



NONRESIDENTIAL SITE PLAN APPLICATION
City of Rochester, NH

FOR

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON
(APPROX. 110,000 SF)

AT

238 ROCHESTER HILL ROAD, ROCHESTER, N.H.

OWNER:

PEASE DEVELOPMENT AUTHORITY
55 International Drive
Portsmouth, NH 03801

Prepared by:

JACOBS ENGINEERING GROUP INC.
Two Executive Park Drive
Bedford, NH 03110

January 2024

City of Rochester Planning Board Approval:

--

Printed Name: _____ Date: _____

Describe proposed activity/use: Re-pave existing terminal apron, replace drainage piping and structures, and pave Portland Cement

Concrete pad around existing aviation fuel station. Construction is anticipated to take place in the Fall of 2024 or the Spring 2025 due to funding availability.

Describe existing conditions/use (vacant land?): Skyhaven Airport

Utility information

City water? yes ☐ no ☐; How far is City water from the site? Project does not need water.

City sewer? yes ☐ no ☐; How far is City sewer from the site? Project does not need sewer.

If City water, what are the estimated total daily needs? _____ gallons per day

If City water, is it proposed for anything other than domestic purposes? yes ☐ no ☐

If City sewer, do you plan to discharge anything other than domestic waste? yes ☐ no ☐

Where will stormwater be discharged? Outfall to existing stream.

Building information

Type of building(s): _____

Building height: _____ Finished floor elevation: _____

Other information

parking spaces: existing: _____ total proposed: _____; Are there pertinent covenants? _____

Number of cubic yards of earth being removed from the site +/- 3,100 CY

Number of existing employees: _____; number of proposed employees total: _____

Check any that are proposed: variance ☐; special exception ☐; conditional use ☐

Wetlands: Is any fill proposed? No; area to be filled: _____; buffer impact? None

Proposed <u>post-development</u> disposition of site (should total 100%)		
	Square footage	% overall site
Building footprint(s) – give for each building	45,250	1
Parking and vehicle circulation	940,875	12
Planted/landscaped areas (excluding drainage)	2,808,255	35
Natural/undisturbed areas (excluding wetlands)	2,911,280	36
Wetlands	1,266,100	16
Other – drainage structures, outside storage, etc.		

Comments

Please feel free to add any comments, additional information, or requests for waivers here:

Request to have application fees waived aside from required abutter notification fees.

Submission of application

This application must be signed by the property owner, applicant/developer (if different from property owner), and/or the agent.

I (we) hereby submit this Site Plan application to the City of Rochester Planning Board pursuant to the City of Rochester Site Plan Regulations and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant/developer (if different from property owner)/as agent, I attest that I am duly authorized to act in this capacity.

Signature of property owner: _____

Date: _____

Signature of applicant/developer: _____

John Pelletier, PE

Digitally signed by John Pelletier, PE
DN: cn=John Pelletier, o=City of Rochester Planning Board, ou=City of Rochester Planning Board, email=j.pelletier@rochesterplanningboard.com, c=US
Date: 2024.01.24 11:41:41 -0500

Date: _____

Signature of agent: _____

John Pelletier, PE

Digitally signed by John Pelletier, PE
DN: cn=John Pelletier, o=City of Rochester Planning Board, ou=City of Rochester Planning Board, email=j.pelletier@rochesterplanningboard.com, c=US
Date: 2024.01.24 11:41:41 -0500

Date: 1/24/2024

Authorization to enter subject property

I hereby authorize members of the Rochester Planning Board, Zoning Board of Adjustment, Conservation Commission, Planning Department, and other pertinent City departments, boards and agencies to enter my property for the purpose of evaluating this application including performing any appropriate inspections during the application phase, review phase, post-approval phase, construction phase, and occupancy phase. This authorization applies specifically to those particular individuals legitimately involved in evaluating, reviewing, or inspecting this specific application/project. It is understood that these individuals must use all reasonable care, courtesy, and diligence when entering the property.

Signature of property owner: _____

Date: _____

Skyhaven Airport Terminal Apron – Site Plan – Nonresidential – Narrative

Date:	January 24, 2024	Jacobs Engineering Group Inc.
Project name:	Rehabilitate and Mark Terminal Area Tie-Down Apron	Two Executive Park Drive
Project no:	SBG 15-09-2020	Bedford, NH 03110
Attention:	Shanna B. Saunders, Planning Director	United States
Company:	City of Rochester Planning & Development	T +1.603.666.7181
Prepared by:	John Pelletier, P.E., Jacobs	F +1.603.666.7185
Copies to:	Maria Stowell, P.E., Pease Development Authority	www.jacobs.com

Ms. Shanna B. Saunders, Planning Director
City of Rochester Planning & Development
33 Wakefield Street
Rochester, NH 03867

Dear Ms. Saunders,

On behalf of the Pease Development Authority (PDA), please find enclosed the Nonresidential Site Plan application for the project "Rehabilitate and Mark Terminal Area Tie-Down Apron (approx. 110,000 SF)" at Skyhaven Airport.

The below is intended to be the Narrative required by the Nonresidential Site Plan Checklist and Memorandum, respectively. The project can be described as follows:

Reconstruction of the existing apron north of the Terminal Building to address deteriorating pavement, aging drainage infrastructure, and inadequate pavement marking layout. Approximately 2.55 acres of pavement will be removed and replaced to bring the grades within FAA standards. The pavement will mostly consist of asphalt pavement, along with a Portland Cement Concrete pad (approximately 12,250 square feet) to be paved around the existing aircraft fuel dispenser. No impervious area will be added to the site during the project.

The project is currently planned to take place in two separate phases within one year. The project is funded by PDA, the NHDOT, and the FAA. Construction of this project is anticipated to take place in Fall of 2024 or the Spring 2025 due to availability of funding.

Please find enclosed the Nonresidential Site Plan Application, Checklist, and attachments. Please call 603.518.1775 or email john.pelletier@jacobs.com should you have any additional questions.

Sincerely,



John Pelletier, P.E.

Jacobs Engineering Group

Memorandum

Attachments:

Nonresidential Site Plan Application

Checklist

Full-size Plans

11 x 17 Plan Reductions

Completed Abutters List

Exhibit "A" Airport Property Inventory Map

Zoning Map

FIRM Flood Map

Drainage Report

Site Plan Checklist (residential and nonresidential)

**To be filled out by applicant/agent (with notes to be inserted by staff)*

See regulations for other specific requirements
City of Rochester Planning & Development Department

Project Name: Rehabilitate and Mark Terminal Area Tiedown Apron Map: 243 Lot: 18 Date: January 24, 2024

Applicant/agent: John Pelletier, P.E. Signature: John Pelletier, PE 

(Staff review by: _____ Date: _____)

General items

	Yes	No	N/A	Waiver Requested	Comments
<u>4</u> sets completed application	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Total application fee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>State agency</u>
<u>4</u> copies of narrative	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>3</u> sets of full-size plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>2</u> sets of 11 X 17 reductions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Completed abutters list	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Copy of existing covenants, easements, deed restrictions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Exhibit "A" Airport Property Inventory Map</u>

Plan Information

Basic information including:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
• Title sheet					
• Name of Project					
• Date					
• North arrow					
• Scale					
• Legend					
• Revision block					
• Vicinity sketch -not less than 1" = 1,000'					
Name and address of developer/applicant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Name, stamp, and NH license # of land survey, engineer, and/or architect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
City tax map & lot #'s	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Exhibit "A" Airport Property Inventory Map</u>
Notation on plans: "For more information about this site plan contact..."	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

General items Continued

	Yes	No	N/A	Waiver Requested	Comments
Approval block (for signature by staff attesting to Planning Board approval)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
References to neighboring plans and subdivisions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Surveyed property lines including: <ul style="list-style-type: none">• existing and proposed bearings• existing and proposed distances• pins, stakes, bounds• monuments• benchmarks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On existing property _____
Include error of closure statement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exhibit "A" property lines used _____
Information on abutting properties: <ul style="list-style-type: none">• owner name• owner address• tax map and lot #• square footage of lots• approximate building footprints• use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Zoning

Zoning designations of subject tract and in vicinity of tract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Airport Special _____
Zoning requirements for district: <ul style="list-style-type: none">• frontage• lot dimensions/density• all setbacks• lot coverage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing development _____
Zoning overlay districts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Airport Special _____

Existing Topographic Features:

Contour lines a (not to exceed two-foot Intervals, except on steep slopes) and spot elevations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Soil types and boundaries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Drainage Report _____
Soil test pit locations, profiles, and Depth to water table and ledge	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Soil boring report available _____
Percolation test locations and results	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Existing Topographic Features Continued:

	Yes	No	N/A	Waiver Requested	Comments
Water features (ponds, streams)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Wetlands including name of certified Wetlands scientist who delineated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wetlands taken from previous 2015 project _____
Statement whether located in flood area, And if so, 100 year flood elevation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FIRM Zone X _____
Delineation of trees and open areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Overview of types of trees and vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Stone walls and archaeological features	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Locations of trails and paths	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other natural/cultural resources (productive farmland, habitats, scenic views, historic structures, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Building Information

Existing buildings/structures including square footage and use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Proposed building/structures including <ul style="list-style-type: none">• square footage• first floor elevation• use• # bedrooms per unit if residential	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Elevation drawing of proposed buildings and structures as follows: <ul style="list-style-type: none">• Showing all four sides• Drawn to scale with dimensions• Showing exterior materials• Showing exterior colors	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Circulation and Parking Plans

Existing and proposed driveways and access points including: <ul style="list-style-type: none">• Width of opening• Turning radii• Cross section of driveway	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Curbing & edge treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Traffic control devices, if appropriate:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Circulation and Parking Plans Continued:

	Yes	No	N/A	Waiver Requested	Comments
Number of parking spaces	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
• required by ordinance					
• proposed					
Parking layout and dimensions of spaces	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Handicap spaces	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Loading area	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Pedestrian circulation plan (including existing sidewalks in vicinity, if any)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Bicycle rack, if appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Buffers, landscaping & screening	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Snow storage areas/plan	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Utilities

Show all pertinent existing and proposed profiles, elevations, materials, sizes, and details

Water lines/well (with protective radius)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Sewer lines/septic and leaching areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Pump stations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Stormwater management system: pipes, culverts,, catch basins detention/ retention basins, swales, rip rap, etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fire hydrant location(s) and details	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Electric, telephone, cable TV (underground or overhead)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gas lines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Fire alarm connections	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Treatment of solid waste (dumpsters?)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Handling of oil, grease, chemicals hazardous materials/waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Landscaping Plan

	Yes	No	N/A	Waiver Requested	Comments
Demarcation of limits of construction, clear delineation of vegetation to be saved, and strategy for protecting vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Proposed ground cover, shrubbery, and trees including: <ul style="list-style-type: none">• botanical and common names• locations and spacing• total number of each species• size at installation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Planting plan (size of holes, depth of planting, soil amendments, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Irrigation: system? soaker hose? Manual? underground, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Protection of landscaping from vehicles (Curb stops, berm, railroad ties, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Specification all finished ground surfaces and edges (greenspace, mulch, asphalt, concrete, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fencing/screening	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
<u>Signage</u>					
Location and type of signs: <ul style="list-style-type: none">• Attached to building• Freestanding• Directional, if appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Dimensions of signs: <ul style="list-style-type: none">• Height• Area• Setback	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Elevation drawings with colors & materials	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Type of Illumination, if proposed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Outdoor Lighting

	Yes	No	N/A	Waiver Requested	Comments
Locations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Height of fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Wattage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Type of light (high pressure sodium, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Design/cut sheets of fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Illumination study, if appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Other Elements

Traffic study, if appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Drainage study with calculations, storm Water impact analysis, and mitigation plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Grading plan (including finish grades)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Earth being removed from site(in cubic yards)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	+/- 3,100 CY _____
Erosion and sedimentation plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Proposed covenants, easements, And deed restrictions, if any	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Fiscal impact study, if requested	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Additional Comments:

PEASE DEVELOPMENT AUTHORITY

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON (APPROX. 110,000 SF)
SBG 15-09-2020 (DESIGN)

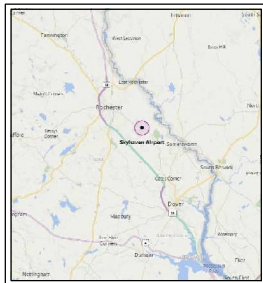
100% DRAWINGS

SKYHAVEN AIRPORT

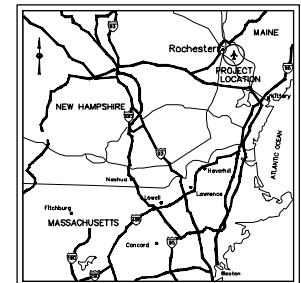
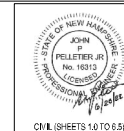
ROCHESTER, NH

JANUARY 2024

INDEX TO DRAWINGS	
DRAWING NUMBER	TITLE
0.0	TITLE SHEET
1.0	GENERAL PLAN
2.0	EXISTING CONDITIONS PLAN
3.0	SAFETY AND PHASING PLAN - PHASE I
3.1	SAFETY AND PHASING PLAN - PHASE II
3.2	SAFETY AND PHASING DETAILS
4.0	SITE PREPARATION AND EROSION CONTROL PLAN
4.1	1ST PREPARATION AND EROSION CONTROL DETAILS
5.0	GEOMETRY AND MARKING PLAN
5.1	GEOMETRY AND MARKING DETAILS
6.0	GRADING AND DRAINAGE PLAN
6.1	GRADING AND DRAINAGE PROFILES
6.2	TYPICAL SECTIONS
6.3	DRAINAGE DETAILS
6.4-6.9	CROSS SECTIONS



LOCATION MAP

VICINITY MAP

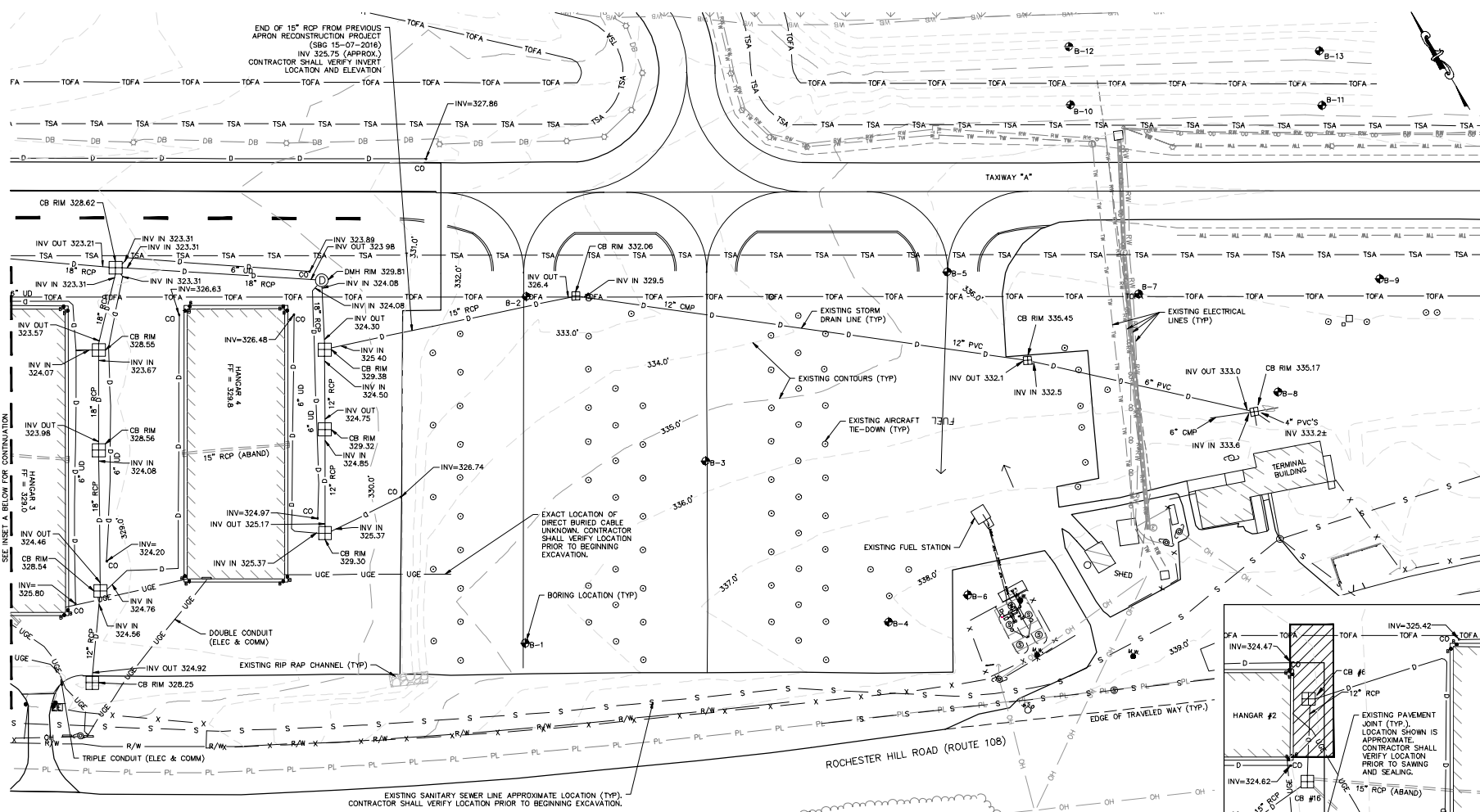
Jacobs
Two Executive Park Drive
Bedford, NH 03110
Phone: (603) 884-7181
Fax: (603) 884-7185

JACOBS ENGINEERING GROUP, INC. HEREBY CERTIFIES THAT THESE CONSTRUCTION DRAWINGS AND ACCOMPANYING SPECIFICATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH CURRENT FAA ADVISORY CIRCULARS. THESE ADVISORY CIRCULARS ARE INDICATED ON A LISTING HAVING AN EFFECTIVE DATE OF **NOVEMBER 17, 2022.**

APPROVED BY: _____ AIRPORTS
DIVISION

DATE: _____

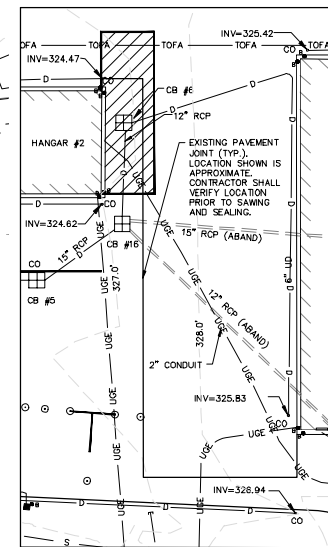
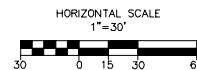
J:\projects\2020\22090502 - DAV\Reconstr at Terminal Aprt\0701 CAD\Drawings\2020\22090502.dwg [2.0] June 05, 2024 - 11:37am [document]



EXISTING CONDITIONS PLAN
SCALE: 1"=30'

NOTES

1. BORING LOGS AND TESTING PROVIDED IN PROJECT MANUAL.
2. CONTRACTOR TO LOCATE EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. PROVIDE LOCATION IN AS-BUILT.



INSET A
SCALE: 1"=30'

LEGEND

	EXISTING STORM DRAIN LINE		EXISTING PROPERTY LINE		EXISTING STORM DRAIN MANHOLE
	EXISTING ABANDONED STORM DRAIN LINE		EXISTING RIGHT OF WAY		EXISTING UNDERDRAIN CLEANOUT
	EXISTING WATER LINE		EXISTING TAXIWAY SAFETY AREA		EXISTING SANITARY SEWER MANHOLE
	EXISTING OVERHEAD LINE		EXISTING TAXIWAY OBJECT FREE AREA		EXISTING UTILITY POLE
	EXISTING UNDERGROUND ELECTRICAL LINE		EXISTING TREE LINE		EXISTING FLAG POLE
	EXISTING RUNWAY CIRCUIT LINE		EXISTING MAJOR CONTOUR		EXISTING AIRCRAFT TIE-DOWN
	EXISTING TAXIWAY CIRCUIT LINE		EXISTING MINOR CONTOUR		EXISTING TAXIWAY EDGE LIGHT
	EXISTING COUNTERPOISE WIRE		EXISTING WETLAND BOUNDARY		EXISTING ELECTRICAL MANHOLE
	EXISTING ELECTRICAL DUCT BANK		EXISTING WETLAND		BORING LOCATION
	EXISTING DIRECT BURIED CABLE		EXISTING FIRE HYDRANT		MONITORING WELL
	EXISTING ODALS SYSTEM CABLE		EXISTING WATER GATE VALVE		EXISTING BUILDING
	EXISTING SANITARY SEWER LINE		EXISTING WATER SHUTOFF		EXISTING RIP RAP
	EXISTING FUEL LINES		EXISTING BOLLARD		
	EXISTING FENCE LINE		EXISTING CATCH BASIN		

2 RESERVE PARK DRIVE
SUITE 200
ROCHESTER, NH 05860
PHONE (603) 896-7878

PROJECT DESIGNER

ENVIRONMENTAL CONSULTANT

SCALE: 1"=30'	DATE: JANUARY 2024	LMO	LMO	LMO	LMO
DESIGNED BY:	LMO	LMO	LMO	LMO	LMO
DRAWN BY:	LMO	LMO	LMO	LMO	LMO
CHECKED BY:	LMO	LMO	LMO	LMO	LMO
APPROVED:	LMO	LMO	LMO	LMO	LMO

SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

EXISTING CONDITIONS PLAN

REV.	NO.	DATE	DESCRIPTION

PROJ. NO.: E2X90502

FILE: P:/2020/E2X90502

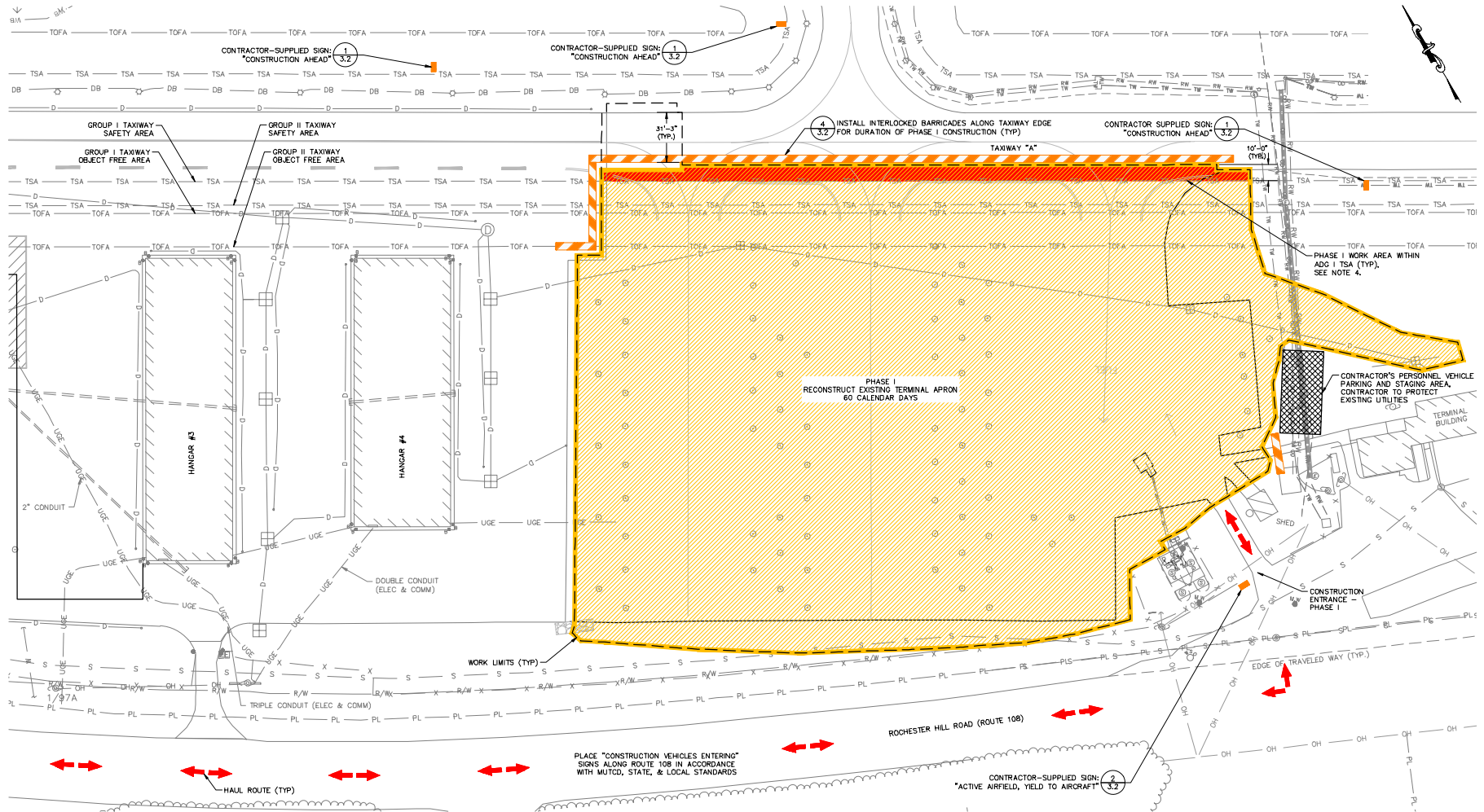
SBG NO.: SBG 15-09-2020

DRAWING NO.

2.0

SHEET 03 OF 16

Jacobs - V:\Hillman\2020\01\22\020202 - DAW Reconstruct Terminal Apron 2700 CAD\Thema\10% Design\30 Safety & Phasing Plan.dwg [3.0 January 20, 2024 - 4:46pm (continued)]



LEGEND

- PHASE I WORK AREA
- PHASE I WORK AREA WITHIN ADG I TSA
- CONTRACTOR'S PERSONNEL VEHICLE PARKING AND STAGING AREA
- HAUL ROUTE
- CONSTRUCTION BARRICADE
- CONSTRUCTION SIGN
- TSA TAXIWAY SAFETY AREA
- TOFA TAXIWAY OBJECT FREE AREA
- WORK LIMITS

PHASE I NOTES

- TOTAL PROJECT DURATION IS 95 CALENDAR DAYS. CONSTRUCTION IS ANTICIPATED TO BEGIN IN APRIL 2025. PHASE I: 60 CALENDAR DAYS. PHASE II (A, B, AND C): 35 CALENDAR DAYS.
- CONSTRUCTION IN PHASE I AND PHASE II MAY NOT OCCUR CONCURRENTLY.
- ACCESS TO HANGARS ARE TO BE MAINTAINED FOR THE DURATION OF PHASE I.
- WORK WITHIN TAXIWAY SAFETY AREA AND OBJECT FREE AREA REQUIRES ISSUANCE OF NOTAMS BY THE OWNER AND MINIMUM 20-FOOT CLEARANCE BETWEEN EQUIPMENT/MATERIALS AND ANY PART OF THE AIRCRAFT. CONTRACTOR-PROVIDED FLAGGERS MUST BE USED TO DIRECT CONSTRUCTION EQUIPMENT AND CONTRACTOR-PROVIDED WALKERS WILL BE NECESSARY TO GUIDE AIRCRAFT WHEN WORKING IN THE TAXIWAY SAFETY AREA AND OBJECT FREE AREA. THE CONTRACTOR SHALL WORK WITHIN THE TAXIWAY SAFETY AREA ON A PULLBACK BASIS. NO AIRCRAFT LARGER THAN AIRPLANE DESIGN GROUP (ADG) I SHALL BE PERMITTED TO USE TAXIWAY A DURING PHASE I.
- NO EXCAVATIONS EXCEEDING 3" IN DEPTH SHALL BE LEFT OPEN WITHIN THE ADG I TAXIWAY OBJECT FREE AREA WHILE THE TAXIWAY IS IN OPERATION AND THE CONTRACTOR IS NOT ON SITE.
- THE CONTRACTOR SHALL RESTORE THE ADG I TAXIWAY SAFETY AREA AT THE END OF EACH WORK DAY. MAXIMUM GRADE WITHIN THE TAXIWAY SAFETY AREA SHALL BE LIMITED TO 5% GRADED AWAY FROM PAVEMENTS, AND SHALL BE LEFT IN SUCH A CONDITION THAT IT WILL DRAIN READILY AND EFFECTIVELY AND WILL NOT POSE A HAZARD TO AIRCRAFT. NO PILES OF SOIL SHALL BE LEFT UNSPREAD, NO DROPS, PROJECTIONS, OR SHARP CHANGES IN GRADE GREATER THAN 3" WILL BE PERMITTED, AND THE SURFACE SHALL BE THOROUGHLY COMPACTED.
- ALL WORK ASSOCIATED WITH TEMPORARY RESTORATION OF TAXIWAY SAFETY AND OBJECT FREE AREAS SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM G-001-1 SPECIAL WORK REQUIREMENTS.

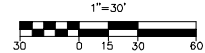
PHASING SCHEDULE

NOTICE TO PROCEED		
PHASE I	60 DAYS	
PHASE II A	5 DAYS	
PHASE II B	1 DAY	
PHASE II C	30 DAYS	

PHASING LEGEND

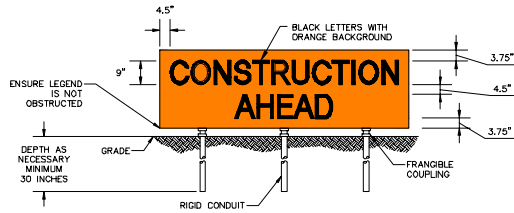
PHASE DURATION	
PHASE FLOAT	

HORIZONTAL SCALE



REVISIONS	DESCRIPTION	BY
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

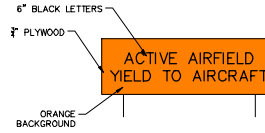
J:\ Jacobs - V:\114111\15012020\152005052 - DAY\Reconstr Terminal Apr\170701 CAD\Drawings\170701 Drawings\170701 Safety & Phasing\Phasing [3.2] June 05, 2022 - 11:38am [Accessed]



NOTES:

1. SIGN SHALL BE CONSTRUCTED IN ACCORDANCE WITH FAA ENGINEERING BRIEF 93, "GUIDANCE FOR THE ASSEMBLY AND INSTALLATION OF TEMPORARY ORANGE CONSTRUCTION SIGNS".
2. SIGN PANELS MUST BE CONSTRUCTED OF MATERIALS OF DURABILITY APPROPRIATE FOR THE LENGTH OF TIME THE SIGN IS TO BE USED, MEETING THE REQUIREMENTS OF THE MANUFACTURER OF THE RETROREFLECTIVE SHEETING TO BE USED.
3. LETTERING MUST BE BLACK, APPLIED BY DIRECT APPLIED CHARACTER OR SCREEN PROCESS.
4. BACKGROUND COLOR OF SIGNS MUST BE FLUORESCENT ORANGE, MEETING THE REQUIREMENTS OF ASTM D4956, "SPECIFICATION FOR RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL", FOR TYPE II OR TYPE IV SHEETING.
5. NO SIGN SHALL BE ANCHORED INTO AIRFIELD PAVEMENT.
6. PRIOR TO THE INSTALLATION OF THE RIGID CONDUIT LEGS, THE AREA SHALL BE CHECKED FOR UNDERGROUND UTILITIES.
7. CONSTRUCTION SIGNS SHALL BE ADEQUATELY MOUNTED, SECURED, AND FOUNDED TO BE ABLE TO WITHSTAND HIGH WINDS.
8. EXACT LOCATION AND ORIENTATION TO BE REVIEWED WITH THE RPR PRIOR TO INSTALLATION.
9. TEMPORARY SIGNS SHALL BE CONSIDERED SUBSIDIARY TO ITEM G-001-1.

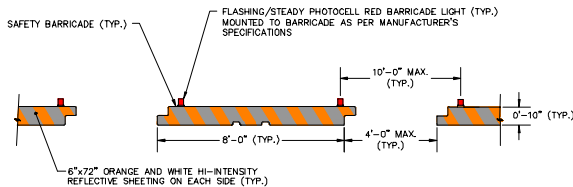
1
3.0 3.2
"CONSTRUCTION AHEAD"
SIGN DETAIL
NOT TO SCALE



NOTES:

1. SIGN SHALL BE CONSTRUCTED IN ACCORDANCE WITH FAA ENGINEERING BRIEF 93, "GUIDANCE FOR THE ASSEMBLY AND INSTALLATION OF TEMPORARY ORANGE CONSTRUCTION SIGNS".
2. SIGN PANELS MUST BE CONSTRUCTED OF MATERIALS OF DURABILITY APPROPRIATE FOR THE LENGTH OF TIME THE SIGN IS TO BE USED, MEETING THE REQUIREMENTS OF THE MANUFACTURER OF THE RETROREFLECTIVE SHEETING TO BE USED.
3. LETTERING MUST BE BLACK, APPLIED BY DIRECT APPLIED CHARACTER OR SCREEN PROCESS.
4. BACKGROUND COLOR OF SIGNS MUST BE FLUORESCENT ORANGE, MEETING THE REQUIREMENTS OF ASTM D4956, "SPECIFICATION FOR RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL", FOR TYPE II OR TYPE IV SHEETING.
5. NO SIGN SHALL BE ANCHORED INTO AIRFIELD PAVEMENT.
6. PRIOR TO THE INSTALLATION OF THE RIGID CONDUIT LEGS, THE AREA SHALL BE CHECKED FOR UNDERGROUND UTILITIES.
7. CONSTRUCTION SIGNS SHALL BE ADEQUATELY MOUNTED, SECURED, AND FOUNDED TO BE ABLE TO WITHSTAND HIGH WINDS.
8. EXACT LOCATION AND ORIENTATION TO BE REVIEWED WITH THE RPR PRIOR TO INSTALLATION.
9. TEMPORARY SIGNS SHALL BE CONSIDERED SUBSIDIARY TO ITEM G-001-1.

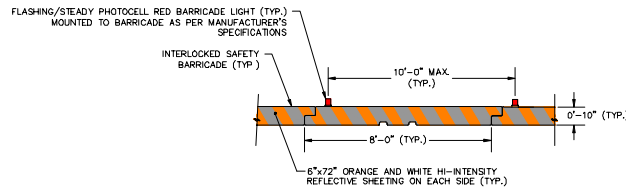
2
3.0 3.2
"ACTIVE AIRFIELD, YIELD TO
AIRCRAFT" SIGN DETAIL
NOT TO SCALE



BARRICADE NOTES:

1. FAA APPROVED CONSTRUCTION BARRICADES ARE REQUIRED FOR THIS PROJECT. BARRICADES WITH LIGHTS SHALL BE PROVIDED BY THE CONTRACTOR FOR USE DURING THIS PROJECT. CONSTRUCTION BARRICADES SHALL BE CONSIDERED INCIDENTAL TO SAFETY & PHASING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH, ASSEMBLE, TRANSPORT, PLACE, FILL WITH WATER, REPOSITION, MAINTAIN, DISASSEMBLE AND REMOVE THE BARRICADES. BARRICADES PROVIDED BY THE CONTRACTOR SHALL REMAIN PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT. REFER TO SPECIFICATION SECTION G-001 FOR PAYMENT OF BARRICADES.
2. ALL CONSTRUCTION BARRICADES SHALL CONFORM TO THE CRITERIA ESTABLISHED IN FAA AC 150/5370-20.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY BARRICADES OR LIGHTS DAMAGED DURING THE PROJECT, AS DETERMINED BY THE RPR, AND AT NO COST TO THE OWNER.

3
3.0 3.2
BARRICADE DETAIL
NOT TO SCALE



BARRICADE NOTES:

1. FAA APPROVED CONSTRUCTION BARRICADES ARE REQUIRED FOR THIS PROJECT. BARRICADES WITH LIGHTS SHALL BE PROVIDED BY THE CONTRACTOR FOR USE DURING THIS PROJECT. CONSTRUCTION BARRICADES SHALL BE CONSIDERED INCIDENTAL TO SAFETY & PHASING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH, ASSEMBLE, TRANSPORT, PLACE, FILL WITH WATER, REPOSITION, MAINTAIN, DISASSEMBLE AND REMOVE THE BARRICADES. BARRICADES PROVIDED BY THE CONTRACTOR SHALL REMAIN PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT. REFER TO SPECIFICATION SECTION G-001 FOR PAYMENT OF BARRICADES.
2. ALL CONSTRUCTION BARRICADES SHALL CONFORM TO THE CRITERIA ESTABLISHED IN FAA AC 150/5370-20.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY BARRICADES OR LIGHTS DAMAGED DURING THE PROJECT, AS DETERMINED BY THE RPR, AND AT NO COST TO THE OWNER.

4
3.0 3.2
INTERLOCKED BARRICADE DETAIL
NOT TO SCALE



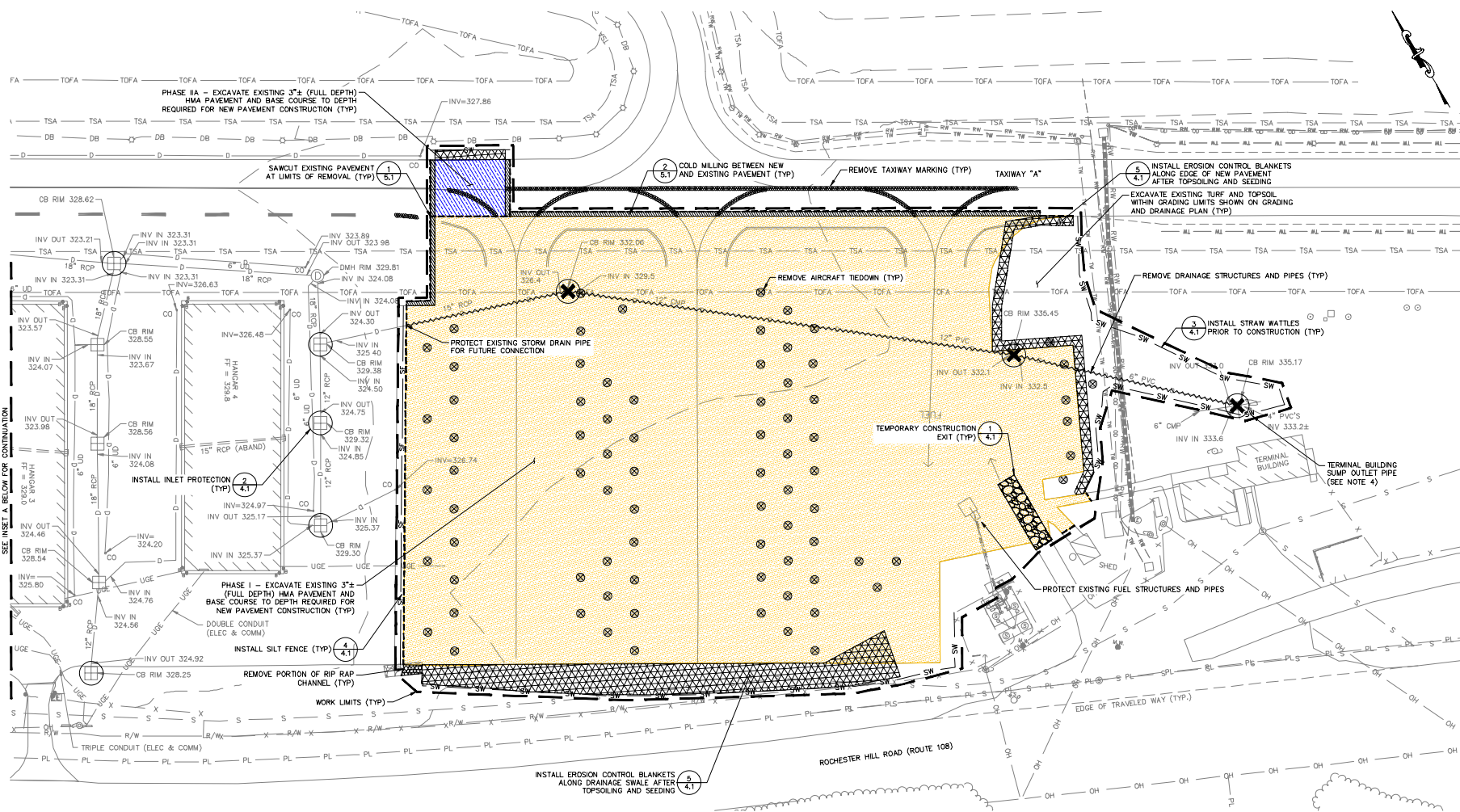
PROJECT DESIGNER: Jacobs 2 RESERVE PARK DRIVE SUITE 200 ROCHESTER, NH 05601 PHONE (603) 886-7789 FAX (603) 886-7789	ENVIRONMENTAL CONSULTANT: Wilcox & Burton 100 COMMONS DRIVE LAKEPORT, NH 03003 PHONE (603) 251-1245
DATE: JANUARY 2024	DESIGNED BY: LMD
DATE: JANUARY 2024	DESIGNED BY: LMD
DATE: JANUARY 2024	DESIGNED BY: JPP
DATE: JANUARY 2024	APPROVED:

SKYHAVEN AIRPORT ROCHESTER, NH	REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON
SAFETY AND PHASING DETAILS	

REVISIONS	DESCRIPTION	DATE	BY

PROJ. NO.:	E2X90502
J. FILE:	P. / 2020/E2X90502
SBG NO.:	SBG 15-09-2020
DRAWING NO.	
3.2	
SHEET 06 OF 16	

Jacobs - V:\Hillman\2020\22905052 - DAW\Recover\at Terminal\Aircraft\CD\Drawings\Site Preparation & Erosion Control Plan.dwg [6/1 June 05, 2024 - 1:38am] [locked]



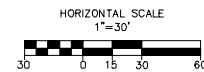
SITE PREPARATION AND EROSION CONTROL PLAN
SCALE: 1"=30'

LEGEND

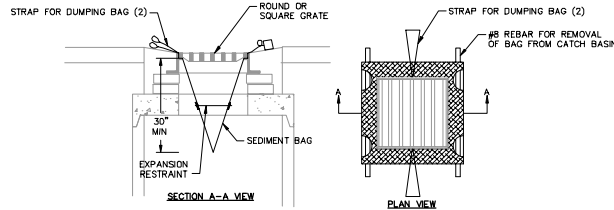
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	PAVEMENT REMOVAL - PHASE II		REMOVE PIPE
	PAVEMENT COLD MILLING (2/5.1)		REMOVE DRAINAGE STRUCTURE
	REMOVE RIP RAP		REMOVE AIRCRAFT TIEDOWN
	INSTALL EROSION CONTROL BLANKETS (5/4.1)		INSTALL INLET PROTECTION (2/4.1)
	TEMPORARY CONSTRUCTION EXIT (1/4.1)		INSTALL STRAW WATTLE (3/4.1)
	REMOVE PAVEMENT MARKING		INSTALL SILT FENCE (4/4.1)
			WORK LIMITS

NOTES

1. THE CONTRACTOR SHALL ENSURE ALL CONSTRUCTION EQUIPMENT SHALL GIVE RIGHT OF WAY TO AIRCRAFT.
2. THE CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. PROVIDE LOCATION IN AS-BUILT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING PAVEMENTS FREE OF FOREIGN OBJECT DEBRIS (FOD) BY SWEEPING ALL CONSTRUCTION DEBRIS FROM PAVEMENTS. THE SWEEPER SHALL BE MOTORIZED AND EQUIPPED WITH A VACUUM AND HAVE NOT LESS THAN A 6 CUBIC YARD STORAGE CONTAINER. THE SWEEPER SHALL APPLY WATER PRIOR TO SWEEPING TO MINIMIZE DUST. CONTRACTOR SHALL SUPPLY WATER FOR SWEEPER. SWEEPING IS INCIDENTAL TO SAFETY AND PHASING ITEM.
4. THE CONTRACTOR SHALL VERIFY SOURCES OF PIPES ENTERING CATCH BASIN STRUCTURE (NORTH OF TERMINAL BUILDING) PRIOR TO REMOVAL OF STRUCTURE. PROTECT ALL PIPE TO REMAIN FOR CONNECTION TO NEW CATCH BASIN.

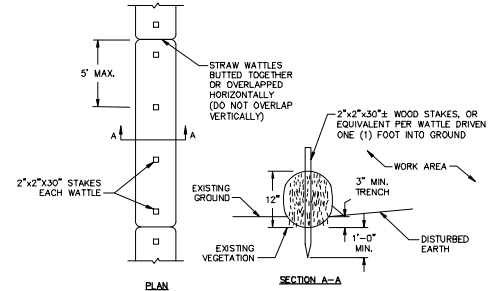


PROJECT DESIGNER: Jacobs	
SCALE: 1"=30'	DATE: JANUARY 2024
DESIGNED BY: LMD	DRAWN BY: LMD
CHECKED BY: JPP	APPROVED:
SKYHAVEN AIRPORT ROCHESTER, NH	
REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON	
SITE PREPARATION AND EROSION CONTROL PLAN	
REVISIONS	DESCRIPTION
DATE	
REV. NO.	
PROJ. NO.: E2X90502	
J. FILE: P:/2020/E2X90502	
S&B NO.: S&B 15-09-2020	
DRAWING NO.	
4.0	
SHEET 07 OF 16	



STRAW WATTLE NOTES:

1. STRAW WATTLES SHALL BE INSTALLED BEFORE ANY EXCAVATION OR OTHER WORK BEGINS. STRAW WATTLES SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON DRAWINGS.
2. PRE-FABRICATED STRAW WATTLES MUST BE ASSEMBLED IN THE FIELD ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
3. INSPECT AND REPAIR STRAW WATTLES WEEKLY AND AFTER EACH STORM EVENT OF 1" OR GREATER OF PRECIPITATION AND REMOVE SEDIMENT WHEN NECESSARY. (4" MAXIMUM STORAGE HEIGHT)
4. IN ADDITION, MAINTENANCE OF STRAW WATTLES SHALL BE AS NEEDED AND AS ORDERED BY THE RRI. REMOVE MATERIALS AS NECESSARY FROM BEHIND THE STRAW WATTLES. REMOVED MATERIALS SHALL NOT BE DISCARDED NEAR WETLANDS, WATERCOURSES AND SHALL BE REMOVED FROM THE JOB SITE. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT CAN BE PERMANENTLY STABILIZED.
5. STRAW WATTLES SHALL BE SECURELY FASTENED BY POSTS/STAKES.
6. MAINTENANCE AND REMOVAL SHALL NOT BE PAID FOR SEPARATELY BUT RATHER WILL BE CONSIDERED INCIDENTAL TO THE INITIAL INSTALLATION.



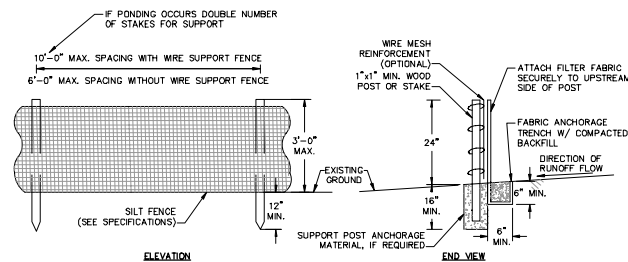
1
4.0 | 4.1

TEMPORARY CONSTRUCTION EXIT DETAIL

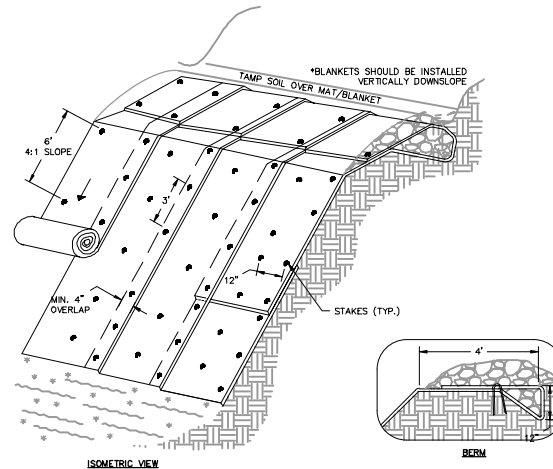
NOT TO SCALE

4.0 4.1 NOT TO SCALE

4.0 4.1 NOT TO SCALE


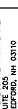


4.0 4.1 NOT TO SCALE

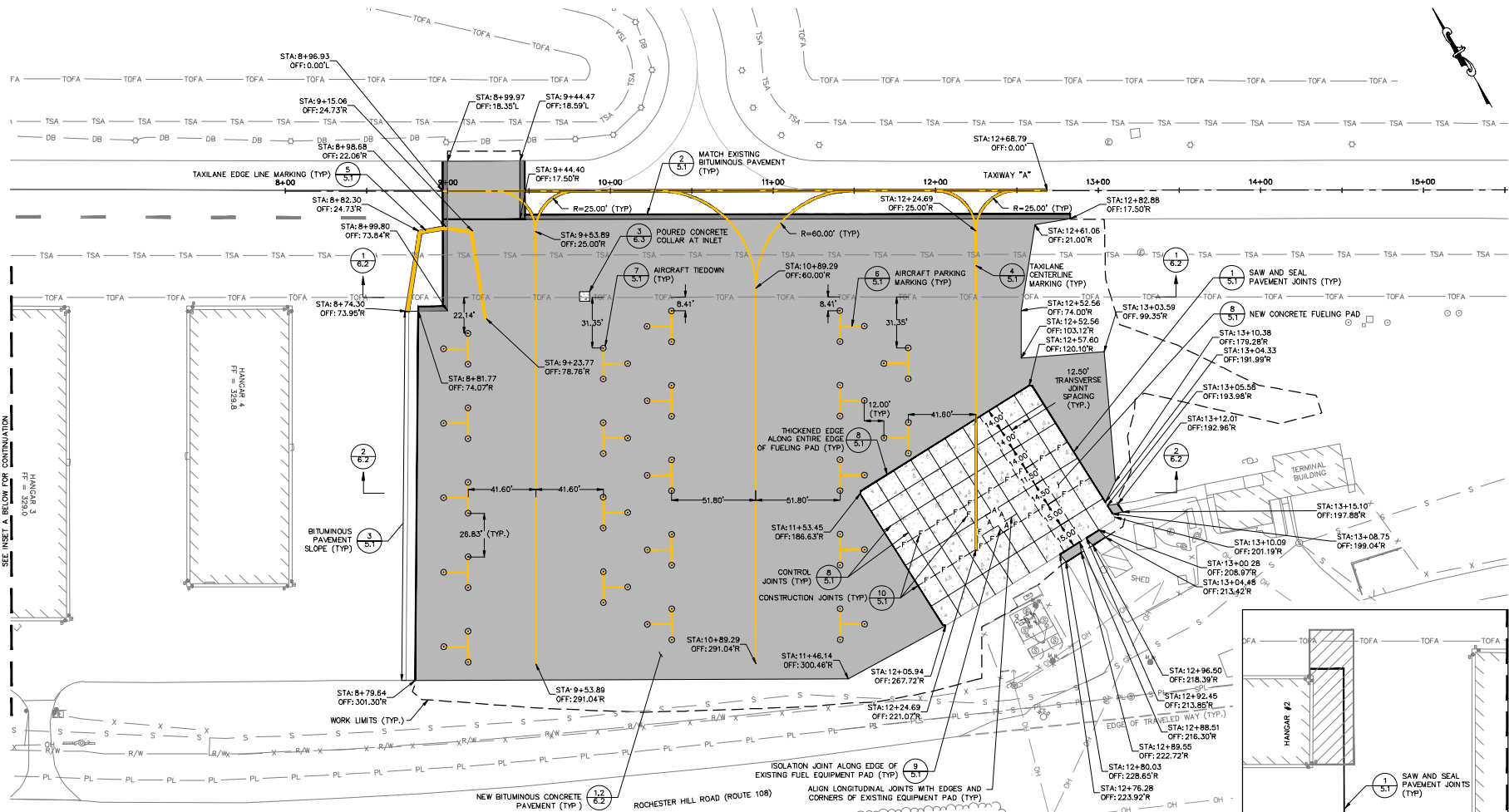


4.0 4.1 NOT TO SCALE

1. DIMENSIONS GIVEN IN THE DRAWINGS ARE EXAMPLES; DEVICES SHOULD BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND INSTALL STAKES TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
5. BLANKETS MUST BE 100% FREE OF WEEDS AND SEEDS.

			
PROJECT DESIGNER 2. EXECUTIVE PARK DRIVE BEDFORD, NH 03110 PROJECT (JOB) #66-1781		#3 COMBINED DRIVE PROJECT (JOB) #66-1783 PROJECT (JOB) #66-1780	
SCALES/NOT TO SCALE DATE: JANUARY 2024 DESIGNED BY: LMO		ENVIRONMENTAL CONSULTANT WILSON & HATHORN INC. 1000 WILSON DRIVE BEDFORD, NH 03110	
REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON		SITE PREPARATION AND EROSION CONTROL DETAILS	
BY:		DRAWN BY: LMO CHECKED BY: JPT APPROVED:	
REVISIONS NO. DATE DESCRIPTION		PROJ. NO. E2X905052 JK. FILE P: 2020/E2X905052 SIBG NO. DSBG 15-09-2020 DRAWING NO. 4.1	
SHEET 08 OF 16		REV	

Jacobs - V:\Hillman\17012020\12290502 - DAV\Reconstr at Terminal Aprt\1701 CAD\Drawings\1701 Geometry & Marking\Planning [E] June 17, 2022 - 4:48pm [jacobm]

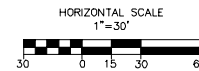


GEOMETRY AND MARKING PLAN
SCALE: 1"=30'

LEGEND

- PROPOSED BITUMINOUS CONCRETE PAVEMENT
- PROPOSED BITUMINOUS MILL AND OVERLAY
- PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT
- SAW AND SEAL PAVEMENT JOINT
- PROPOSED PAVEMENT MARKING - TAXILANE CENTERLINE OR AIRCRAFT PARKING
- PROPOSED PAVEMENT MARKING - TAXILANE EDGE LINE

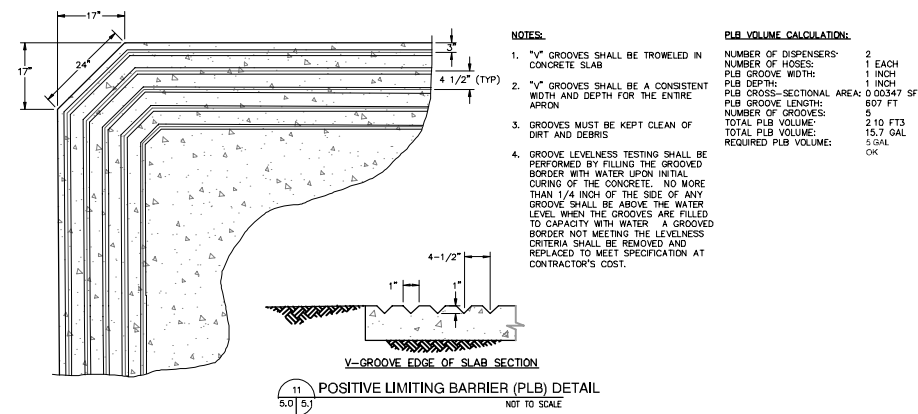
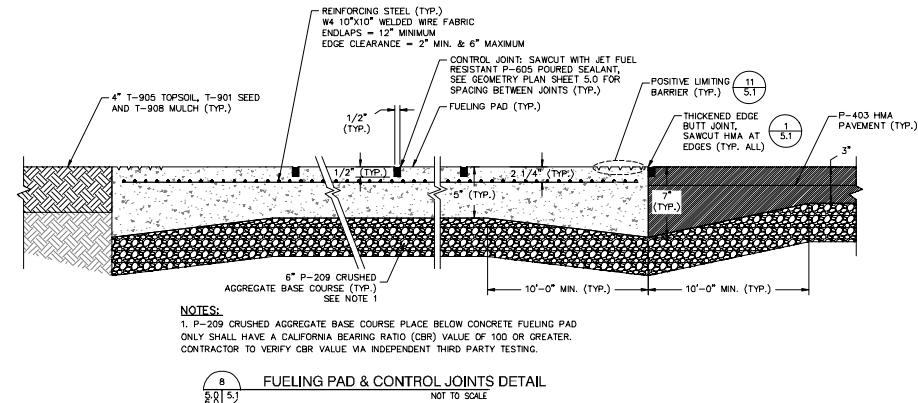
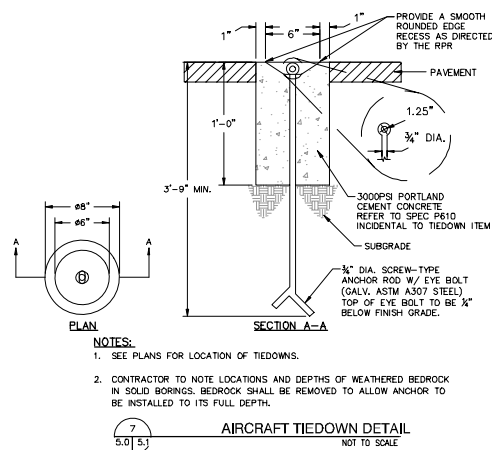
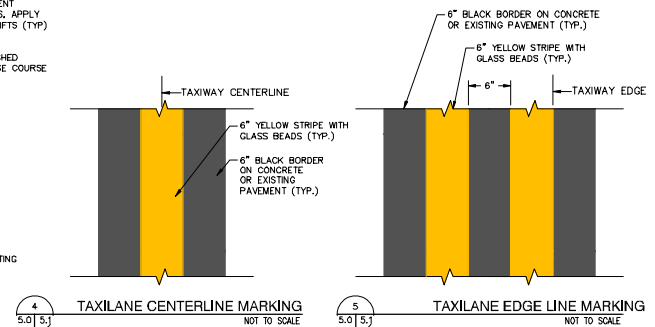
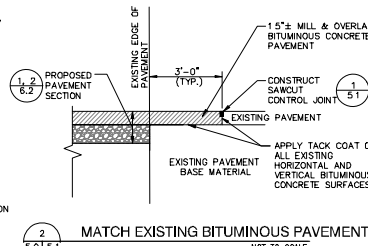
- PROPOSED AIRCRAFT TIEDOWN
- WORK LIMITS
- ISOLATION JOINT
- CONSTRUCTION JOINT



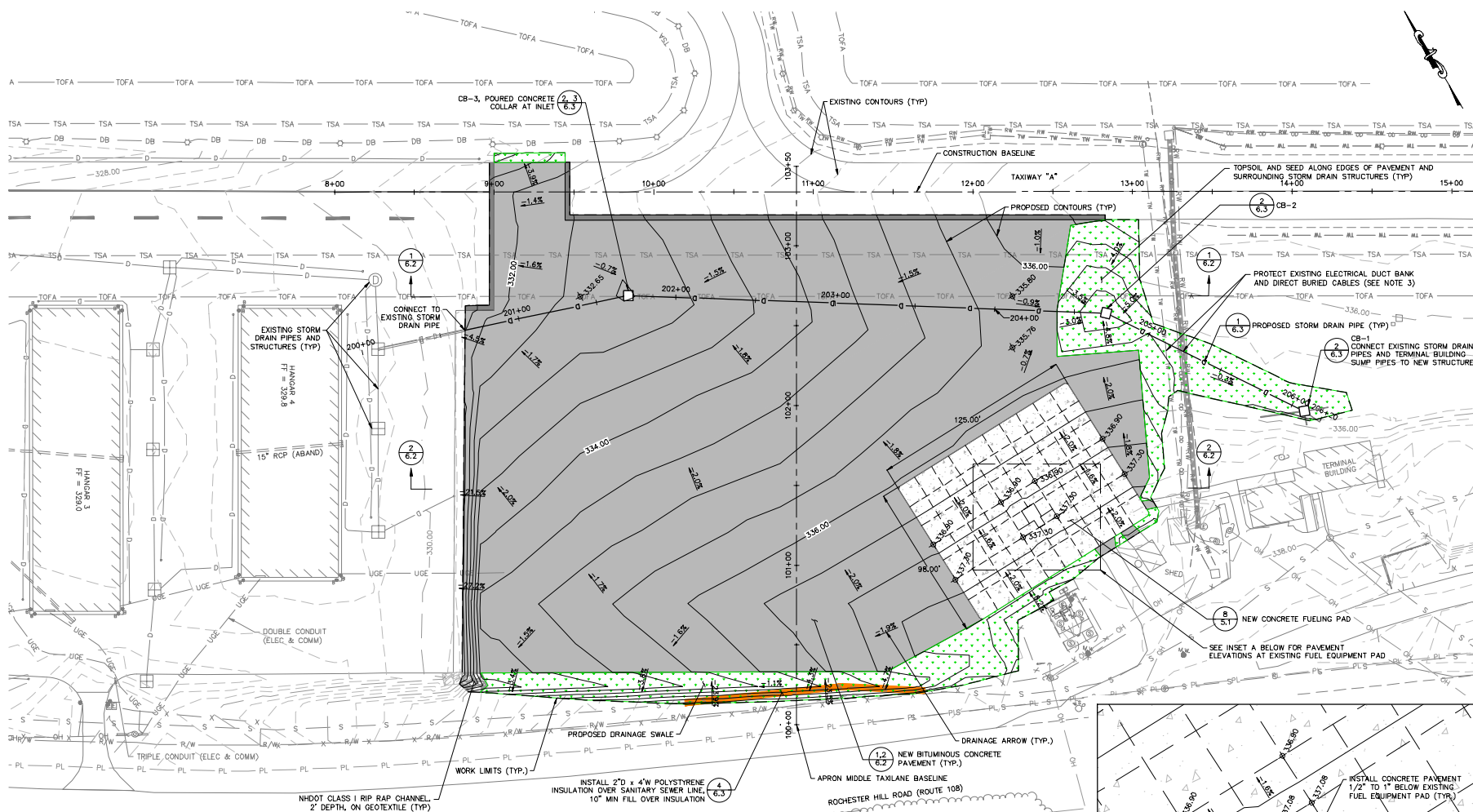
INSET A
SCALE: 1"=30'

REV. NO.	DATE	DESCRIPTION	BY

PROJ. NO.: E2X90502
J. FILE: P/2020/E2X90502
SBG NO.: SBG 15-09-2020



Jacobs - V:\Hill\14102010\22090502 - DAW\Recover\Terminal Area\70701 CAD\Files\DWG Grading and Drainage - Terminal\70701.dwg June 19, 2022 - 6:58pm (bocovsing)

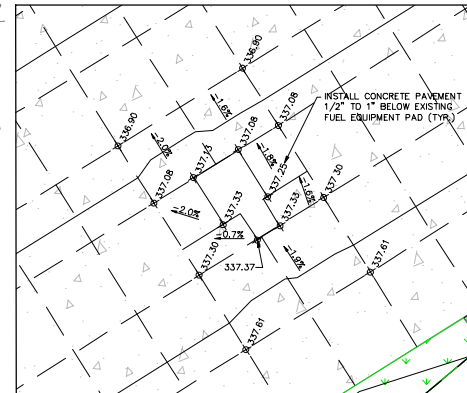
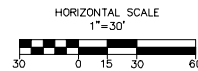


LEGEND

	PROPOSED BITUMINOUS CONCRETE PAVEMENT		2.0%		DRAINAGE ARROW
	PROPOSED BITUMINOUS MILL AND OVERLAY		SPOT ELEVATION		EXISTING STORM DRAIN PIPE
	PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT		EXISTING STORM DRAIN MANHOLE		EXISTING STORM DRAIN CATCH BASIN
	TOPSOIL AND SEED		PROPOSED STORM DRAIN PIPE		PROPOSED STORM DRAIN CATCH BASIN
	RIP RAP CHANNEL		WORK LIMITS		SANITARY SEWER PIPE INSULATION
	EXISTING MAJOR CONTOUR (2.0' INTERVALS)				
	EXISTING MINOR CONTOUR (0.5' INTERVALS)				
	PROPOSED MAJOR CONTOUR (2.0' INTERVALS)				
	PROPOSED MINOR CONTOUR (0.5' INTERVALS)				

NOTES

- CONTRACTOR SHALL FIELD VERIFY ALL INVERTS PRIOR TO ORDERING STORM DRAIN MATERIALS AND STRUCTURES.
- FOR STRUCTURE AND PIPE DATA, SEE GRADING AND DRAINAGE PROFILE SHEET 6.1.
- CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE SUPPORT FOR ELECTRICAL CONDUIT DURING DRAINAGE INSTALLATION, AND ENSURE NO CONFLICT BETWEEN DRAINAGE AND ELECTRICAL UTILITIES.



INSET A
SCALE: 1"=10'

PEASE
AIRPORT
MANAGEMENT

2 RESERVE PARK DRIVE
SUITE 200
ROCHESTER, NH 03063
PHONE (603) 882-7787

Jacobs

PROJECT DESIGNER

1"=30'

DATE: JANUARY 2024

DESIGNED BY: LMO

DRAWN BY: LMO

CHECKED BY: JPP

APPROVED:

SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

GRADING AND DRAINAGE PLAN

REV.	NO.	DATE	DESCRIPTION

PROJ. NO.: E2X90502

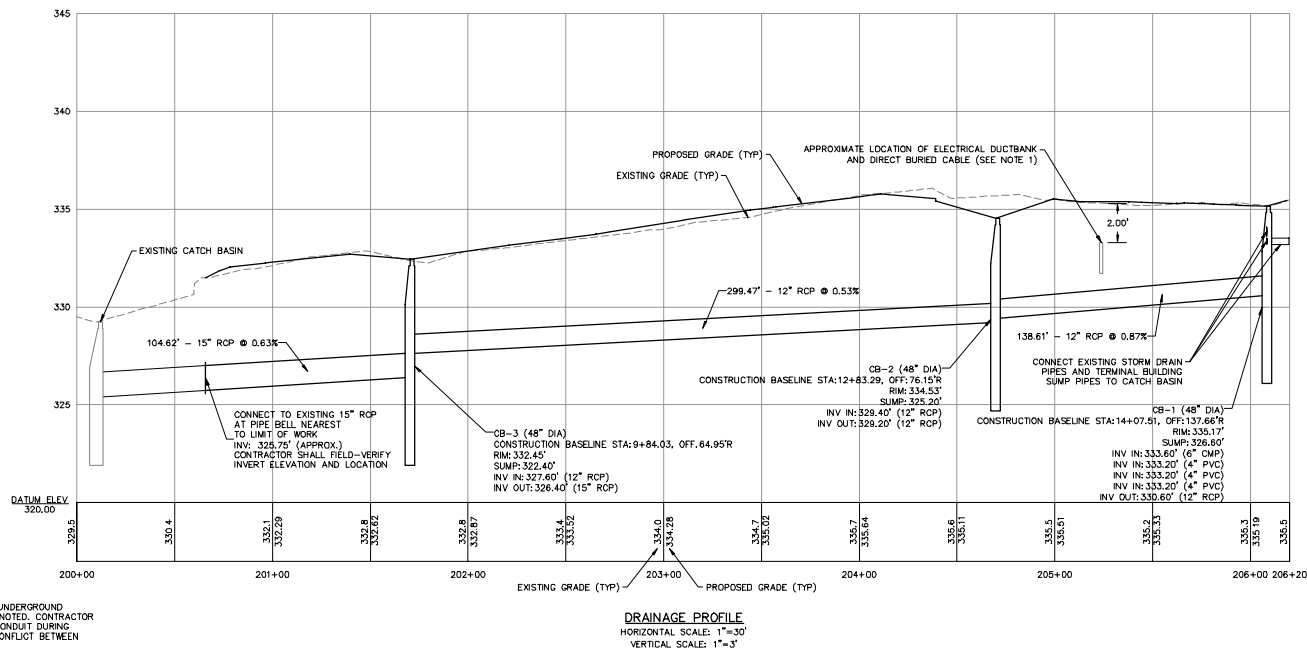
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SBG NO.: SBG 15-09-2020

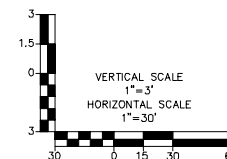
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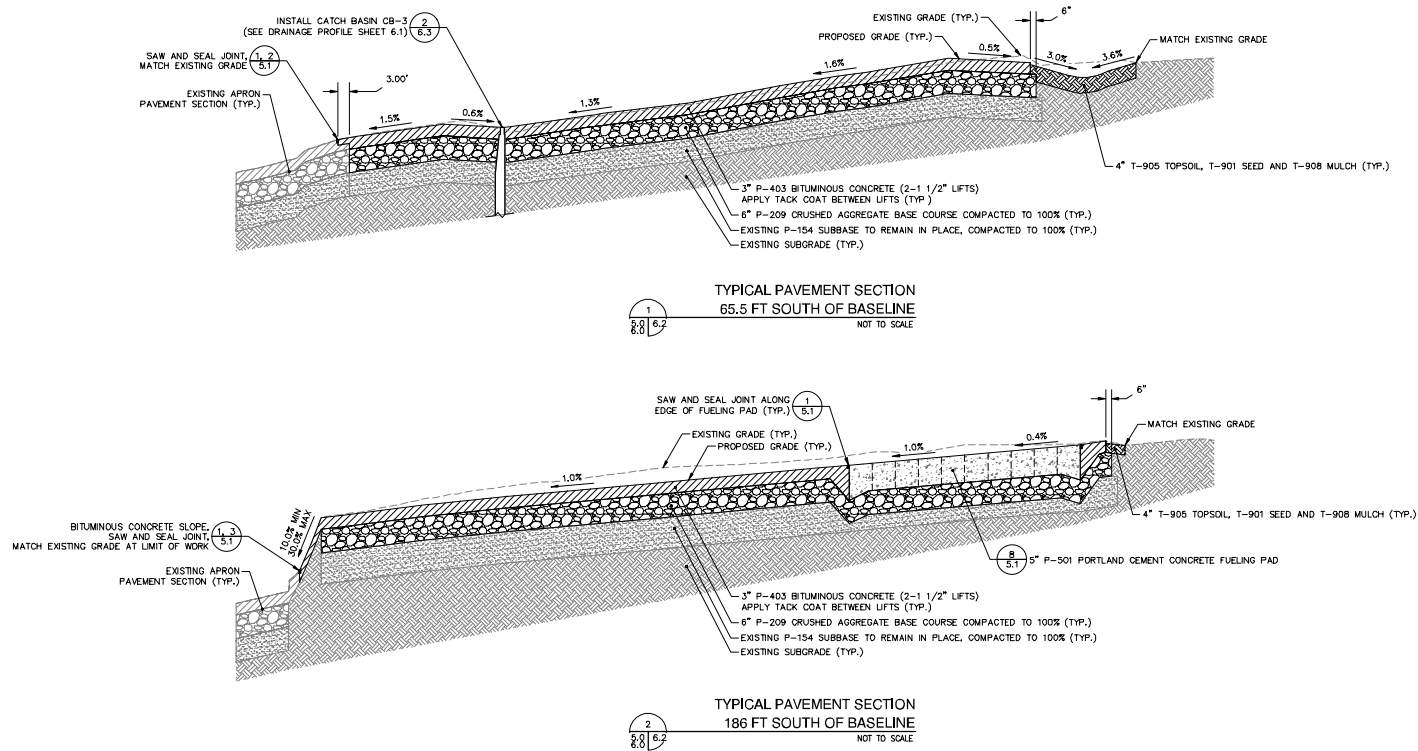
SHEET 11 OF 16



1. CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE SUPPORT FOR ELECTRICAL CONDUIT DURING DRAINAGE INSTALLATION, AND ENSURE NO CONFLICT BETWEEN DRAINAGE AND ELECTRICAL UTILITIES.



\\nasdaq-1\proj\2020\22090502 - DAV\Reconstruct Terminal Apron\70701 CAD\Files\DWG\Design\6.2 Grading and Drainage.dwg (6.2) - 6.2.dwg (6.2) - 6.2.dwg (6.2)



PROJECT DESIGNER:
Jacobs
2 RESERVE PARK DRIVE
SUITE 200
PEASE, NH 03263
PHONE (603) 896-7789
FAX (603) 896-7789
ENVIRONMENTAL CONSULTANT:
Wilcox & Barton
1400 COMMONS DRIVE
LAKEPORT, NH 03003
PHONE (603) 792-4743
FAX (603) 792-4743

SCALE: 1" = 10' - 0"

DATE: JANUARY 2024

DESIGNED BY: LMD

DRAWN BY: LMD

CHECKED BY: JPP

APPROVED:

SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

TYPICAL SECTIONS

REV.	DATE	REVISIONS	BY

PROJ. NO.: E2X90502

FILE: P:/2020/E2X90502

SBG NO.: SBG 15-09-2020

DRAWING NO.

6.2

SHEET 13 OF 16

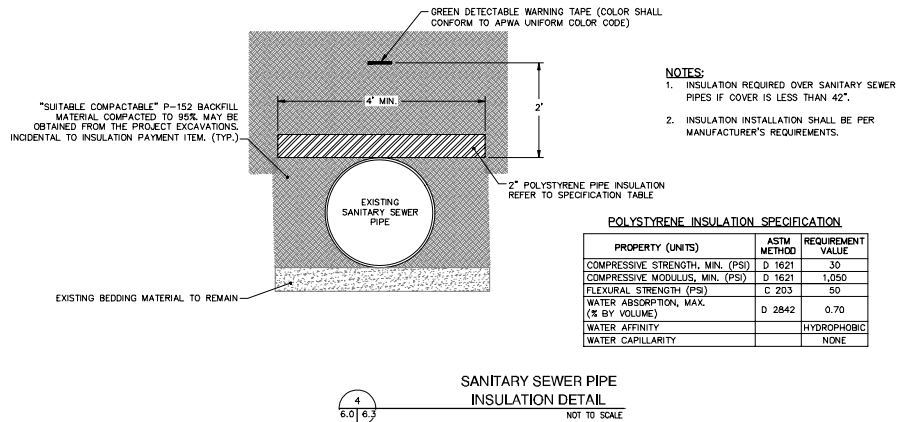
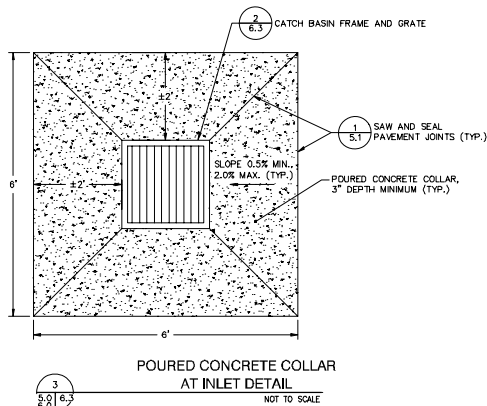
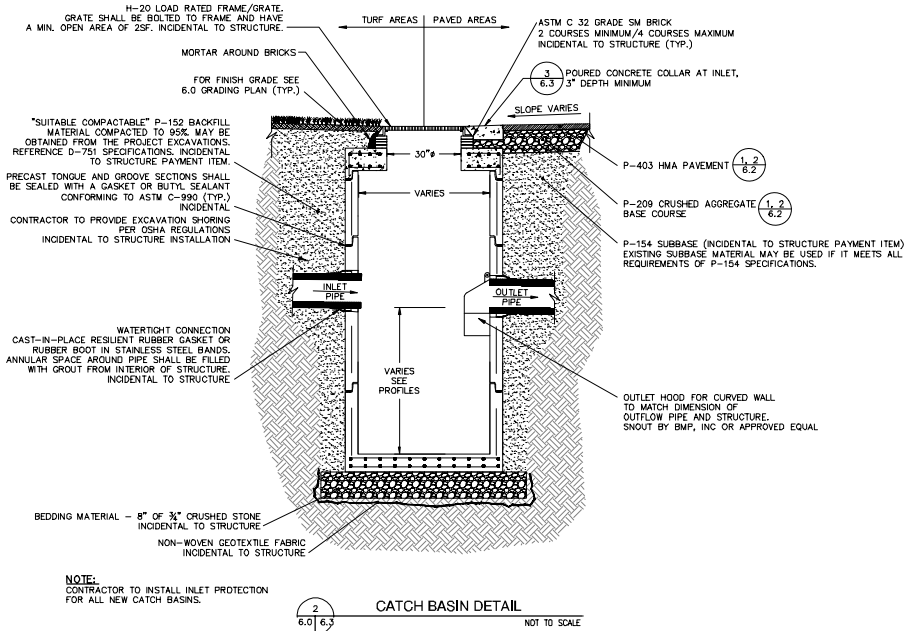
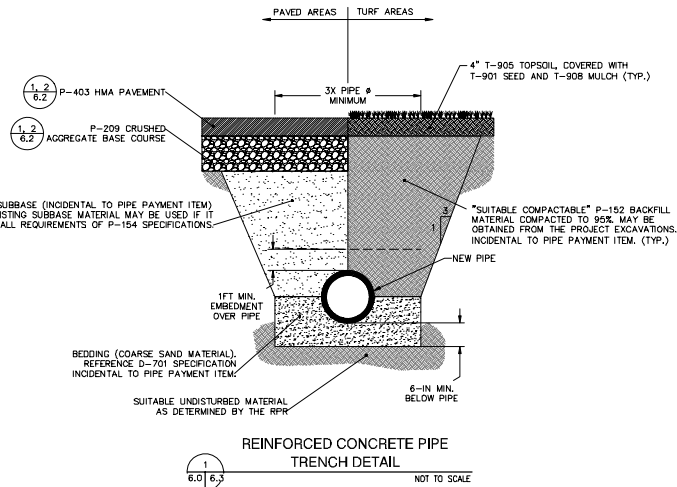
REV

Jacobs - V:\Hillman\2020\22X90502 - DAY Recover at Terminal Apr\2020\22X90502\02 Grading and Drainage\22X90502.dwg 7/3/2022 - 6:58pm (drc:rsj)

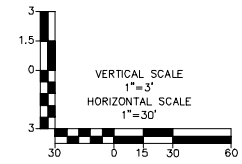
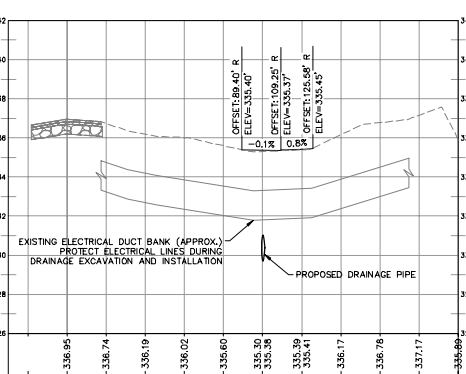
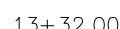
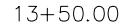
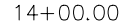
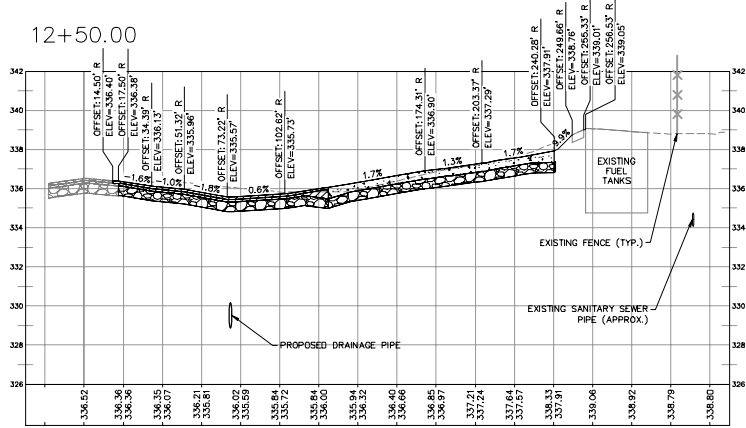
REVISIONS	DATE	BY
DESCRIPTION		

PROJ. NO.: E2X90502
J.E. FILE: P:/2020/E2X90502
SBG NO.: SBG 15-09-2020

DRAWING NO.
6.3
SHEET 14 OF 16



6.4

$12 + 50.00$ 

ABUTTER LIST

City of Rochester, NH

Please Print or Type

Applicant: Pease Development Authority **Phone** 603.433.6088

Project Address: 238 Rochester Hill Rd, Rochester, NH

List the names and addresses of all parties below. For abutting lot owners, list each owner whose lot adjoins or is directly across the street or a body of water from the subject property. This form may not be completed more than five (5) days prior to the application deadline.

LEGAL OWNER OF SUBJECT LOT

Map	Lot	Zone	Owner Name	Mailing Address
243	18	AG	Pease Development Authority	55 International Drive, Portsmouth, NH 03801

ABUTTING LOT OWNERS

Map	Lot	Owner Name	Owner Mailing Address (NOT property location)
242	01	Sakuntala LLC	4 Andrew Way, Madbury, NH 03823
243	04	Pease Development Authority	55 International Drive, Portsmouth, NH 03801
243	10	ORourke John F & Dyann L	144 Rochester Hill Rd, Rochester, NH 03867
243	12	150 Rochester Hill LLC	761 Washington Rd, Rye, NH 03870
243	13	43 North LLC	156 Rochester Hill Rd, Rochester, NH 03867
243	14		
243	15	Graham Susan M	160 Rochester Hill Rd, Rochester, NH 03867
243	17	Trinity Anglican Church, Kathleen A Lewis	P.O. Box 1078, Rochester, NH 03866
243	17	Trinity Anglican Church, Kathleen A Lewis	P.O. Box 1078, Rochester, NH 03866
243	19	88 AD LLC	20 Pond Park Rd., Hingham, MA 02043
243	20	Albany Eng'd Composites Inc. Attn: AP	P.O. Box 1907, Albany, NY 12201
243	21	Albany INT'L Techniweave Inc. Attn: AP	P.O. Box 1907, Albany, NY 12201
243	24	Albany Eng'd Composites Inc. Attn: AP	P.O. Box 1907, Albany, NY 12201
243	25	Albany Eng'd Composites Inc. Attn: AP	P.O. Box 1907, Albany, NY 12201
243	27	Albany Eng'd Composites Inc. Attn: AP	P.O. Box 1907, Albany, NY 12201
243	38	Society for the Protection of New Hampshire Forests	54 Portsmouth St, Concord, NH 03301
243	38	Ash Trust, Donald P Ash Jr. Trustee	249 Rochester Hill Rd, Rochester, NH 03867
243	38	FMH Health Services LLC	One Park Plaza, Nashville, TN 37203
243	39	Easter Seals New Hampshire Inc.	555 Auburn St, Manchester, NH 03103
243	39	FMH Health Services LLC	One Park Plaza, Nashville, TN 37203
243	39	FMH Health Services LLC	One Park Plaza, Nashville, TN 37203
243	40	Tetreault Randolph R & Kathy L	P.O. Box 1782, Wolfboro, NH 03894
243	50	Lemieux D R Trust of 2012, Lemieux David R Trustee	P.O. Box 1163, Rochester, NH 03866
243	51	Devlin Beth M & Savastio George R	79 Beech Rd, Eliot, ME 03903
243	51	603 Group LLC	P.O. Box 60, Rochester, NH 03839
243	51	Shah Ashok A Revocable Living Trust, Ashok A Shah Trustee	161 Rochester Hill Rd, Rochester, NH 03867
243	55	Society for the Protection of New Hampshire Forests	54 Portsmouth St, Concord, NH 03301

254	18	MHG 4 Fund LLC	165 Thorndike St Suite 2002, Lowell, MA 01852
254 254	19 20	Bress Family Rev Trust of 2011 & Bress James H & Judy A	9 St Andrews Cir, Dover, NH 03820
254 254	21 22	Bress Family Rev Trust of 2011 & Bress James H & Judy A	9 St Andrews Cir, Dover, NH 03820
254	23	Perkins Michael & Laroche Sandra D	265 Rochester Hill Rd, Rochester, NH 03867
254	24	Wark David A & Whitney Jeffrey A	263 Rochester Hill Rd, Rochester, NH 03867
254	25	Dore Sylvia F Living Trust, Dore Sylvia F Trustee	259 Rochester Hill Rd, Rochester, NH 03867
255	17	Pease Development Authority	55 International Drive, Portsmouth, NH 03801

PROFESSIONALS AND EASEMENT HOLDERS. Engineers, Surveyors, Soil Scientists, and Architects whose seal appears or will appear on the plans (other than any agent submitting this application); holders of conservation, preservation, or agricultural easements; and upstream dam owners/NHDES.

Name of Professional or Easement Holder

Mailing Address

John Pelletier, P.E.	Jacobs Engineering Group, Inc. 2 Executive Park Dr. Bedford, NH 03110

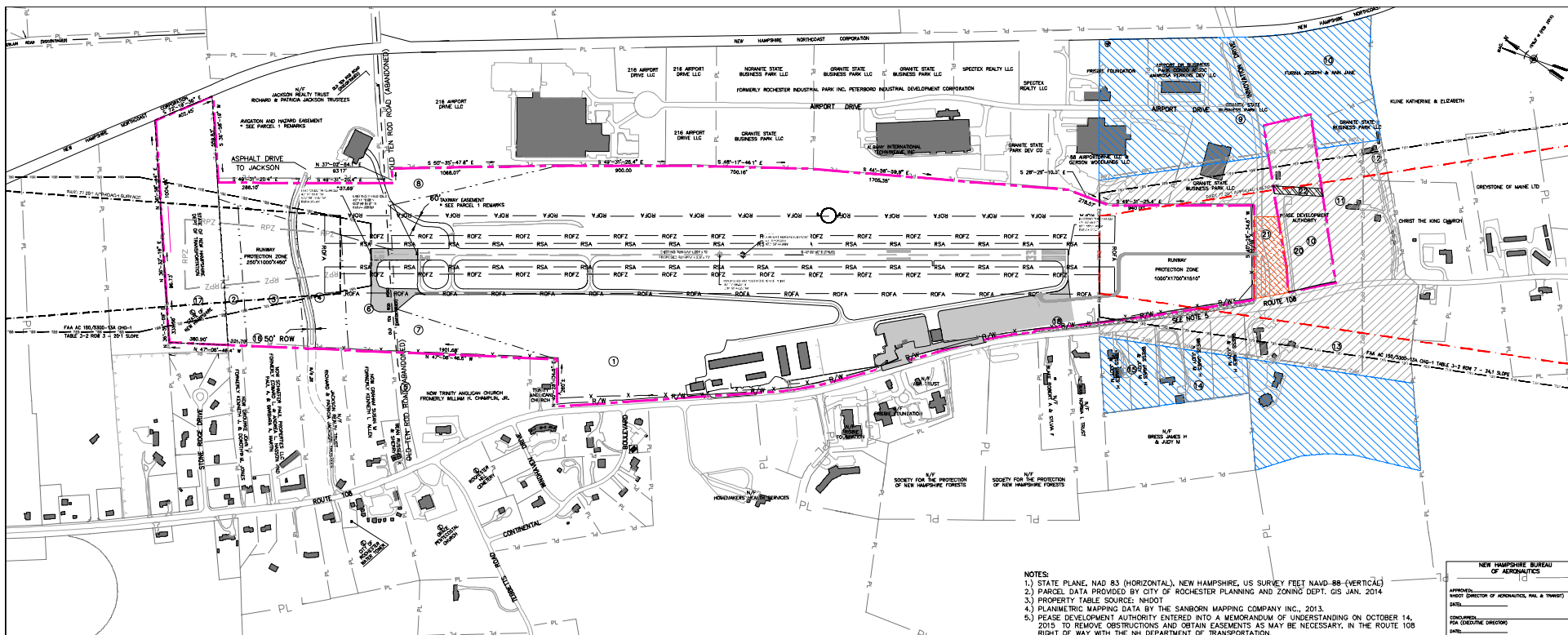
I, the undersigned, acknowledge that it is the responsibility of the applicant or his/her agent to fill out this form. I understand that any error or omission could affect the validity of any approval. The names and address listed on this form were obtained from the City of Rochester Planning Department

on this date: February 09, 2024 This is page 2 of 2 pages.

Applicant or Agent: John Pelletier, PE

Digitally signed by John Pelletier, PE
DN: c=US, E=john.pelletier@jacobs.com, O=Jacobs
Engineering Group, OU=US MA NEW ENGLAND, CN=John
Pelletier, PE
Reason: I signed to the accuracy and integrity of this document
Date: 2024.02.14 08:17:25-05'00'

Planning Staff Verification: _____ Date: _____



NOTES:
1) STATE PLANE, NAD 83 (HORIZONTAL), NEW HAMPSHIRE, US SURVEY FEET NAVD-88 (VERTICAL)
2) PARCEL DATA PROVIDED BY CITY OF ROCHESTER PLANNING AND ZONING DEPT. GIS JAN. 2014
3) PROPERTY TABLE SOURCE: NHDOT
4) PLANIMETRIC MAPPING DATA BY THE SANBORN MAPPING COMPANY INC., 2013
5) PEASE DEVELOPMENT AUTHORITY ENTERED INTO A MEMORANDUM OF UNDERSTANDING ON OCTOBER 14, 2015 TO REMOVE OBSTRUCTIONS AND OBTAIN EASEMENTS AS MAY BE NECESSARY, IN THE ROUTE 108 RIGHT OF WAY WITH THE NH DEPARTMENT OF TRANSPORTATION.

NEW HAMPSHIRE BUREAU OF AERONAUTICS
APPROVED:
DIRECTOR OF AERONAUTICS, PA & TRUSTS
DATE:
COMPILED:
FOR EXISTING RECORD
DATE:

HORIZONTAL SCALE
1"=300'
300' 0 150' 300' 600'

LEGEND	
SYMBOL	DESCRIPTION
---	PAYMENT CODE
---	EXISTING FENCE
---	AIRPORT PROPERTY LINE
---	BUILDING
---	RETAINING WALL
---	RUNWAY PROTECTION ZONE
---	RUNWAY OBSTACLE FREE AREA
---	RUNWAY SAFETY AREA
---	PROPOSED PAVEMENT
---	PARCEL BOUNDARY
---	OTHER PROPERTY BOUNDARY
---	R/W
---	RIGHT-OF-WAY
---	AVIGATION EASEMENT 7:1
---	HIGHWAY OPERATIONS EASEMENT (PARCEL 18)
---	WAND EASEMENT
---	SEWER EASEMENT
---	SEMENTED CIRCLE/LIGHTED WINDSOCK
---	AIRPORT REFERENCE POINT
---	EXISTING PART 77 APPROACH SURFACE
---	PROPOSED PART 77 APPROACH SURFACE

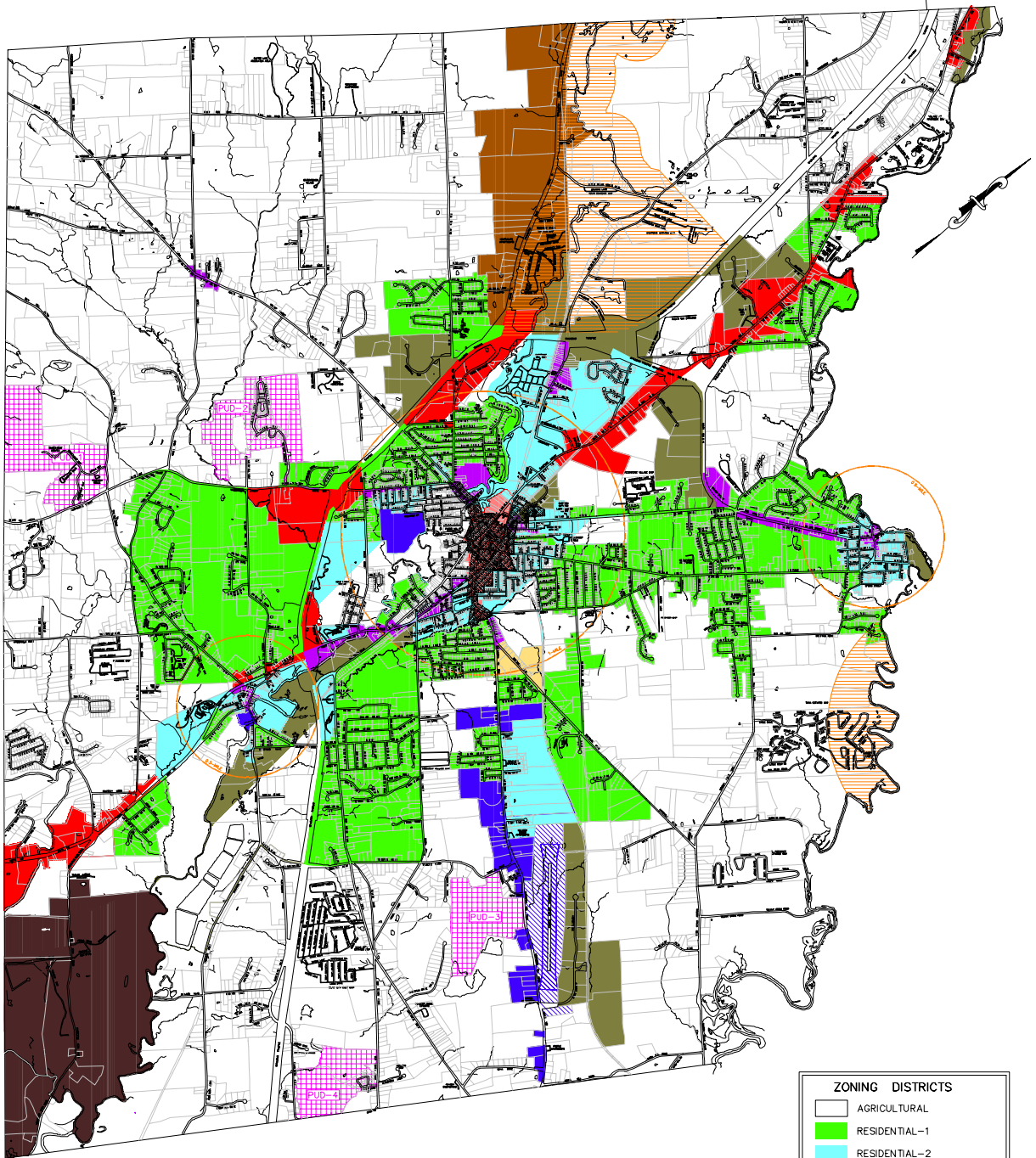
P R O P E R T Y	GRANTOR	GRANTEE	AREA BEFORE	FEE SIMPLE	ACRES		NAVD	AREA REMAINING	DATE RECORDED	BOOK/PAGE LOCATION	REMARKS
					AVIGATION EASEMENT	7:1					
1	CHAMPLIN, WILLIAM H. JR.	STATE OF NEW HAMPSHIRE	-	148±	-	-	-	-	12/31/1968	850 / 470 SCRD	ORIGINAL PURCHASE OF AIRFIELD PAAP 9-27-023-2801 "DRIVEWAY RIGHT-OF-WAY" TRANSFERRED FROM WARRANTY DEED BETWEEN THE CHAMPLIN COMPANY AND RICHARD C. JACKSON, DATED JULY 19, 1967
2	JONES, KENNETH J. & DOROTHY M.	STATE OF NEW HAMPSHIRE	3,75	1,75	-	-	-	2,00	2/25/1965	1160 / 28 SCRD	AIP 3-33-0015-01
3	HASSON, EDWARD L. & ANDREA L. MARTIN, PAULA & BARBARA A.	STATE OF NEW HAMPSHIRE	13,00	7,69	-	-	-	6,21	12/26/1994	1194 / 691 SCRD	AIP 3-33-0015-01
4	JACKSON, RICHARD C. & PATRICIA H.	STATE OF NEW HAMPSHIRE	37,25	11,41	-	-	-	25,84	4/2/1987	1303 / 730 SCRD	AIP 3-33-0015-01
5	JACKSON RICHARD C. & PATRICIA H.	STATE OF NEW HAMPSHIRE	-	-	-	-	-	-	11/26/1994	1152 / 0185 SCRD	NOTICE OF CONDEMNATION EXTINGUISHING 11.4-ACRE RIGHT-OF-WAY HELD BY RICHARD AND PATRICIA JACKSON.
6	ALLEN, KENNETH L.	STATE OF NEW HAMPSHIRE	11,55	6,34	-	-	-	5,21	3/5/1985	1160 / 700	AIP 3-33-0015-01
7	CHAMPLIN, WILLIAM H. JR.	STATE OF NEW HAMPSHIRE	13,55	2,38	-	-	-	11,17	9/25/1984	1148 / 271 SCRD	AIP 3-33-0015-01
8	PETERBORO INDUSTRIAL DEVELOPMENT CORPORATION	STATE OF NEW HAMPSHIRE	114,30	2,38	-	-	-	112,92	4/30/1985	1167 / 280	AIP 3-33-0015-01
9	PETERBORO INDUSTRIAL DEVELOPMENT CORPORATION	STATE OF NEW HAMPSHIRE	114,30	-	6,28	15,54	0,00	108,06	4/30/1985	1167 / 280	AIP 3-33-0015-01
10	PEASE DEVELOPMENT AUTHORITY	PEASE DEVELOPMENT AUTHORITY	7,93	-	6,57	1,36	0,00	7,93	-	-	AIP 3-33-0015-01; AVIGATION EASEMENT WITH PARCEL.
11	FURINA, JOSEPH V. & ANN JANE	STATE OF NEW HAMPSHIRE	16,20	-	7,35	8,85	0,00	16,20	4/26/1985	1166 / 633 SCRD	AIP 3-33-0015-01
12	GENEST, PATRICK R. & ALICE K.	STATE OF NEW HAMPSHIRE	2,88	-	1,48	1,40	0,00	2,88	4/26/1985	1166 / 604 SCRD	AIP 3-33-0015-04
13	WHITCHER, DAVID R.	STATE OF NEW HAMPSHIRE	24,70	-	9,75	14,95	0,00	24,70	4/26/1985	1166 / 611 SCRD	AIP 3-33-0015-04
14	BRESS, JAMES H. & JUDY M.	STATE OF NEW HAMPSHIRE	6,77	-	2,16	4,61	0,00	6,77	4/26/1985	1166 / 618 SCRD	AIP 3-33-0015-04
15	DENISON, JACK E. & MARY ANNE	STATE OF NEW HAMPSHIRE	4,14	-	0,41	3,73	0,00	4,14	8/6/1991	1557 / 475 SCRD	AIP 3-33-0015-04
16	STATE OF NEW HAMPSHIRE	JACKSON RICHARD C. & PATRICIA H.	-	-	-	-	-	-	11/1/1991	1960 / 238 SCRD	GRANTED NEW 50-FT. RIGHT-OF-WAY TO RICHARD AND PATRICIA JACKSON.
17	ROBERGE, RONALD R. & ROSE MARIE	STATE OF NEW HAMPSHIRE	22,59	14,07	-	-	-	8,52	3/29/1998	1168 / 342 SCRD	AIP 3-33-0015-08
18	STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION BUREAU OF AERONAUTICS	STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION BUREAU OF RIGHT-OF-WAY	0,78	0,78	0,78	-	-	0,78	SEE REMARKS	SEE REMARKS	LET. OF TRANSFER 8/6/1992 ON FILE WITH NHDOT / ROW & DIST AS FAA APPROVALS, 3/13/1992 EASEMENT RETAINED
19	STATE OF NEW HAMPSHIRE	PEASE DEVELOPMENT AUTHORITY	-	194±	36,78±	53,54±	-	-	6/25/2009	3752 / 0526 SCRD	IN ACCORDANCE WITH ASSIGNMENT AND ASSUMPTION AGREEMENT DATED JUNE 26, 2009
20	DUPONT MADELINE M REVOCABLE TRUST	PEASE DEVELOPMENT AUTHORITY	7,93	7,93	-	-	-	-	2/11/11	39050581	SBG 15-03-2011
21	CITY OF ROCHESTER	PEASE DEVELOPMENT AUTHORITY	2,298	-	-	-	-	2,298	1/27/16	4354/0909	SURFACE ACCESS AND MAINTENANCE EASEMENT AND OVERHEAD AVIGATION EASEMENT PLAN, STRAFFORD REG OF DEEDS, EASEMENT DEED: PLAN E1151587
22	PEASE DEVELOPMENT AUTHORITY	CITY OF ROCHESTER	-	-	-	-	-	-	TBD	TBD	SEWER EASEMENT PER NORWICH PLAINS SEWER MAIN PLANS (JULY 2020)

NO.	REVISIONS	BY	APP.	DATE
1	UPDATED LINE 20 TO INCLUDE DATE RECORDED, BOOK/PAGE AND REMARKS	JG	JG	5/13
2	REMOVED AVIGATION EASEMENT OVER DUPONT PROPERTY PER POA LEGAL	JG	JG	6/13
3	ADDED WAND EASEMENT TO BE ACQUIRED	JG	JG	7/13
4	PROPERTY PURCHASED AND HOUSE DEMOLISHED BY SBG-15-03-2011	JG	JG	3/14
5	UPDATED RUNWAY GEOMETRY, PROPERTY LINES, ROADS, AND BUILDINGS	KH	JG	9/14
6	UPDATED MAGNETIC VARIATION	KH	JG	3/15
7	UPDATED RUNWAY GEOMETRY TO REFLECT AS-BUILT DATA	JG	JG	8/15
8	EASEMENT PURCHASED BY SBG-15-05-2012	JH	JG	4/16
9	UPDATE PER R/W 15-33 PROJECT	NT	JG	6/17
10	ADDED SEWER EASEMENT ON 290 ROCHESTER HILL ROAD	SBG	JG	3/21

SKYHAVEN AIRPORT
ROCHESTER, NH
EXHIBIT "A"
AIRPORT PROPERTY
INVENTORY MAPS

Two Executive Park Drive
Bedford, New Hampshire 03060
603 55-974 FAX 603 655-795

DRAWN BY: KLH	CHD. BY: HHM	DWG. NO:
SCALE: 1"=300'	APPROVED: JG	DATE: MAR 2021
		12



CITY OF ROCHESTER, N.H. ZONING MAP

FEET 1200 0 1200 2400 3600
METERS 400 0 400 800 1200

PRODUCED IN 2014 BY
NORWAY PLAINS ASSOCIATES, INC.
A CONFIDENTIAL SERVICE OF N.P.A. 2014 04
2014-04-11 11:00 AM
www.norwayplains.com

ADOPTED: 4/14/2014
AMENDED: 7/12/2013; 10/7/2013
1 & 1.25 RINGS: 04/11/2014

ZONING DISTRICTS	
	AGRICULTURAL
	RESIDENTIAL-1
	RESIDENTIAL-2
	DOWNTOWN COMMERCIAL
	OFFICE COMMERCIAL
	NEIGHBORHOOD MIXED USE
	HIGHWAY COMMERCIAL
	GRANITE RIDGE
	INDUSTRIAL
	RECYCLING INDUSTRIAL
	AIRPORT SPECIAL
	HOSPITAL SPECIAL
OVERLAY DISTRICTS	
	AQUIFER PROTECTION
	HISTORIC DISTRICT
	SPECIAL DOWNTOWN

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding resulting from local drainage sources or small area. The community map repository should be consulted for possible updated or otherwise flood threat information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) or **Floodways** have been determined, users are encouraged to consult the Flood Insurance Study (FIS) and/or Flood Insurance Rate Study (FIRS) contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent nearest whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation shown on this map apply only to lowland of 137 National Geospatial Intelligence (NGI) Zone 25. Users of this FIRM should be aware that coastal base elevations are also provided in the Survey of Elevation Elevations values in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Survey of Elevation Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

Boundaries of the **Floodways** were computed at cross sections and interpolated between cross sections. The Floodways were based on hydrologic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdiction.

The **projection** used in the preparation of this map was New Hampshire State Plane, NAD83/2011. The horizontal datum was NAD 83, ellipsoid datum. Differences in datum, projection or State Plane zones used in the production of FIRM for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geospatial Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

National Geospatial Survey Division
National Geospatial Survey, NOAA
Silver Spring, Virginia Center
505 East-West Highway
Silver Spring, Maryland 20910
(301) 751-7511

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 751-9242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Graphics (DOGs) produced at a scale of 1:50,000 from photography dated 1998 or later.

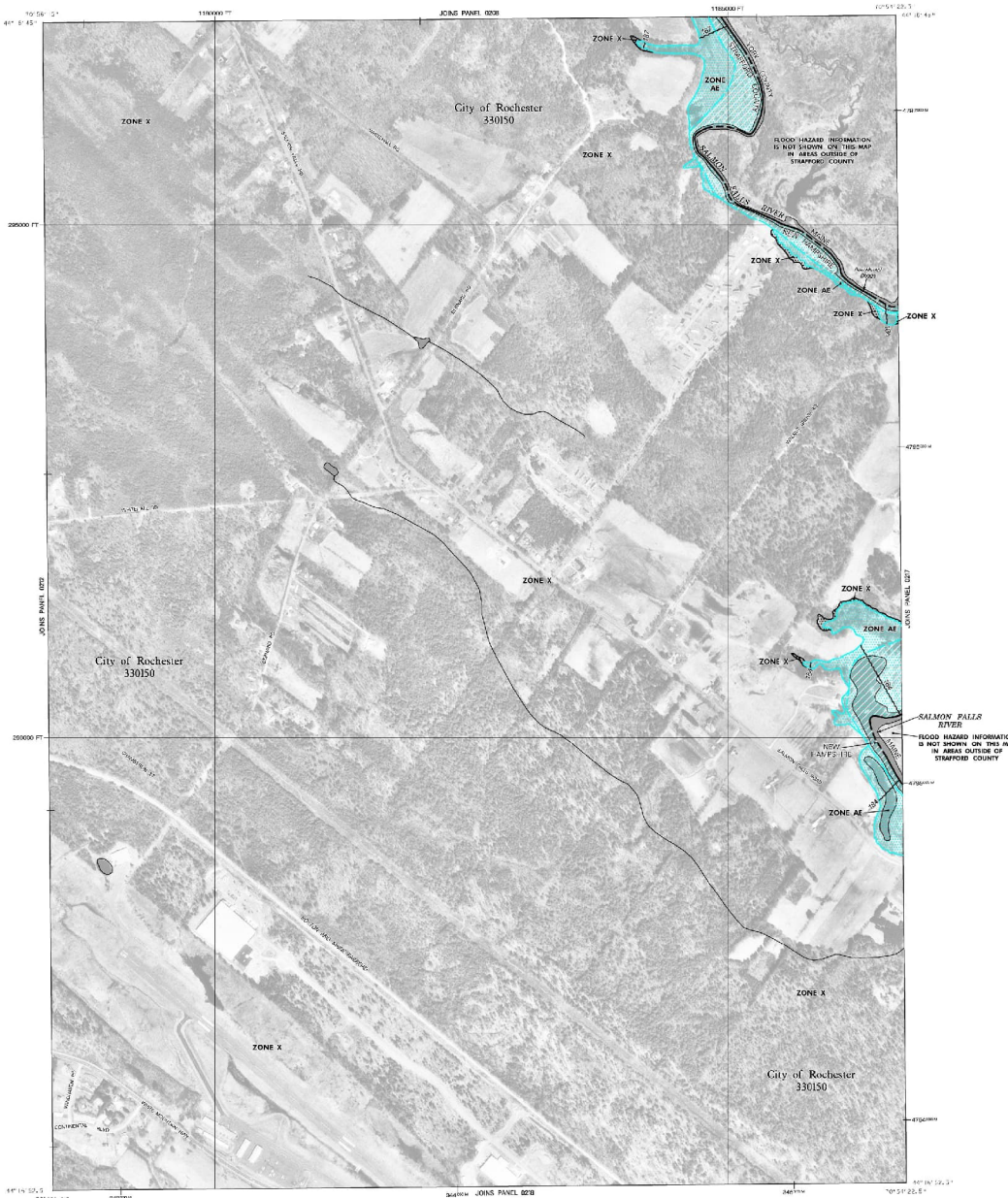
This map reflects new defined and/or altered stream channel configurations that have been shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel changes that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disannexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the listed map panels, community map repository addresses, and a listing of communities with National Flood Insurance Program rates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-368-5858 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by fax at 1-800-368-5859 and their website at www.fema.gov/mfc.

If you have **questions** about this map or questions concerning the National Flood Insurance Program, in general, please call 1-877-FEMA (3634) or 1-877-368-5857, or visit the FEMA website at www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (500 year flood) also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include: Zone A, AE, AH, AO, AR, AR1, AR2, AR3, and AR4. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

Zone A - No Base Flood Elevation determination.

Zone AH - Base Flood Elevation determined.

Zone AH1 - Flood depths of 1 to 3 feet (mostly areas of ponding). Base Flood Elevation determined.

Zone AH2 - Flood depths of 1 to 3 feet (mostly areas of ponding). Base Flood Elevation determined.

Zone AH3 - Flood depths of 1 to 3 feet (mostly areas of ponding). Base Flood Elevation determined.

Zone AH4 - Flood depths of 1 to 3 feet (mostly areas of ponding). Base Flood Elevation determined.

Zone AE - Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined to be inadequate to provide protection from the 1% annual chance or greater flood.

Zone AE1 - Area to be protected from 1% annual chance flood by a Flood Flood Protection System under construction, no Base Flood Elevation determination.

Zone AE2 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE3 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE4 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE5 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE6 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE7 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE8 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE9 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE10 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE11 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE12 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE13 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE14 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE15 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE16 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE17 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE18 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE19 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE20 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE21 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE22 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE23 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE24 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE25 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE26 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE27 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE28 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE29 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE30 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE31 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE32 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE33 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE34 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE35 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE36 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE37 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE38 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE39 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE40 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE41 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE42 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE43 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE44 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE45 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE46 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE47 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE48 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE49 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE50 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE51 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE52 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE53 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE54 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE55 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE56 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE57 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE58 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE59 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE60 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE61 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE62 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE63 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE64 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE65 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE66 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE67 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE68 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE69 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE70 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE71 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE72 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE73 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE74 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE75 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE76 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE77 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE78 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE79 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Zone AE80 - Coastal flood zone with velocity hazard (wave action), no Base Flood Elevation determination.

Drainage Report

Document no: 1
Revision no: 0

Pease Development Authority
Skyhaven Airport

Rehabilitate and Mark Terminal Area Tiedown Apron (approx. 110,000 SF); Relocate Existing Fuel Farm
March 14, 2022





Drainage Report

Client name: Pease Development Authority

Project name: Rehabilitate and Mark Terminal Area Tiedown Apron (approx. 110,000 SF); Relocate Existing Fuel Farm

Client reference: Skyhaven Airport **Project no:** SBG 15-09-2020

Document no: 1 **Project manager:** John Pelletier, PE

Revision no: 0 **Prepared by:** Lawrence O'Connor

Date: March 14, 2022 **File name:** Drainage Report.docx

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments

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1. Drainage Design

1.1 Hydrology

The proposed drainage patterns within the project limits generally follow the existing patterns. Along the southwest and eastern edges of pavement, however, the turf areas were regraded to direct water away from the pavement. One storm drain structure (CB-2) was also moved off-pavement to prevent the eastern apron area from flooding.

1.1.1 Existing Conditions

This project will impact approximately 2.53 acres of the existing 262.8-acre airport. The flows of three storm drain structures within and five structures outside the project limits will be impacted by the project. See Appendix B for tables and maps of pre- and post-development catchment areas.

1.1.2 Pre-Development Flows

The existing flows for the project area were calculated by the SCS methodology, using HydroCAD® software and those set out in Soil Conservation Service's Technical Release 55 (TR-55). The existing site was analyzed by land cover and soil type. A composite curve number for each area was obtained to calculate runoff for each storm event, shown in Table 1 below.

Table 1. Pre-Development Curve Numbers

Drainage Area	Runoff Area	Curve Number
1B	70.3 ac	73
2	48.5 ac	53

The second aspect of the hydrologic analysis consisted of calculating the Time of Concentration (Tc) for the delineated drainage areas. The Tc was calculated using the methodologies outlined above via the use of HydroCAD software (worksheets are included in the Appendix C of this report).

The Northeast Regional Climate Center Extreme Precipitation Tables rainfall data was used in calculating the runoff rates for the design storm events (see Appendix C). The storms analyzed were the 2-year, 10-year, and the 50-year 24-hour storms. Based on the airport's location, the Type III rainfall distribution curve was applied to each storm event to determine the associated peak flow rates shown in Table 2.

Table 2. Pre-Development Peak Flow Rates

Outfall	2-yr (Pre)	10-yr (Pre)	50-yr (Pre)
#1	9.94	20.30	122.08
#2	1.29	8.83	29.79
TOTAL	11.23	29.13	151.87

1.1.3 Post-Development Flows

The proposed flows were calculated and analyzed via the same methods as above and a composite curve number for each area was obtained to calculate runoff for each storm event, shown in Table 3 below.

Table 3. Post-Development Curve Numbers

Drainage Area	Runoff Area	Curve Number
1B	70.3 ac	73
2	48.5 ac	53

The Tc for each drainage area and runoff rates were calculated using the methodologies outlined above (see Appendix C). The Type III rainfall distribution curve was applied to each storm event to determine the associated peak flow rates shown in Table 4.

Table 4. Post-Development Peak Flow Rates

Outfall	2-yr (Post)	10-yr (Post)	50-yr (Post)
#1	9.94	20.30	122.08
#2	1.29	8.83	29.79
TOTAL	11.23	29.13	151.87

The total peak runoff rates have remained the same to Outfalls #1 and #2, due to the negligible change in impervious area and drainage patterns from this project.

1.2 Hydraulics

Analysis of the closed system was performed based on the 5-year rainfall event per FAA AC 150/5320-5D paragraph 2-2.4.2.

The main change to the system during this project was to the pipes at the upstream end of the system. The pipe between CB-1 and CB-2 was upsized to 12" to account for potential future development north of the Terminal Building. The pipe elevations from CB-1 to CB-3 were also lowered to provide at least 42" of cover and ensure the pipes are below the frost depth.

Additionally, the catchment areas for individual catch basins within and adjacent to the project limits have changed due to flattening the apron pavement to 2.0% maximum in any direction, in accordance with FAA apron grading standards. The resulting catchment areas for each catch basin are shown in Table 5 below.

Table 5. Proposed Net Flow Area Changes

Catch Basin	Existing Catchment Area (SF)	Proposed Catchment Area (SF)	Δ
CB-1	75,047	78,867	3,820
CB-2	22,100	23,604	1,504
CB-3	65,235	67,541	2,306
CB-4	66,473	64,938	-1,535
CB-5	10,491	10,490	-1
CB-6	9,754	10,251	497
CB-7	23,528	20,088	-3,440
CB-8	19,497	16,470	-3,027
TW A Sheet Flow	1,576	1,452	-124
TOTAL	293,701	293,701	0

The drainage structures and pipes were analyzed using Hydraflow Storm Sewers (extension for Autodesk AutoCAD Civil 3D) software to determine if the closed storm drain system would have enough capacity to handle the catchment area changes. After analyzing the system for a 5-year rainfall event, the hydraulic grade line (HGL) was shown to lie within the pipe network below the pavement surface, as shown in Figure 1 below (HGL shown in red, pavement surface shown in green).

Drainage Report

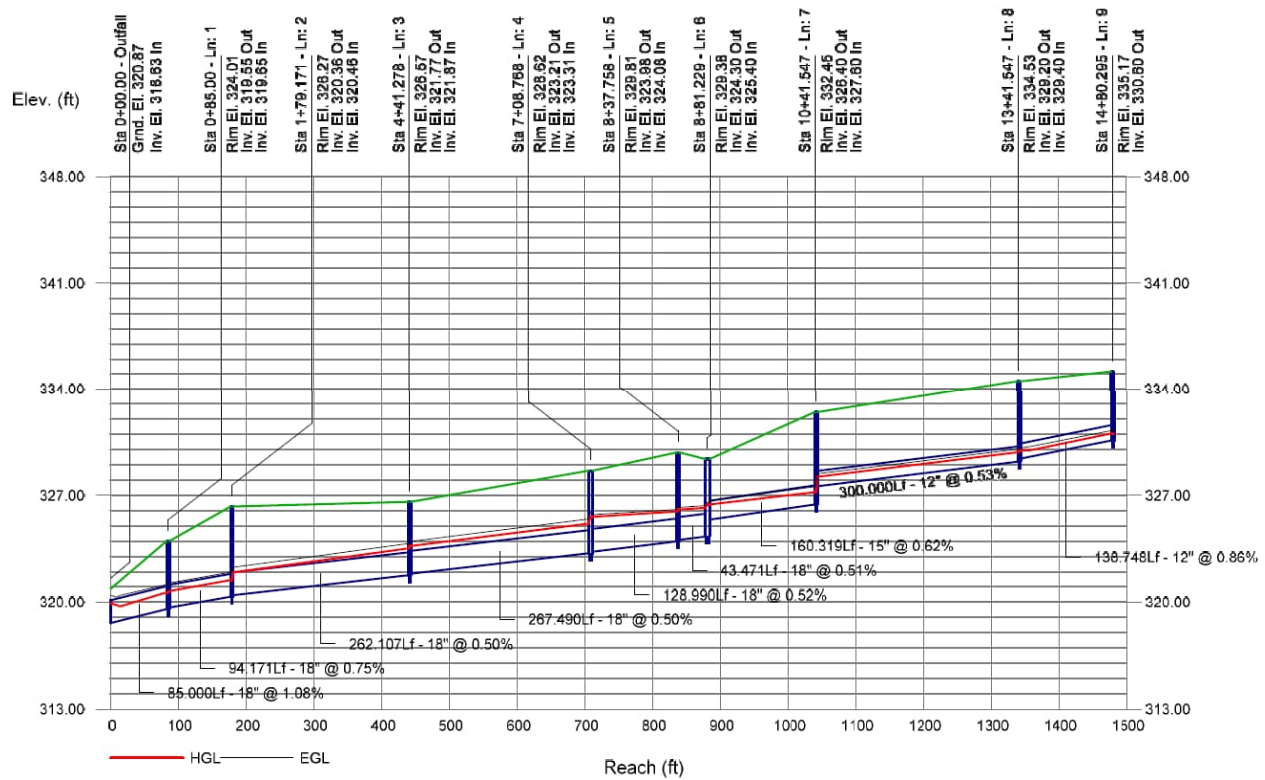
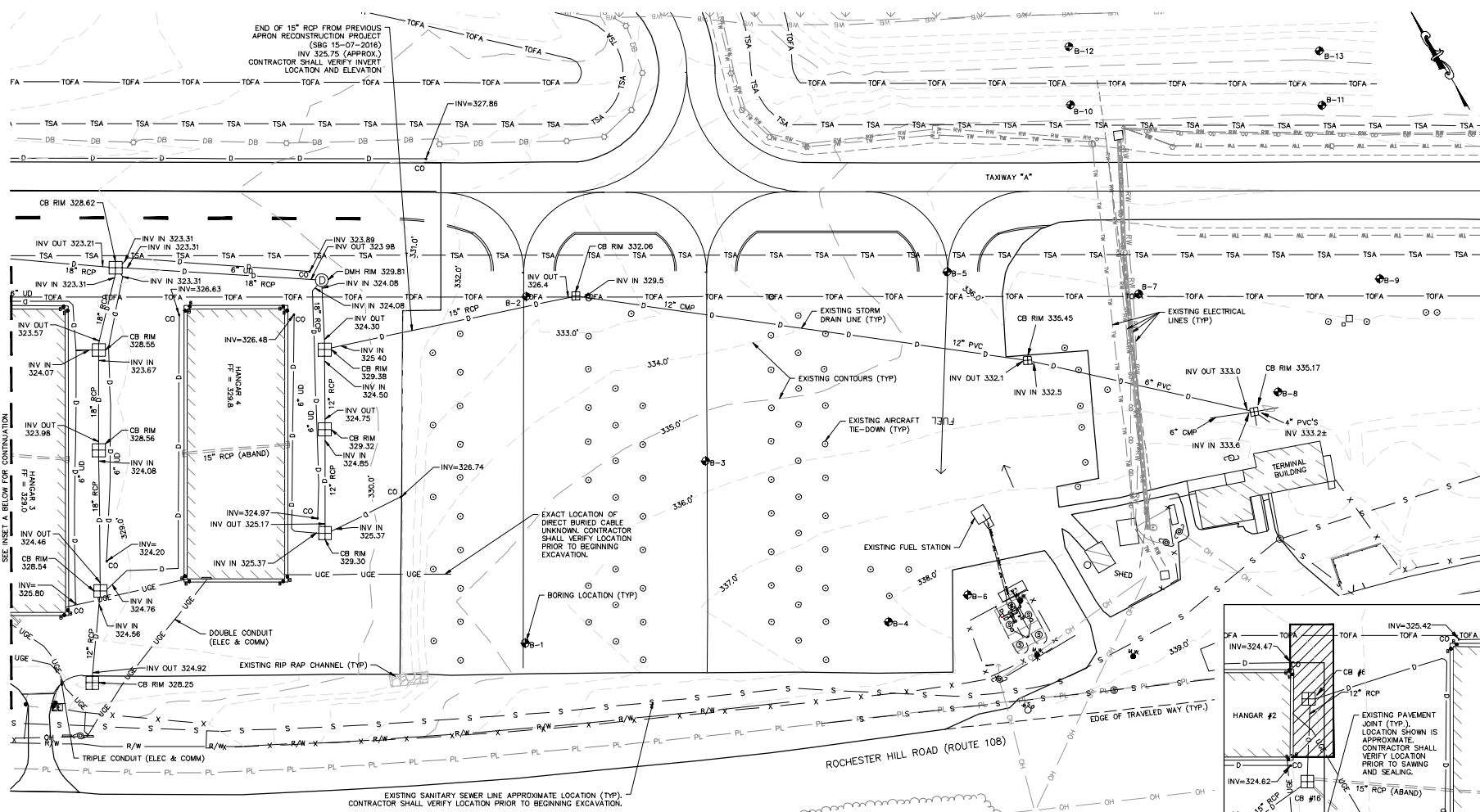


Figure 1. Storm Drain Network from CB-1 to Outfall B

Although the grading and storm drain catchment areas have changed slightly due to this project, the closed storm drain system has enough capacity to mitigate flooding during a 5-year rainfall event, as shown by the hydraulic grade line which lies below the pavement surface.

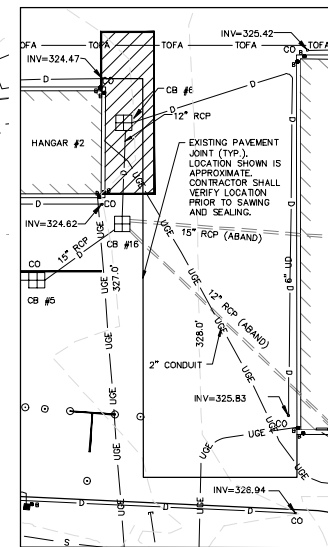
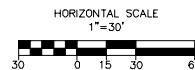
Appendix A. Drainage Plans



EXISTING CONDITIONS PLAN
SCALE: 1"=30'

NOTES

1. BORING LOGS AND TESTING PROVIDED IN PROJECT MANUAL.
2. CONTRACTOR TO LOCATE EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. PROVIDE LOCATION IN AS-BUILT.



INSET A
SCALE: 1"=30'

LEGEND

	EXISTING STORM DRAIN LINE		EXISTING PROPERTY LINE		EXISTING STORM DRAIN MANHOLE
	EXISTING ABANDONED STORM DRAIN LINE		EXISTING RIGHT OF WAY		EXISTING UNDERDRAIN CLEANOUT
	EXISTING WATER LINE		EXISTING TAXIWAY SAFETY AREA		EXISTING SANITARY SEWER MANHOLE
	EXISTING OVERHEAD LINE		EXISTING TAXIWAY OBJECT FREE AREA		EXISTING UTILITY POLE
	EXISTING UNDERGROUND ELECTRICAL LINE		EXISTING TREE LINE		EXISTING FLAG POLE
	EXISTING RUNWAY CIRCUIT LINE		EXISTING MAJOR CONTOUR		EXISTING AIRCRAFT TIE-DOWN
	EXISTING TAXIWAY CIRCUIT LINE		EXISTING MINOR CONTOUR		EXISTING TAXIWAY EDGE LIGHT
	EXISTING COUNTERPOISE WIRE		EXISTING WETLAND BOUNDARY		EXISTING ELECTRICAL MANHOLE
	EXISTING ELECTRICAL DUCT BANK		EXISTING WETLAND		BORING LOCATION
	EXISTING DIRECT BURIED CABLE		EXISTING FIRE HYDRANT		MONITORING WELL
	EXISTING ODALS SYSTEM CABLE		EXISTING WATER GATE VALVE		EXISTING BUILDING
	EXISTING SANITARY SEWER LINE		EXISTING WATER SHUTOFF		EXISTING RIP RAP
	EXISTING FUEL LINES		EXISTING BOLLARD		
	EXISTING FENCE LINE		EXISTING CATCH BASIN		

PEASE AIRPORT MANAGEMENT

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Jacobs

PROJECT DESIGNER

SCALE: 1"=30'
DATE: JUNE 2022
DESIGNED BY: LMO
DRAWN BY: LMO
CHECKED BY: JPP
APPROVED:

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SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

EXISTING CONDITIONS PLAN

REV.	DATE	DESCRIPTION

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FILE: P:/2020/E2X90502

SBG NO.: SBG 15-09-2020

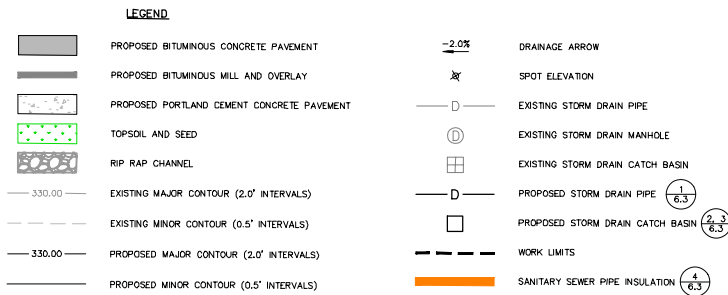
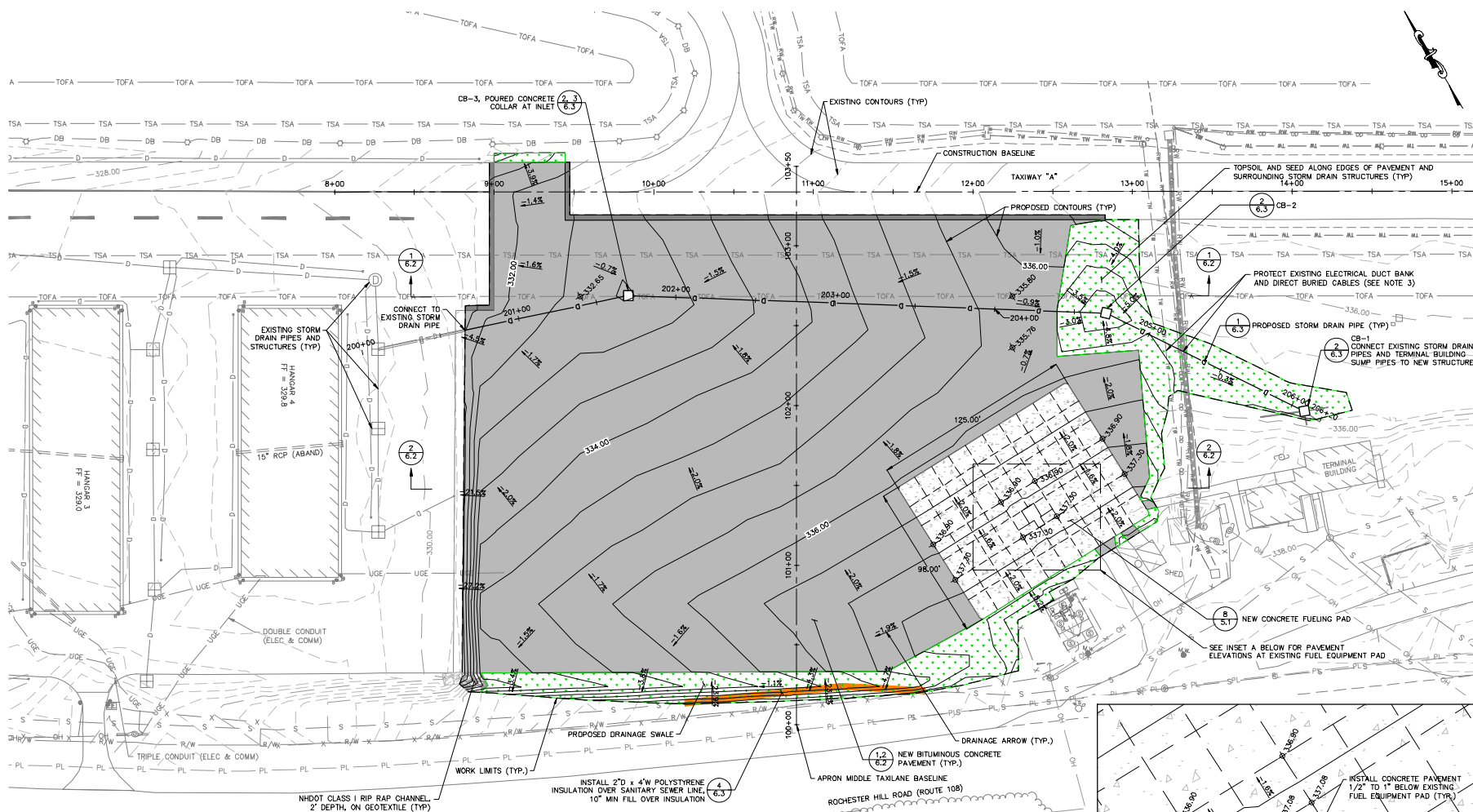
DRAWING NO.

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SHEET 03 OF 16

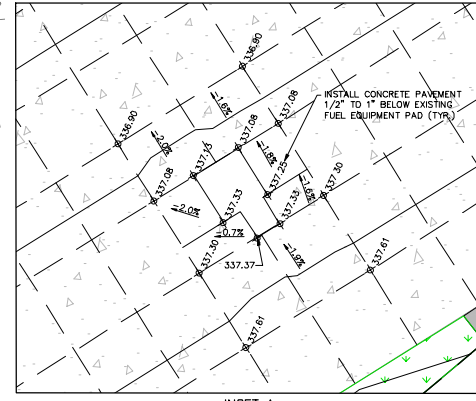
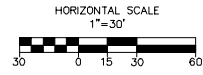
REV

Jacobs - V:\0200\02000502 - DAW\Reconstr Terminal Aprt\0701 CADFiles\00 Grading and Drainage Plan.dwg [E:\01 June 19, 2022 - 8:58pm] (no view)



NOTES

- CONTRACTOR SHALL FIELD VERIFY ALL INVERTS PRIOR TO ORDERING STORM DRAIN MATERIALS AND STRUCTURES.
- FOR STRUCTURE AND PIPE DATA, SEE GRADING AND DRAINAGE PROFILE SHEET 6.1.
- CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE SUPPORT FOR ELECTRICAL CONDUIT DURING DRAINAGE INSTALLATION, AND ENSURE NO CONFLICT BETWEEN DRAINAGE AND ELECTRICAL UTILITIES.



PEASE AIRPORT MANAGEMENT

PROJECT DESIGNER: **Jacobs**

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SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

GRADING AND DRAINAGE PLAN

REV. NO.	DATE	DESCRIPTION	BY

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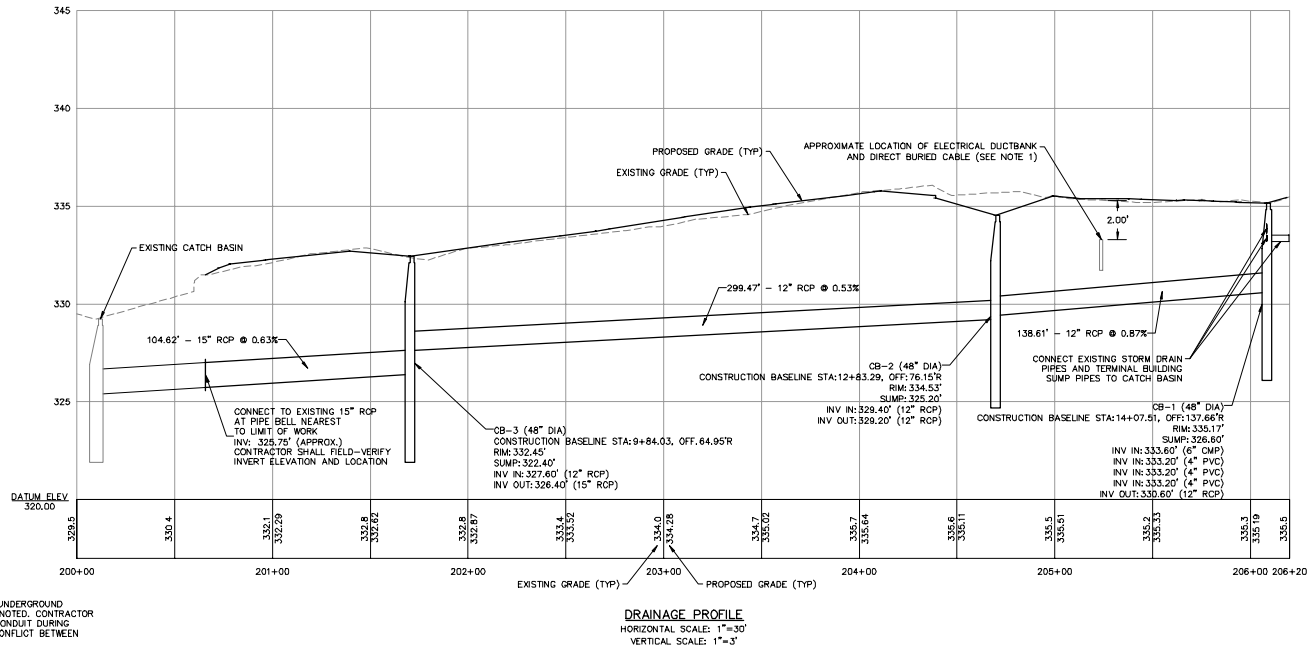
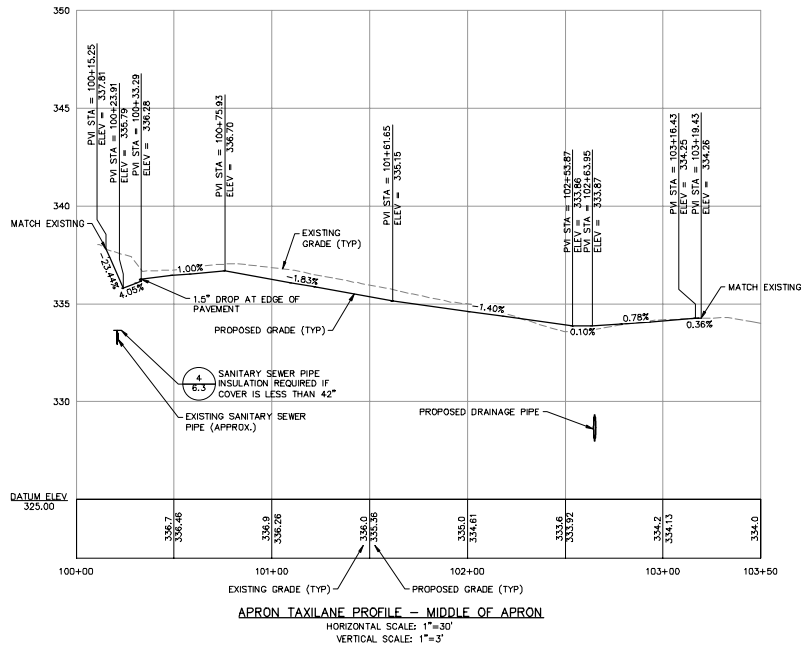
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DRAWING NO.

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SHEET 11 OF 16

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NOTES

1. CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES AND PROTECT UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE SUPPORT FOR ELECTRICAL CONDUIT DURING DRAINAGE INSTALLATION AND ENSURE NO CONFLICT BETWEEN DRAINAGE AND ELECTRICAL UTILITIES.



PEASE
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PROJECT DESIGNER:
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SCALE: AS NOTED
DATE: JUNE 2022
DESIGNED BY: LMO
DRAWN BY: LMO
CHECKED BY: JPP
APPROVED:

SKYHAVEN AIRPORT
ROCHESTER, NH

REHABILITATE AND MARK TERMINAL AREA TIEDOWN APRON

GRADING AND DRAINAGE PROFILES

REV.	DATE	BY	REVISIONS

PROJ. NO.: E2X90502
FILE: P:/2020/E2X90502
SHEET NO.: SBG 15-09-2020

DRAWING NO.
6.1

SHEET 12 OF 16

Appendix B. Airport Watersheds

Existing (PRE) Conditions ** Note: All areas taken from AutoCAD drawing

Drainage Area #1a

<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
145447	3.34	Impervious
1133	0.03	Woods - Good - HSG A
300608	6.90	Woods - Good - HSG B
466223	10.70	Woods - Good - HSG C
77406	1.78	Woods - Good - HSG D
1437	0.03	Meadow Non-Grazed - HSG A
0	0.00	Meadow Non-Grazed - HSG B
302524	6.94	Meadow Non-Grazed - HSG C
75097	1.72	Meadow Non-Grazed - HSG D
0	0.00	Water Surface, 0% imp, HSG D
1369875	31.45	Total Area

Drainage Area #1b

<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
675441	15.51	Impervious
15246	0.35	Woods - Good - HSG A
224334	5.15	Woods - Good - HSG B
200028	4.59	Woods - Good - HSG C
87904	2.02	Woods - Good - HSG D
231652	5.32	Meadow Non-Grazed - HSG A
391648	8.99	Meadow Non-Grazed - HSG B
429850	9.87	Meadow Non-Grazed - HSG C
791921	18.18	Meadow Non-Grazed - HSG D
14244	0.33	Water Surface, 0% imp, HSG D
3062268	70.30	Total Area

Drainage Area #2

<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
329009	7.55	Impervious
92826	2.13	Woods - Good - HSG A
0	0.00	Woods - Good - HSG B
0	0.00	Woods - Good - HSG C
1830	0.04	Woods - Good - HSG D
1004450	23.06	Meadow Non-Grazed - HSG A
381716	8.76	Meadow Non-Grazed - HSG B
40903	0.94	Meadow Non-Grazed - HSG C
253737	5.83	Meadow Non-Grazed - HSG D
8364	0.19	Water Surface, 0% imp, HSG D
2112835	48.50	Total Area

Proposed (POST) Conditions

Drainage Area #1a

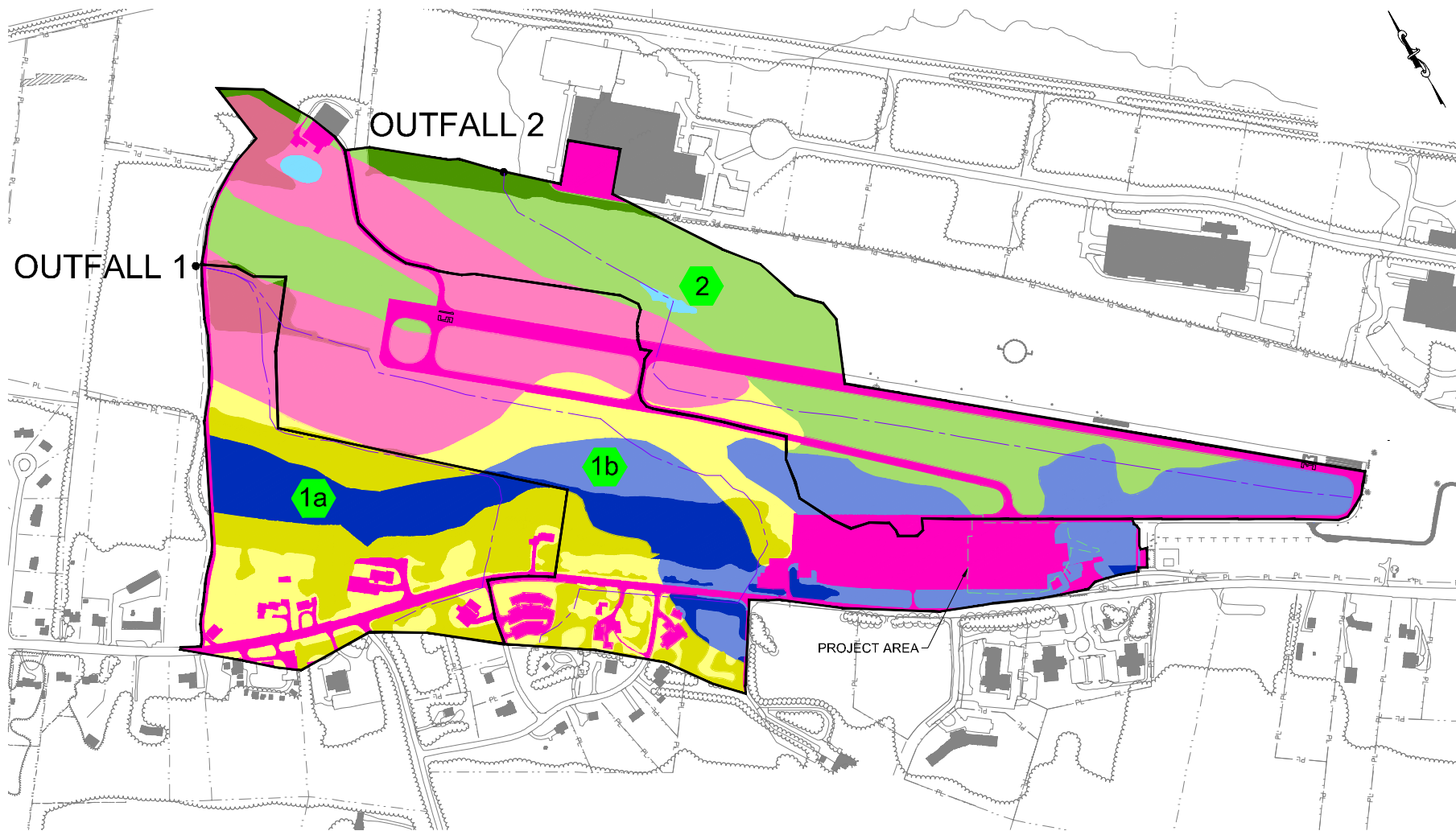
<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
145447	3.34	Impervious
1133	0.03	Woods - Good - HSG A
300608	6.90	Woods - Good - HSG B
466223	10.70	Woods - Good - HSG C
77406	1.78	Woods - Good - HSG D
1437	0.03	Meadow Non-Grazed - HSG A
0	0.00	Meadow Non-Grazed - HSG B
302524	6.94	Meadow Non-Grazed - HSG C
75097	1.72	Meadow Non-Grazed - HSG D
0	0.00	Water Surface, 0% imp, HSG D
1369875	31.45	Total Area

Drainage Area #1b

<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
675180	15.50	Impervious
15246	0.35	Woods - Good - HSG A
224334	5.15	Woods - Good - HSG B
200028	4.59	Woods - Good - HSG C
87904	2.02	Woods - Good - HSG D
231652	5.32	Meadow Non-Grazed - HSG A
391909	9.00	Meadow Non-Grazed - HSG B
429850	9.87	Meadow Non-Grazed - HSG C
791921	18.18	Meadow Non-Grazed - HSG D
14244	0.33	Water Surface, 0% imp, HSG D
3062268	70.30	Total Area

Drainage Area #2

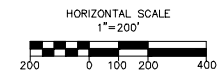
<u>SF</u>	<u>Acres</u>	<u>Desc.</u>
329009	7.55	Impervious
92826	2.13	Woods - Good - HSG A
0	0.00	Woods - Good - HSG B
0	0.00	Woods - Good - HSG C
1830	0.04	Woods - Good - HSG D
1004450	23.06	Meadow Non-Grazed - HSG A
381716	8.76	Meadow Non-Grazed - HSG B
40903	0.94	Meadow Non-Grazed - HSG C
253737	5.83	Meadow Non-Grazed - HSG D
8364	0.19	Water Surface, 0% imp, HSG D
2112835	48.50	Total Area



PRE-DEVELOPMENT WATERSHEDS
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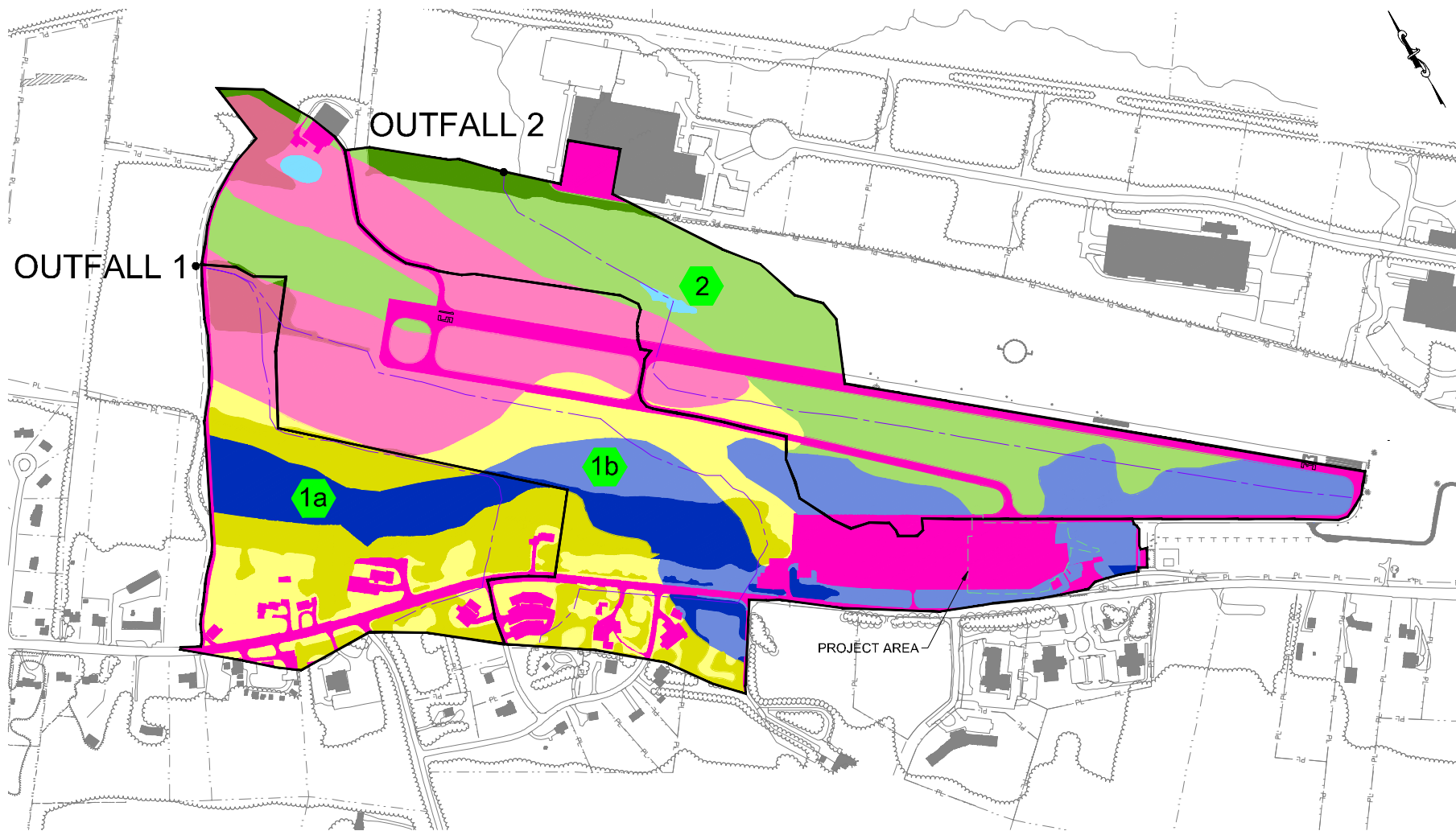
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IMPERVIOUS AREA	PROJECT LIMITS
HSG A - MEADOW	WATERSHED BOUNDARY
HSG A - WOODED	CONCENTRATED FLOW PATH
HSG B - MEADOW	WATERSHED AREA NUMBER
HSG B - WOODED	
HSG C - MEADOW	
HSG C - WOODED	
HSG D - MEADOW	
HSG D - WOODED	
SURFACE WATER	



REV. NO.	DATE	BY	DESCRIPTION

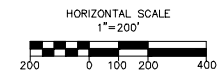
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POST-DEVELOPMENT WATERSHEDS
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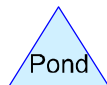
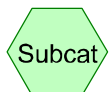
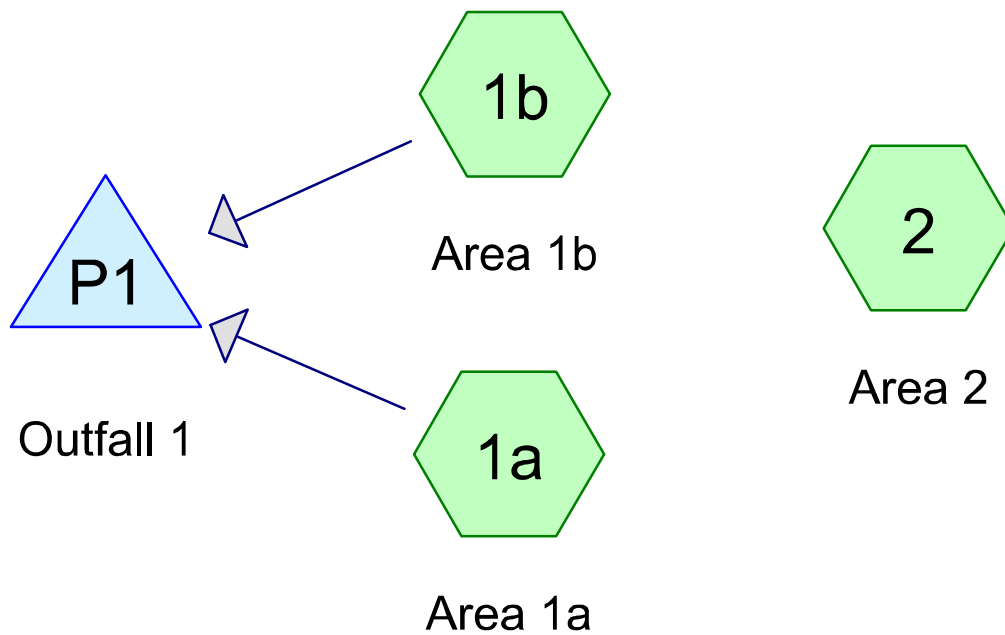
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- | | |
|-----------------|------------------------|
| IMPERVIOUS AREA | PROJECT LIMITS |
| HSG A - MEADOW | WATERSHED BOUNDARY |
| HSG A - WOODED | CONCENTRATED FLOW PATH |
| HSG B - MEADOW | WATERSHED AREA NUMBER |
| HSG B - WOODED | |
| HSG C - MEADOW | |
| HSG C - WOODED | |
| HSG D - MEADOW | |
| HSG D - WOODED | |
| SURFACE WATER | |



REV. NO.	DATE	REVISIONS DESCRIPTION	BY

Appendix C. Hydrology Reports



Routing Diagram for DAW Terminal Apron - Existing Conditions

Prepared by Jacobs, Printed 3/10/2022

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DAW Terminal Apron - Existing Conditions

Prepared by Jacobs

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Printed 3/10/2022

Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
28.410	30	Meadow, non-grazed, HSG A (1a, 1b, 2)
17.754	58	Meadow, non-grazed, HSG B (1b, 2)
17.752	71	Meadow, non-grazed, HSG C (1a, 1b, 2)
25.729	78	Meadow, non-grazed, HSG D (1a, 1b, 2)
26.398	98	Paved parking & roofs (1a, 1b, 2)
0.192	98	Water Surface, 0% imp (2)
0.327	98	Water Surface, 0% imp, HSG D (1b)
2.507	30	Woods, Good, HSG A (1a, 1b, 2)
12.051	55	Woods, Good, HSG B (1a, 1b)
15.295	70	Woods, Good, HSG C (1a, 1b)
3.837	77	Woods, Good, HSG D (1a, 1b, 2)
150.252	66	TOTAL AREA

DAW Terminal Apron - Existing Conditions

Prepared by Jacobs

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Printed 3/10/2022

Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
30.917	HSG A	1a, 1b, 2
29.805	HSG B	1a, 1b, 2
33.047	HSG C	1a, 1b, 2
29.893	HSG D	1a, 1b, 2
26.590	Other	1a, 1b, 2
150.252		TOTAL AREA

DAW Terminal Apron - Existing Conditions

Type III 24-hr 5yr Rainfall=3.93"

Prepared by Jacobs

Printed 3/10/2022

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Time span=8.00-48.00 hrs, dt=0.05 hrs, 801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1a: Area 1a

Runoff Area=31.448 ac 10.62% Impervious Runoff Depth=1.35"
Flow Length=2,691' Tc=71.6 min CN=71 Runoff=16.57 cfs 3.529 af

Subcatchment1b: Area 1b

Runoff Area=70.300 ac 22.06% Impervious Runoff Depth=1.48"
Flow Length=4,066' Tc=88.5 min CN=73 Runoff=35.89 cfs 8.655 af

Subcatchment2: Area 2

Runoff Area=48.504 ac 15.57% Impervious Runoff Depth=0.42"
Flow Length=4,304' Tc=92.3 min CN=53 Runoff=4.37 cfs 1.705 af

Pond P1: Outfall 1

Peak Elev=293.93' Storage=228,271 cf Inflow=51.56 cfs 12.184 af
Discarded=0.11 cfs 0.146 af Primary=15.33 cfs 11.839 af Outflow=15.43 cfs 11.986 af

Total Runoff Area = 150.252 ac Runoff Volume = 13.889 af Average Runoff Depth = 1.11"
82.43% Pervious = 123.854 ac 17.57% Impervious = 26.398 ac

DAW Terminal Apron - Existing Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 1a: Area 1a

Runoff = 16.57 cfs @ 13.02 hrs, Volume= 3.529 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
3.339	98	Paved parking & roofs
0.026	30	Woods, Good, HSG A
6.901	55	Woods, Good, HSG B
10.703	70	Woods, Good, HSG C
1.777	77	Woods, Good, HSG D
0.033	30	Meadow, non-grazed, HSG A
6.945	71	Meadow, non-grazed, HSG C
1.724	78	Meadow, non-grazed, HSG D
31.448	71	Weighted Average
28.109		89.38% Pervious Area
3.339		10.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0550	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.12"
3.0	300	0.0550	1.64		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	90	0.0050	6.02	18.90	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
8.9	451	0.1130	0.84		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.0	1,332	0.0030	0.53	1.59	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
3.0	418	0.0080	2.30	6.91	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.030 Earth, grassed & winding
71.6	2,691	Total			

DAW Terminal Apron - Existing Conditions

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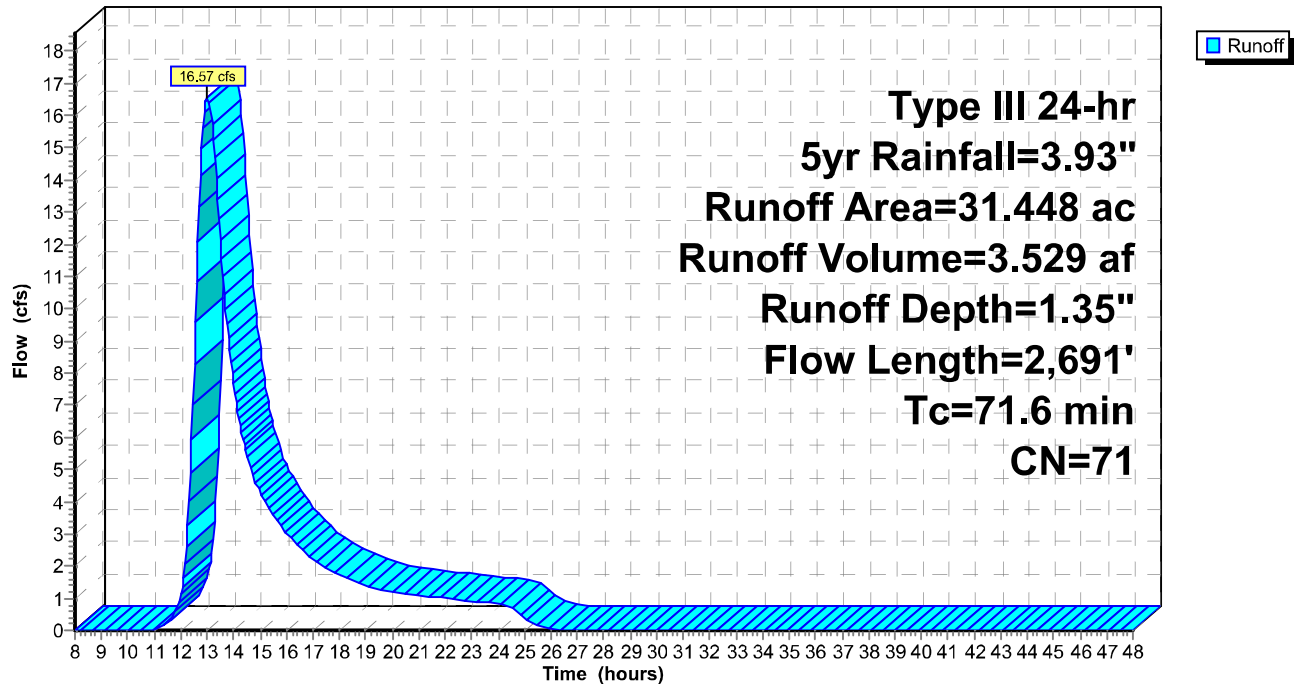
Type III 24-hr 5yr Rainfall=3.93"

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Subcatchment 1a: Area 1a

Hydrograph



DAW Terminal Apron - Existing Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 1b: Area 1b

Runoff = 35.89 cfs @ 13.25 hrs, Volume= 8.655 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
15.506	98	Paved parking & roofs
0.350	30	Woods, Good, HSG A
5.150	55	Woods, Good, HSG B
4.592	70	Woods, Good, HSG C
2.018	77	Woods, Good, HSG D
5.318	30	Meadow, non-grazed, HSG A
8.991	58	Meadow, non-grazed, HSG B
9.868	71	Meadow, non-grazed, HSG C
18.180	78	Meadow, non-grazed, HSG D
0.327	98	Water Surface, 0% imp, HSG D
70.300	73	Weighted Average
54.794		77.94% Pervious Area
15.506		22.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0580	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.12"
6.0	200	0.0500	0.56		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
2.4	305	0.0470	2.09	6.28	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.1	124	0.0330	15.46	48.57	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
2.3	242	0.0330	1.75	5.26	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.1	149	0.0740	23.15	72.73	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
21.6	502	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
2.6	575	0.0160	3.73	37.30	Channel Flow, Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.080 Earth, long dense weeds
3.3	804	0.0150	4.08	48.94	Channel Flow, Area= 12.0 sf Perim= 5.0' r= 2.40' n= 0.080 Earth, long dense weeds
35.9	1,065	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
88.5	4,066	Total			

DAW Terminal Apron - Existing Conditions

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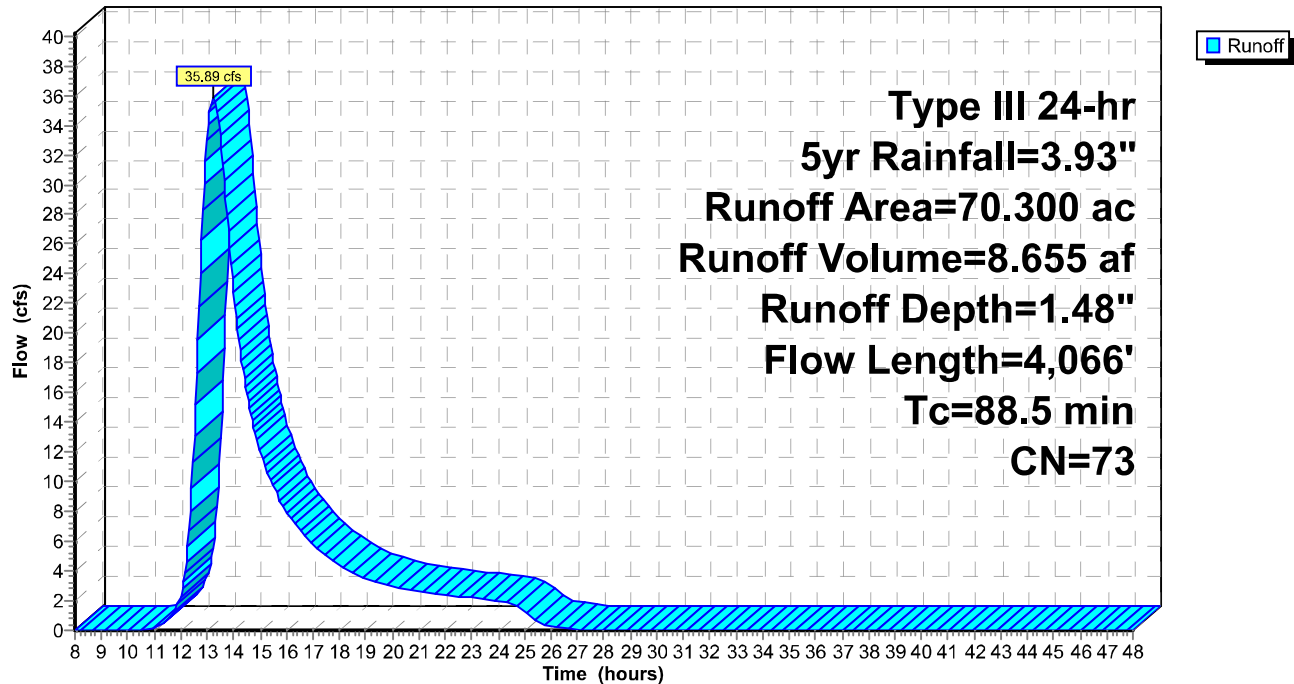
Type III 24-hr 5yr Rainfall=3.93"

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Subcatchment 1b: Area 1b

Hydrograph



DAW Terminal Apron - Existing Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 2: Area 2

Runoff = 4.37 cfs @ 13.63 hrs, Volume= 1.705 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
7.553	98	Paved parking & roofs
2.131	30	Woods, Good, HSG A
0.042	77	Woods, Good, HSG D
23.059	30	Meadow, non-grazed, HSG A
8.763	58	Meadow, non-grazed, HSG B
0.939	71	Meadow, non-grazed, HSG C
5.825	78	Meadow, non-grazed, HSG D
* 0.192	98	Water Surface, 0% imp
48.504	53	Weighted Average
40.951		84.43% Pervious Area
7.553		15.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	17	0.0150	0.85		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.12"
10.6	83	0.0300	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.12"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
52.8	2,650	0.0075	0.84	2.51	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.9	254	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
24.4	1,000	0.0050	0.68	2.05	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
92.3	4,304	Total			

DAW Terminal Apron - Existing Conditions

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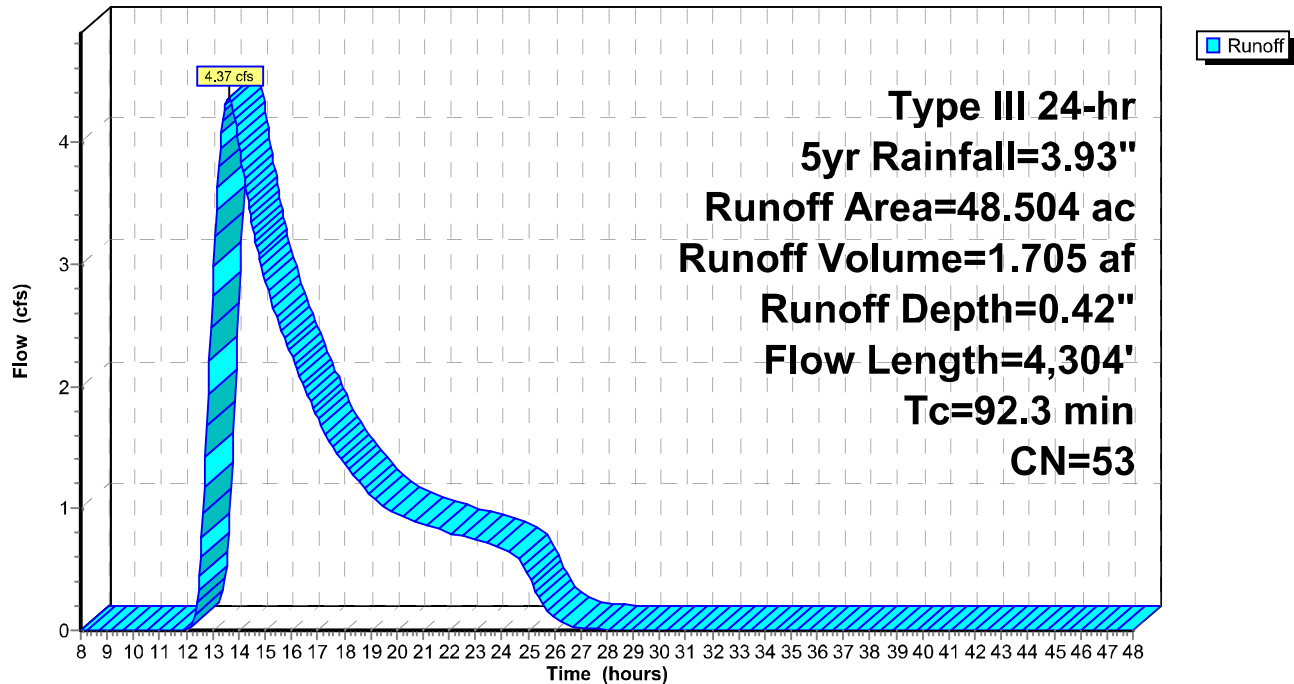
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Subcatchment 2: Area 2

Hydrograph



DAW Terminal Apron - Existing Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Summary for Pond P1: Outfall 1

Inflow Area = 101.748 ac, 18.52% Impervious, Inflow Depth = 1.44" for 5yr event
 Inflow = 51.56 cfs @ 13.16 hrs, Volume= 12.184 af
 Outflow = 15.43 cfs @ 15.11 hrs, Volume= 11.986 af, Atten= 70%, Lag= 116.9 min
 Discarded = 0.11 cfs @ 15.11 hrs, Volume= 0.146 af
 Primary = 15.33 cfs @ 15.11 hrs, Volume= 11.839 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 293.93' @ 15.11 hrs Surf.Area= 102,117 sf Storage= 228,271 cf

Plug-Flow detention time= 240.0 min calculated for 11.971 af (98% of inflow)
 Center-of-Mass det. time= 231.9 min (1,158.4 - 926.5)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	561,512 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	1	1.0	0	0	1
291.00	19,088	562.0	6,409	6,409	25,137
292.00	81,675	1,381.0	46,749	53,158	151,773
293.00	90,387	1,456.0	85,994	139,152	168,765
294.00	103,079	1,717.0	96,664	235,816	234,686
295.00	118,262	1,870.0	110,584	346,400	278,396
296.00	329,635	3,208.0	215,113	561,512	819,080

Device	Routing	Invert	Outlet Devices
#1	Primary	291.00'	24.0" Round 24" HDPE Culvert L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 291.00' / 290.81' S= 0.0050 ' / Cc= 0.900 n= 0.020, Flow Area= 3.14 sf
#2	Discarded	290.00'	0.020 in/hr Evaporation/Exfiltration over Wetted area
#3	Primary	294.90'	100.0' long x 18.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.11 cfs @ 15.11 hrs HW=293.93' (Free Discharge)
 ↳ **2=Evaporation/Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=15.33 cfs @ 15.11 hrs HW=293.93' (Free Discharge)
 ↳ **1=24" HDPE Culvert** (Barrel Controls 15.33 cfs @ 4.88 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

DAW Terminal Apron - Existing Conditions

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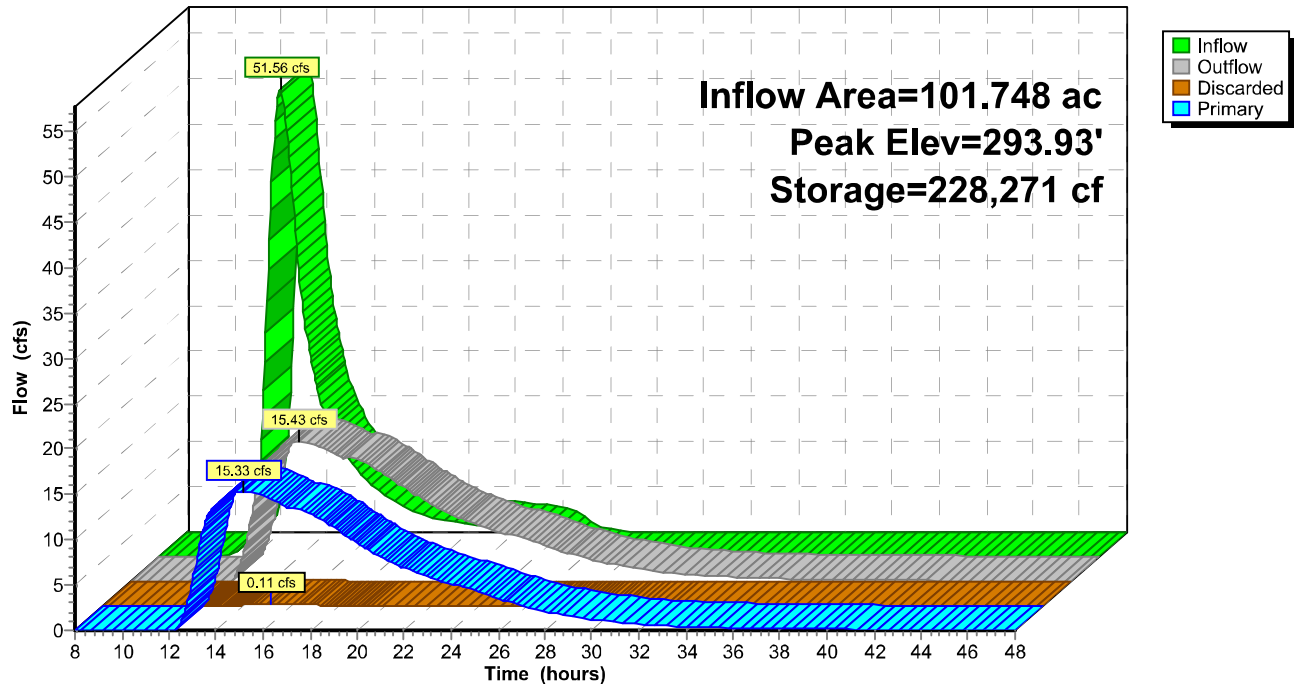
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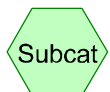
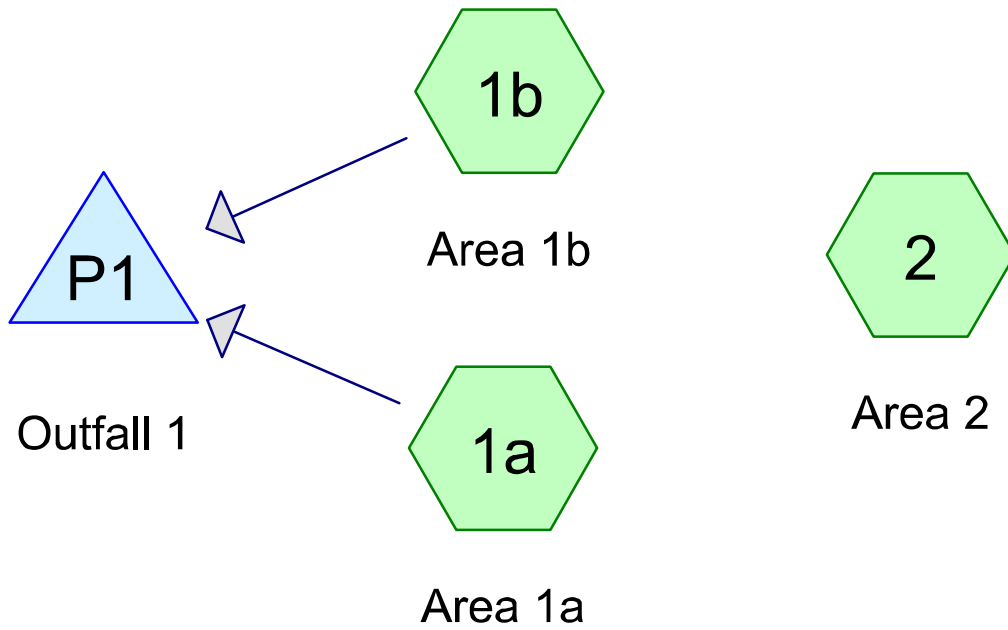
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Pond P1: Outfall 1

Hydrograph

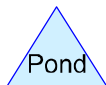




Subcat



Reach



Pond



Link

Routing Diagram for DAW Terminal Apron - Proposed Conditions

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
28.410	30	Meadow, non-grazed, HSG A (1a, 1b, 2)
17.760	58	Meadow, non-grazed, HSG B (1b, 2)
17.752	71	Meadow, non-grazed, HSG C (1a, 1b, 2)
25.729	78	Meadow, non-grazed, HSG D (1a, 1b, 2)
26.392	98	Paved parking & roofs (1a, 1b, 2)
0.192	98	Water Surface, 0% imp (2)
0.327	98	Water Surface, 0% imp, HSG D (1b)
2.507	30	Woods, Good, HSG A (1a, 1b, 2)
12.051	55	Woods, Good, HSG B (1a, 1b)
15.295	70	Woods, Good, HSG C (1a, 1b)
3.837	77	Woods, Good, HSG D (1a, 1b, 2)
150.252	66	TOTAL AREA

DAW Terminal Apron - Proposed Conditions

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
30.917	HSG A	1a, 1b, 2
29.811	HSG B	1a, 1b, 2
33.047	HSG C	1a, 1b, 2
29.893	HSG D	1a, 1b, 2
26.584	Other	1a, 1b, 2
150.252		TOTAL AREA

DAW Terminal Apron - Proposed Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Time span=8.00-48.00 hrs, dt=0.05 hrs, 801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1a: Area 1a

Runoff Area=31.448 ac 10.62% Impervious Runoff Depth=1.35"
Flow Length=2,691' Tc=71.6 min CN=71 Runoff=16.57 cfs 3.529 af

Subcatchment1b: Area 1b

Runoff Area=70.300 ac 22.05% Impervious Runoff Depth=1.48"
Flow Length=4,066' Tc=88.5 min CN=73 Runoff=35.89 cfs 8.655 af

Subcatchment2: Area 2

Runoff Area=48.504 ac 15.57% Impervious Runoff Depth=0.42"
Flow Length=4,304' Tc=92.3 min CN=53 Runoff=4.37 cfs 1.705 af

Pond P1: Outfall 1

Peak Elev=293.93' Storage=228,271 cf Inflow=51.56 cfs 12.184 af
Discarded=0.11 cfs 0.146 af Primary=15.33 cfs 11.839 af Outflow=15.43 cfs 11.986 af

Total Runoff Area = 150.252 ac Runoff Volume = 13.889 af Average Runoff Depth = 1.11"
82.43% Pervious = 123.860 ac 17.57% Impervious = 26.392 ac

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Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 1a: Area 1a

Runoff = 16.57 cfs @ 13.02 hrs, Volume= 3.529 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
3.339	98	Paved parking & roofs
0.026	30	Woods, Good, HSG A
6.901	55	Woods, Good, HSG B
10.703	70	Woods, Good, HSG C
1.777	77	Woods, Good, HSG D
0.033	30	Meadow, non-grazed, HSG A
6.945	71	Meadow, non-grazed, HSG C
1.724	78	Meadow, non-grazed, HSG D
31.448	71	Weighted Average
28.109		89.38% Pervious Area
3.339		10.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0550	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.12"
3.0	300	0.0550	1.64		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	90	0.0050	6.02	18.90	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
8.9	451	0.1130	0.84		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.0	1,332	0.0030	0.53	1.59	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
3.0	418	0.0080	2.30	6.91	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.030 Earth, grassed & winding
71.6	2,691	Total			

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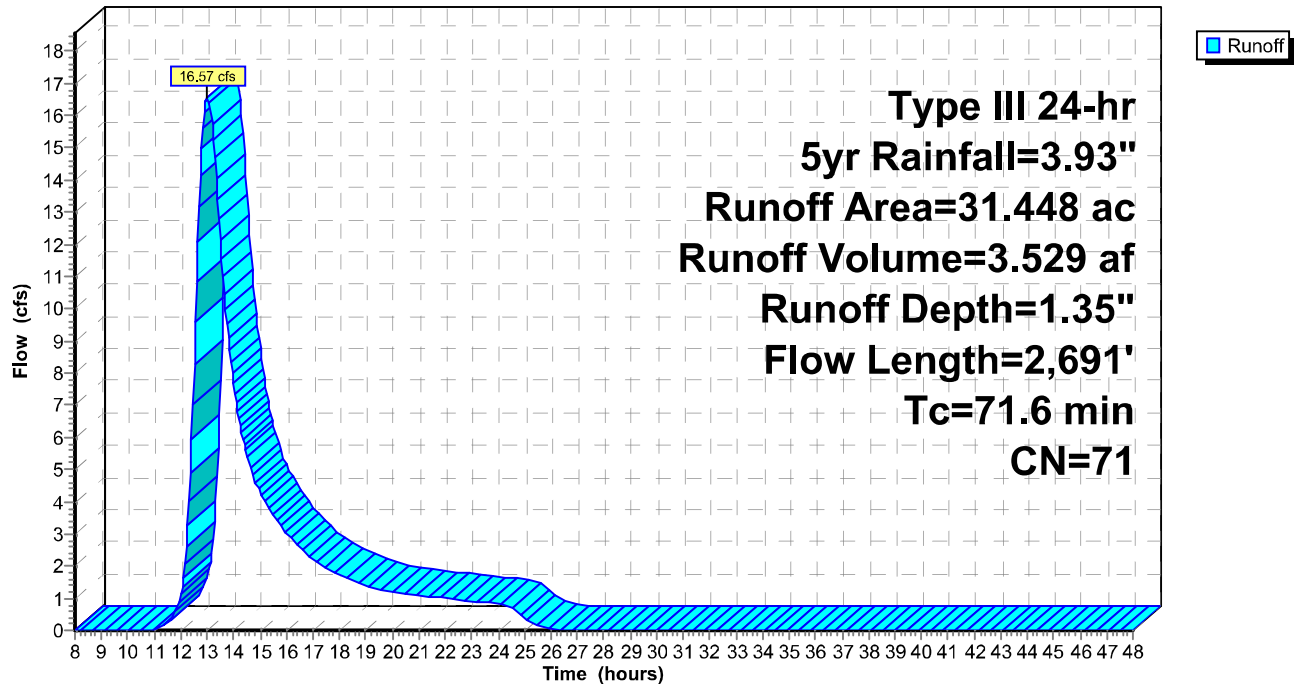
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Subcatchment 1a: Area 1a

Hydrograph



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Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 1b: Area 1b

Runoff = 35.89 cfs @ 13.25 hrs, Volume= 8.655 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
15.500	98	Paved parking & roofs
0.350	30	Woods, Good, HSG A
5.150	55	Woods, Good, HSG B
4.592	70	Woods, Good, HSG C
2.018	77	Woods, Good, HSG D
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9.868	71	Meadow, non-grazed, HSG C
18.180	78	Meadow, non-grazed, HSG D
0.327	98	Water Surface, 0% imp, HSG D
70.300	73	Weighted Average
54.800		77.95% Pervious Area
15.500		22.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0580	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.12"
6.0	200	0.0500	0.56		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
2.4	305	0.0470	2.09	6.28	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.1	124	0.0330	15.46	48.57	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
2.3	242	0.0330	1.75	5.26	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.1	149	0.0740	23.15	72.73	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
21.6	502	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
2.6	575	0.0160	3.73	37.30	Channel Flow, Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.080 Earth, long dense weeds
3.3	804	0.0150	4.08	48.94	Channel Flow, Area= 12.0 sf Perim= 5.0' r= 2.40' n= 0.080 Earth, long dense weeds
35.9	1,065	0.0050	0.49		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
88.5	4,066	Total			

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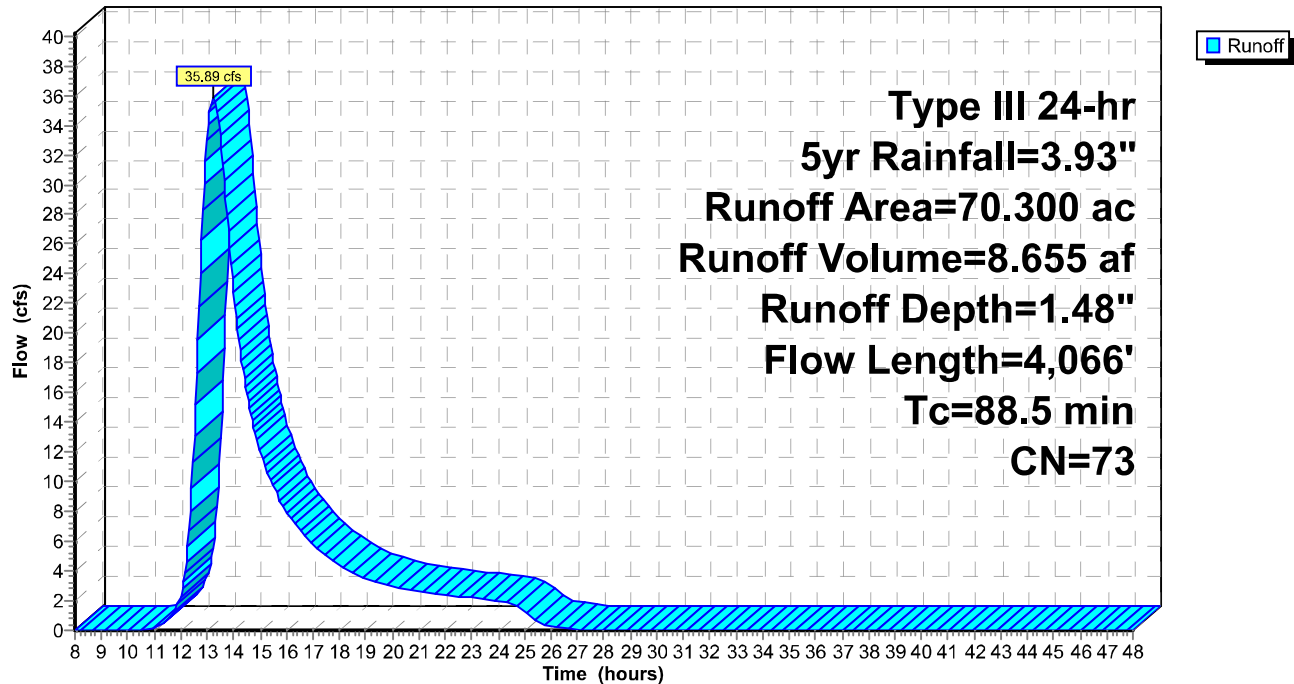
Type III 24-hr 5yr Rainfall=3.93"

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Subcatchment 1b: Area 1b

Hydrograph



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Type III 24-hr 5yr Rainfall=3.93"

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Summary for Subcatchment 2: Area 2

Runoff = 4.37 cfs @ 13.63 hrs, Volume= 1.705 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 5yr Rainfall=3.93"

Area (ac)	CN	Description
7.553	98	Paved parking & roofs
2.131	30	Woods, Good, HSG A
0.042	77	Woods, Good, HSG D
23.059	30	Meadow, non-grazed, HSG A
8.763	58	Meadow, non-grazed, HSG B
0.939	71	Meadow, non-grazed, HSG C
5.825	78	Meadow, non-grazed, HSG D
* 0.192	98	Water Surface, 0% imp
48.504	53	Weighted Average
40.951		84.43% Pervious Area
7.553		15.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	17	0.0150	0.85		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.12"
10.6	83	0.0300	0.13		Sheet Flow, Grass: Dense n= 0.240 P2= 3.12"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
52.8	2,650	0.0075	0.84	2.51	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
0.9	254	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
24.4	1,000	0.0050	0.68	2.05	Channel Flow, Area= 3.0 sf Perim= 8.0' r= 0.38' n= 0.080 Earth, long dense weeds
92.3	4,304	Total			

DAW Terminal Apron - Proposed Conditions

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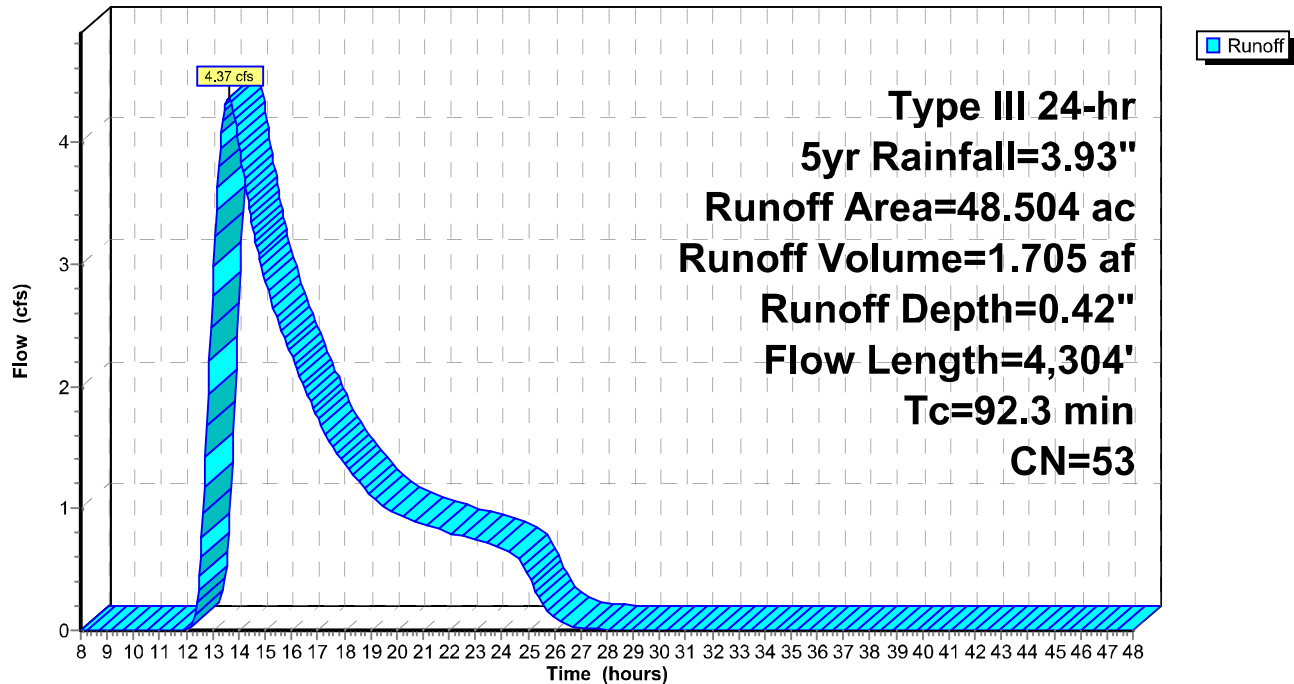
Type III 24-hr 5yr Rainfall=3.93"

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Subcatchment 2: Area 2

Hydrograph



DAW Terminal Apron - Proposed Conditions

Type III 24-hr 5yr Rainfall=3.93"

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Summary for Pond P1: Outfall 1

Inflow Area = 101.748 ac, 18.52% Impervious, Inflow Depth = 1.44" for 5yr event
 Inflow = 51.56 cfs @ 13.16 hrs, Volume= 12.184 af
 Outflow = 15.43 cfs @ 15.11 hrs, Volume= 11.986 af, Atten= 70%, Lag= 116.9 min
 Discarded = 0.11 cfs @ 15.11 hrs, Volume= 0.146 af
 Primary = 15.33 cfs @ 15.11 hrs, Volume= 11.839 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 293.93' @ 15.11 hrs Surf.Area= 102,117 sf Storage= 228,271 cf

Plug-Flow detention time= 240.0 min calculated for 11.971 af (98% of inflow)
 Center-of-Mass det. time= 231.9 min (1,158.4 - 926.5)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	561,512 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	1	1.0	0	0	1
291.00	19,088	562.0	6,409	6,409	25,137
292.00	81,675	1,381.0	46,749	53,158	151,773
293.00	90,387	1,456.0	85,994	139,152	168,765
294.00	103,079	1,717.0	96,664	235,816	234,686
295.00	118,262	1,870.0	110,584	346,400	278,396
296.00	329,635	3,208.0	215,113	561,512	819,080

Device	Routing	Invert	Outlet Devices
#1	Primary	291.00'	24.0" Round 24" HDPE Culvert L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 291.00' / 290.81' S= 0.0050 '/' Cc= 0.900 n= 0.020, Flow Area= 3.14 sf
#2	Discarded	290.00'	0.020 in/hr Evaporation/Exfiltration over Wetted area
#3	Primary	294.90'	100.0' long x 18.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.11 cfs @ 15.11 hrs HW=293.93' (Free Discharge)
 ↳ **2=Evaporation/Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=15.33 cfs @ 15.11 hrs HW=293.93' (Free Discharge)
 ↳ **1=24" HDPE Culvert** (Barrel Controls 15.33 cfs @ 4.88 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

DAW Terminal Apron - Proposed Conditions

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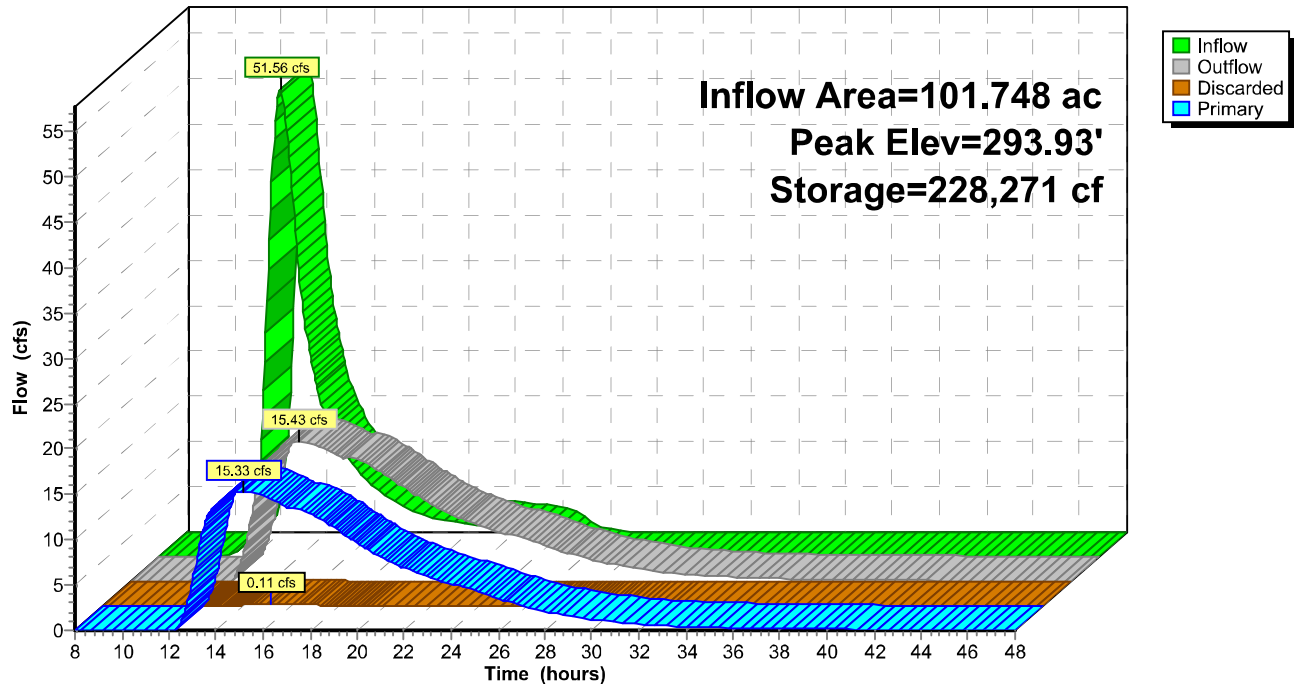
Type III 24-hr 5yr Rainfall=3.93"

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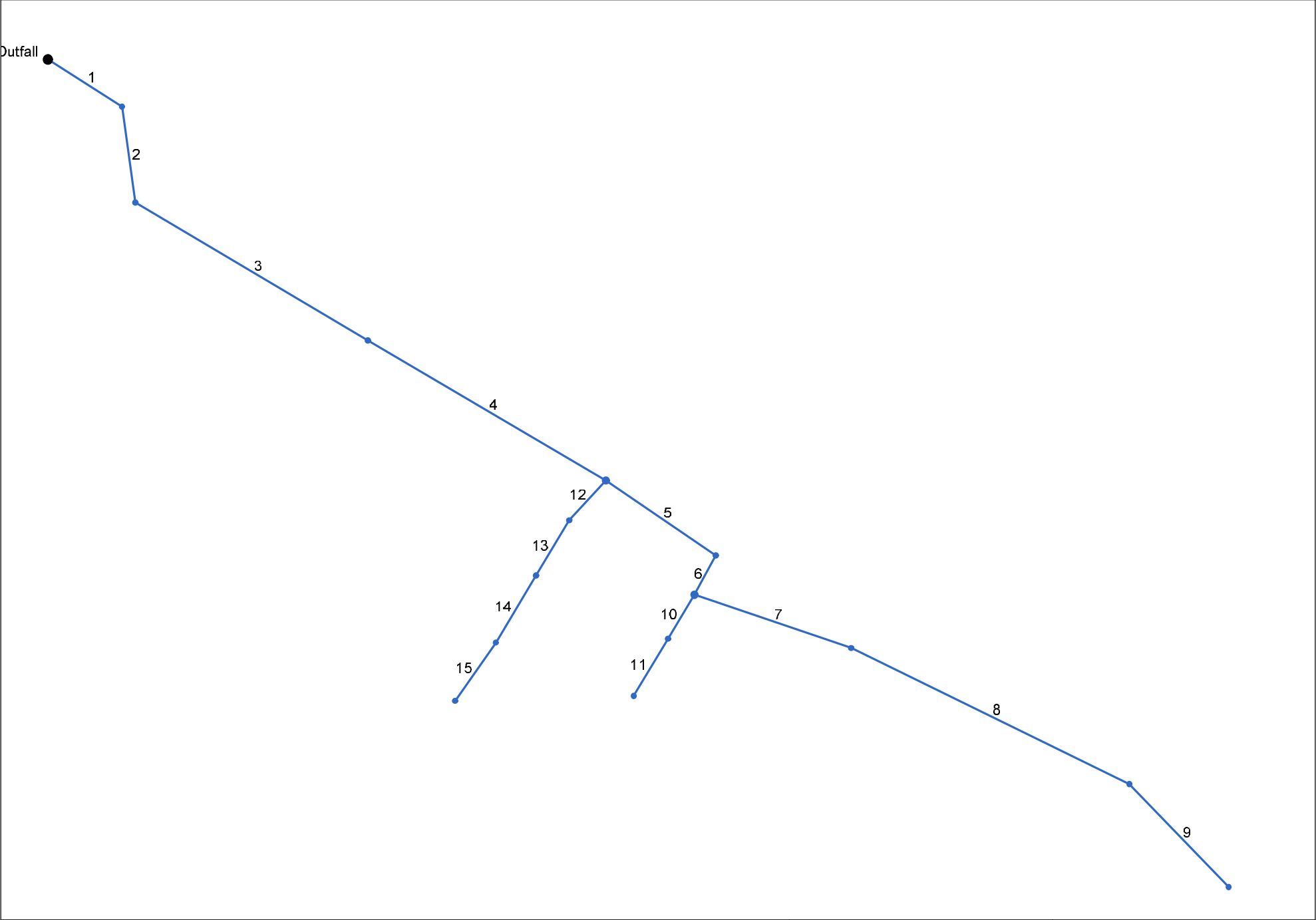
Pond P1: Outfall 1

Hydrograph



Appendix D. Hydraulics Report

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: Apron Pipe Network - POST-con.stm	Number of lines: 15	Date: 3/10/2022
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Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	85.000	32.498	MH	0.00	0.01	0.90	5.0	318.63	1.08	319.55	18	Cir	0.009	0.80	324.01	DMH #4 - OUTLET B
2	1	94.171	49.639	MH	0.00	0.01	0.90	5.0	319.65	0.75	320.36	18	Cir	0.013	0.82	326.27	DMH #3 - DMH #4
3	2	262.107	-51.379	DrGrt	0.00	0.31	0.90	5.0	320.46	0.50	321.77	18	Cir	0.013	0.50	326.57	CB #12 - DMH #3
4	3	267.490	-0.183	DrGrt	0.00	0.38	0.90	5.0	321.87	0.50	323.21	18	Cir	0.013	1.50	328.62	CB #8 - CB #12
5	4	128.990	3.802	MH	0.00	0.01	0.90	5.0	323.31	0.52	323.98	18	Cir	0.013	1.00	329.81	DMH #2 - CB #8
6	5	43.471	84.116	DrGrt	0.00	0.46	0.90	5.0	324.08	0.51	324.30	18	Cir	0.013	1.50	329.38	CB #7 - DMH #2
7	6	160.319	-99.666	DrGrt	0.00	1.55	0.90	5.0	325.40	0.62	326.40	15	Cir	0.013	0.50	332.45	CB #3 - CB #7
8	7	300.000	7.317	DrGrt	0.00	0.54	0.71	20.5	327.60	0.53	329.20	12	Cir	0.013	0.59	334.53	CB-2 TO CB-3
9	8	138.748	20.031	DrGrt	0.00	1.81	0.39	35.9	329.40	0.86	330.60	12	Cir	0.013	1.00	335.17	CB-1 TO CB-2
10	6	49.736	2.353	DrGrt	0.00	0.24	0.90	5.0	324.50	0.50	324.75	12	Cir	0.013	0.50	329.32	CB #6 - CB #7
11	10	64.824	0.000	DrGrt	0.00	0.24	0.90	5.0	324.85	0.49	325.17	12	Cir	0.013	1.00	329.30	CB #5 - CB #6
12	4	52.413	101.887	DrGrt	0.00	0.17	0.90	5.0	323.31	0.50	323.57	18	Cir	0.013	0.50	328.55	CB #11 - CB #8
13	12	62.614	-11.538	DrGrt	0.00	0.22	0.90	5.0	323.67	0.50	323.98	18	Cir	0.013	0.50	328.56	CB #10 - CB #11
14	13	75.861	0.000	DrGrt	0.00	0.18	0.90	5.0	324.08	0.50	324.46	18	Cir	0.013	0.50	328.54	CB #9 - CB #10
15	14	69.089	3.881	DrGrt	0.00	1.49	0.49	35.0	324.56	0.52	324.92	12	Cir	0.013	1.00	328.10	CB #4 - CB #9
Project File: Apron Pipe Network - POST-con.stm												Number of lines: 15				Date: 3/10/2022	

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	DMH #4	Manhole	324.01	Cir	4.00	4.00	18	Cir	319.55	18	Cir	319.65
2	DMH #3	Manhole	326.27	Cir	4.00	4.00	18	Cir	320.36	18	Cir	320.46
3	CB #7	DropGrate	326.57	Cir	4.00	4.00	18	Cir	321.77	18	Cir	321.87
4	CB #12	DropGrate	328.62	Cir	6.00	6.00	18	Cir	323.21	18	Cir	323.31
5	DMH #2	Manhole	329.81	Cir	4.00	4.00	18	Cir	323.98	18	Cir	324.08
6	CB #15	DropGrate	329.38	Cir	6.00	6.00	18	Cir	324.30	15	Cir	325.40
7	CB #3	DropGrate	332.45	Cir	4.00	4.00	15	Cir	326.40	12	Cir	327.60
8	NEW CB-2	DropGrate	334.53	Cir	4.00	4.00	12	Cir	329.20	12	Cir	329.40
9	NEW CB-1	DropGrate	335.17	Cir	4.00	4.00	12	Cir	330.60			
10	CB #14	DropGrate	329.32	Cir	4.00	4.00	12	Cir	324.75	12	Cir	324.85
11	CB #13	DropGrate	329.30	Cir	4.00	4.00	12	Cir	325.17			
12	CB #11	DropGrate	328.55	Cir	4.00	4.00	18	Cir	323.57	18	Cir	323.67
13	CB #10	DropGrate	328.56	Cir	4.00	4.00	18	Cir	323.98	18	Cir	324.08
14	CB #9	DropGrate	328.54	Cir	4.00	4.00	18	Cir	324.46	12	Cir	324.56
15	CB #4	DropGrate	328.10	Cir	4.00	4.00	12	Cir	324.92			
Project File: Apron Pipe Network - POST-con.stm							Number of Structures: 15			Run Date: 3/10/2022		

Storm Sewer Profile

Proj. file: Apron Pipe Network - POST-con.stm

