHETHER OR NOT INDICATED TO BE MODIFIED).
- ANY AND ALL LANDSCAPING AND EXISTING TREES & SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR OR UTILIZING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- PROTECT EXISTING SITE FURNISHINGS AND PLAYGROUNDS DURING CONSTRUCTION. REPLACE AT NO COST TO THE OWNER IF DAMAGED.
- A TREE SURVEY PER ROLESVILLE LDD SECTION WAS PERFORMED BY STEVEN BALL, R.F. AT SOIL & ENVIRONMENTAL CONSULTANTS, P.A.
- ALL TREE PROTECTION FENCING MUST REMAIN IN PLACE THROUGHOUT THE ENTIRE SITE DEVELOPMENT PROCESS UNTIL THE TIME A CERTIFICATE OF OCCUPANCY IS ISSUED.

**DEMOLITION KEY NOTES**

- A REMOVE ASPHALT PAVEMENT AND STONE BASE
- B REMOVE TREE CLEARING
- C 50-FT MILL TAPER FROM 0'-1.5" (SEE C7.0)
- D SAW CUT AND REMOVE CONCRETE AT NEAREST JOINT.
- E REMOVE AND REPLACE EXISTING CULVERT
- F RELOCATE EXISTING MAIL BOX
- G REMOVE EXISTING GRAVEL
- H REMOVE EXISTING HEADWALL
- I REMOVE SANITARY SEWER PIPES
- J REMOVE SANITARY SEWER STRUCTURE
- K MILL AND REMOVE 1.5" OF ASPHALT

**EXISTING CONDITIONS LEGEND**

EX. CONSTRUCTION LIMITS	---
EX. STORM PIPE	---
EX. FENCE	---
EX. GAS LINE	---
EX. POWER LINE	---
EX. TELEPHONE LINE	---
EX. WATER LINE	---
EX. SANITARY SEWER FORCE MAIN	---
EX. SANITARY SEWER LINE	---
EX. CABLE TV LINE	---
EX. FIBER OPTIC LINE	---
EX. TREE LINE	---
LIGHT POLE	---
SITE BOLLARD	---
UTILITY POLE	---
SANITARY SEWER MANHOLE	---
STORM SEWER MANHOLE	---
CLEANOUT (SANITARY OR STORM)	---
DROP INLET	---
FIRE HYDRANT	---
WATER VALVE	---
TELECOM BOX	---
GROUND MOUNTED SIGN	---

**TREE DISTURBANCE LEGEND**

PN	PINE
----	------



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WWW.PALETT.COM

DATE	REVISION DESCRIPTION
06/07/2023	ADDED TOWN OF ROLESVILLE COMMENTS
07/07/2023	ADDED TOWN OF ROLESVILLE COMMENTS
09/05/2023	ADDED TOWN OF ROLESVILLE COMMENTS

YOUR VISION ACHIEVED THROUGH OURS.

DRAWN BY: L. BARNES  
DESIGNED BY: G. FRANK  
CHECKED BY: G. FRANK  
SCALE: AS SHOWN

**TIMMONS GROUP**  
NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**EXISTING CONDITIONS & DEMOLITION PLAN**

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JOB NO. 54832  
SHEET NO. C1.0

**TRAFFIC CONTROL NOTES**

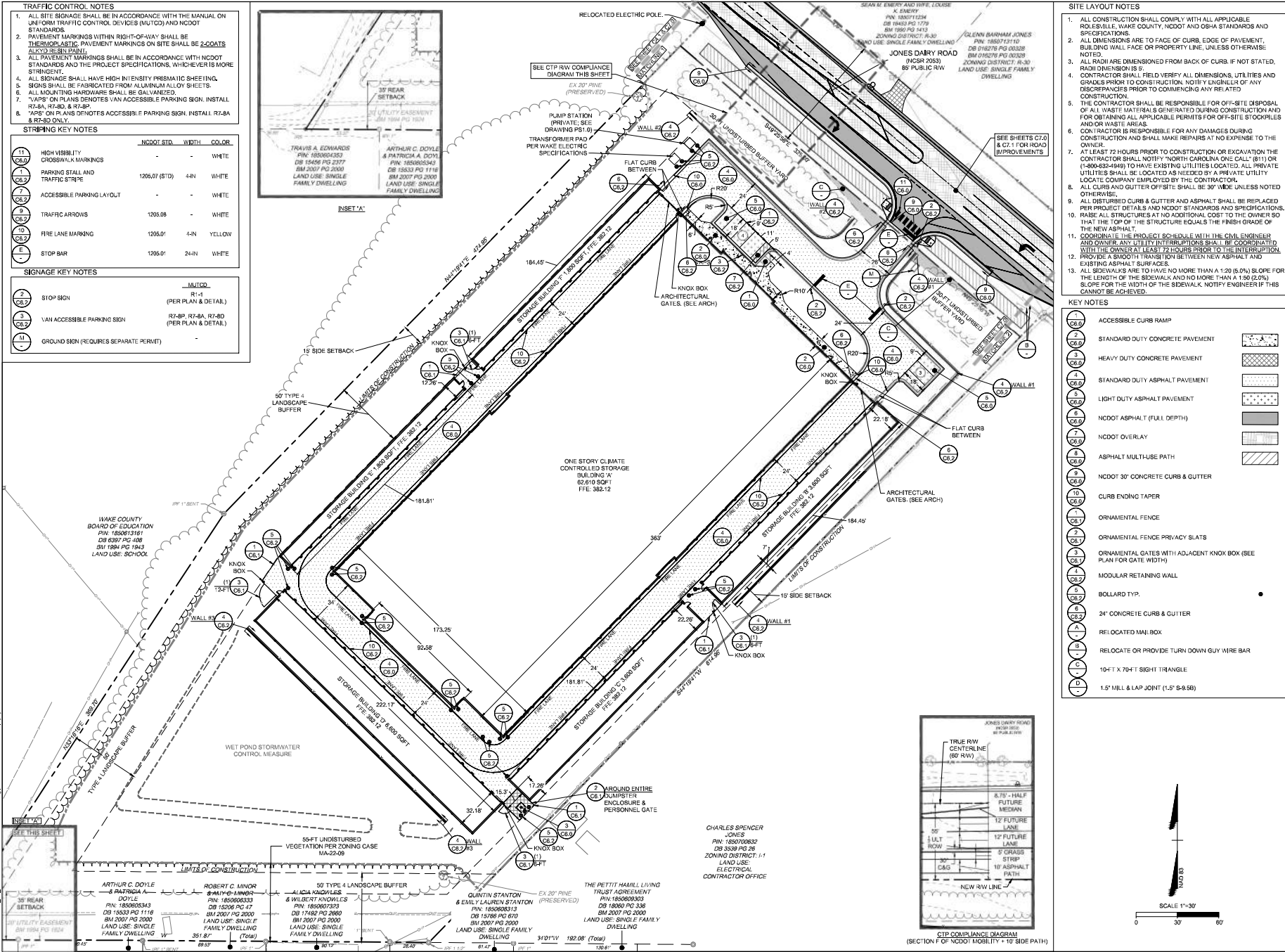
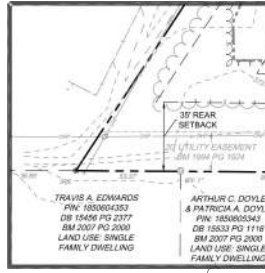
- ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.
- PAVEMENT MARKINGS WITHIN RIGHT-OF-WAY SHALL BE THERMOPLASTIC. PAVEMENT MARKINGS ON SITE SHALL BE 2-COATS ALYO RESIN PAVING.
- ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH NCDOT STANDARDS AND THE PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
- ALL SIGNAGE SHALL HAVE HIGH INTENSITY PRISMATIC SHEETING. SIGNS SHALL BE FABRICATED FROM ALUMINUM ALLOY SHEETS.
- ALL MOUNTING HARDWARE SHALL BE GALVANIZED.
- "VAPS" ON PLANS DENOTES VAN ACCESSIBLE PARKING SIGN. INSTALL RT-8A, RT-8D, & RT-8P.
- "WPS" ON PLANS DENOTES ACCESSIBLE PARKING SIGN. INSTALL RT-8A & RT-8D ONLY.

**STRIPING KEY NOTES**

	NCDOT STD.	WIDTH	COLOR
11			WHITE
1			WHITE
2			WHITE
3			WHITE
4			WHITE
5			WHITE
6			WHITE
7			WHITE
8			WHITE
9			WHITE
10			WHITE
12			WHITE
13			WHITE
14			WHITE

**SIGNAGE KEY NOTES**

	MUTCD
2	R1-1 (PER PLAN & DETAIL)
3	RT-8P, RT-8A, RT-8D (PER PLAN & DETAIL)
4	



**SITE LAYOUT NOTES**

- ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE ROLESVILLE, WAKE COUNTY, NCDOT AND OSHA STANDARDS AND SPECIFICATIONS.
- ALL DIMENSIONS ARE TO FACE OF CURB, EDGE OF PAVEMENT, BUILDING WALL, FACE OF PROPERTY LINE, UNLESS OTHERWISE NOTED.
- ALL RADII ARE DIMENSIONED FROM BACK OF CURB. IF NOT STATED, RADII DIMENSIONS IS 10'-0".
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, UTILITIES AND GRADES PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY RELATED CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL WASTE MATERIALS GENERATED DURING CONSTRUCTION AND FOR OBTAINING ALL APPLICABLE PERMITS FOR OFF-SITE STOCKPILES AND WASTE AREAS.
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES DURING CONSTRUCTION AND SHALL MAKE REPAIRS AT NO EXPENSE TO THE OWNER.
- AT LEAST 72 HOURS PRIOR TO CONSTRUCTION OR EXCAVATION THE CONTRACTOR SHALL NOTIFY NORTH CAROLINA ONE CALL (811) OR (1-800-832-4989) TO HAVE EXISTING UTILITIES LOCATED. ALL PRIVATE UTILITIES SHALL BE LOCATED AS NEEDED BY A PRIVATE UTILITY LOCATE COMPANY EMPLOYED BY THE CONTRACTOR.
- ALL CURB AND GUTTER OFFSITE SHALL BE 30" WIDE UNLESS NOTED OTHERWISE.
- ALL DISTURBED CURB & GUTTER AND ASPHALT SHALL BE REPLACED PER PROJECT DETAILS AND NCDOT STANDARDS AND SPECIFICATIONS.
- RAISE ALL STRUCTURES AT NO ADDITIONAL COST TO THE OWNER SO THAT THE TOP OF THE STRUCTURE EQUALS THE FINISH GRADE OF THE NEW ASPHALT.
- COORDINATE THE PROJECT SCHEDULE WITH THE CIVIL ENGINEER AND OWNER. ANY UTILITY INTERRUPTIONS SHALL BE COORDINATED WITH THE OWNER AT LEAST 72 HOURS PRIOR TO THE INTERRUPTION.
- PROVIDE A SMOOTH TRANSITION BETWEEN NEW ASPHALT AND EXISTING ASPHALT SURFACES.
- ALL SIDEWALKS ARE TO HAVE NO MORE THAN A 1:20 (5.0%) SLOPE FOR THE LENGTH OF THE SIDEWALK AND NO MORE THAN A 1:50 (2.0%) SLOPE FOR THE WIDTH OF THE SIDEWALK. NOTIFY ENGINEER IF THIS CANNOT BE ACHIEVED.

**KEY NOTES**

- ACCESSIBLE CURB RAMP
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LIGHT DUTY ASPHALT PAVEMENT
- NCDOT ASPHALT (FULL DEPTH)
- NCDOT OVERLAY
- ASPHALT MULTI-USE PATH
- NCDOT 30" CONCRETE CURB & GUTTER
- CURB ENDING TAPER
- ORNAMENTAL FENCE
- ORNAMENTAL FENCE PRIVACY SLATS
- ORNAMENTAL GATES WITH ADJACENT KNOX BOX (SEE PLAN FOR GATE WIDTH)
- MODULAR RETAINING WALL
- BOLLARD TYP.
- 24" CONCRETE CURB & GUTTER
- RELOCATED MAIL BOX
- RELOCATE OR PROVIDE TURN DOWN GUY WIRE BAR
- 10'4" X 70'4" SIGHT TRIANGLE
- 1.5" MILL & LAP JOINT (1.5" S-8.56)



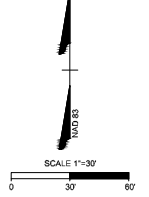
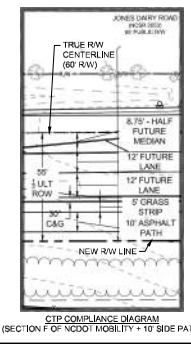
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DATE	REVISION DESCRIPTION
06/07/2023 <td>ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT</td>	ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT
07/07/2023 <td>ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT</td>	ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT
07/10/2023 <td>ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT</td>	ADDED TO TOWN OF ROLESVILLE COMMUNITY DEVELOPMENT DEPARTMENT

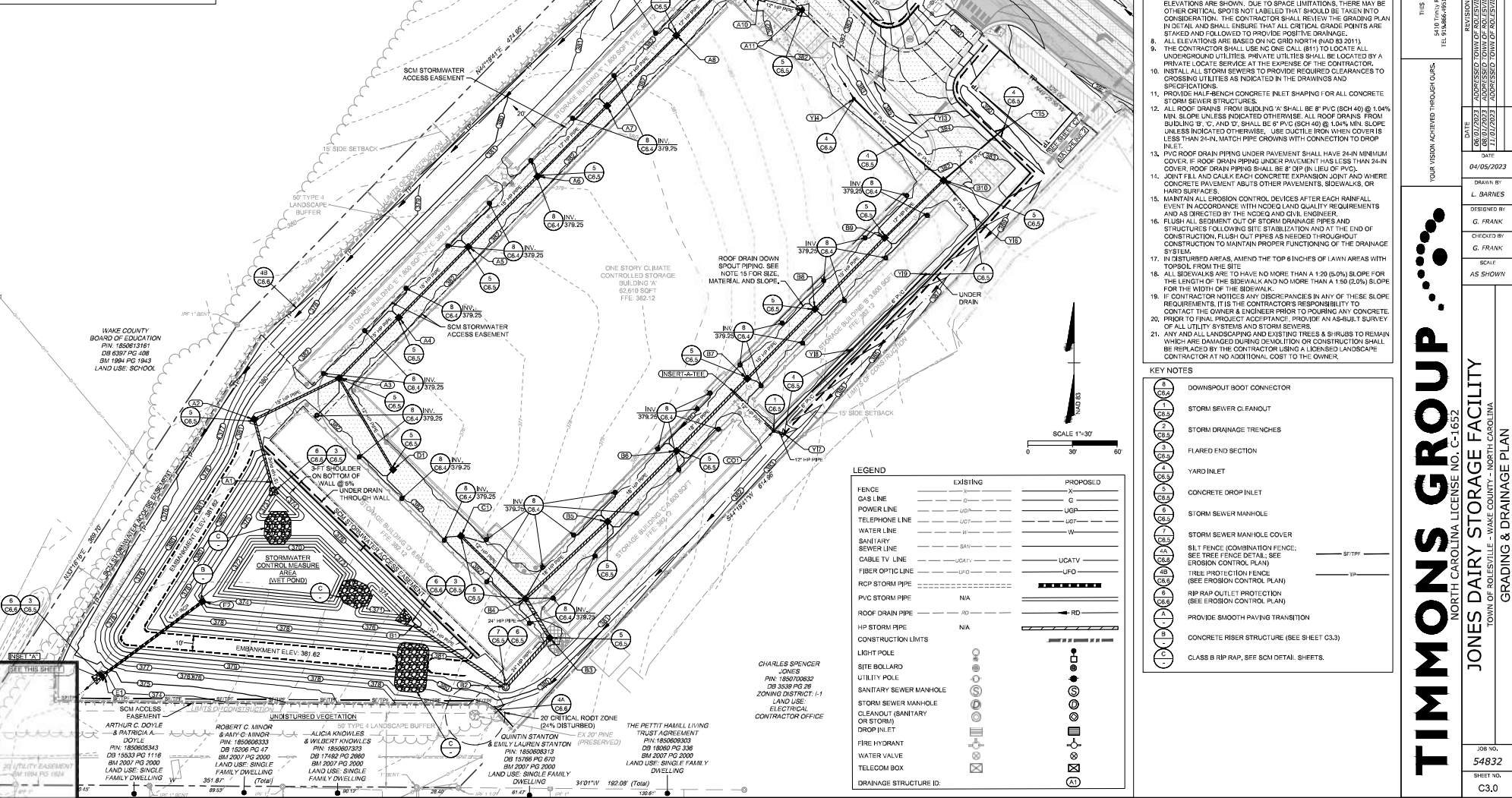
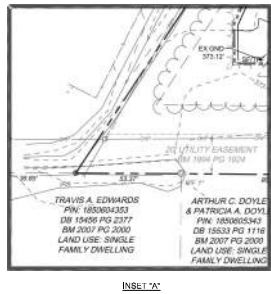
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 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652  
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**SITE PLAN**

JOB NO. 54832  
 SHEET NO. C2.0



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- ### GRADING & DRAINAGE NOTES
- ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE REGULATORY, WAKE COUNTY, NCDDI AND OSHA STANDARDS AND SPECIFICATIONS.
  - COORDINATE THE PROJECT SCHEDULE WITH THE OWNER AND ADJACENT USERS OF THE PROPERTY. MAINTAIN TRAFFIC FLOW AND DO NOT INTERRUPT UTILITIES AROUND THE SITE. DO NOT DISTURB OPERATIONS OF ADJACENT SITES AND FACILITIES AND/OR THEIR OWNERS ONGOING OPERATIONS.
  - ALL EXISTING VAULTS, MANHOLES, STORM DRAIN STRUCTURES, VALVE BOXES, CLEANOUTS, ETC. SHALL BE ADJUSTED AS NEEDED TO MATCH FINISHED GRADE.
  - ALL BACKFILL, COMPACTION, SOILS TESTING, ETC. SHALL BE PERFORMED BY THE OWNER-INDEPENDENT TESTING LABORATORY.
  - ALL SPOT ELEVATIONS INDICATED ARE AT TOP OF CURB UNLESS NOTED OTHERWISE.
  - SPOT GRADE ABBREVIATIONS:
    - TC: TOP OF CURB
    - EP: EDGE OF PAVEMENT
    - HP: HIGH POINT
    - SWK: SIDEWALK
    - FF: FINISHED FLOOR ELEVATION
    - TW: TOP OF WALL
    - BW: BOTTOM OF WALL
    - FL: FLOW LINE
    - EG: END GROUND
  - SPOT ELEVATIONS ARE GIVEN AT THE MAJORITY OF THE MAJOR BREAK POINTS BUT IT SHOULD NOT BE ASSUMED THAT ALL NECESSARY SPOT ELEVATIONS ARE SHOWN. DUE TO SPACE LIMITATIONS, THERE MAY BE OTHER CRITICAL SPOTS NOT LABELED THAT SHOULD BE TAKEN INTO CONSIDERATION. THE CONTRACTOR SHALL REVIEW THE GRADING PLAN IN DETAIL AND SHALL ENSURE THAT ALL CRITICAL GRADE POINTS ARE STAKED AND FOLLOWED TO PROVIDE POSITIVE DRAINAGE.
  - ALL ELEVATIONS ARE BASED ON NC GRID NORTH (NAD 83 2011).
  - THE CONTRACTOR SHALL USE NC CALL (811) TO LOCATE ALL UNDERGROUND UTILITIES. PRIVATE UTILITIES SHALL BE LOCATED BY A PRIVATE LOCATE SERVICE AT THE EXPENSE OF THE CONTRACTOR.
  - INSTALL ALL STORM SEWERS TO PROVIDE REQUIRED CLEARANCES TO CROSSING UTILITIES AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
  - PROVIDE HALF-BENCH CONCRETE INLET SHAPING FOR ALL CONCRETE STORM SEWER STRUCTURES.
  - ALL ROOF DRAINS FROM BUILDING 'A' SHALL BE 8" PVC (SCH 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. ALL ROOF DRAINS FROM BUILDING 'B', 'C', AND 'D' SHALL BE 8" PVC (SCH 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24-IN. MATCH PIPE CROWNS WITH CONNECTION TO DROP INLET.
  - PVC ROOF DRAIN PIPING UNDER PAVEMENT SHALL HAVE 24-IN MINIMUM COVER. ROOF DRAIN PIPING UNDER PAVEMENT HAS LESS THAN 24-IN COVER, ROOF DRAIN PIPING SHALL BE 8" DIP (IN LIEU OF PVC).
  - JOINT FILL AND GULCH EACH CONCRETE EXPANSION JOINT AND WHERE CONCRETE PAVEMENT ADJUTS OTHER PAVEMENTS, SIDEWALKS, OR HARD SURFACES.
  - MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT IN ACCORDANCE WITH NOTED LAND QUALITY REQUIREMENTS AND AS DIRECTED BY THE NOCDS AND CIVIL ENGINEER.
  - FLUSH ALL SEWER OUT OF STORM DRAINAGE PIPES AND STRUCTURES FOLLOWING SITE STABILIZATION AND AT THE END OF CONSTRUCTION. FLUSH OUT PIPES AS NEEDED THROUGHOUT CONSTRUCTION TO MAINTAIN PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
  - IN DISTURBED AREAS, AMEND THE TOP SIX INCHES OF LAWN AREAS WITH TOPSOIL FROM THE SITE.
  - ALL SIDEWALKS ARE TO HAVE NO MORE THAN A 1:20 (5.0%) SLOPE FOR THE LENGTH OF THE SIDEWALK AND NO MORE THAN A 1:50 (2.0%) SLOPE FOR THE WIDTH OF THE SIDEWALK.
  - IF CONTRACTOR NOTICES ANY DISCREPANCIES IN ANY OF THESE SLOPE REQUIREMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNER & ENGINEER PRIOR TO POURING ANY CONCRETE.
  - PRIOR TO FINAL PROJECT ACCEPTANCE, PROVIDE AN AS-BUILT SURVEY OF ALL UTILITY SYSTEMS AND STORM SEWERS.
  - ANY AND ALL LANDSCAPING AND EXISTING TREES & SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR USING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

- ### KEY NOTES
- DOWNSPOUT BOOT CONNECTOR
  - STORM SEWER CLEANOUT
  - STORM DRAINAGE TRENCHES
  - FLARED END SECTION
  - YARD INLET
  - CONCRETE DROP INLET
  - STORM SEWER MANHOLE
  - STORM SEWER MANHOLE COVER
  - SILT FENCE COMBINATION FENCE; SEE TREE FENCE DETAIL; SEE EROSION CONTROL PLAN
  - TREE PROTECTION FENCE (SEE EROSION CONTROL PLAN)
  - RIP RAP OUTLET PROTECTION (SEE EROSION CONTROL PLAN)
  - PROVIDE SMOOTH PAVING TRANSITION
  - CONCRETE RISER STRUCTURE (SEE SHEET C3.3)
  - CLASS B RIP RAP, SEE SCM DETAIL SHEETS.

### LEGEND

	EXISTING	PROPOSED
FENCE	---	---
GAS LINE	---	G
POWER LINE	---	GP
TELEPHONE LINE	---	UT
WATER LINE	---	W
SANITARY SEWER LINE	---	SW
CABLE TV LINE	---	LCATV
FIBER OPTIC LINE	---	UFO
RCP STORM PIPE	---	---
PVC STORM PIPE	N/A	---
ROOF DRAIN PIPE	---	---
HP STORM PIPE	N/A	---
CONSTRUCTION LIMITS	---	---
LIGHT POLE	---	---
SITE BOLLARD	---	---
UTILITY POLE	---	---
SANITARY SEWER MANHOLE	---	---
STORM SEWER MANHOLE	---	---
CLEANOUT (SANITARY OR STORM)	---	---
DROP INLET	---	---
FIRE HYDRANT	---	---
WATER VALVE	---	---
TELECOM BOX	---	---
DRAINAGE STRUCTURE ID	---	---



THIS DRAWING PREPARED AT THE  
**MAKING OFFICE**  
 1111 S. HARRIS ST. SUITE 200  
 RALEIGH, NC 27603

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
06/07/2023	ADDED TO THE PROJECT
07/07/2023	ADDED TO THE PROJECT
08/07/2023	ADDED TO THE PROJECT

DATE: 04/05/2023  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

# TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

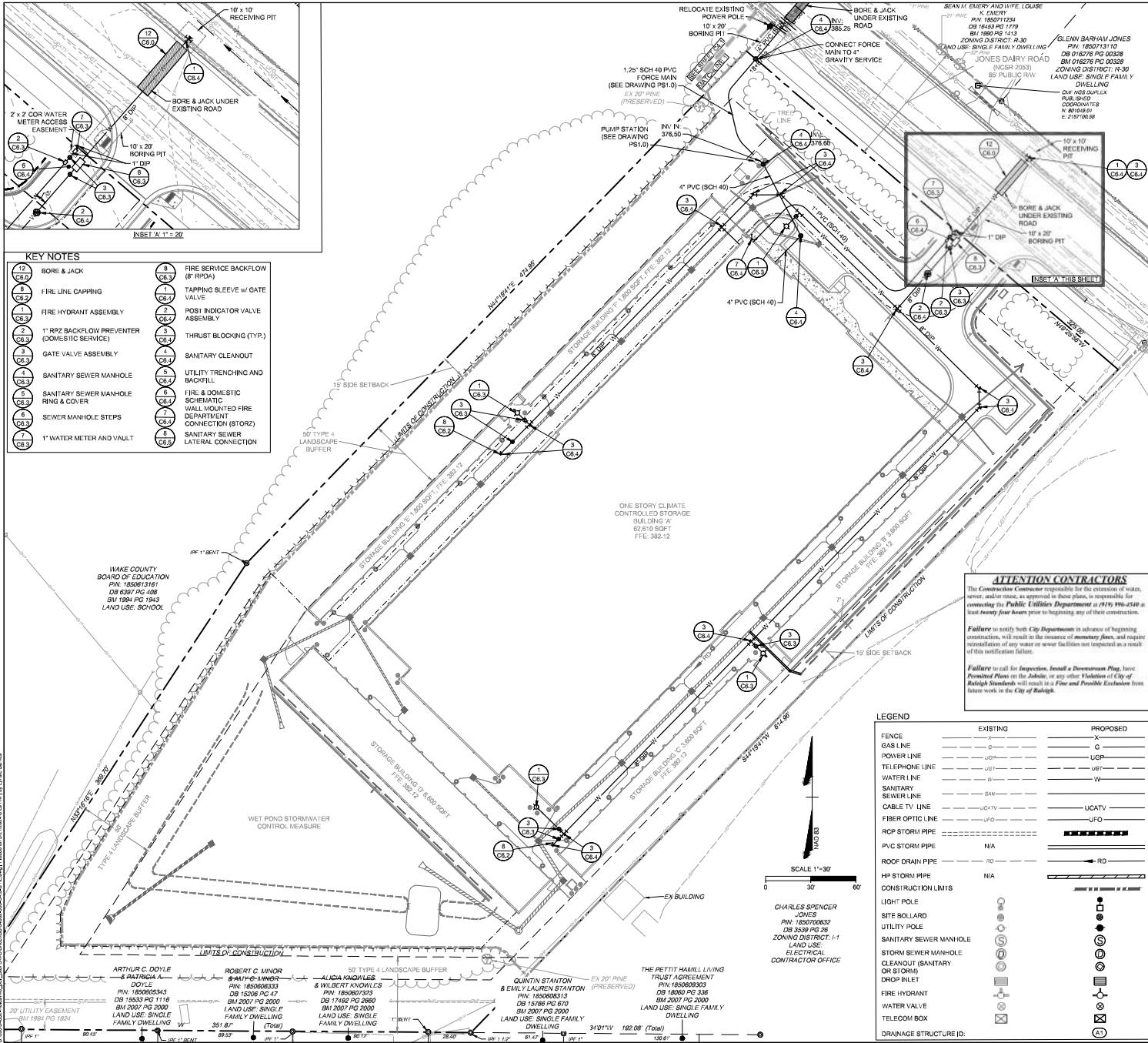
## JONES DAIRY STORAGE FACILITY

TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

### GRADING & DRAINAGE PLAN

JOB NO. 54832  
 SHEET NO. C3.0

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- KEY NOTES**
- 1. BORE & JACK
  - 2. FIRE LINE CAPPING
  - 3. FIRE HYDRANT ASSEMBLY
  - 4. 1" RPZ BACKFLOW PREVENTER (DOMESTIC SERVICE)
  - 5. GATE VALVE ASSEMBLY
  - 6. SANITARY SEWER MANHOLE
  - 7. SANITARY SEWER MANHOLE RING & COVER
  - 8. SEWER MANHOLE STEPS
  - 9. 1" WATER METER AND VALV
  - 10. FIRE SERVICE BACKFLOW (8" RPS)
  - 11. TAPPING SLEEVE w/ GATE VALVE
  - 12. POST INDICATOR VALVE ASSEMBLY
  - 13. THRUST BLOCKING (TYP)
  - 14. SANITARY CLEANOUT
  - 15. UTILITY TRENCHING AND BACKFILL
  - 16. FIRE & DOMESTIC SCHEMATIC WALL MOUNTED FIRE DEPARTMENT CONNECTION (STORZ)
  - 17. SANITARY SEWER LATERAL CONNECTION

- CITY OF RALEIGH UTILITY NOTES**
- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
  - UTILITY SEPARATION REQUIREMENTS
    - A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPROVED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
    - WHEN INSTALLING WATER AND SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 12" IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
    - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR AN 18" SANITARY SEWER PASSES OVER A WATERMAIN, DP MATERIALS OR STEEL ENCASUREMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
    - 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
    - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS, MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS, WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAIL S-141).
    - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITHIN 18" MIN. VERTICAL SEPARATION REQUIRED.
  - ANY NECESSARY FIELD REVISIONS TO THESE PLANS SHALL BE APPROVED BY AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
  - DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO EXISTING RESIDENTS & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
  - 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
  - IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED. IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT, THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
  - INSTALL 12" PVC WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 20' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
  - INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINE FEET MINIMUM.
  - PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI. BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
  - ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWR, USACE, SOI, FEMA OR ANY REPAIRAN BUFFER, NEIGHBORHOOD FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
  - NGDOT / RAIL-ROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD RIGHT-OF-WAY PRIOR TO CONSTRUCTION.
  - GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE RWI FG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A U/C BLDG PERMIT. CONTACT (919) 996-5181 OR FOG@RALEIGH.GOV FOR MORE INFORMATION.
  - CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX A OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS; THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED BOTH INITIAL AND PERIODIC TESTING THEREAFTER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. A CERTIFICATE OF COMPLIANCE SHALL ALSO BE OBTAINED FROM THE RWI CROSS-CONNECTION COORDINATOR FOR EACH DEVICE PRIOR TO ISSUANCE OF A U/C BLDG PERMIT. CONTACT (919) 996-5923 OR CROSS.CONNECTION@RALEIGH.GOV FOR MORE INFORMATION.
  - NOTIFY WAKE COUNTY PARCELS & 18080181 (SCHOOL), 1806116277 (DAYCARE), 180618622 (TASHONDA BROOKS), AND 180614731 (STEPHANIE CANNON) OF SEWER SHUT DOWN 2 WEEKS PRIOR TO STARTING WORK. WORK SHALL BE PERFORMED DURING A WEEKEND OR UTILITIES BYPASS PUMPING AS COORDINATED AND APPROVED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.

**ATTENTION CONTRACTORS**

The Contractor/Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-5540 at least seven (7) business days prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require installation of any water or sewer facilities not depicted on this notification failure.

Failure to call for inspection, install a Disconnect Plug, have Permitted Plans on the jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

**LEGEND**

	EXISTING	PROPOSED
FENCE	- - - - -	X
GAS LINE	- - - - -	G
POWER LINE	- - - - -	UGP
TELEPHONE LINE	- - - - -	UGP
WATER LINE	- - - - -	W
SANITARY SEWER LINE	- - - - -	UCATV
CABLE TV LINE	- - - - -	UCATV
FIBER OPTIC LINE	- - - - -	UFO
RCP STORM PIPE	- - - - -	RD
PVC STORM PIPE	N/A	RD
ROOF DRAIN PIPE	N/A	RD
HP STORM PIPE	N/A	RD
CONSTRUCTION LIMITS	- - - - -	- - - - -
LIGHT POLE	○	○
SITE BOLLARD	○	○
UTILITY POLE	○	○
SANITARY SEWER MANHOLE	○	○
STORM SEWER MANHOLE (OR STORM)	○	○
DROP INLET	○	○
FIRE HYDRANT	○	○
WATER VALVE	○	○
TELECOM BOX	○	○
DRAINAGE STRUCTURE ID.	○	○

**TIMMONS GROUP**  
NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
TOWN OF ROLESVILLE - WAKE COUNTY, NORTH CAROLINA

**SITE UTILITY PLAN**

DATE: 04/05/2023  
DRAWN BY: L. BARNES  
DESIGNED BY: G. FRANK  
CHECKED BY: G. FRANK  
SCALE: AS SHOWN

THIS DRAWING PREPARED AT THE RALEIGH OFFICE  
1111 W. WILSON ROAD, SUITE 200, RALEIGH, NC 27603  
TEL: 919.996.9000 FAX: 919.996.9001 WWW.TIMMONSGROUP.COM

REVISION DESCRIPTION  
DATE  
04/05/2023  
ADDRESS: TOWN OF ROLESVILLE, COMMUNITY: ROLESVILLE, ADDRESS: TOWN OF ROLESVILLE, 300 REVIEW COMMENTS

YOUR VISION ACHIEVED THROUGH OURS.

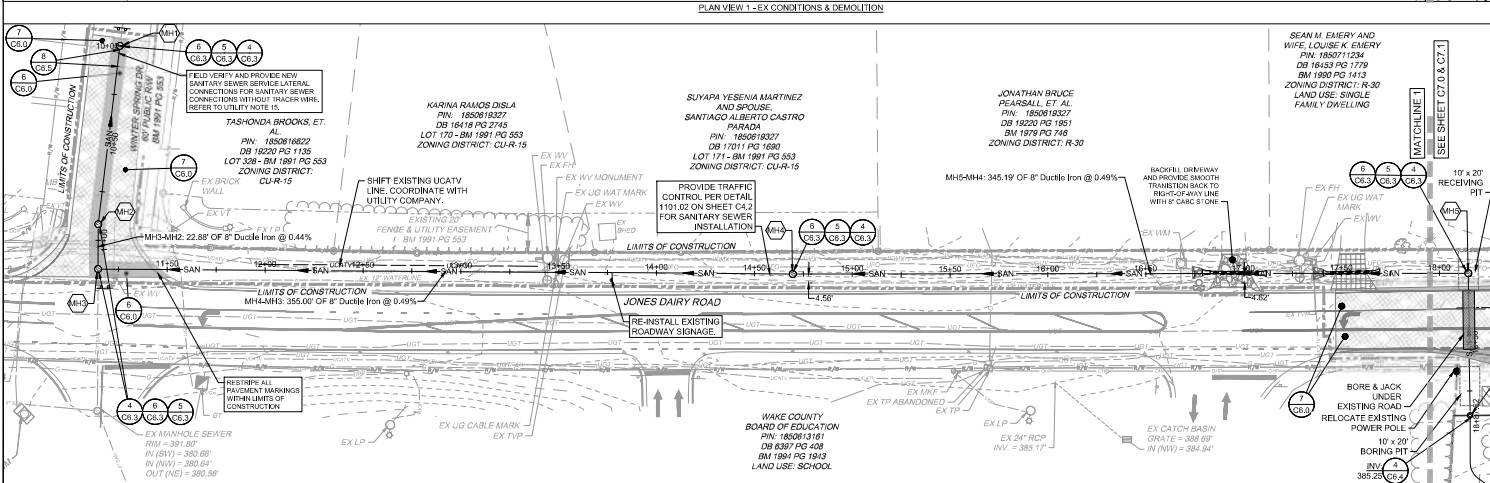
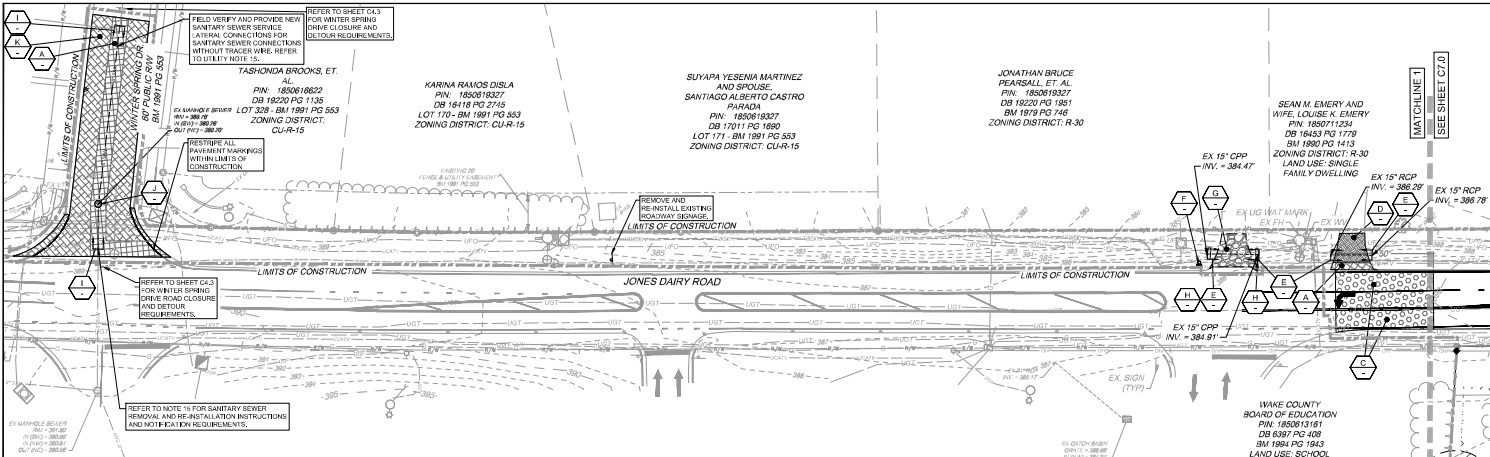
City of Raleigh  
Public Utilities Department Permit # S-5375  
Authorization to Construct  
Date:

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**

ELECTRONIC APPROVAL: THIS APPROVAL IS BEING ISSUED ELECTRONICALLY. THIS APPROVAL IS VALID ONLY UPON THE SIGNATURE OF A CITY OF RALEIGH REVIEW OFFICER BELOW. THE CITY WILL NOT SIGN ANY OF THE APPROVED PLANS, ANY WORK AUTHORIZED BY THIS APPROVAL MUST PROCEED IN ACCORDANCE WITH THE CITY OF RALEIGH WITH THE CITY. THIS ELECTRONIC APPROVAL MAY NOT BE EDITED ONCE ISSUED. ANY MODIFICATION TO THIS APPROVAL ONCE ISSUED WILL INVALIDATE THIS APPROVAL.

CITY OF RALEIGH DEVELOPMENT APPROVAL: \_\_\_\_\_ RALEIGH WATER REVIEW OFFICER: \_\_\_\_\_

JOB NO. 54832  
SHEET NO. C4.0



- ### CITY OF RALEIGH UTILITY NOTES
- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS. DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
  - UTILITY SEPARATION REQUIREMENTS:
    - A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE. SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, PERFORATED SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
    - WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10' IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS. THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18\"/>
  - ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION
  - DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO OWNER FOR ANY WORK REQUIRED WITHIN AN EXISTING CITY OF RALEIGH UTILITY EASEMENT TRAVERSING PRIVATE PROPERTY
  - CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT
  - 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS
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  - INSTALL 12\"/>

### KEY NOTES

(A) REMOVE ASPHALT PAVEMENT AND STONE BASE	(7.0) STANDARD DUTY CONCRETE PAVEMENT
(B) 5/8\"/>	
(C) SAW CUT AND REMOVE CONCRETE AT NEAREST JOINT	(8.0) NDOT ASPHALT (FULL DEPTH)
(D) REMOVE AND REPLACE EXISTING CULVERT	(9.0) NDOT OVERLAY
(E) REMOVE & REINSTALL MAIL BOX AT UTILITY INSTALLATION	(10.0) SANITARY SEWER MANHOLE
(F) REMOVE EXISTING GRAVEL	(11.0) SANITARY SEWER MANHOLE RING & COVER
(G) REMOVE EXISTING HEADWALL	(12.0) SEWER MANHOLE STEPS
(H) REMOVE SANITARY SEWER PIPE	(13.0) SANITARY CLEANOUT
(I) REMOVE SANITARY SEWER STRUCTURE	(14.0) UTILITY TRENCHING AND BACKFILL
(J) MILL AND REMOVE 1.5\"/>	

### GENERAL NOTES

- THIS PLAN SHALL BE USED TO IDENTIFY THE METHODS OF REMOVAL OF EXISTING SEWER, SEWER STRUCTURE, OR OTHER TYPES OF CONSTRUCTION UNDER THE SUPERVISION OF THE ENGINEER.
- REMOVING THE TOP OF ANY EXISTING EXPOSED PIPE OR TRENCH SHALL BE DONE TO THE PROPOSED FINISH GRADE SURFACE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
- THESE NOTES, SPECIFICATIONS AND DRAWINGS SHALL BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTS. THE ENGINEER SHALL BE RESPONSIBLE FOR THE PROPER APPLICATION OF THESE NOTES.
- THESE NOTES SHALL BE USED TO IDENTIFY THE METHODS OF REMOVAL OF EXISTING SEWER, SEWER STRUCTURE, OR OTHER TYPES OF CONSTRUCTION UNDER THE SUPERVISION OF THE ENGINEER.

### ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for coordinating the Public Utilities Department at (919) 996-4546 at least ninety (90) days prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of necessary fines, and require resubmission of any water or sewer facilities not supported as a result of this notification failure.

Failure to call for inspection, install a Downstream Plug, have Permitted Plans on the Job, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

Public Utilities Department  
 City of Raleigh  
 Public Utilities Department Phone # 919-996-4546  
 Web: [www.ci.raleigh.nc.us/department/public-utilities](http://www.ci.raleigh.nc.us/department/public-utilities)  
 Date:

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

ELECTRONIC APPROVAL: THIS APPROVAL IS BEING ISSUED ELECTRONICALLY. THIS APPROVAL IS VALID ONLY UPON THE SIGNATURE OF A CITY OF RALEIGH REVIEW OFFICER BELOW. THE CITY WILL RETAIN A COPY OF THE APPROVED PLANS. ANY WORK AUTHORIZED BY THIS APPROVAL MUST PROCEED IN ACCORDANCE WITH THE PERMITS OFFERED BY THE CITY. THIS ELECTRONIC APPROVAL MAY NOT BE EDITED OR ISSUED. ANY MODIFICATION TO THIS APPROVAL ONCE IT IS ISSUED WILL INVALIDATE THIS APPROVAL.

CITY OF RALEIGH DEVELOPMENT APPROVAL: \_\_\_\_\_  
 RALEIGH WATER REVIEW OFFICER: \_\_\_\_\_

**TIMMONS GROUP**

NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**

TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

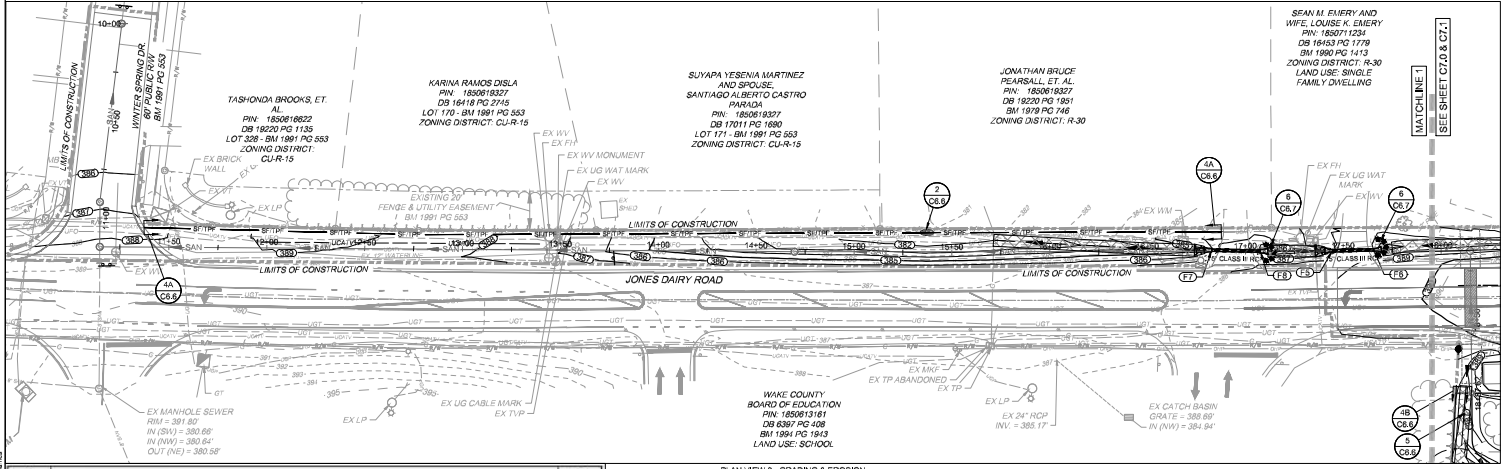
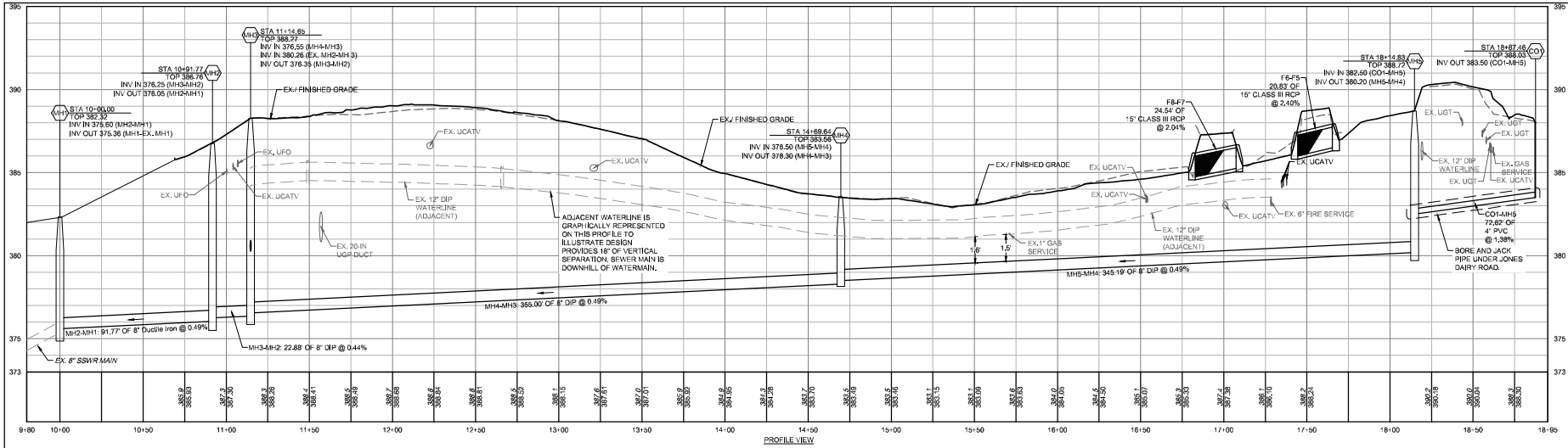
**OFF-SITE UTILITY PLAN**

DATE	REVISION DESCRIPTION
06/20/2023	ADDED ADDRESS COMMENTS
07/07/2023	ADDED ADDRESS COMMENTS
07/27/2023	ADDED ADDRESS COMMENTS

DATE	DATE
04/05/2023	04/05/2023

DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

JOB NO.: 54832  
 SHEET NO.: C4.1

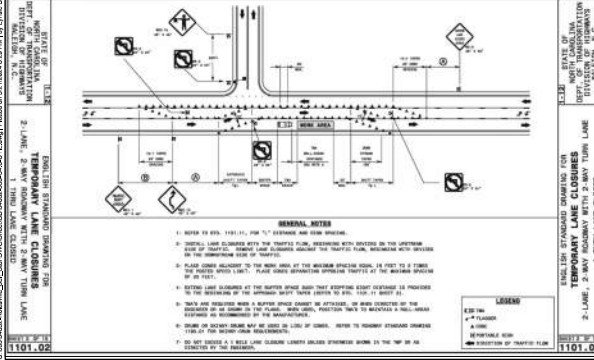


**SANITARY SEWER SCHEDULE**

MH1	TOP = 382.32 INV IN = 375.00 (SW) INV OUT = 375.36 (NE)	MH4	TOP = 383.56 INV IN = 376.50 (SE) INV OUT = 378.30 (NW)
MH2	TOP = 386.78 INV IN = 375.25 (SW) INV IN = 380.20 (SE)	MH5	TOP = 388.72 INV IN = 382.50 (SW) INV OUT = 380.20 (NW)
MH3	TOP = 388.05 INV IN = 376.56 (SE) INV IN = 380.26 (NE) INV OUT = 378.35 (NE)		

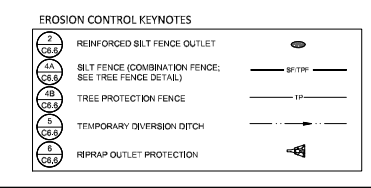
**PIPE TABLE**

PIPE NAME	SIZE	LENGTH	SLOPE	BEARING
MH2-MH1	8"	91.77 LF	0.49%	N47° 42' 17"E
MH3-MH2	8"	22.88 LF	0.44%	N11° 04' 56"E
MH5-MH4	8"	345.19 LF	0.49%	N49° 16' 50"W
MH6-MH3	8"	355.00 LF	0.49%	N48° 48' 46"W
CO1-MH5	4"	72.62 LF	1.38%	N40° 05' 55"E



**NCDD STORM PIPE TABLE**

PIPE #	DA	UPSTREAM INVERT	DOWNSTREAM INVERT	SLOPE	LENGTH	DESCRIPTION
F6-F5	15'	386.50	386.00	2.40%	20.83 LF	15' CLASS III RCP
F8-F7	15'	385.25	384.75	2.04%	24.84 LF	15' CLASS III RCP



**ATTENTION CONTRACTORS**

The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for consulting the Public Utilities Department at 919.996.4544 at least twenty four hours prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require resubmission of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, based on Downstream Plug, have Permitted Plans on the Jobite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**

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CITY OF RALEIGH DEVELOPMENT APPROVAL

RALEIGH WATER REVIEW OFFICER

THIS DRAWING PREPARED AT THE RALEIGH OFFICE  
 115 S. HARRIS ST., RALEIGH, NC 27601  
 TEL: 919.996.4544 FAX: 919.996.4545

YOUR VISION ACHIEVED THROUGH OURS.

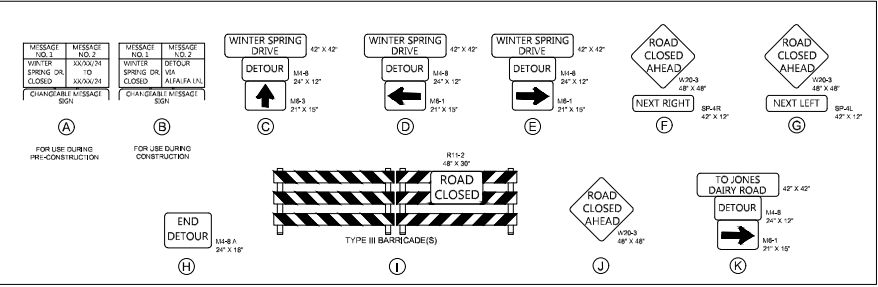
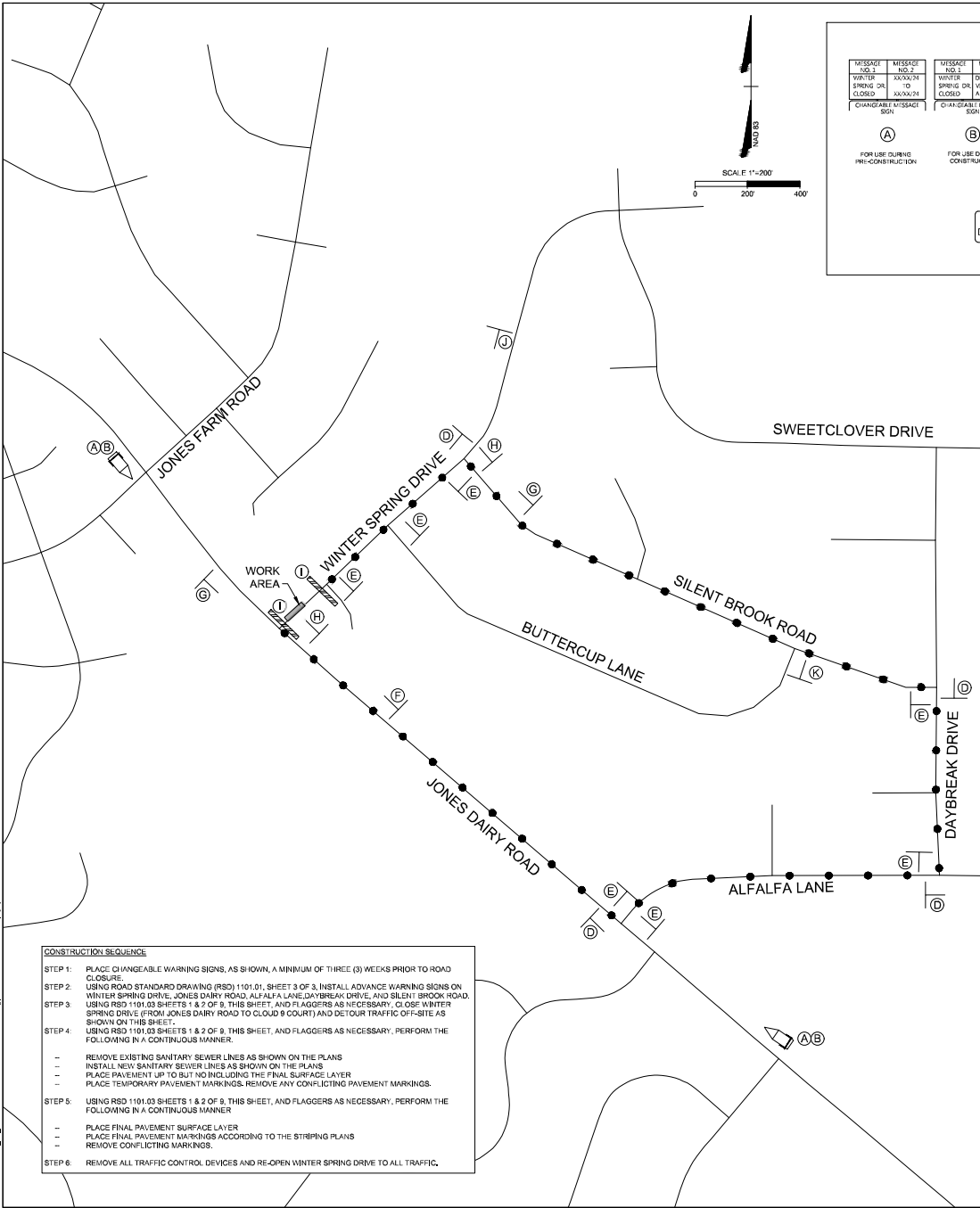
DATE: 04/05/2023  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

REVISION DESCRIPTION  
 ADDRESS: TOWN OF ROLESVILLE COMMISSIONS  
 DATE: 11/01/2023  
 ADDRESS: TOWN OF ROLESVILLE AND REVIEW COMMENTS

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
 OFF-SITE UTILITY PLAN & PROFILE

JOB NO. 54832  
 SHEET NO. C4.2



**TRANSPORTATION MANAGEMENT PLAN**

- MANAGEMENT STRATEGIES:**
- VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION ACTIVITIES INCLUDING SANITARY SEWER INSTALLATION, MILLING AND OVERLAYING PAVEMENT OPERATIONS AND FINAL PAVEMENT MARKING INSTALLATION.
  - DRIVEWAY ACCESS TO THE ADJACENT HOMES, LOCATED ALONG WINTER SPRING DRIVE SHALL BE MAINTAINED WITH MINIMAL IMPACT.
  - TRAFFIC CONTROL DEVICES INCLUDING TRAFFIC CONTROL DEVICES IN AREAS OPEN TO PUBLIC TRAFFIC SHALL MEET MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
  - NOTIFY THE ENGINEER, WAKE COUNTY EMERGENCY SERVICES AND THE TOWN OF ROLESVILLE AT LEAST ONE (1) MONTH PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- ROADWAY STANDARD DRAWINGS:**
- THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN 'ROADWAY STANDARD DRAWINGS - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JUNE 2004 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS.
- | STD. NO.      | TITLE   |
|---------------|---|
| 1.1. 654.01   | PAVEMENT REPAIRS  |
| 1.2. 804.50   | MOUNTING OF TYPE 'D', 'E', AND 'F' SIGNS ON 'U' CHANNEL |
| 1.3. 1101.01  | WORK ZONE ADVANCE WARNING SIGNS                         |
| 1.4. 1101.02  | TEMPORARY LANE CLOSURES                                 |
| 1.5. 1101.03  | TEMPORARY SHOULDER CLOSURES                             |
| 1.6. 1101.04  | TEMPORARY SHOULDER CLOSURES                             |
| 1.7. 1101.11  | TRAFFIC CONTROL DESIGN TABLES                           |
| 1.8. 1110.01  | STATIONARY WORK ZONE SIGNS                              |
| 1.9. 1110.02  | PORTABLE WORK ZONE SIGNS                                |
| 1.10. 1130.01 | DRUMS   |
| 1.11. 1145.01 | BARRICADES  |
| 1.12. 1150.01 | FLAGGERS  |
| 1.13. 1205.01 | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS              |
| 1.14. 1205.05 | PAVEMENT MARKINGS - TURN LANES                          |
| 1.15. 1205.07 | PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS               |
| 1.16. 1205.08 | PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES           |
- TRANSPORTATION OPERATION PLAN:**
- IN CASE OF EMERGENCY, CALL 911
- THE FOLLOWING IS A LIST OF LOCAL NON-EMERGENCY NUMBERS:  
WAKE COUNTY EMERGENCY SERVICES: 919-856-6000  
TOWN OF ROLESVILLE POLICE: 919-556-7226
  - ANY TRAFFIC INCIDENT (IF APPLICABLE) THAT OCCURS DURING THE LIFE OF THE SANITARY SEWER INSTALLATION WILL BE DISCUSSED BY THE CONTRACTOR AND THE ENGINEER OF RECORD TO DETERMINE WHETHER ANY CHANGES NEED TO BE MADE TO THE TRAFFIC CONTROL ON THE PROJECT.

**GENERAL NOTES:**

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAIL S, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF CONSTRUCTION OF THE SANITARY SEWER EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

\*TIME RESTRICTIONS - REQUIRES INTERMEDIATE CONTRACT TIME PROJECT SPECIAL PROVISIONS.

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
JONES DAIRY ROAD	SCHOOL DAYS 8:45 AM TO 9:45 AM & 3:15 PM TO 4:15 PM

LANE AND SHOULDER CLOSURE REQUIREMENTS

  - REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
  - WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15-FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
  - WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5-FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
  - WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
  - DO NOT WORK SIMULTANEOUSLY WITHIN 15-FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED BY GUARDRAIL OR BARRIER.
  - BACKFILL AT A 8:1 SLOPE UP TO THE EDGE AND ELEVATION OR EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPEN TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFFS AS FOLLOWS:
    - BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER
    - BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
  - BACKFILL WITH SUSTAINABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
  - DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.8 INCHES. INSTALL ADVANCE WARNING 'UNEVEN LANES' SIGNS (WB-1) 100-FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE LANEWAY AREA.

**TRAFFIC PATTERN ALTERATIONS**

  - NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

**SIGNING**

  - INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40-FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
  - PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
  - PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
  - COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
  - COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
  - ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
  - INSTALL BLACK ON ORANGE "TOP" SIGNS (WB-2) AND/OR "BLIMP" SIGNS (WB-1) 100-FT IN ADVANCE OF THE LANEWAY AREA, OR AS DIRECTED BY THE ENGINEER.

**TRAFFIC CONTROL DEVICES**

  - WHEN LANE CLOSURES ARE NOT IN EFFECT, SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT 4-FT ON-CENTER RADIUS, AND 5-FT OF THE EDGE OF AN OPEN TRAVELWAY, REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), AND 1180 (SKIPPY DRUMS) FOR ADDITIONAL REQUIREMENTS.
  - PLACE TYPE III BARRICADES, WITH 'ROAD CLOSED' SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE THE ENTIRE ROADWAY.

**PAVEMENT MARKINGS AND MARKERS**

  - THE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES
  - REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

**MISCELLANEOUS**

  - LAW ENFORCEMENT SHALL BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.
  - IN THE EVENT A TRUCK CANNOT BE MOVED IN ONE DAY'S TIME, BRING THE TRUCK AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER, PLACE BLACK ON ORANGE 'LOOSE GRAVEL' SIGNS (WB-7) AND BLACK ON ORANGE 'PAVEMENT ENDS' SIGNS (WB-8) AND RESPECTIVELY IN ADVANCE OF THE WORK AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.
  - CONTRACTOR SHALL MAINTAIN SIDEWALK ACCESS AT ALL TIMES. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY SIDEWALKS (CONCRETE, ASPHALT, OR OTHER SUITABLE MATERIAL) AS APPROVED BY THE ENGINEER AT ALL LOCATIONS WHERE THE OPEN PEDESTRIAN TRAVELWAY HAS BEEN REMOVED FOR CONSTRUCTION OPERATIONS (UTILITIES, DRAINAGE, ETC.)

- CONSTRUCTION SEQUENCE**
- PLACE CHANGEABLE WARNING SIGNS, AS SHOWN, A MINIMUM OF THREE (3) WEEKS PRIOR TO ROAD CLOSURE.
  - USING ROAD STANDARD DRAWING (RSD) 1101.01, SHEET 3 OF 3, INSTALL ADVANCE WARNING SIGNS ON WINTER SPRING DRIVE, JONES DAIRY ROAD, ALFALFA LANE, DAYBREAK DRIVE, AND SILENT BROOK ROAD. USING RSD 1101.03 SHEETS 1 & 2 OF 9, THIS SHEET, AND FLAGGERS AS NECESSARY, CLOSE WINTER SPRING DRIVE (FROM JONES DAIRY ROAD TO CLOUD 9 COURT) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON THIS SHEET.
  - USING RSD 1101.03 SHEETS 1 & 2 OF 9, THIS SHEET, AND FLAGGERS AS NECESSARY, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
    - REMOVE EXISTING SANITARY SEWER LINES AS SHOWN ON THE PLANS
    - INSTALL NEW SANITARY SEWER LINES AS SHOWN ON THE PLANS
    - PLACE PAVEMENT UP TO BUT NOT INCLUDING THE FINAL SURFACE LAYER
    - PLACE TEMPORARY PAVEMENT MARKINGS. REMOVE ANY CONFLICTING PAVEMENT MARKINGS.
  - USING RSD 1101.03 SHEETS 1 & 2 OF 9, THIS SHEET, AND FLAGGERS AS NECESSARY, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
    - PLACE FINAL PAVEMENT SURFACE LAYER
    - PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE STRIPING PLANS
    - REMOVE CONFLICTING MARKINGS.
  - REMOVE ALL TRAFFIC CONTROL DEVICES AND RE-OPEN WINTER SPRING DRIVE TO ALL TRAFFIC.



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 RALEIGH, NC 27601  
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DATE	REVISION DESCRIPTION
06/07/2023	ADDITIONAL TOWN OF ROLESVILLE COMMENTS
07/10/2023	ADDITIONAL TOWN OF ROLESVILLE COMMENTS
07/10/2023	ADDITIONAL TOWN OF ROLESVILLE COMMENTS

DATE: 04/05/2023  
 DRAWN BY: L. BARVLES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652

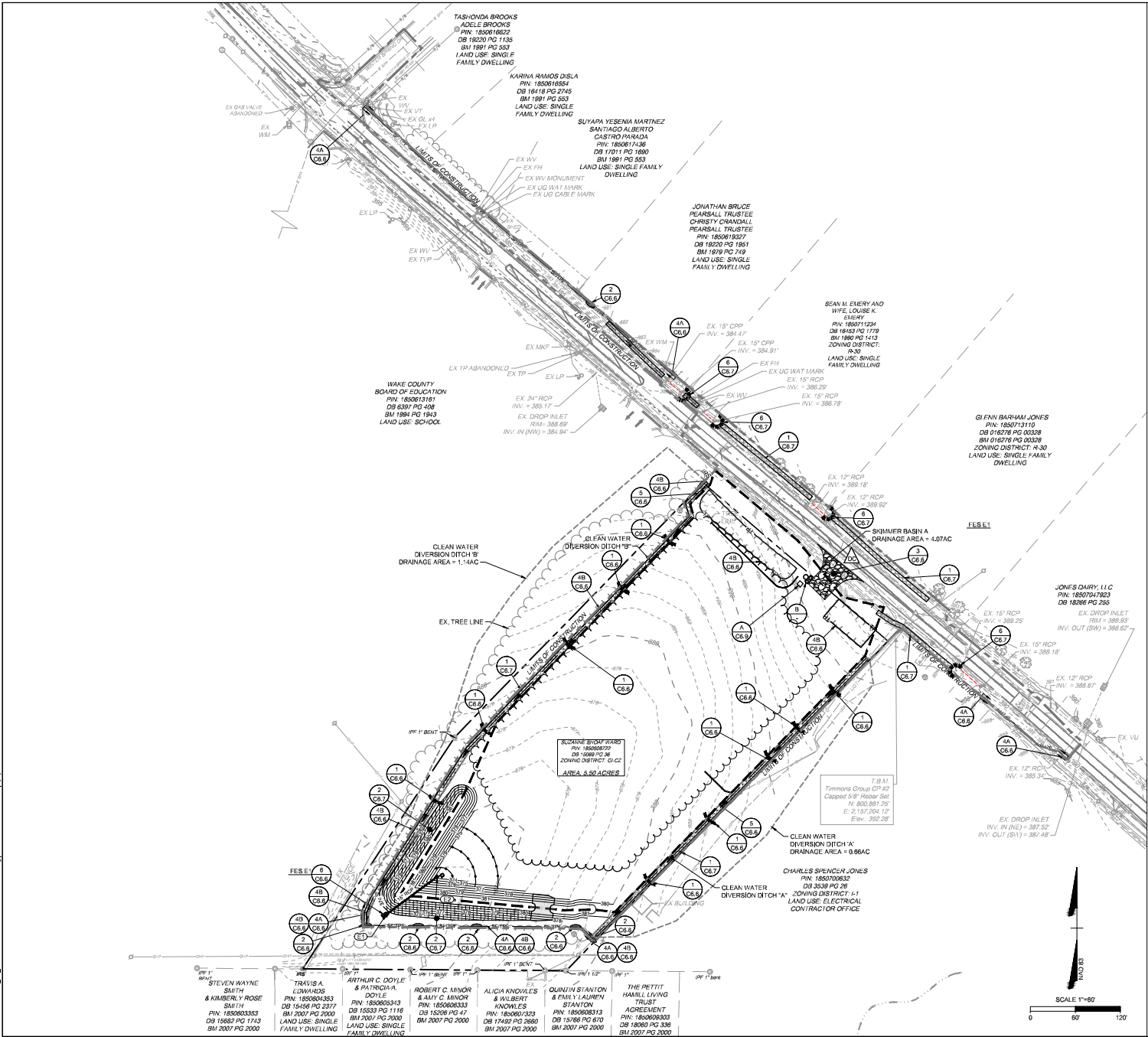
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

**OFF-SITE DETOUR PLAN**

JOB NO. 54832  
 SHEET NO. C4.3

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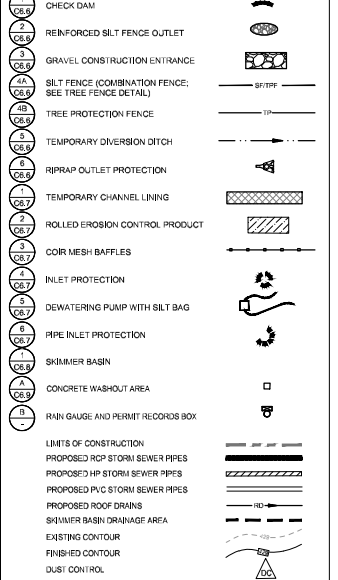




**EROSION CONTROL NOTES**

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE. ALL OFF-SITE SOIL BORROW AND WASTE SITES SHALL BE PROPERLY PERMITTED FOR SUCH ACTIVITIES.
2. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY LOCAL AUTHORITIES OR ENGINEER.
3. ALL OPEN STORM PIPES SHALL BE PROTECTED WITH STONE FILTER PROTECTION AFTER WORK STOPPAGE EACH DAY.
4. ALL STORM DRAINAGE PIPES SHALL BE THOROUGHLY FLUSHED OF ALL SEDIMENT FOLLOWING SITE STABILIZATION. INTERIOR FLUSHING OF SYSTEM SHALL BE PERFORMED AS NEEDED TO MAINTAIN PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
5. THE INDICATED STAGING AREA IS INTENDED FOR VEHICLES AND NON-ERODIBLE MATERIALS ONLY. NO SOIL, SAND OR OTHER ERODIBLE, FINE GRAINED MATERIAL SHALL BE STORED OUTSIDE OF THE LIMITS OF THE SITE PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
6. SOIL AND OTHER MATERIALS SHALL ONLY BE TEMPORARILY STOCKPILED WITHIN THE CONSTRUCTION LIMITS PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
7. TREE PROTECTION INSPECTION SHALL BE COMPLETED PRIOR TO INSTALLING EROSION CONTROL DEVICES.
8. ALL APPLICABLE EROSION CONTROL MEASURES ARE TO BE PROPERLY MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
9. PERMANENT GROUND COVER SHALL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER).
10. TOTAL DISTURBED AREA: 5.83 AC.

**KEYNOTES**



**CONSTRUCTION SEQUENCE - PH I**

1. OBTAIN AN APPROVED PLAN AND APPLICABLE PERMIT PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITY. A COPY OF THE APPROVED PLAN AND APPROVAL LETTERS MUST BE ON FILE AT THE JOB SITE. NOTIFY EROSION CONTROL OFFICIALS OF PROPOSED STARTING DATE OF LAND DISTURBING ACTIVITIES BY CALLING JEEVAN NEUPANE, PE AT (919) 819-8907.
2. SCHEDULE A PRECONSTRUCTION CONFERENCE WITH JEEVAN NEUPANE, PE BY CALLING AT (919) 819-8907, OBTAIN A LAND DISTURBING PERMIT.
3. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
4. INSTALL STORM STRUCTURES (FES) WITH RIP RAP OUTLET PROTECTION (R-PI) AS SHOWN ON PLANS (PRIOR TO SKIMMER BASIN INSTALLATION).
5. CALL ENVIRONMENTAL CONSULTANT, JEEVAN NEUPANE, PE, FOR AN ON-SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF CONSTRUCTION.
6. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
7. INSTALL STORM SEWER, IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.
8. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT CONSTRUCTION. REMOVE AND STABILIZE CONSTRUCTION LAY DOWN, STAGING, DIRT & WASTE PILE AREAS. ALL APPLICABLE EROSION CONTROL MEASURES ARE TO REMAIN UNTIL PERMANENT VEGETATION IS ESTABLISHED.
9. ONCE THE SITE IS READY TO MOVE FORWARD WITH SITE PAVING, STABILIZE THE SITE AND PROCEED TO PHASE 2 EROSION CONTROL.



THIS DRAWING PREPARED AT THE  
**RALEIGH OFFICE**  
 10101 W. WOODBRIDGE DRIVE, SUITE 100  
 RALEIGH, NC 27615  
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 WWW.TIMMONSGROUP.COM

DATE	REVISION DESCRIPTION
06/07/2023 <td>ADDED TOWN OF ROLESVILLE COMMENTS</td>	ADDED TOWN OF ROLESVILLE COMMENTS
07/01/2023 <td>ADDED TOWN OF ROLESVILLE COMMENTS</td>	ADDED TOWN OF ROLESVILLE COMMENTS
07/01/2023 <td>ADDED TOWN OF ROLESVILLE COMMENTS</td>	ADDED TOWN OF ROLESVILLE COMMENTS

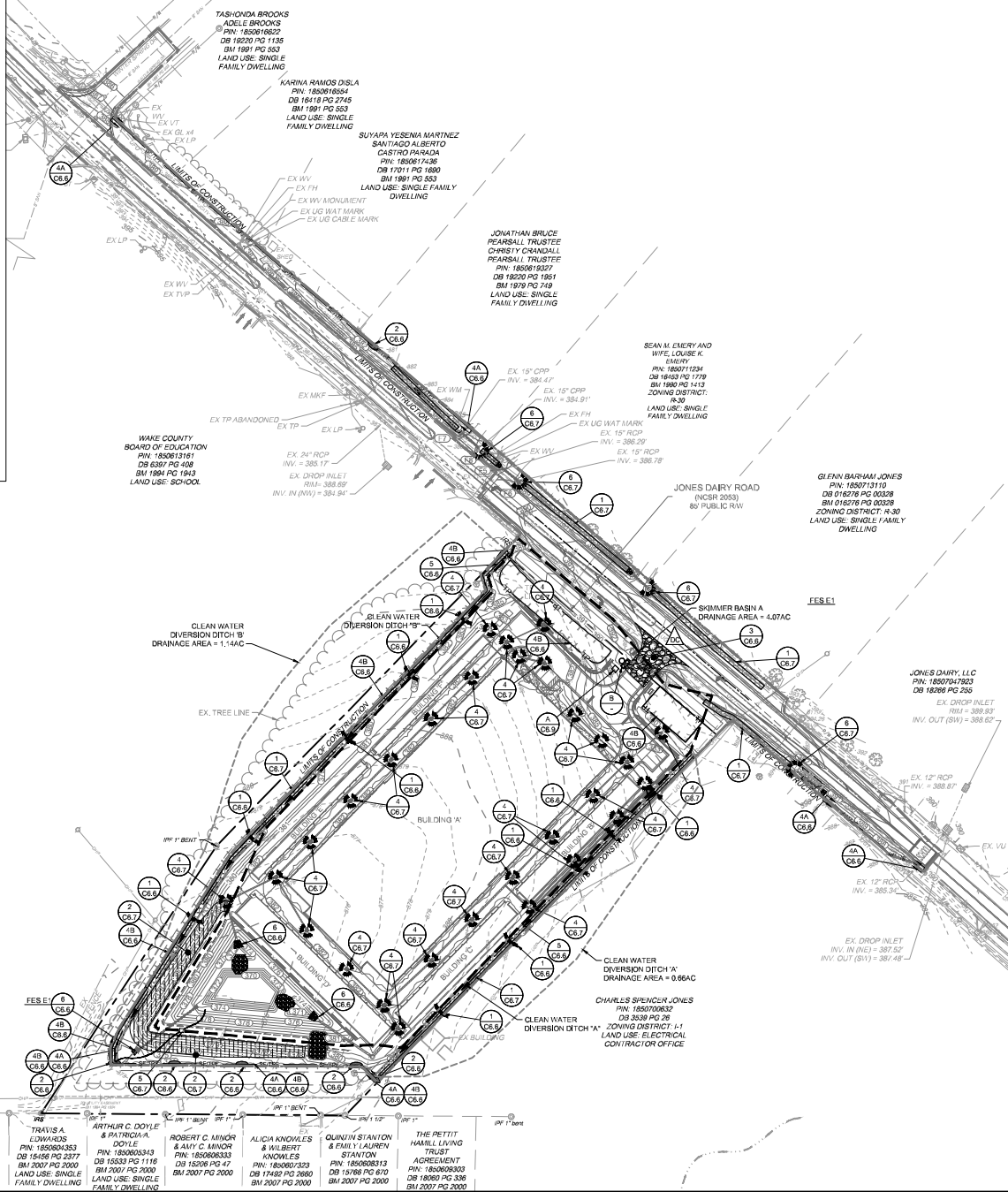
YOUR VISION ACHIEVED THROUGH OURS.  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652  
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**EROSION & SEDIMENTATION CONTROL PLAN - PH I**

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**CONSTRUCTION SEQUENCE - PH II**

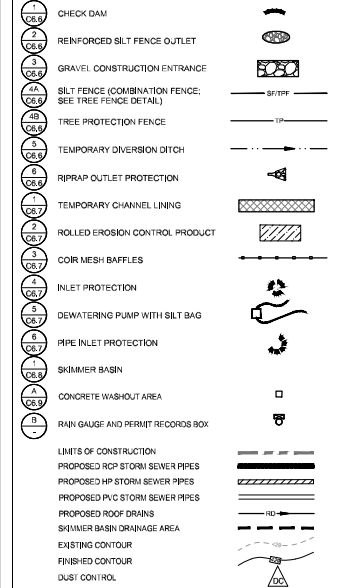
1. MAINTAIN ALL EXISTING EROSION & SEDIMENT CONTROL MEASURES PREVIOUSLY CONSTRUCTED AND ASSOCIATED WITH PHASE I ADJUST AS NEEDED.
2. AS SITE IS PAVED AND BROUGHT UP TO FINAL GRADE, INSTALL THE REMAINDER OF THE STORM DRAINAGE SYSTEM, INSTALL INLET AND OUTLET PROTECTION DEVICES AT NEW STRUCTURES AS THEY ARE CONSTRUCTED.
3. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS ETC. SEED AND MULCH DISTURBED AREAS PER GROUND STABILIZATION TIE FRAMES.
4. INITIAL REFINISHING OF PAVING AND SITE FEATURES.
5. REAPPLY TOPSOIL, INSTALL S.O.P. PROTECTION BLANKETS ON ANY 3:1 SLOPES AND VEGETATE STEEP SLOPES AS THEY ARE ESTABLISHED AS SHOWN ON PLANS.
6. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL JEEVAN NEUPANE, PE AT (819) 818-8807 AND TIMMONS GROUP AT (819) 866-6503 FOR AN INSPECTION AND APPROVAL FOR SEDIMENT BASIN CONVERSION.
7. CONTACT NODCO - RALEIGH REGIONAL OFFICE (819) 794-4209 TO DETERMINE THE DIVISION OF ENERGY, MINERAL AND LAND RESOURCES CONTACT PERSON TO RECEIVE DEWATERING NOTIFICATION, AT LEAST 10 DAYS PRIOR TO BEGINNING DEWATERING ACTIVITY, SEND EMAIL TO NODCO-DEMUR CONTACT PERSON AND COPY ENVIRONMENTAL CONSULTANT THAT LET YOU ONSITE. THE EMAIL SHOULD INCLUDE: EASC JURISDICTION, WAKE COUNTY, WAKE COUNTY PROJECT NAME, NUMBER, AND LOCATION (CITY/TOWN), ENVIRONMENTAL CONSULTANT NAME, AND ADDRESS THE FOLLOWING: A) REASON FOR CONVERSION, B) BASIN #, C) DEWATERING METHOD, AND D) ALL OTHER NECESSARY INFO FROM PART II, SECTION G, ITEM 4 OF THE NODCO. KEEP EMAIL FOR YOUR FILES MONITORING DOCUMENTATION)
8. AFTER RECEIVING POSITIVE CONFIRMATION FROM NODCO-DEMUR THAT YOU MAY REMOVE THE BASIN OR ON DAY 11, WHICHEVER IS SOONER, REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME, FINE GRADE AREA IN PREPARATION FOR SEEDING, PERFORM SEEDBED PREPARATION, SEED, MULCH AND ANCHOR ANY RESULTING BARE AREAS IMMEDIATELY.
9. INSTALL VELOCITY DISPERSORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
10. WHEN SITE IS FULLY STABILIZED, CALL JEEVAN NEUPANE, PE AT (819) 818-8807 FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.
11. IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS, ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISPERSORS, SHOULD NOW BE INSTALLED.
12. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY JEEVAN NEUPANE, PE, OBTAIN A CERTIFICATE OF COMPLETION.



**EROSION CONTROL NOTES**

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE. ALL OFF-SITE SOIL BORROW AND WASTE SITES SHALL BE PROPERLY PERMITTED FOR SUCH ACTIVITIES.
2. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY LOCAL AUTHORITIES OR ENGINEER.
3. ALL OPEN STORM PIPES SHALL BE PROTECTED WITH STONE FILTER PROTECTION AFTER WORK STOPPAGE EACH DAY.
4. ALL STORM DRAINAGE PIPES SHALL BE THOROUGHLY FLUSHED OF ALL SEDIMENT FOLLOWING SITE STABILIZATION. INTERIOR FLUSHING OF SYSTEM SHALL BE PERFORMED AS NEEDED TO MAINTAIN PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
5. THE INDICATED STAGING AREA IS INTENDED FOR VEHICLES AND NON-ROBBLE MATERIALS ONLY. NO SOIL, SAND OR OTHER ERODIBLE, FINE GRAINED MATERIAL SHALL BE STORED OUTSIDE OF THE LIMITS OF THE SITE PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
6. SOIL AND OTHER MATERIALS SHALL ONLY BE TEMPORARILY STOCKPILED WITHIN THE CONSTRUCTION LIMITS PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
7. TREE PROTECTION INSPECTION SHALL BE COMPLETED PRIOR TO INSTALLING EROSION CONTROL DEVICES.
8. ALL APPLICATIONS FOR EROSION CONTROL MEASURES ARE TO BE PROPERLY MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
9. PERMANENT GROUND COVER SHALL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER).
10. TOTAL DISTURBED AREA: 5.89 AC.

**KEYNOTES**



THIS DRAWING PREPARED AT THE  
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 1101 W. GARDNER STREET, SUITE 200  
 RALEIGH, NC 27603  
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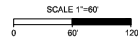
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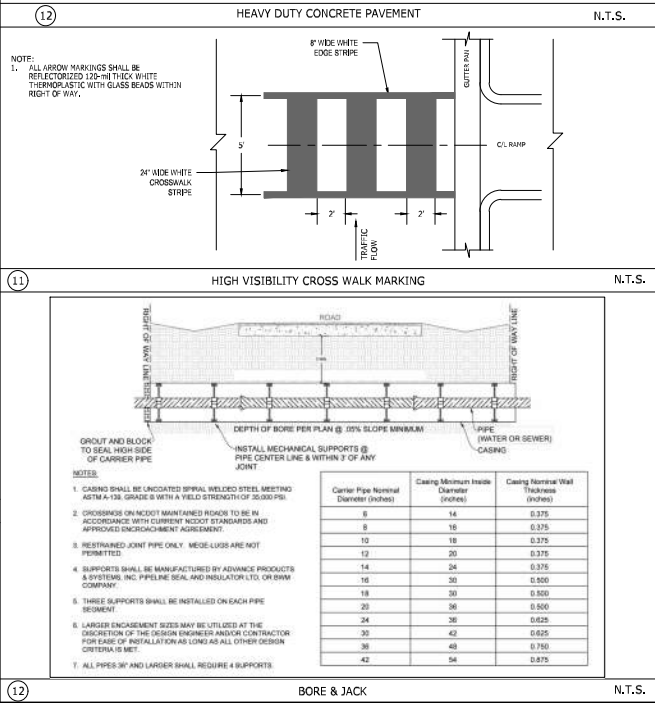
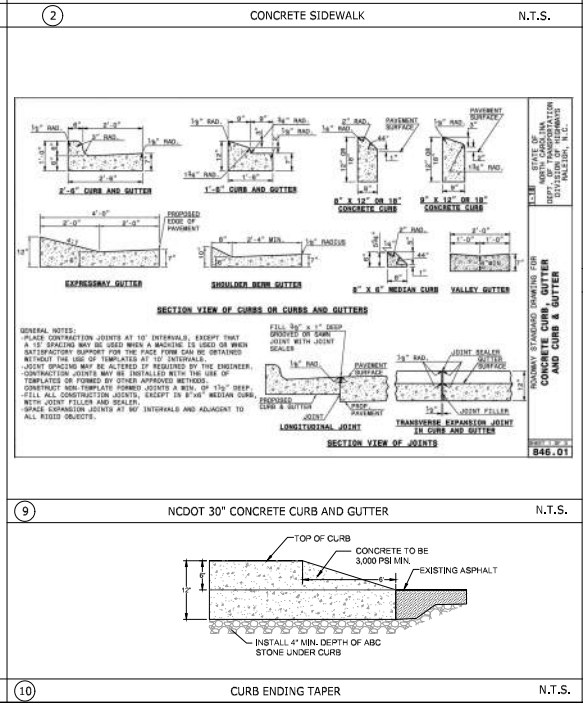
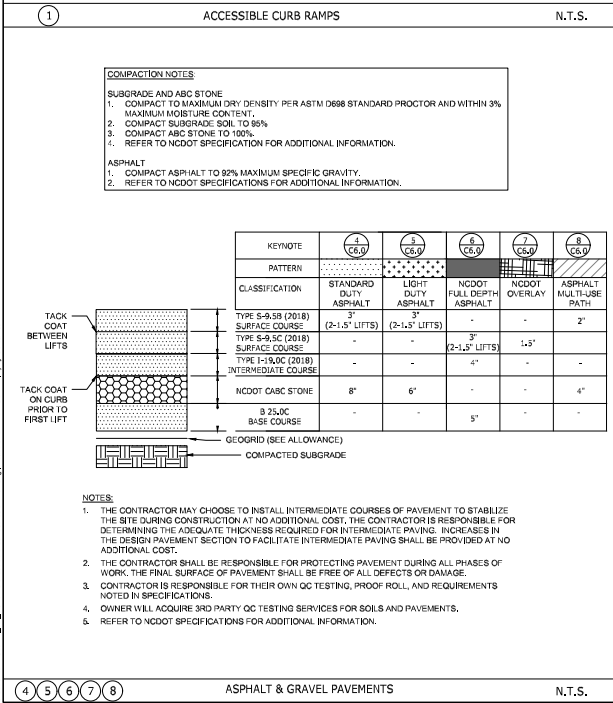
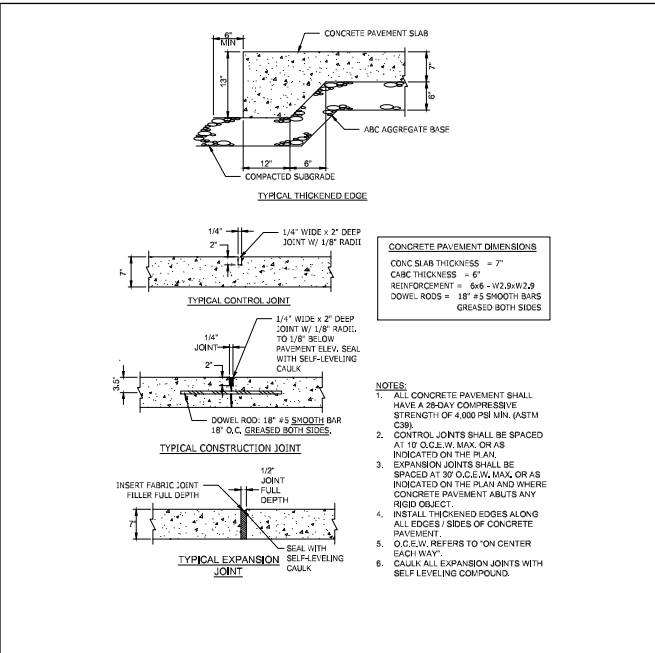
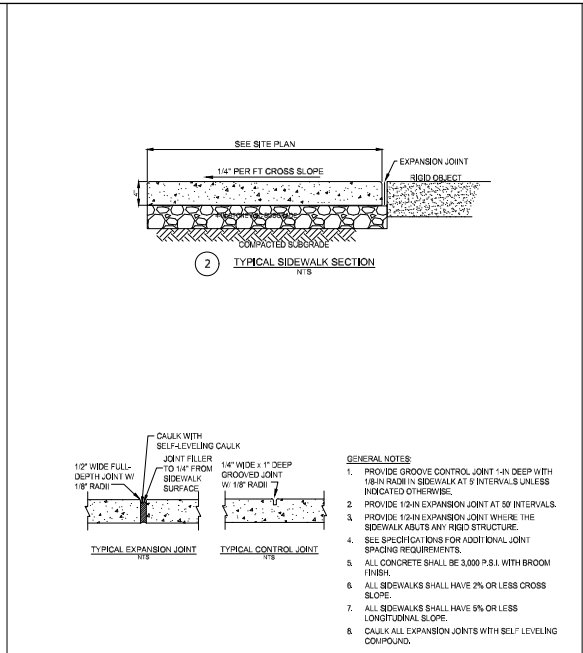
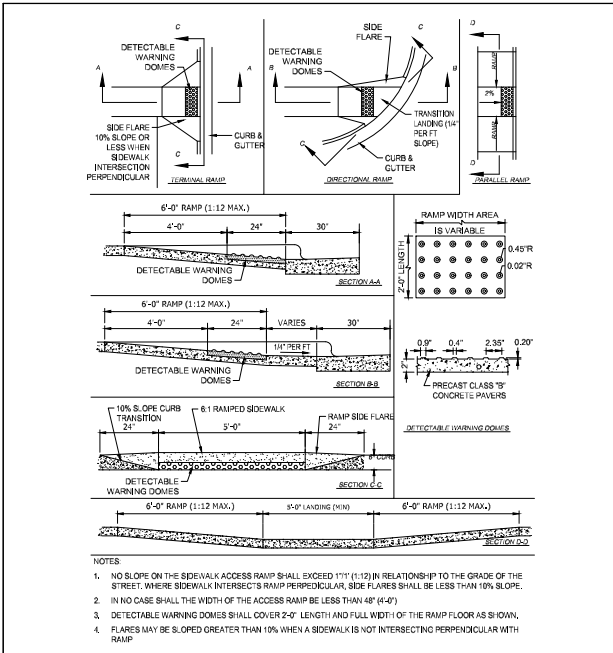
DATE: 04/05/2023  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**EROSION & SEDIMENTATION CONTROL PLAN - PH II**

JOB NO. 54832  
 SHEET NO. C5.1





THIS DRAWING PREPARED AT THE  
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HALEIGH, NC 27539

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06/07/2023  
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06/07/2023

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DATE  
04/05/2023

DRAWN BY  
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G. FRANK

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G. FRANK

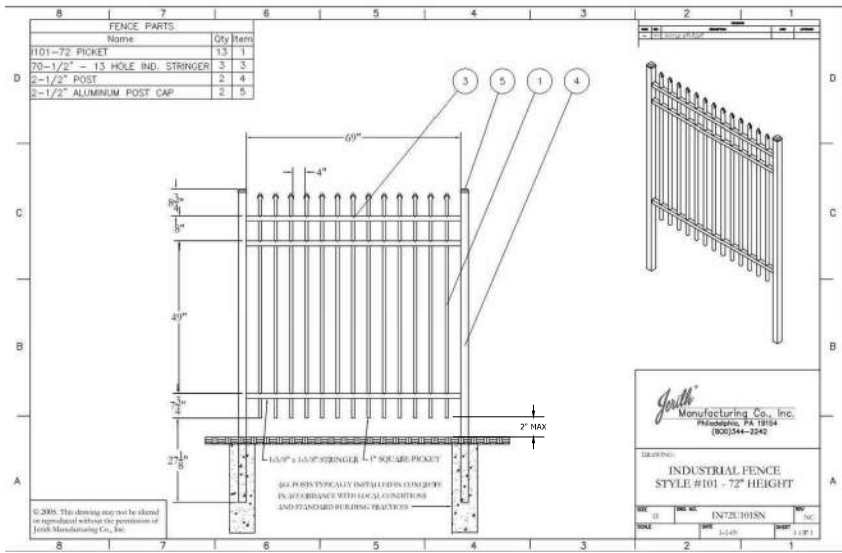
SCALE  
AS SHOWN

**TIMMONS GROUP**  
NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

**SITE DETAILS**

JOB NO. 54832  
SHEET NO. C6.0



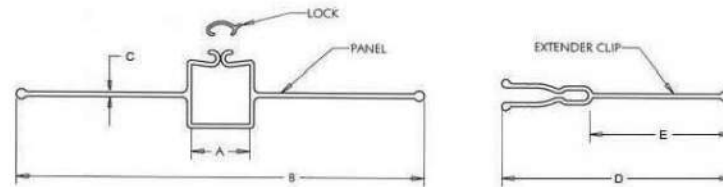
- NOTES:  
 1. ALL FENCING SHALL BE INSTALLED PER MANUFACTURER STANDARDS AND SPECIFICATIONS.  
 2. PROVIDE BUILDING PERMITTING AS REQUIRED BY WAKE COUNTY.

① ORNAMENTAL FENCE (6' HEIGHT)

N.T.S.



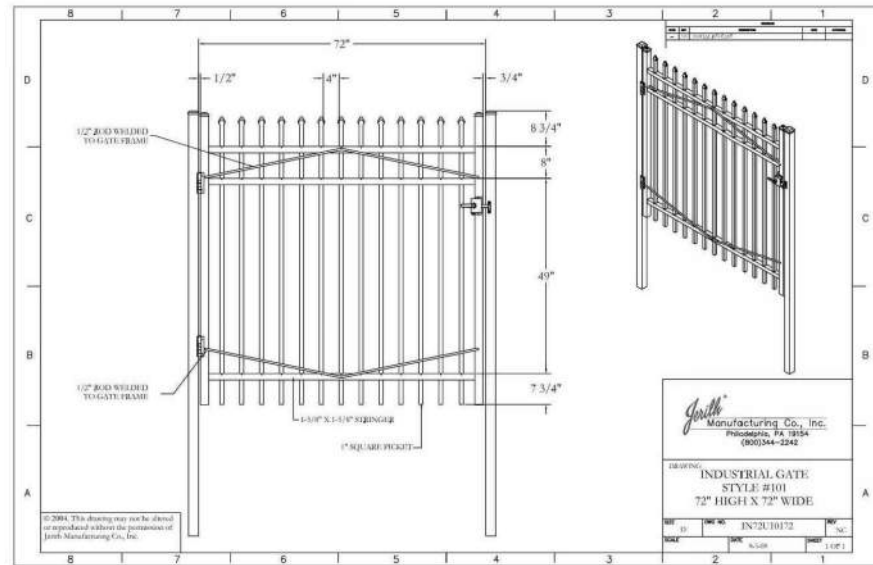
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5/8"	.70"	4.86"	0.050"	—	—
3/4"	.84"	5.00"	0.050"	—	—
1"	1.05"	5.21"	0.050"	—	—
Clip Size	—	—	—	2.75"	1.75"



②

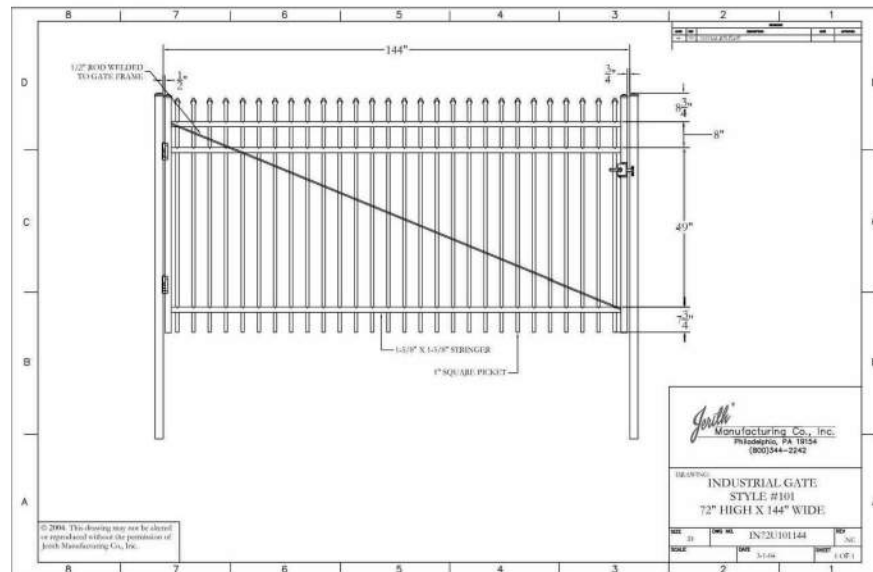
ORNAMENTAL FENCE PRIVACY SLATS

N.T.S.



- NOTES:  
 1. ALL FENCING SHALL BE INSTALLED PER MANUFACTURER STANDARDS AND SPECIFICATIONS.  
 2. PROVIDE BUILDING PERMITTING AS REQUIRED BY WAKE COUNTY.

③ ORNAMENTAL GATES (SEE PLANS FOR GATE WIDTH)



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THIS DRAWING PREPARED AT THE  
**WAKE COUNTY OFFICE**  
 101 S. HARRIS ST., SUITE 200  
 RALEIGH, NC 27601  
 TEL: 919.876.9000 FAX: 919.876.9020 WWW.JMFGROUP.COM

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION  
 DATE 06/07/2023 ADDRESSSED TOWN OF ROLESVILLE COMMENTS  
 DATE 04/05/2023 ADDRESSSED TOWN OF ROLESVILLE COMMENTS  
 DATE 04/05/2023 ADDRESSSED TOWN OF ROLESVILLE COMMENTS

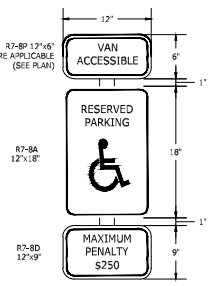
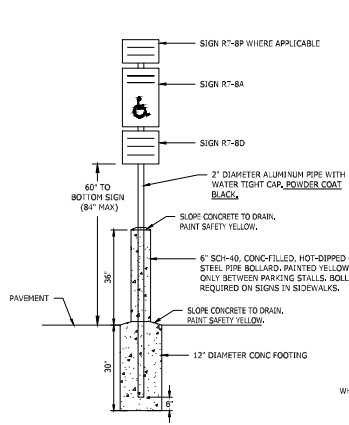
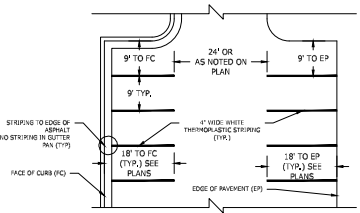
DATE 04/05/2023  
 DRAWN BY L. BARNES  
 DESIGNED BY G. FRANK  
 CHECKED BY G. FRANK  
 SCALE AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652  
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**SITE DETAILS**

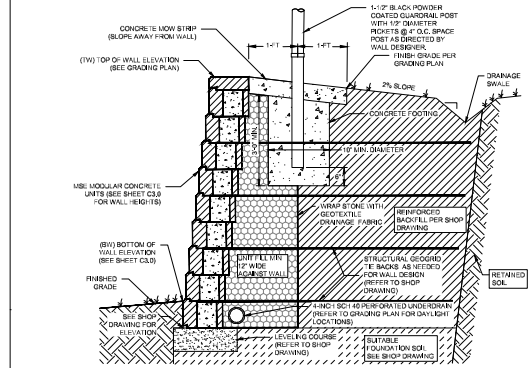
JOB NO. 54832  
 SHEET NO. C6.1

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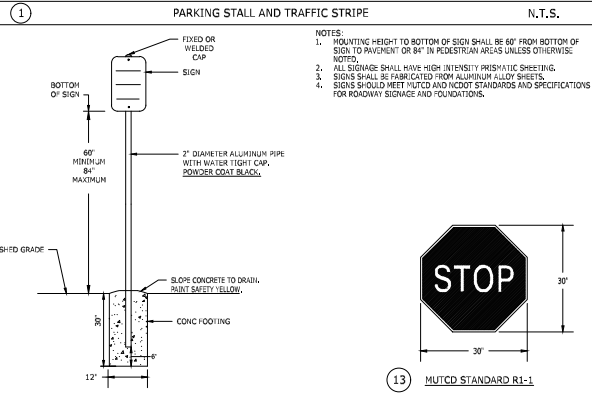
- NOTE:  
 1. ALL PARKING STALL MARKINGS SHALL BE 2 COATS 15-mil THICK ALKYD RESIN PAINT.  
 2. FC = FACE OF CURB  
 3. EP = EDGE OF PAVEMENT



- NOTES:  
 1. MOUNTING HEIGHT TO BOTTOM OF SIGN SHALL BE 60\"/>

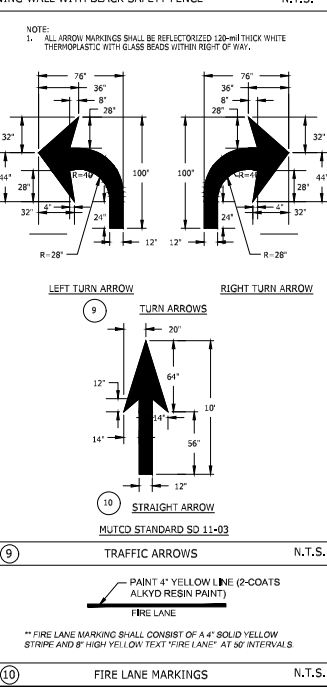
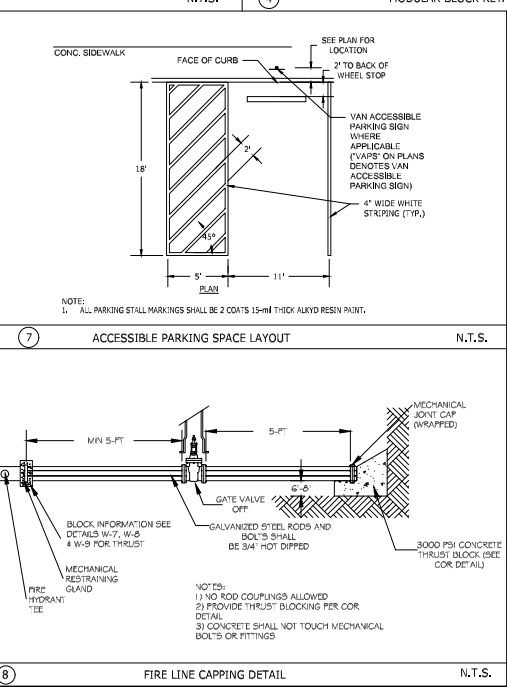
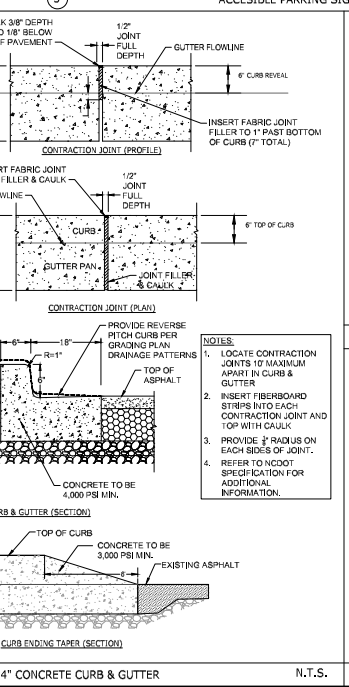
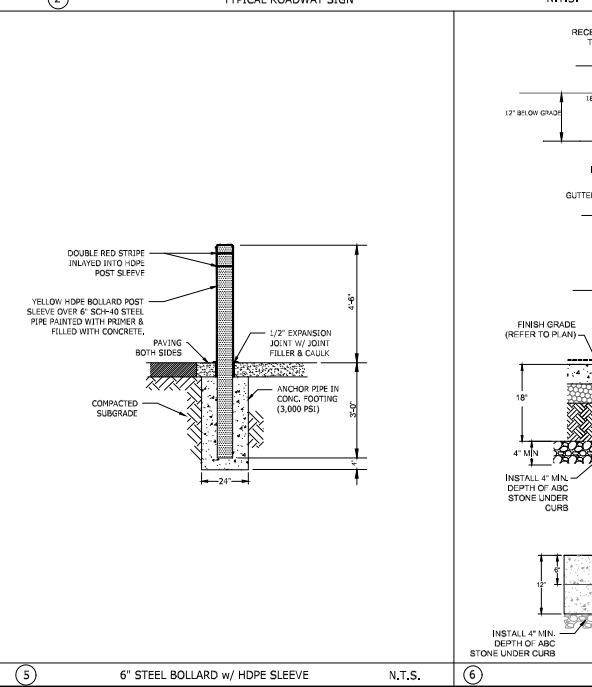


- NOTES:  
 1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHOP DRAWING OF WALL DESIGN, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER (REGISTERED IN NORTH CAROLINA). FOR APPROVAL PRIOR TO CONSTRUCTION, CONTRACTOR MUST BE CERTIFIED TO BUILD THE WALL OR HAVE LICENSED PROFESSIONAL ENGINEER CERTIFY CONSTRUCTION.  
 2. FURNISH AND INSTALL ALL MATERIALS IN ACCORDANCE WITH THE SIGNED AND SEALED RETAINING WALL SHOP DRAWING.  
 3. MODULAR CONCRETE WALL UNITS SHALL CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000-PSI. UNITS SHALL HAVE STRAIGHT SPRIFFS EXTERIOR FACE, PROVIDE CAP UNITS WITH SMOOTH TOP SURFACES, BASIS OF DESIGN BLOCK IS ANCHOR DIAMOND PRO.  
 4. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MATERIALS IN THE REINFORCED ZONE FOR THE WALL CONSTRUCTION IN ACCORDANCE WITH THE SHOP DRAWINGS. ANY BARRICADE OR IMPORTED FILL MATERIAL REQUIRED FOR PROPER BACKFILLING OF THE WALL SHALL BE PROVIDED BY THE CONTRACTOR IN THE BASE BID CONTRACT, (REFER TO THE ATTACHED GEOTECHNICAL REPORT FOR EXISTING ON-SITE SOILS).  
 5. THE FOUNDATION SOIL (BELOW THE WALL AND GEORID THE BACKS) MUST MEET THE REQUIREMENTS IN THE SHOP DRAWING. THESE SOILS WILL BE TESTED BY THE MATERIAL TESTING COMPANY HIRSH BY THE OWNER. SHOULD THE SITE SOILS NOT MEET THE REQUIREMENTS CONSULT WITH THE WALL DESIGNER AND CIVIL ENGINEER PRIOR TO CONSTRUCTION.  
 5.1. PROVIDE A DESIGN THAT WORKS WITH THE FOUNDATION SOILS (REFER TO ATTACHED GEOTECHNICAL REPORT).  
 6. ACCQUITY FOR PREMIUM COLOR BLOCK IN THE BID, BASIS OF DESIGN COLOR IS ANCHOR DIAMOND PRO PLANTATION.  
 7. REFER TO WALL MANUFACTURERS SPECIFICATIONS AND GEOTECHNICAL ENGINEERING REPORT BY TIMMONS GROUP, DATED MARCH 10, 2023, INCLUDING OTHER ACCESSIBLE USE WALL SYSTEMS BASED ON OWNER APPROVAL.



**3** **ACCESSIBLE PARKING SIGN** **N.T.S.**

**4** **MODULAR BLOCK RETAINING WALL WITH BLACK SAFETY FENCE** **N.T.S.**

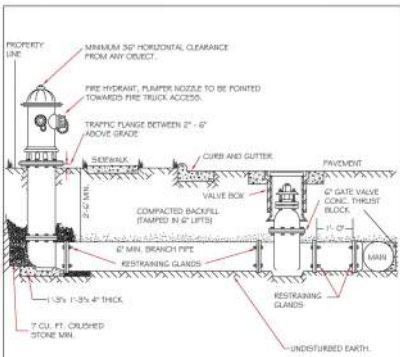


**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652  
 JONES DAIRY STORAGE FACILITY  
 TOWN OF ROLESVILLE - NORTH CAROLINA  
 SITE DETAILS

YOUR VISION ACHIEVED THROUGH OURS.	
THIS DRAWING PREPARED AT THE <b>HEADQUARTERS OFFICE</b> 1515 S. W. 12TH AVENUE, SUITE 100 FAYETTEVILLE, NC 28404 TEL: 704.346.0000 FAX: 704.346.0001 WWW.TIMMONSGROUP.COM	REVISION DESCRIPTION DATE 04/05/2023 DRAWN BY L. BARNES DESIGNED BY G. FRANK CHECKED BY G. FRANK SCALE AS SHOWN

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JOB NO. 54832  
 SHEET NO. C6.2

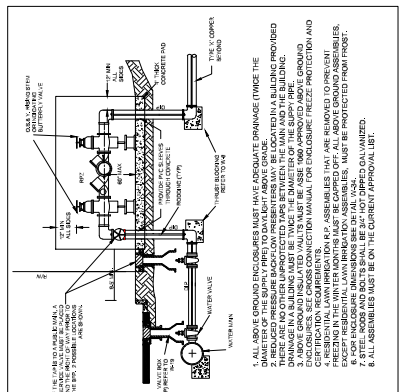


1. FIRE HYDRANT SHALL BE AS MANUFACTURED: WALKER, AMERICAN GARDEN, EDWARDS, MPH, WATERVAL, CONIC, BAY, GARDEN, OR APPROX. OR 1/2" PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON ANNA C/150-30.
3. 4" GATE VALVE SHALL BE ANNA C/200-36 OPEN LEFT.
4. STEEL RISER AND BOLTS SHALL BE #2 HOT DIPPED GALVANIZED.
5. FIRE HYDRANTS WILL BE INSTALLED ON THEIR VERTICAL POSITION. RISER SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 50' THEN A MECHANICAL RESTRAINING GLAND WITH A BREAK CASE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POINTED IN CONCRETE.
6. FIRE HYDRANTS TO BE LOCATED IN ROW OR 4' FOOT EXPOSURE ADJACENT TO ROW.

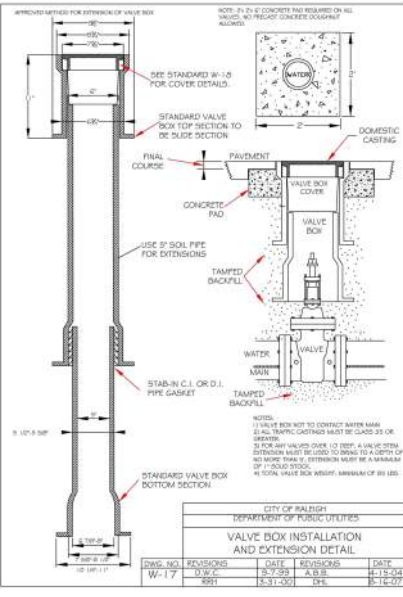
ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
STANDARD FIRE HYDRANT INSTALLATION DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-4	RRH	3-1-87	A,B	3-1-87	
	RRH	3-30-90	B,C	3-30-90	

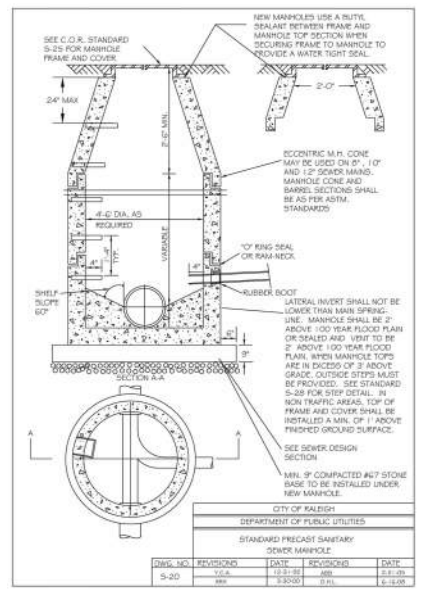
1. SIZE ENCLOSURE AND HEATERS BASED ON SIZE OF THE BACKFLOW PREVENTER PER MANUFACTURER RECOMMENDATIONS.
2. PROVIDE COMPLETE ASSEMBLY IN ACCORDANCE WITH THE CITY OF RALEIGH STANDARDS OR INSPECTION POLICY, COORDINATE WITH WATER AUTHORITY IN ADVANCE OF CONSTRUCTION.
3. DOMESTIC REDUCED PRESSURE ZONE ASSEMBLY BASIS OF DESIGN IS WILKINS #3520. OTHER ACCEPTABLE DEVICES ARE FEBCO 860 OR WATTS 319 SZAL. COORDINATE WITH ARCHITECT AND ENGINEER.
4. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS OF BACKFLOW PREVENTER, VALVES, ENCLOSURE, ETC.
5. HEATING DEVICE AND POWER LINES BY G.C., SHALL BE LISTED FOR WET LOCATIONS.
6. PROVIDE PVC SLEEVES AT ALL PIPE AND WIRE PENETRATIONS OF CONCRETE BASE SLAB.
7. SEE SHEETS ELECTRICAL FOR TAMPER SWITCHES, LOW TEMPERATURE DEVICE, AND OTHER ELECTRICAL INFORMATION.



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
TYPICAL REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-35	RRH	1-23-10	A,B	1-23-10	
	D.W.C.	11-8-09	D,U,L	8-18-08	



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
VALVE BOX INSTALLATION AND EXTENSION DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-17	RRH	3-2-85	A,B	3-1-84	
	RRH	5-31-00	DEL	8-18-07	



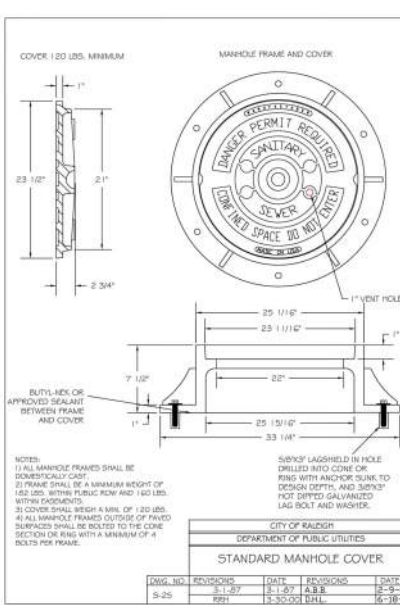
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
STANDARD GREASE SANITARY PRECAST MANHOLE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-20	RRH	1-18-88	B,C	1-18-88	
	RRH	9-20-00	DEL	6-15-00	

1 FIRE HYDRANT ASSEMBLY N.T.S.

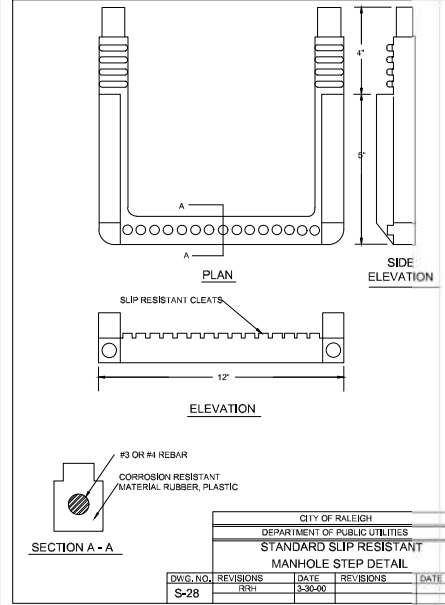
2 1.5" RPZ BACKFLOW PREVENTER (DOMESTIC SERVICE) N.T.S.

3 GATE VALVE ASSEMBLY N.T.S.

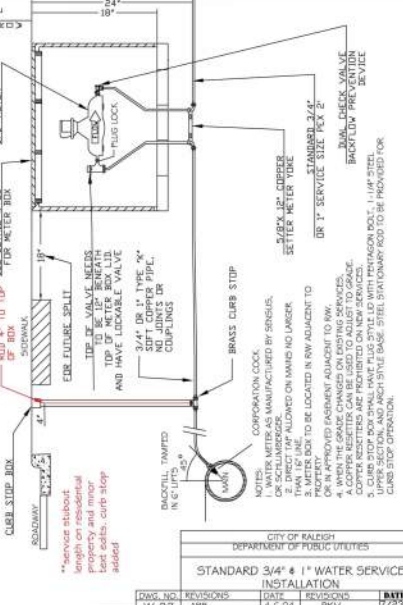
4 SANITARY SEWER MANHOLE N.T.S.



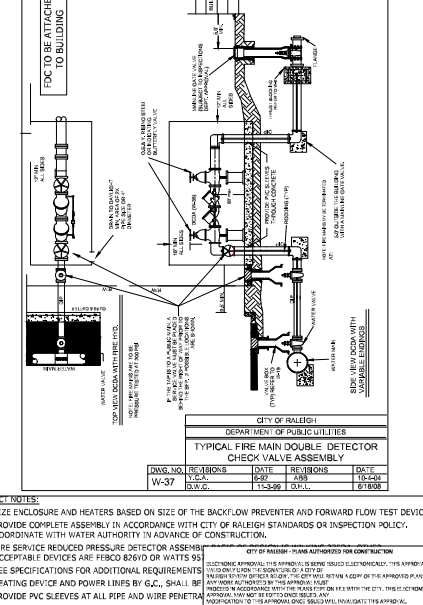
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
STANDARD MANHOLE COVER					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-25	RRH	3-1-87	A,B	3-1-87	
	RRH	3-30-90	B,C	3-30-90	



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-28	RRH	3-30-00			



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
STANDARD 3/4" x 1" WATER SERVICE INSTALLATION					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-23	RRH	4-1-04	B,K	7-22-03	
	D.W.C.	8-10-00			



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES					
TYPICAL FIRE MAIN DOUBLE DETECTOR CHECK VALVE ASSEMBLY					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-37	RRH	8-27-03	A,B	10-24-03	
	RRH	1-23-10	B,C	8-18-08	

5 SANITARY SEWER MANHOLE RING & COVER N.T.S.

6 MANHOLE STEPS N.T.S.

7 1" WATER METER AND VAULT N.T.S.

8 FIRE SERVICE BACKFLOW (8" RPDA) N.T.S.



THIS DRAWING PREPARED AT THE  
**RALEIGH OFFICE**  
 101 S. HARRIS ST., SUITE 200  
 RALEIGH, NC 27601-3222  
 TEL: 919.978.2222 FAX: 919.978.2222  
 WWW.TIMMONSGROUP.COM

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REVISION DESCRIPTION  
 DATE  
 06/07/2023  
 ADDRESSED TOWN OF ROLESVILLE COMMENTS  
 07/10/2023  
 ADDRESSED TOWN OF ROLESVILLE COMMENTS

DATE  
 04/05/2023

DRAWN BY  
 L. BARNES

DESIGNED BY  
 G. FRANK

CHECKED BY  
 G. FRANK

SCALE  
 AS SHOWN

**TIMMONS GROUP**

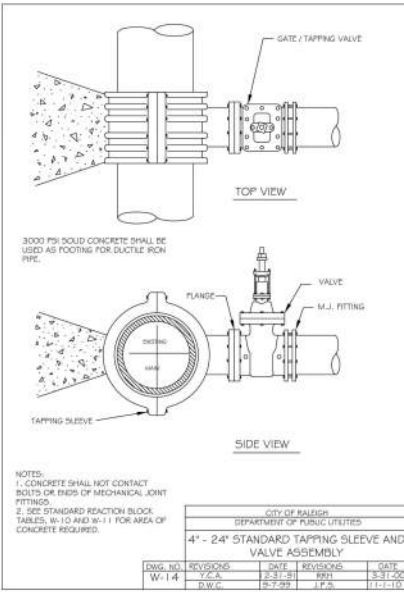
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 NORTH CAROLINA LICENSE NO. C-1652  
 TOWN OF ROLESVILLE - NORTH CAROLINA

SITE DETAILS

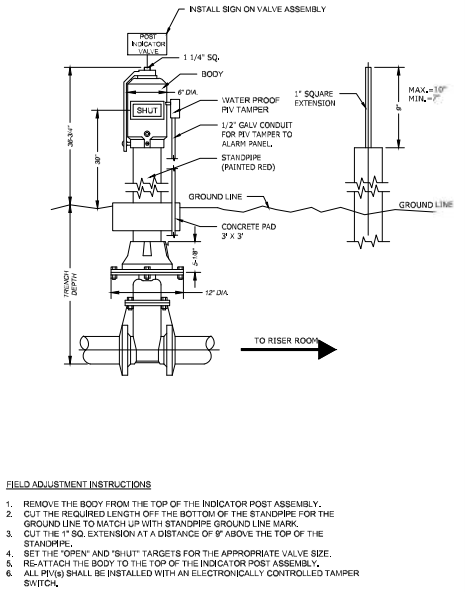
JOB NO.  
**54832**

SHEET NO.  
**C6.3**

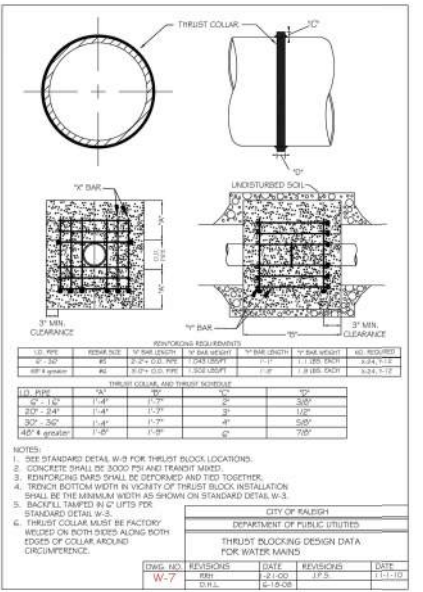
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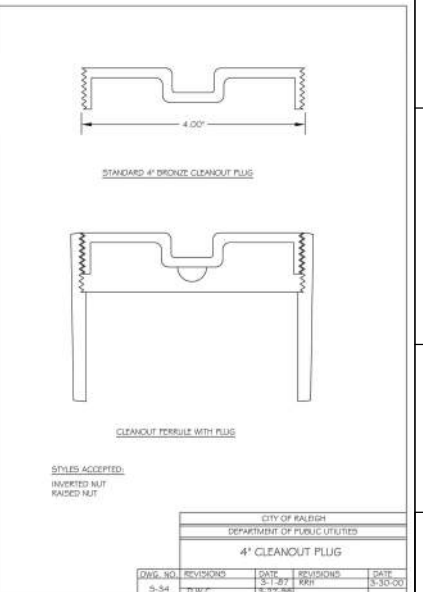
1 TAPPING SLEEVE w/ GATE VALVE N.T.S.



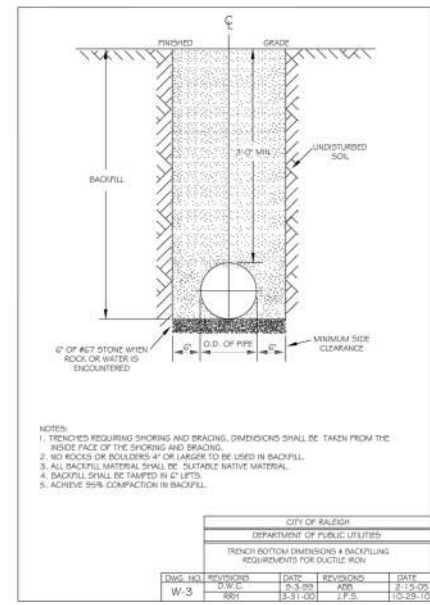
2 POST INDICATOR VALVE ASSEMBLY N.T.S.



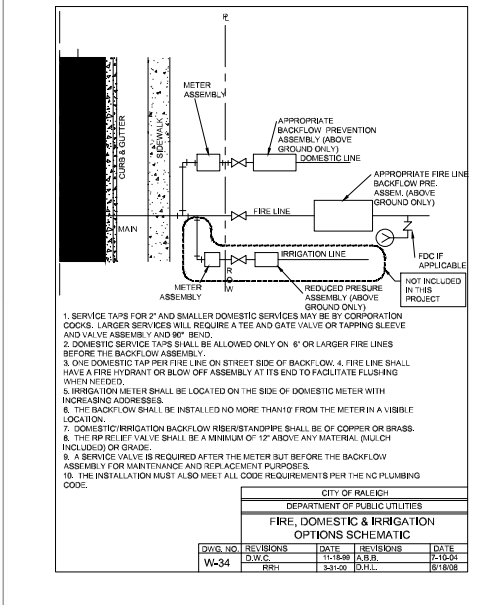
3 THRUST BLOCKING N.T.S.



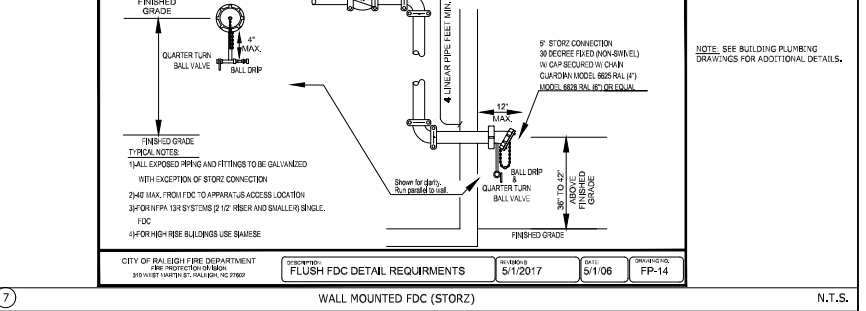
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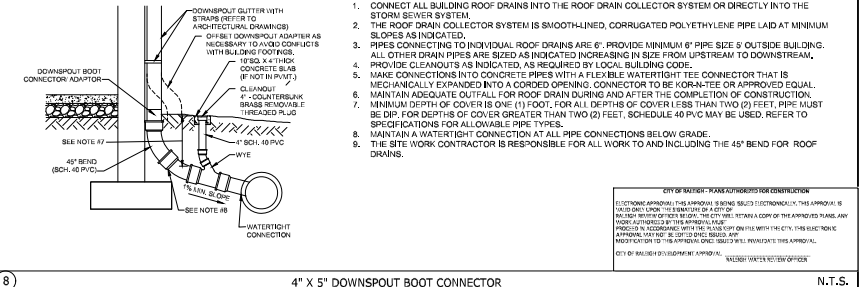
5 UTILITY TRENCHING AND BACKFILL N.T.S.




6 FIRE, DOMESTIC, & IRRIGATION OPTIONS N.T.S.



7 WALL MOUNTED FDC (STORZ) N.T.S.



8 4\"/>



**TIMMONS GROUP**

NORTH CAROLINA LICENSE NO. C-1652

JONES DAIRY STORAGE FACILITY

TOWN OF ROLESVILLE - NORTH CAROLINA

SITE DETAILS

DATE	REVISION DESCRIPTION	DATE
06/07/2023	1.0	04/05/2023
06/07/2023	2.0	

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISIONS	DATE	REVISIONS	DATE
06/07/2023	1.0	03/11/2023	1.0	03/11/2023
06/07/2023	2.0	03/11/2023	1.0	03/11/2023

CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
4\"/>

DATE	REVISIONS	DATE	REVISIONS	DATE
06/07/2023	1.0	03/11/2023	1.0	03/11/2023
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CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
THRUST BLOCKING DESIGN DATA  
FOR WATER MAINS

DATE	REVISIONS	DATE	REVISIONS	DATE
06/07/2023	1.0	03/11/2023	1.0	03/11/2023
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CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
4\"/>

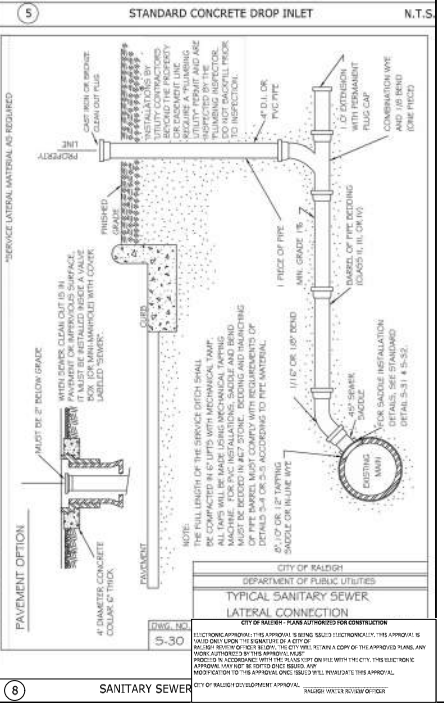
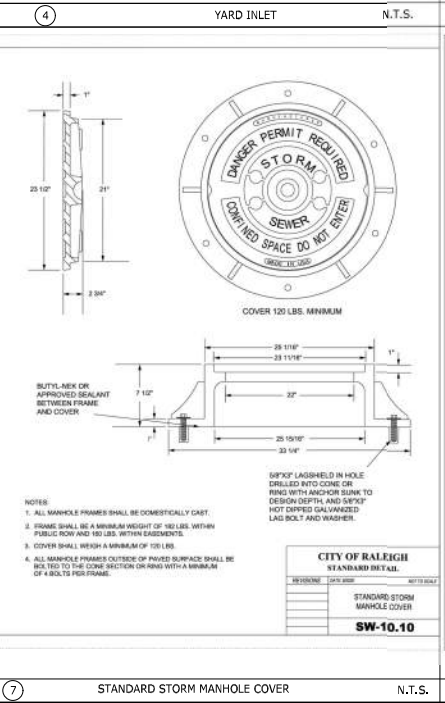
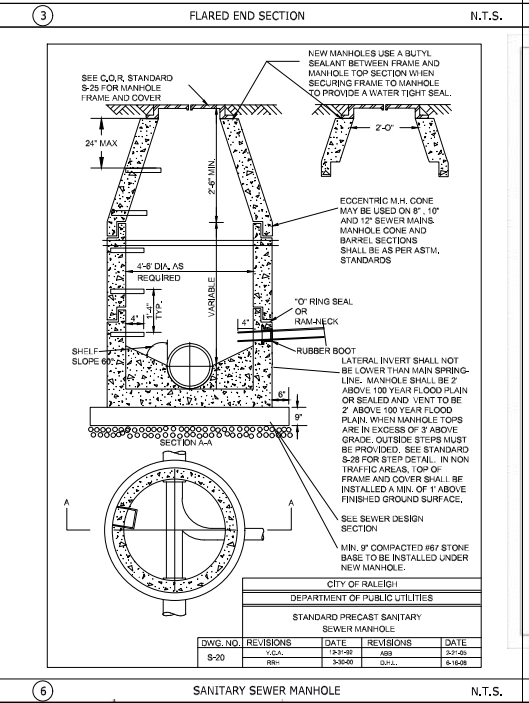
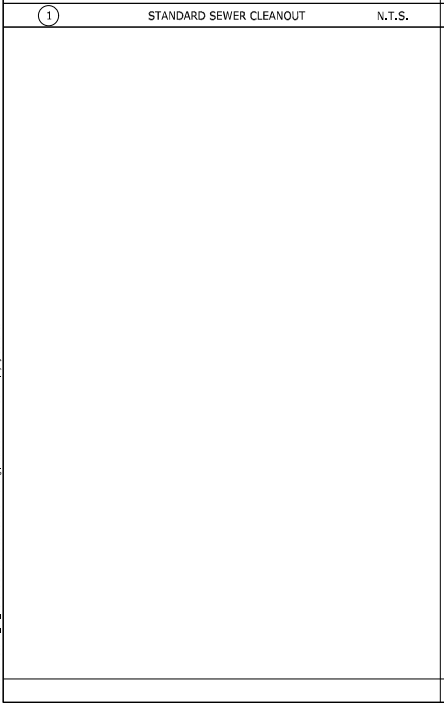
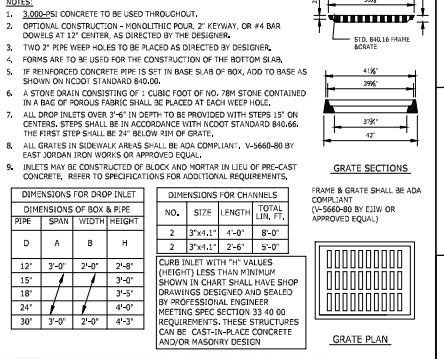
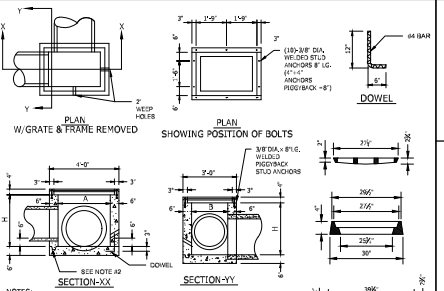
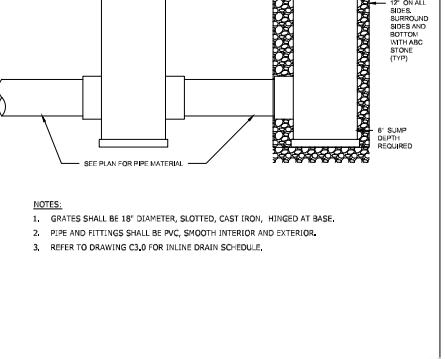
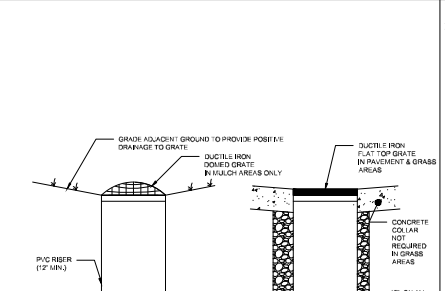
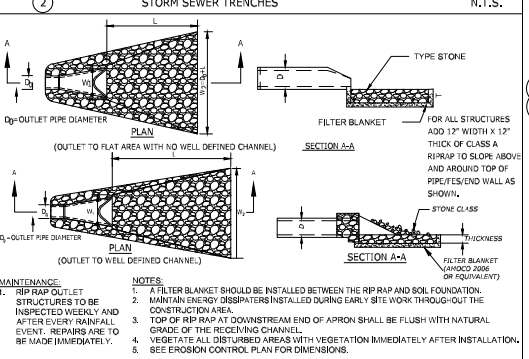
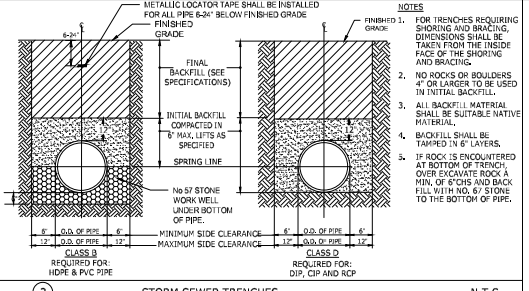
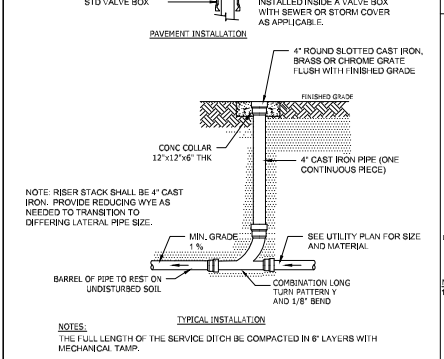
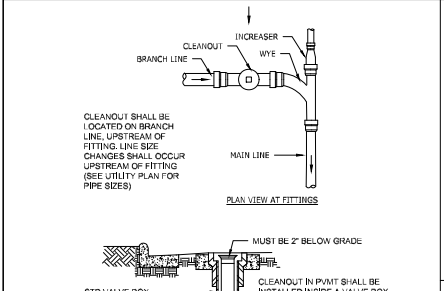
DATE	REVISIONS	DATE	REVISIONS	DATE
06/07/2023	1.0	03/11/2023	1.0	03/11/2023
06/07/2023	2.0	03/11/2023	1.0	03/11/2023


CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
THRUST BLOCKING DESIGN DATA  
FOR WATER MAINS

DATE	REVISIONS	DATE	REVISIONS	DATE
06/07/2023	1.0	03/11/2023	1.0	03/11/2023
06/07/2023	2.0	03/11/2023	1.0	03/11/2023

CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
4\"/>

JOB NO. 54832  
SHEET NO. C6.4






THIS DRAWING PREPARED AT THE  
**RALEIGH OFFICE**  
10111 W. BRADLEY BLVD., SUITE 100, RALEIGH, NC 27615  
TEL: 919-875-8200 FAX: 919-875-8201

REVISION DESCRIPTION	DATE
04/05/2023	

YOUR VISION ACHIEVED THROUGH OURS.



**JONES DAIRY STORAGE FACILITY**  
NORTH CAROLINA LICENSE NO. C-1652  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**SITE DETAILS**

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
8-20	1.00	12/28/20	001	2/3/21
	2.00	3/30/21	002	3/30/21

CITY OF RALEIGH  
DEPARTMENT OF PUBLIC UTILITIES  
STANDARD PRECAST SANITARY SEWER MANHOLE

REVISION	DATE	BY
1	12/28/20	001
2	3/30/21	002

**SW-10-10**

DATE	SCALE
04/05/2023	AS SHOWN

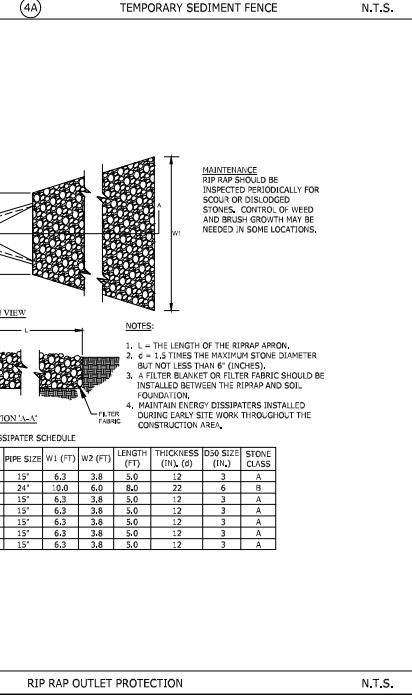
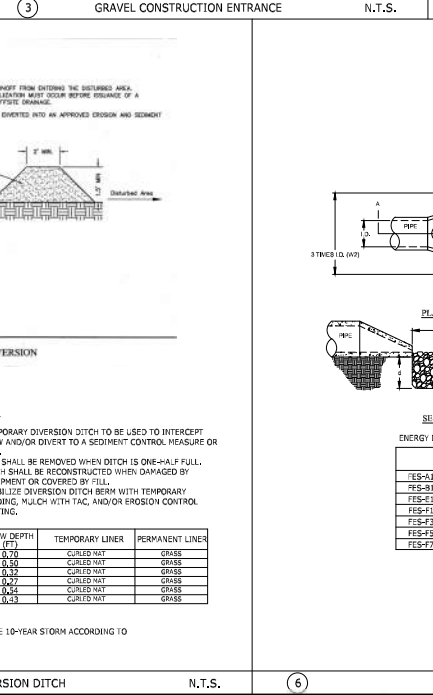
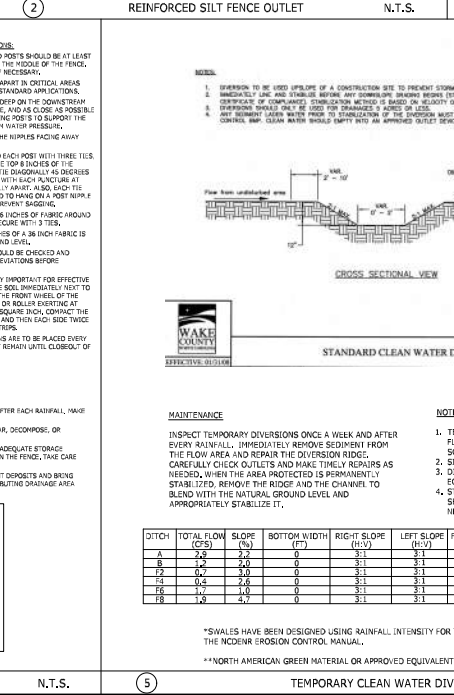
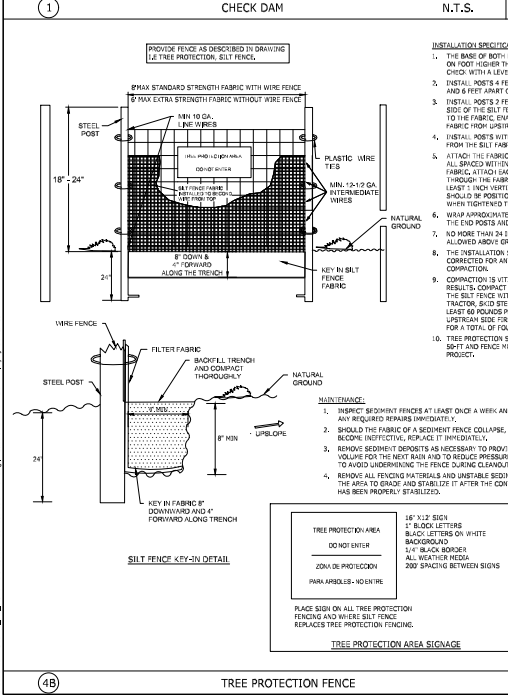
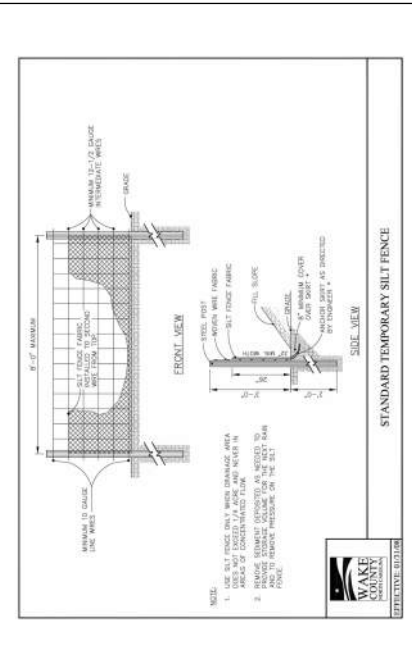
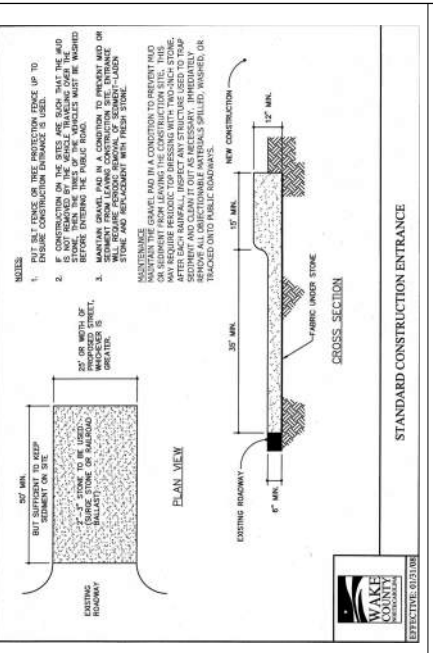
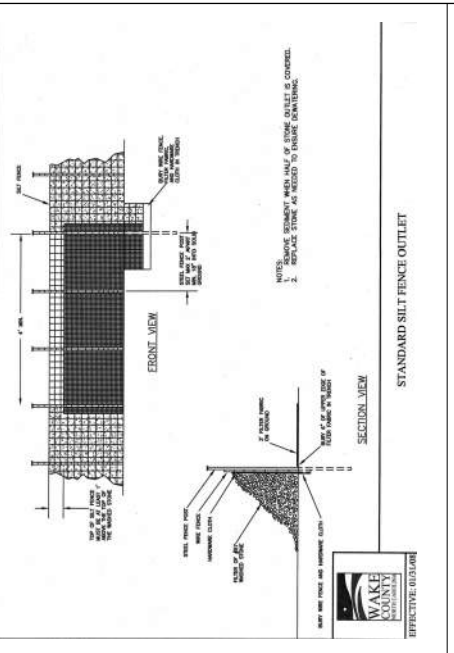
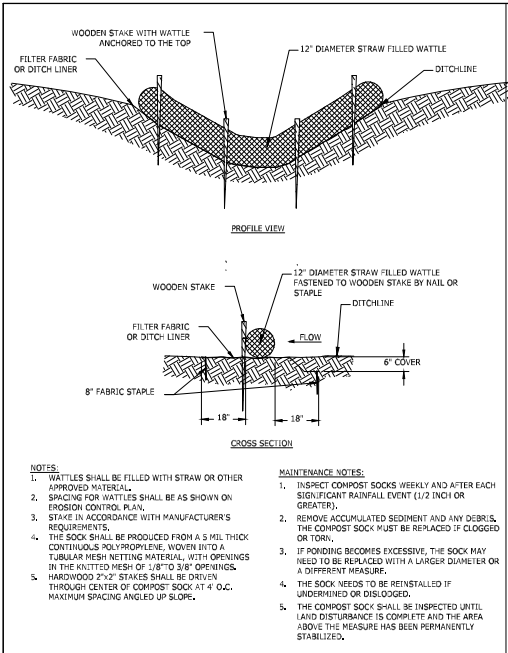
DATE	SCALE
04/05/2023	AS SHOWN

DRAWN BY: L. BARNES  
DESIGNED BY: G. FRANK  
CHECKED BY: G. FRANK  
SCALE: AS SHOWN

JOB NO. 54832  
SHEET NO. C6.5

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**TIMMONS GROUP**

JONES DAIRY STORAGE FACILITY  
NORTH CAROLINA LICENSE NO. C-1652  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

**SITE DETAILS**

DATE: 04/05/2023  
DRAWN BY: L. BARNES  
DESIGNED BY: G. FRANK  
CHECKED BY: G. FRANK  
SCALE: AS SHOWN

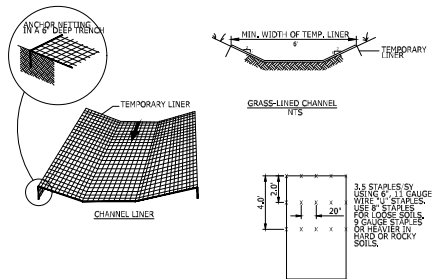
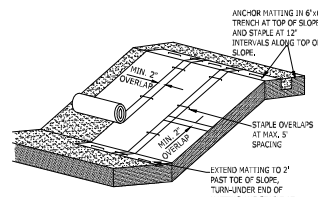
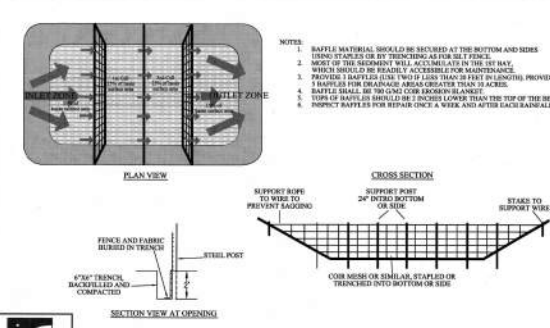
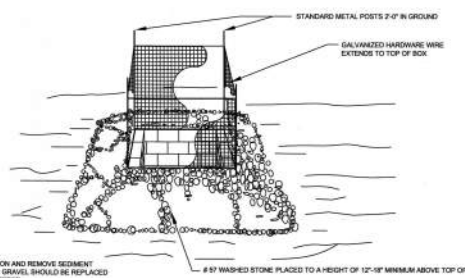
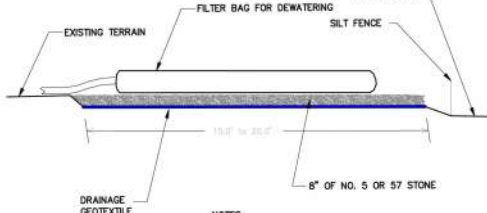
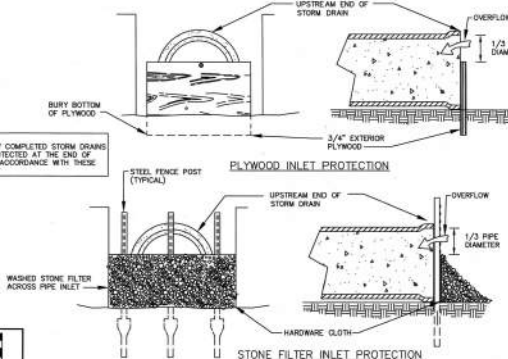
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WAKE COUNTY  
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DATE  
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07/01/2023  
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07/01/2023

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APPROVED BY: [Signature]  
APPROVED BY: [Signature]

JOB NO. 54832  
SHEET NO. C6.6

 <p><b>CONSTRUCTION NOTES:</b></p> <ol style="list-style-type: none"> <li>INSTALL EXCELSIOR CHANNEL LINING IN ALL SWALES OR AREAS OF CONCENTRATED STORMWATER FLOW.</li> <li>SEE SPECIFICATIONS FOR TEMP. LINING REQUIREMENTS.</li> <li>PREPARE SOIL BEFORE INSTALLING MATS OR NETS, INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED.</li> <li>BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE NET OR MAT IN A 6" DEEP TRENCH, BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.</li> <li>ROLL CENTER MAT OR NET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.</li> <li>PLACE MAT OR NET END OVER END (SHINGLE STYLE) WITH 4" OVERLAP. USE DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE.</li> <li>FULL LENGTH EDGE OF MAT OR NET AT TOP SIDE SLOPES SHALL BE ANCHORED IN 6" DEEP TRENCH AFTER STAPLING.</li> <li>MATS OR NETS SHALL BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.</li> <li>THE TERMINAL END OF THE MAT OR NET MUST BE ANCHORED IN A 6" DEEP TRENCH, BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.</li> </ol> <p><b>MAINTENANCE NOTES:</b></p> <ol style="list-style-type: none"> <li>GRASS-LINED CHANNELS TO BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL EVENT, DURING THE ESTABLISHMENT PERIOD.</li> <li>REPAIRS ARE TO BE MADE IMMEDIATELY.</li> <li>REMOVE SEDIMENT ACCUMULATIONS TO MAINTAIN DESIGNED CARRYING CAPACITY.</li> <li>GRASS TO BE HEALTHY AND IN VIGOROUS CONDITIONS AT ALL TIMES.</li> </ol>	 <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>SLOPE SURFACE SHALL BE SMOOTH PRIOR TO PLACEMENT OF MATTING TO ENSURE PROPER SOIL CONTACT.</li> <li>LIME, FERTILIZER AND SEED PRIOR TO PLACING MATTING, PLANT SHRUBS, TREES, ETC. FOLLOWING PLACEMENT OF MATTING.</li> <li>ON SLOPES FLATTER THAN 4:1, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS.</li> <li>DO NOT STRETCH MATTING TIGHT. ALLOW ROLLS TO CONFORM TO ANY IRREGULARITIES.</li> <li>INSTALL STAPLES IN PATTERNS AS RECOMMENDED BY MATTING MANUFACTURER.</li> </ol> <p><b>MAINTENANCE NOTES:</b></p> <ol style="list-style-type: none"> <li>INSPECT MATTING AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2" OR GREATER) RAINFALL AND REPAIR IMMEDIATELY AS NEEDED.</li> <li>ENSURE GOOD CONTACT WITH SOIL. SURFACE IS MAINTAINED AND EROSION DOES NOT OCCUR BENEATH MATTING.</li> <li>AREAS OF MATTING THAT ARE DAMAGED OR WHERE NOT IN CLOSE CONTACT WITH THE SOIL SHALL BE REPAIRED AND STAPLED.</li> <li>IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREAS PROTECTED.</li> <li>MONITOR AND REPAIR MATTING AS NECESSARY UNTIL GROUND COVER IS ESTABLISHED.</li> </ol>	 <p><b>STANDARD BAFFLES DETAIL</b></p> <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING 1/2" STAPLES OR BY TRENCHING. MATS OR NETS SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.</li> <li>PROVIDE BAFFLES WITH 2" OVERLAP BETWEEN ADJACENT BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 FEET.</li> <li>BAFFLES SHALL BE THE SAME COLOR AND GRADE AS THE CHANNEL.</li> <li>TOP OF BAFFLES SHALL BE 1" LOWER THAN THE TOP OF THE DRAINAGE PROJECT BAFFLES FOR REPAIRS ONCE A WEEK AND AFTER EACH RAINFALL.</li> </ol> <p><b>MAINTENANCE:</b> INSPECT BAFFLES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.</p> <p>BE SURE TO MAINTAIN ACCESS TO THE BAFFLES. SHOULD THE FABRIC OF A BAFFLE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.</p> <p>REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE BAFFLES. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANUP. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH.</p> <p>REMOVE ALL BAFFLE MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.</p>
<p>① TEMPORARY CHANNEL LINING N.T.S.</p>	<p>② ROLLED EROSION CONTROL PRODUCT N.T.S.</p>	<p>③ COIR MESH BAFFLES (NCDENR 6.65) N.T.S.</p>
 <p><b>NOTE:</b></p> <ol style="list-style-type: none"> <li>INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.</li> </ol>	 <p><b>NOTES:</b></p> <p>PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLET MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLET MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.</p>	 <p><b>NOTE:</b> ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.</p>
<p>④ YARD INLET PROTECTION N.T.S.</p>	<p>⑤ DEWATERING PUMP WITH SILT BAG N.T.S.</p>	<p>⑥ PIPE INLET PROTECTION N.T.S.</p>



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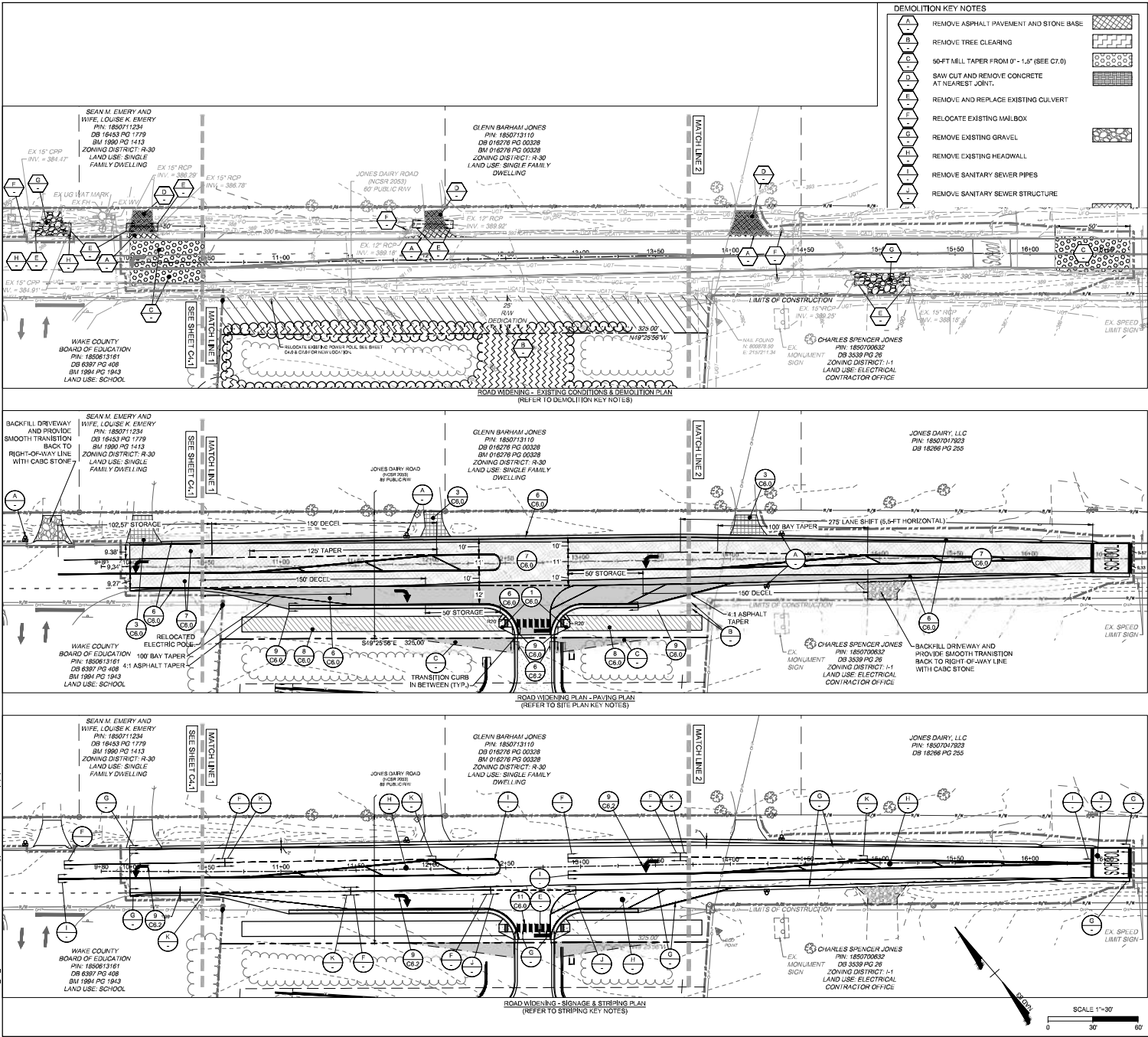
NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

**SITE DETAILS**

<p>THIS DRAWING PREPARED AT THE <b>WAKE COUNTY</b> ENGINEERING OFFICE 1515 HARRIS ROAD, SUITE 200, WAKE FOREST, NC 27157 TEL: 919.853.2222 FAX: 919.853.2228 www.timmons.com</p>	<p>REVISION DESCRIPTION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>06/07/2023</td> <td>ADDED TOWN OF ROLESVILLE COMMENTS</td> </tr> <tr> <td>07/10/2023</td> <td>ADDED TOWN OF ROLESVILLE COMMENTS</td> </tr> <tr> <td>07/10/2023</td> <td>ADDED TOWN OF ROLESVILLE COMMENTS</td> </tr> </table> <p>DATE: 04/05/2023</p> <p>DRAWN BY: L. BARNES</p> <p>DESIGNED BY: G. FRANK</p> <p>CHECKED BY: G. FRANK</p> <p>SCALE: AS SHOWN</p>	DATE	DESCRIPTION	06/07/2023	ADDED TOWN OF ROLESVILLE COMMENTS	07/10/2023	ADDED TOWN OF ROLESVILLE COMMENTS	07/10/2023	ADDED TOWN OF ROLESVILLE COMMENTS
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### DEMOLITION KEY NOTES

A	REMOVE ASPHALT PAVEMENT AND STONE BASE
B	REMOVE TREE CLEARING
C	50-FT MILL TAPER FROM 0' - 1.5' (SEE C7.0)
D	SAW CUT AND REMOVE CONCRETE AT NEAREST JOINT.
E	REMOVE AND REPLACE EXISTING CULVERT
F	RELOCATE EXISTING MAILBOX
G	REMOVE EXISTING GRAVEL
H	REMOVE EXISTING HEADWALL
I	REMOVE SANITARY SEWER PIPES
J	REMOVE SANITARY SEWER STRUCTURE

- ### SITE LAYOUT NOTES
1. ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE RULES, ORDINANCES, AND SPECIFICATIONS OF WAKE COUNTY, NCDOT AND OSHA STANDARDS AND SPECIFICATIONS.
  2. ALL DIMENSIONS ARE TO FACE OF CURB, EDGE OF PAVEMENT, BUILDING WALL FACE OR PROPERTY LINE, UNLESS OTHERWISE NOTED.
  3. ALL RADI ARE DIMENSIONED FROM BACK OF CURB, IF NOT STATED, RADIUS DIMENSION IS 9'.
  4. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, UTILITIES AND GRADES PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY RELATED CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL WASTE MATERIALS GENERATED DURING CONSTRUCTION AND FOR OBTAINING ALL APPLICABLE PERMITS FOR OFF-SITE STOCKPILES AND/OR WASTE AREAS.
  5. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES DURING CONSTRUCTION AND SHALL MAKE REPAIRS AT NO CHARGE TO THE OWNER.
  6. AT LEAST 72 HOURS PRIOR TO CONSTRUCTION OR EXCAVATION THE CONTRACTOR SHALL NOTIFY "NORTH CAROLINA ONE CALL" (811) OR (1-800-433-4949) TO HAVE EXISTING UTILITIES LOCATED. ALL PRIVATE UTILITIES SHALL BE LOCATED AS NEEDED BY A PRIVATE UTILITY LOCATE COMPANY EMPLOYED BY THE CONTRACTOR.
  7. ALL CURB AND GUTTER OFFSITE SHALL BE 30" WIDE UNLESS NOTED OTHERWISE.
  8. ALL DISTURBED CURB & GUTTER AND ASPHALT SHALL BE REPLACED PER PROJECT DETAILS AND NCDOT STANDARDS AND SPECIFICATIONS. RAISE ALL STRUCTURES AT NO ADDITIONAL COST TO THE OWNER SO THAT THE TOP OF THE STRUCTURE EQUALS THE FINISH GRADE OF THE NEW ASPHALT.
  9. COORDINATE THE PROJECT SCHEDULE WITH THE CIVIL ENGINEER AND OWNER. ANY UTILITY INTERSECTIONS SHALL BE COORDINATED WITH THE OWNER AT LEAST 72 HOURS PRIOR TO THE INTERSECTION.
  10. PROVIDE A SMOOTH TRANSITION BETWEEN NEW ASPHALT AND EXISTING ASPHALT.
  11. ALL SIDEWALKS ARE TO HAVE NO MORE THAN A 1:20 (5.0%) SLOPE FOR THE LENGTH OF THE SIDEWALK AND NO MORE THAN A 1:50 (2.0%) SLOPE FOR THE WIDTH OF THE SIDEWALK. NOTIFY ENGINEER IF THIS CANNOT BE ACHIEVED.
  12. REFER TO SHEET C7.0 FOR THE CTP COMPLIANCE DIAGRAM.

### SITE PLAN KEY NOTES

1	ACCESSIBLE CURB RAMP
2	STANDARD DUTY CONCRETE PAVEMENT
3	HEAVY DUTY CONCRETE PAVEMENT
4	STANDARD DUTY ASPHALT PAVEMENT
5	LIGHT DUTY ASPHALT PAVEMENT
6	NCDOT ASPHALT (FULL DEPTH)
7	NCDOT OVERLAY
8	ASPHALT MULTI-USE PATH
9	NCDOT 30' CONCRETE CURB & GUTTER
10	CURB ENDING TAPER
11	24" CONCRETE CURB & GUTTER
12	RELOCATED MAIL BOX
13	RELOCATE OR PROVIDE TURN DOWN GUY WIRE BAR
14	10-FT X 70-FT SIGHT TRIANGLE
15	1.5" MILL & LAP JOINT (1.5' @ 9-5.5)

- ### TRAFFIC CONTROL NOTES
1. ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.
  2. ALL PAVEMENT MARKINGS WITHIN RIGHT-OF-WAY SHALL BE THERMOPLASTIC.
  3. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH NCDOT STANDARDS AND THE PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
  4. ALL SIGNAGE SHALL HAVE HIGH INTENSITY PRISMATIC SHEETING.
  5. SIGNS SHALL BE FABRICATED FROM ALUMINUM ALLOY SHEETS.
  6. ALL MOUNTING HARDWARE SHALL BE GALVANIZED.
  7. "AR" ON PLANS DENOTES VAN ACCESSIBLE PARKING SIGN. INSTALL R7-8A, R7-8D, & R7-8F.
  8. "AR" ON PLANS DENOTES ACCESSIBLE PARKING SIGN. INSTALL R7-8A & R7-8D ONLY.

### STRIPING KEY NOTES

	NCDOT STD.	WIDTH	COLOR
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### REVISION DESCRIPTION

DATE	DESCRIPTION
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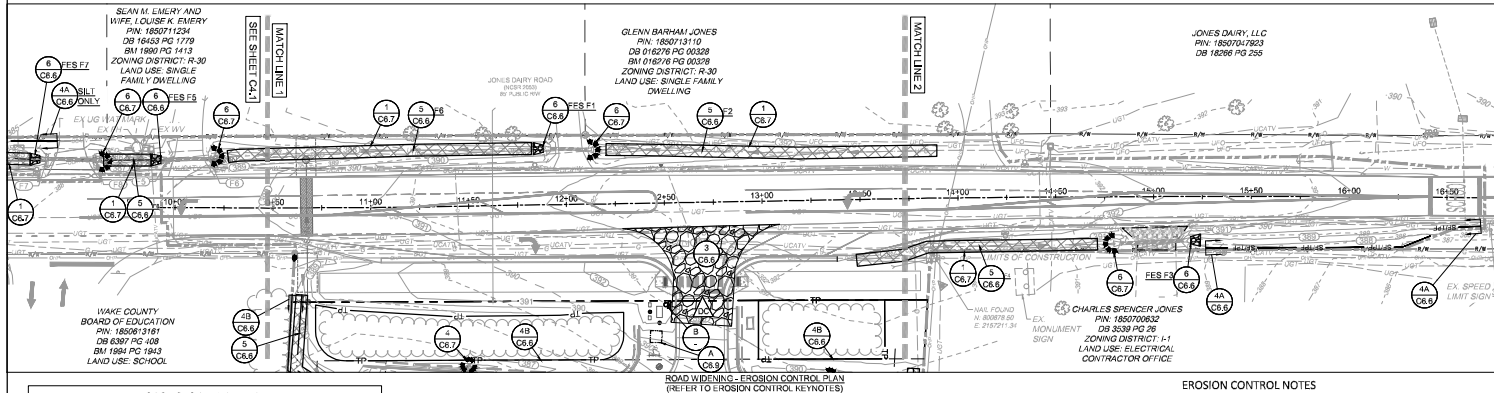
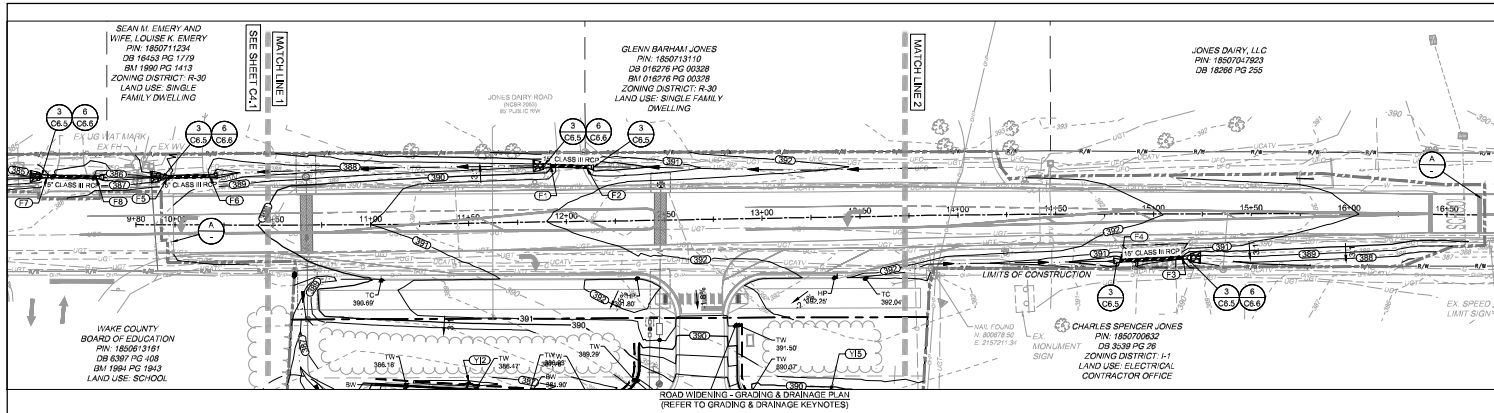
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 DESIGNED BY: G. FRANK  
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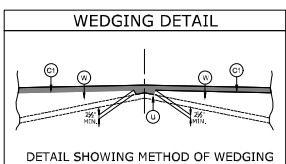
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**ROAD WIDENING PLAN - DEMO, SITE AND SIGNAGE & STRIPING PLANS**  
 NORTH CAROLINA LICENSE NO. C-1652

JOB NO. 54832  
 SHEET NO. C7.0



**NCDDOT STORM PIPE TABLE**

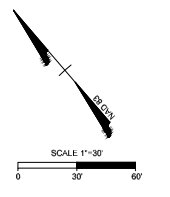
PIPE #	DA	UPSTREAM INVERT	DOWNSTREAM INVERT	SLOPE	LENGTH	DESCRIPTION
F2-F1	15"	368.00	368.75	1.40%	17.85 LF	15" CLASS III RCP
F4-F3	15"	368.75	368.25	1.36%	31.45 LF	15" CLASS III RCP
F6-F5	15"	366.50	366.00	2.40%	20.83 LF	15" CLASS III RCP
F8-F7	15"	366.25	364.75	2.04%	24.54 LF	15" CLASS III RCP



NOTE: MILL OR OVERLAY EXISTING PAVEMENT AS NECESSARY TO ACHIEVE REQUIRED CROSS SLOPE PER CROSS SECTIONS AND SUPPLEMENT TRANSITIONS, BUILD UP WITH ASPHALT CONCRETE INTERMEDIATE TYPE 1B OR AT VARIABLE DEPTH, DEPENDING ON EXISTING CIRCUMSTANCES. REFER TO NCDDOT ROAD DESIGN MANUAL FOR MINIMUM PAVEMENT THICKNESS AND WEDGING REQUIREMENTS.

**PAVEMENT SCHEDULE**

STRUCTURE #	TOP	STRUCTURE HEIGHT	DESCRIPTION
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.		
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.		
U	EXISTING PAVEMENT		



**EROSION CONTROL NOTES**

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF SITE. ALL OFF-SITE SOIL BORROW AND WASTE SITES SHALL BE PROPERLY PERMITTED FOR SUCH ACTIVITIES.
2. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY LOCAL AUTHORITIES OR ENGINEER.
3. ALL OPEN STORM PIPES SHALL BE PROTECTED WITH STONE FILTER PROTECTION AFTER WORK STOPPAGE EACH DAY.
4. ALL STORM DRAINAGE PIPES SHALL BE THOROUGHLY FLUSHED OF ALL SEDIMENT FOLLOWING SITE STABILIZATION. INTERIOR FLUSHING OF SYSTEM SHALL BE PERFORMED AS NEEDED TO MAINTAIN PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
5. THE INDICATED STAGING AREA IS INTENDED FOR VEHICLES AND NON-ERODIBLE MATERIALS ONLY. NO SOIL, SAND OR OTHER ERODIBLE FINE GRAINED MATERIAL SHALL BE STORED OUTSIDE OF THE LIMITS OF THE SITE PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
6. SOIL AND OTHER MATERIAL SHALL ONLY BE TEMPORARILY STOCKPILED WITHIN THE CONSTRUCTION LIMITS PROTECTED BY SEDIMENT AND EROSION CONTROL DEVICES AND MEASURES.
7. TREE PROTECTION INSPECTION SHALL BE COMPLETED PRIOR TO INSTALLING EROSION CONTROL DEVICES.
8. ALL APPLICABLE E&S CONTROL MEASURES ARE TO BE PROPERLY MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
9. PERMANENT GROUNDCOVER SHALL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER).
10. TOTAL DISTURBED AREA: 5.90 AC.

**NCDDOT STORM STRUCTURE TABLE**

STRUCTURE #	TOP	STRUCTURE HEIGHT	DESCRIPTION
F1	360.44	N/A	15" FES
F2	360.19	N/A	15" FES
F3	368.60	N/A	15" FES
F4	360.19	N/A	15" FES
F5	367.44	N/A	15" FES
F6	367.94	N/A	15" FES
F7	366.19	N/A	15" FES
F8	366.69	N/A	15" FES

- GRADING & DRAINAGE NOTES**
1. ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE RULES/REGS. WAKE COUNTY, NCDDOT AND OSHA STANDARDS AND SPECIFICATIONS.
  2. COORDINATE THE PROJECT SCHEDULE WITH THE OWNER AND ADJACENT USERS OF THE PROPERTY. MAINTAIN TRAFFIC FLOW AND DO NOT INTERRUPT UTILITIES AROUND THE SITE. DO NOT DISTURB OPERATIONS OF ADJACENT SITES AND FACILITIES AND/OR THEIR OWNERS' ONGOING OPERATIONS.
  3. ALL EXISTING VALVES, MANHOLES, STORM DRAIN STRUCTURES, VALVE BOXES, CLEANOUTS, ETC. SHALL BE ADJUSTED AS NEEDED TO MATCH FINISHED GRADE.
  4. ALL BACKFILL COMPACTION, SOILS TESTING, ETC. SHALL BE PERFORMED BY THE OWNER'S INDEPENDENT TESTING LABORATORY.
  5. ALL SPOT ELEVATIONS INDICATED ARE AT TOP OF CURB UNLESS NOTED OTHERWISE.
  6. SPOT GRADE ABBREVIATIONS:
    - 6.1. TC: TOP OF CURB
    - 6.2. EP: EDGE OF PAVEMENT
    - 6.3. HP: HIGH POINT
    - 6.4. SWK: SIDEWALK
    - 6.5. FFE: FINISH FLOOR ELEVATION
    - 6.6. TW: TOP OF WALL
    - 6.7. BW: BOTTOM OF WALL
    - 6.8. FL: FLOW LINE
    - 6.9. GND: GROUND
  7. SPOT ELEVATIONS ARE GIVEN AT THE MAJORITY OF THE MAJOR BREAK POINTS BUT IT SHOULD NOT BE ASSUMED THAT ALL NECESSARY SPOT ELEVATIONS ARE SHOWN. DUE TO SPACE LIMITATIONS, THERE MAY BE OTHER CRITICAL SPOTS NOT LABELED THAT SHOULD BE TAKEN INTO CONSIDERATION. THE CONTRACTOR SHALL REVIEW THE GRADING PLAN IN DETAIL AND SHALL ENSURE THAT ALL CRITICAL GRADE POINTS ARE STAKED AND FOLLOWED TO PROVIDE POSITIVE DRAINAGE.
  8. ALL ELEVATIONS ARE BASED ON NC GRID NORTH (NAD 83) 11.0.
  9. THE CONTRACTOR SHALL USE NC ONE CALL (811) TO LOCATE ALL UNDERGROUND UTILITIES. PRIVATE UTILITIES SHALL BE LOCATED BY A PRIVATE LOCATE SERVICE AT THE EXPENSE OF THE CONTRACTOR.
  10. INSTALL ALL STORM SEWERS TO PROVIDE REQUIRED CLEARANCES TO CROSSING UTILITIES AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
  11. PROVIDE HALF-BENCH CONCRETE INLET SHAPING FOR ALL CONCRETE STORM SEWER STRUCTURES.
  12. ALL ROOF DRAINS FROM BUILDING "A" SHALL BE 8" PVC (SCHEDULE 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. ALL ROOF DRAINS FROM BUILDING "B" AND "C" SHALL BE 8" PVC (SCHEDULE 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24-IN. MATCH-PIPE CROWNS WITH CONNECTION TO DROP INLET.
  13. PVC ROOF DRAIN PIPING UNDER PAVEMENT SHALL HAVE 24-IN MINIMUM COVER. ROOF DRAIN PIPING UNDER PAVEMENT SHALL BE 8" DP (IN LIEU OF PVC).
  14. JOINT FILL AND CALK EACH CONCRETE EXPANSION JOINT AND WHERE CONCRETE PAVEMENT ADJUTS OTHER PAVEMENTS, SIDEWALKS, OR HARD SURFACES.
  15. MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT IN ACCORDANCE WITH NCDDOT LAND QUALITY REQUIREMENTS AND AS DIRECTED BY THE ENGINEER AND CIVIL ENGINEER.
  16. FLUSH ALL SEWER AND STORM DRAIN PIPES AND STRUCTURES FOLLOWING SITE STABILIZATION AND AT THE END OF CONSTRUCTION. FLUSH OUT PIPES AS NEEDED THROUGHOUT CONSTRUCTION TO MAINTAIN PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
  17. IN DISTURBED AREAS, AMEND THE TOP 6-INCHES OF LAWN AREAS WITH TOPSOIL FROM THE SITE.
  18. ALL SIDEWALKS ARE TO HAVE NO MORE THAN A 1.20 (0.6%) SLOPE FOR THE LENGTH OF THE SIDEWALK AND NO MORE THAN A 1.50 (0.75%) SLOPE FOR THE WIDTH OF THE SIDEWALK.
  19. IF CONTRACTOR NOTICED ANY UNDESIRABLES IN ANY OF THESE SLOPE REQUIREMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNER'S ENGINEER PRIOR TO POURING ANY CONCRETE.
  20. PRIOR TO FINAL PROJECT ACCEPTANCE, PROVIDE AN AS-BUILT SURVEY OF ALL UTILITY SYSTEMS AND STORM SEWERS.
  21. ANY AND ALL LANDSCAPING AND EXISTING TREES & SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR USING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

**GRADING & DRAINAGE KEY NOTES**

- (3) FLARED END SECTION
- (B) RIP-RAP OUTLET PROTECTION (SEE EROSION CONTROL PLAN)
- (A) PROVIDE SMOOTH PAVING TRANSITION

- EROSION CONTROL KEYNOTES**
- (CD) CHECK DAM
  - (CA) GRAVEL CONSTRUCTION ENTRANCE
  - (AA) SILT FENCE COMBINATION FENCE, SEE TREE FENCE DETAIL
  - (AD) TREE PROTECTION FENCE
  - (CDB) TEMPORARY DIVERSION DITCH
  - (CDE) RIPRAP OUTLET PROTECTION
  - (CDL) TEMPORARY CHANNEL LINING
  - (CDI) INLET PROTECTION
  - (CDEI) PIPE INLET PROTECTION
  - (CAW) CONCRETE WASH-OUT AREA
  - (A) RAIN GAUGE AND PERMIT RECORDS BOX
  - LIMITS OF CONSTRUCTION
  - EXISTING CONTOUR
  - FINISHED CONTOUR
  - DUST CONTROL

**GENERAL NOTES FOR FLAGGER OPERATIONS**

1. THE FLAGGER SHALL BE TRAINED AND LICENSED BY THE STATE OF NORTH CAROLINA. THE FLAGGER SHALL BE WEARING THE APPROPRIATE FLUORESCENT VEST AND BEARING THE APPROPRIATE SIGNAGE AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. THE FLAGGER SHALL BE WEARING THE APPROPRIATE FLUORESCENT VEST AND BEARING THE APPROPRIATE SIGNAGE AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

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10. THE FLAGGER SHALL BE WEARING THE APPROPRIATE FLUORESCENT VEST AND BEARING THE APPROPRIATE SIGNAGE AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

**GENERAL NOTES FOR PILE-ON OPERATIONS**

1. THE PILE-ON OPERATOR SHALL BE TRAINED AND LICENSED BY THE STATE OF NORTH CAROLINA. THE PILE-ON OPERATOR SHALL BE WEARING THE APPROPRIATE FLUORESCENT VEST AND BEARING THE APPROPRIATE SIGNAGE AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

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10. THE PILE-ON OPERATOR SHALL BE WEARING THE APPROPRIATE FLUORESCENT VEST AND BEARING THE APPROPRIATE SIGNAGE AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

**TIMMONS GROUP**  
NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

**ROAD WIDENING PLAN - GRADING, DRAINAGE & EROSION CONTROL PLAN**

DATE: 04/05/2023  
DRAWN BY: L. BARVES  
CHECKED BY: G. FRANK  
SCALE: AS SHOWN

JOB NO. 54832  
SHEET NO. C7.1

**REVISION DESCRIPTION**

1. 04/05/2023: ISSUED FOR PERMIT REVIEW

2. 04/05/2023: REVISIONS TO EROSION CONTROL PLAN

3. 04/05/2023: REVISIONS TO DRAINAGE PLAN

4. 04/05/2023: REVISIONS TO GRADING PLAN





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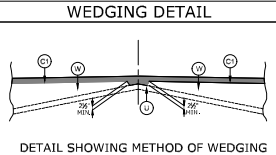
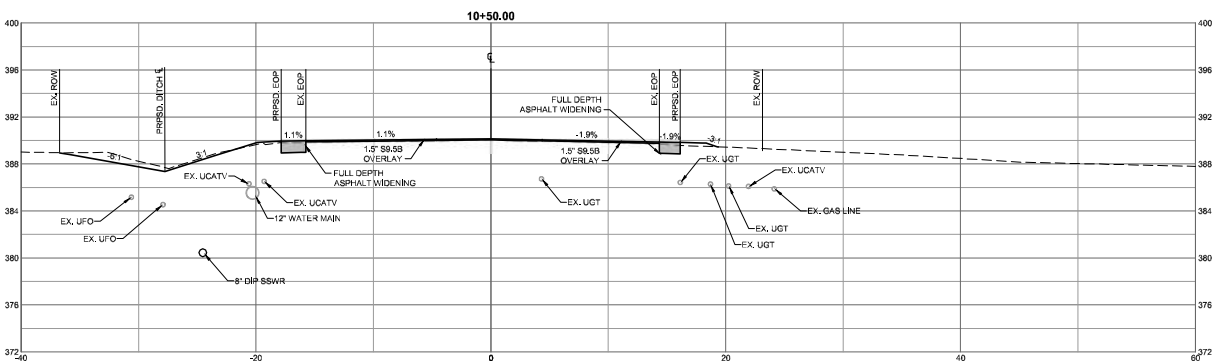
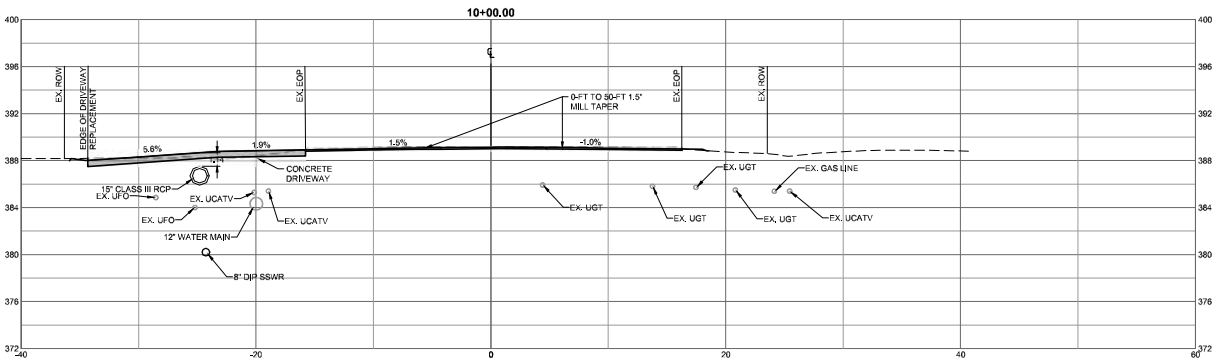
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07/07/2023	ADDED TOWN OF ROLESVILLE COMMENTS

DATE: 04/05/2023  
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 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
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**JONES DAIRY STORAGE FACILITY**  
 NORTH CAROLINA LICENSE NO. C-1652  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY ROAD - CROSS SECTIONS STA. 10+00 - 10+50**

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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
U	EXISTING PAVEMENT

NOTE: MILL OR OVERLAY EXISTING PAVEMENT AS NECESSARY TO ACHIEVE REQUIRED CROSS SLOPE PER CROSS SECTIONS AND SUPERELEVATION TRANSITIONS. BUILD UP WITH ASPHALT CONCRETE INTERMEDIATE TYPE 118.0C AT VARIABLE DEPTH. DEPENDING ON EXISTING CIRCUMSTANCES, REFER TO NC DOT ROAD DESIGN MANUAL FOR MINIMUM PAVEMENT LIFTS AND WEDGING REQUIREMENTS.



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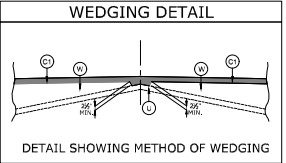
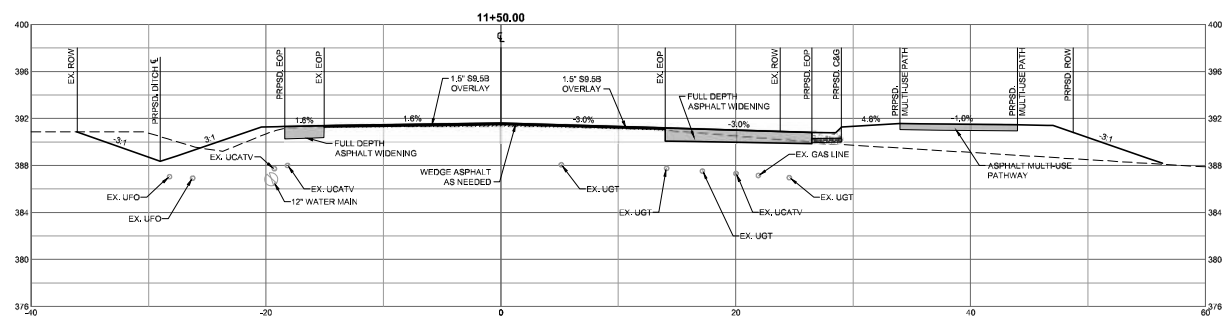
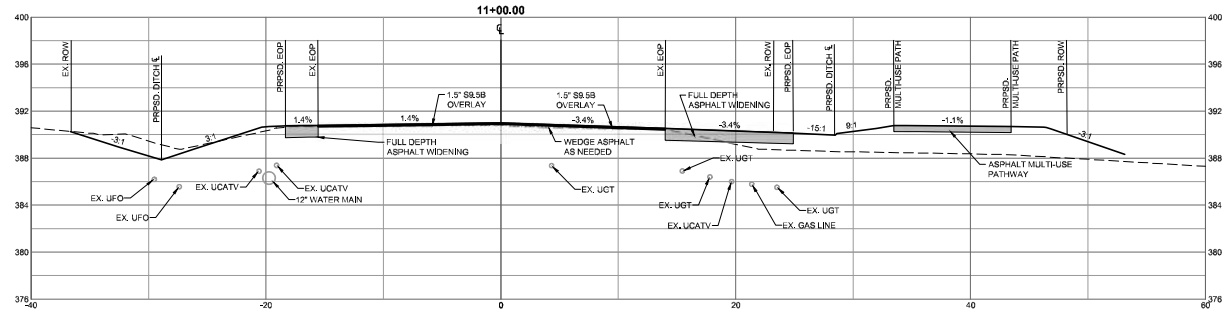
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 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY ROAD - CROSS SECTIONS STA. 11+00 - 11+50**

JOB NO.  
**54832**  
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
U	EXISTING PAVEMENT



3:33:00 PM 04/05/2023 54832-C7.3 (Sheet) - Model: 04/05/2023 11:59 AM by: l.barnes

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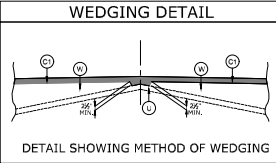
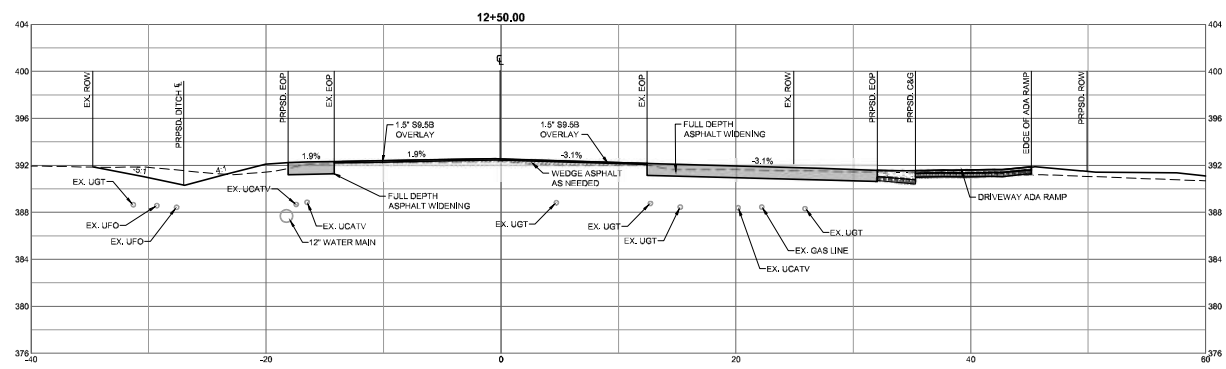
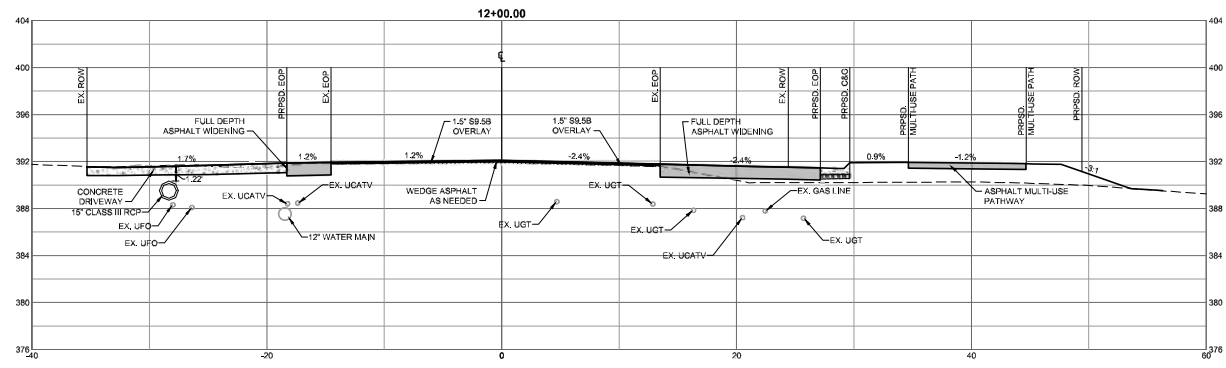
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07/07/2023	ADDED SOUTH OF ROLESVILLE COMMENTS

DATE: 04/05/2023  
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 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

**TIMMONS GROUP**  
 NORTH CAROLINA LICENSE NO. C-1652  
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S&SC.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S&SC.
U	EXISTING PAVEMENT



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 06/07/2023 ADDED TOWN OF ROLESVILLE COMMENTS  
 07/07/2023 ADDED TOWN OF ROLESVILLE COMMENTS  
 07/10/2023 ADDED TOWN OF ROLESVILLE COMMENTS

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 L. BARNES

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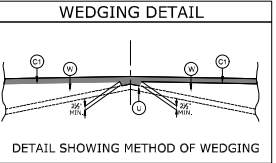
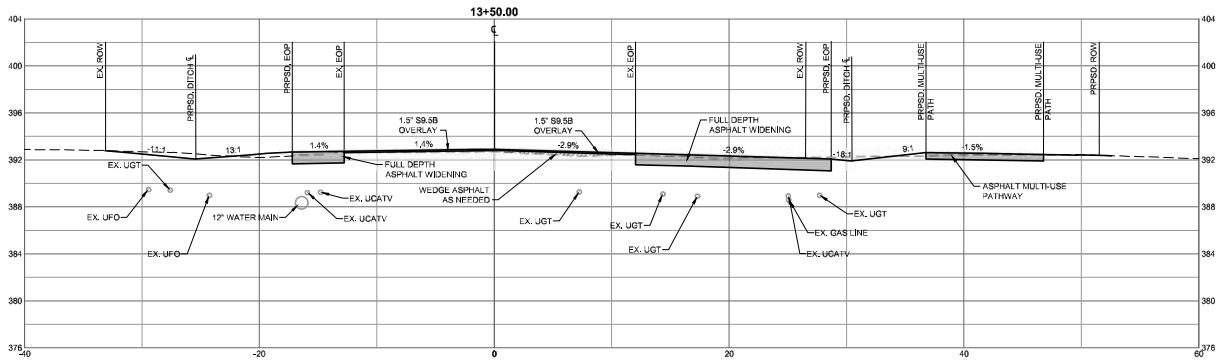
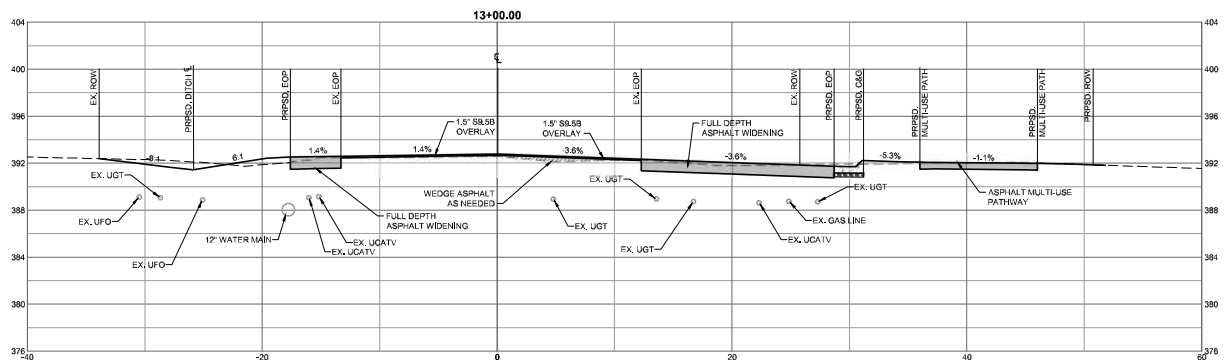
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# TIMMONS GROUP

**JONES DAIRY STORAGE FACILITY**  
 NORTH CAROLINA LICENSE NO. C-1652  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY ROAD - CROSS SECTIONS STA. 13+00 - 13+50**

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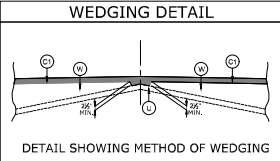
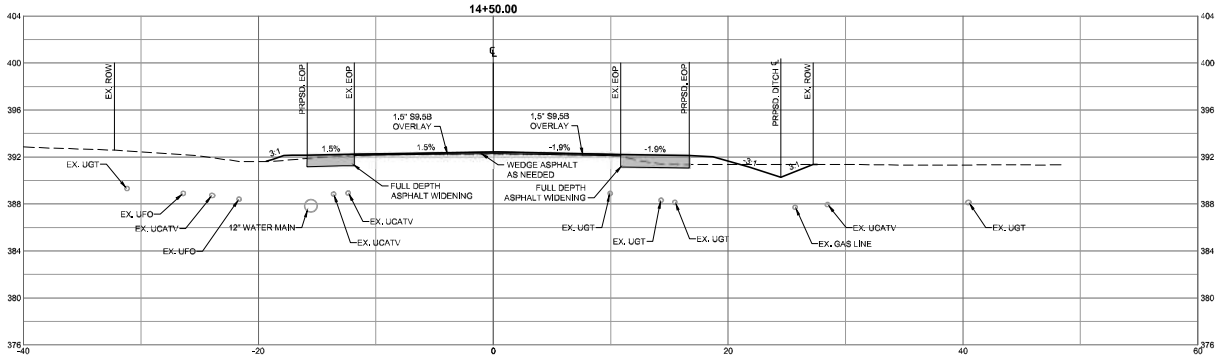
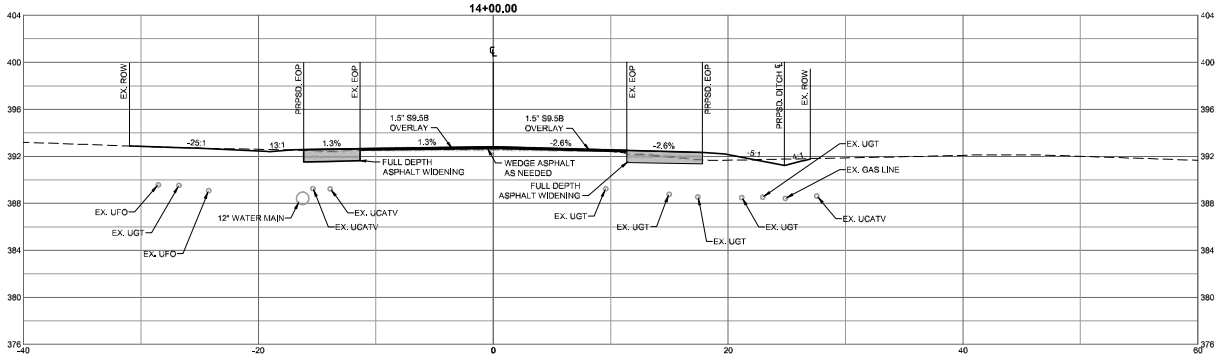
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S&SC.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S&SC.
U	EXISTING PAVEMENT



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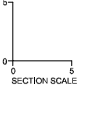


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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5\"/>
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
U	EXISTING PAVEMENT



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07/01/2022	ADAPTED TO TOWN OF ROLESVILLE COMMENTS
04/05/2023	

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**G. FRANK**  
 CHECKED BY  
**G. FRANK**  
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# TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-16572

## JONES DAIRY STORAGE FACILITY

TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
 JONES DAIRY ROAD - CROSS SECTIONS STA. 14+00 - 14+50

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07/10/2023	ADMITTED TOWN OF ROLESVILLE COMMENTS

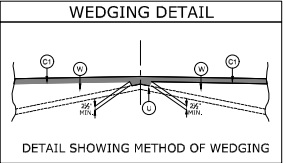
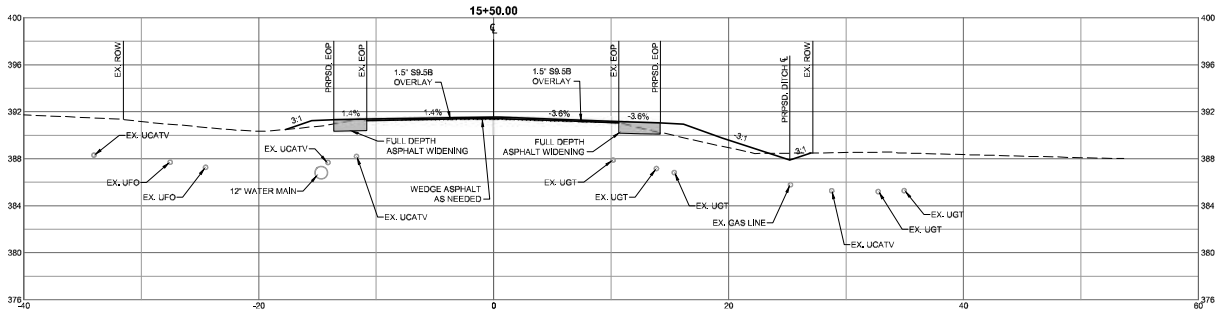
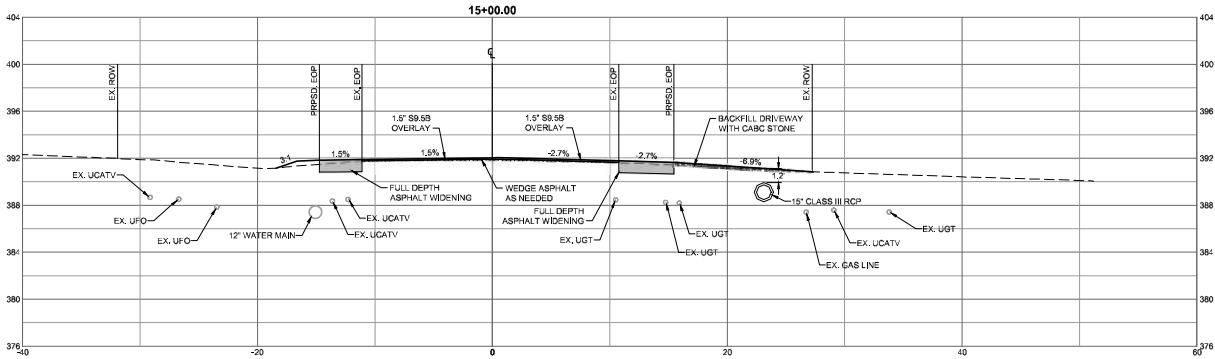
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 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

# TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY ROAD - CROSS SECTIONS STA. 15+00 - 15+50**

JOB NO. 54832  
 SHEET NO. C7.7



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C.
U	EXISTING PAVEMENT

NOTE: MILL OR OVERLAY EXISTING PAVEMENT AS NECESSARY TO ACHIEVE REQUIRED CROSS SLOPE PER CROSS SECTIONS AND SUPERELEVATION TRANSITIONS. BUILD UP WITH ASPHALT CONCRETE INTERMEDIATE TYPE 18.0c AT VARIABLE DEPTH DEPENDING ON EXISTING CIRCUMSTANCES. REFER TO NDOT ROAD DESIGN MANUAL FOR MINIMUM PAVEMENT LIFTS AND WEDGING REQUIREMENTS.



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07/01/2023	ADMITTED TOWN OF ROLESVILLE COMMENTS
07/01/2023	ADMITTED TOWN OF ROLESVILLE COMMENTS

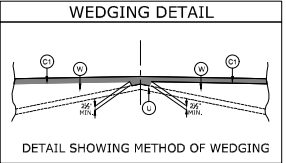
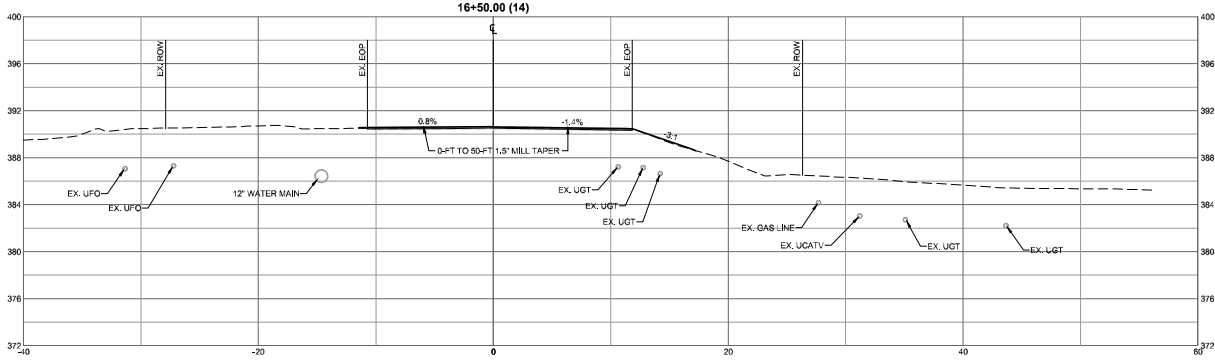
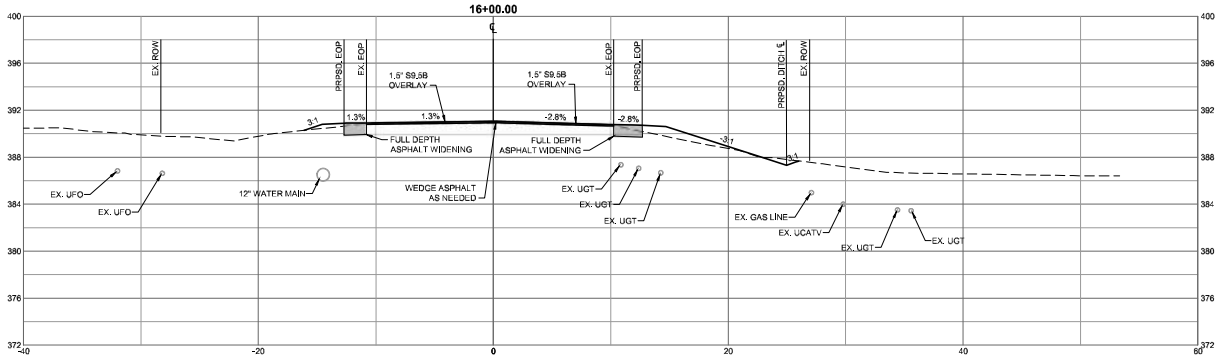
DATE: 04/05/2023  
 DRAWN BY: L. BARNES  
 DESIGNED BY: G. FRANK  
 CHECKED BY: G. FRANK  
 SCALE: AS SHOWN

# TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652  
**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY ROAD - CROSS SECTIONS STA. 16+00 - 16+50**

JOB NO. 54832  
 SHEET NO. C7.8

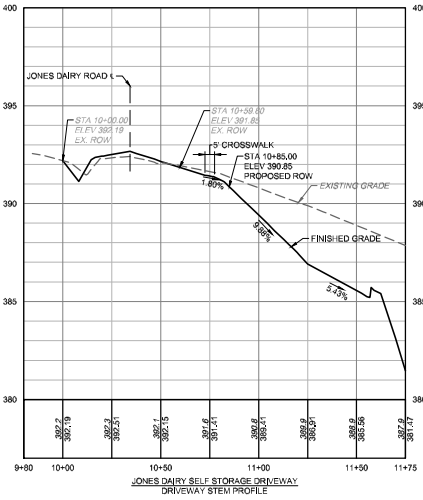
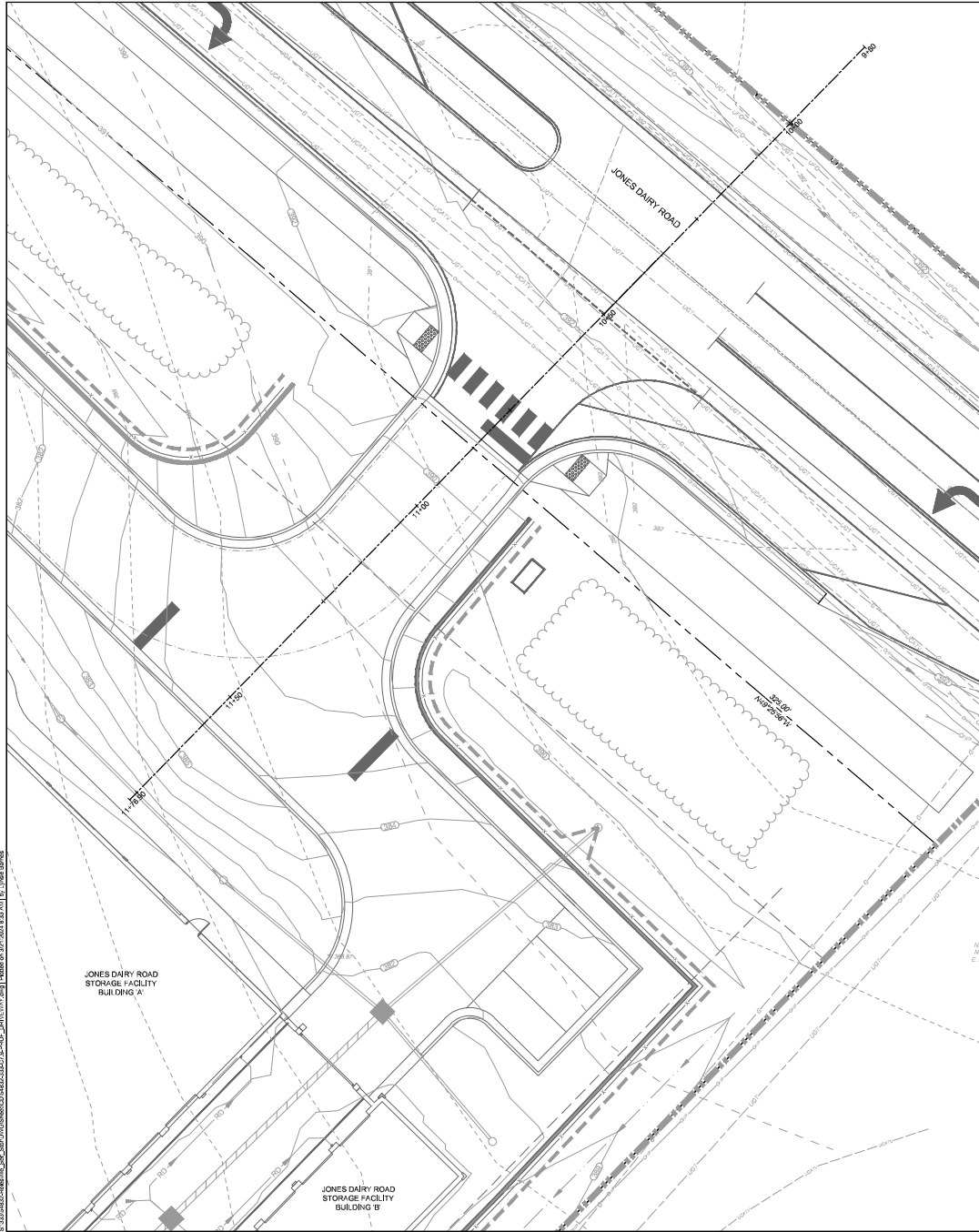
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S85C.
W	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S85C.
U	EXISTING PAVEMENT

S:\333\4832\Jones Dairy Storage\Drawings\16+00 to 16+50.dwg (16+00 to 16+50) by: L. Barnes





THIS DRAWING PREPARED AT THE  
**RALEIGH OFFICE**  
 1600 W. GARDEN CITY BLVD., SUITE 100  
 RALEIGH, NC 27603-3422

DATE	REVISION DESCRIPTION
06/07/2023	ADAPTED TO ADDRESS COMMENTS
07/07/2023	ADAPTED TO ADDRESS COMMENTS
07/10/2023	ADAPTED TO ADDRESS COMMENTS

YOUR VISION ACHIEVED THROUGH OURS.

DATE	04/05/2023
DRAWN BY	L. BARNES
DESIGNED BY	G. FRANK
CHECKED BY	G. FRANK
SCALE	AS SHOWN

**TIMMONS GROUP**

NORTH CAROLINA LICENSE NO. C-1652

**JONES DAIRY STORAGE FACILITY**  
 TOWN OF ROLESVILLE - WAKE COUNTY - NORTH CAROLINA  
 JONES DAIRY ROAD DRIVEWAY STEM PROFILE

JOB NO. 54832  
 SHEET NO. C7.9

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# JONES DAIRY STORAGE FACILITY NCDOT HYDRAULIC CALCULATIONS



JANUARY 25, 2023

## PREPARED BY:

Garrett Frank, PLA, PE

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Raleigh, North Carolina 27607

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919.859.5663 fax

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[www.timmons.com](http://www.timmons.com)



## RIP RAP OUTLET DESIGN

**OUTLET PROTECTION  
DESIGN**

**DATE**

07/31/2023

**PROJECT NAME**

Rolesville Self Storage Facility

**PROJECT NO**

54832

**LOCATION**

Rolesville, NC

**BY**

LMB



**RIPRAP FES F1**

Pipe Diameter: 15.00 in  
 Upper Invert: 389.00  
 Lower Invert: 388.75  
 Pipe Length: 17.45 ft  
 Pipe Slope: 0.014  
 Pipe Material: RCP

\*Discharge from Storm Sewers

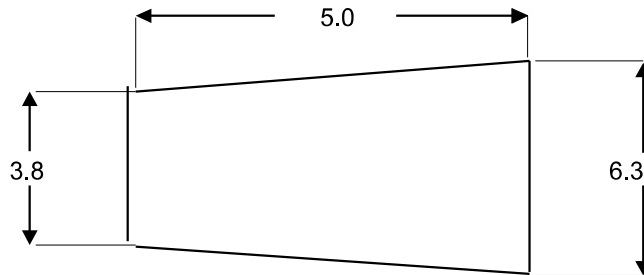
Discharge: 0.47 cfs

Q<sub>10</sub> = 0.47 cfs  
 Q<sub>full</sub> = 7.74 cfs  
 V<sub>full</sub> = 6.31 fps

Q<sub>10</sub>/Q<sub>full</sub> = 0.06  
 V/V<sub>full</sub> = 0.52  
 V = 3.29 fps

Dissipator Dimensions \*

Zone = 1  
 Stone Filling Class = A  
 Entry Width ( 3 X D<sub>0</sub> ) = 3.8 ft  
 Length ( 4 X D<sub>0</sub> ) = 5.0 ft  
 Width (La + D<sub>0</sub>) = 6.3 ft  
 Min. Thickness = 12 inches  
 Stone Diameter (D<sub>50</sub>) = 3 inches



\* All units are in feet

\*\* Dissipator pad designed for full flow of pipe

**OUTLET PROTECTION  
DESIGN**

**DATE**

07/31/2023

**PROJECT NAME**

Rolesville Self Storage Facility

**PROJECT NO**

54832

**LOCATION**

Rolesville, NC

**BY**

LMB



**RIPRAP FES F3**

Pipe Diameter: 15.00 in  
 Upper Invert: 389.00  
 Lower Invert: 388.50  
 Pipe Length: 31.45 ft  
 Pipe Slope: 0.016  
 Pipe Material: RCP

\*Discharge from Storm Sewers

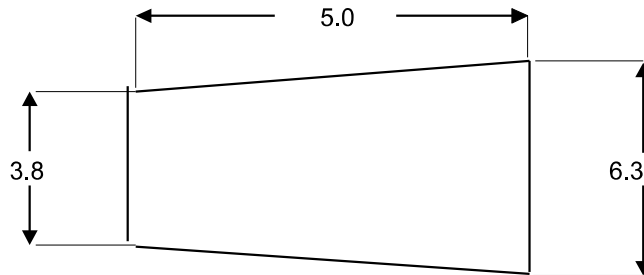
Discharge: 0.32 cfs

Q<sub>10</sub> = 0.32 cfs  
 Q<sub>full</sub> = 8.16 cfs  
 V<sub>full</sub> = 6.65 fps

Q<sub>10</sub>/Q<sub>full</sub> = 0.04  
 V/V<sub>full</sub> = 0.42  
 V = 2.81 fps

Dissipator Dimensions \*

Zone = 1  
 Stone Filling Class = A  
 Entry Width ( 3 X D<sub>0</sub> ) = 3.8 ft  
 Length ( 4 X D<sub>0</sub> ) = 5.0 ft  
 Width (La + D<sub>0</sub>) = 6.3 ft  
 Min. Thickness = 12 inches  
 Stone Diameter (D<sub>50</sub>) = 3 inches



\* All units are in feet

\*\* Dissipator pad designed for full flow of pipe



**OUTLET PROTECTION  
DESIGN**

**DATE**

01/19/2024

**PROJECT NAME**

Rolesville Self Storage Facility

**PROJECT NO**

54832

**LOCATION**

Rolesville, NC

**BY**

LMB



**RIPRAP FES F5**

Pipe Diameter: 15.00 in  
 Upper Invert: 387.00  
 Lower Invert: 386.40  
 Pipe Length: 20.35 ft  
 Pipe Slope: 0.029  
 Pipe Material: RCP

\*Discharge from Storm Sewers

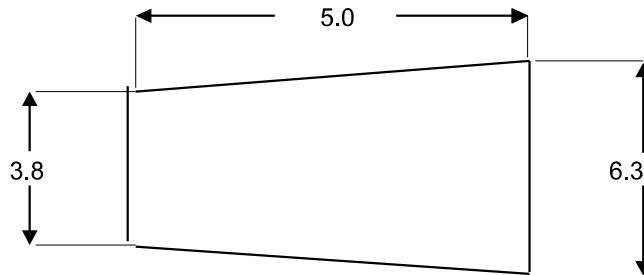
Discharge: 1.70 cfs

Q<sub>10</sub> = 1.70 cfs  
 Q<sub>full</sub> = 11.11 cfs  
 V<sub>full</sub> = 9.05 fps

Q<sub>10</sub>/Q<sub>full</sub> = 0.15  
 V/V<sub>full</sub> = 0.72  
 V = 6.51 fps

Dissipator Dimensions \*

Zone = 1  
 Stone Filling Class = A  
 Entry Width ( 3 X D<sub>0</sub> ) = 3.8 ft  
 Length ( 4 X D<sub>0</sub> ) = 5.0 ft  
 Width (La + D<sub>0</sub>) = 6.3 ft  
 Min. Thickness = 12 inches  
 Stone Diameter (D<sub>50</sub>) = 3 inches



\* All units are in feet

\*\* Dissipator pad designed for full flow of pipe

**OUTLET PROTECTION  
DESIGN**

**DATE**

01/19/2024

**PROJECT NAME**

Rolesville Self Storage Facility

**PROJECT NO**

54832

**LOCATION**

Rolesville, NC

**BY**

LMB



**RIPRAP FES F7**

Pipe Diameter: 15.00 in  
 Upper Invert: 385.00  
 Lower Invert: 384.50  
 Pipe Length: 24.50 ft  
 Pipe Slope: 0.020  
 Pipe Material: RCP

\*Discharge from Storm Sewers

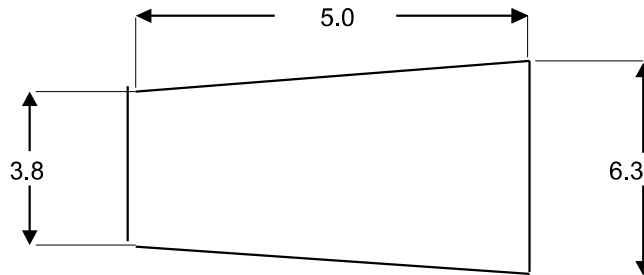
Discharge: 1.90 cfs

Q<sub>10</sub> = 1.90 cfs  
 Q<sub>full</sub> = 9.24 cfs  
 V<sub>full</sub> = 7.53 fps

Q<sub>10</sub>/Q<sub>full</sub> = 0.21  
 V/V<sub>full</sub> = 0.78  
 V = 5.88 fps

Dissipator Dimensions \*

Zone = 1  
 Stone Filling Class = A  
 Entry Width ( 3 X D<sub>0</sub> ) = 3.8 ft  
 Length ( 4 X D<sub>0</sub> ) = 5.0 ft  
 Width (La + D<sub>0</sub>) = 6.3 ft  
 Min. Thickness = 12 inches  
 Stone Diameter (D<sub>50</sub>) = 3 inches



\* All units are in feet

\*\* Dissipator pad designed for full flow of pipe

## CULVERT DESIGN

# Culvert Report

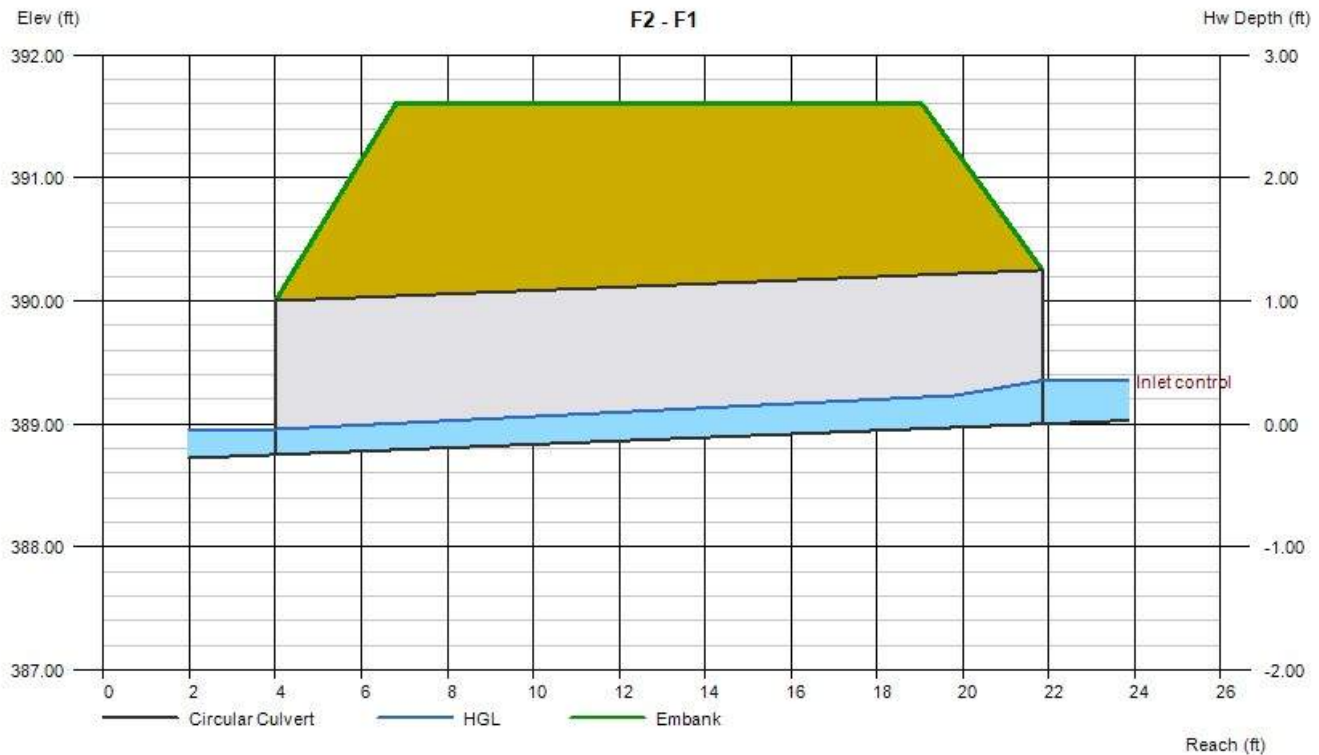
## F2 - F1

Invert Elev Dn (ft)	= 388.75
Pipe Length (ft)	= 17.85
Slope (%)	= 1.40
Invert Elev Up (ft)	= 389.00
Rise (in)	= 15.0
Shape	= Circular
Span (in)	= 15.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

<b>Embankment</b>	
Top Elevation (ft)	= 391.60
Top Width (ft)	= 12.25
Crest Width (ft)	= 12.25

<b>Calculations</b>	
Qmin (cfs)	= 0.47
Qmax (cfs)	= 0.47
Tailwater Elev (ft)	= Normal

<b>Highlighted</b>	
Qtotal (cfs)	= 0.47
Qpipe (cfs)	= 0.47
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 3.57
Veloc Up (ft/s)	= 2.45
HGL Dn (ft)	= 388.96
HGL Up (ft)	= 389.27
Hw Elev (ft)	= 389.35
Hw/D (ft)	= 0.28
Flow Regime	= Inlet Control



# Culvert Report

## F4 - F3

Invert Elev Dn (ft)	= 388.25
Pipe Length (ft)	= 31.45
Slope (%)	= 1.59
Invert Elev Up (ft)	= 388.75
Rise (in)	= 15.0
Shape	= Circular
Span (in)	= 15.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

### Embankment

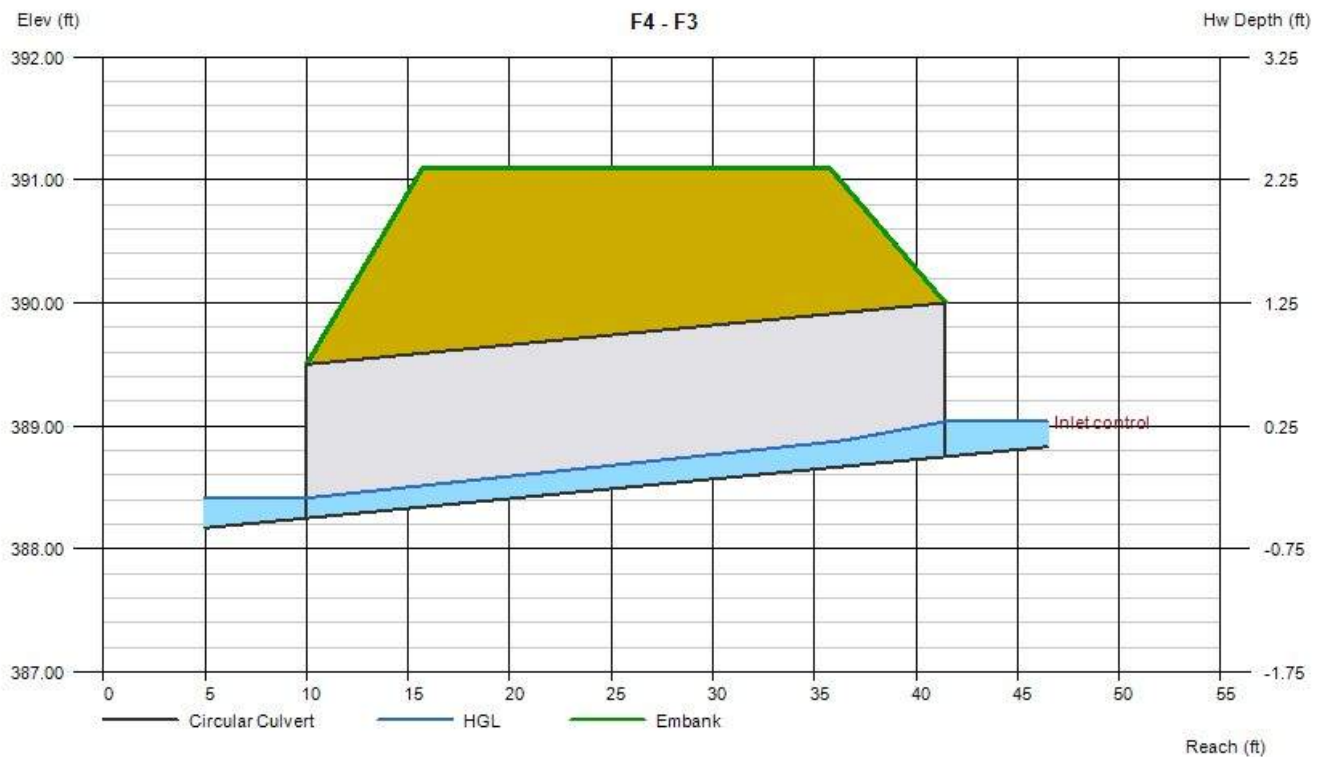
Top Elevation (ft)	= 391.10
Top Width (ft)	= 20.00
Crest Width (ft)	= 20.00

### Calculations

Qmin (cfs)	= 0.32
Qmax (cfs)	= 0.32
Tailwater Elev (ft)	= Normal

### Highlighted

Qtotal (cfs)	= 0.32
Qpipe (cfs)	= 0.32
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 3.38
Veloc Up (ft/s)	= 2.21
HGL Dn (ft)	= 388.41
HGL Up (ft)	= 388.97
Hw Elev (ft)	= 389.04
Hw/D (ft)	= 0.23
Flow Regime	= Inlet Control



# Culvert Report

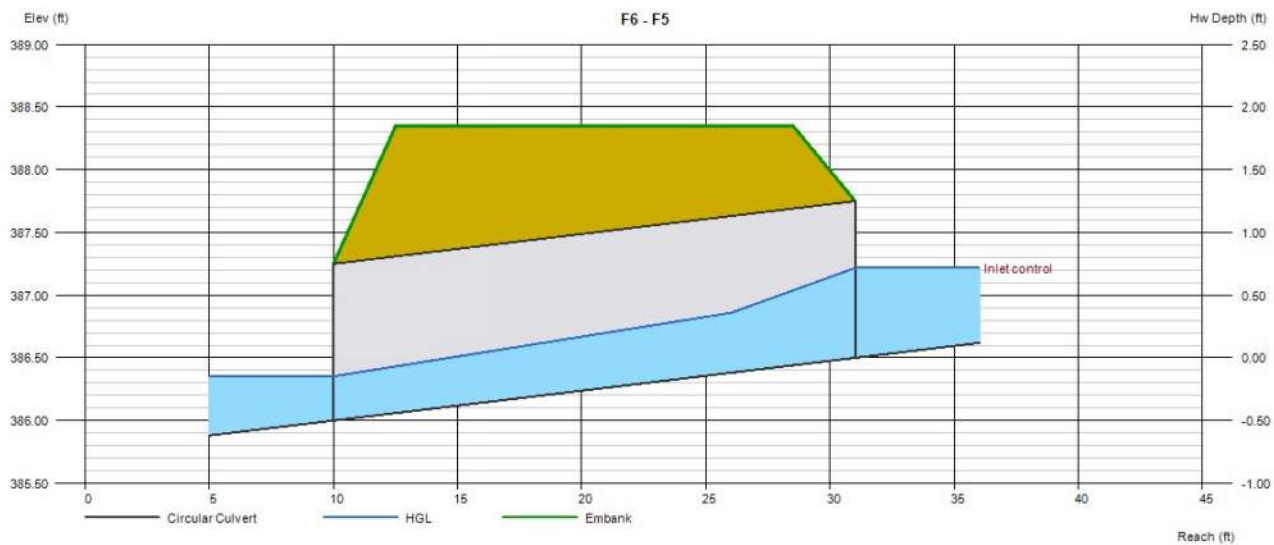
## F6 - F5

Invert Elev Dn (ft)	= 386.00
Pipe Length (ft)	= 21.01
Slope (%)	= 2.38
Invert Elev Up (ft)	= 386.50
Rise (in)	= 15.0
Shape	= Circular
Span (in)	= 15.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

<b>Embankment</b>	
Top Elevation (ft)	= 388.35
Top Width (ft)	= 16.00
Crest Width (ft)	= 16.00

<b>Calculations</b>	
Qmin (cfs)	= 1.70
Qmax (cfs)	= 1.70
Tailwater Elev (ft)	= Normal

<b>Highlighted</b>	
Qtotal (cfs)	= 1.70
Qpipe (cfs)	= 1.70
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 5.98
Veloc Up (ft/s)	= 3.55
HGL Dn (ft)	= 386.35
HGL Up (ft)	= 387.02
Hw Elev (ft)	= 387.22
Hw/D (ft)	= 0.57
Flow Regime	= Inlet Control



# Culvert Report

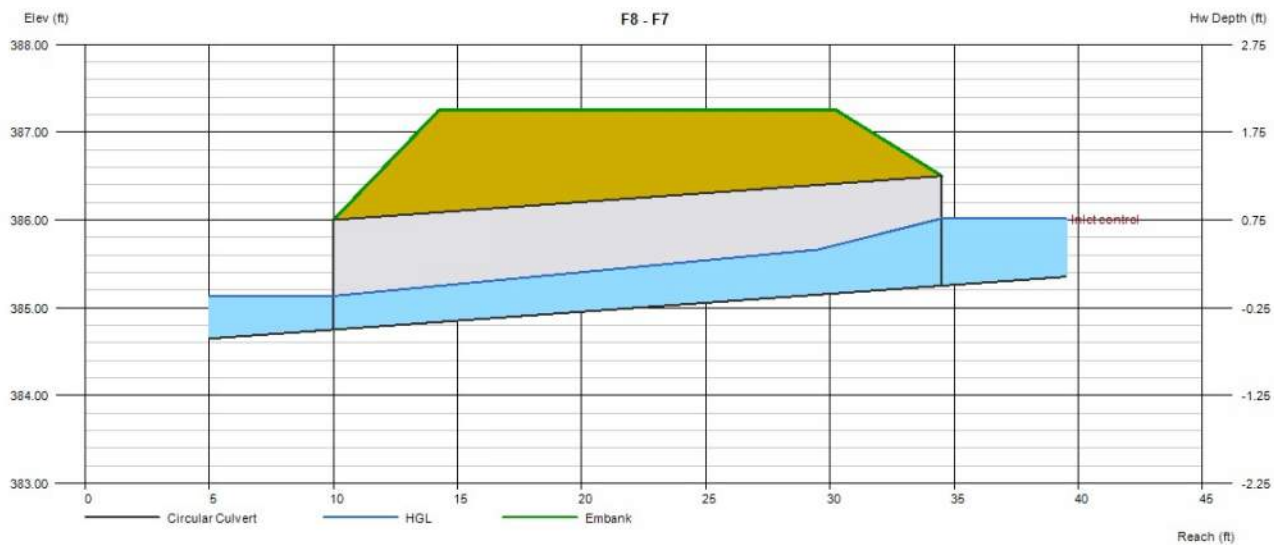
## F8 - F7

Invert Elev Dn (ft)	= 384.75
Pipe Length (ft)	= 24.50
Slope (%)	= 2.04
Invert Elev Up (ft)	= 385.25
Rise (in)	= 15.0
Shape	= Circular
Span (in)	= 15.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

<b>Embankment</b>	
Top Elevation (ft)	= 387.25
Top Width (ft)	= 16.00
Crest Width (ft)	= 16.00

<b>Calculations</b>	
Qmin (cfs)	= 1.89
Qmax (cfs)	= 1.89
Tailwater Elev (ft)	= Normal

<b>Highlighted</b>	
Qtotal (cfs)	= 1.89
Qpipe (cfs)	= 1.89
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 5.91
Veloc Up (ft/s)	= 3.66
HGL Dn (ft)	= 385.13
HGL Up (ft)	= 385.80
Hw Elev (ft)	= 386.02
Hw/D (ft)	= 0.61
Flow Regime	= Inlet Control



CHANNEL DESIGN



**DITCH NAME**  
**F2**  
**CALCULATED BY**  
 Lysie Barnes



**PROJECT NAME**  
**Jones Dairy Storage**  
**PROJECT NUMBER**  
**54832**

**Drainage Ditch Design (Velocity Constraint)**

**PERMANENT DIVERSION DITCH: F2**

This worksheet is designed to determine channel lining based on flow and ditch geometry (base width, side slope, & channel slope). This program determines depth of flow, velocity and tractive force assuming  $n=0.03$  for grass or rip rap ( $n$  can be varied if desired). (Vary depth until  $z$  actual equals  $z$  required;  $v$  &  $t$  will be correct; select appropriate lining based on tractive force)

**Watershed Data**

Area (A) = **0.17** (Acres)  
 Coef. (C) = **0.60** (Dimensionless)  
 Inte. (I) = **7.19** (in/hr)  
 Flow (Q<sub>10</sub>) = **0.7** (cfs)

**Known Quantities**

Line channel with: **6** " rip-rap (Assume 6" even if using grass)  
 Manning n = **0.030** (Dimensionless) Ditch Length = **122** LF  
 Slope = **0.030** (ft/ft) Highest Elevation = **392.6**  
 Z Required = **0.08** Ratio Lowest Elevation = **389**  
 Side Slope (M) = **3** :1

**Variable Quantities (Ditch Width & Depth)**

Flow Depth (Y) = **0.32** ft 3.8 in  
 Bottom Width (B) = **0.00** ft 0.0 in  
 Freeboard = **0.00** ft 0.0 in

**Compute Tractive Force**

$T=YxDxS$   
 $T = 0.59$  LB/SF  
 Y = Weight of water (62.4 LB/CUFT)  
 D=Depth of flow in channel (ft)  
 S=Slope of channel (ft/ft)

General Lining	LB/SF
Jute Net	0.45
Curled Mat	1.55
Class A (4"@9"THK)	2.00
Class B (8"@18"THK)	3.50
Class I (12"@22"THK)	5.00
Class II (18"@30"THK)	7.50

North American Green Lining	LB/SF
S75	1.55
S150	1.75
SC150	2.10
C125	2.25
P300	8.00

**Determine If Z Actual Is Greater Than Z Required**

New A = 0.31 SF  
 New P = 2.02 Wetted perimeter  
 New R = 0.15 Hydraulic radius  
 Z Actual = **0.09** Must be greater than z required=> **0.08** **Okay**  
 New V = 2.43 fps

**Minimum Design Geometry**

Permanent Liner: **Grass** **3.50** LB/SF > 0.59 LB/SF **Okay**  
 Temporary Liner: **Curled Mat** **1.55** LB/SF > 0.59 LB/SF **Okay**

Top Width = 1.92 ft  
 Min. Ditch Depth = 0.32 ft  
 Bottom Width (B) = 0 ft  
 Flow Depth (Y) = 0.32 ft  
 Side Slope = 3:1

Ditch Geometry				
Min. Ditch Depth (ft)	Bottom Width (ft)	Flow Depth (ft)	Top Width (ft)	Side Slope
0.32	0.00	0.32	1.92	3:1

**Ditch Liner**

Permanent Liner:Grass,Temporary Liner:Curled Mat

**\*RED IS USER INPUT**

**DITCH NAME**  
F4  
**CALCULATED BY**  
Lynsie Barnes



**PROJECT NAME**  
Jones Dairy Storage  
**PROJECT NUMBER**  
54832

**Drainage Ditch Design (Velocity Constraint)**

**PERMANENT DIVERSION DITCH: F4**

This worksheet is designed to determine channel lining based on flow and ditch geometry (base width, side slope, & channel slope). This program determines depth of flow, velocity and tractive force assuming  $n=0.03$  for grass or rip rap ( $n$  can be varied if desired). (Vary depth until  $z$  actual equals  $z$  required;  $v$  &  $t$  will be correct; select appropriate lining based on tractive force)

**Watershed Data**

Area (A) = **0.09** (Acres)  
Coef. (C) = **0.60** (Dimensionless)  
Inte. (I) = **7.19** (in/hr)  
Flow ( $Q_{10}$ ) = **0.4** (cfs)

**Known Quantities**

Line channel with: **6** " rip-rap (Assume 6" even if using grass)  
Manning  $n$  = **0.030** (Dimensionless) Ditch Length = **132** LF  
Slope = **0.026** (ft/ft) Highest Elevation = **392.2**  
Z Required = **0.05** Ratio Lowest Elevation = **388.75**  
Side Slope (M) = **3** :1

**Variable Quantities (Ditch Width & Depth)**

Flow Depth (Y) = **0.27** ft 3.2 in  
Bottom Width (B) = **0.00** ft 0.0 in  
Freeboard = **0.00** ft 0.0 in

**Compute Tractive Force**

$T=YxDxS$  Y = Weight of water (62.4 LB/CUFT)  
T = **0.44** LB/SF D=Depth of flow in channel (ft)  
S=Slope of channel (ft/ft)

General Lining	LB/SF
Jute Net	0.45
Curled Mat	1.55
Class A (4"@9"THK)	2.00
Class B (8"@18"THK)	3.50
Class I (12"@22"THK)	5.00
Class II (18"@30"THK)	7.50

North American Green Lining	LB/SF
S75	1.55
S150	1.75
SC150	2.10
C125	2.25
P300	8.00

**Determine If Z Actual Is Greater Than Z Required**

New A = 0.22 SF  
New P = 1.70 Wetted perimeter  
New R = 0.13 Hydraulic radius  
Z Actual = **0.06** Must be greater than  $z$  required=> **0.05** **Okay**  
New V = 2.04 fps

**Minimum Design Geometry**

Permanent Liner: **Grass** **3.50** LB/SF > 0.44 LB/SF **Okay**  
Temporary Liner: **Curled Mat** **1.55** LB/SF > 0.44 LB/SF **Okay**

Top Width = 1.61 ft  
Min. Ditch Depth = 0.27 ft  
Bottom Width (B) = 0 ft  
Flow Depth (Y) = 0.27 ft  
Side Slope = 3:1

Ditch Geometry				
Min. Ditch Depth (ft)	Bottom Width (ft)	Flow Depth (ft)	Top Width (ft)	Side Slope
0.27	0.00	0.27	1.61	3:1

**Ditch Liner**

Permanent Liner:Grass,Temporary Liner:Curled Mat

**\*RED IS USER INPUT**

**DITCH NAME**  
F6  
**CALCULATED BY**  
Lynsie Barnes



**PROJECT NAME**  
Jones Dairy Storage  
**PROJECT NUMBER**  
54832

**Drainage Ditch Design (Velocity Constraint)**

**PERMANENT DIVERSION DITCH: F6**

This worksheet is designed to determine channel lining based on flow and ditch geometry (base width, side slope, & channel slope). This program determines depth of flow, velocity and tractive force assuming  $n=0.03$  for grass or rip rap ( $n$  can be varied if desired). (Vary depth until  $z$  actual equals  $z$  required;  $v$  &  $t$  will be correct; select appropriate lining based on tractive force)

**Watershed Data**

Area (A) = **0.39** (Acres)  
Coef. (C) = **0.60** (Dimensionless)  
Inte. (I) = **7.19** (in/hr)  
Flow ( $Q_{10}$ ) = **1.7** (cfs)

**Known Quantities**

Line channel with: **6** " rip-rap (Assume 6" even if using grass)  
Manning  $n$  = **0.030** (Dimensionless) Ditch Length = **170** LF  
Slope = **0.010** (ft/ft) Highest Elevation = **388.75**  
Z Required = **0.34** Ratio Lowest Elevation = **387**  
Side Slope (M) = **3** :1

**Variable Quantities (Ditch Width & Depth)**

Flow Depth (Y) = **0.54** ft 6.5 in  
Bottom Width (B) = **0.00** ft 0.0 in  
Freeboard = **0.00** ft 0.0 in

**Compute Tractive Force**

$T=YxDxS$  Y = Weight of water (62.4 LB/CUFT)  
T = **0.35** LB/SF D=Depth of flow in channel (ft)  
S=Slope of channel (ft/ft)

General Lining	LB/SF
Jute Net	0.45
Curled Mat	1.55
Class A (4"@9"THK)	2.00
Class B (8"@18"THK)	3.50
Class I (12"@22"THK)	5.00
Class II (18"@30"THK)	7.50

North American Green Lining	LB/SF
S75	1.55
S150	1.75
SC150	2.10
C125	2.25
P300	8.00

**Determine If Z Actual Is Greater Than Z Required**

New A = **0.87** SF  
New P = **3.41** Wetted perimeter  
New R = **0.26** Hydraulic radius  
Z Actual = **0.35** Must be greater than  $z$  required=> **0.34** **Okay**  
New V = **2.03** fps

**Minimum Design Geometry**

Permanent Liner: **Grass** **3.50** LB/SF > 0.35 LB/SF **Okay**  
Temporary Liner: **Curled Mat** **1.55** LB/SF > 0.35 LB/SF **Okay**

Top Width = 3.23 ft  
Min. Ditch Depth = 0.54 ft  
Flow Depth (Y) = 0.54 ft  
Bottom Width (B) = 0 ft

Ditch Geometry				
Min. Ditch Depth (ft)	Bottom Width (ft)	Flow Depth (ft)	Top Width (ft)	Side Slope
0.54	0.00	0.54	3.23	3:1

**Ditch Liner**  
Permanent Liner:Grass,Temporary Liner:Curled Mat

**\*RED IS USER INPUT**

**DITCH NAME**  
F8  
**CALCULATED BY**  
Lynsie Barnes



**PROJECT NAME**  
Jones Dairy Storage  
**PROJECT NUMBER**  
54832

**Drainage Ditch Design (Velocity Constraint)**

**PERMANENT DIVERSION DITCH: F8**

This worksheet is designed to determine channel lining based on flow and ditch geometry (base width, side slope, & channel slope). This program determines depth of flow, velocity and tractive force assuming  $n=0.03$  for grass or rip rap ( $n$  can be varied if desired). (Vary depth until  $z$  actual equals  $z$  required;  $v$  &  $t$  will be correct; select appropriate lining based on tractive force)

**Watershed Data**

Area (A) = **0.44** (Acres)  
Coef. (C) = **0.60** (Dimensionless)  
Inte. (I) = **7.19** (in/hr)  
Flow ( $Q_{10}$ ) = **1.9** (cfs)

**Known Quantities**

Line channel with: **6** " rip-rap (Assume 6" even if using grass)  
Manning  $n$  = **0.030** (Dimensionless) Ditch Length = **30** LF  
Slope = **0.047** (ft/ft) Highest Elevation = **386.4**  
Z Required = **0.18** Ratio Lowest Elevation = **385**  
Side Slope (M) = **3** :1

**Variable Quantities (Ditch Width & Depth)**

Flow Depth (Y) = **0.43** ft 5.1 in  
Bottom Width (B) = **0.00** ft 0.0 in  
Freeboard = **0.00** ft 0.0 in

**Compute Tractive Force**

$T=YxDxS$  Y = Weight of water (62.4 LB/CUFT)  
T = **1.25** LB/SF D=Depth of flow in channel (ft)  
S=Slope of channel (ft/ft)

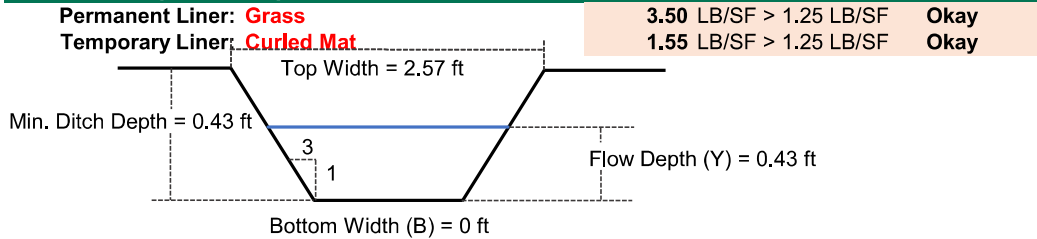
General Lining	LB/SF
Jute Net	0.45
Curled Mat	1.55
Class A (4"@9"THK)	2.00
Class B (8"@18"THK)	3.50
Class I (12"@22"THK)	5.00
Class II (18"@30"THK)	7.50

North American Green Lining	LB/SF
S75	1.55
S150	1.75
SC150	2.10
C125	2.25
P300	8.00

**Determine If Z Actual Is Greater Than Z Required**

New A = **0.55** SF  
New P = **2.71** Wetted perimeter  
New R = **0.20** Hydraulic radius  
Z Actual = **0.19** Must be greater than  $z$  required=> **0.18** **Okay**  
New V = **3.71** fps

**Minimum Design Geometry**



Ditch Geometry				
Min. Ditch Depth (ft)	Bottom Width (ft)	Flow Depth (ft)	Top Width (ft)	Side Slope
0.43	0.00	0.43	2.57	3:1

**Ditch Liner**  
Permanent Liner:Grass,Temporary Liner:Curled Mat

**\*RED IS USER INPUT**

## GUTTER SPREAD

# Channel Report

## Gutter Spread Plan East

### Gutter

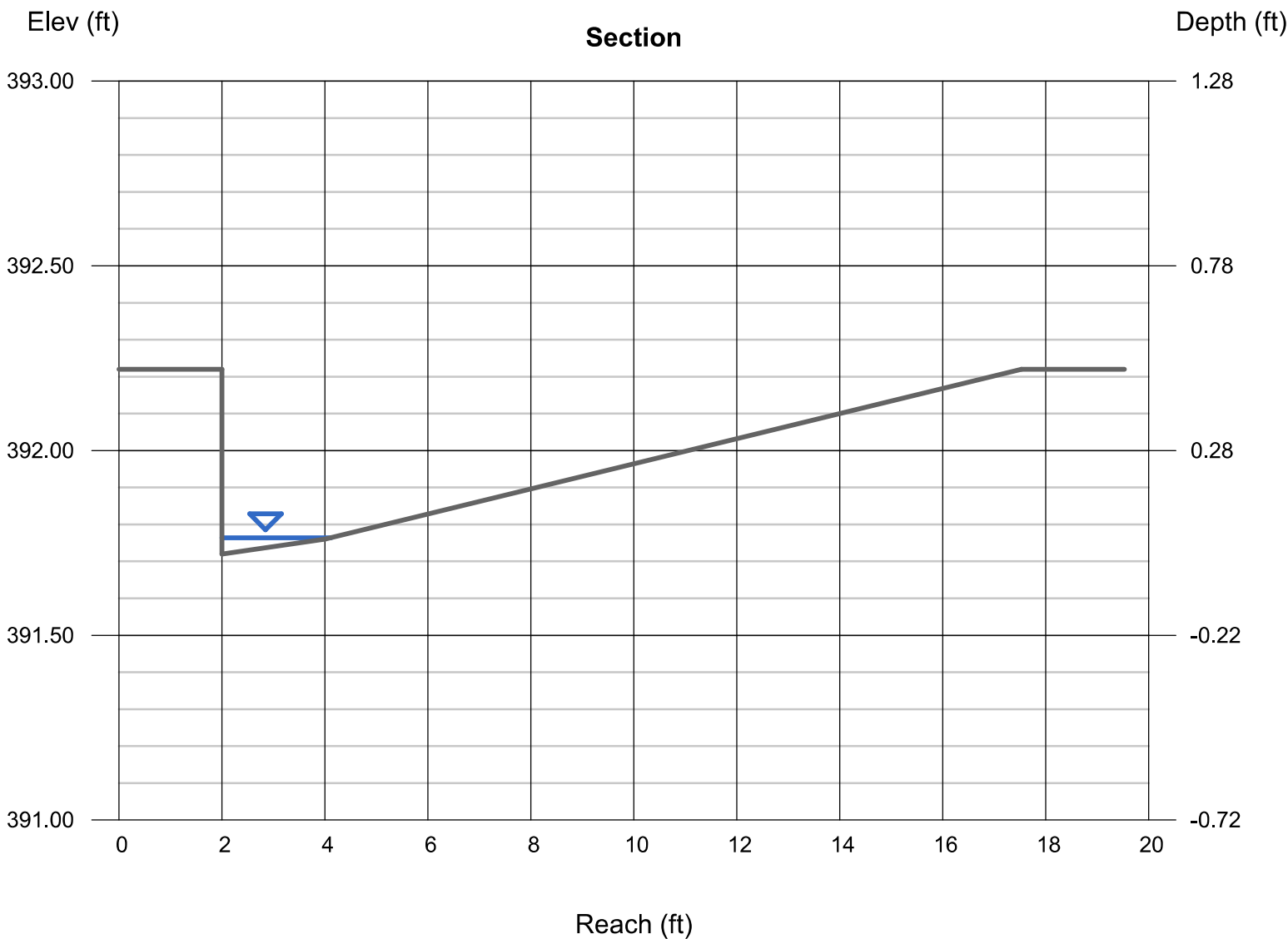
Cross SI, Sx (ft/ft) = 0.034  
Cross SI, Sw (ft/ft) = 0.020  
Gutter Width (ft) = 2.00  
Invert Elev (ft) = 391.72  
Slope (%) = 1.50  
N-Value = 0.013

### Highlighted

Depth (ft) = 0.04  
Q (cfs) = 0.060  
Area (sqft) = 0.05  
Velocity (ft/s) = 1.24  
Wetted Perim (ft) = 2.16  
Crit Depth, Yc (ft) = 0.06  
Spread Width (ft) = 2.12  
EGL (ft) = 0.07

### Calculations

Compute by: Known Q  
Known Q (cfs) = 0.06



# Channel Report

## Gutter Spread Plan West

### Gutter

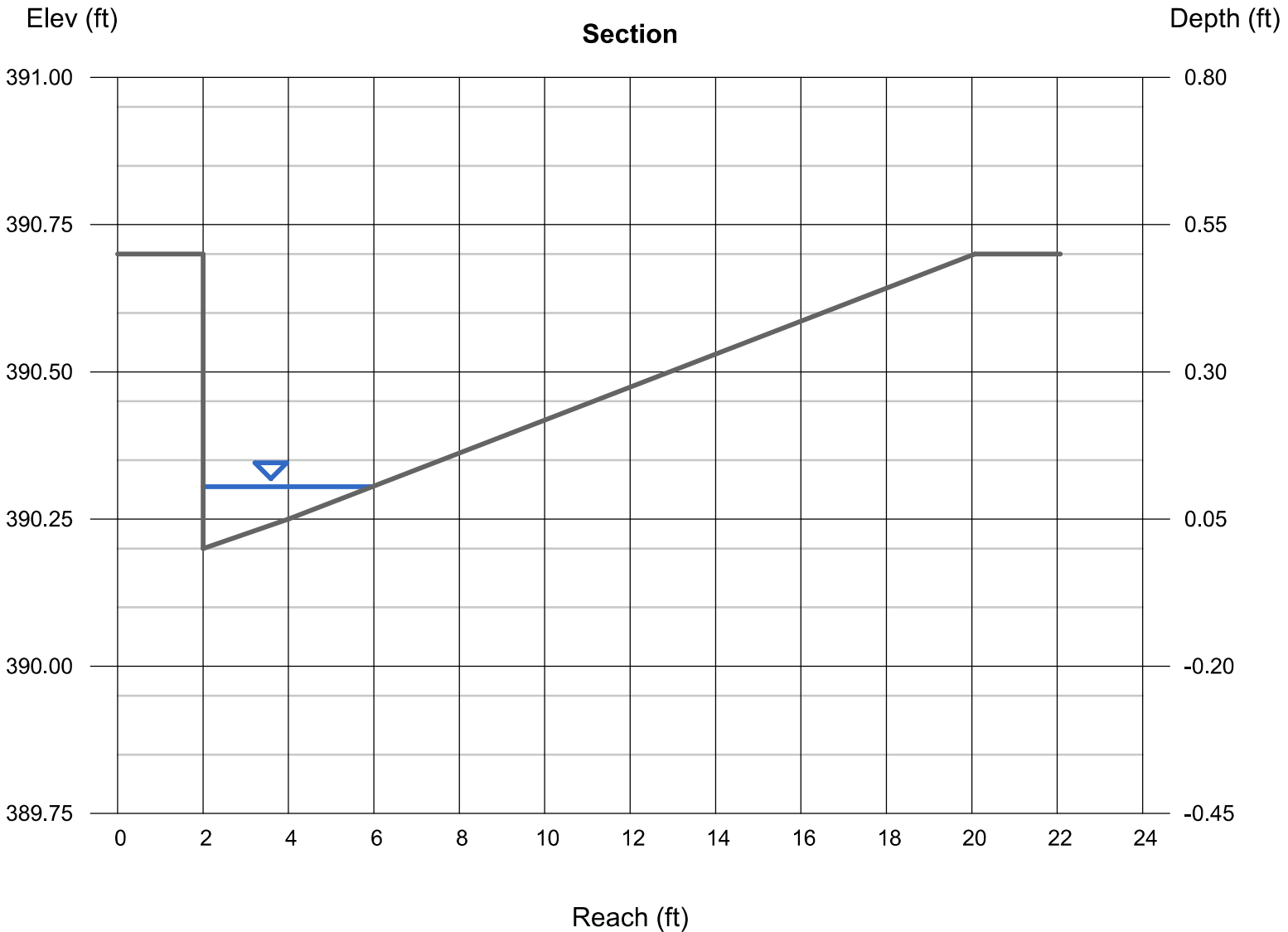
Cross SI, Sx (ft/ft) = 0.028  
Cross SI, Sw (ft/ft) = 0.025  
Gutter Width (ft) = 2.00  
Invert Elev (ft) = 390.20  
Slope (%) = 1.25  
N-Value = 0.013

### Highlighted

Depth (ft) = 0.11  
Q (cfs) = 0.460  
Area (sqft) = 0.21  
Velocity (ft/s) = 2.15  
Wetted Perim (ft) = 4.07  
Crit Depth, Yc (ft) = 0.13  
Spread Width (ft) = 3.96  
EGL (ft) = 0.18

### Calculations

Compute by: Known Q  
Known Q (cfs) = 0.46



## PRE/POST STORMWATER MAP





THIS DRAWING PREPARED AT THE  
**RALIGH OFFICE**  
 5110 TRINITY ROAD, SUITE 102, RALEIGH, NC 27607  
 TEL: 919.966.9991 FAX: 919.833.8124 WWW.COMTECH.COM

REVISION DESCRIPTION  
 DATE  
 06/01/2023 ADDRESS: TOWN OF ROSELVILLE COMMENTS  
 11/01/2023 ADDRESS: TOWN OF ROSELVILLE AND REVIEW COMMENTS

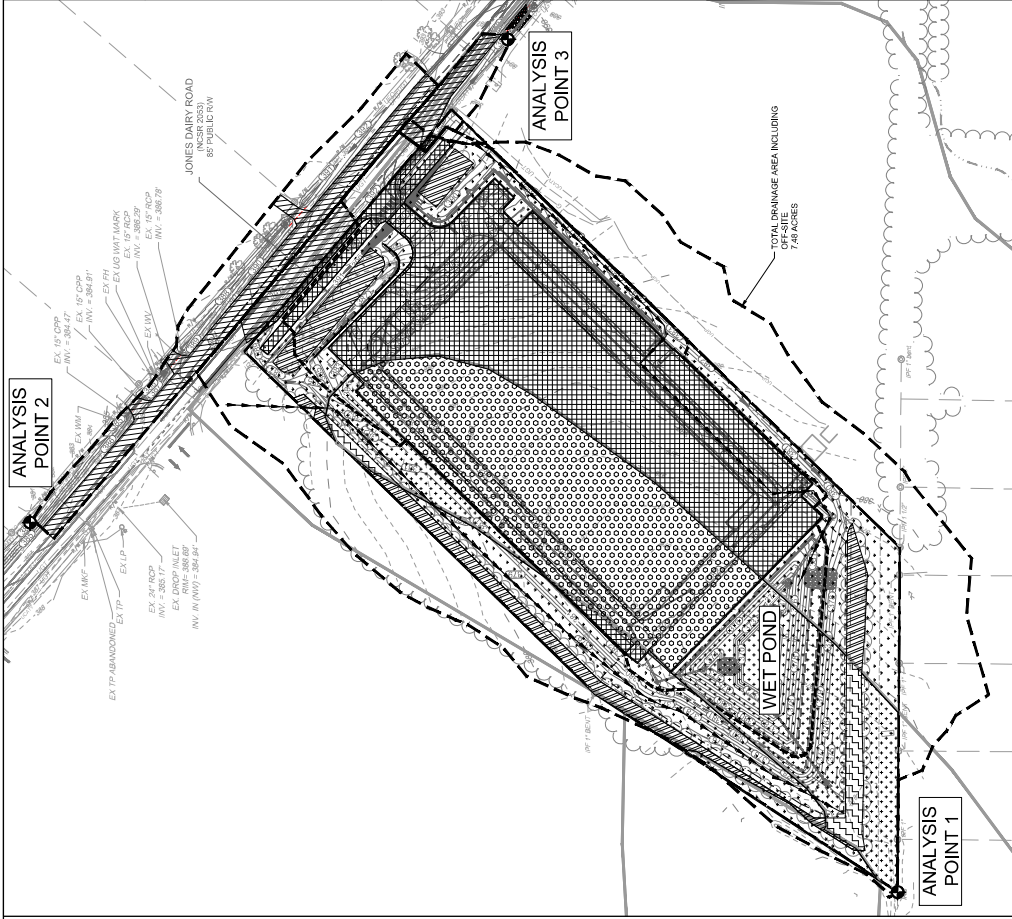
DRAWN BY  
**L. BARNES**  
 DATE  
 04/05/2023

DESIGNED BY  
**G. FRANK**  
 CHECKED BY  
**G. FRANK**  
 SCALE  
 AS SHOWN

**TIMMONS GROUP**

NORTH CAROLINA LICENSE NO. C-1652  
 TOWN OF ROSELVILLE - WAKE COUNTY - NORTH CAROLINA  
**JONES DAIRY STORAGE FACILITY**  
**STORMWATER COMPLIANCE PLAN**

JOB NO. **54832**  
 SHEET NO. **C-3.5**



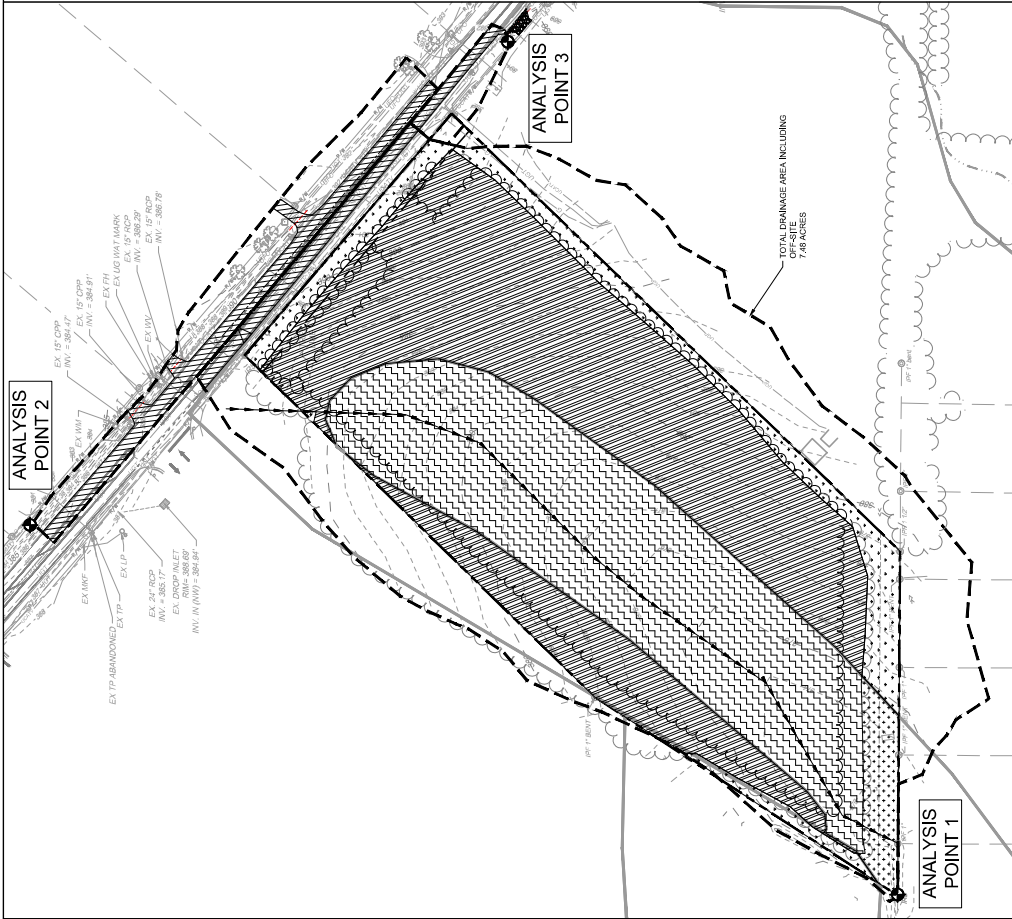
**POST-DEVELOPMENT IMPERVIOUS ANALYSIS MAP**

STORM WATER QUANTITY CALCULATIONS

ANALYSIS POINT	PERMANENT IMPERVIOUS AREA (AC)	COMPOSITE CN	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
1	7.48	65	1.51	0.97	2.94	2.07	7.85	6.09				
2	0.98	91	0.99	0.18	0.39	0.43	1.06	1.28				
3	0.12	60	0.00	0.06	0.01	0.12	0.11	0.31				

LANDUSE SUMMARY

LANDUSE	PERMANENT IMPERVIOUS	EXISTING AREA (AC)	PROPOSED AREA (AC)
LAWN & SOIL		0.00	3.27
LAWN & SOIL		0.95	1.22
WOODS & SOIL		0.16	0.06
WOODS & SOIL		2.73	0.33
WOODS & SOIL		2.04	0.10
DRAINAGE		5.48	5.48
FOUNDATION			



**PRE-DEVELOPMENT IMPERVIOUS ANALYSIS MAP**

STORM WATER QUANTITY CALCULATIONS

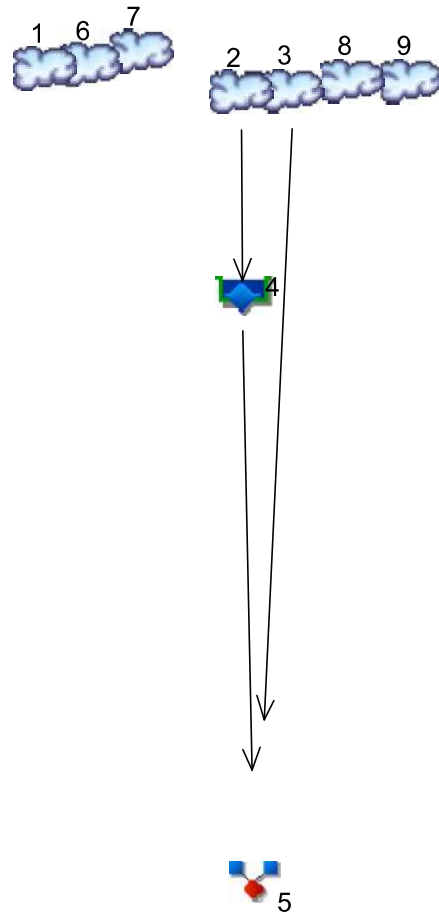
ANALYSIS POINT	PERMANENT IMPERVIOUS AREA (AC)	COMPOSITE CN	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
1	7.48	65	1.51	2.44	7.85							
2	0.98	97	0.99	0.29	1.06							
3	0.12	49	0.00	0.01	0.11							

## PRE/POST DRAINAGE AREA CALCULATIONS

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# Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



## Legend

Hyd.	Origin	Description
1	SCS Runoff	Analysis Point 1_PRE
2	SCS Runoff	Analysis Point 1_POST SCM
3	SCS Runoff	Analysis Point 1_POST BYPASS
4	Reservoir	Wetpond
5	Combine	POST SITE
6	SCS Runoff	Analysis Point 2_PRE
7	SCS Runoff	Analysis Point 3_PRE
8	SCS Runoff	Analysis Point 2_POST
9	SCS Runoff	Analysis Point 3_POST

# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	----	2.063	4.009	----	----	10.71	----	----	23.44	Analysis Point 1_PRE
2	SCS Runoff	----	10.85	13.85	----	----	21.66	----	----	33.79	Analysis Point 1_POST SCM
3	SCS Runoff	----	0.704	1.658	----	----	5.251	----	----	12.38	Analysis Point 1_POST BYPASS
4	Reservoir	2	0.437	1.213	----	----	2.863	----	----	10.53	Wetpond
5	Combine	3, 4	0.745	2.255	----	----	7.737	----	----	20.55	POST SITE
6	SCS Runoff	----	0.089	0.289	----	----	1.062	----	----	2.617	Analysis Point 2_PRE
7	SCS Runoff	----	0.001	0.005	----	----	0.105	----	----	0.370	Analysis Point 3_PRE
8	SCS Runoff	----	0.178	0.432	----	----	1.279	----	----	2.923	Analysis Point 2_POST
9	SCS Runoff	----	0.061	0.120	----	----	0.310	----	----	0.667	Analysis Point 3_POST

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.063	2	734	12,044	----	----	----	Analysis Point 1_PRE
2	SCS Runoff	10.85	2	720	28,557	----	----	----	Analysis Point 1_POST SCM
3	SCS Runoff	0.704	2	728	4,036	----	----	----	Analysis Point 1_POST BYPASS
4	Reservoir	0.437	2	836	18,230	2	376.98	19,520	Wetpond
5	Combine	0.745	2	728	22,267	3, 4	----	----	POST SITE
6	SCS Runoff	0.089	2	720	405	----	----	----	Analysis Point 2_PRE
7	SCS Runoff	0.001	2	902	22	----	----	----	Analysis Point 3_PRE
8	SCS Runoff	0.178	2	720	561	----	----	----	Analysis Point 2_POST
9	SCS Runoff	0.061	2	718	153	----	----	----	Analysis Point 3_POST
Rolesville Stormwater Compliance_NCDOT.gpr					Return Period: 1 Year			Monday, 01 / 29 / 2024	

# Hydrograph Report

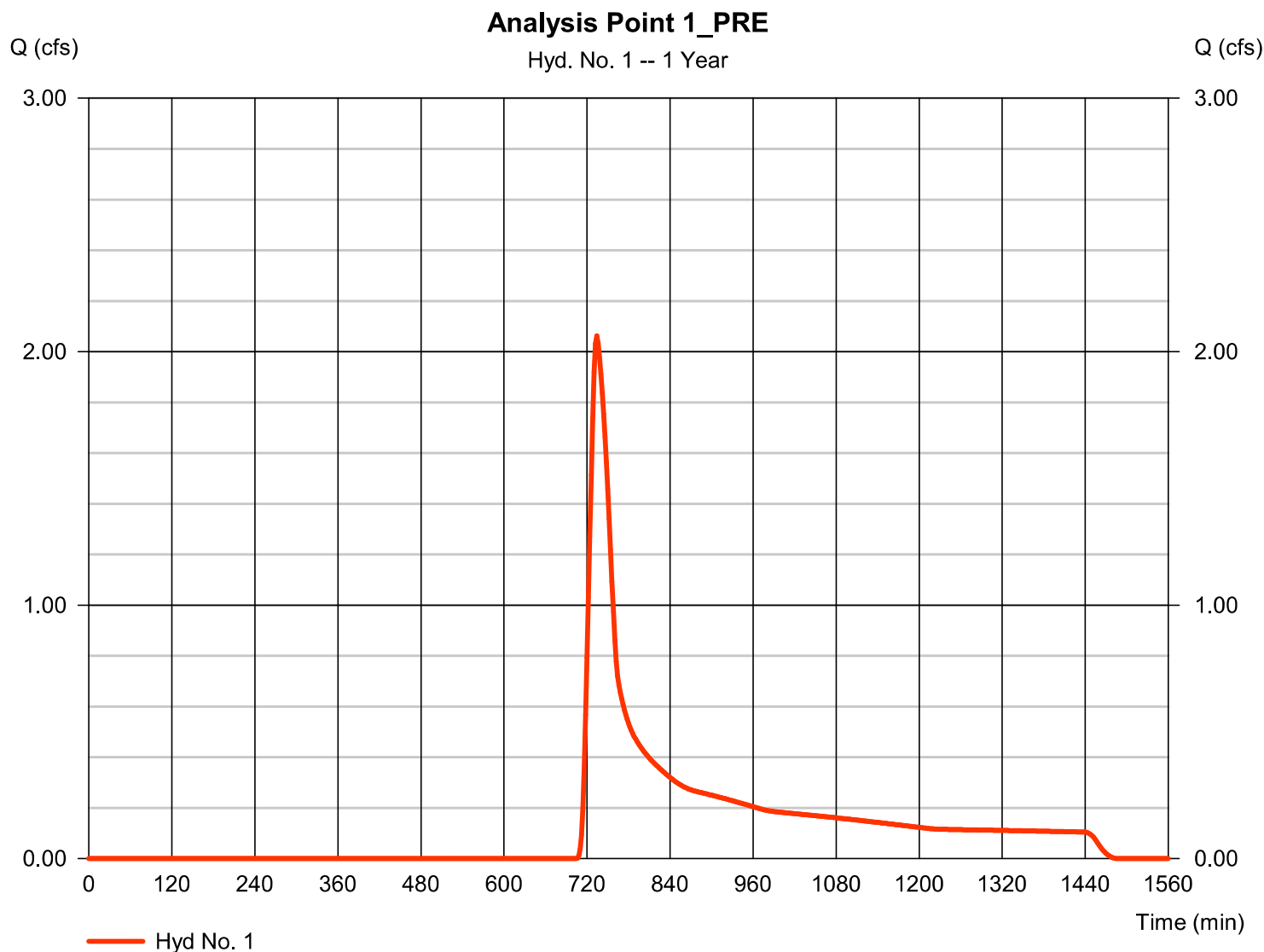
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 1

Analysis Point 1\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 2.063 cfs
Storm frequency	= 1 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 12,044 cuft
Drainage area	= 7.480 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 28.10 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

## Hyd. No. 1

Analysis Point 1\_PRE

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.46	0.00	0.00	
Land slope (%)	= 2.93	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 17.73</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 17.73</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 1315.00	0.00	0.00	
Watercourse slope (%)	= 1.71	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=2.11	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 10.39</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 10.39</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc .....</b>				<b>28.10 min</b>



# Hydrograph Report

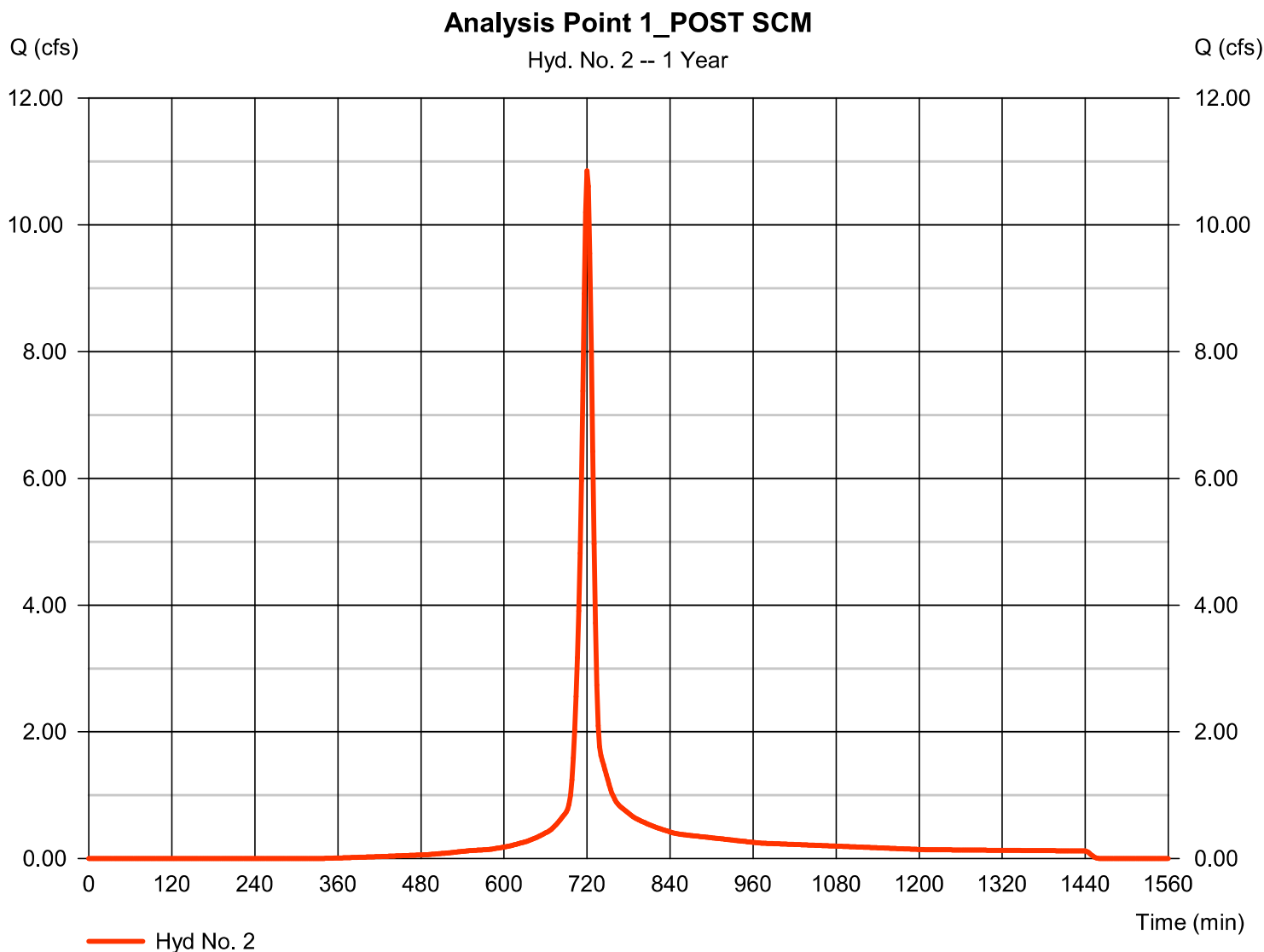
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 2

Analysis Point 1\_POST SCM

Hydrograph type	= SCS Runoff	Peak discharge	= 10.85 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 28,557 cuft
Drainage area	= 3.930 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.20 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

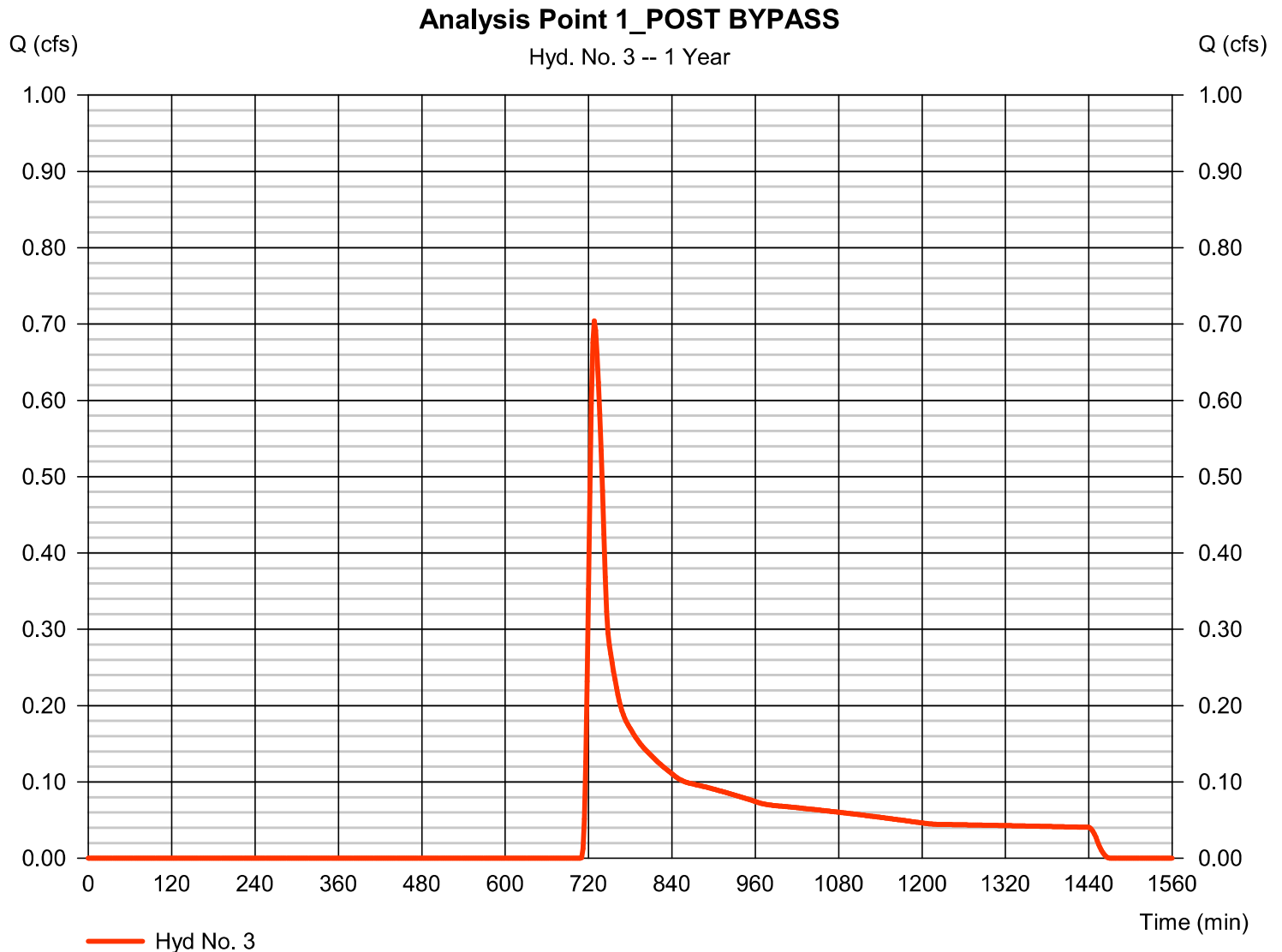
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Monday, 01 / 29 / 2024

## Hyd. No. 3

### Analysis Point 1\_POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 0.704 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 4,036 cuft
Drainage area	= 3.550 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

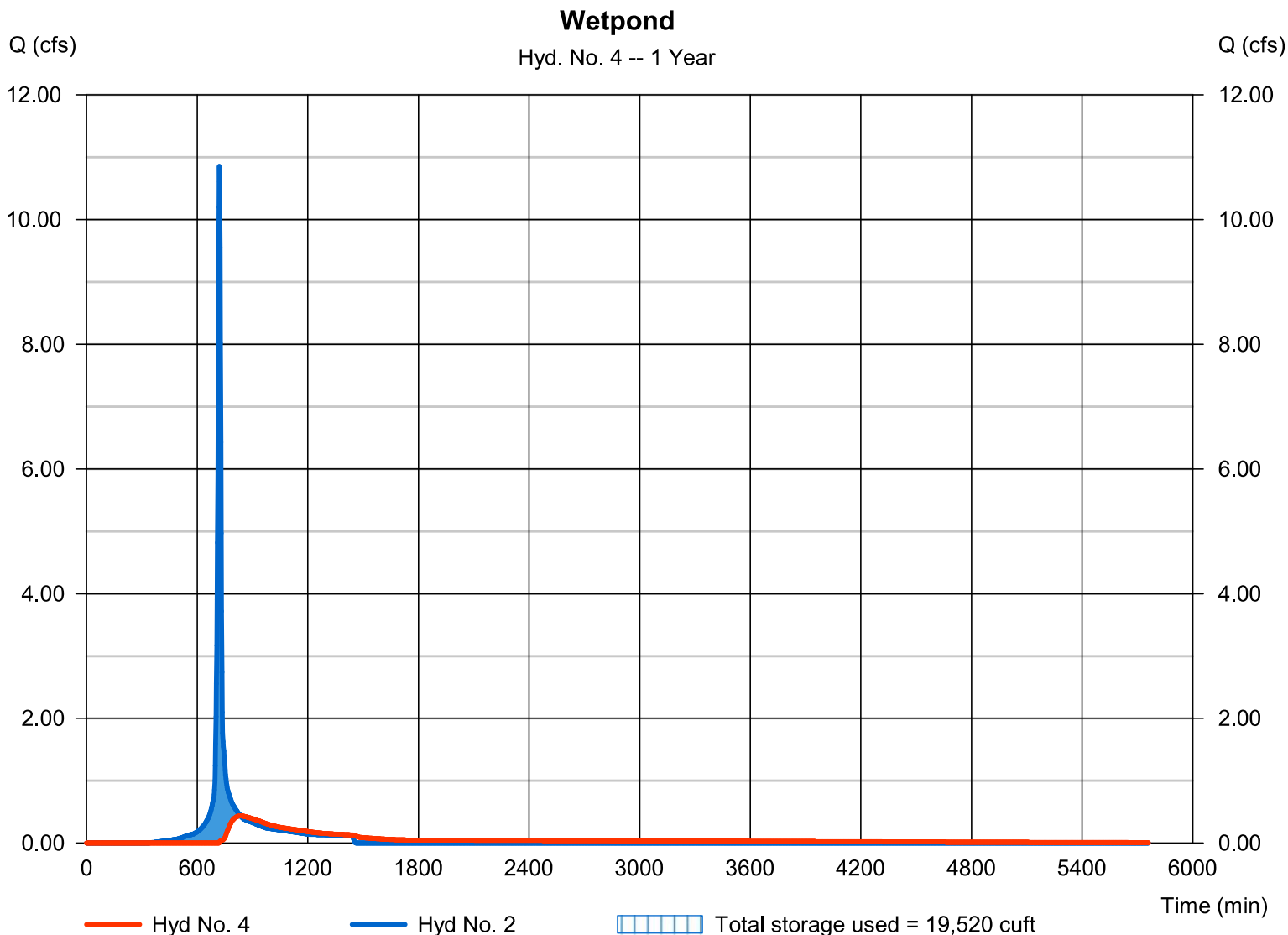
Monday, 01 / 29 / 2024

## Hyd. No. 4

Wetpond

Hydrograph type	= Reservoir	Peak discharge	= 0.437 cfs
Storm frequency	= 1 yrs	Time to peak	= 836 min
Time interval	= 2 min	Hyd. volume	= 18,230 cuft
Inflow hyd. No.	= 2 - Analysis Point 1_POST SCM	Max. Elevation	= 376.98 ft
Reservoir name	= Wet Pond	Max. Storage	= 19,520 cuft

Storage Indication method used.



# Hydrograph Report

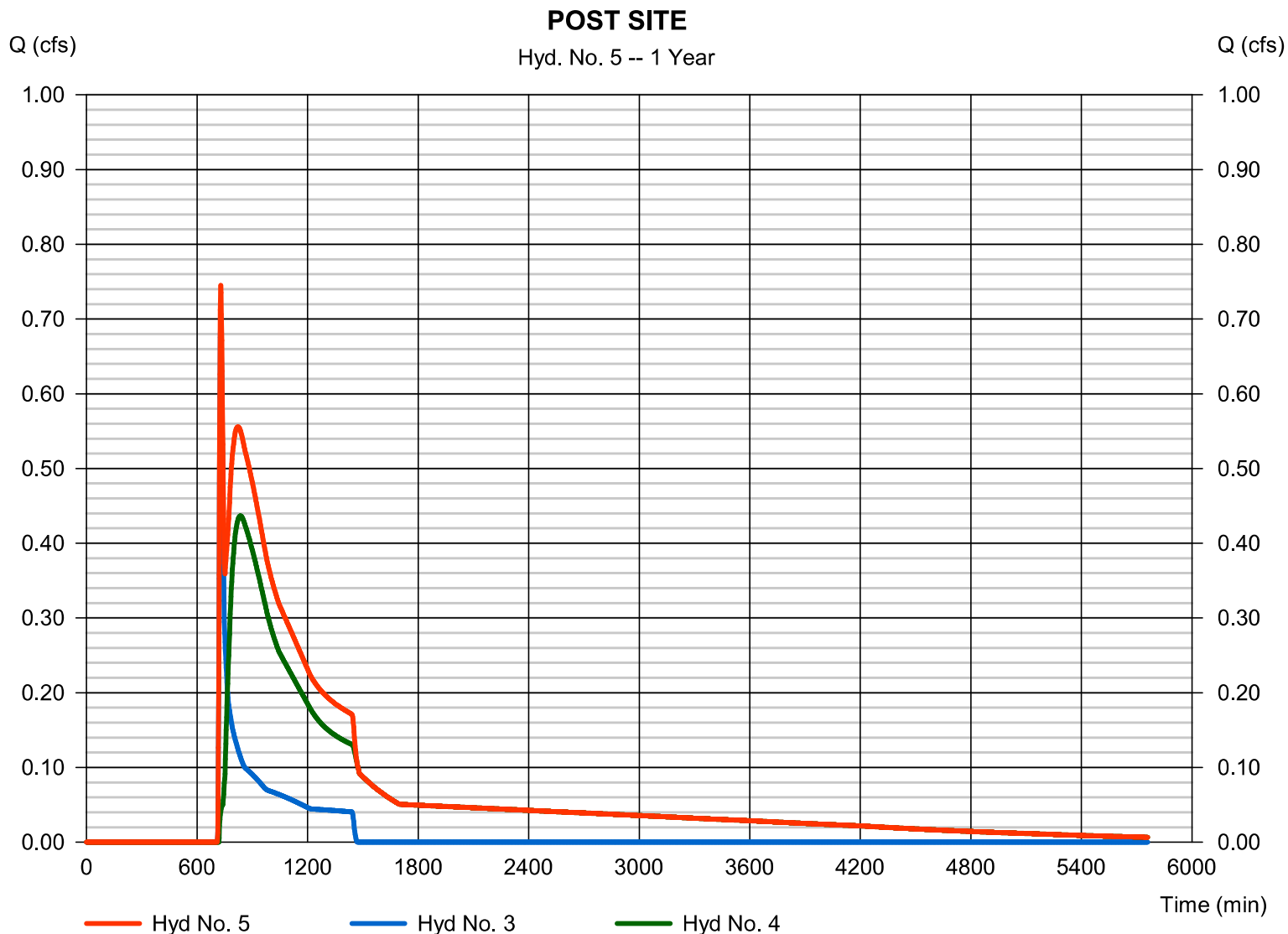
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 5

### POST SITE

Hydrograph type	= Combine	Peak discharge	= 0.745 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 22,267 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 3.550 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

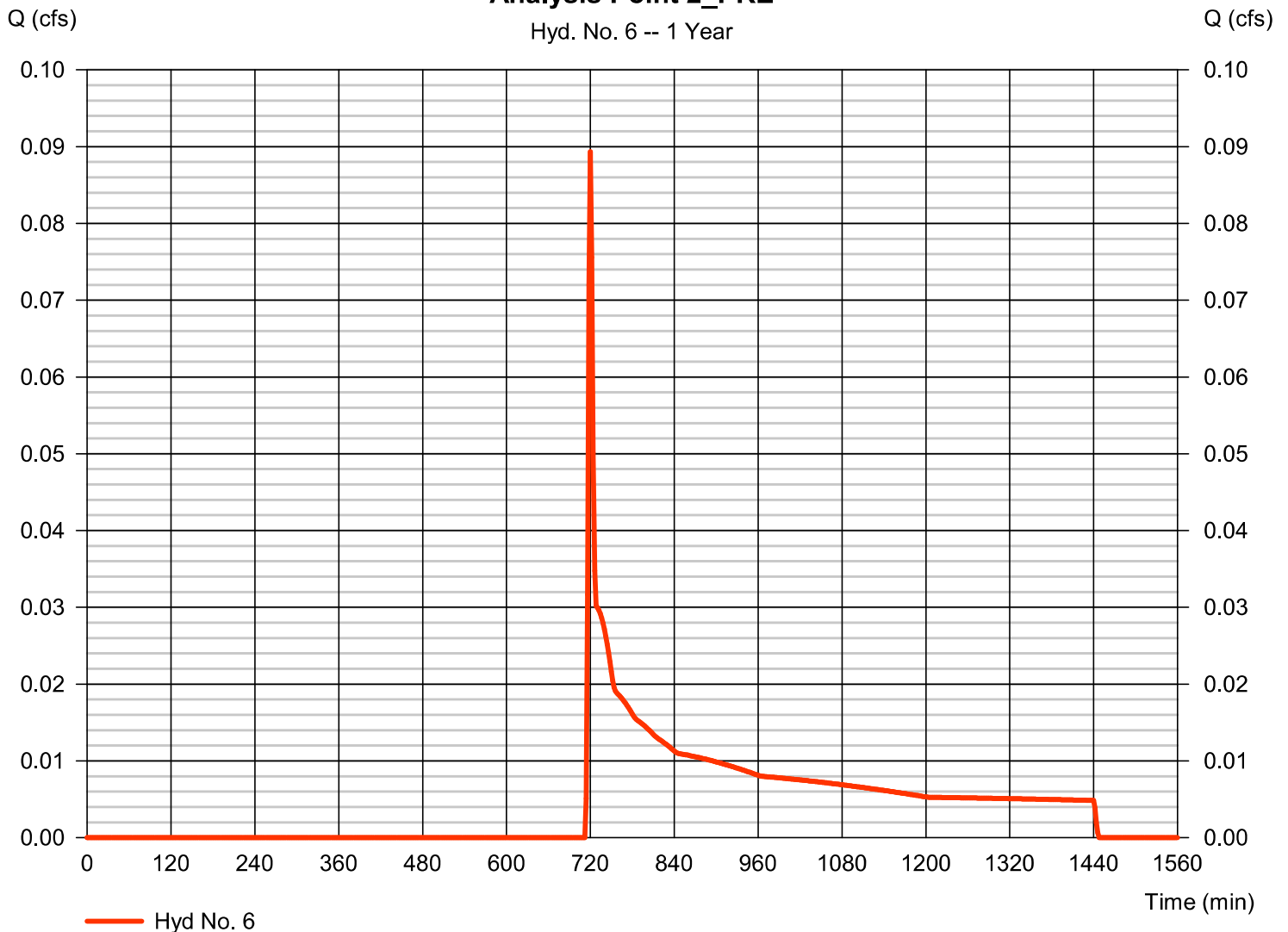
## Hyd. No. 6

Analysis Point 2\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.089 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 405 cuft
Drainage area	= 0.580 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 2\_PRE

Hyd. No. 6 -- 1 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

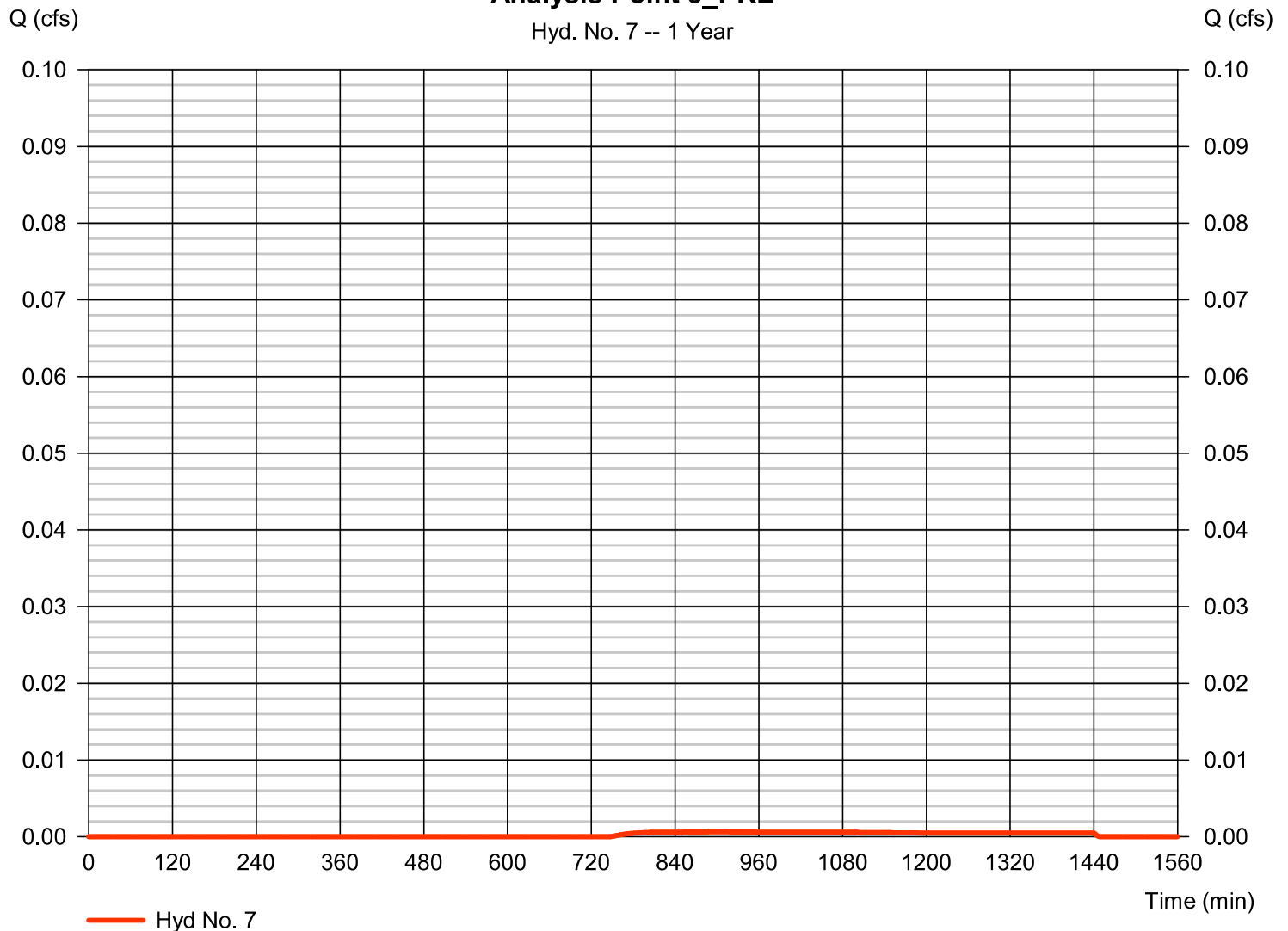
## Hyd. No. 7

Analysis Point 3\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 902 min
Time interval	= 2 min	Hyd. volume	= 22 cuft
Drainage area	= 0.120 ac	Curve number	= 49
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 3\_PRE

Hyd. No. 7 -- 1 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

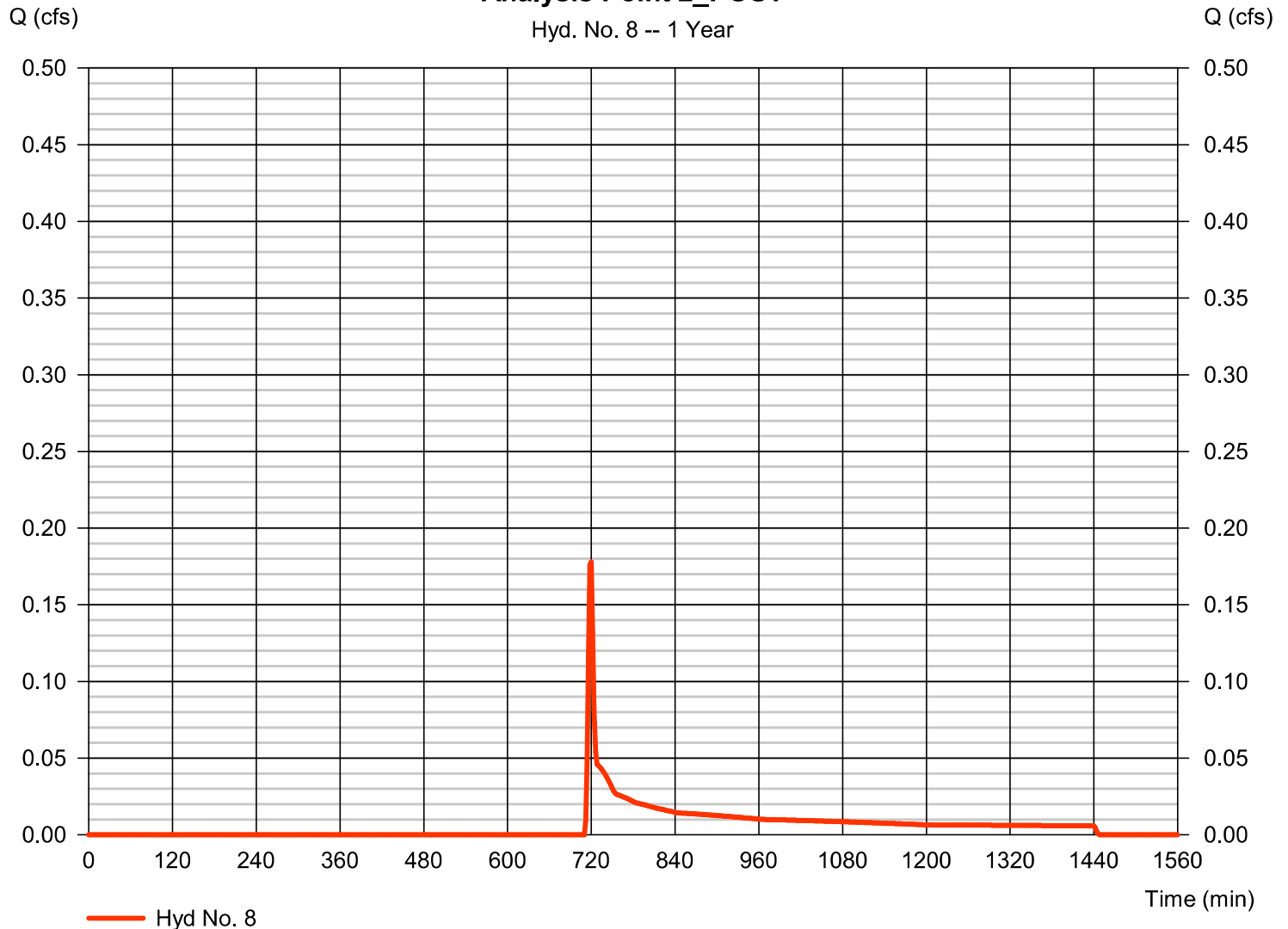
## Hyd. No. 8

Analysis Point 2\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 561 cuft
Drainage area	= 0.580 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 2\_POST

Hyd. No. 8 -- 1 Year



# Hydrograph Report

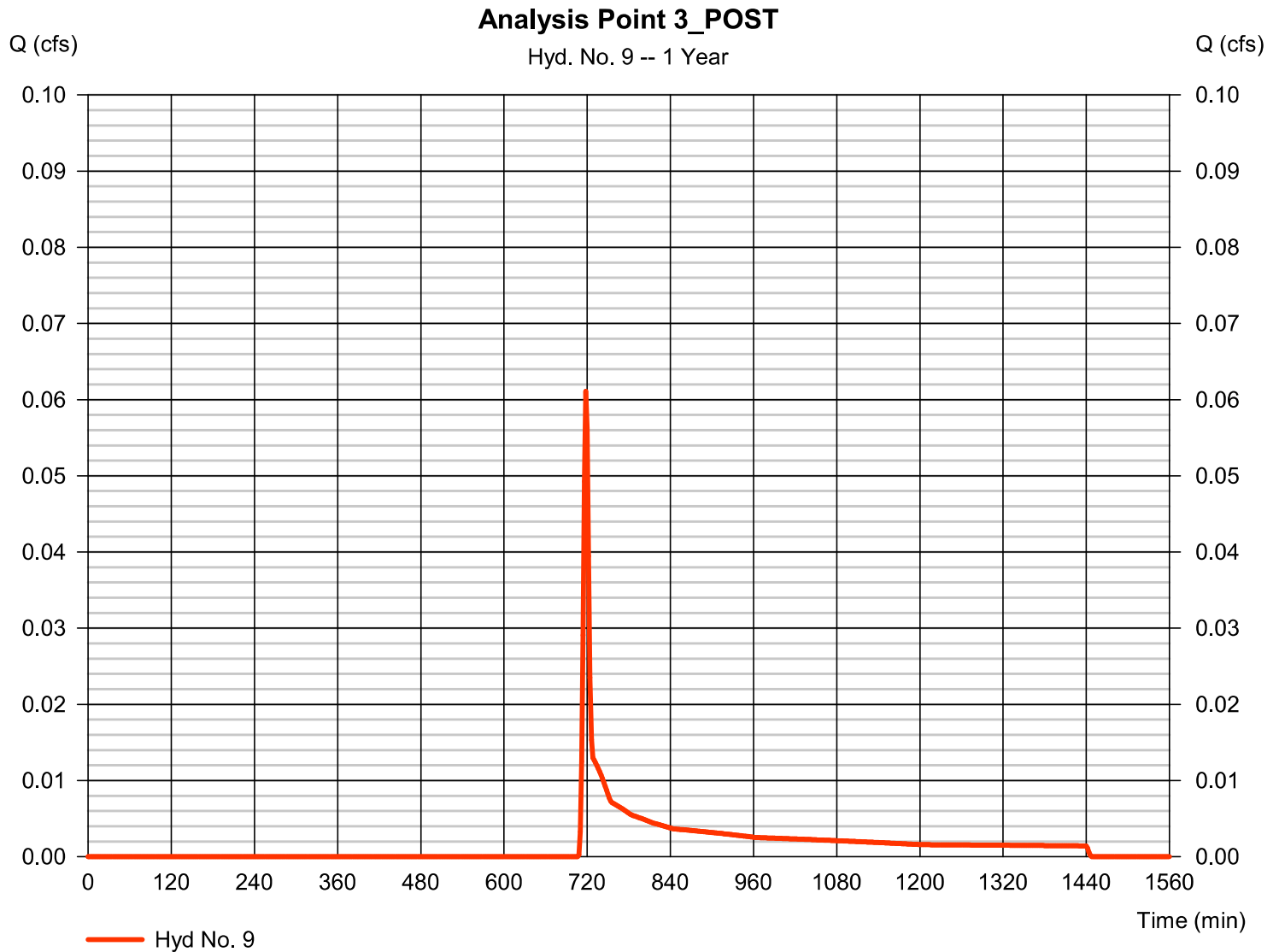
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 9

Analysis Point 3\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.061 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 153 cuft
Drainage area	= 0.120 ac	Curve number	= 63
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	4.009	2	732	19,850	----	----	----	Analysis Point 1_PRE
2	SCS Runoff	13.85	2	720	36,827	----	----	----	Analysis Point 1_POST SCM
3	SCS Runoff	1.658	2	728	7,150	----	----	----	Analysis Point 1_POST BYPASS
4	Reservoir	1.213	2	758	26,493	2	377.24	22,234	Wetpond
5	Combine	2.255	2	732	33,643	3, 4	----	----	POST SITE
6	SCS Runoff	0.289	2	718	791	----	----	----	Analysis Point 2_PRE
7	SCS Runoff	0.005	2	722	66	----	----	----	Analysis Point 3_PRE
8	SCS Runoff	0.432	2	718	1,015	----	----	----	Analysis Point 2_POST
9	SCS Runoff	0.120	2	718	261	----	----	----	Analysis Point 3_POST
Rolesville Stormwater Compliance_NCDOT.gpr							Return Period: 2 Year		Monday, 01 / 29 / 2024

# Hydrograph Report

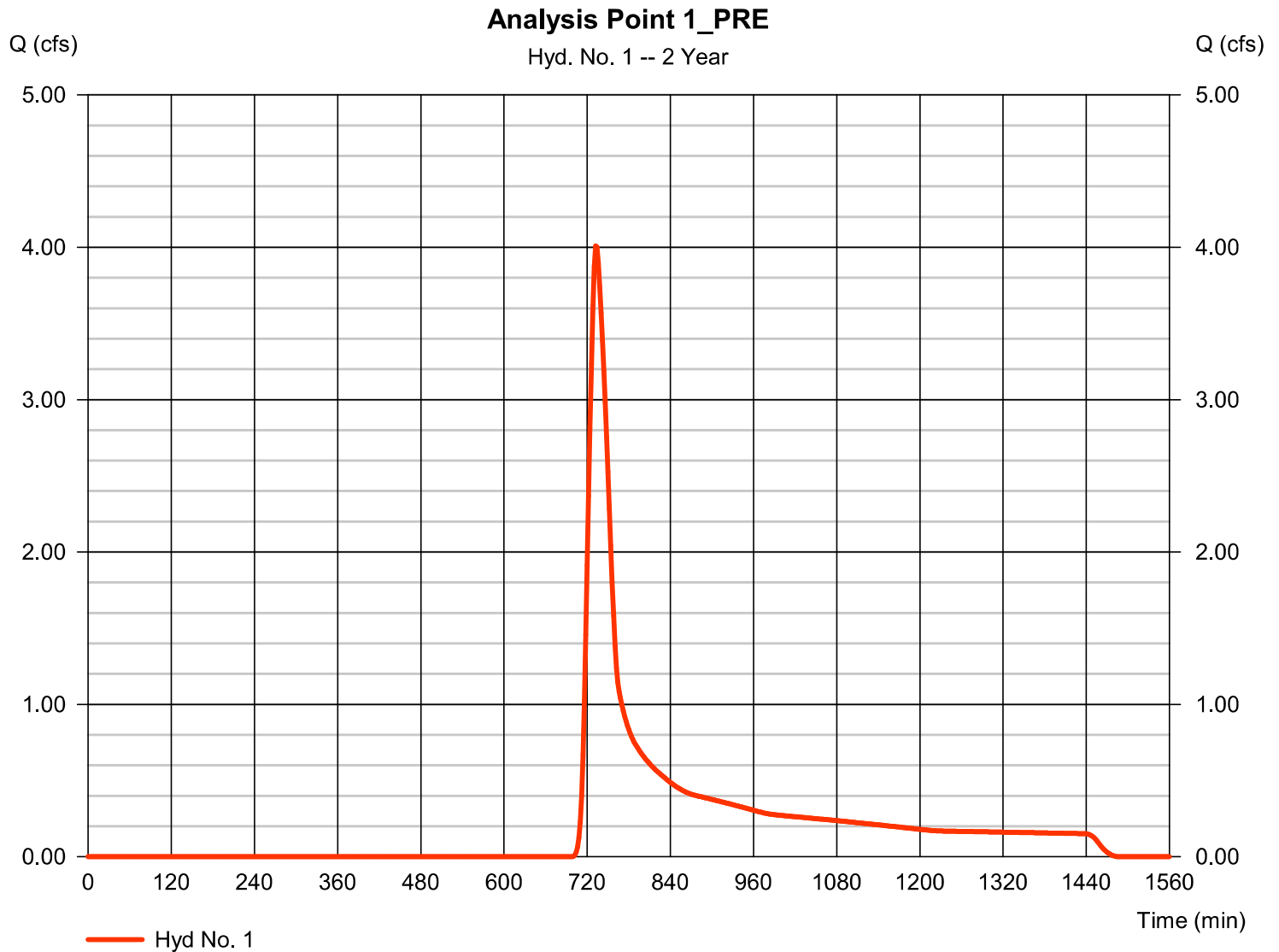
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 1

Analysis Point 1\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 4.009 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 19,850 cuft
Drainage area	= 7.480 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 28.10 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

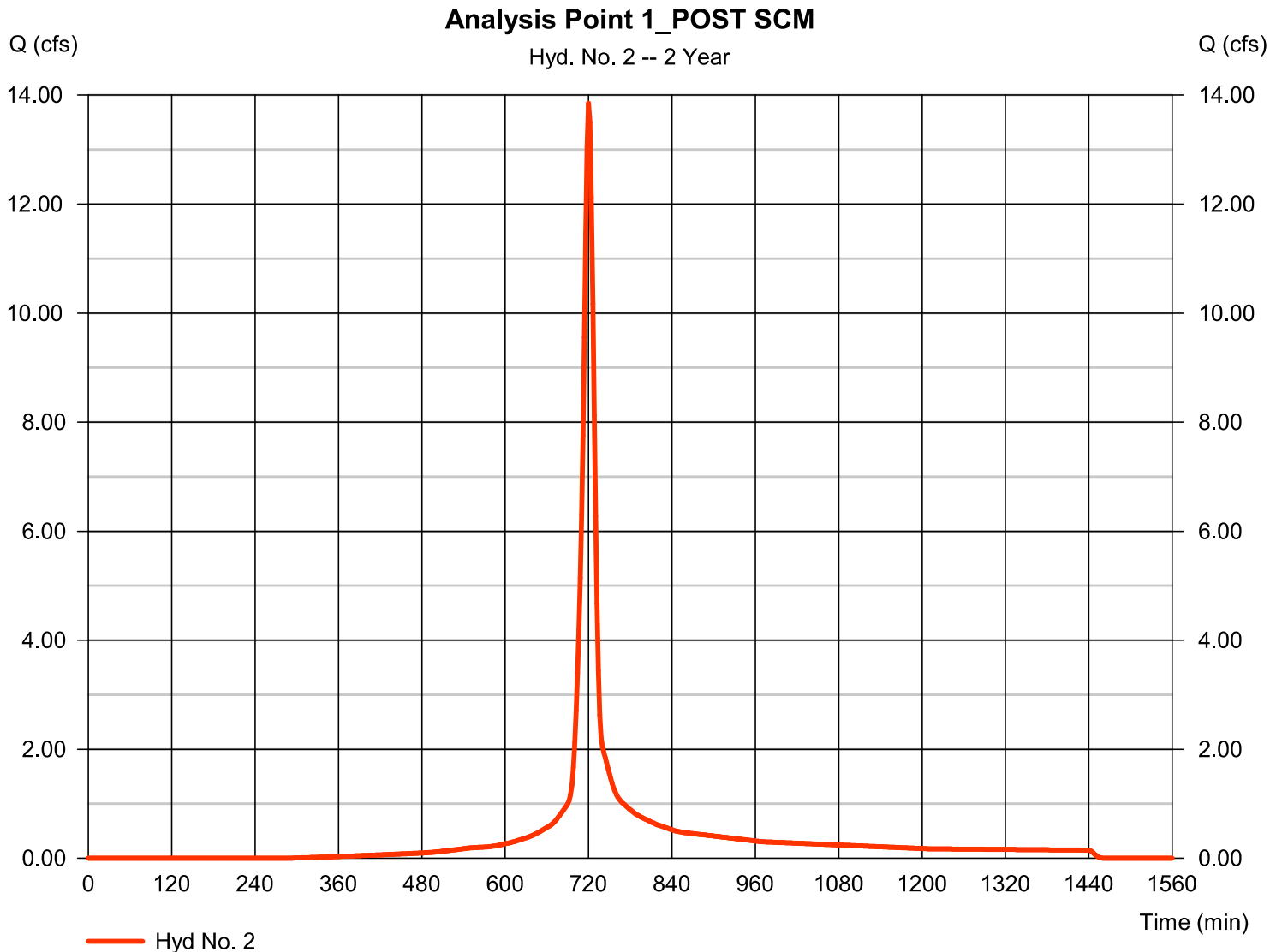
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Monday, 01 / 29 / 2024

## Hyd. No. 2

Analysis Point 1\_POST SCM

Hydrograph type	= SCS Runoff	Peak discharge	= 13.85 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 36,827 cuft
Drainage area	= 3.930 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

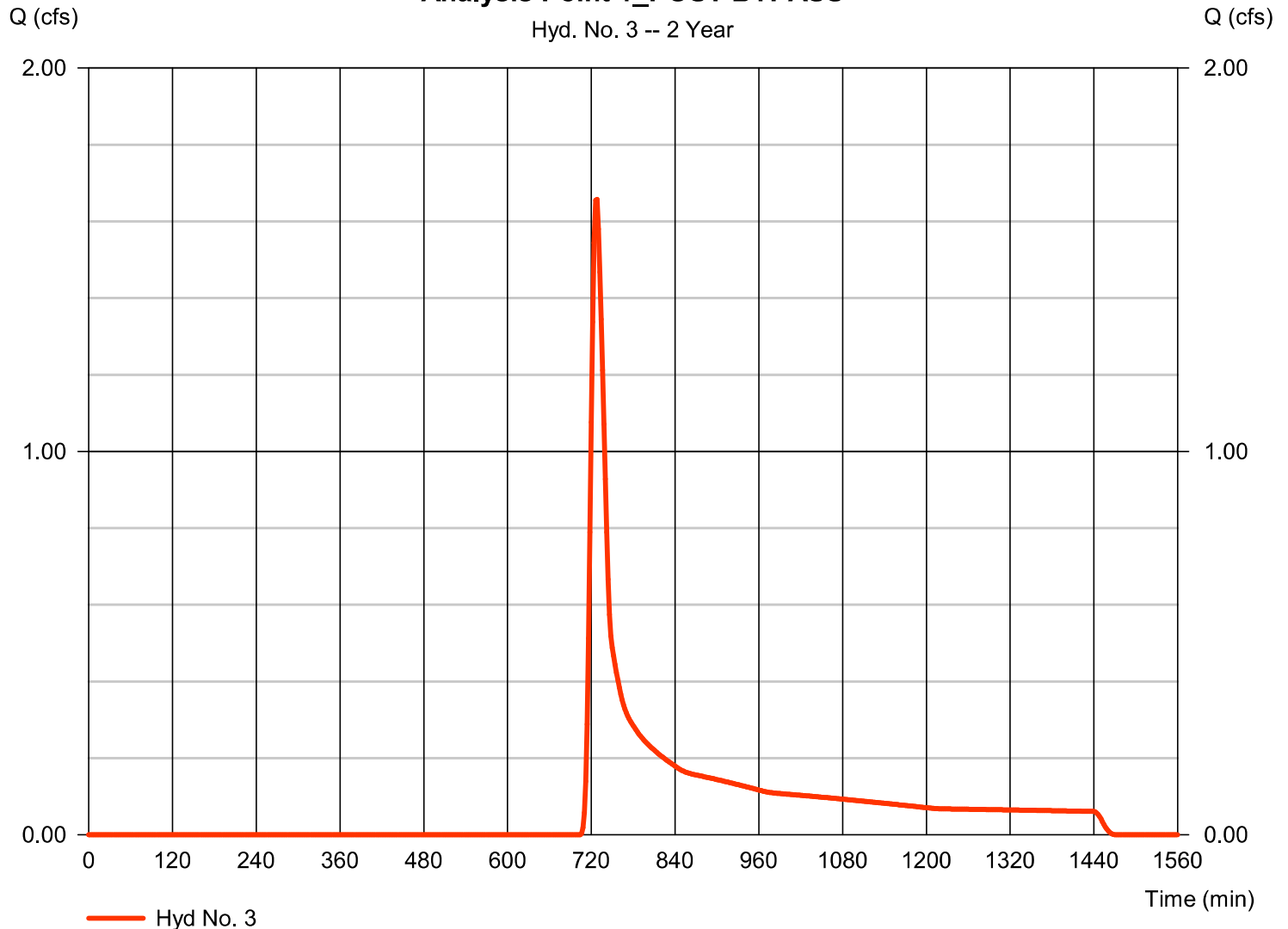
Monday, 01 / 29 / 2024

## Hyd. No. 3

Analysis Point 1\_POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.658 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 7,150 cuft
Drainage area	= 3.550 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 1\_POST BYPASS



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

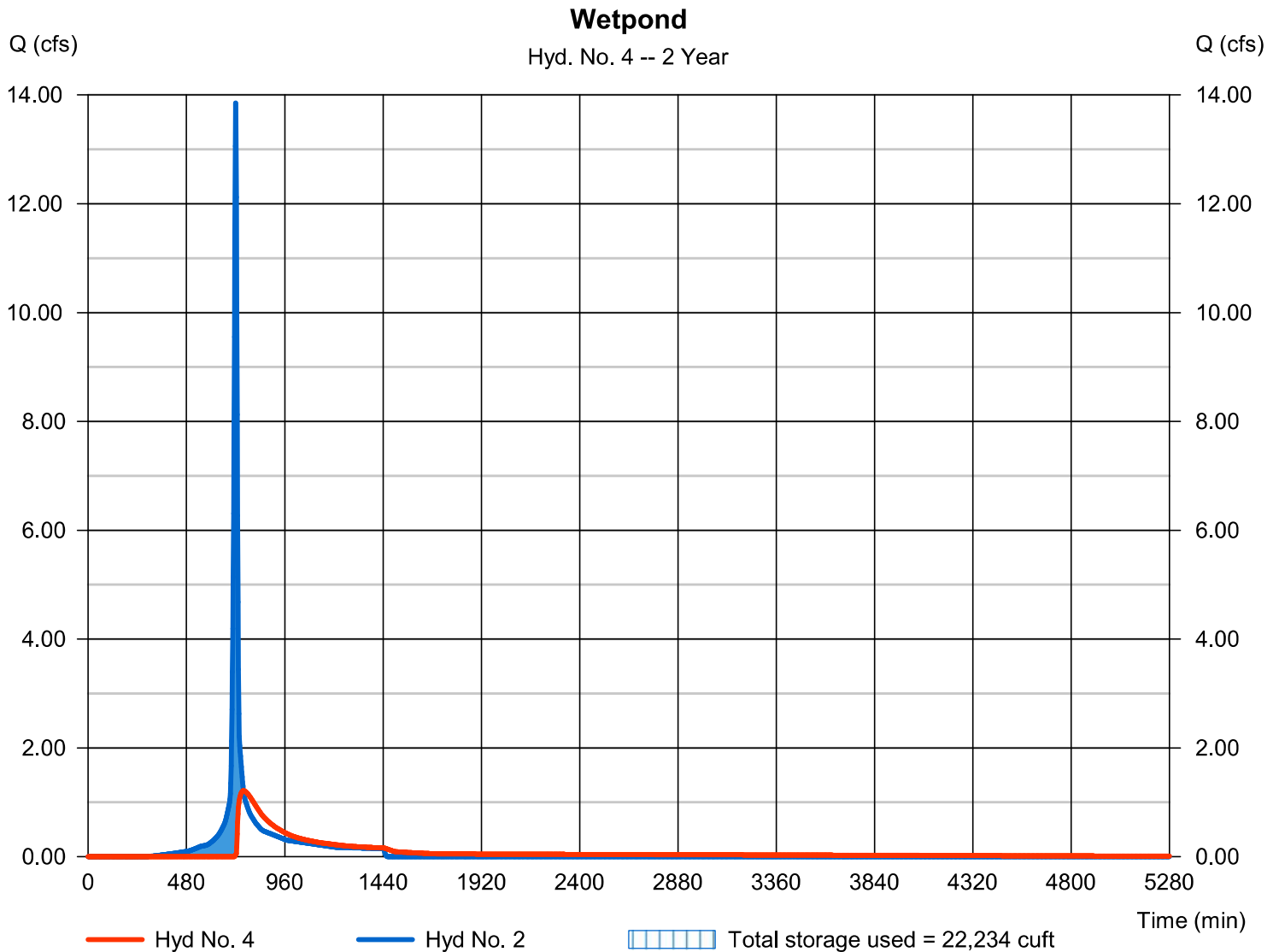
Monday, 01 / 29 / 2024

## Hyd. No. 4

Wetpond

Hydrograph type	= Reservoir	Peak discharge	= 1.213 cfs
Storm frequency	= 2 yrs	Time to peak	= 758 min
Time interval	= 2 min	Hyd. volume	= 26,493 cuft
Inflow hyd. No.	= 2 - Analysis Point 1_POST SCM	Max. Elevation	= 377.24 ft
Reservoir name	= Wet Pond	Max. Storage	= 22,234 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

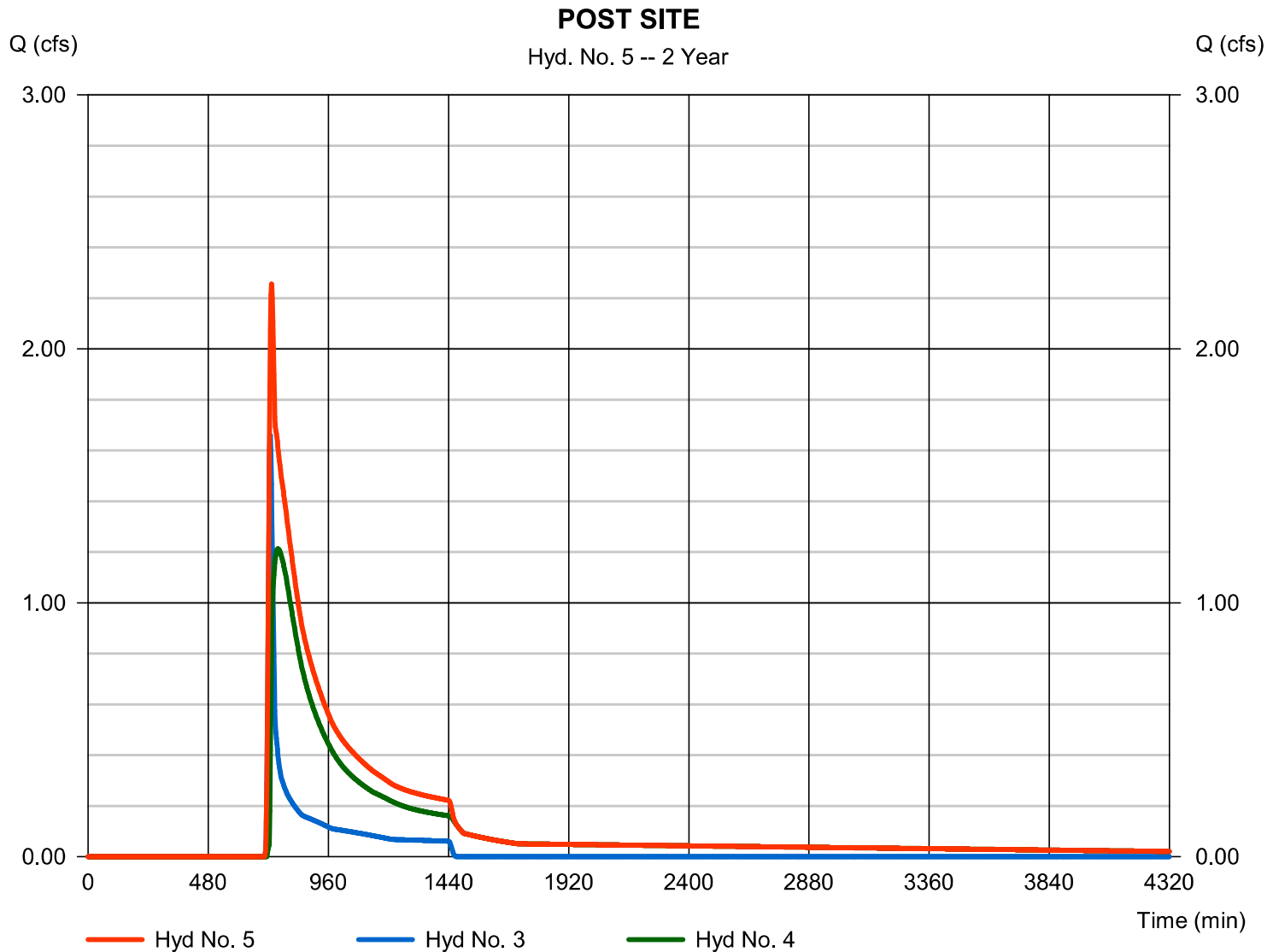
Monday, 01 / 29 / 2024

## Hyd. No. 5

### POST SITE

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 3, 4

Peak discharge = 2.255 cfs  
Time to peak = 732 min  
Hyd. volume = 33,643 cuft  
Contrib. drain. area = 3.550 ac



# Hydrograph Report

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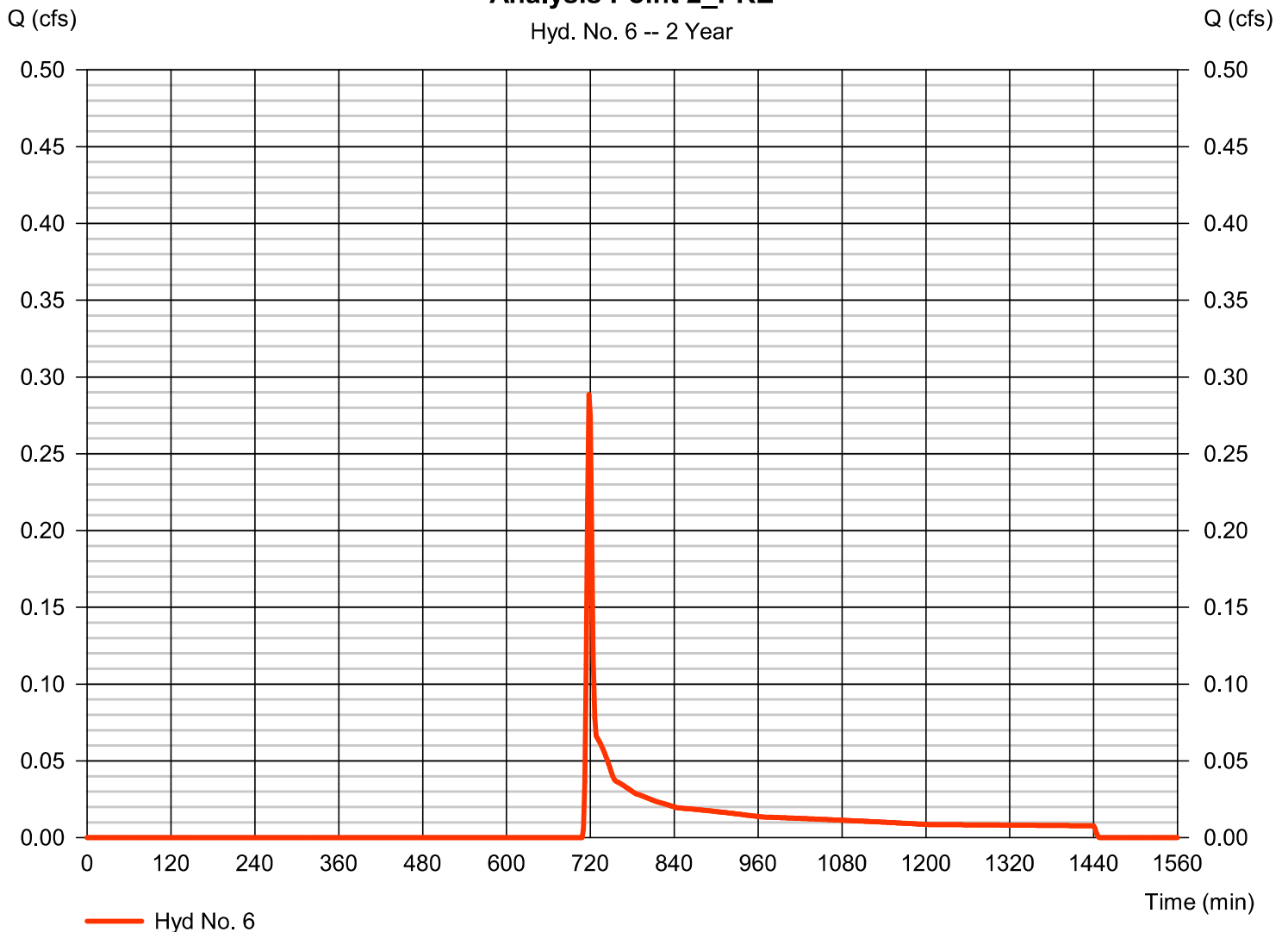
## Hyd. No. 6

Analysis Point 2\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.289 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 791 cuft
Drainage area	= 0.580 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 2\_PRE

Hyd. No. 6 -- 2 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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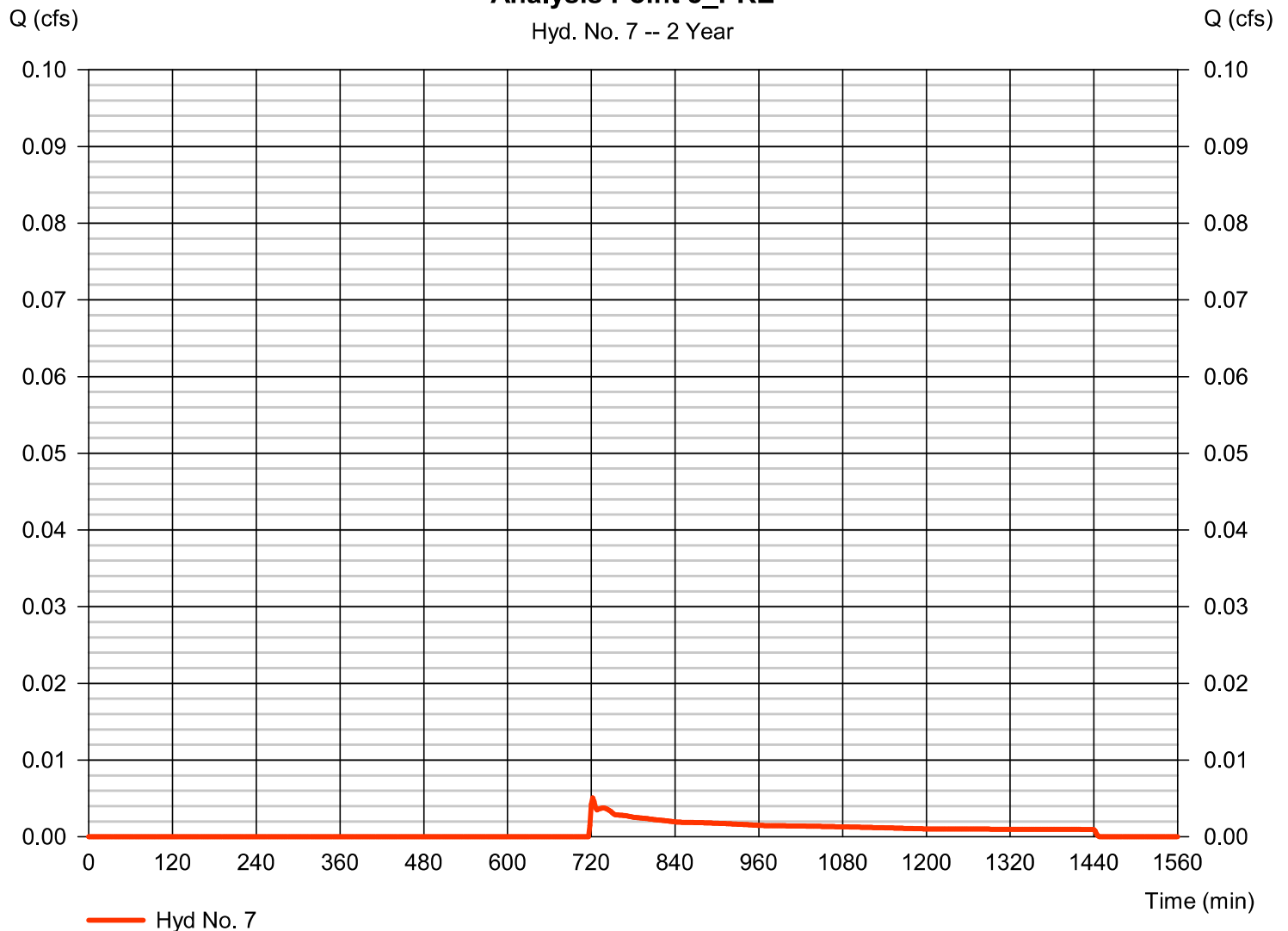
## Hyd. No. 7

Analysis Point 3\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.005 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 66 cuft
Drainage area	= 0.120 ac	Curve number	= 49
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 3\_PRE

Hyd. No. 7 -- 2 Year





# Hydrograph Report

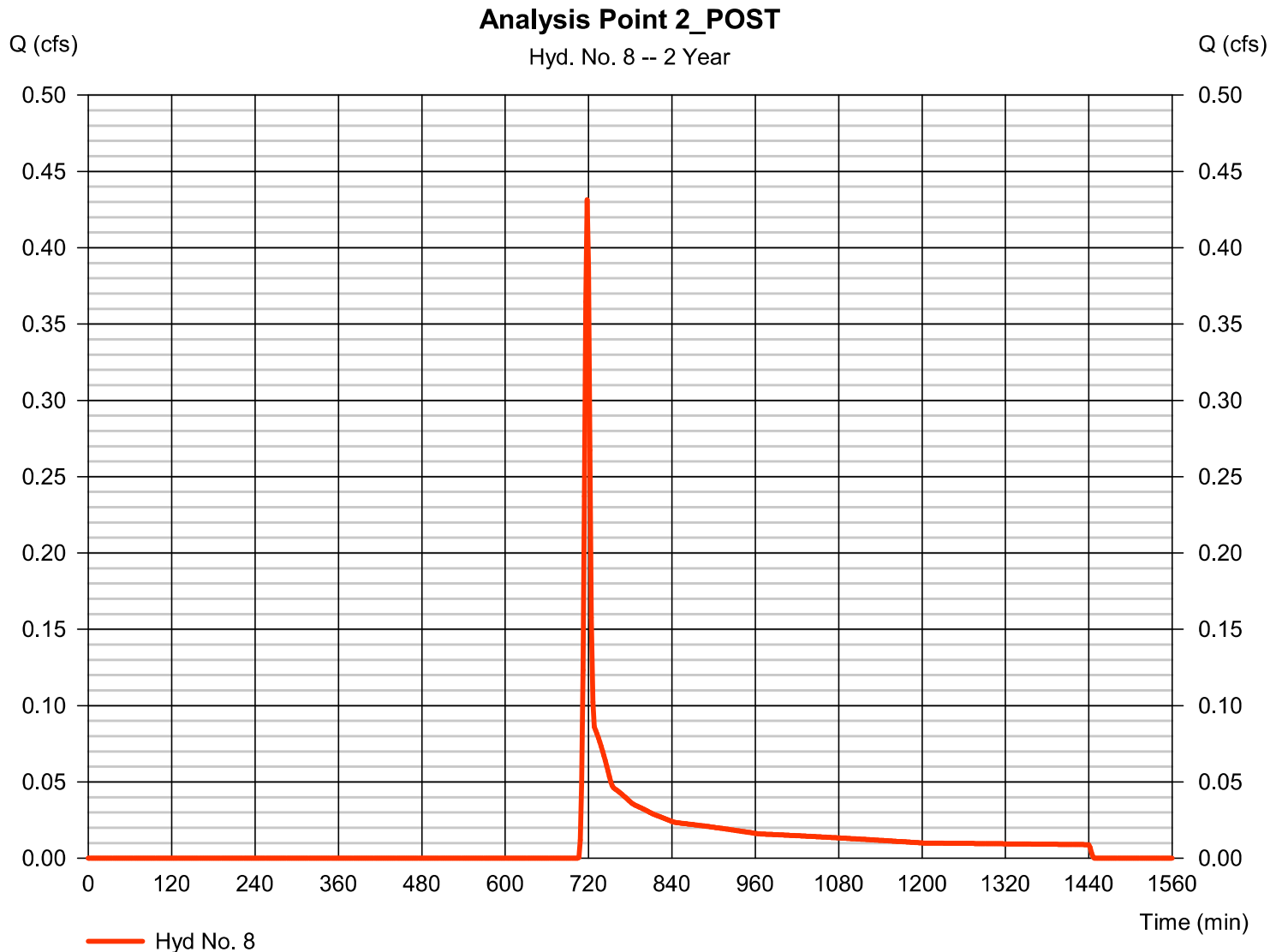
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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## Hyd. No. 8

Analysis Point 2\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.432 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,015 cuft
Drainage area	= 0.580 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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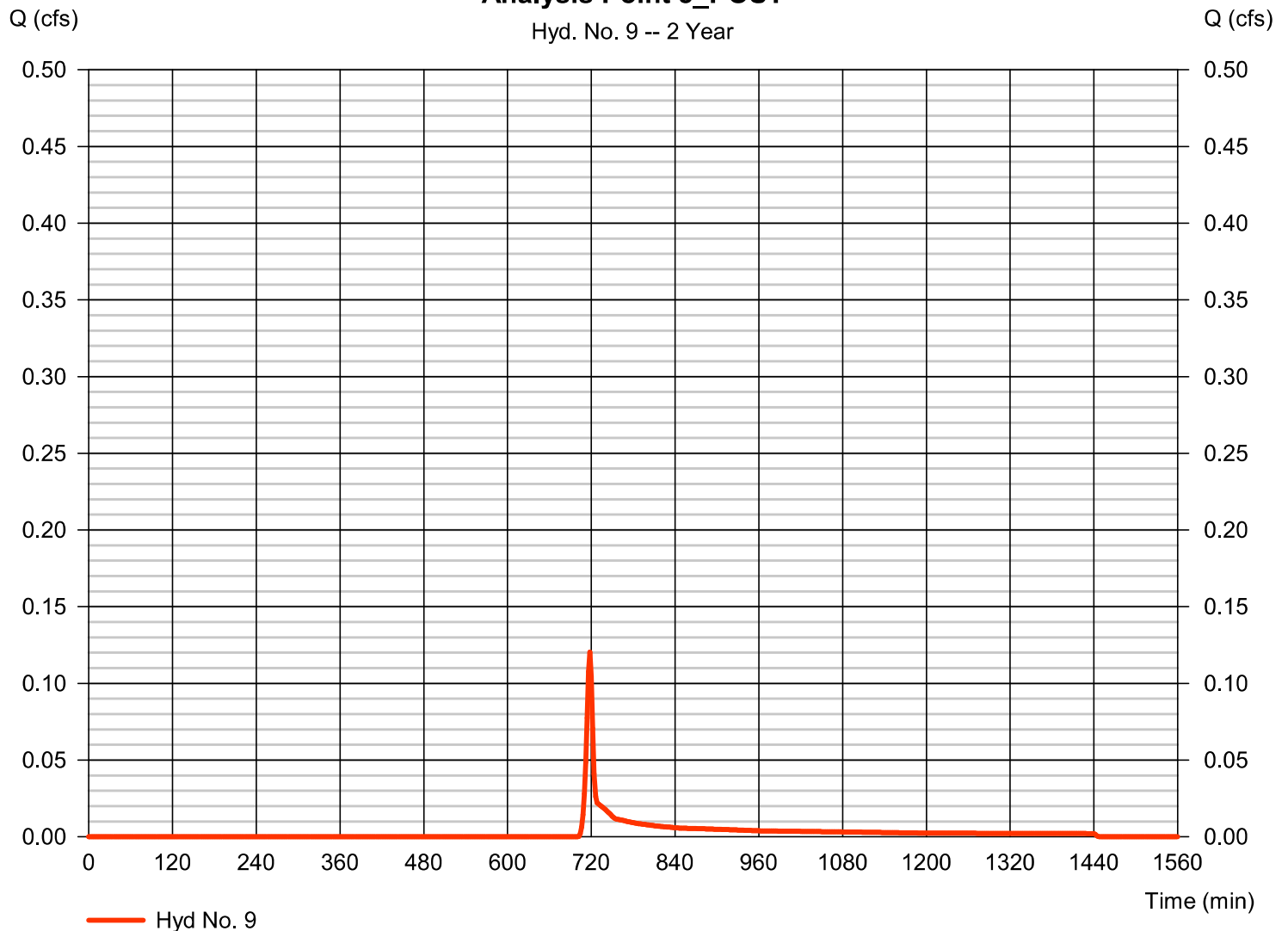
## Hyd. No. 9

Analysis Point 3\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.120 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 261 cuft
Drainage area	= 0.120 ac	Curve number	= 63
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 3\_POST

Hyd. No. 9 -- 2 Year



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	10.71	2	732	45,440	----	----	----	Analysis Point 1_PRE
2	SCS Runoff	21.66	2	720	59,012	----	----	----	Analysis Point 1_POST SCM
3	SCS Runoff	5.251	2	726	17,876	----	----	----	Analysis Point 1_POST BYPASS
4	Reservoir	2.863	2	744	48,663	2	378.33	34,009	Wetpond
5	Combine	7.737	2	726	66,539	3, 4	----	----	POST SITE
6	SCS Runoff	1.062	2	718	2,212	----	----	----	Analysis Point 2_PRE
7	SCS Runoff	0.105	2	718	266	----	----	----	Analysis Point 3_PRE
8	SCS Runoff	1.279	2	718	2,603	----	----	----	Analysis Point 2_POST
9	SCS Runoff	0.310	2	718	624	----	----	----	Analysis Point 3_POST
Rolesville Stormwater Compliance_NCDOT.gpr					Return Period: 10 Year			Monday, 01 / 29 / 2024	

# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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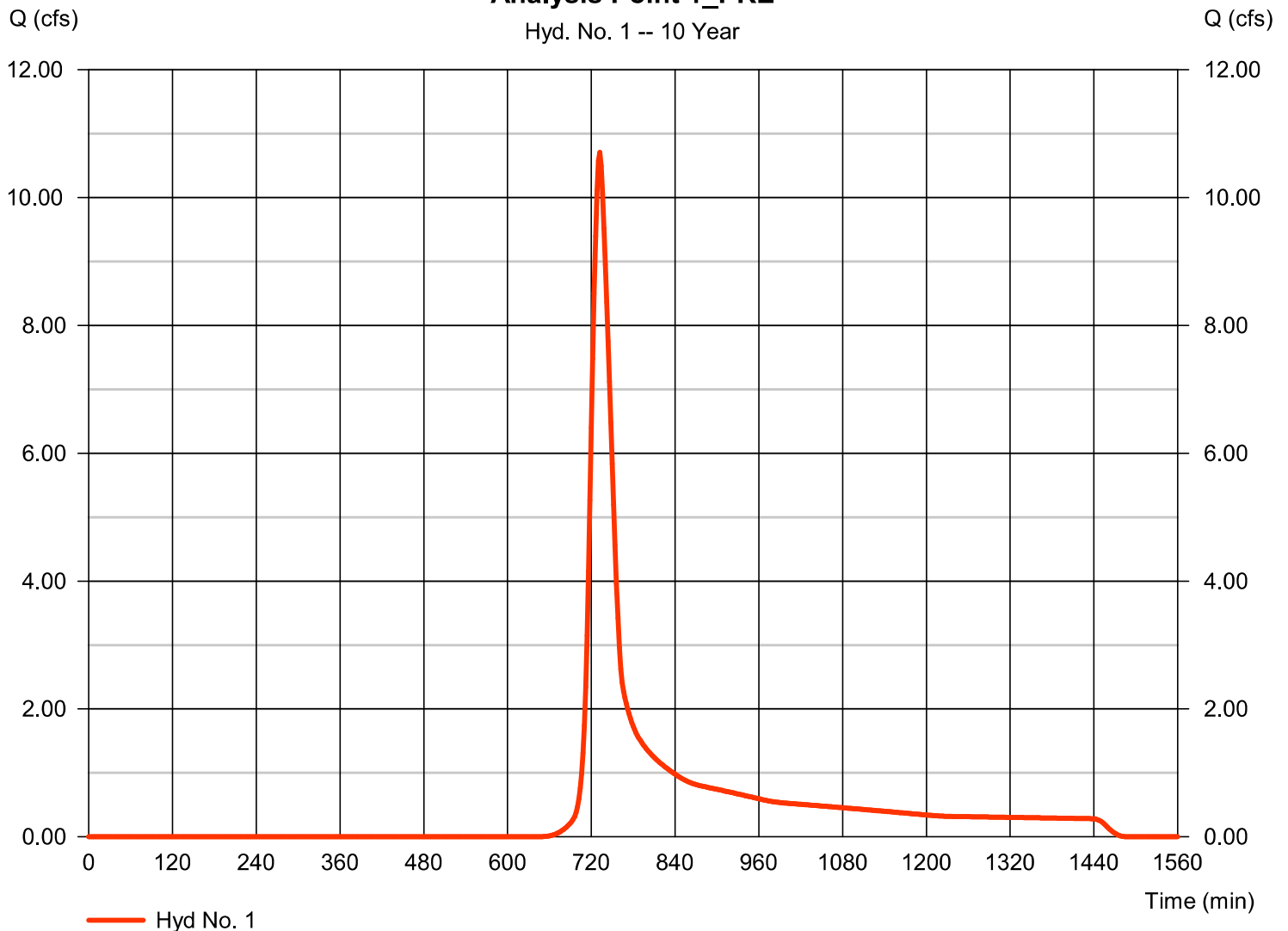
## Hyd. No. 1

Analysis Point 1\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 10.71 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 45,440 cuft
Drainage area	= 7.480 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 28.10 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

**Analysis Point 1\_PRE**

Hyd. No. 1 -- 10 Year



# Hydrograph Report

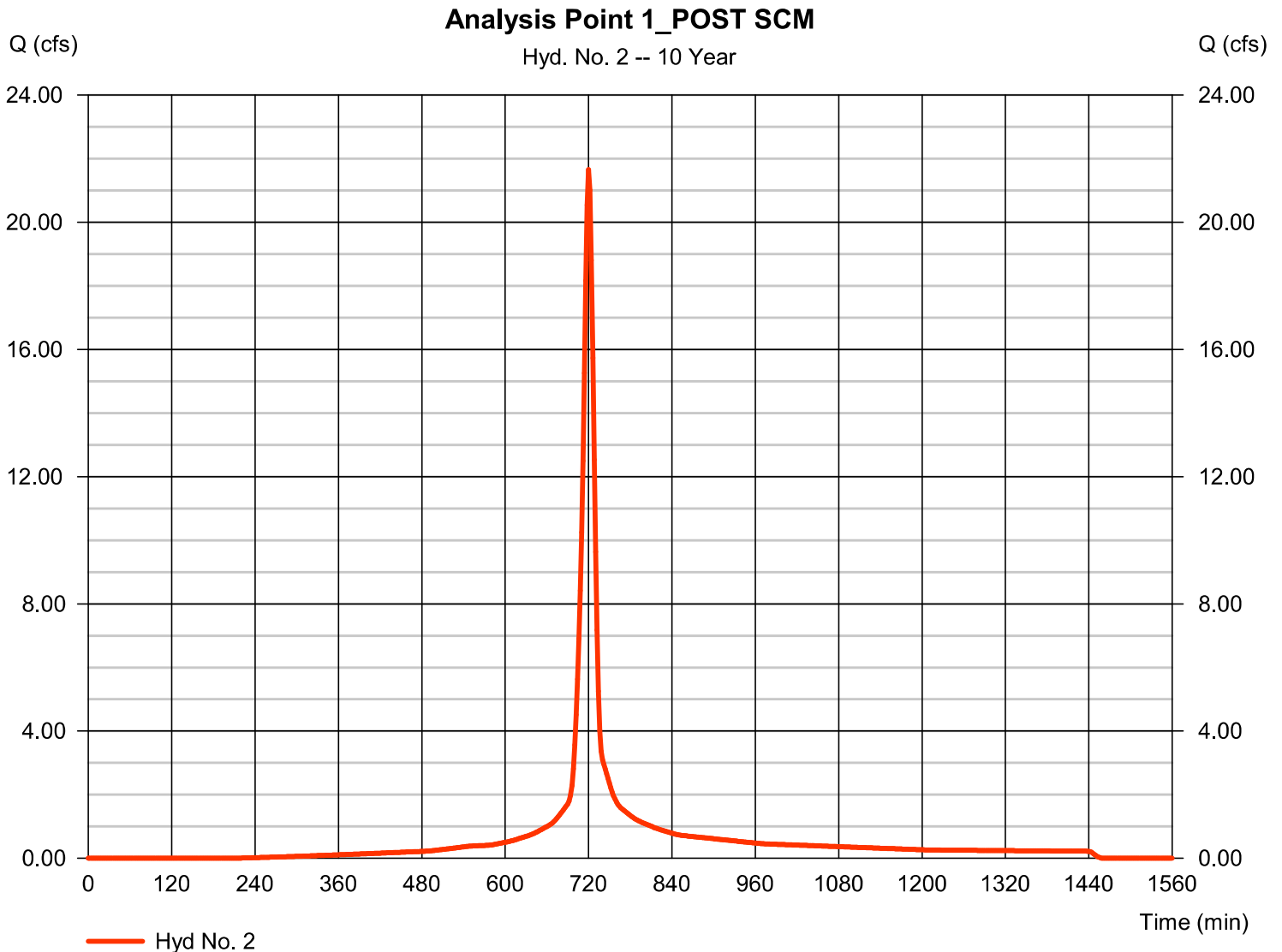
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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## Hyd. No. 2

Analysis Point 1\_POST SCM

Hydrograph type	= SCS Runoff	Peak discharge	= 21.66 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 59,012 cuft
Drainage area	= 3.930 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.20 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

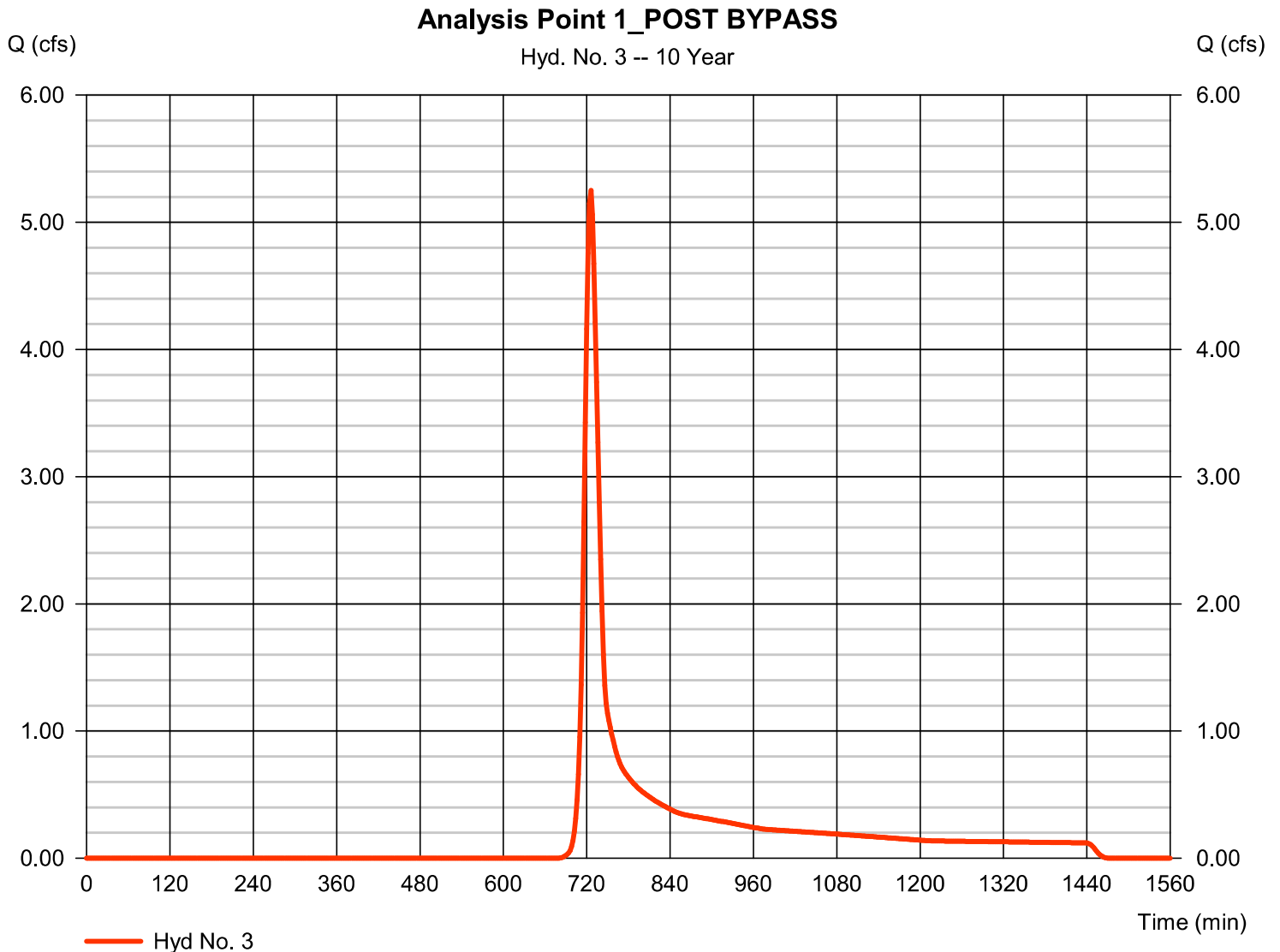
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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## Hyd. No. 3

Analysis Point 1\_POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.251 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 17,876 cuft
Drainage area	= 3.550 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

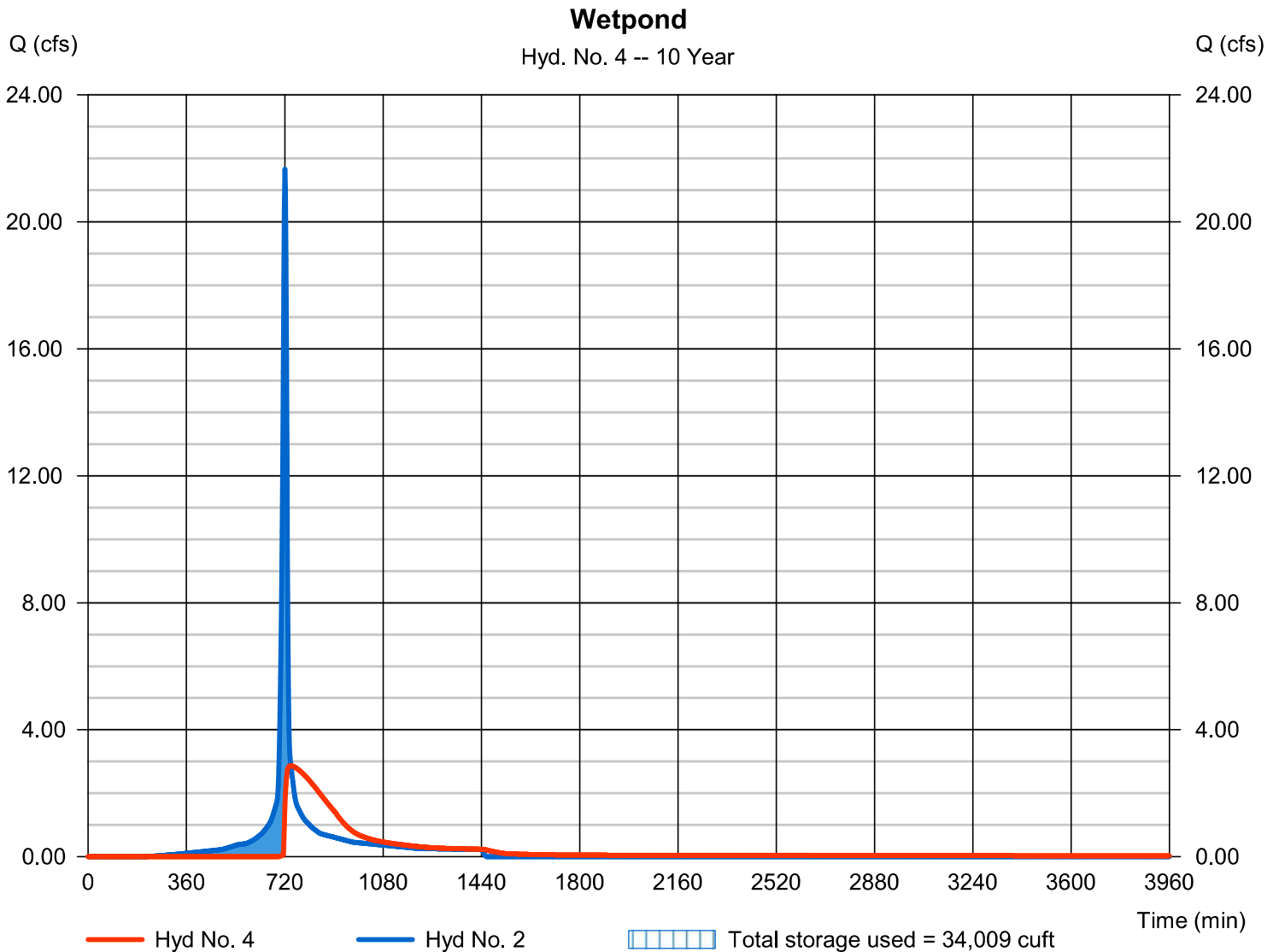
Monday, 01 / 29 / 2024

## Hyd. No. 4

Wetpond

Hydrograph type	= Reservoir	Peak discharge	= 2.863 cfs
Storm frequency	= 10 yrs	Time to peak	= 744 min
Time interval	= 2 min	Hyd. volume	= 48,663 cuft
Inflow hyd. No.	= 2 - Analysis Point 1_POST SCM	Max. Elevation	= 378.33 ft
Reservoir name	= Wet Pond	Max. Storage	= 34,009 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

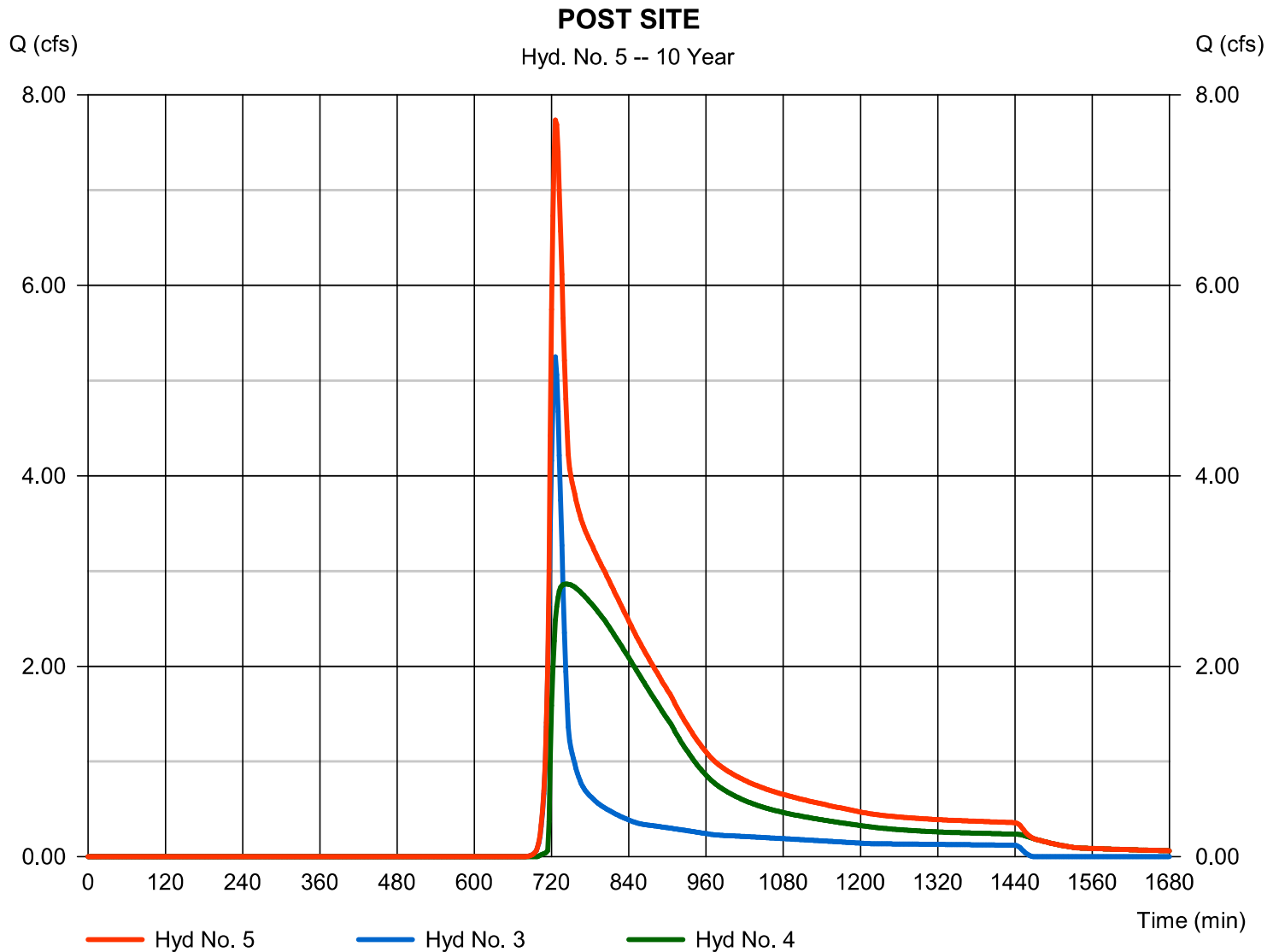
Monday, 01 / 29 / 2024

## Hyd. No. 5

### POST SITE

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 2 min  
Inflow hyds. = 3, 4

Peak discharge = 7.737 cfs  
Time to peak = 726 min  
Hyd. volume = 66,539 cuft  
Contrib. drain. area = 3.550 ac





# Hydrograph Report

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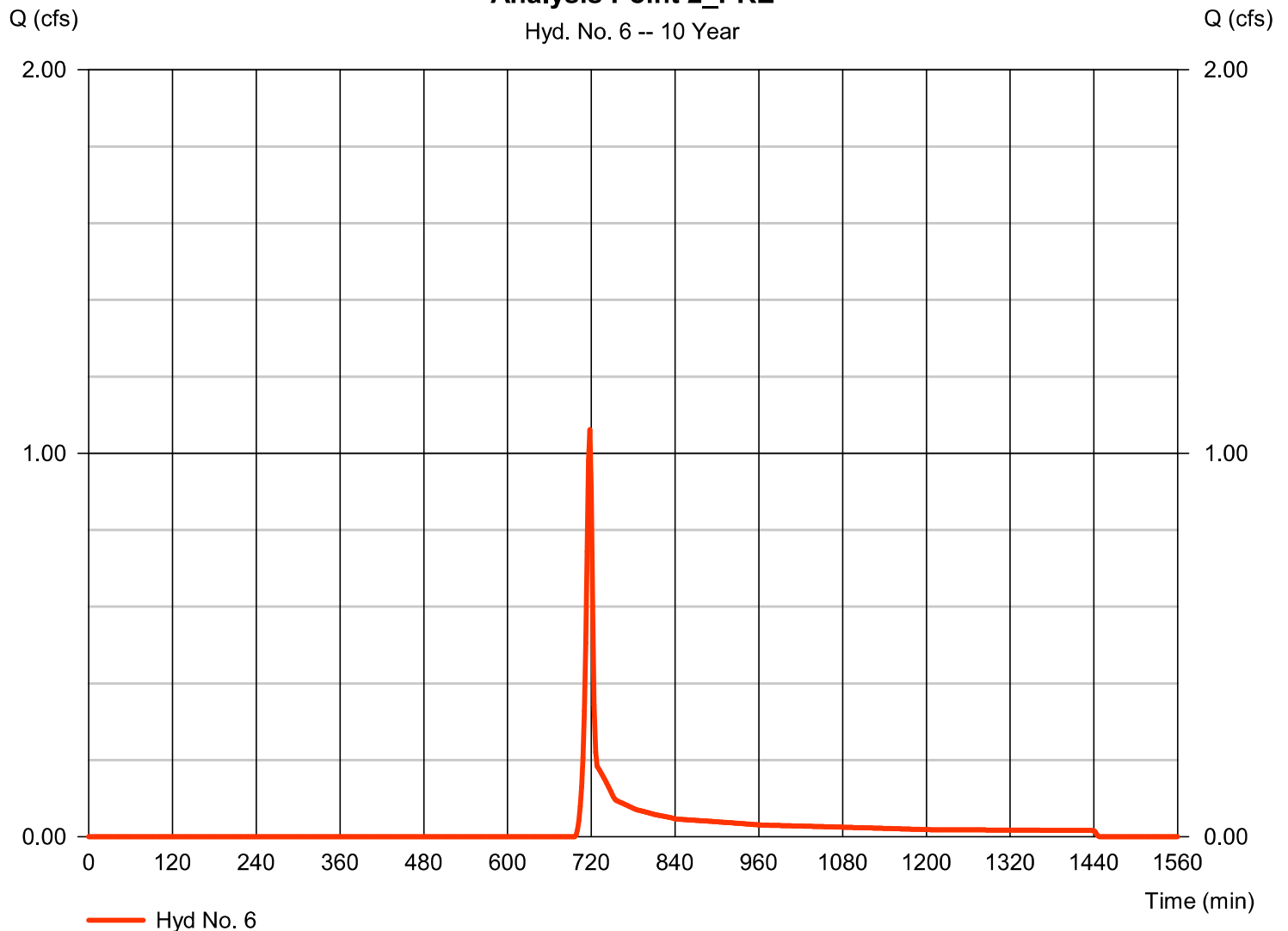
## Hyd. No. 6

Analysis Point 2\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 1.062 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,212 cuft
Drainage area	= 0.580 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 2\_PRE

Hyd. No. 6 -- 10 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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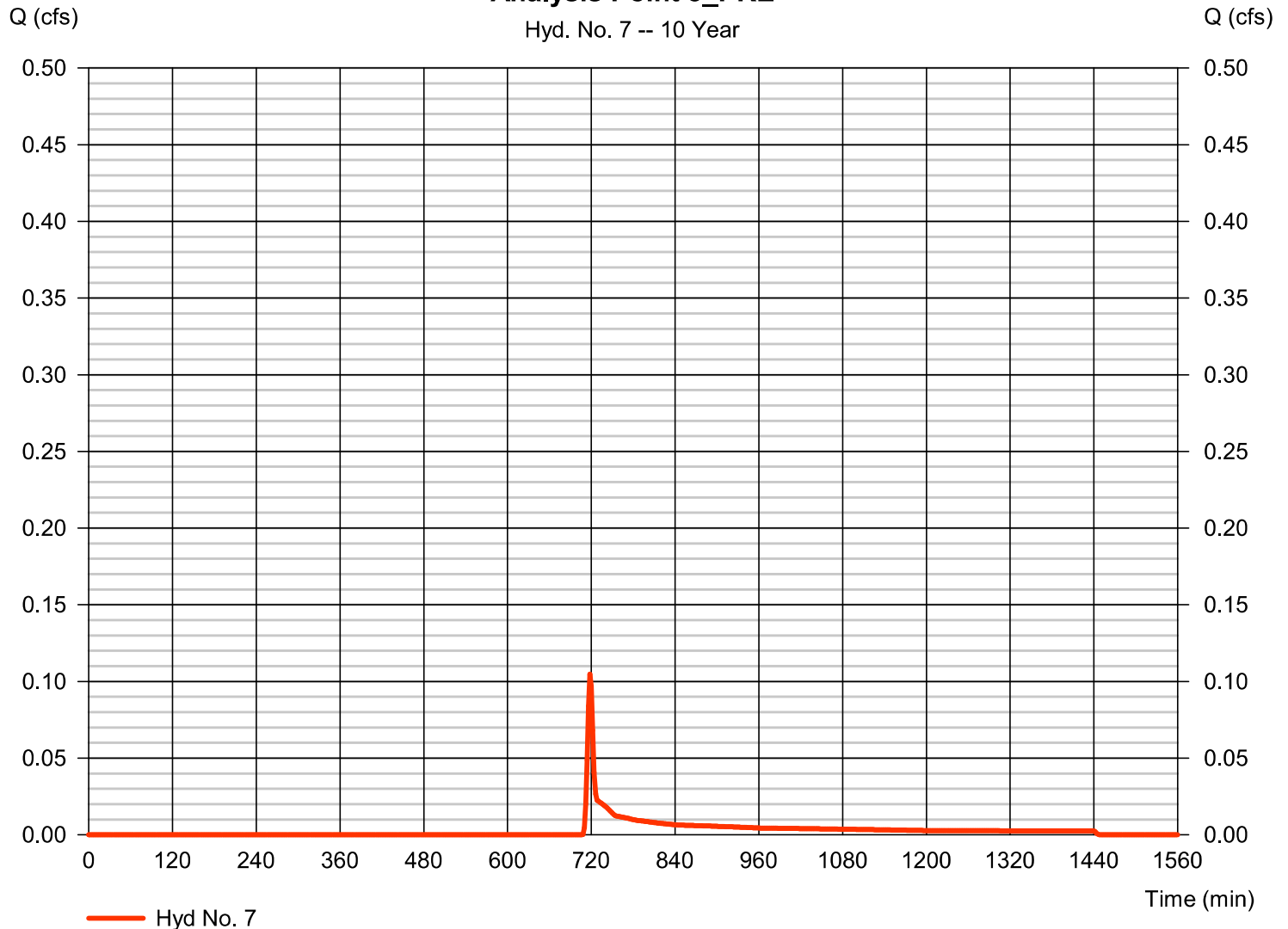
## Hyd. No. 7

Analysis Point 3\_PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.105 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 266 cuft
Drainage area	= 0.120 ac	Curve number	= 49
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### Analysis Point 3\_PRE

Hyd. No. 7 -- 10 Year



# Hydrograph Report

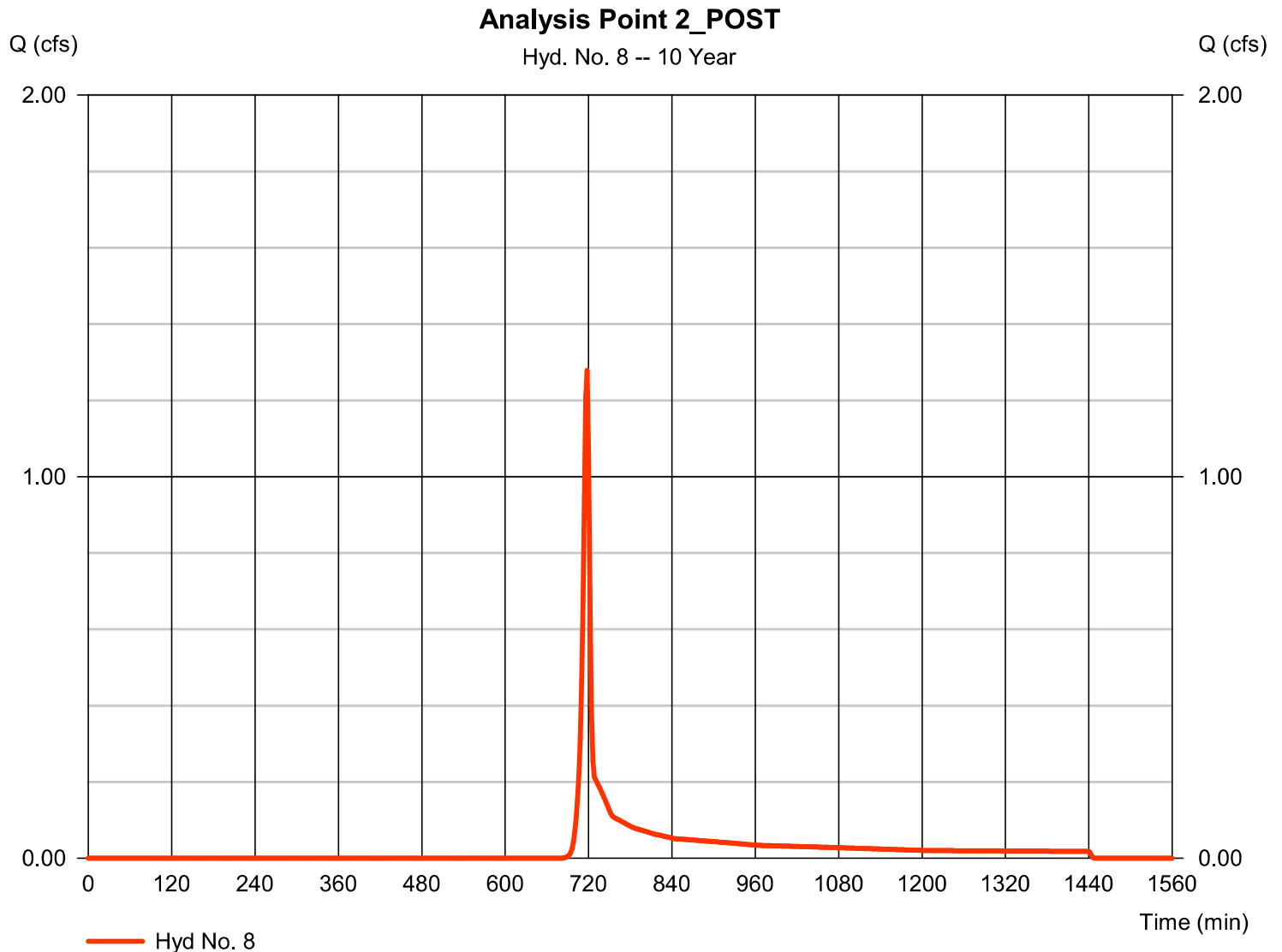
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

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## Hyd. No. 8

Analysis Point 2\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 1.279 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,603 cuft
Drainage area	= 0.580 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

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## Hyd. No. 9

Analysis Point 3\_POST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.310 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 624 cuft
Drainage area	= 0.120 ac	Curve number	= 63
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.03 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

