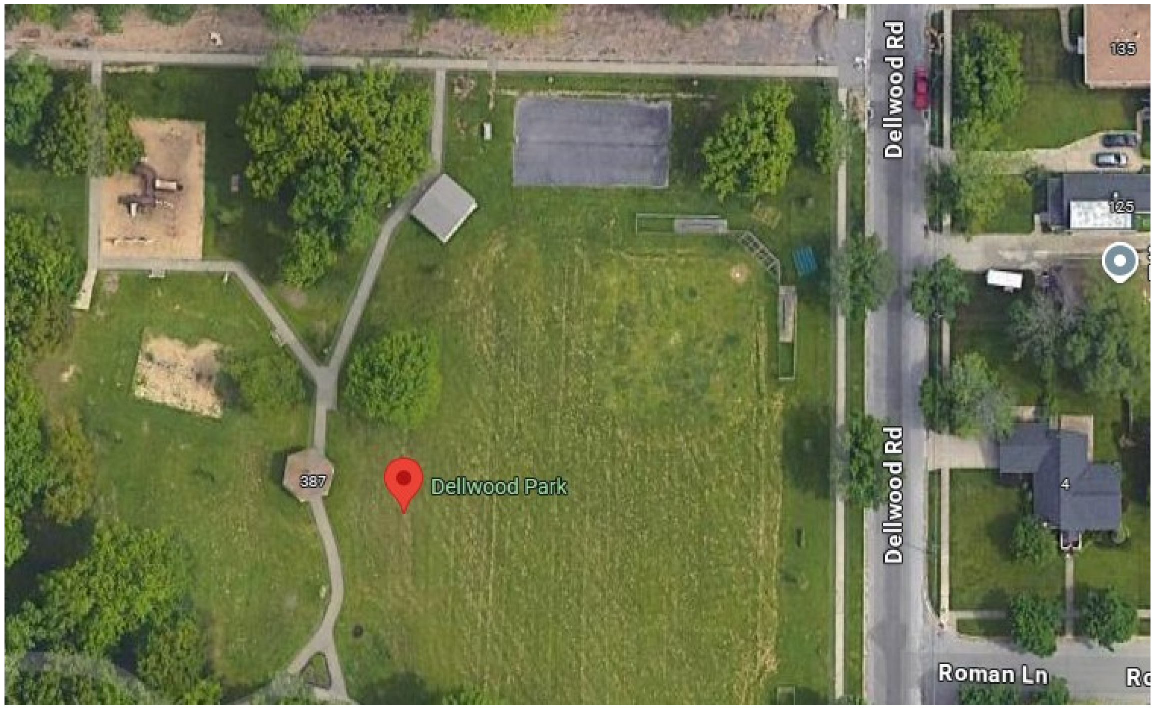
ENGINEERS REPORT
for
DELLWOOD PARK IMPROVEMENTS PROJECT
DELLWOOD ROAD
EAST AMHERST NY



Prepared for

TOWN OF AMHERST

ENGINEERING DEPARTMENT

1100 N. FORREST ROAD

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PRELIMINARY REPORT

FEBRUARY 2025

ENGINEERS REPORT

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I. INTRODUCTION

DiDonato Associates, P.E., P.C. has been retained by the Town of Amherst to perform the site design services for a restroom building for Dellwood Park located along 750 Dellwood Road in the Town of Amherst, Erie County, New York. The proposed improvements to the existing Ballpark will comprise of improvements to the existing field with a permeable asphalt field, a restroom facility and associated access concrete sidewalks, and a permeable pavement parking lot adjacent to the existing parking lot.

The following Engineers Report, which includes the preliminary drainage study, has been performed in accordance with the Town of Amherst requirements. The drainage study for the building site will address the existing site drainage and the proposed drainage measures related to the construction of the project.

II. ANALYSIS

A. *Methodology*:

The Natural Resources Conservation Service (NRCS), formerly the Soils Conservation Service (SCS) Technical Report 20 (TR-20) method utilizing HydroCAD 10.0 program by Applied Microcomputer Systems was used to analyze the runoff hydrograph and perform stormwater routing calculations.

As per the Town of Amherst's standards, the retention volume is based on the difference in runoff from the post-developed 25-year storm and the 10-year pre-developed storm.

The Time of Concentration was based on the methods described in the NRCS Technical Report 55 (TR-55). A storm recurrence of 10 years was used for the analysis of the existing watershed and a 25-year storm for analysis of proposed improvements for the watershed. The NRCS Soil Survey of Erie County was used to determine the existing soil classification and is attached in Appendix A. The hydrologic conditions used for the analysis were based primarily on topographic maps for the area along with limited topographic survey data and field investigations. Hydraulic calculations are contained in Appendix C of this report.

B. *Design Parameters*:

It is proposed that 0.88 acres of the park property will be disturbed for this project. The existing hydrology for the site will not be changed due to this construction. The watershed for this analysis was the area impacted by the construction and was used to determine the runoff coefficient for the area based on the watershed characteristics. The time of concentration was taken as the travel time from the most hydraulically distant point in the area to the upstream end of the receiving point.

III. RESULTS

However, this report focuses on the detention of the 10-year design storm for the pre-developed conditions and 25-year design storm for the post-developed conditions as per the Town of Amherst requirements.

The minimal increase in runoff from the post-developed conditions as compared to the pre-developed conditions is due to the increase in the impervious areas for the proposed building and the small sidewalk area. The runoff from the existing conditions and the proposed conditions is as follows:

A. EXISTING DRAINAGE CONDITIONS

The existing Dellwood Park area consists of grass lined surface and a permeable parking lot to the north. Runoff from the area flows to the north over land and a section of the area drains to the closed roadway drainage system along Dellwood Road. Runoff from the existing parking lot that does not infiltrate is conveyed to the 36-inch storm sewer along the park which

Site soils as depicted in the Web Soil Survey and the Soil Survey of Erie County, New York consist of Urban land -Churchville Complex (100%), with 0 to 3% slopes, and cover the entire disturbed area and is characterized as somewhat poorly drained soil. This soil falls under the hydrologic group C/D. A Natural Resources Conservation Service (NRCS) custom soils report is attached in Appendix A.

The overall runoff from the 0.88± acre section of land is surfa Runoff calculations for the existing conditions are attached in Appendix C of this report.

B. PROPOSED DRAINAGE CONDITIONS

Approximately 0.88 acre site will be disturbed as part of the project. The proposed development will consist of a 1100 square feet restroom building with concrete sidewalks to access the restrooms for the ballpark patrons. A new parking lot with permeable pavement will be constructed to the north of the ballpark. The ballpark will have an artificial turf with a permeable base to drain the field faster. The new permeable asphalt paved parking lot will be connected to the existing permeable parking lot with underdrains that are connected to the existing drainage system. The permeable ballpark area underdrain will be connected to an existing 6-inch underdrain pipe stub that was installed for the ballpark drainage during a previous stormwater improvement project by the Town of Amherst. The proposed permeable areas will store runoff that does not infiltrate and convey the excess runoff to an existing 6-inch pipe. This 6-inch storm sewer stub was installed as part of the drainage improvement project for conveying this runoff from the ballpark area to the 36- inch storm sewer which drains the Dellwood Road watershed to the bioretention pond along N. Ivyhurst Road.

SUMMARY AND CONCLUSIONS

The storm sewer system for the proposed improvements at Dellwood Park in Amherst is designed to meet the requirements of the Town of Amherst. The proposed development will result in 18% increase in the impervious cover within the 0.88 acre area for improvement with slight increase in the peak stormwater runoff from the developed site as compared to the pre-developed conditions on the outfall location. The majority of the existing area characteristics and the drainage pattern of the surrounding area will not change due to this development.

IV. WATERLINE DESIGN / RPZ REPORT

A new 2-inch Domestic Water Service will be installed at Dellwood Park, and it is proposed that the proposed water services to the new restroom building will be connected to a new RPZ.

This new water service will be used for typical bathroom uses (including toilet flushing and hand washing). The design water usage for the proposed office building shall be 1550 gpd based on the peak water demand.

Waterline Chlorination and Testing

The newly installed water service shall be tested prior to being placed in service. Current Erie County Water Authority (ECWA) and Erie County Health Department (Erie County Department of Environment and Planning) standards will be utilized for these tests. All installed pipes will be new and in excellent condition and will be disinfected with a chlorine solution meeting the requirements of the ECWA and the American Water Works Association (AWWA).

V. SANITARY SEWER DESIGN

Project Description

The Town of Amherst owns and maintains numerous parks that provide a variety of recreational activities and team sports opportunities for the community. Dellwood Park, located on Ivyhurst Road between Millersport Highway and Dellwood Road, features a baseball field along with passive amenities such as a playground and a picnic shelter.

To enhance the park, a new inclusive baseball field will be constructed, along with a single-story, ADA- compliant building that will include restrooms and storage facilities. This new building will be conveniently located near the inclusive field and accessible to all onsite recreational amenities. The seasonal restroom building will be operational from April through September each year.

Wastewater from the site will flow east from the new building (shown on the enclosed site plan) by a new six (6) inch sanitary service lateral and connecting into the existing manhole on the west side of Dellwood; thence north via existing 8-inch gravity sewer along Dellwood to the existing 36-inch gravity sewer on Sheridan Drive; thence easterly along the south side of Sheridan drive by 36 and 42-inch gravity sewers to the I-290 right-of- way; thence northerly and westerly by 54 and 60-inch trunk lines to the Peanut trunk line; thence northerly by 84-inch gravity trunk line to the Town of Amherst Wastewater Treatment Plant No. 16 on Tonawanda Creek Road.

<u>Sanitary Flows (as per demand calculations provided):</u>

Average Daily Flows: 0.0003 MGD (347.1 gpd)
[Seasonal flows from April through September]

Note: Average sanitary demand is well less than 2,500 gpd and therefore a Downstream Sewer Capacity Analysis (DSCA) and I/I mitigation is not required.

<u>Find Peak Sanitary Demand:</u>

Peaking factor based on population

Total Demand: 347.1 gpd / 100 gpcd = 3.471 per capita
say = 4 per capita

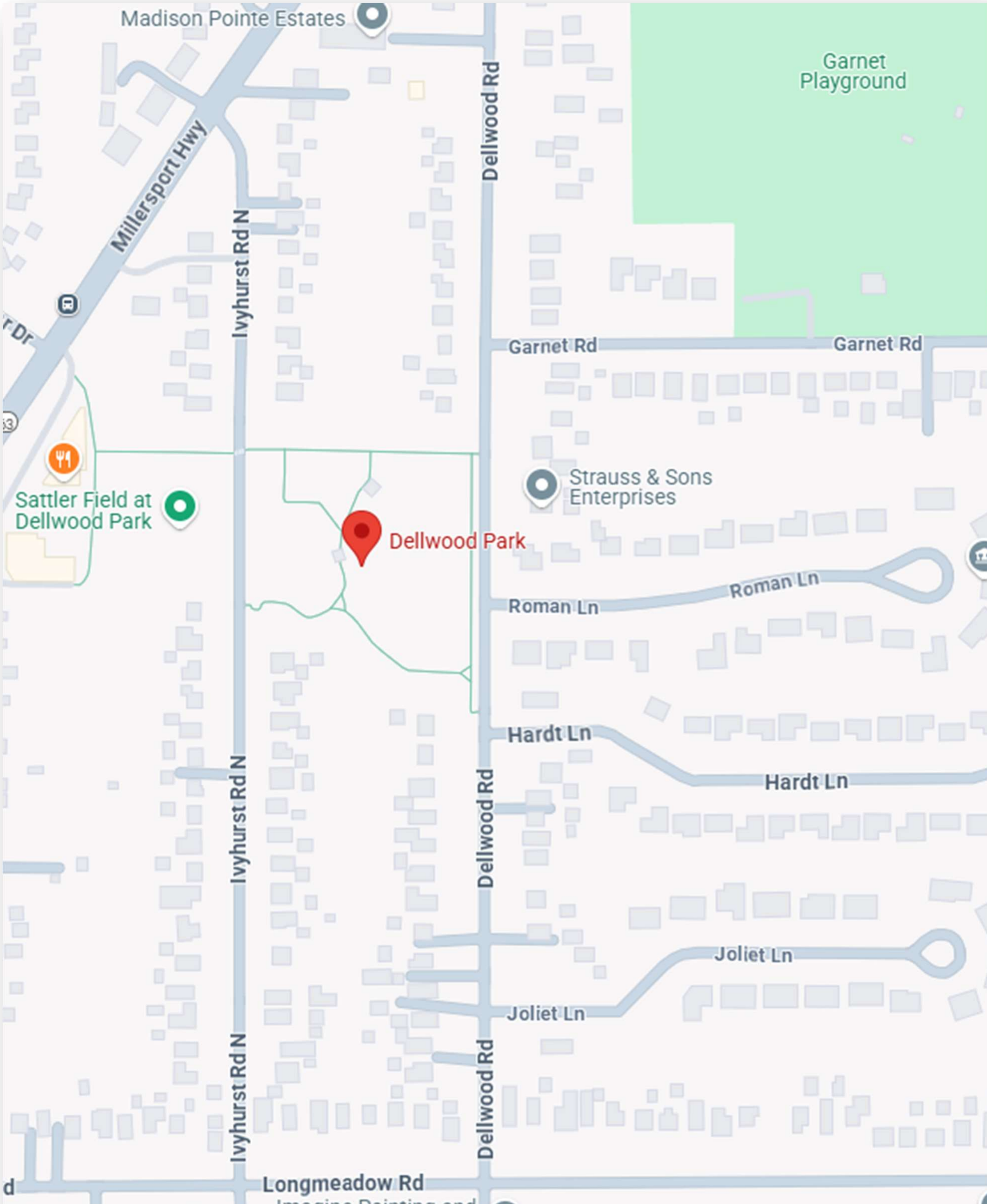
Population (P) = 4 people

Peaking Factor Demand Calcs: $(18 + \sqrt{P}) / (4 + \sqrt{P})$ [P is in thousands] Peaking Factor: $(18 + \sqrt{0.004}) / (4 + \sqrt{0.004}) = 4.45$

Peak Sanitary Demand = 347.1 gpd x 4.45 = 1,545 gpd
= 0.00154 mgd

APPENDIX A

LOCATION & SOIL MAPS



PROJECT LOCATION MAP	
DELLWOOD PARK IMPROVEMENTS PROJECT DELLWOOD ROAD. AMHERST, NY	DiDonato Associates Engineering and Architecture, P.C.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Erie County, New York

Dellwood Park Improvements Project Amherst NY

February 24, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

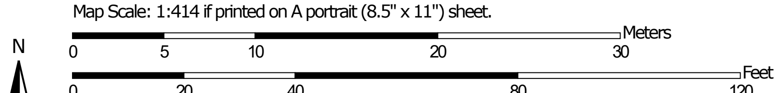
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:414 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 24, Aug 25, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 13, 2023—May 27, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Uh	Urban land-Churchville complex	0.9	100.0%
Totals for Area of Interest		**0.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Erie County, New York

Uh—Urban land-Churchville complex

Map Unit Setting

National map unit symbol: 9rq9
Elevation: 570 to 720 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 65 percent
Churchville and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Churchville

Setting

Landform: Lake plains, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey glaciolacustrine deposits over loamy till

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 26 inches: silty clay
H3 - 26 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Niagara

Percent of map unit: 3 percent

Hydric soil rating: No

Ovid

Percent of map unit: 3 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 2 percent
Hydric soil rating: No

Lakemont

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

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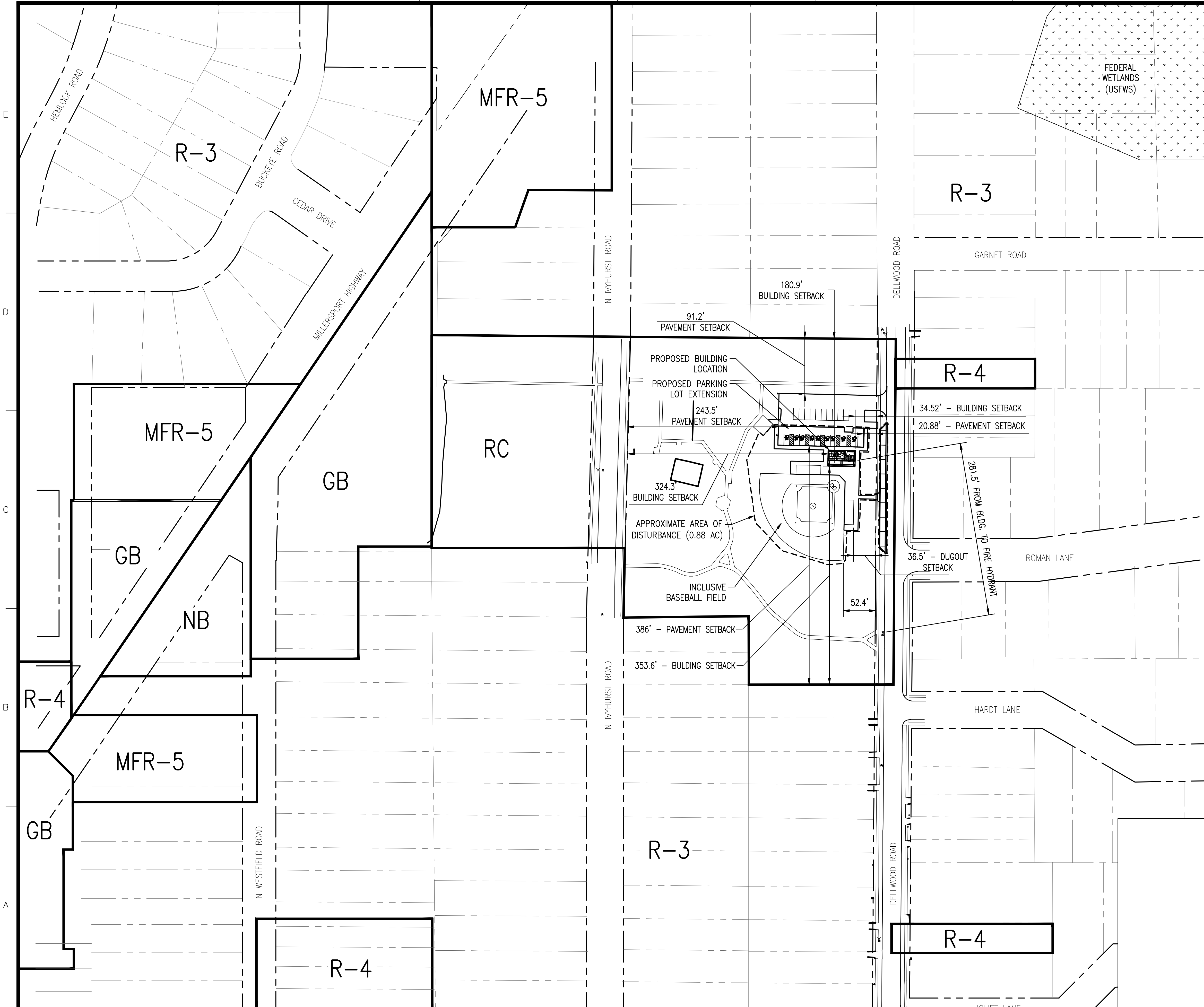
APPENDIX B

PROJECT DRAWINGS



N

ZONING DISTRICTS

MFR–5 = MULTI–FAMILY RESIDENTS DISTRICT 5
R–3 = RESIDENTIAL DISTRICT 3
R–4 = RESIDENTIAL DISTRICT 4
RC = RECREATION CONSERVATION
GB = GENERAL BUSINESS
NB = NEIGHBORHOOD BUSINESS

NOTES:

1. SITE DOES NOT CONTAIN ANY STATE WETLANDS AND IS NOT LOCATED IN A FEMA FLOODPLAIN OR FLOODWAY. APPROXIMATE LOCATION OF FEDERAL WETLANDS (USFWS) IS SHOWN PER TOWN OF AMHERST GIS MAP.
2. 387 N. IVYHURST RAOD
   SBL 67.16–2–1 ACREAGE 6.7 ACRES
3. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM TOPOGRAPHIC SURVEY – PREPARED BY KHEOPS ARCHITECTURE, ENGINEERING & SURVEY DPC DATED 8/16/2019.

80 0 80 160
SCALE (FEET)

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Engineering and Architecture, P.C.

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STATE OF NEW YORK · WILLIAM F. RAAB · LICENSED PROFESSIONAL ENGINEER · 081988

TOWN OF AMHERST

DELLWOOD PARK
INCLUSIVE FIELD &
PARK IMPROVEMENTS

MARK	DATE	DESCRIPTION
	02/24/25	SITE PLAN APPROVAL

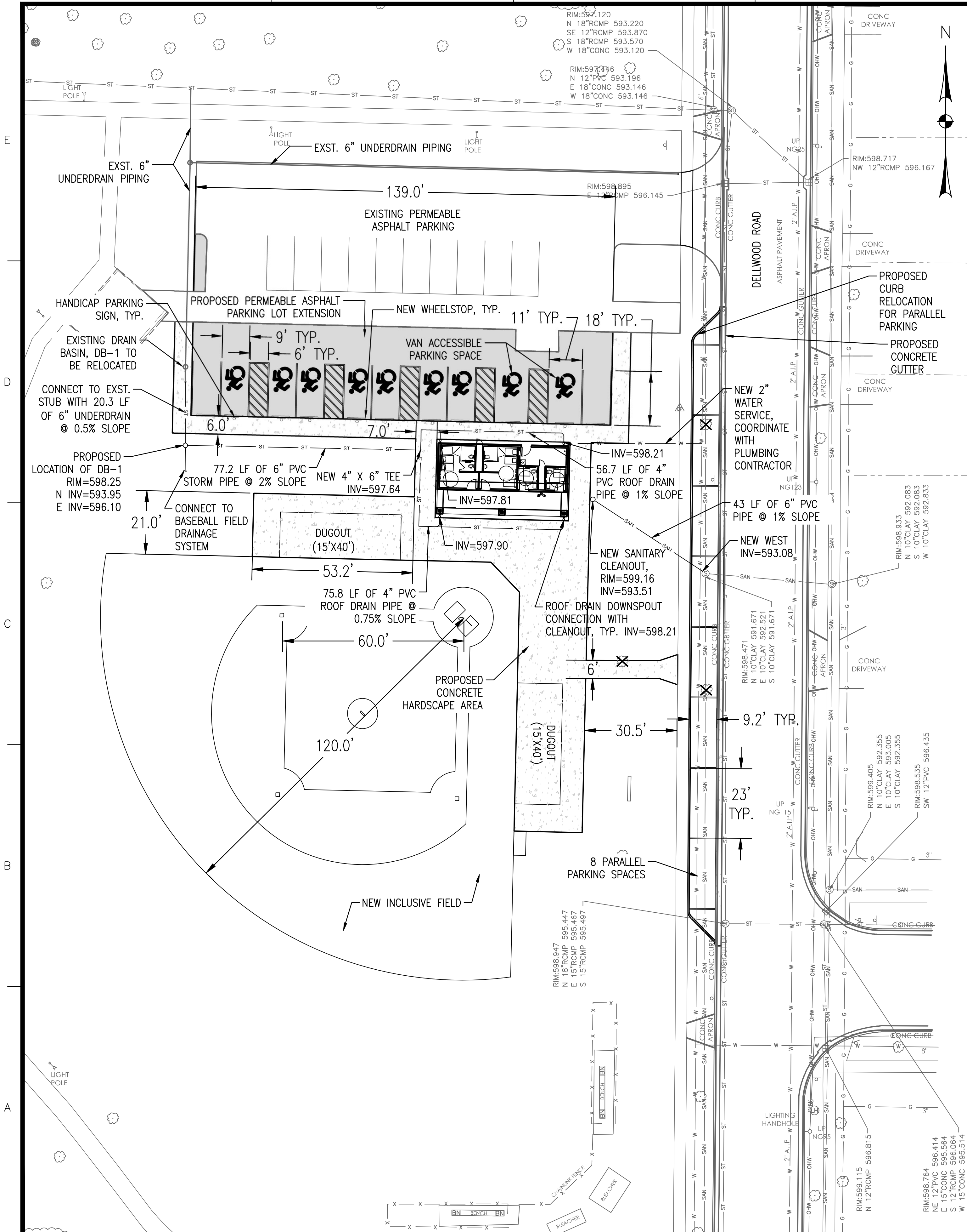
ISSUE:

PROJECT NO:	2019.025B
DESIGNER PROJECT NO:	25–3610
CAD DWG FILE:	CP100.DWG
DRAWN BY:	CHB
CHECKED BY:	ADS
SCALE:	AS NOTED
COPYRIGHT:	

SHEET TITLE

OVERALL SITE AND ZONING PLAN

DRAWING#
CP100



NOTES:

1. CONTRACTOR SHALL FIELD VERIFY SERVICE LOCATIONS AND DEPTHS AT START OF CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONNECT ROOF DRAINS INTO EXISTING DRAINAGE SYSTEM.
3. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PRESERVE THE INTEGRITY OF THE EXISTING UTILITIES TO REMAIN AND SHALL PROVIDE UNINTERRUPTED SERVICE TO ALL USERS OF THE EXISTING UTILITIES. INSTALLATION OF ALL UTILITIES, INCLUDING ANY REMOVAL OR RELOCATION, SHALL BE IN ACCORDANCE WITH THE TOWN OF AMHERST REQUIREMENTS.
4. EXISTING UTILITIES (LOCATION, SIZES AND INVERTS) SHOWN ON THE PLANS HAVE BEEN PLOTTED FROM FIELD SURVEYS AND RECORD MAPS AND ARE NOT CERTIFIED AS TO THE ACCURACY OF THEIR LOCATION OR COMPLETENESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND DEPTH OF ALL UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DELAYS OR DAMAGES OCCURRING AS A RESULT OF INCORRECTLY LOCATED UTILITIES. NO EXTENSIONS OF CONTRACT TIME AND NO MONETARY DAMAGE CLAIMS SHALL BE ALLOWED AS A RESULT OF REVISED DESIGN LOCATIONS.
5. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF ALL PIPE LAYING OPERATIONS TO ALLOW FOR MINOR ADJUSTMENTS TO BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, IF NECESSARY.
6. CONTRACTOR SHALL PROVIDE TOWN REPRESENTATIVES AND DESIGN TEAM INSPECTORS FREE ACCESS TO ALL PARTS OF THE SITE FOR PROPER INSPECTION.
7. CONTRACTOR SHALL PERFORM NO WORK OUTSIDE OF THE DESIGNATED WORK LIMITS WITHOUT APPROVAL FROM THE ENGINEER.
8. CONTRACTOR SHALL VERIFY LOCATION OF SANITARY BUILDING TRAP WITH PLUMBING CONTRACTOR, SEE DETAIL CP504.
9. CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AREAS IN-KIND USING A MINIMUM OF 4" OF TOPSOIL AND SEED.
10. CONTRACTOR SHALL TAKE CARE TO NOT DISTURB ADJACENT EXISTING PAVEMENT WHEN TRENCHING IN GRASS AREA.
11. IN AREAS WHERE PROPOSED UTILITIES CROSS EXISTING ASPHALT PAVEMENT, REFER TO DWG CP501 FOR EXISTING ASPHALT PAVEMENT SECTION AND DWG CP502 FOR TRENCH DETAILS.

0 10 20 40 60
SCALE (FEET)

LEGEND

(shaded)	ASPHALT PARKING
(stippled)	CONCRETE SIDEWALK
●	TREE
—ST—	STORM SEWER PIPE
—SAN—	SANITARY SEWER PIPE
—W—	WATER SERVICE PIPE
⊠	EXISTING TREE TO BE REMOVED

SITE INFORMATION

SITE DATA:	SITE DATA:
CURRENT ZONING: 387 N. IVYHURST	RECREATION CONSERVATION DISTRICT (RC)
TOTAL SITE AREA:	6.7 Ac
TOTAL PROJECT DISTURBANCE:	38,316 S.F.±
BUILDING DATA	
GROSS BUILDING AREA:	660 S.F.±
NET BUILDING AREA:	558 S.F.±
MAX. BUILDING HT.:	16'-0"±

RECREATION CONSERVATION (RC) – ZONING REQUIREMENTS

BUILDING SETBACKS:	REQUIRED:	PROVIDED:
NORTH	50'	181'
SOUTH	50'	354'
EAST	20'	35'
WEST	50'	324'

VEHICLE USE SETBACKS	REQUIRED:	PROVIDED:
NORTH	25'	91'
SOUTH	25'	386'
EAST	15'	21'
WEST	25'	244'

* NOTE SETBACKS BASED ON MAX. STRUCTURE HEIGHT < 65'

AVAILABLE PARKING DATA

EXISTING PARKING LOT	HANDICAP SPACES – 0 STANDARD SPACES – 10
PROPOSED PARKING	HANDICAP SPACES – 9 STANDARD SPACES – 2 PARALLEL SPACES – 8

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TOWN OF AMHERST

DELLWOOD PARK INCLUSIVE FIELD & PARK IMPROVEMENTS

MARK	DATE	DESCRIPTION
	02/24/25	SITE PLAN APPROVAL

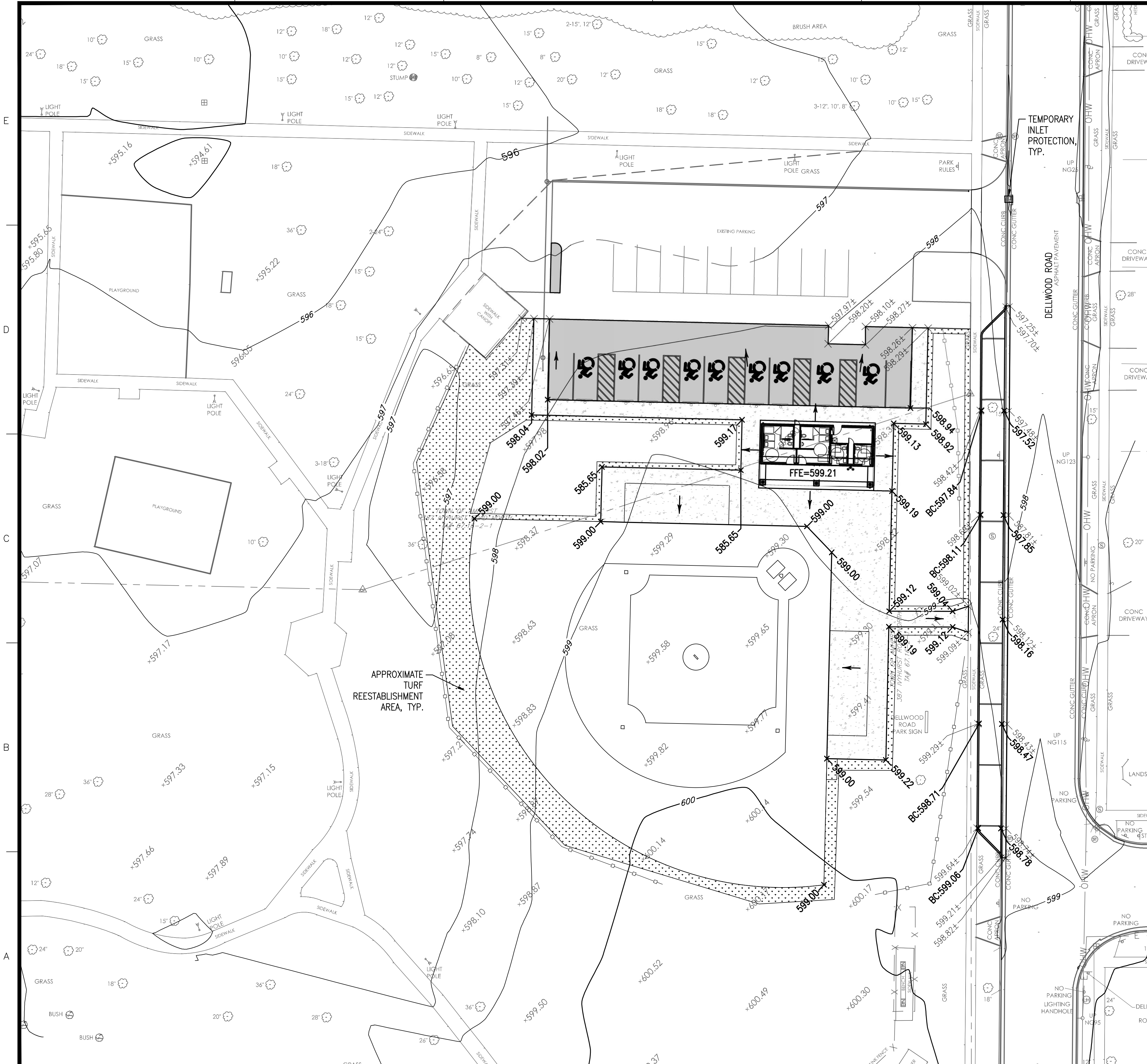
ISSUE:	
PROJECT NO:	2019.025B
DESIGNER PROJECT NO:	25-3610
CAD DWG FILE:	CP101.DWG
DRAWN BY:	CHB
CHECKED BY:	ADS
SCALE:	AS NOTED
COPYRIGHT:	

SHEET TITLE

SITE AND UTILITY PLAN

DRAWING#

CP101



NOTES:

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7. CONTRACTOR SHALL PERFORM NO WORK OUTSIDE OF THE DESIGNATED WORK LIMITS WITHOUT APPROVAL FROM THE ENGINEER.
8. ALL TURF DISTURBED BY REGRADING SHALL BE RESTORED WITH MIN. 4" OF TOPSOIL AND SEEDED.

LEGEND

- 588.0 — EXISTING CONTOUR
- GRADE BREAK
- 585.28 — PROPOSED SPOT GRADE
- 585.88 — EXISTING SPOT GRADE
- DIRECTION OF FLOW
- PROPOSED SILT FENCE

0 10 20 40 60
SCALE (FEET)

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TOWN OF AMHERST

DELLWOOD PARK INCLUSIVE FIELD & PARK IMPROVEMENTS

MARK	DATE	DESCRIPTION
	02/24/25	SITE PLAN APPROVAL

ISSUE:	
PROJECT NO:	2019.025B
DESIGNER PROJECT NO:	25-3610
CAD DWG FILE:	GP101.DWG
DRAWN BY:	ADS
CHECKED BY:	JDM
SCALE:	AS NOTED
COPYRIGHT:	

SHEET TITLE

GRADING PLAN

DRAWING#

GP101

APPENDIX C

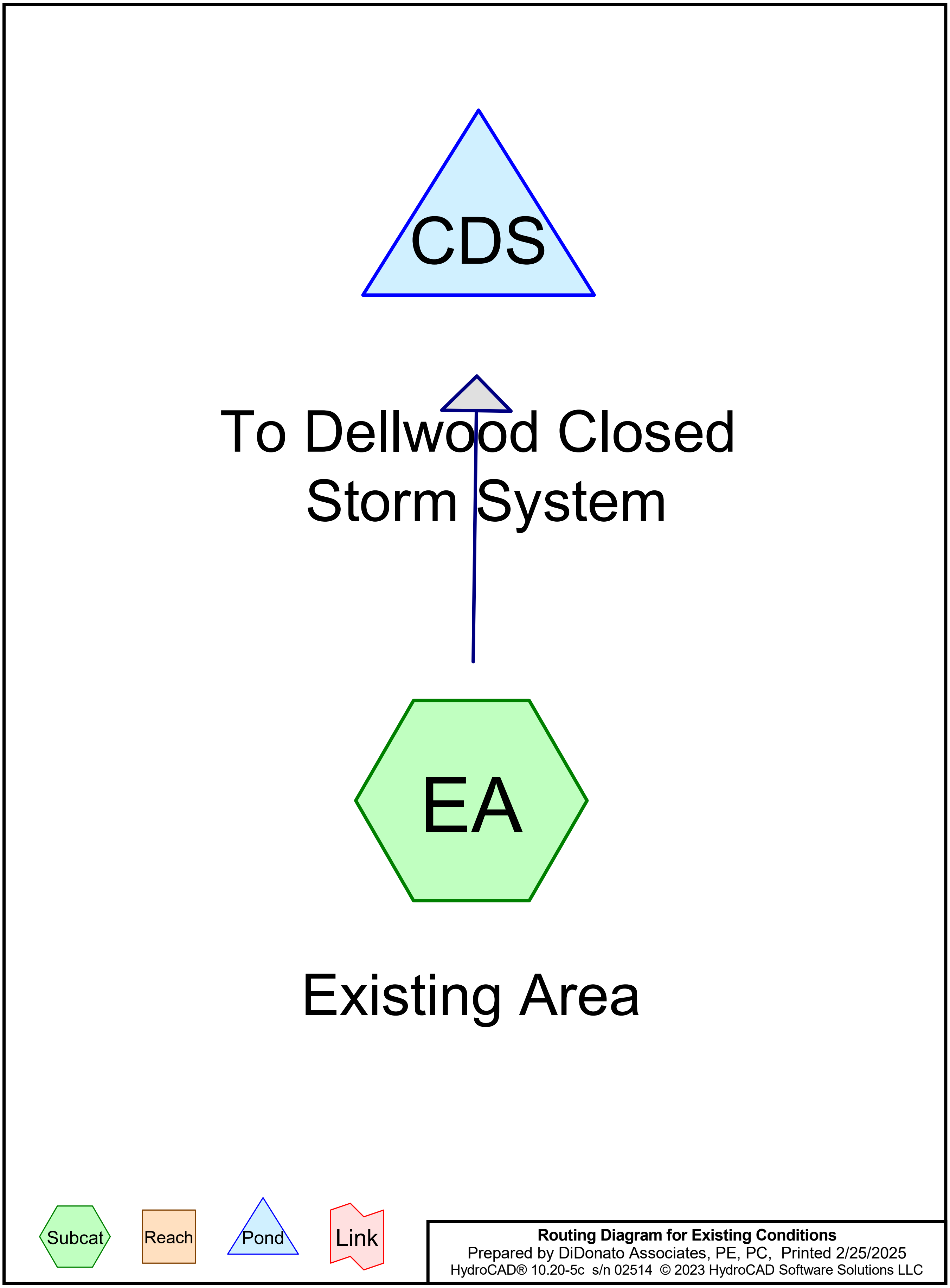
HYDRAULIC ANALYSIS

EXISTING CONDITIONS

DiDonato Associates

10 YEAR STORM

EXISTING CONDITIONS



Routing Diagram for Existing Conditions
Prepared by DiDonato Associates, PE, PC, Printed 2/25/2025
HydroCAD® 10.20-5c s/n 02514 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.895	80	>75% Grass cover, Good, HSG D (EA)
0.895	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.895	HSG D	EA
0.000	Other	
0.895		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.895	0.000	0.895	>75% Grass cover, Good	EA
0.000	**0.000**	**0.000**	**0.895**	**0.000**	**0.895**	**TOTAL AREA**	

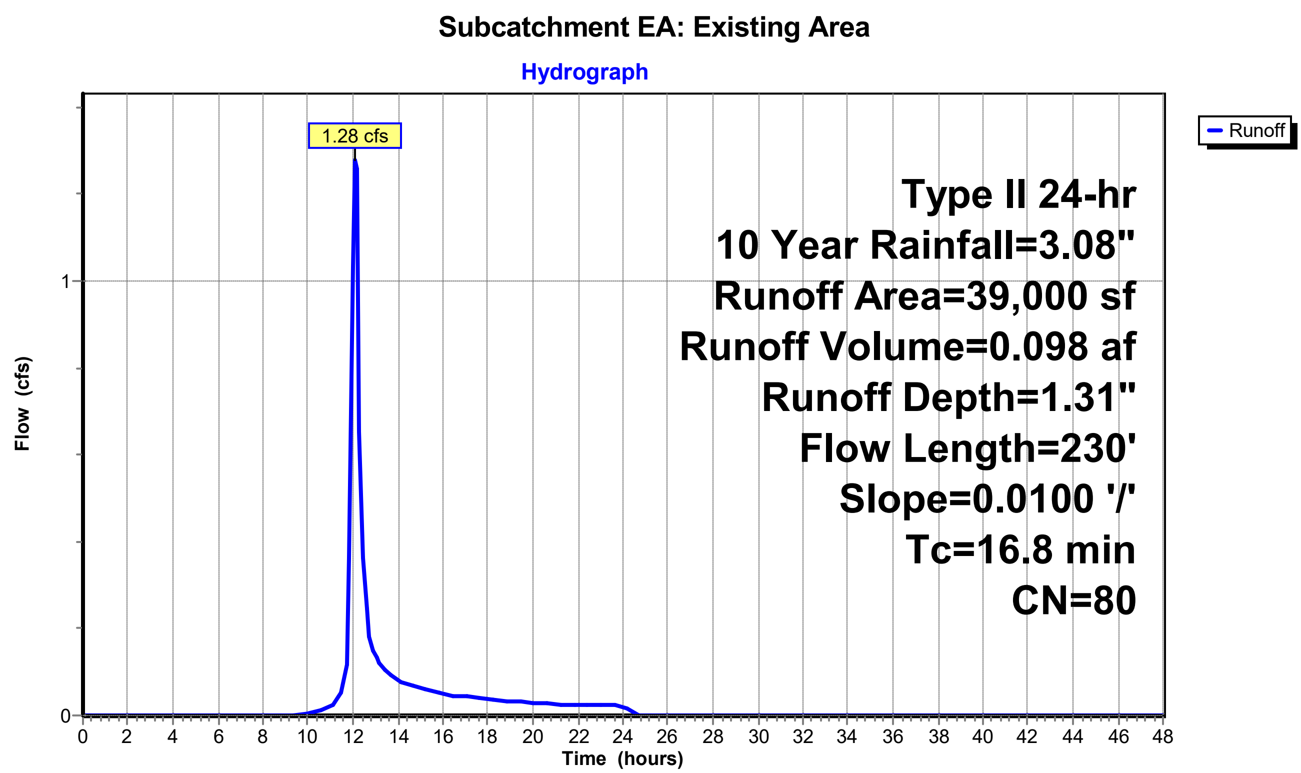
Summary for Subcatchment EA: Existing Area

Runoff = 1.28 cfs @ 12.12 hrs, Volume= 0.098 af, Depth= 1.31"
Routed to Pond CDS : To Dellwood Closed Storm System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Type II 24-hr 10 Year Rainfall=3.08"

Area (sf)	CN	Description
39,000	80	>75% Grass cover, Good, HSG D
39,000		100.00% Pervious Area

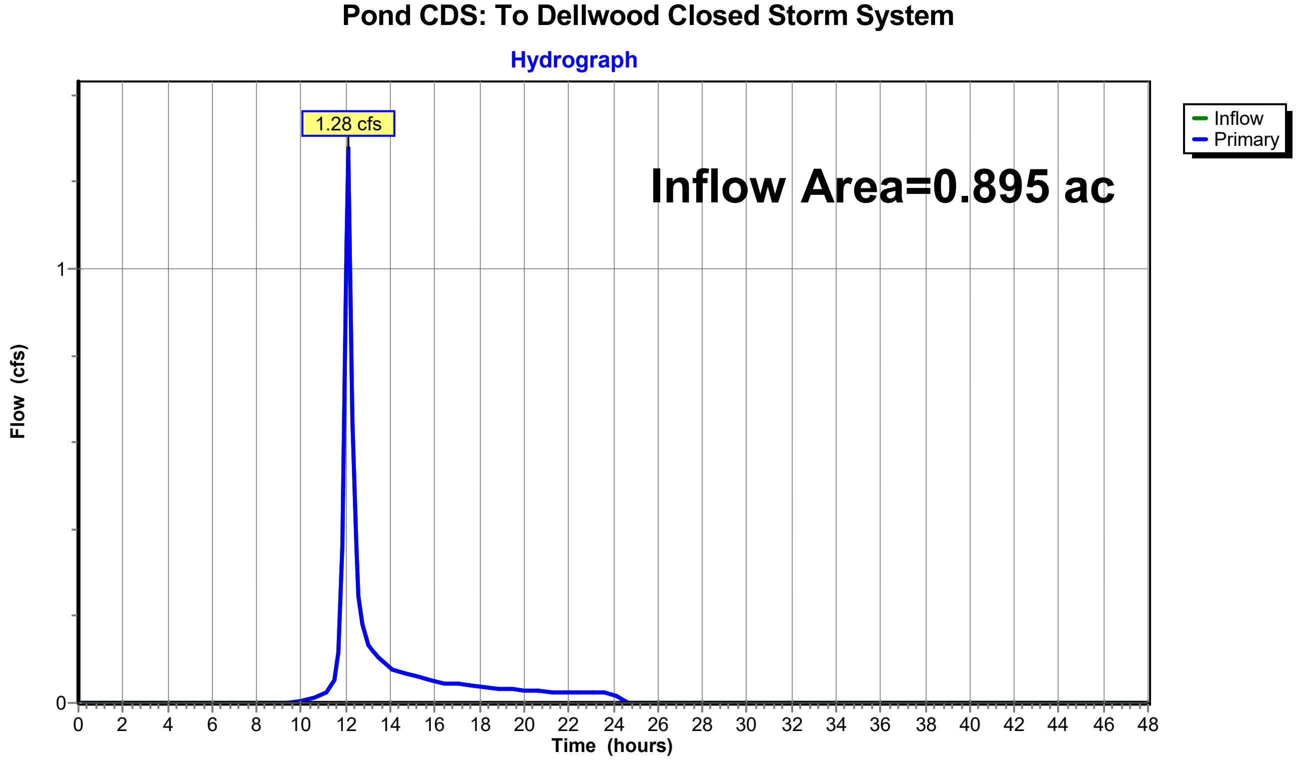
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.17"
1.1	130	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.8	230	Total			



Summary for Pond CDS: To Dellwood Closed Storm System

Inflow Area =	0.895 ac,	0.00% Impervious, Inflow Depth = 1.31"	for 10 Year event	
Inflow =	1.28 cfs @	12.12 hrs, Volume=	0.098 af	
Primary =	1.28 cfs @	12.12 hrs, Volume=	0.098 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs



DiDonato Associates

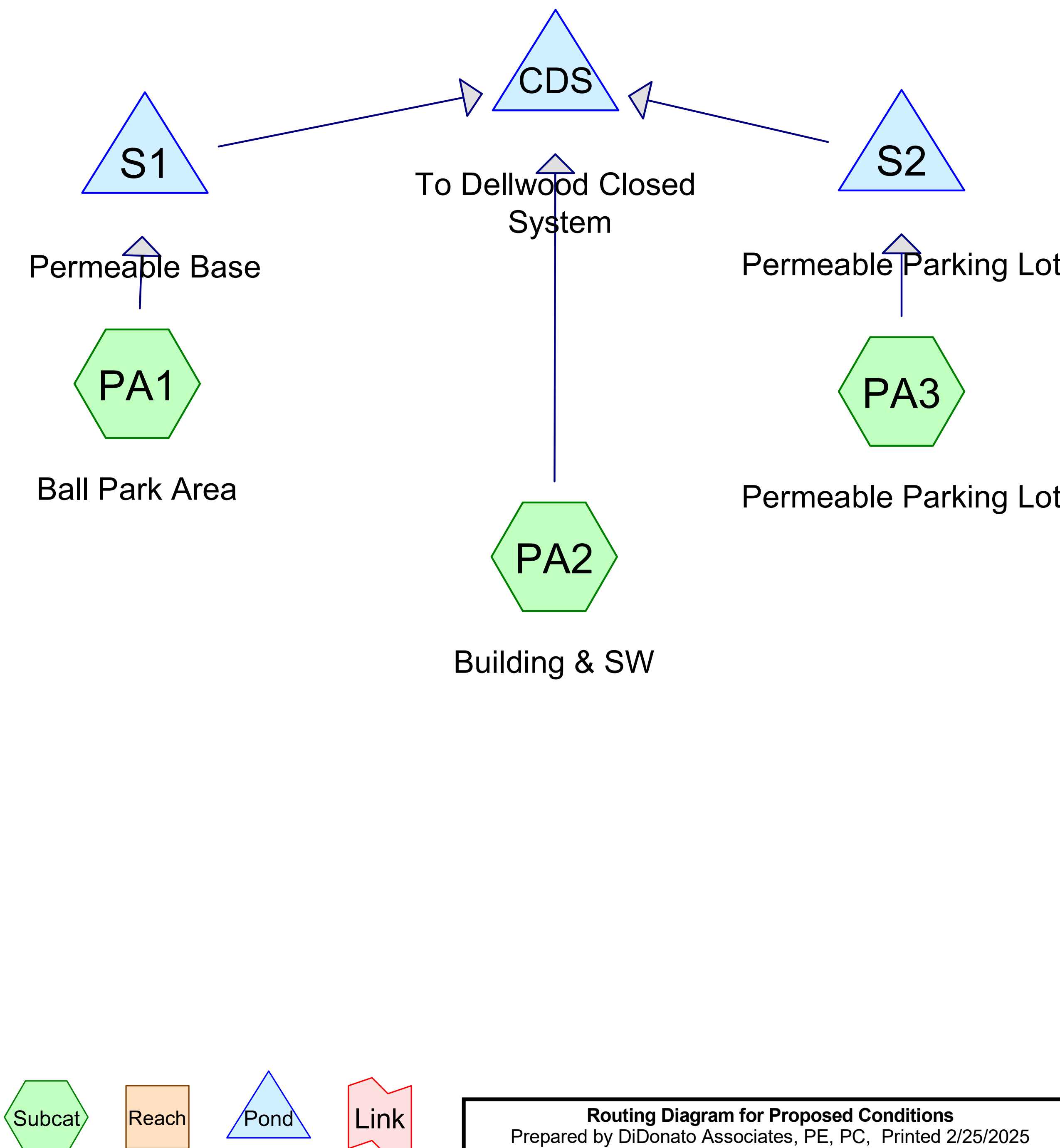
PROPOSED CONDITIONS

DiDonato Associates

25 YEAR STORM

PROPOSED CONDITIONS

Engineers Report
Dellwood Park Improvements Project
Dellwood Road
Amherst, NY



Routing Diagram for Proposed Conditions
Prepared by DiDonato Associates, PE, PC, Printed 2/25/2025

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.333	80	>75% Grass cover, Good, HSG D (PA1, PA2, PA3)
0.096	98	Paved parking, HSG D (PA2)
0.370	55	Permeable Baseball Field (PA1)
0.096	55	Permeable Parking Lot (PA3)
0.895	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.429	HSG D	PA1, PA2, PA3
0.466	Other	PA1, PA3
0.895		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.333	0.000	0.333	>75% Grass cover, Good	PA1, PA2, PA3
0.000	0.000	0.000	0.096	0.000	0.096	Paved parking	PA2
0.000	0.000	0.000	0.000	0.370	0.370	Permeable Baseball Field	PA1
0.000	0.000	0.000	0.000	0.096	0.096	Permeable Parking Lot	PA3
0.000	**0.000**	**0.000**	**0.429**	**0.466**	**0.895**	**TOTAL AREA**	

Summary for Subcatchment PA1: Ball Park Area

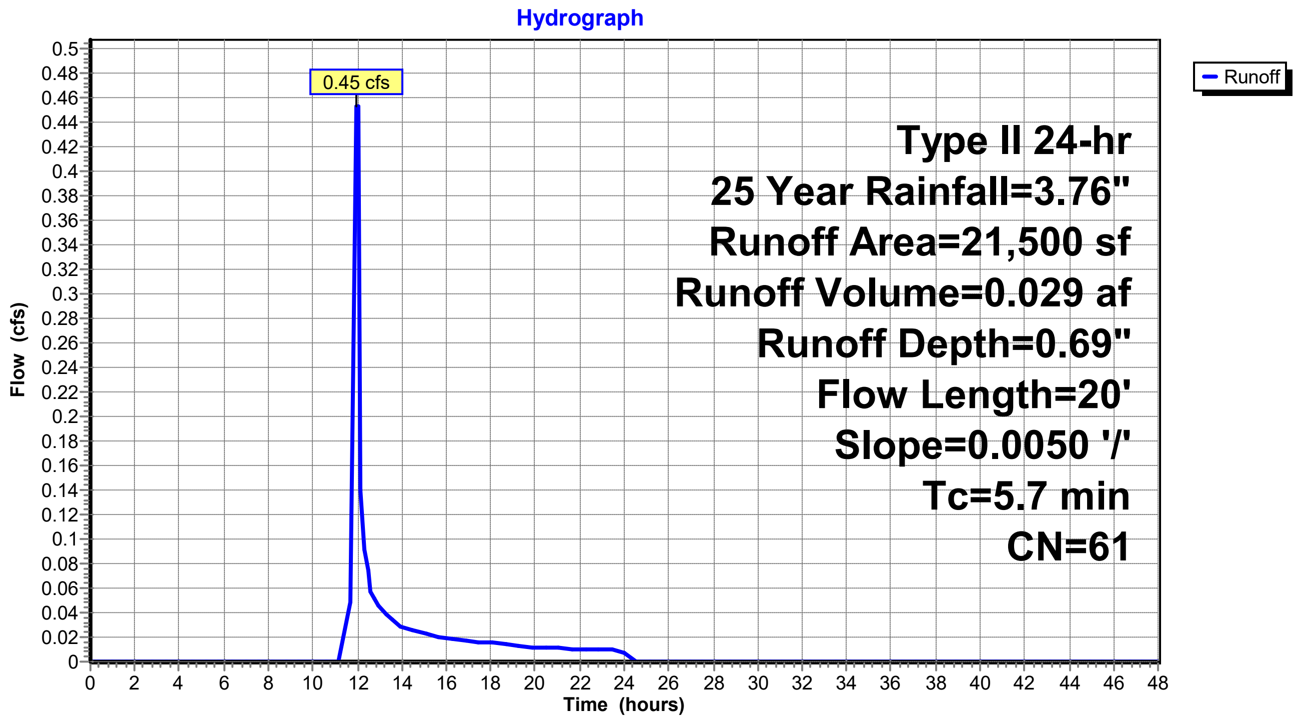
Runoff = 0.45 cfs @ 12.00 hrs, Volume= 0.029 af, Depth= 0.69"
Routed to Pond S1 : Permeable Base

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Type II 24-hr 25 Year Rainfall=3.76"

	Area (sf)	CN	Description
*	16,100	55	Permeable Baseball Field
	5,400	80	>75% Grass cover, Good, HSG D
	21,500	61	Weighted Average
	21,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	20	0.0050	0.06		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.17"

Subcatchment PA1: Ball Park Area



Summary for Subcatchment PA2: Building & SW

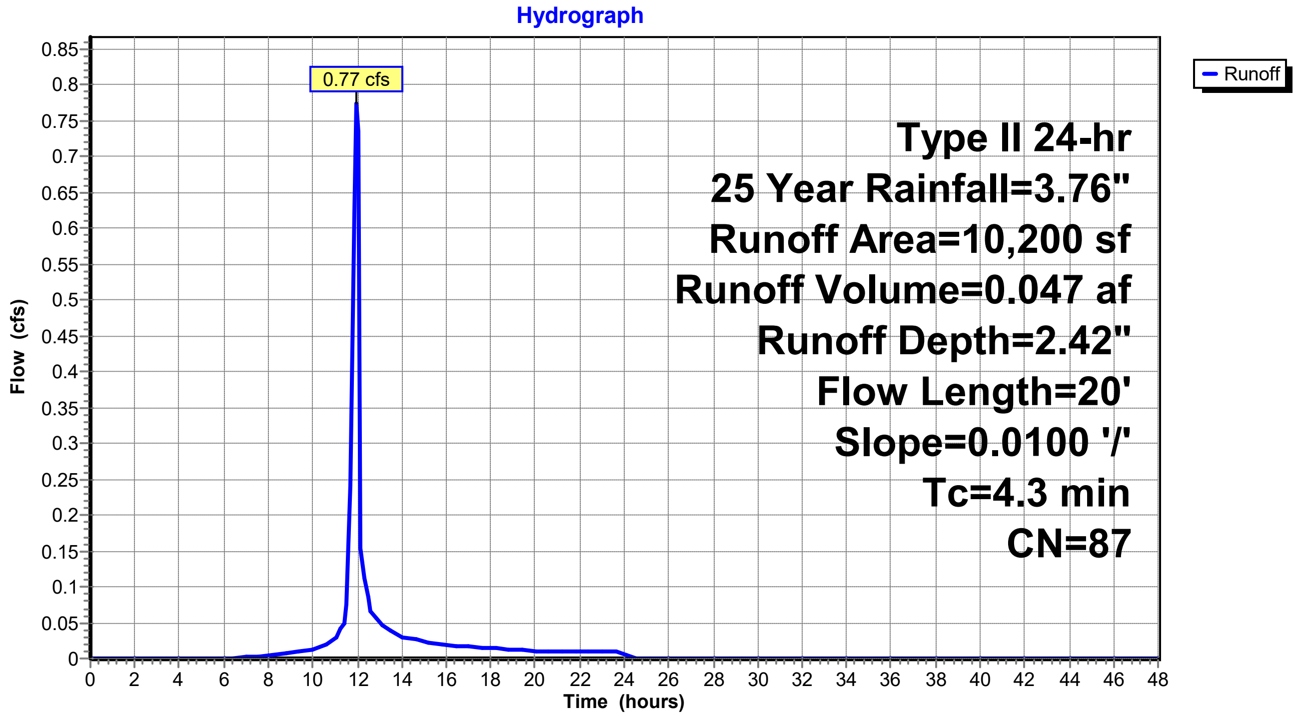
Runoff = 0.77 cfs @ 11.95 hrs, Volume= 0.047 af, Depth= 2.42"
Routed to Pond CDS : To Dellwood Closed System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Type II 24-hr 25 Year Rainfall=3.76"

Area (sf)	CN	Description
4,200	98	Paved parking, HSG D
6,000	80	>75% Grass cover, Good, HSG D
10,200	87	Weighted Average
6,000		58.82% Pervious Area
4,200		41.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0100	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.17"

Subcatchment PA2: Building & SW



Summary for Subcatchment PA3: Permeable Parking Lot

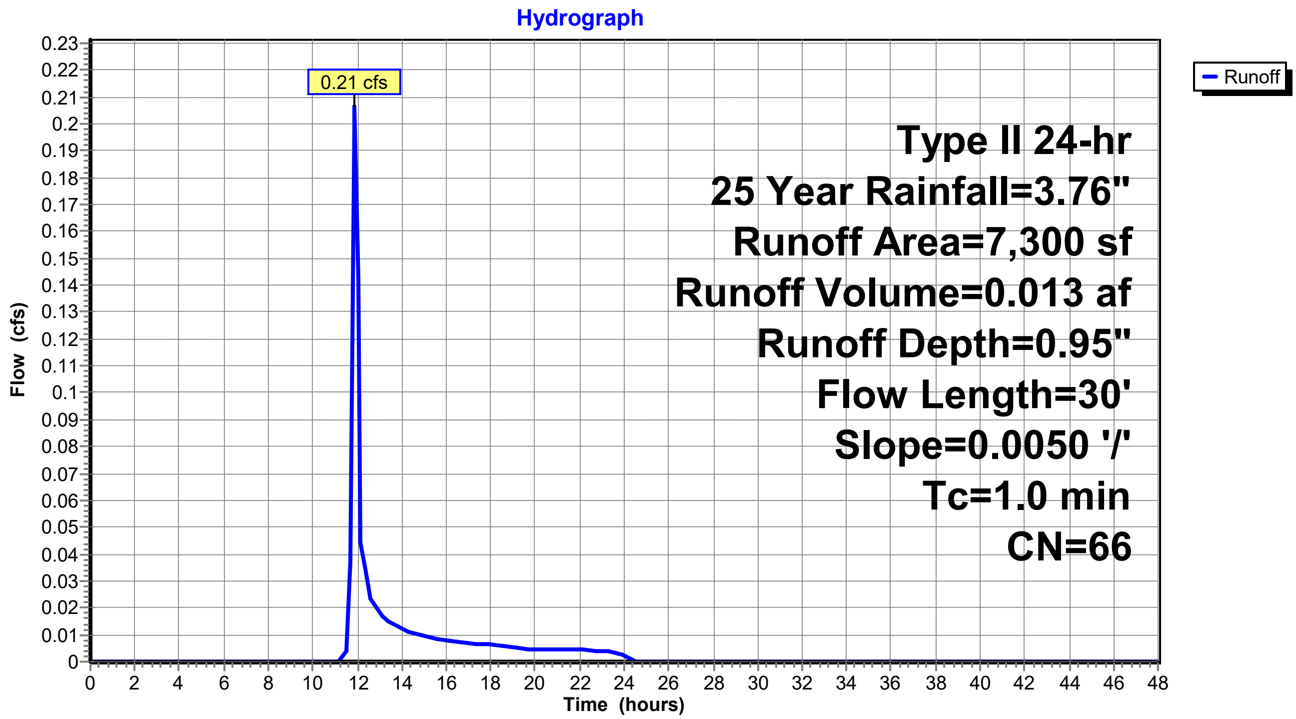
Runoff = 0.21 cfs @ 11.89 hrs, Volume= 0.013 af, Depth= 0.95"
Routed to Pond S2 : Permeable Parking Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Type II 24-hr 25 Year Rainfall=3.76"

	Area (sf)	CN	Description
*	4,200	55	Permeable Parking Lot
	3,100	80	>75% Grass cover, Good, HSG D
	7,300	66	Weighted Average
	7,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	30	0.0050	0.51		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.17"

Subcatchment PA3: Permeable Parking Lot



Summary for Pond CDS: To Dellwood Closed System

Inflow Area = 0.895 ac, 10.77% Impervious, Inflow Depth = 1.19" for 25 Year event
Inflow = 1.02 cfs @ 11.97 hrs, Volume= 0.089 af
Outflow = 0.56 cfs @ 12.14 hrs, Volume= 0.090 af, Atten= 45%, Lag= 10.1 min
Primary = 0.56 cfs @ 12.14 hrs, Volume= 0.090 af

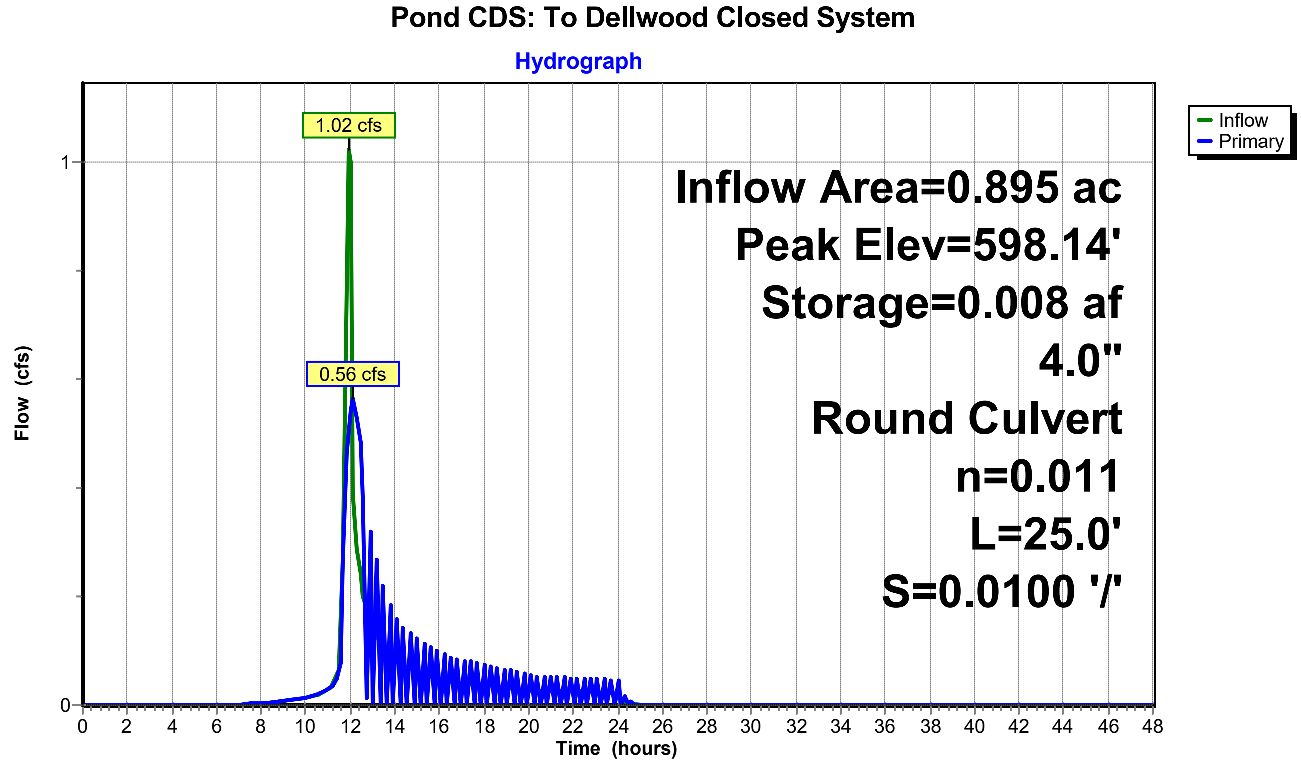
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Peak Elev= 598.14' @ 12.14 hrs Surf.Area= 0.009 ac Storage= 0.008 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.7 min (857.6 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1	596.50'	0.014 af	**24.0" Round Pipe Storage** L= 200.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	595.50'	**4.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.50' / 595.25' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.09 sf

Primary OutFlow Max=0.56 cfs @ 12.14 hrs HW=598.11' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.56 cfs @ 6.44 fps)



Summary for Pond S1: Permeable Base

Inflow Area = 0.494 ac, 0.00% Impervious, Inflow Depth = 0.69" for 25 Year event
Inflow = 0.45 cfs @ 12.00 hrs, Volume= 0.029 af
Outflow = 0.15 cfs @ 12.21 hrs, Volume= 0.029 af, Atten= 67%, Lag= 12.4 min
Primary = 0.15 cfs @ 12.21 hrs, Volume= 0.029 af
Routed to Pond CDS : To Dellwood Closed System

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Peak Elev= 596.73' @ 12.21 hrs Surf.Area= 7,563 sf Storage= 266 cf

Plug-Flow detention time= 27.3 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 27.5 min (921.2 - 893.8)

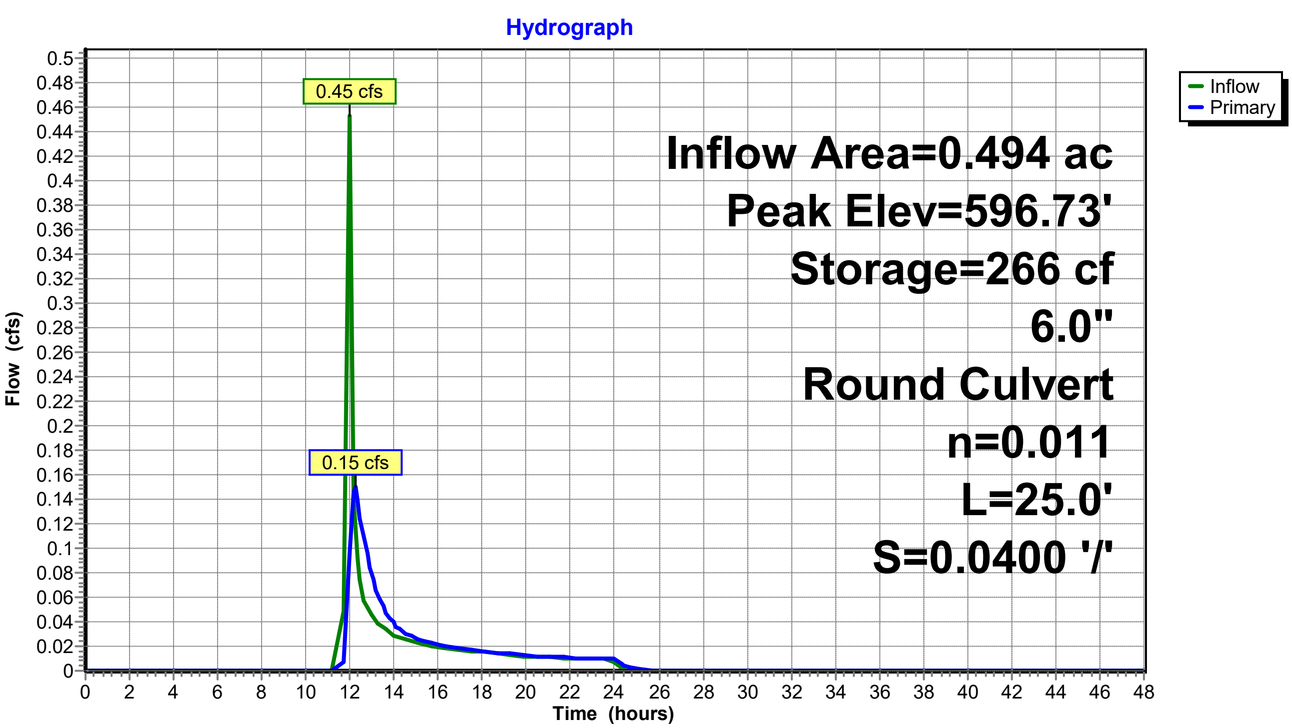
Volume	Invert	Avail.Storage	Storage Description
#1	596.50'	10,063 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
596.50	1	0.0	0	0
597.00	16,100	30.0	1,208	1,208
598.00	16,100	35.0	5,635	6,843
598.50	16,100	40.0	3,220	10,063

Device	Routing	Invert	Outlet Devices
#1	Primary	596.50'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.50' / 595.50' S= 0.0400 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.14 cfs @ 12.21 hrs HW=596.73' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.14 cfs @ 1.63 fps)

Pond S1: Permeable Base



Summary for Pond S2: Permeable Parking Lot

Inflow Area = 0.168 ac, 0.00% Impervious, Inflow Depth = 0.95" for 25 Year event
Inflow = 0.21 cfs @ 11.89 hrs, Volume= 0.013 af
Outflow = 0.17 cfs @ 11.98 hrs, Volume= 0.013 af, Atten= 16%, Lag= 5.6 min
Primary = 0.17 cfs @ 11.98 hrs, Volume= 0.013 af
Routed to Pond CDS : To Dellwood Closed System

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.15 hrs
Peak Elev= 595.26' @ 11.98 hrs Surf.Area= 1,073 sf Storage= 41 cf

Plug-Flow detention time= 3.6 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 3.7 min (873.4 - 869.8)

Volume	Invert	Avail.Storage	Storage Description
#1	595.00'	3,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
595.00	1	0.0	0	0
596.00	4,200	30.0	630	630
597.00	4,200	35.0	1,470	2,100
598.00	4,200	40.0	1,680	3,780

Device	Routing	Invert	Outlet Devices
#1	Primary	595.00'	**6.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.00' / 594.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.17 cfs @ 11.98 hrs HW=595.25' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.17 cfs @ 1.70 fps)

Pond S2: Permeable Parking Lot