STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:

APPLICATION OF HOMELAND TOWERS, LLC AND NEW CINGULAR WIRELESS PCS, LLC d/b/a AT&T FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF A TELECOMMUNICATIONS FACILITY AT 1837 PONUS RIDGE ROAD IN THE TOWN OF NEW CANAAN	DOCKET NO. 509 September 18, 2023

HOMELAND TOWERS, LLC AND NEW CINGULAR WIRELESS PCS, LLC d/b/a AT&T
DEVELOPMENT & MANAGEMENT PLAN

Homeland Towers, LLC, the Certificate Holder in the above-referenced Docket, respectfully submits the following Development & Management Plan ("D&M Plan") documents and materials for Facility approved in Docket No. 509 at1837 Ponus Ridge Road, the certificate site:

Homeland Towers, LLC cover letter dated September 18, 2023 with the following Exhibits:

Exhibit A: AT&T Antenna and generator specifications

Exhibit B: Geotechnical study dated February 28, 2023 prepared by Tectonic Engineering; a structural design report for the tower and foundation dated August 25, 2023 prepared by Cell Trees, Inc., a slope stability analysis dated July 28, 2023 prepared by Tectonic Engineering and a Stormwater management Report dated September 2023 prepared by All Points.

Exhibit C: color swatch for the brown monopole, carrier antennas and all mounts and photo of similar conical tree design/branch density

Exhibit D: AT&T's Commitment Letter.

Two full-sized sets and 15 half-sized sets of D&M Plan Drawings prepared by All-Points Technology Corporation last revised September 14, 2023 and signed and sealed by Robert Charles Burns, CT P.E. license no. 20071.

CERTIFICATE OF SERVICE

I hereby certify that on this day one original and 16 hard copies, and one electronic version of the foregoing were sent to the Connecticut Siting Council and one electronic copy was sent to:

Kenneth C. Baldwin, Esq.
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60 Squires Lane
New Canaan, CT 06840
Phone (510) 913-3476
Justin.nishioka@gmailcom

Dated: September 18, 2023

_____

Lucia Chiocchio, Esq.
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, NY 10601
(914)-761-1300

cc: Manny Vicente, Homeland Towers
Ray Vergati, Homeland Towers
Harry Carey, AT&T
Rachelle Biden Lewis, AT&T
APT
C Squared

HOMELAND TOWERS

September 18, 2023

Via Federal Express
Honorable John Morissette, Presiding Officer
And Members of the Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Re: Docket No. 509 – Homeland Towers LLC (HT) and New Cingular Wireless PCS, LLC d/b/a AT&T Development & Management Plan- Tower Facility at 1837 Ponus Ridge Road, New Canaan CT (CT050).

Dear Honorable Morissette and Members of the Siting Council,

Homeland Towers ("HT") respectfully requests that you please accept for review and Council approval this Development & Management Plan ("D&M Plan") filing for the Facility as approved in Docket No. 509.

Tower, Compound & Other Equipment
Enclosed are fifteen (15) sets of 11"x17" Development & Management Plans dated September 14, 2023 prepared by All Points Technology Corporation ("All Points"). These plans are being filed in accordance with the Council's Decision and Order dated December 8, 2023 ("Decision and Order"). Two full-sized sets of the Development & Management Plans are also enclosed. The D&M Plan incorporates a stealth monopine at a height of 110 feet AGL (115 feet AGL top of branches) provided for in the Siting Council's Decision and Order in this Docket. AT&T will initially install six (6) panel antennas and nine (9) RRH's at a centerline of 106'. The Town of New Canaan also plans on installing two (2) omni antennas two (2) microwave dishes off the top of the tower. Verizon wireless who intervened on this Docket would install their antennas at the 95' centerline. As depicted in the Visual Resource Assessment dated September 1, 2021 prepared by All Points, AT&T's (and future carrier) antennas and mounts will be painted brown to match the color of the monopine, panel antennas will have wraps/socks. The Town's omni antennas extending above the tower will be "Horizon Blue" in color. Attachment ***Exhibit A*** contains antenna specification sheets for AT&T along with the generator specification sheet. Attachment ***Exhibit B*** is a geotechnical study dated February 28, 2023 prepared by Tectonic Engineering; a structural design report for the tower and foundation which includes a branch layout dated August 25, 2023 prepared by Cell Trees, Inc., a slope stability analysis dated July 28, 2023 prepared by Tectonic Engineering and a Stormwater management Report dated September 2023 prepared by All Points.[1] Attachment ***Exhibit C*** contains the color swatch for the brown monopole, carrier antennas and all mounts, photo of similar conical tree design/branch density and Attachment ***Exhibit D*** contains AT&T's Commitment Letter.

Conditions of Decision and Order to be submitted and approved by Council prior to the commencement of facility construction:

- Per Condition 1, Homeland shall comply.
- Per Condition 2(a), a copy of certified letter from AT&T with a firm commitment to install is attached as Exhibit D.
- Per Condition 2(b), Homeland shall comply.

[1] Please note that hard copies of the appendices for the Slope Stability Analysis and the Stormwater Management Report are being bulk filed due to their volume.

- Per Condition 2(c), see attached Exhibit B.
- Per condition 2(d), the proposed D&M Plan includes construction plans for post construction storm water control. Based on geotech field analysis, Homeland does not feel confident that existing site conditions and shallow depth of rock would allow for the proper installation and functioning of rain gardens. Stilling basins are proposed.
- Per condition 2(e) the proposed D&M Plan includes plans for site clearing, drainage, and erosion and sedimentation control measures consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as amended.
- Per Condition 2(f), Homeland shall comply.
- Per Condition 2(g), Homeland shall comply.
- Per Condition 2(h), homeland shall comply.
- Per Condition 2(i), the proposed D&M Plan includes landscaping plan around compound and along slopes.
- Per Condition 2(j), the proposed D&M Plan includes a wetland monitoring plan.
- Per Condition 2(k), the proposed D&M Plan includes an invasive species control plan.
- Per Condition 2(l), Homeland shall comply.
- Per Condition 2(m), the proposed D&M Plan includes a Petroleum Materials Storage and Fill Prevention Plan.
- Per Condition 2 (n), all rock to be removed off site and disposed of, Homeland shall comply
- Per Condition 2(o), construction of the facility will take place between the hours of 8:00am and 5:00pm, Monday through Friday.
- Per Conditions 3- 18, Homeland shall comply

Improvements/additions made to D&M plans

- Wooden guard rail added to access drive

Required Notifications

In accordance with the provisions of RCSA Section 16-50j-77, Homeland Towers hereby notifies the Council of its intention to begin site work immediately after Council approval of the D&M Plan. Construction of the tower and other site improvements will commence upon issuance of a local building permit. The supervisor for all construction related matters on this project is David Weinpahl with On-Air Engineering, located at 88 Foundry Pond Road, Cold Spring, NY 10516 and can be reached by telephone at 201-456-4624.

We respectfully request that this matter be included on the Council's next available agenda for review and approval. Thank you for your consideration of the enclosed.

Sincerely,

Raymond Vergati

Raymond Vergati
rv@homelandtowers.us
Enclosures

cc: Honorable Kevin Moynihan, First Selectman, Town of New Canaan; Manny Vicente, Homeland Towers LLC; Lucia Chiocchio, Esq., Cuddy & Feder LLP; Scott Chasse, P.E., APT; Tim Parks, Verizon; Kenneth Baldwin, Esq., Robinson & Cole

HOMELAND TOWERS

EXHIBIT A

(AT&T antenna and generator specifications)

8340-100 series

RUGGED POWER

POLAR POWER INC.

PRIME POWER DC GENERATOR SET

Founded in 1979 Polar Power specialized in solar photovoltaic systems, solar air conditioning and refrigeration. We developed and provided photovoltaic charging controls for telecommunications in the 1980s along with DC generators for the military. In 1994 we were first to provide DC generators with remote control and monitoring to the telecommunications industry.

Polar's success is based on engineering generators to meet the very specific needs of each application. Telecom site optimization is best met with the DC generator technology as the loads and batteries are DC. It makes no sense to install an AC generator and convert the output to DC. The AC generators are designed for a wide range of applications and they are not specifically produced for telecom applications so there are issues with reliability, space, and fuel efficiency.

Polar can save you considerable time and cost in permitting, installing, purchasing, and maintaining a backup generator. We reduce CAPEX and OPEX costs while improving backup reliability.

Intertek 4003706
Conforms to UL STD 2200
Certified to CSA STD C22.2 No. 100

Meets EPA Emission Regulations
CA/MA Emissions Compliant

2 year standard warranty

Available Models:

- **8340-100-LP-15-03** LPG 15 kW -48 VDC

Made in USA

The concepts and features behind Polar's Hybrid application generator for telecommunications include:

SMALL FOOTPRINT. Polar's DC generator is considerably smaller in size than an AC generator. You can now backup sites that could not accommodate an AC generator. Smaller also means less cost for space leasing.

LOW MAINTENANCE. Due to oversized oil sump, and oil/fuel filtration system.

LOW ACOUSTIC NOISE. <62 dBA @ 7 meters for LPG, and low vibration so as not to disturb the local residents or building landlords.

LIGHTWEIGHT. Up to 1/3 the weight of a comparable AC generator.

CORROSION RESISTANT. All-aluminum enclosure with stainless hardware for low maintenance, and long service life.

FUEL EFFICIENT. Up to 85% fuel savings due to smaller engine displacement, high efficiency alternator, and variable speed operation.

RODENT RESISTANT. Small animals can quickly destroy a generator set by gnawing on wires, fuel lines, radiator hoses, etc. Cooling air inlets and outlets have perforated aluminum screens to keep small rodents and large insects out. Stainless steel wire braid is placed over fuel and radiator lines to prevent damage.

SUPERCAPACITOR STARTER. Failure to start is the number one problem plaguing generator reliability and typically this is caused by a bad starting battery. Polar unique design has replaced the starting battery with a Super Capacitor. Capacitors are more reliable and last longer than batteries (10-15 year life).

LONG LIFE. Controls and wire harnesses are designed to exceed a 20 year life. Higher grade, longer life electrical wire (UL 3173), weather tight connectors, gold plated connector pins on signal circuits. No transfer switches are required.

ADVANCED MONITORING. Remote diagnostics, control, and monitoring. Ethernet and RS232 standard, with optional SNMP.

POLAR POWER INC.

APPLICATION AND ENGINEERING DATA

COMPARING THE COST OF AC vs DC

	AC	DC
Transfer switch required	Yes	No
Permitting costs	$$	$
Shipping to site and installation cost	$$	$
Site preparation/reinforcing structures	$$$	$
Ethernet/RS232 remote control and monitoring	Extra	Standard

PERMITTING IS FACILITATED

- Small engine horsepower
- DC generator is fully isolated from the utility grid
- No transfer switch
- Low acoustic noise
- Incorporates all requirements made by local Fire Marshals

8220 ALTERNATOR FEATURES

- No mechanical adjustments
- Very lightweight
- High quality electrical output
- Voltage and current regulation
- Up to 94% efficiency
- Class 220° C insulation
- Anodized type III process for aluminum parts
- Nickel plating for steel parts
- Stator is varnished

8220 ALTERNATOR SPECIFICATIONS

Type	Permanent Magnets, NdFeB
Weight (lb/kg)	46.5/21
Regulation Type	Variable engine speed
Stator	3 phase/32 poles
Overcurrent Protection (A)	350
Disconnect Means	Pull fuse block, sized for each generator kW
Voltage Range (VDC)	44 to 62
Alternator Exhaust Flow (cfm/cmm)	130 to 180 / 3.68 to 5.1
MTBF (hr)	100,000+

ENCLOSURE

Model	88-25-0100
Type	Weather Protective
Materials	Marine Grade Aluminum
Door Hardware	Pad Locked with Removable Side Panels
Mounting	Secure Mounting Tabs

STARTER SUPERCAPACITOR SPECIFICATIONS

Model	20-16-0001
Storage Rating (Farads)	500
Voltage (VDC)	13-14.4
Weight (lb/kg)	12.1/5.5
Operating Temperature (°C/°F)	-40 to 65 / -40 to 149
Service Life (year)	10 to 15

CHARGER SPECIFICATIONS

Model	00-10-0015
Input Voltage (VDC)	28.8 to 60
Output Voltage (VDC)	14 to 14.4
Recharge time from 0 VDC (min)	10
Recharge time from 8 VDC (min)	2
Weight (lb/kg)	2.2/1

SOUND EMISSIONS

Contact us for current sound data.

SPECIFICATIONS NATURAL GAS and LPG

Engine Model	Natural Gas - Kubota DG972 LPG - Kubota WG972
Cylinders	3 In-line
Displacement (L)	0.962
Bore (in./mm)	2.93/74.5
Stroke (in./mm)	2.9/73.6
Intake Air System	Naturally Aspirated
Engine HP	18
Emissions Compliance	EPA and CARB Certified
Variable RPM	2650 to 3150

ENVIRONMENTAL

Operating Temperature (°C/°F)	-40 to 72 or -40 to 162
Operating Humidity %	100
Cold Start Aids	Glow Plugs

PROPANE ENGINE FUEL CONSUMPTION

	Output (kW)	gal/hr	L/hr
Kubota 972	4	0.97	3.67
	5	1.1	4.16
	6	1.26	4.77
	7	1.475	5.58
	8	1.69	6.4
	9	1.945	7.36
	10	2.2	8.33
	12	2.52	9.54
	15	3.55	13.44

ENGINE LUBRICATION SYSTEM

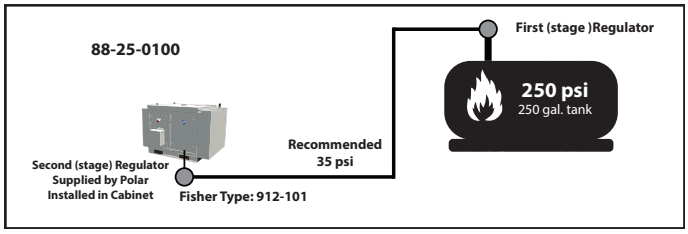
Oil Filter Type	Full flow spin-on canister
Oil Capacity	3.7 L - DG972/WG972
Oil Pressure Switch	Yes
Oil Pressure Transducer	Optional

ENGINE COOLING SYSTEM

Type	Pressurized Aluminum Radiator
Water Pump	Belt-driven, Pre-lubed, self-sealing
Fan Type	Electric Fans
Airflow CFM or M^3/hr	1300 or 2200
Fan Mode	Pusher
Temperature Switch	Yes

FUEL SYSTEM

Type	Natural Gas or Propane
Fuel Tank/Line	Supplied By Customer
Max Fuel Flow Rate (BTU/hr)	15 kW - 340,000



Pressure Chart

Minimum	Recommended	Maximum
0.14 psi	0.39 psi	0.5 psi
4 in H2O	11 in H2O	13.9 in H2O
10 mbar	27.4 mbar	34.5 mbar

POWER ADJUSTMENT FOR AMBIENT CONDITIONS

Temperature Deration	1% derate for every 5.6 ºC (10 ºF) above 25 ºC (77 ºF)
Altitude Deration	3% derate for every 300 m (1000 ft) above 91 m (300 ft)

WEIGHTS AND DIMENSIONS

Dry Weight (lb/kg)	680/308
Dimensions (LxWxH) (in/cm)	54 x 38 x 38/137 x 97 x 97

POLAR POWER INC.

OPERATING DATA

ENGINE COOLING

System coolant capacity (gal/L)	2.2/8.3
Maximum operation air temperature on radiator (°C/°F)	54/129
Maximum ambient temperature (°C/°F)	49/120

COMBUSTION REQUIREMENTS

Flow at rated power (cfm/cmm)	47/1.34

EXHAUST

Exhaust flow at rated output (cfm/cmm)	90/2.55
Exhaust temperature at rated output (°C/°F)	480/900

CONTROLLER FEATURES

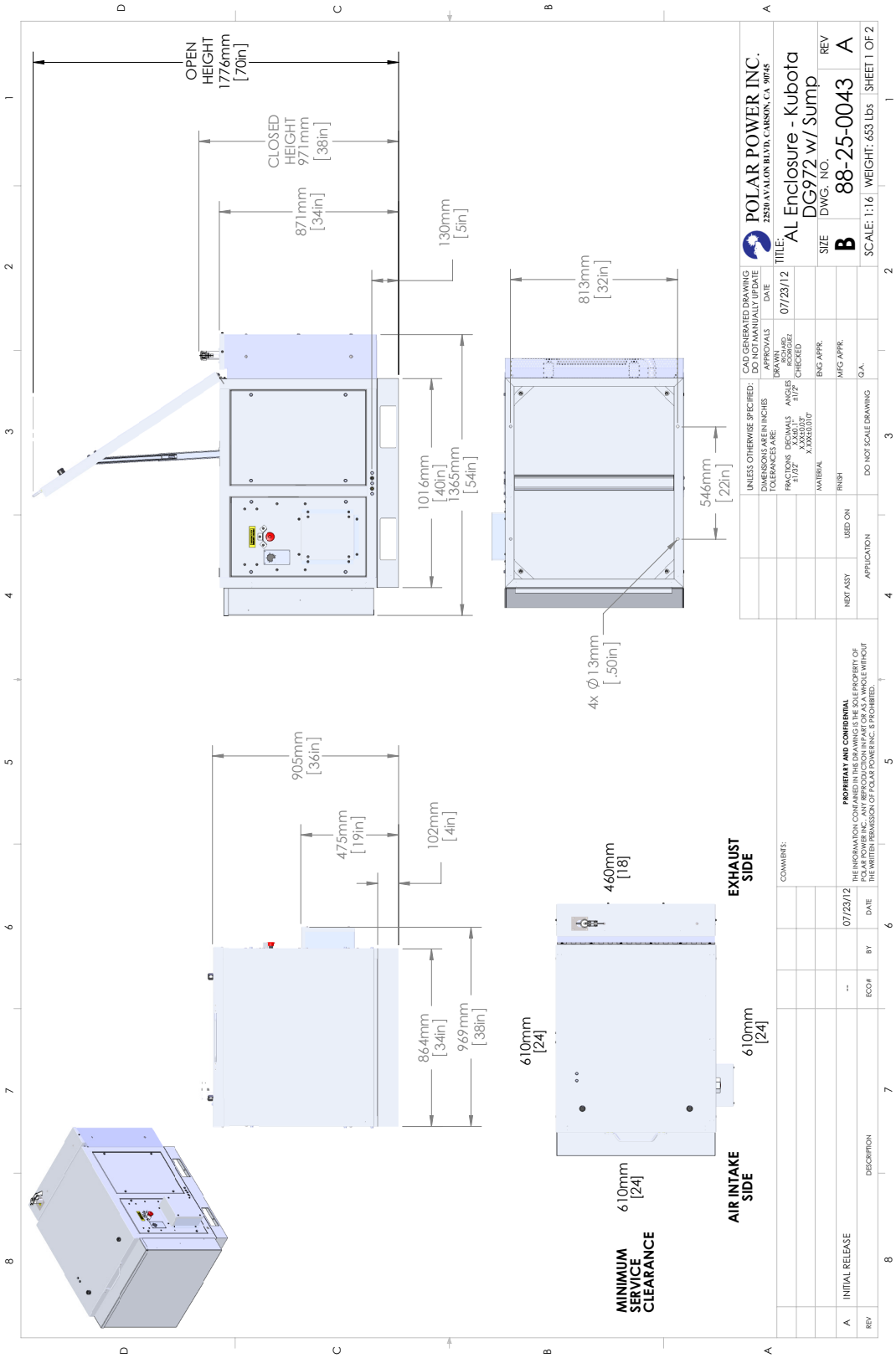
Controller Type.....Supra Model 250
4-Line Plain Text LCD Display.....Simple user interface for ease of operation
Engine Run Hours Indication.....Standard
Programmable Start Delay.....Standard
Run/Alarm/Maintenance Logs.....Standard
Engine Start Sequence.....Cyclic cranking: 5 sec on, 45 sec rest (3 attempts maximum)
Starter Supercapacitor Charger.....Standard
Automatic Voltage Regulation with Over and Under Voltage Protection.....Standard
Automatic Low Oil Pressure/High Oil Temperature Shutdown.....Standard
Overcrank/Overspeed.....Standard
Automatic High Engine Temperature Shutdown.....Standard
Field Upgradeable Firmware.....Standard
Glow Plug Delay .....Automatic With Temperature
Engine Start Delay.....Adjustable, Set at 60 sec
Return to Utility Delay.....Adjustable, Set at 60 sec
Engine Cooldown.....Adjustable, Set at 60 sec
Exerciser.....Programmable, weekly/bi-weekly

WARNING ALARMS

Low/High Supercapacitor Voltage.....Standard
High Water Temperature.....Standard
Low Oil Pressure.....Standard

CONTACT CLOSURE FOR REMOTE INDICATION (PN 84-12-0640)

Shutdown Alarm.....Optional
Warning Alarm.....Optional
Engine Run.....Optional
E-Stop Depressed.....Optional


OPEN HEIGHT 1776mm [70in]
CLOSED HEIGHT 971mm [38in]
871mm [34in]
130mm [5in]
1016mm [40in]
1365mm [54in]
813mm [32in]
546mm [22in]
4x Ø13mm [.50in]
905mm [36in]
475mm [19in]
102mm [4in]
864mm [34in]
969mm [38in]
460mm [18]
610mm [24]
610mm [24]
610mm [24]
EXHAUST SIDE
AIR INTAKE SIDE
MINIMUM SERVICE CLEARANCE
POLAR POWER INC.
22530 AVALON BLVD, CARSON, CA 90745
TITLE: AL Enclosure - Kubota DG972 w/ Sump
SIZE B
DWG. NO. 88-25-0043
REV A
SCALE: 1:16
WEIGHT: 653 Lbs
SHEET 1 OF 2
CAD GENERATED DRAWING DO NOT MANUALLY UPDATE
APPROVALS
DRAWN
DATE 07/23/12
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF POLAR POWER INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF POLAR POWER INC. IS PROHIBITED.
A INITIAL RELEASE -- 07/23/12

Antennas

MultiPort Series

DATA SHEET

Multi-Band Twelve-Port Antenna

TPA65R-BU8D

- Eight foot (2.4 m) multiband, twelve port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Eight high band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz in a single antenna enclosure
- Innovative Low and High Band Array configuration allows for 4T4R (4x4 MIMO) on Low Band and Dual 4T4R (4x4 MIMO) High Band Arrays, using full length arrays (non stacked), all in a 21.0" (534mm) width enclosure, an Industry First
- Full Spectrum Compliance for WCS and AWS-3 frequencies and Band 14 Operations
- Array configuration allows for 4T4R (4X4 MIMO) on Low Band, essential for Band 14 Operations
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Equipped with 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)
- Ordering options for External RET Controllers (Type 1) or Internally Integraged RET Controllers (Type 17)

Overview

The CCI 12-Port multiband array is a twelve port antenna, with eight wide band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz. The antenna provides the capability to deploy Dual 4x4 Multiple-input Multiple-output (MIMO) in the high band and 4X4 Multiple-input Multiple-output (MIMO) across low band ports. The CCI 12-Port allows independent tilt control between the low band ports and high band ports and independent tilt control between left and right antenna arrays.

In this three RET configuration, the 1st RET is dedicated for the four Low Band ports. The 2nd RET is dedicated for the four Left High Band ports and the 3th RET is dedicated for the four Right High Band ports. This RET arrangement allows for complete flexibility in coverage control between left and right antenna arrays.

CCI antennas are designed and produced to ISO 9001:2008 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- Dual 4x4 MIMO for the High Band and 4X4 MIMO Low Band ports
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs

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SPECIFICATIONS

Multi-Band Twelve-Port Antenna

TPA65R-BU8D

Electrical

Ports	4 x Low Band Ports for 698-896 MHz	
Frequency Range	698-806 MHz	824-896 MHz
Gain[1]	15.6 dBi	16.4 dBi
Gain (Average)[2]	14.6 dBi	15.5 dBi
Azimuth Beamwidth (-3dB)	73°	64°
Elevation Beamwidth (-3dB)	9.5°	7.9°
Electrical Downtilt	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-18 dB	<-17 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	13.2 dB	9.7 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts
Polarization	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Ports	8 x High Band Ports for 1695-2400 MHz			
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz
Gain[1]	18.0 dBi	18.1 dBi	18.3 dBi	18.2 dBi
Gain (Average)[2]	16.7 dBi	17.1 dBi	17.4 dBi	16.8 dBi
Azimuth Beamwidth (-3dB)	70°	66°	66°	60°
Elevation Beamwidth (-3dB)	5.7°	5.1°	4.8°	4.1°
Electrical Downtilt	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	<-17 dB	<-17 dB	<-17 dB	<-16 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 19 dB	> 18 dB	> 19 dB	> 20 dB
Cross-Polar Discrimination at Sector[2]	11.6 dB	9.8 dB	10.5 dB	8.6 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

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SPECIFICATIONS

Multi-Band Twelve-Port Antenna

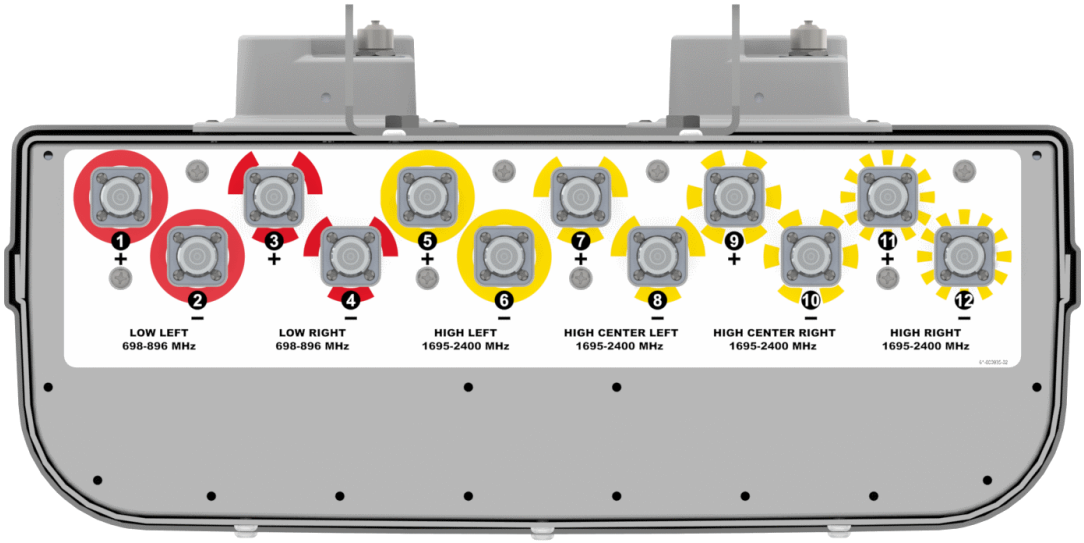
TPA65R-BU8D

Mechanical

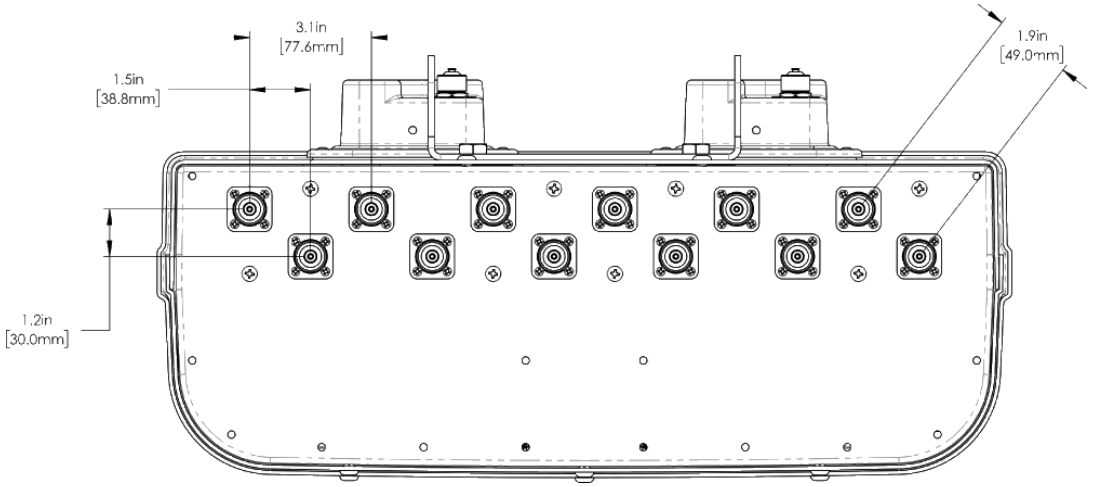
Dimensions (LxWxD)	96.0x21.0x7.8 in (2438x534x198 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	463 lbs (2061 N) @ 100 mph (161 kph)
Side Wind Load	210 lbs (933 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	18.1 ft^2 (1.7 m^2)
Weight *	87.5 lbs (39.7 kg)
Connector	12 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting and RET*

Bottom View



Connector Spacing



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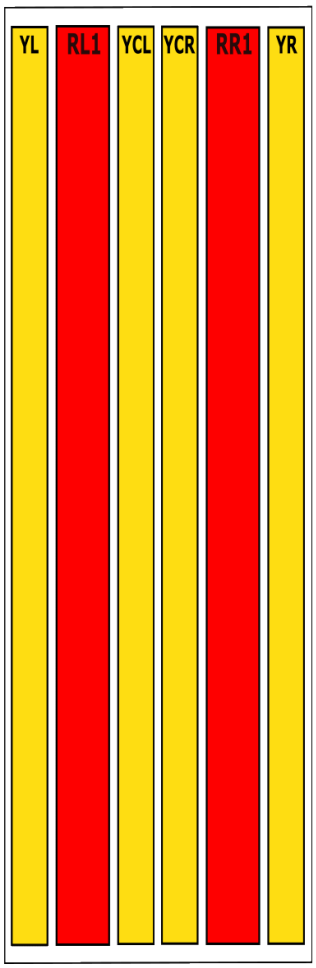
Mechanical

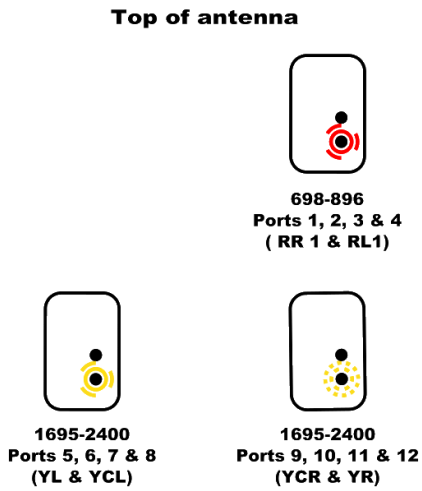
RET to Element Configuration

TPA65R-BU8DA Element and RET configuration (Type 1 External RET)

Top of antenna
Viewed from rear



RET placement as viewed from rear of antenna



Array	Ports	Freq (MHz)	Ports controlled by common RET
RL1	1, 2	698-896	1, 2, 3, 4
RR1	3, 4	698-896	
YL	5, 6	1695-2400	5, 6, 7, 8
YCL	7, 8	1695-2400	
YCR	9,10	1695-2400	9, 10, 11, 12
YR	11,12	1695-2400	

Mechanical

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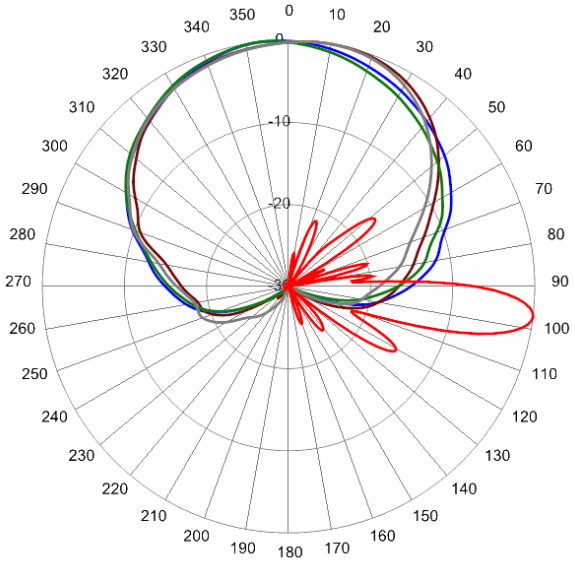
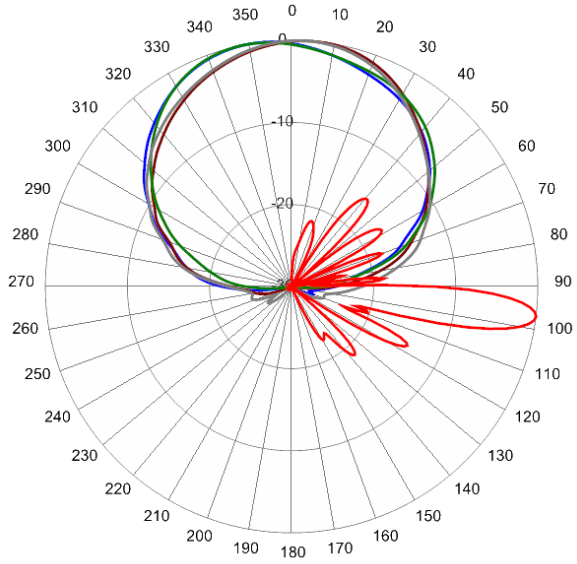
Typical Antenna Patterns

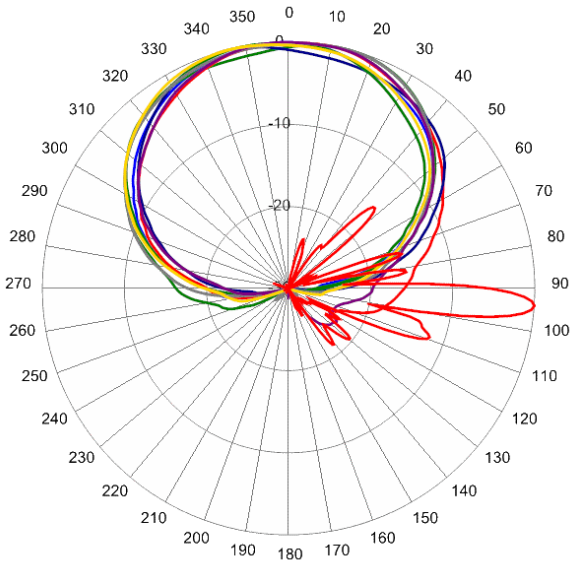
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



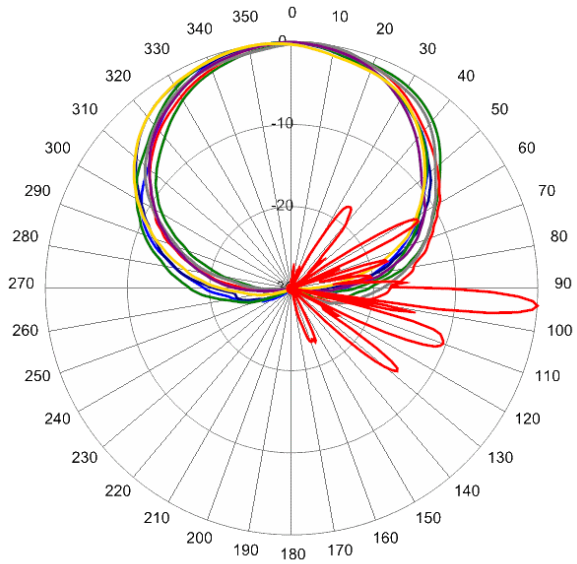
734 MHz Azimuth with Elevation 7°



880 MHz Azimuth with Elevation 7°



1720 MHz Azimuth with Elevation 4°



2155 MHz Azimuth with Elevation 4°

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ORDERING

Multi-Band Twelve-Port Antenna

Parts & Accessories

TPA65R-BU8DA-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET200 RET actuators (Type 1 external)and MBK-01 mounting bracket
TPA65R-BU8DB-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-01 mounting bracket
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Type 1 Remote electrical tilt actuator
BSA-RET400	Type 17 Remote electrical tilt actuator
DPA-CBK-AG-RRU	Antenna with 3 RET to RRU AISG cable kit
DPA-CBK-RA-AG-RRU	Antenna with 3 RET to RRU AISG right angle cable kit

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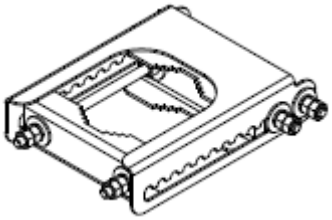
MultiPort Series

Mounting Bracket Kit

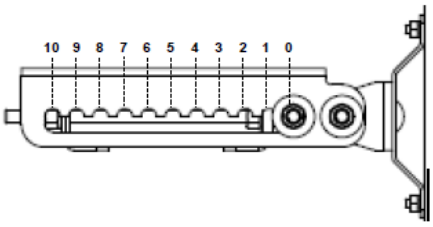
MBK-01

Mechanical

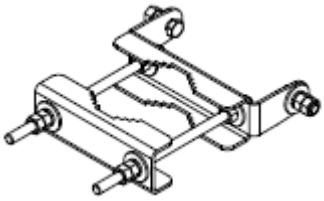
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 Nm)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

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Remote Electrical Tilt Actuator (RET)

General Specifications

Part Number	BSA-RET200
Protocols	AISG 2.0
RET Type	Type 1
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

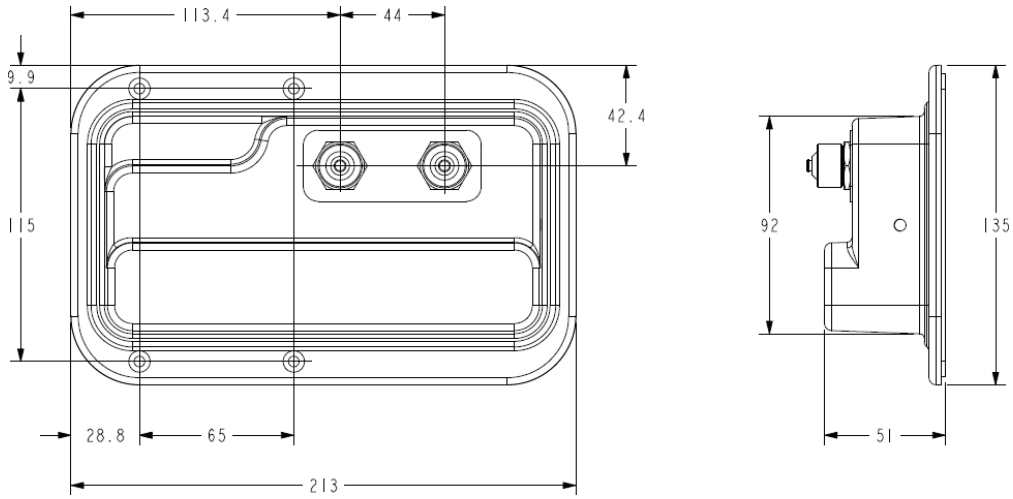
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	120 mA at V_{in}=24
Current Consumption Idle	55 mA at V_{in}=24
Hardware Interface	AISG-RS 485 A/B
Input Connector	Male 1 x 8 pin Daisy Chain
Output Connector	Female 1 x 8 pin Daisy Chain

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.7 lbs (0.75 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



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MultiPort Series

Internal Remote Electrical Tilt (iRET)

BSA-RET400

General Specifications

Part Number	BSA-RET400
Protocols	AISG 2.0
RET Type	Type 17
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

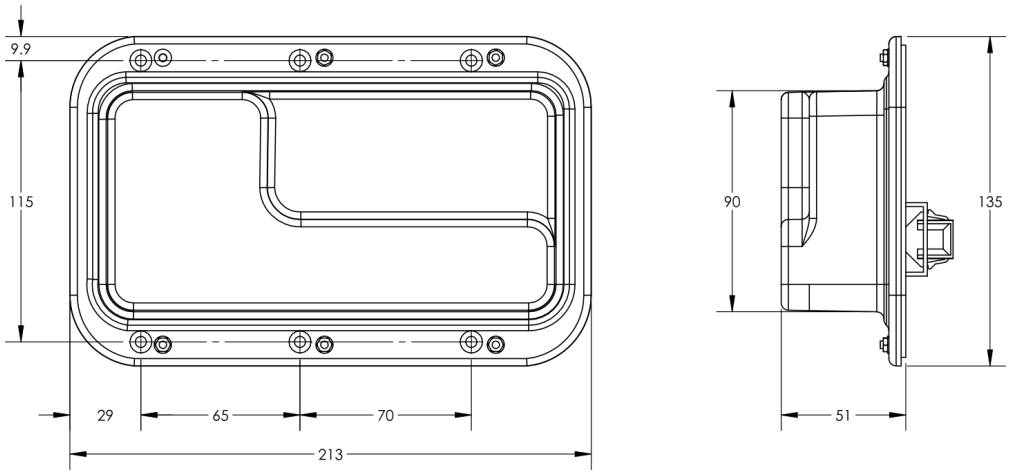
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V_{in}=24
Current Consumption Idle	10 mA at V_{in}=24

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.4 lbs (0.64 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



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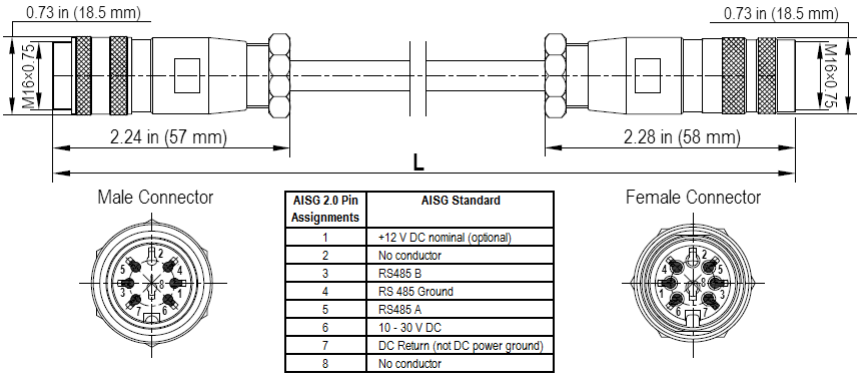
AISG Cable Kit

DPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-27	AISGC-M-F-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 Nm)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	
Length	27 in (686 mm)	120 in (3048 mm)
Weight	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

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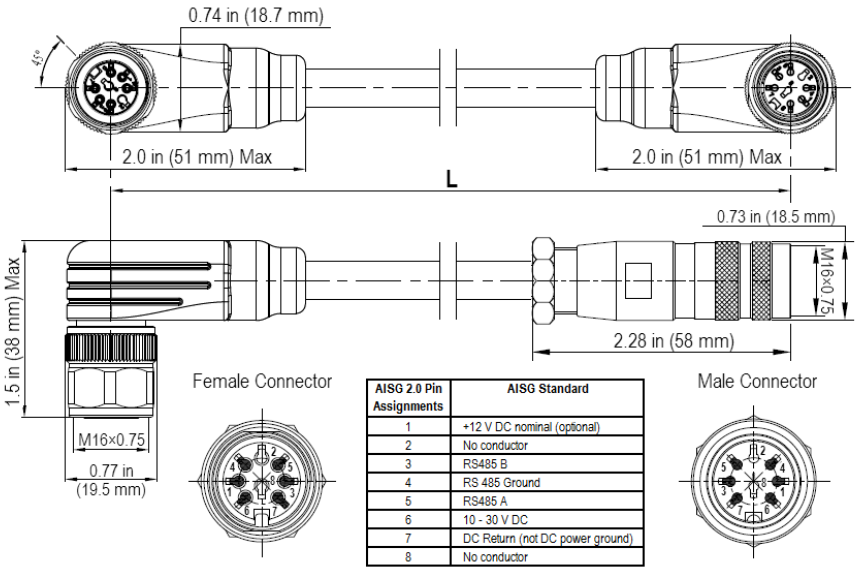
AISG Cable Kit

DPA-CBK-RA-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-36	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5& Nm)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	36 in (914 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

Right Angle to Right Angle and Right Angle to Straight Jumper Cable

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Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN 60529, IP 24

Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001:2008

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Antennas

MultiPort Series

DATA SHEET

Diplexed Multi-Band Antenna

DMP65R-BU8D

- Eight foot (2.4 m) internally multiplexed MultiBand antenna, including eight external RF ports (12 RF ports internal), with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Four wide high band ports covering 1695-2400 MHz and four wide low band ports covering 698-896 MHz in a single antenna enclosure
- Innovative Multiplexed/RET Control configuration, supporting Dual Band Radios (B12/B5). The antenna provides Dual 4T4R (4x4 MIMO) capability, while providing independent RET control for B12 and B5, an Industry First
- Innovative Low and High Band Array configuration allows for 4T4R (4x4 MIMO) on Low Band and 4T4R (4x4 MIMO) High Band Arrays, using full length arrays (non stacked), all in a 20.7" (525 mm) width enclosure, an Industry First
- Industry leading antenna topology and RET shielding techniques drastically mitigate PIM propagation from B12/B14 operations, allowing for superior Network performance
- Full Spectrum Compliance for WCS and AWS-3 frequencies and Band 12 / Band 5 Operations
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Ordering options for External RET Controllers (Type 1) or Internally Integrated RET Controllers (Type 17)

Overview

The CCI internally multiplexed MultiBand array is an eight port (12 RF ports internal) antenna, with four wide band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz. The antenna provides the capability to deploy 4T4R (4x4 MIMO) in the high band, with separate RET control and provides the capability to provide independent RET control for B12 and B5 operations, while maintaining 4T4R (4x4 MIMO) on B12 and B5 operations across the low band ports.

CCI antennas are designed and produced to ISO 9001:2008 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- 4x4 MIMO for the High Band and 4X4 MIMO Low Band ports
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs

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SPECIFICATIONS

Diplexed Multi-Band Antenna

DMP65R-BU8D

Electrical

Ports	4 x Low Band Ports for 698-896 MHz	
Frequency Range	698-798 MHz	824-896 MHz
Gain[1]	15.1 dBi	16.0 dBi
Gain (Average)[2]	14.1 dBi	15.1 dBi
Azimuth Beamwidth (-3dB)	75°	64°
Elevation Beamwidth (-3dB)	9.5°	8.0°
Electrical Downtilt	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-19 dB	<-19 dB
Front-to-Back Ratio @180°	> 32 dB	> 35 dB
Front-to-Back Ratio ±20°	> 30 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	10.9 dB	11.0 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts
Polarization	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Ports	4 x High Band Ports for 1695-2400 MHz			
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz
Gain[1]	17.6 dBi	17.8 dBi	18.2 dBi	18.1 dBi
Gain (Average)[2]	16.7 dBi	17.0 dBi	17.3 dBi	17.2 dBi
Azimuth Beamwidth (-3dB)	70°	68°	68°	54°
Elevation Beamwidth (-3dB)	5.7°	5.1°	4.8°	4.1°
Electrical Downtilt	2° to 8°	2° to 8°	2° to 8°	2° to 8°
Elevation Sidelobes (1st Upper)	<-17 dB	<-18 dB	<-18 dB	<-17 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 19 dB	> 18 dB	> 20 dB	> 20 dB
Cross-Polar Discrimination at Sector[2]	10.8 dB	8.2 dB	8.5 dB	8.3 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

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SPECIFICATIONS

Diplexed Multi-Band Antenna

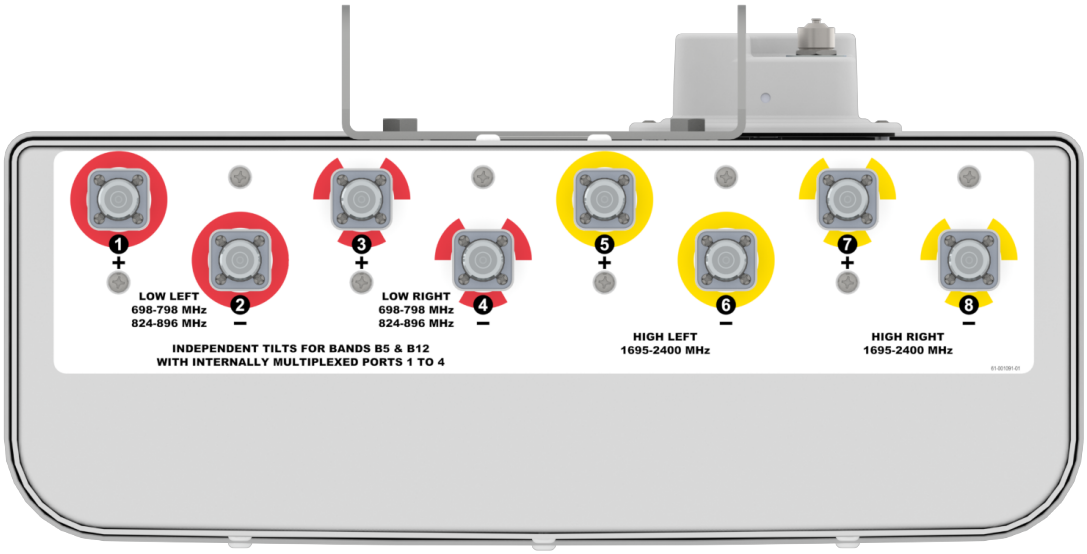
DMP65R-BU8D

Mechanical

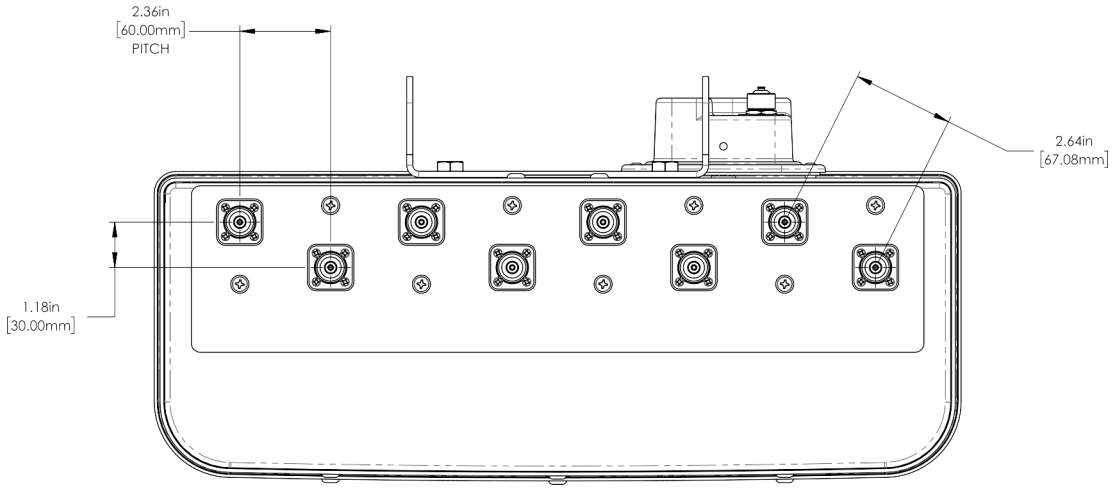
Dimensions (LxWxD)	96.0x20.7x7.7 in (2438x525x197 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	457 lbs (2033 N) @ 100 mph (161 kph)
Side Wind Load	209 lbs (929 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	17.9 ft^2 (1.7 m^2)
Weight *	95.7 lbs (43.4 kg)
Connector	8 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting*

Bottom View



Connector Spacing



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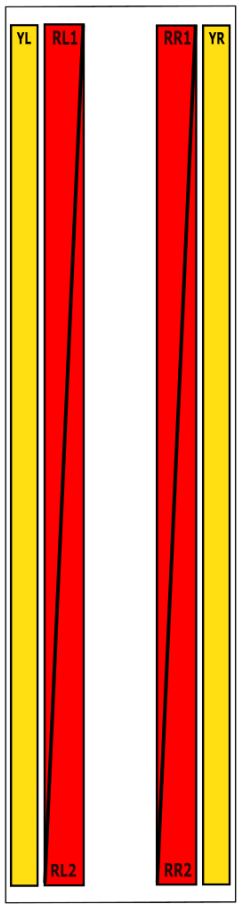
Mechanical

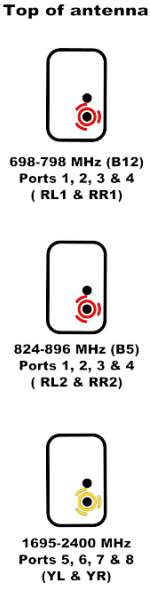
RET to Element Configuration

DMP65R-BU8DA Element and RET configuration (Type 1 External RET)

Top of antenna Viewed from rear

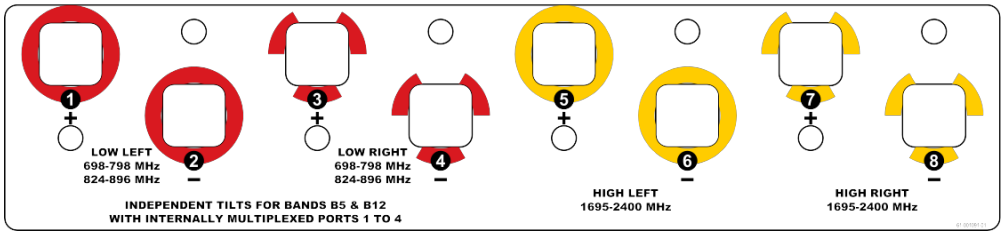


RET placement as viewed from rear of antenna



Array	Ports	Freq (MHz)	Ports controlled by dedicated RET	RET location on Antenna
RL1	1, 2	698-798	1, 2, 3, 4 (B12 RET)	Top
RR1	3, 4			
RL2	1, 2	824-896	1, 2, 3, 4 (B5 RET)	Middle
RR2	3, 4			
YL	5, 6	1695-2400	5, 6, 7, 8	Bottom
YR	7, 8			

Port Label



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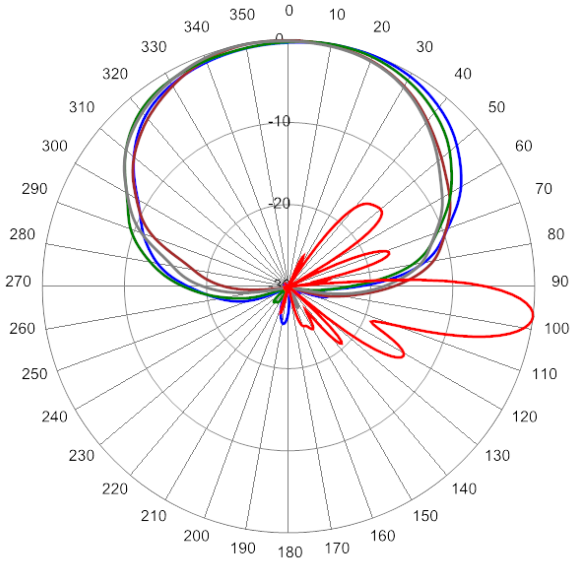
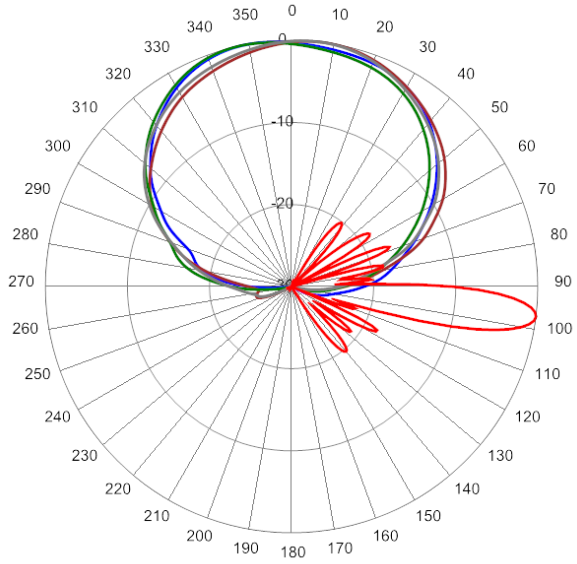
Typical Antenna Patterns

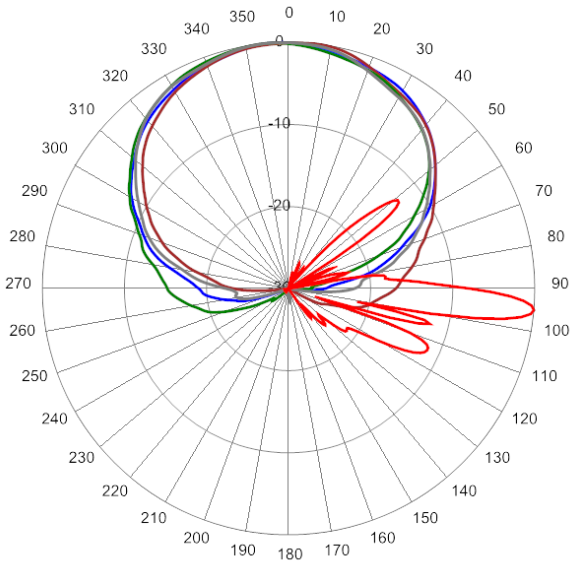
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



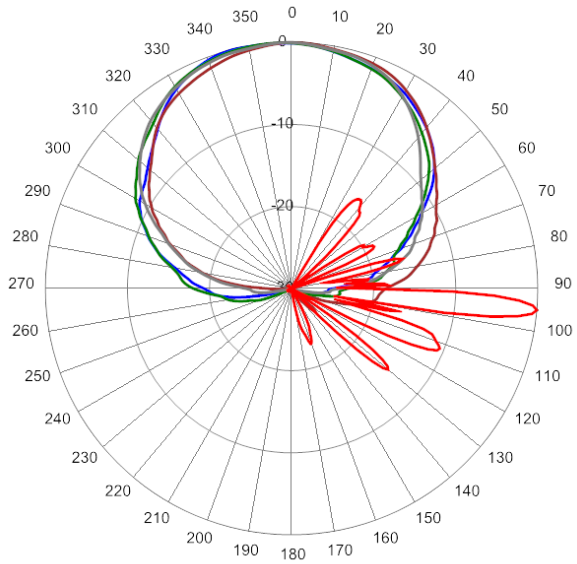
698 MHz Azimuth with Elevation 7°



840 MHz Azimuth with Elevation 7°



1780 MHz Azimuth with Elevation 5°



2155 MHz Azimuth with Elevation 5°

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Parts & Accessories

DMP65R-BU8DA-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 2 factory installed BSA-RET200 RET actuators (Type 1 external) and MBK-02 mounting bracket
DMP65R-BU8DB-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 2 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-02 mounting bracket
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Type 1 External Remote Electrical Tilt System (RET)
BSA-RET400	Type 17 Internal Remote Electrical Tilt System (RET)
DPA-CBK-AG-RRU	Antenna with 3 Type 1 RET to RRU AISG cable kit
CBK-RA-AG-RRU-004	Antenna with 3 Type 1 RET to RRU AISG right angle cable kit

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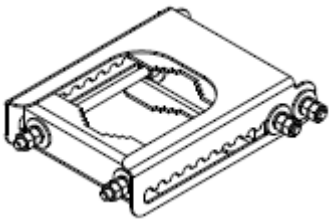
MultiPort Series

Mounting Bracket Kit

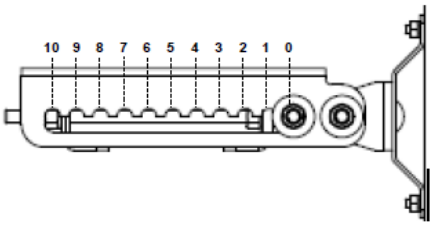
MBK-01

Mechanical

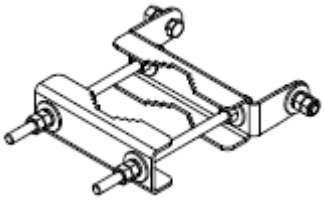
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 Nm)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

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Remote Electrical Tilt Actuator (RET)

General Specifications

Part Number	BSA-RET200
Protocols	AISG 2.0
RET Type	Type 1
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

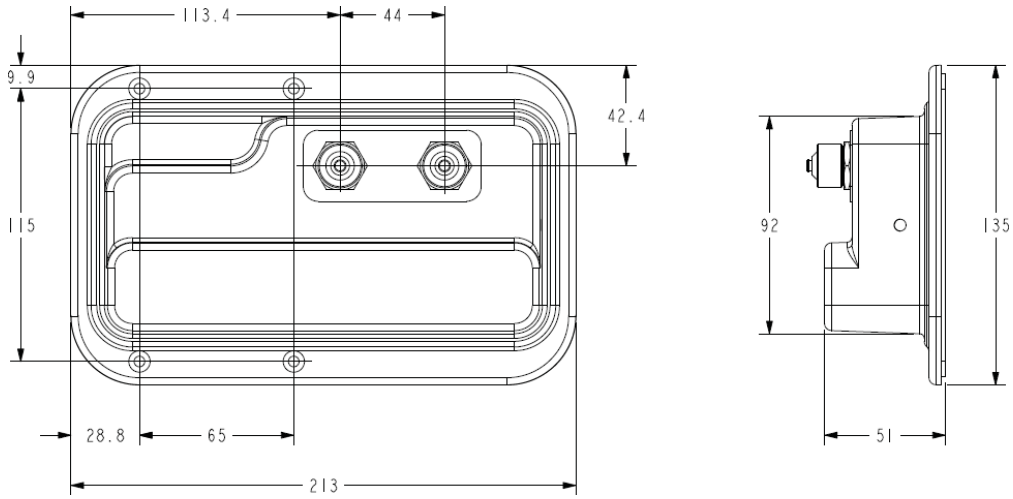
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	120 mA at V_{in}=24
Current Consumption Idle	55 mA at V_{in}=24
Hardware Interface	AISG-RS 485 A/B
Input Connector	Male 1 x 8 pin Daisy Chain
Output Connector	Female 1 x 8 pin Daisy Chain

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.7 lbs (0.75 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



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MultiPort Series

Internal Remote Electrical Tilt (iRET)

BSA-RET400

General Specifications

Part Number	BSA-RET400
Protocols	AISG 2.0
RET Type	Type 17
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

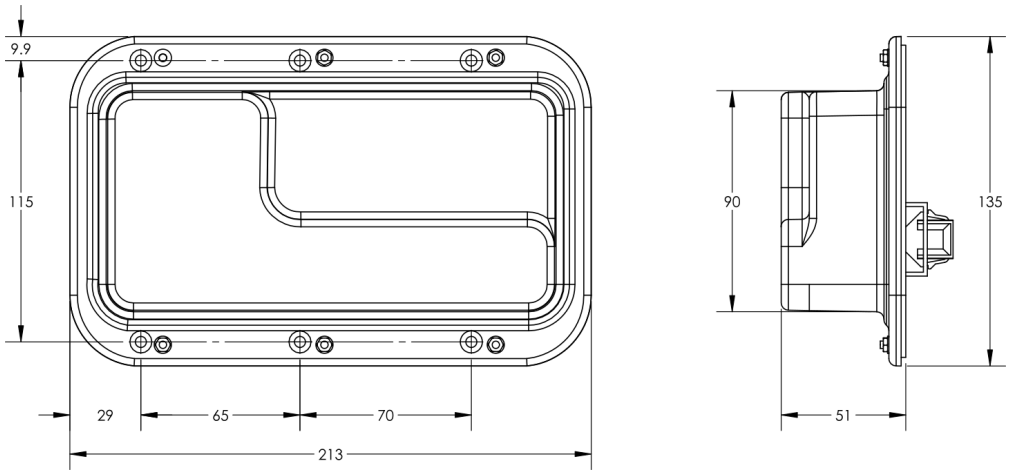
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V_{in}=24
Current Consumption Idle	10 mA at V_{in}=24

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.4 lbs (0.64 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



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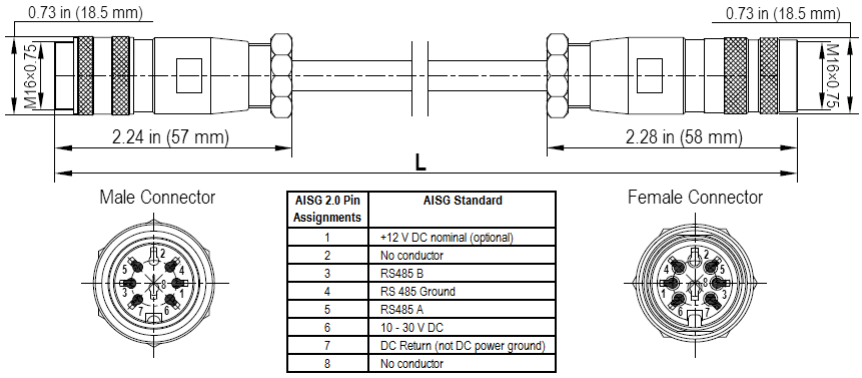
AISG Cable Kit

DPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-27	AISGC-M-F-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 Nm)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	
Length	27 in (686 mm)	120 in (3048 mm)
Weight	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

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ACCESSORIES

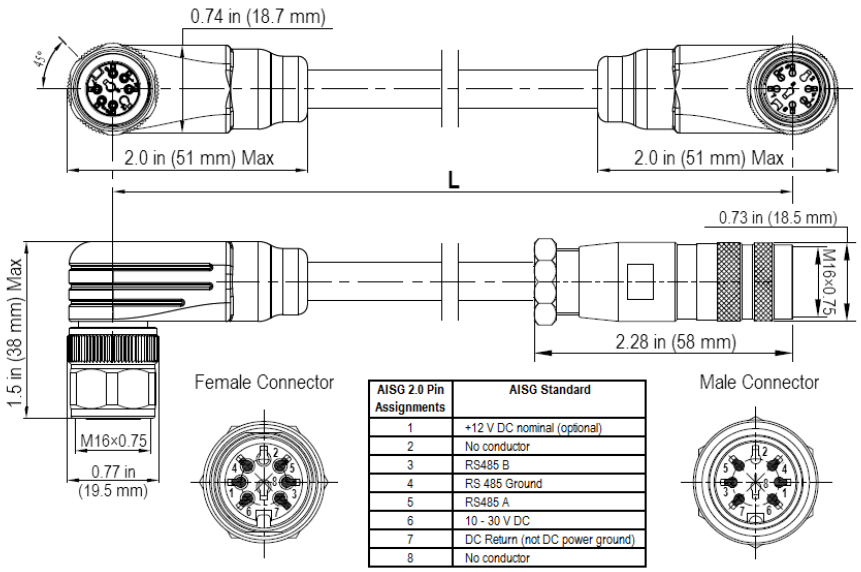
AISG Cable Kit

CBK-RA-AG-RRU-004

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables		RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-22	AISGC-MRA-FRA-36	AISGC-M-FRA-10FT
Cable style	UL2464		
Protocol	AISG 1.1 and AISG 2.0		
Maximum voltage	300 V		
Rated current	5 A at 104° F (40° C)		
Temperature Range	-40° to 80° C		
Flammability	UL 1581 VW-1		
Ingress Protection	IEC 60529:2001, IP67		
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5& Nm)		
Construction	Shielded (Tinned Copper Braid)		
Braid coverage	85%		
Jacket Material	Matte Polyurethane (Black)		
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464		
Cable Diameter	0.307 in (7.8 mm)		
Minimum bend radius	3.9 in (100 mm)		
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female		2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	22 in (559 mm)	36 in (914 mm)	120 in (3048 mm)
Weight	0.18 lbs (0.08 kg)	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	1	1	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

Right Angle to Right Angle and Right Angle to Straight Jumper Cable

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Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN 60529, IP 24

Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001:2008

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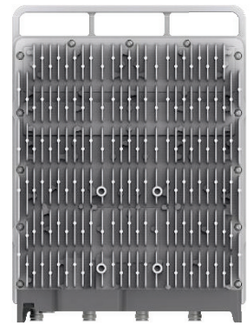
AIR 6449 B77D

- Advanced Antenna System (AAS)
- Support operation frequency range 3700-3980 MHz
- Up to 320W
- EIRP : 79 dBm (dual-polarization)
- Up to 200 MHz IBW & TCBW
- NR only
- Power consumption < 860W
- 4 x 25 Gbps eCPRI
- Weight: 81.6 pounds
- Weight with bracket: ~ 106 pounds
- Size (H x W x D): 30.39 x 15.87 x 8.07 inches
- -48 VDC (3-wire or 2-wire)
- -40 to +55˚C

RADIO 4449 DUAL BAND B5 & B12

Target PRA: 30 Oct 2018

- 4TX/4RX per Band (B5 & B12)
- 320W of total power
  - 4x40 W per band (4T4R in each band)
- Full IBW in each band
- Carrier BW:
  - 5, 10 MHz
- LTE: Max 6 carriers per port (DL), max 6 carriers per port (UL)
- CPRI Support:
  - 2.5; 4.9; 9.8; 10.1
- -48 VDC 3-wire (2-wire with adapter)
  - Two DC power ports of 20A
- AISG TMA & RET support via RS-485 or RF connectors
  - Bias-T only be supported on antenna port A and C.
- Four antenna connectors : 4 x 4.3-10 plus (f)
- 2 external alarm
- ~ 73 lb.
- ~33L (14.96” x 13.19” x 10.43”)
  (Preliminary, final figures in Mar 18 pending B12 filter design)
- IP 65, -40 to +55℃

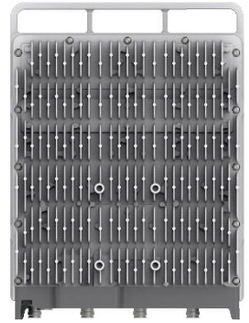


RADIO 8843 DUAL BAND B2 & B66A

Target PRA: Jun 30

- 4TX/4RX per Band (B2 & B66A)
- 320W of total power with three configuration options
  - 4x40 W per band (4T4R in each band)
  - Or 4x20W for B2 and 4x60W for B66A
  - Or 2x60W for B2 and 2x80W for B66A (2T4R in each band)
- Full IBW in each band
- Carrier BW:
  - 5, 10, 15, 20 MHz
- LTE: Max 3 carriers per port (DL), max 3 carriers per port (UL)
- CPRI Support:
  - 2.5; 4.9; 9.8; 10.1
- -48 VDC 3-wire (2-wire with adapter)
  - Two DC power ports of 20A
- AISG TMA & RET support via RS-485 or RF connectors
  - Bias-T only be supported on antenna port A and E.
- Eight antenna connectors : 8 x 4.3-10 plus (f)
  - 4 ports dedicated to B2 and 4 ports dedicated to B66A
- 2 external alarms
- ~ 75 lb.
- ~36L (14.96” x 13.19” x 11.1”)
- IP 65, -40 to +55℃

SW Baseline- 18.Q1
Supported on DUS41
and BB5216



RADIO 4478

The macro Radio 4478 is a 4T/4R radio supporting low bands with 4x40W output power. As part of the Ericsson Radio System portfolio Radio 4478 has best in class design when it comes to radio performance and power efficiency for wide area 3GPP radio products.

Radio 4478 has by use of its small and smart dimensions support for a wide range of mounting scenarios and provides a pioneering flexibility within its product segment with the One-bolt Installation. With Radio 4478 Ericsson evolves the macro radio part of the portfolio to become even more flexible and making it easier than ever to make small and efficient single and multi-band macro radio installations.

The Radio 4478 should preferably be located near the antenna and can be located up to 40 km from the baseband unit. A fiber optic cable can be used to connect the Radio 4478 to the baseband unit and several radio units can be connected in a cascade or star configuration.

Radio 4478 provides support for AISG TMA and RET towards the antenna system. LTE is supported with up to 6 carriers in MIMO. Four duplex (TX/RX) branches provide in-built support for MIMO, antenna calibration and TX/RX diversity.

Optional installation equipment for wall and pole mount is available. To support AC installations there will be optional Power Supply Units (PSU).

Technical specification for Radio 4478

FREQUENCY BANDS	
Bands:	3GPP FDD low bands (600-900 MHz)
HW CAPACITY	
Carrier capacity LTE:	Up to 6 carriers in MIMO
IBW:	Full band IBW
MIMO:	Yes, 4T4R
Output power:	Up to 4 x 40 W
INTERFACE SPECIFICATIONS	
Antenna ports:	4 x 4.3-10 (f)
External Antenna Line Device:	RET 2.0, using DIN 8 or over the antenna port. AISG TMA & RET support
CPRI:	2 x 2.5/4.9/9.8/10.1 Gbps (exchangeable SFP modules)
Optical indicators:	5
Maintenance button:	1
External alarms:	2 (using DIN 14) or optional fan unit
Field ground:	Dual lug
MECHANICAL SPECIFICATIONS	
Weight:	27 kg
Volume:	24 liter
Mounting:	Rail, wall and pole mount Fans needed when mounted in non-vertical direction
ELECTRICAL SPECIFICATIONS	
Power Supply:	-48 VDC (3-wire)
ENVIRONMENTAL SPECIFICATIONS	
Normal operating temp.:	-40 °C to +55 °C (cold start at -40 °C)
Environment:	Outdoor class with IP65

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HOMELAND TOWERS

EXHIBIT B

(Geotech and Tower/Foundation Structural; Slope Stability and Stormwater Management)

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Homeland Towers, LLC
9 Harmony Street, 2nd Floor
Danbury, Connecticut 06810

Attention: Mr. Raymond Vergati - Regional Manager
(Via email: rv@homelandtowers.us)

February 28, 2023

RE: W.O. 11869.01
GEOTECHNICAL INVESTIGATION
SITE NAME: NEW CANAAN NORTHWEST
PROPOSED 110-FOOT-HIGH MONOPOLE TOWER
1837 PONUS RIDGE ROAD
NEW CANAAN, FAIRFIELD COUNTY, CONNECTICUT

Dear Mr. Vergati:

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. (Tectonic) has performed a subsurface investigation and geotechnical engineering analyses for the proposed monopine (monopole) tower, and RF equipment and cabinets on concrete pads, at the above referenced site. This report presents our findings and recommendations for the design and construction of the foundations for the proposed tower and appurtenances.

1.0 DESIGN CONSIDERATIONS

The proposed tower is a monopole tower structure that will be used to mount communication antennas. It is expected that the monopole tower foundation will be subjected to relatively high overturning loads, whereas static compressive loads will be modest, in comparison. The actual loads from the monopole tower are to be determined by others.

In accordance with the publication entitled "Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures" (TIA-222-H), it shall be permissible to determine seismic design parameters from the ASCE 7 online Hazard Tool based on ASCE 7-16. Additionally, it is our understanding that the monopole tower is categorized as Risk Category II.

2.0 SITE DESCRIPTION

The proposed project site (site) is an irregularly shaped 3,000 square foot (sf) fenced gravel compound, within a 5,100-sf lease area, located at the above referenced address. The site is generally bound by heavily wooded, undeveloped land, on all sides. Per our review of a topographic survey prepared by Northeast Tower Surveying, Inc. (NTS), the general topography of the site slopes downward from northeast to southwest across the proposed lease area. Site grades across the lease area range from approximately +404 feet (northeastern edge) to +397.5 feet (southwestern edge). All elevations listed herein are in reference to the North American Vertical Datum of 1988 (NAVD88).

The proposed construction will include the monopole tower, equipment cabinets containing telecommunications equipment, a generator, and associated appurtenances. The proposed tower will be located toward the western portion of the lease area, with the equipment cabinets further to the northeast. The finished grade elevation at the base of the proposed tower is reported to be at approximately +394 feet and is located at 41° 10' 18.89"N, 73° 32' 36.90"W. Access to the site will be provided on a proposed 12-foot-wide, 500 foot long, gravel access driveway that connects directly to a paved driveway and Ponus Ridge Road.

Per the provided partial site plan drawing, up to approximately 5 feet of cut will be required to construct the tower and associated appurtenances with the lease area.

3.0 SUBSURFACE INVESTIGATION

The subsurface investigation consisted of advancing one (1) test boring, designated as B-1, located within the general footprint area of the proposed tower. Additionally, three (3) probes, designated as P-1 through P-3, were attempted along and within the general alignment of the proposed access road. The boring and probe locations are shown on the attached Boring and Probe Location Plan, Figure 1.

The boring and probes were performed by Core Down Drilling, LLC on January 30, 2023 using a CME 55 ATV-mounted drill rig, equipped with an automatic hammer. The borings and probes were advanced to depths up to approximately 12 feet below existing grade (bgs) using 3-1/4 inch diameter hollow stem augers. In boring B-1, Standard Penetration Testing (SPT) was performed using standard 2-inch diameter split-spoon samplers. SPT sampling was performed in general accordance with the requirements of ASTM Standard D1586 "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils". Field SPT N-values were recorded for each soil sample taken. Samples of the soil obtained during the investigation were collected and retained in glass jars and are currently stored at our material testing laboratory. Upon completion, the boring was backfilled with drill cuttings. SPT sampling was not completed in any of the probes. Groundwater conditions were monitored during and upon completion of drilling. When bedrock was encountered within boring B-1, an NX (2-inch inside diameter) double-tube core barrel, equipped with a diamond-impregnated core bit, was used to collect samples of the bedrock from the boring. A total of 10 feet of rock core was sampled in the boring from approximately 12 to 22 feet bgs.

All boring and probe inspection was performed by a Tectonic representative, working under the supervision of a Connecticut State licensed Professional Engineer. The boring and probes were field located by Tectonic, and the logs are attached.

4.0 SUBSURFACE CONDITIONS

The subsurface conditions encountered within the boring generally consisted of interbedded layers of silt and sand soils, with varying amounts of coarse to fine gravel, overlying bedrock. The following is a general description of the encountered subsurface conditions. Detailed descriptions can be found on the attached boring log.

As noted in Section 3 above, an automatic hammer was used by the driller to perform the standard penetration tests. An energy correction is typically applied to convert the field N-values measured with the automatic hammer to those of a safety hammer (N_{60}-values) – the standard used for most geotechnical engineering analyses. An automatic hammer typically applies approximately 1.3 times the energy to the soils that a safety hammer (because of its improved efficiency), and subsequently, a correction factor of 1.3 has been applied to the field N-values reported on the boring logs, to calculate the N_{60}-values reported herein.

Boring B-1 was advanced through overburden soils approximately 3-feet southeast of the tower center where bedrock was encountered at approximately 12 feet bgs. The soils encountered within this boring generally consisted of native silt and sand soils, with varying amounts of coarse to fine gravel. The field SPT N-value within the native soils ranged from 3 to 113 blows per foot (bpf), with a corresponding N_{60}-value of approximately 4 to 147 bpf, indicating a loose to very dense condition. Note should be taken that the loose layer was encountered from the ground surface to approximately 2 feet bgs, and the soils below this depth were encountered in a very dense condition. Split spoon sampler refusal, which is defined as less than 6 inches of sampler penetration for 50 blows of the hammer, was encountered at approximately 10 feet bgs.

Bedrock was cored in boring B-1 from approximate depths ranging from 12 to 22 feet bgs. Brown-white-pink, medium to highly fractured, medium to coarse grained, slightly to completely weathered, hard to very hard granitic gneiss bedrock, indicative of the Trap Falls parent formation, was encountered. Recovery (REC) ranged from approximately 90 to 92 percent with Rock Quality Designation (RQD) values ranging from approximately 51 to 54 percent, indicating fair rock quality. More detailed information can be found on the attached boring and rock probe logs, and approximate locations of the boring and rock probes can be found on the attached Boring and Rock Probe Location Plan.

The table below summarizes the approximate depths and elevations to bedrock/auger refusal in the borings and rock probes.

Boring (B) or Rock Probe (P) Designation	Approximate Surface Elevation (NAVD88) (1)	Total Depth Explored BGS (ft.)(1)	Approximate Bedrock/Auger Refusal Elevation (NAVD88)(1)
B-1	+399	22(2)	+387
P-1	+368	Not Completed(3)	NE
P-2	+352.5	6	NE
P-3	+343	6	NE

NE = Not Encountered

(1) Depths and elevations are approximate. Elevations are based on the NTS survey.

(2) Bedrock was cored in this boring from approximate depths ranging from 12 to 22 feet bgs (~ El. +387 to +367)

(3) An attempt was made to advance an auger probe at this location. However, during mobilization, it became apparent that due to the steep topography of the location, the drill rig could not be safely set up.

Saturated soil conditions were not encountered during drilling activities. Groundwater levels will fluctuate with variations in rainfall and with season and may be encountered in a perched condition within the fine grained soils or overlying bedrock.

5.0 SITE CLASS AND SEISMIC SITE COEFFICIENTS

Based on the results of the subsurface investigation and the criteria outlined in the current edition of the Connecticut State Building Code and TIA-222-H, the subsurface conditions underlying the site should be considered Class C. The associated seismic design parameters from the ASCE 7 are attached.

6.0 TOWER FOUNDATION RECOMMENDATIONS

Due to the presence of relatively shallow bedrock, it is recommended that the proposed tower be supported on a mat foundation (pad and pier). Recommendations for the mat foundation are provided below:

6.1 Mat Foundation Design Recommendations:

Based on a limited investigation of one boring and the potential for the bedrock depth to vary at the tower location in areas not yet explored, a single mat foundation should be sized using a maximum net allowable bearing capacity of 2 tons per square foot (tsf). This will alleviate the requirement to extend excavations to competent bedrock if foundations are not bearing completely on bedrock at the design bearing elevation. If bedrock is encountered at, or above, the proposed bottom of the mat bearing elevation within the foundation footprint, bedrock should be undercut by a minimum of 1 foot and should extend at least 2 feet laterally on each side of the footing. The subgrade in the undercut area, and throughout the entire area of the zone of influence of the foundations (defined as 1:1 (horizontal to vertical) planes sloping downward and outward from the bottom edges of the mat) should be reestablished with compacted structural fill.

The dimensions and depth of embedment of the foundation should be established by the design engineer to provide sufficient resistance to the design loads. We recommend that the mat be founded at a minimum depth of at least 6 feet, which also satisfies the requirements for frost protection. Bedrock was encountered within the general area of the tower footprint at a depth of approximately 12 feet bgs, corresponding to an approximate elevation of +387 feet. Based on the subsurface conditions encountered, the mat should be designed to bear on the very dense native sand soils.

The foundation subgrade should be confirmed by the Tectonic geotechnical engineer prior to placing any steel or concrete, and prior to performing any other construction activities, other than excavation. The calculation of sliding resistance at the base of the mat should incorporate a sliding (friction) coefficient of 0.45 for concrete cast directly against the very dense native sand subgrade, or structural fill . The passive earth pressure resistance along the sides of the foundation can be calculated using the following properties.

Lateral Parameters	Native Soil / Structural Fill
γ	125
K_p	3.54
ϕ	34°

Where,

γ = design unit weight of soil (pounds per cubic foot).
ϕ = angle of internal friction (degrees).
K_p = passive earth pressure coefficient.

Based on the information gathered during drilling activities, groundwater is not anticipated to impact the design of the mat; however, may be encountered in a perched condition during excavation.

6.2 Mat Foundation Construction Considerations

The foundation subgrade should be prepared by excavating to the bearing depth using hydraulic excavation equipment and using hand equipment to remove all soil and broken rock materials loosened by excavation. The subgrade should then be inspected by the geotechnical engineer to verify that the materials are consistent with those described in this report. Any unsuitable materials (soil or rock other than those recommended for bearing) should be removed as directed by the geotechnical engineer.

Bedrock, if encountered above the subgrade elevation, should be removed to create a level bearing surface. Contractors involved in the excavation for the foundation should be prepared for the need for rock removal.

Any new fill slopes should be constructed on a slope inclination no steeper than 3 to 1 (Horizontal to Vertical) unless a detailed slope stability evaluation is performed. The sides of the excavation should be sloped back for safety unless a sheeting or bracing system is used. OSHA and other applicable agency requirements pertaining to worker safety should be met during the excavation activities.

7.0 EARTHWORK CONSTRUCTION CRITERIA

The following sections present our recommendations regarding earthwork and construction monitoring.

7.1 General Site Preparation

Initially, the site should be stripped of all topsoil-like material and organics, debris, and vegetation. Debris and vegetation from the clearing operations should be removed from the site and disposed of at a legal dump site. All soft or unsuitable native materials, and subsurface obstructions, should be removed from the mat foundation footprint.

If encountered, any existing utilities within the project limits should be excavated and re-routed or removed. The resulting excavations should be backfilled with structural fill in accordance with the procedures outlined in Section 7.4. Trench excavations should be properly benched to allow for adequate compaction.

7.2 Rock Excavations

Excavation of rock, if required, should be performed in a manner that will minimize damage to underlying bedrock. Contractors involved in the excavation for the foundation should be prepared for the need for rock removal. The feasibility and methodology for rock removal should be developed by an experienced qualified contractor or a specialist and it should be performed in a manner that will minimize damage to underlying bedrock that will serve as foundation subgrades.

Where feasible, rock excavation should be performed by ripping techniques. Other methods, including controlled blasting, hydraulic hoe-ramming, rock trenching, or expansive chemical grout, should also be considered as potential means for the rock excavation. It should be noted that blasting of the rock is feasible, if required. If blasting is selected, it should be performed by a qualified contractor in accordance with all applicable standards. In addition, local permits will likely be required for blasting. Rock removal

should also be conducted in a manner that will minimize ground vibrations at adjacent structures. Final and temporary cuts in bedrock should be thoroughly scaled to remove any loose rock blocks.

7.3 Foundation and Subgrade Preparation

All subgrades should be inspected by the Tectonic geotechnical engineer prior to the placement of structural fill, steel, or concrete. The foundation subgrade should be prepared by excavating to the bearing depth using hydraulic excavation equipment.

Mat subgrades should be proofrolled under the observation of the geotechnical engineer. Proofrolling should be accomplished by making a minimum of 4 passes in perpendicular directions with a 10-ton roller in open areas and a 1.5-ton trench roller where access is confined. Proofrolling should not be performed on saturated soils, or in areas having freestanding surface water, until they are allowed to sufficiently dry. Proofrolling soils that exceed the optimum moisture content may result in more unfavorable conditions. The subgrade should then be inspected by the geotechnical engineer to verify that the materials are consistent with those described in this report. Any unsuitable materials (soil other than those recommended for bearing) should be removed and replaced with structural fill as directed by the geotechnical engineer. The area of removal should be within the zone of influence of the foundation, which is defined by imaginary lines sloping downward and outward from the bottom edge of the foundation at a 1 to 1 (Horizontal to Vertical) slope. After the soil subgrade has been inspected and approved by the geotechnical engineer, an approximate 4 inch layer of free draining (Item #57 or similar) crushed stone can be placed to protect the subgrade and act as a working platform during construction.

7.4 Fill and Backfill Materials

The existing native soils, due to their high fines content, are not suitable for structural or backfill material, but may be used as general fill in landscape areas. Imported structural fill for construction of the proposed gravel access driveway should consist of clean imported on-site sand, gravel, crushed stone, crushed gravel, or a mixture of these, and should contain no organic matter. Structural fill materials should meet the gradation for as specified in the Connecticut State Department of Transportation (CTDOT) Standard Specifications Section M.02, Grading "B" material, and as recommended below.

Sieve Size	Percent Finer by Weight
5-inch	100
3-1/2-inch	90-100
1-1/2-inch	55-95
1/4-inch	25-60
No. 10	15-45
No. 40	5-25
No. 100	0 - 10
No. 200	0 – 5

All structural fill should be compacted to at least 95 percent of the maximum dry density at near optimum moisture contents as determined by ASTM Standard D1557, *"Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))".* The lift thickness for the fill soils will vary depending on the type of compaction equipment used. Fills should generally be placed in uniform horizontal lifts not exceeding 8 inches in loose thickness in open areas. In confined

areas, the loose lift thickness should be reduced to 4 inches or less and each lift should be compacted with sufficient passes of hand operated vibratory or impact compaction equipment.

A geotechnical engineer with appropriate field and laboratory support should approve materials for use as fill, and test backfill materials for compliance with the recommended compaction. Each lift of fill placed at the site should be tested for compaction.

If required, free draining crushed stone placed below concrete pads should be CTDOT Standard Specifications Section M.02, Grading "C" material, and as recommended below and as follows:

Sieve Size	Percent Finer by Weight
1-1/2-inch	100
3/4-inch	45-80
1/4-inch	25-60
No. 10	15-45
No. 40	5-25
No. 100	0 - 10
No. 200	0 - 5

7.5 Construction Dewatering and Protection of Subgrades

Approved subgrades should be protected from the effects of frost, construction traffic, perched groundwater, surface water, and precipitation. The necessary protection should be provided as soon after acceptance, as is practicable, and should be maintained until coverage with compacted fill or concrete. It is recommended that temporary surface drainage measures be installed to divert runoff away from the proposed construction limits.

If water is encountered in excavations, dewatering should be performed in a manner that will prevent loosening or migration of the subgrade soils. The operation of sumps directly in the footing excavations should not be allowed. Sump pits should be placed at least 1 foot outside of foundation excavations for every foot below the foundation subgrade elevation that they excavated. As per our field observations, the on-site soils were observed to contain significant amounts of silt, which make them moisture sensitive. They will readily soften and experience a reduction in load-carrying capacity when exposed to moisture. These soils are also frost susceptible and will experience expansion and contraction during freeze-thaw cycles.

7.6 Excavations, Shoring and Slopes

Temporary excavation slopes, if required, should conform to the latest OSHA standards, including slopes permitted for specified heights and soil conditions encountered. OSHA and other applicable agency requirements pertaining to worker safety should be met during the excavation activities. Excavations into the native soil should be feasible utilizing standard construction equipment (i.e., hydraulic excavator). Design of dewatering and excavation support, if required, should conform to the latest OSHA and other applicable agency requirements.

Based on our review of the partial site plan provided, it appears that construction of the proposed lease area and gravel access drive/drainage features will require the construction of slopes with up to more than 10 feet of cuts into the existing topography at slope ratios as steep as 2:1 (horizontal to vertical). It

should be noted that the scope of our surface investigation and geotechnical study did not include evaluation of the proposed slopes and associated stability. It is also unknown if rock will be encountered within the proposed cuts. Additional investigation and slope stability analysis is recommended and can be provided as an additional scope upon request.

8.0 LIMITATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers and geologists practicing in this or similar situations. The interpretation of the field data is based on good judgment and experience. However, no matter how qualified the geotechnical engineer or detailed the investigation, subsurface conditions cannot always be predicted beyond the points of actual sampling and testing. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The recommendations contained in this report are for design purposes only. Contractors and others involved in this project are advised to make an independent assessment of the subsurface conditions for the purpose of estimating quantities and scheduling. No warranty, express or implied, is made as to the advice provided in this report.

This report has been prepared for the exclusive use of Homeland Towers, LLC. for the specific application to the proposed monopole installation detailed in this report. If any changes in the design or location of the proposed monopole is planned, the conclusions and recommendations contained in this report shall not be considered valid unless reviewed and verified in writing by Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. It is recommended that Tectonic be retained to provide construction monitoring and inspection services to ensure proper implementation of the recommendations contained herein, which would otherwise limit our professional liability.

We trust this report will allow you to proceed with design of the proposed foundations.

Sincerely,

TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C.

STATE OF CONNECTICUT MARK A. STIER No. 22358 REGISTERED PROFESSIONAL ENGINEER

Mark A. Stier, P.E., PG
Executive Vice President

CDF/MAS: "G:\Newburgh\Geotechnical\11800\11869.01 Homeland Towers New Canaan Northwest\Report\11869.01.Geo.Report.docx"

Attachments: Figure 1 – Boring and Rock Probe Location Plan
Boring and Rock Probe Logs
Soil Legend Sheet
ASCE 7-16 Seismic Design Parameters

LEGEND

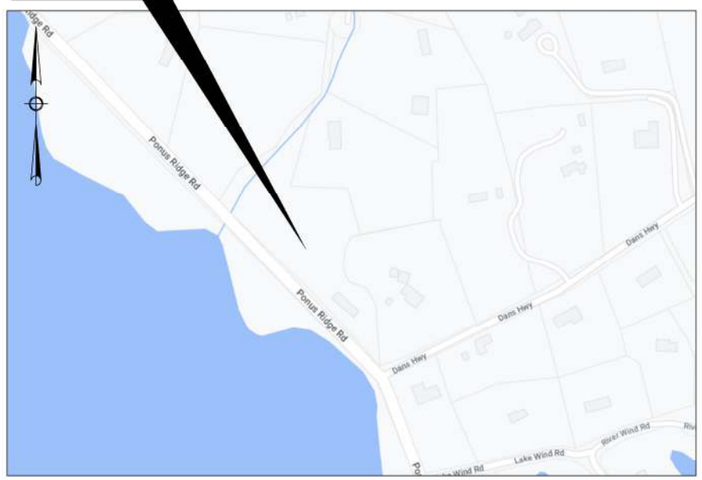
B-4 — APPROXIMATE BORING LOCATION

P-3 — APPROXIMATE PROBE LOCATION

NOTES

1. PLAN BASED ON A DRAWING PROVIDED BY THE CLIENT, TITLED "PARTIAL SITE PLAN", SHEET SP-2, DATED 04/04/2022.
2. BORING AND PROBE LOCATIONS WERE FIELD LOCATED BY TECTONIC AND SHOULD BE CONSIDERED APPROXIMATE.

SITE



0 1 2 3

ORIGINAL SIZE IN INCHES

Tectonic

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Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.
70 Pleasant Hill Road — Phone: (845) 534-5959
P.O. Box 37 — (800) 829-6531
Mountainville, NY 10953 — www.tectonicengineering.com

Project Contact Info
1279 Route 300
Newburgh, NY 12550 — Phone: (845) 567-6656

BORING AND PROBE LOCATION PLAN

PROPOSED 125-FOOT HIGH MONOPINE TOWER
1837 PONUS RIDGE ROAD
NEW CANAAN, FAIRFIELD COUNTY, CONNECTICUT

Date	Work Order	Drawing No.	Rev
02/02/23	11869.01	FIGURE 1	0
Scale 1" = 40'			

Tectonic

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**

BORING No. B-1

SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **12'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | **2"** | **12** TO **22'**
CME 55 with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

INSPECTOR: **Garrett Masterson**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **399.0**
MON. WELL ☐ YES ☒ NO
DATUM: **See Remarks**
SCREEN DEPTH: **---** TO **---**
DATE START: **1/30/23**
WEATHER: **Clear** TEMP: **50° F**
DATE FINISH: **1/30/23**
DEPTH TO ROCK: **12'**
*CHANGES IN STRATA ARE INFERRED

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	3	WOH 1 2 3	S-1	10		M	ML	4" Topsoil like material Bwn SILT, and f Sand, trace c Gravel, trace organics		
3	47	5 13 34 68/4	S-2	16		M	ML	Bwn-wh SILT, and c-f Sand, little c-f Gravel		
5										394.0
7	113	54 58 55 49	S-3	20		M	SM	Wht-bwn c-f SAND, and c-f Gravel, little Silt		113
9	111	34 70 41 50/4	S-4	20		M	SM	Wht-bwn c-f SAND, and c-f Gravel, little Silt		111
10										389.0
13	2.5 2.5 2.0 2.5 2.0		C-1	54/60	54			Bwn-wht-pk, fresh, completely weathered, highly fractured, course grained, very hard to hard GRANITIC GNEISS		
15										384.0
18	2.0 2.5 2.5 3.0 3.0		C-2	55/60	51			Blk-wht slightly-completely weathered, medium-highly fractured, course grained, very hard to hard GRANITIC GNEISS		
20										379.0
22								End of Boring at 22'		
25										374.0

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01.GPJ TECTONIC ENG.GDT 2/27/23

Tectonic

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**

BORING No. P-1

SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | | TO
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Clear** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Garrett Masterson**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **368.0**
DATUM: **See Remarks**
DATE START: **1/30/23**
DATE FINISH: **1/30/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓ 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
● STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1								Attempt was made but topography of the location was too steep to safely set up the drill rig and advance auger probe.		
2										
3										
4										
5										363.0
6										
7										
8										
9										
10										358.0
11										
12										
13										
14										
15										353.0
16										
17										
18										
19										
20										348.0
21										
22										
23										
24										
25										343.0

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01.GPJ TECTONIC ENG.GDT 2/27/23

Tectonic

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**

BORING No. P-2

SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **6'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Garrett Masterson**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **352.5**
DATUM: **See Remarks**
DATE START: **1/30/23**
DATE FINISH: **1/30/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓ 1 2 3 4 5
PLASTIC LIMIT % × — WATER CONTENT % ⊗ — LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1								Drilled to 6 feet. No SPT sampling.		
2										
3						M	SM	Bwn f SAND, and Silt, little f Gravel, trace Organics		
4										
5										347.5
6										
7								End of Boring at 6'		
8										
9										
10										342.5
11										
12										
13										
14										
15										337.5
16										
17										
18										
19										
20										332.5
21										
22										
23										
24										
25										327.5

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01.GPJ TECTONIC ENG.GDT 2/27/23

Tectonic

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**

BORING No. P-3

SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **6'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
| | | |

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Garrett Masterson**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **343.0**
DATUM: **See Remarks**
DATE START: **1/30/23**
DATE FINISH: **1/30/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % ✕ WATER CONTENT % ⊗ LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1								Drilled to 6 feet. No SPT sampling.		
2										
3						M	ML	Bwn SILT, little f Sand, trace Organics		
4										
5										338.0
6								End of Boring at 6'		
7										
8										
9										
10										333.0
11										
12										
13										
14										
15										328.0
16										
17										
18										
19										
20										323.0
21										
22										
23										
24										
25										318.0

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01.GPJ TECTONIC ENG.GDT 2/27/23

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LEGEND FOR SOIL DESCRIPTION

COARSE GRAINED SOIL (Coarser then No. 200 Sieve)

DESCRIPTIVE TERM & GRAIN SIZE

TERM	SAND					GRAVEL
coarse - c	No.	4	Sieve to No.	10	Sieve	3" to 3/4"
medium - m	No.	10	Sieve to No.	40	Sieve	3/4" to 3/16"
fine - f	No,	40	Sieve to No.	200	Sieve	

COBBLES 3" to 10"

BOULDERS 10" +

GRADATION DESIGNATIONS	PROPORTIONS OF COMPONENT
fine, f	Less than 10% coarse to medium
medium to fine, m-f	Less than 10% coarse
medium, m	Less than 10% coarse and fine
coarse to medium, c-m	Less than 10% fine
coarse, c	Less than 10% medium and fine
coarse to fine, c-f	All greater than 10%

FINE GRAINED SOIL (Finer than No. 200 Sieve)

DESCRIPTION	PLASTICITY INDEX	PLASTICITY
Silt	0 - 1	none
Clayey Silt	2 - 5	slight
Silt & Clay	6 - 10	low
Clay & Silt	11 - 20	medium
Silty Clay	21 - 40	high
Clay	greater than 40	very high

PROPORTION

DESCRIPTIVE TERM	PERCENT OF SAMPLE WEIGHT
trace	1 - 10
little	10 - 20
some	20 - 35
and	35 - 50

The primary component is fully capitalized

COLOR

Blue - blue	Gy - gray	Wh - white
Blk - black	Or - orange	Yl - yellow
Bwn - brown	Rd - red	Lgt - light
Gn - green	Tn - tan	Dk - dark

SAMPLE NOTATION

S - Split Spoon Soil Sample
U - Undisturbed Tube Sample
C - Core Sample
B - Bulk Soil Sample
NR - No Recovery of Sample

WOC - Weight of Casing
WOR - Weight of Rods
WOH - Weight of Hammer
PPR - Compressive Strength based on Pocket Penetrometer
TV - Shear Strength (tsf) based on Torvane

ADDITIONAL CLASSIFICATIONS

New York City Building Code soil classifications are given in parentheses at the end of each description of material, if applicable. See sections 1804.2 of the 2008 Building Code for further details.

11869.01

1837 Ponus Ridge Rd, New Canaan, CT 06840, USA

Latitude, Longitude: 41.171001, -73.5432625

Date	2/28/2023, 6:12:20 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	C - Very Dense Soil and Soft Rock

Type	Value	Description
S_S	0.259	MCE_R ground motion. (for 0.2 second period)
S_1	0.058	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.336	Site-modified spectral acceleration value
S_{M1}	0.088	Site-modified spectral acceleration value
S_{DS}	0.224	Numeric seismic design value at 0.2 second SA
S_{D1}	0.058	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.3	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.155	MCE_G peak ground acceleration
F_{PGA}	1.245	Site amplification factor at PGA
PGA_M	0.193	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.259	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.274	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.058	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.062	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.155	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.942	Mapped value of the risk coefficient at short periods
C_{R1}	0.937	Mapped value of the risk coefficient at a period of 1 s
C_V	0.759	Vertical coefficient

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Homeland Towers, LLC
9 Harmony Street, 2nd Floor
Danbury, Connecticut 06810

Attention: Mr. Raymond Vergati, Regional Manager
via email: (rv@homelandtowers.us)

July 28, 2023

RE: W.O. 11869.01
SUPPLEMENTAL GEOTECHNICAL ENGINEERING SERVICES
HOMELAND TOWERS – NEW CANAAN NORTHWEST
SLOPE STABILITY ANALYSIS
1837 PONUS RIDGE ROAD
NEW CANAAN, FAIRFIELD COUNTY, CONNECTICUT

Dear Mr. Vergati:

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. (Tectonic) has completed a supplemental subsurface investigation and geotechnical engineering evaluation for the proposed slope to the south of the proposed tower, at the above-mentioned location. The purpose of this investigation was to evaluate the subsurface conditions and to provide geotechnical recommendations for the proposed slope. This report presents our findings and recommendations.

1.0 SCOPE OF SERVICES

The following services were performed for Homeland Towers LLC, herein referred to as Client:

- Review of background information provided by the Client.
- Review of the geotechnical report provided by Tectonic, dated February 28, 2023.
- Drilling, sampling, and logging of two (2) borings to depths up to 14.5 feet below existing grade (bgs).
- Field inspection by a Tectonic representative, working under the purview of a New York State licensed Professional Engineer, to locate the borings, and log and classify all soil samples.
- Geotechnical engineering analyses of the subsurface conditions as they relate to evaluating the potential stability of the slope.
- Preparation of this supplemental geotechnical letter report presenting the results of the supplemental subsurface investigation, engineering analyses, and our geotechnical recommendations for the design and construction of the proposed slopes.

2.0 SITE AND PROJECT DESCRIPTION

The project site is located at 1839 Ponus Ridge Road, in the Town of New Canaan, Fairfield County, Connecticut. The site is an irregularly shaped 3,000 square foot (sf) fenced gravel compound, within a 5,100-sf lease area. The site is generally bound by heavily wooded, undeveloped land on all sides. Per our review of a topographic survey prepared by Northeast Tower Surveying, Inc., the general topography of the site slopes downward from north to south. It should be noted that bedrock outcroppings were observed throughout the site, particularly within the eastern portion of the site, near the site entrance adjacent to Ponus Ridge Road. All elevations referenced herein are per the North American Vertical Datum of 1988 (NAVD88).

Based on the drawing provided by the Client, entitled "Partial Site Plan", drawing SP-2, dated April 4, 2022, the proposed project will include the re-grading of slopes adjacent to the proposed access road. The most significant re-grading will occur to the south of the lease area. Minor re-grading is proposed on the western portion of the site, to the west of the proposed access road. The proposed slope to be re-graded is located approximately 65 feet south of the lease area, as outlined in the Tectonic geotechnical report, issued in February 2023. Based on the topographic survey, existing elevations along the slope range from between approximately +395 feet, to approximately +344 feet. The existing slopes range between approximately 1H:1V (horizontal to vertical), up to approximately 2H:1V. The proposed re-grading will reportedly consist of cutting the existing slope, and flattening to approximately 2H:1V. Based on the provided grading plan, cuts within the slope are proposed to be between approximately 5 to 10 feet. The purpose of the geotechnical engineering analyses was to determine the feasibility of re-grading the slopes as proposed, and to determine the overall stability of the proposed slope.

3.0 SUBSURFACE INVESTIGATION

The subsurface investigation consisted of the drilling, sampling, and logging of two (2) borings, designated as borings B-2 and B-3. It should be noted that as part of the previous subsurface investigation, one (1) boring, designated as B-1 was advanced within the lease area, and three (3) probes were advanced adjacent to the proposed access road, within the proposed riprap basins. Boring B-2 was advanced near the top, and boring B-3 was advanced near the toe, of the re-graded slope. The slope stability cross section was selected generally between the two boring locations. The locations of the borings and cross section are shown on the attached Boring and Cross Section Location Plan, Figure 1.

The borings were performed by Limited Access Drilling Services, Inc. on June 29, 2023, using an Acker Recon track-mounted drill rig, equipped with an automatic hammer. The borings were advanced using 3-¼-inch inside diameter hollow-stem augers. Standard Penetration Testing (SPT) and split-spoon sampling were generally performed continuously to a total depth of up to 9.5 feet. SPT sampling was performed in general accordance with the requirements of ASTM Standard D1586 *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*. SPT N-values were recorded for each soil sample taken. Samples of the soil obtained during the investigation were collected and retained and are currently stored at our material testing laboratory. Upon completion, the boreholes were backfilled with drill cuttings to match the existing conditions.

All drilling, sampling, and logging of the borings were observed on a full-time basis by a Tectonic representative, working under the supervision of a Professional Engineer licensed in the State of Connecticut. The representative observed the subsurface investigation, classified soil samples as they were recovered, collected representative soil samples, and prepared logs of the soil, groundwater, and bedrock conditions encountered. The materials encountered were classified in accordance with the Unified Soil Classification System (USCS) (ASTM D2488), and the modified Burmister Classification System. Copies of the boring logs are attached to this report.

4.0 SUBSURFACE CONDITIONS

A review of USGS and Connecticut geologic maps indicates that the site is generally underlain by gravelly sand loam, underlain by relatively shallow gneiss bedrock. The following subsections provide generalized descriptions of the soil, groundwater, and bedrock conditions.

As noted above, an automatic hammer was used in the SPT sampling of the borings. Given that an automatic hammer imparts more energy into the split spoon sampler than a safety hammer (N_{60}); the standard hammer used for most geotechnical engineering calculations; an energy correction factor of 1.3 is applied to the field N-values to obtain the N_{60}-values.

4.1 Native Soils

Underlying approximately 6 inches of topsoil-like material, native glacial till soils were encountered to depths of between 3 and 9.5 feet bgs. The native soils generally consisted of variable-colored coarse-to-fine sand, with varying amounts of coarse-to-fine gravel and fines. It should be noted that weathered rock was observed within the split-spoon samples at the termination depth within both borings.

Field SPT N_{60}-values within the native soils ranged from approximately 4 blows per foot (bpf) to sampler refusal, which is defined as less than 6 inches of sampler penetration for 50 blows of the hammer. In general, the native soils were observed in a dense to very dense condition. Within the borings, the upper 2 feet of soil were observed in a loose condition. The native soils have a USCS designation of SM.

4.2 Bedrock

Based on the conditions observed within the borings, bedrock elevations are highly variable throughout the site. Underlying the native soils, bedrock was observed at depths between approximately 3 and 9.5 feet bgs, corresponding to an elevation of approximately +382 feet within boring B-2, and +350.5 feet within boring B-2. It should be noted that bedrock was observed at a depth of approximately 12 feet bgs, corresponding to an elevation of +387 feet within boring B-1. The bedrock generally consisted of gray-pink, highly weathered, moderately to highly fractured, coarse-grained, hard gneiss. Recovery (REC) ranged from 67 to 88 percent, and rock quality designation (RQD) ranged from approximately 20 to 38 percent, indicating the rock is of very poor to poor quality. It should be noted that due to the site topography, the depth of bedrock should be considered highly variable, and may vary from what was encountered in the borings.

4.3 Groundwater

Groundwater was not encountered within any of the borings, which extended to depths up to 9.5 feet. It should be noted that groundwater levels will fluctuate with variations in rainfall and with season and could be encountered in a perched condition over the bedrock.

5.0 DISCUSSION AND CONCLUSIONS

It is our understanding that the site improvements will include the construction of a new monopole tower within the lease area, the construction of an access road between Ponus Ridge Road and the lease area, and the re-grading of the slope between the lease area and the access road. Significant re-grading of the steep slopes to

the south of the lease area are proposed. The existing slopes range from between approximately 1H:1V to 2H:1V, and are proposed to be cut between 5 and 10 feet, and graded to approximately 2H:1V throughout.

To determine the stability of the proposed re-graded slope, the primary method of evaluation is to perform slope stability analyses. Slope stability analyses involves developing a soil and bedrock profile from the results of our subsurface investigations, as described above, and then applying it to topographic data from the site, to produce a representative cross-section of the slope.

One (1) cross section was evaluated to the south of the lease area generally between the two boring locations, shown on the Boring and Cross-Section Location Plan, Figure 1. Four (4) models were created in the slope stability analysis program SLIDE 2 to evaluate the proposed slope configuration. The identified models are defined as follows:

- Group 1: Based on depth to bedrock encountered in the borings and proposed grading.
- Group 2: Based on proposed grading coupled with bedrock deepened approximately 3 feet across the slope.
- Group 3: Similar to Group 1 with weaker soil layers overlying bedrock.
- Group 4: Similar to Group 1 with bedrock stepped 1 foot deeper every 10 feet along the slope.

See the attached "Homeland Towers – New Canaan, CT, Cross Section A-A" report, attached to this report, for details about the material properties and various soil layer geometries used in our analysis.

The results of our stability analyses suggest that the proposed configuration is stable against deep seated failures. Based on the proposed cuts to the slope, it is anticipated that the overburden soils would be excavated, and the underlying bedrock would be exposed, particularly at the top of the slope, where bedrock was observed closer to the surface. It should be noted that exposed bedrock outcroppings were observed throughout the project site, particularly within the eastern portion of the site, so it is anticipated that bedrock may be relatively shallow elsewhere. Where competent bedrock is encountered above the proposed slope elevation, the uncovered bedrock may remain, which would reduce the overall amount of excavation. It should be noted that weathered bedrock was observed within both borings, so some excavation of the weathered bedrock is anticipated to be required. To help understand the effect of the variable nature of the bedrock, several scenarios were modeled, which all indicated factors of safety greater than 1.3 for the final configuration. The models suggest that by removing the overburden soils, the potential failure planes are cut off by the resulting shallow bedrock.

The following are other general conclusions that can be made regarding the proposed improvements:

- Excavations into the native soils along the face of the slope should be feasible utilizing conventional heavy-duty construction equipment. Bedrock was relatively shallow, particularly at the top of the slope, and is anticipated to be encountered to grade the slope to the proposed elevations.

- If required, excavation of the rock is anticipated to require heavy-duty, excavator-mounted hydraulic hammers, or controlled blasting techniques. The upper weathered bedrock observed in the borings may be able to be excavated using ripping techniques.

- Groundwater was not observed within any of the borings, but perched groundwater may be encountered during construction.

- The results of the slope stability analyses indicate that the slopes are anticipated to be stable as proposed.

6.0 EARTHWORK CONSTRUCTION CRITERIA

The following sections present our recommendations for earthwork.

6.1 General Site Preparation

Initially, the proposed slopes should be cleared and grubbed, then stripped of all topsoil, surface obstructions, trees, and roots. Debris from the clearing operations should be removed from the site and disposed of at a legal disposal facility.

6.2 Rock Excavation

Based on the provided grading plan, it is anticipated that rock removal may be required. Excavation of rock should proceed in a manner that will minimize damage to underlying bedrock. Where encountered, excavation of the upper highly weathered bedrock should be performed by ripping techniques, or with heavy-duty, excavator-mounted hydraulic hammers. Ripping techniques may only be feasible through any upper highly weathered bedrock. It is recommended that competent bedrock remains where encountered above the proposed slope grades.

If necessary, blasting of rock may also be employed as method of rock removal, if approved by the Town of New Canaan. If used, blasting should be performed by a qualified contractor licensed and insured for use of explosives, and it should be performed in a manner that will minimize damage to the underlying bedrock. Blasting should be conducted in a manner to limit the amount of air overblast and flyrock.

Final and temporary cuts in bedrock should be thoroughly scaled to remove any loose rock blocks. If there is to be separate payment for soil and rock excavation, we recommend that rock be defined in the specifications as follows:

> Rock is defined for payment purposes as indurated material, boulders over one (1) cubic yard in volume and masonry or concrete that cannot be broken or removed by mechanical equipment such as power shovels, scoops, excavators, or heavy-duty ripping equipment at least as powerful as a Caterpillar D9L with a Kelly Ripper KR400D-1 single shank ripper attachment and without the use of explosives or drills. The classification does not include materials that can be removed by means other than drilling and blasting or drilling and wedging but which, for reasons of economy in excavating, the Contractor prefers to remove by drilling and blasting.

6.3 Excavations and Slope Construction

Temporary excavation slopes, should conform to the latest OSHA standards, including slopes permitted for specified heights and soil conditions encountered. The onsite soils should be considered OSHA Type C. Excavations into the existing soils should be feasible using standard construction equipment (i.e., hydraulic excavators).

Based on our review of the partial site plan, cuts of between 5 and 10 feet are proposed along the face of the existing slope. The scope of the subsurface investigation was limited due to the topography of the site, but it is anticipated that bedrock may be encountered above the proposed elevation in certain areas, particularly within the northern portion of the slope. Where competent bedrock is encountered above the proposed elevation, the rock should remain rather than over-excavating. Weathered bedrock encountered above the proposed slope elevation should be excavated. Prior to the placement of erosion control devices on the final slope face, all loose rock, cobbles, boulders, roots, and tree stumps should be removed from the slope.

7.0 LIMITATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers and geologists practicing in this or similar situations. The interpretation of the field data is based on good judgment and experience. However, no matter how qualified the geotechnical engineer or detailed the investigation, subsurface conditions cannot always be predicted beyond the points of actual sampling and testing. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The recommendations contained in this report are intended for design purposes only. Contractors and others involved in the construction of this project are advised to make an independent assessment of the subsurface conditions for the purpose of establishing quantities, schedules and construction techniques.

This report has been prepared for the exclusive use of the Client and their designees for the specific application to the proposed construction described in this report. We recommend that, prior to construction, Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. review the project plans and specifications. It should be noted that upon review of those documents, some recommendations presented herein might be revised or modified. If any changes in the design or location of the proposed structures are planned, Tectonic shall not consider the conclusions and recommendations contained in this report valid unless reviewed and verified in writing. It is further recommended that Tectonic be retained to provide construction monitoring and inspection services to ensure proper implementation of the recommendations contained herein, which would otherwise limit our professional liability.

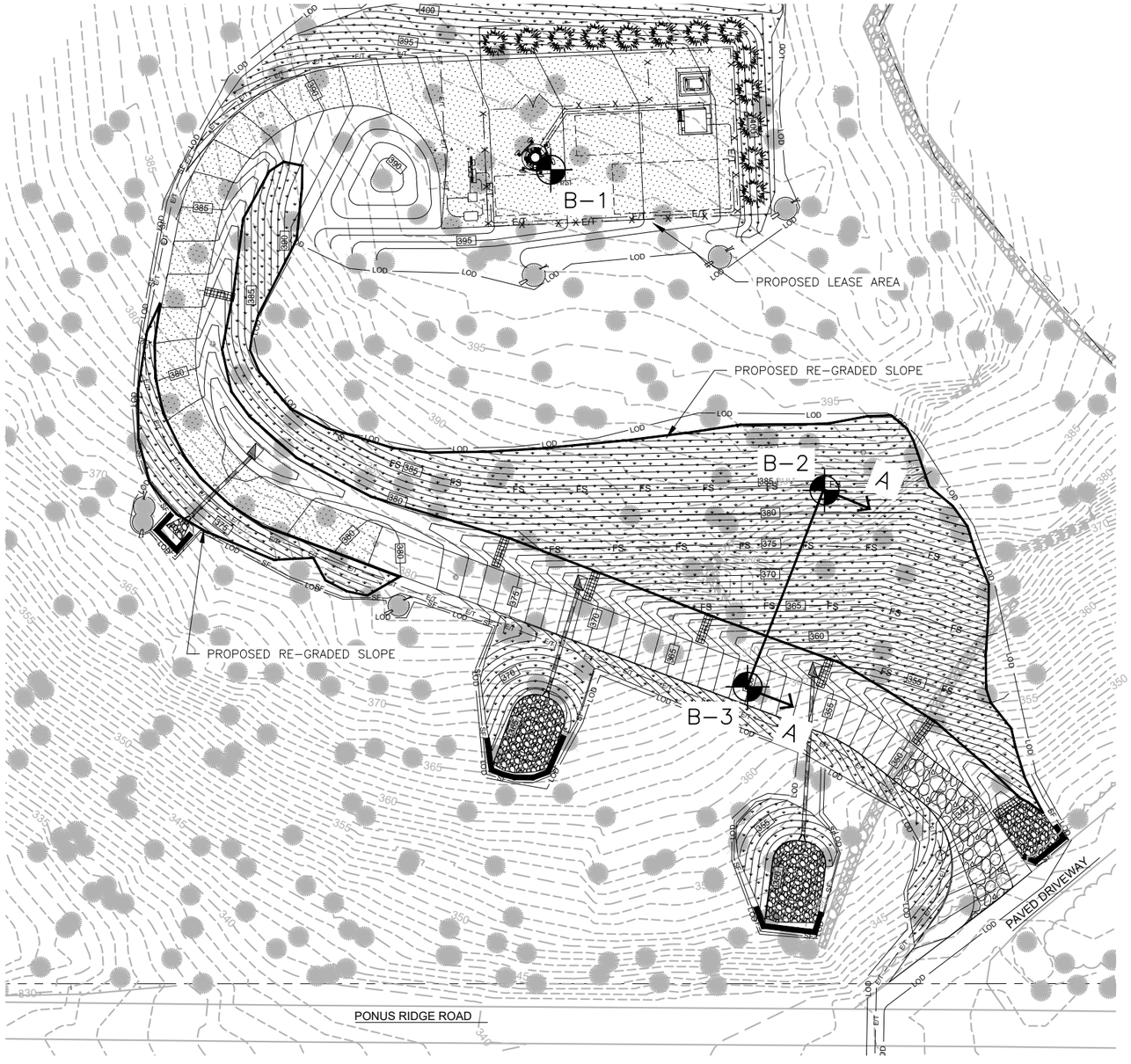
Sincerely,
TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C.

STATE OF CONNECTICUT MARK A. STIER 22356 LICENSED PROFESSIONAL ENGINEER

Mark A. Stier, P.E., PG
Executive Vice President

Attachments: Boring and Cross-Section Location Plan, Figure 1
Boring Logs
SLIDE2 Slope Stability Reports, Cross Section A-A

SC/CBB: G:\Newburgh\Geotechnical\11800\11869.01 Homeland Towers New Canaan Northwest\Slope Stability\11869.01 Homeland Towers New Canaan Slope Stability letter.docx



LEGEND

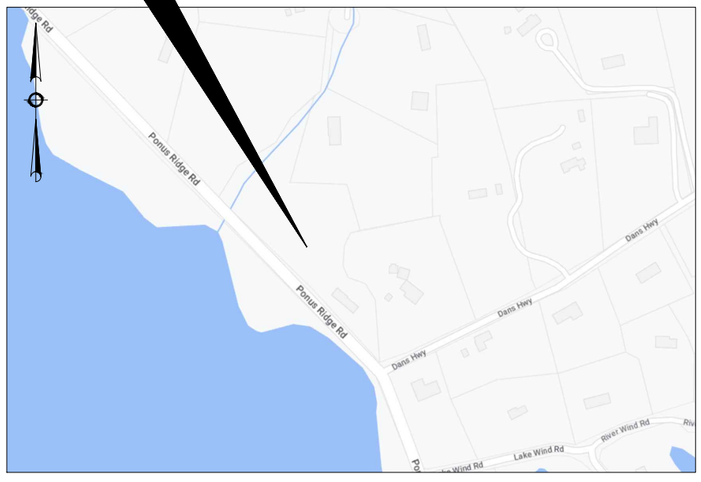
B-3 — APPROXIMATE BORING LOCATION

A — A — SLOPE STABILITY ANALYSIS CROSS SECTION

NOTES

1. PLAN BASED ON A DRAWING PROVIDED BY THE CLIENT, TITLED "PARTIAL SITE PLAN", SHEET SP-2, DATED 04/04/2022.
2. BORING LOCATIONS WERE FIELD LOCATED BY TECTONIC AND SHOULD BE CONSIDERED APPROXIMATE.

SITE



0 1 2 3

ORIGINAL SIZE IN INCHES

Tectonic

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Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.
70 Pleasant Hill Road — Phone: (845) 534-5959
P.O. Box 37 — (800) 829-6531
Mountainville, NY 10953 — www.tectonicengineering.com

Project Contact Info
1279 Route 300
Newburgh, NY 12550 — Phone: (845) 567-6656

BORING AND CROSS-SECTION LOCATION PLAN

HOMELAND TOWERS – NEW CANAAN NORTHWEST
SLOPE STABILITY ANALYSIS
1837 PONUS RIDGE ROAD
NEW CANAAN, FAIRFIELD COUNTY, CONNECTICUT

Date	Work Order	Drawing No.	Rev
07/17/2023	11869.01	FIGURE 1	0
Scale 1" = 40'			

Tectonic

BORING No. B-2

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**
SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Limited Access Drilling Services, LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **3'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | **2"** | **3** TO **8'**
Acker Recon Drill Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Overcast** TEMP: **70° F**
DEPTH TO ROCK: **3'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Anthony Schwind**
DRILLER: **Zach Boland**
SURFACE ELEVATION: **385.0**
DATUM: **See Remarks**
DATE START: **6/29/23**
DATE FINISH: **6/29/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % ✕ ⊗ △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	3	2 1 2 8	S-1	4		M	SM	6" Topsoil-like material Bwn f SAND, some Silt, trace f Gravel		
2	50+	9	S-2	6		M	SM	Bwn-gy c-f SAND, and c-f Gravel, little Silt (weathered bedrock)		
3	50+	50/4 50/1	S-3					No Recovery in spoon		
4	1									
5	1									380.0
6	1		C-1	53	38			Gy-pk highly weathered, moderately to highly fractured, coarse grained, hard, granitic GNEISS		
7	1									
8	1									
9								End of Boring at 8'		
10										375.0
11										
12										
13										
14										
15										370.0
16										
17										
18										
19										
20										365.0
21										
22										
23										
24										
25										360.0

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01 LAD.GPJ TECTONIC ENG.GDT 7/18/23

Tectonic

BORING No. B-3

PROJECT No. **11869.01**
PROJECT: **1837 Ponus Ridge Road**
LOCATION: **New Canaan, Connecticut**
SHEET No. 1 of 1

CLIENT: **Homeland Towers, LLC**
CONTRACTOR: **Limited Access Drilling Services, LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **9.5'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | **2"** | **9.5** TO **14.5'**
Acker Recon Drill Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
| | | |

INSPECTOR: **Anthony Schwind**
DRILLER: **Zach Boland**
SURFACE ELEVATION: **360.0**
MON. WELL ☐ YES ☒ NO
DATUM: **See Remarks**
SCREEN DEPTH: **---** TO **---**
DATE START: **6/29/23**
WEATHER: **Overcast** TEMP: **70° F**
DATE FINISH: **6/29/23**
DEPTH TO ROCK: **9.5'**
*CHANGES IN STRATA ARE INFERRED

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % ✕ ⊗ △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
0								6" Topsoil-like material		
1	4	2, 2, 2, 2	S-1	8		M	SM	Bwn f SAND, some Silt, little Silt		
2										
3	24	5, 8, 16, 22	S-2	12		M	SM	Bwn-gy c-f SAND, some Silt, little c-f Gravel		
4										
5	55	15, 25, 30, 43	S-3	16		M	SM	Gy m-f SAND, some c-f Gravel, some Silt		355.0
6										
7	104	32, 65, 39, 38	S-4	16		M	SM	Same		104
8										
9	86+	36, 36, 50/2	S-5	12		M	SM	Gy c-f SAND, some c-f Gravel, little Silt (weathered bedrock)		86
10	2.5									350.0
11	1.5									
12	3.0		C-1	40	20			Gy-pk highly weathered, moderately to highly fractured, coarse grained, hard, granitic GNEISS		
13	1.75									
14	1.0									
15								End of Boring at 14.5'		345.0
16										
17										
18										
19										
20										340.0
21										
22										
23										
24										
25										335.0

REMARKS: Surface elevations estimated based on Client provided plan "SP-2" revised 04/04/22.

BORING LOG 11869.01 LAD.GPJ TECTONIC ENG.GDT 7/18/23

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LEGEND FOR SOIL DESCRIPTION

COARSE GRAINED SOIL (Coarser then No. 200 Sieve)

DESCRIPTIVE TERM & GRAIN SIZE

TERM	SAND					GRAVEL
coarse - c	No.	4	Sieve to No.	10	Sieve	3" to 3/4"
medium - m	No.	10	Sieve to No.	40	Sieve	3/4" to 3/16"
fine - f	No,	40	Sieve to No.	200	Sieve	

COBBLES 3" to 10"

BOULDERS 10" +

GRADATION DESIGNATIONS	PROPORTIONS OF COMPONENT
fine, f	Less than 10% coarse to medium
medium to fine, m-f	Less than 10% coarse
medium, m	Less than 10% coarse and fine
coarse to medium, c-m	Less than 10% fine
coarse, c	Less than 10% medium and fine
coarse to fine, c-f	All greater than 10%

FINE GRAINED SOIL (Finer than No. 200 Sieve)

DESCRIPTION	PLASTICITY INDEX	PLASTICITY
Silt	0 - 1	none
Clayey Silt	2 - 5	slight
Silt & Clay	6 - 10	low
Clay & Silt	11 - 20	medium
Silty Clay	21 - 40	high
Clay	greater than 40	very high

PROPORTION

DESCRIPTIVE TERM	PERCENT OF SAMPLE WEIGHT
trace	1 - 10
little	10 - 20
some	20 - 35
and	35 - 50

The primary component is fully capitalized if >50% of sample

COLOR

Blue - blue	Gy - gray	Wh - white
Blk - black	Or - orange	Yl - yellow
Bwn - brown	Rd - red	Lgt - light
Gn - green	Tn - tan	Dk - dark

SAMPLE NOTATION

S - Split Spoon Soil Sample
U - Undisturbed Tube Sample
C - Core Sample
B - Bulk Soil Sample
NR - No Recovery of Sample

WOC - Weight of Casing
WOR - Weight of Rods
WOH - Weight of Hammer
PPR - Compressive Strength based on Pocket Penetrometer
TV - Shear Strength (tsf) based on Torvane

ADDITIONAL CLASSIFICATIONS

New York City Building Code soil classifications are given in parentheses at the end of each description of material, if applicable. See sections 1804.2 of the 2008 Building Code for further details.

rocscience

Cross Section A-A
Homeland Towers - New Canaan, CT
Tectonic Engineering Consultants
Date Created: 7/12/2023, 11:38:10 AM
Software Version: 9.027

Table of Contents

Slide2 Analysis Information

Cross Section A-A

Project Summary

File Name:	Cross Section A-A.slmd
Slide2 Modeler Version:	9.027
Project Title:	Homeland Towers - New Canaan, CT
Analysis:	Slope stability analysis between borings B-2 and B-3.
Author:	Scott Cohen, P.E.
Company:	Tectonic Engineering Consultants
Date Created:	7/12/2023, 11:38:10 AM

Currently Open Scenarios

Group Name	Scenario Name	Description	Global Minimum	Compute Time
Group 1	Master Scenario	Anticipated condition based on grading plan.	Spencer: 1.756300 Gle/morgenstern-price: 1.756970	00h:00m:01.400s
Group 2	Master Scenario	Cross section modeled if bedrock is deeper at the toe, with more soil along the slope	Spencer: 1.693400 Gle/morgenstern-price: 1.694010	00h:00m:01.753s
Group 3	Master Scenario	Shallow bedrock, modeled with a weak layer at the soil/rock interface	Spencer: 1.360030 Gle/morgenstern-price: 1.340620	00h:00m:01.468s
Group 4	Master Scenario	Stepped bedrock in the condition where bedrock is deeper than anticipated.	Spencer: 1.692470 Gle/morgenstern-price: 1.689960	00h:00m:01.61s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Left to Right

Analysis Options

All Open Scenarios

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes
Eliminate vertical segments in non-circular search	Yes

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

All Open Scenarios

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

All Open Scenarios

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

Med Dense Native	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	1
Friction Angle [deg]	34
Water Surface	Assigned per scenario
Ru Value	0
Bedrock	
Color	
Strength Type	Hoek-Brown
Unit Weight [lbs/ft3]	170
Unconfined Compressive Strength (intact) [psf]	2.5e+06
mb	3
s	0.1
Water Surface	Assigned per scenario
Ru Value	0
Topsoil	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	95
Cohesion [psf]	21
Friction Angle [deg]	30
Water Surface	Assigned per scenario
Ru Value	0
Weak Layer	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	1
Friction Angle [deg]	27
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material	Group 1	Group 2	Group 3	Group 4
Med Dense Native	✓	✓	✓	✓
Bedrock	✓	✓	✓	✓
Topsoil	✓	✓	✓	✓
Weak Layer	✗	✗	✓	✗

Support

Support 1	
Color	
Type	Geosynthetic
Force Application	Active (Method A)
Force Orientation	Parallel to Reinforcement
Strip Coverage (%)	100
Allowable Tensile Strength	40 lbs/ft
Anchorage	Slope Face
Connection Strength Input	Constant
Connection Strength	40 lbs/ft
Input Type	Friction Angle & Adhesion
Shear Strength Model	Linear
Adhesion	104 psf
Friction Angle	40 °
Material Dependent	No
Use External Loads in Strength Computation	Yes

Global Minimums

Group 1

Method: spencer

FS	1.756300
Center:	59.384, 435.518
Radius:	72.212
Left Slip Surface Endpoint:	18.001, 376.340
Right Slip Surface Endpoint:	45.434, 364.667
Resisting Moment:	161760 lb-ft
Driving Moment:	92102.7 lb-ft
Resisting Horizontal Force:	2058.4 lb
Driving Horizontal Force:	1172.01 lb
Active Support Moment:	-2826.28 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	30.9656 ft2
Surface Horizontal Width:	27.4322 ft
Surface Average Height:	1.1288 ft

Method: gle/morgenstern-price

FS	1.756970
Center:	59.384, 435.518
Radius:	72.212
Left Slip Surface Endpoint:	18.001, 376.340
Right Slip Surface Endpoint:	45.434, 364.667
Resisting Moment:	161822 lb-ft
Driving Moment:	92102.7 lb-ft
Resisting Horizontal Force:	2059.75 lb
Driving Horizontal Force:	1172.33 lb
Active Support Moment:	-2826.28 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	30.9656 ft2
Surface Horizontal Width:	27.4322 ft
Surface Average Height:	1.1288 ft

Group 2

Method: spencer

FS	1.693400
Center:	54.036, 434.281
Radius:	70.618
Left Slip Surface Endpoint:	8.316, 380.461
Right Slip Surface Endpoint:	46.954, 364.019
Resisting Moment:	465254 lb-ft
Driving Moment:	274746 lb-ft
Resisting Horizontal Force:	6045.84 lb
Driving Horizontal Force:	3570.24 lb
Active Support Moment:	-2696.99 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	89.7657 ft2
Surface Horizontal Width:	38.6378 ft
Surface Average Height:	2.32326 ft

Method: gle/morgenstern-price

FS	1.694010
Center:	51.318, 434.281
Radius:	69.103
Left Slip Surface Endpoint:	7.599, 380.766
Right Slip Surface Endpoint:	43.069, 365.673
Resisting Moment:	356537 lb-ft
Driving Moment:	210470 lb-ft
Resisting Horizontal Force:	4742.8 lb
Driving Horizontal Force:	2799.75 lb
Active Support Moment:	-2654.42 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	70.732 ft2
Surface Horizontal Width:	35.4705 ft
Surface Average Height:	1.99411 ft

Group 3

Method: spencer

FS	1.360030
Center:	49.532, 437.981
Radius:	73.053
Left Slip Surface Endpoint:	0.586, 383.751
Right Slip Surface Endpoint:	44.393, 365.109
Resisting Moment:	224443 lb-ft
Driving Moment:	165028 lb-ft
Resisting Horizontal Force:	2921.28 lb
Driving Horizontal Force:	2147.96 lb
Active Support Moment:	-2762.64 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	55.7084 ft2
Surface Horizontal Width:	43.8073 ft
Surface Average Height:	1.27167 ft

Method: gle/morgenstern-price

FS	1.340620
Center:	44.096, 421.674
Radius:	57.695
Left Slip Surface Endpoint:	0.634, 383.730
Right Slip Surface Endpoint:	46.891, 364.046
Resisting Moment:	192292 lb-ft
Driving Moment:	143435 lb-ft
Resisting Horizontal Force:	3279.92 lb
Driving Horizontal Force:	2446.57 lb
Active Support Moment:	-2077.27 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	63.2811 ft2
Surface Horizontal Width:	46.2573 ft
Surface Average Height:	1.36802 ft

Group 4

Method: spencer

FS	1.692470
Center:	57.303, 438.835
Radius:	75.526
Left Slip Surface Endpoint:	10.576, 379.500
Right Slip Surface Endpoint:	46.946, 364.023
Resisting Moment:	383090 lb-ft
Driving Moment:	226350 lb-ft
Resisting Horizontal Force:	4656.28 lb
Driving Horizontal Force:	2751.18 lb
Active Support Moment:	-2915.78 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	69.5645 ft2
Surface Horizontal Width:	36.3709 ft
Surface Average Height:	1.91264 ft

Method: gle/morgenstern-price

FS	1.689960
Center:	57.303, 438.835
Radius:	75.526
Left Slip Surface Endpoint:	10.576, 379.500
Right Slip Surface Endpoint:	46.946, 364.023
Resisting Moment:	382523 lb-ft
Driving Moment:	226350 lb-ft
Resisting Horizontal Force:	4655.97 lb
Driving Horizontal Force:	2755.07 lb
Active Support Moment:	-2915.78 lb-ft
Active Horizontal Support Force:	-36.8062 lb
Maximum Single Support Force:	40 lb
Total Support Force:	40 lb
Total Slice Area:	69.5645 ft2
Surface Horizontal Width:	36.3709 ft
Surface Average Height:	1.91264 ft

Global Minimum Support Data

Group 1

Method: spencer

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	31.515	19.5634	31.515	19.5634	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Method: gle/morgenstern-price

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	31.515	19.5634	31.515	19.5634	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Group 2

Method: spencer

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	42.0404	9.03799	42.0404	9.03799	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Method: gle/morgenstern-price

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	42.8202	8.25816	42.8202	8.25816	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Group 3

Method: spencer

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	50.4419	0.636421	50.4419	0.636421	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Method: gle/morgenstern-price

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	50.3897	0.688634	50.3897	0.688634	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Group 4

Method: spencer

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	39.5852	11.4932	39.5852	11.4932	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Method: gle/morgenstern-price

Number of Supports: 2

Support 1						
Support Type: Geosynthetic						
Start (x, y)	**Length (ft)**	**L Inside SS (ft)**	**L Outside SS (ft)**	**Li (ft)**	**Lo (ft)**	**Force (lb)**
47, 364	51.0784	39.5852	11.4932	39.5852	11.4932	40
66, 360	19.4165	Not Effective	Not Effective	Not Effective	Not Effective	0

Valid and Invalid Surfaces

Group 1

Method: spencer

Number of Valid Surfaces:	2050
Number of Invalid Surfaces:	7211
Error Codes	
Error Code -102 reported for 6 surfaces	
Error Code -103 reported for 80 surfaces	
Error Code -106 reported for 40 surfaces	
Error Code -107 reported for 1194 surfaces	
Error Code -108 reported for 21 surfaces	
Error Code -109 reported for 3 surfaces	
Error Code -111 reported for 5174 surfaces	
Error Code -1000 reported for 693 surfaces	

Method: gle/morgenstern-price

Number of Valid Surfaces:	1837
Number of Invalid Surfaces:	7424
Error Codes	
Error Code -102 reported for 6 surfaces	
Error Code -103 reported for 80 surfaces	
Error Code -106 reported for 40 surfaces	
Error Code -107 reported for 1191 surfaces	
Error Code -108 reported for 22 surfaces	
Error Code -109 reported for 3 surfaces	
Error Code -111 reported for 5389 surfaces	
Error Code -1000 reported for 693 surfaces	

Group 2

Method: spencer

Number of Valid Surfaces:	4878
Number of Invalid Surfaces:	4383
Error Codes	
Error Code -102 reported for 21 surfaces	
Error Code -103 reported for 176 surfaces	
Error Code -106 reported for 6 surfaces	
Error Code -107 reported for 1215 surfaces	
Error Code -108 reported for 86 surfaces	
Error Code -111 reported for 2419 surfaces	
Error Code -112 reported for 2 surfaces	
Error Code -114 reported for 122 surfaces	
Error Code -1000 reported for 336 surfaces	

Method: gle/morgenstern-price

Number of Valid Surfaces:	4716
Number of Invalid Surfaces:	4545
Error Codes	
Error Code -102 reported for 21 surfaces	
Error Code -103 reported for 176 surfaces	
Error Code -106 reported for 6 surfaces	
Error Code -107 reported for 1215 surfaces	
Error Code -108 reported for 80 surfaces	
Error Code -111 reported for 2589 surfaces	
Error Code -114 reported for 122 surfaces	
Error Code -1000 reported for 336 surfaces	

Group 3

Method: spencer

Number of Valid Surfaces:	6720
Number of Invalid Surfaces:	2541
Error Codes	
Error Code -102 reported for 14 surfaces	
Error Code -103 reported for 106 surfaces	
Error Code -106 reported for 32 surfaces	
Error Code -107 reported for 1182 surfaces	
Error Code -108 reported for 10 surfaces	
Error Code -109 reported for 3 surfaces	
Error Code -111 reported for 590 surfaces	
Error Code -112 reported for 2 surfaces	
Error Code -114 reported for 14 surfaces	
Error Code -1000 reported for 588 surfaces	

Method: gle/morgenstern-price

Number of Valid Surfaces:	6489
Number of Invalid Surfaces:	2772
Error Codes	
Error Code -102 reported for 14 surfaces	
Error Code -103 reported for 106 surfaces	
Error Code -106 reported for 32 surfaces	
Error Code -107 reported for 1181 surfaces	
Error Code -108 reported for 20 surfaces	
Error Code -109 reported for 3 surfaces	
Error Code -111 reported for 812 surfaces	
Error Code -112 reported for 2 surfaces	
Error Code -114 reported for 14 surfaces	
Error Code -1000 reported for 588 surfaces	

Group 4

Method: spencer

Number of Valid Surfaces:	3404
Number of Invalid Surfaces:	5857

Error Codes
Error Code -102 reported for 4 surfaces
Error Code -103 reported for 54 surfaces
Error Code -106 reported for 42 surfaces
Error Code -107 reported for 1198 surfaces
Error Code -108 reported for 44 surfaces
Error Code -109 reported for 3 surfaces
Error Code -111 reported for 3735 surfaces
Error Code -1000 reported for 777 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces:	3168
Number of Invalid Surfaces:	6093

Error Codes
Error Code -102 reported for 4 surfaces
Error Code -103 reported for 54 surfaces
Error Code -106 reported for 42 surfaces
Error Code -107 reported for 1196 surfaces
Error Code -108 reported for 48 surfaces
Error Code -109 reported for 3 surfaces
Error Code -111 reported for 3969 surfaces
Error Code -1000 reported for 777 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

-102 = Two surface / slope intersections, but resulting arc is actually outside soil region.

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region,even though the slip surface is wholly within the soil region.

-111 = Safety factor equation did not converge

-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

-114 = Surface with Reverse Curvature.

-1000 = No valid slip surface is generated

Slice Data

Group 1

Global Minimum Query (spencer) - Safety Factor: 1.7563

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.501879	3.2001	-34.7219	Topsoil	21	30	9.70652	17.0476	-6.84584	0	-6.84584	-0.119224	-0.119224
2	0.501879	9.45183	-34.2388	Topsoil	21	30	15.4508	27.1363	10.6283	0	10.6283	21.144	21.144
3	0.501879	15.4092	-33.7585	Topsoil	21	30	18.4736	32.4451	19.8234	0	19.8234	32.171	32.171
4	0.501879	21.0771	-33.2809	Topsoil	21	30	21.3841	37.5569	28.6774	0	28.6774	42.7139	42.7139
5	0.548974	30.0276	-32.7836	Med Dense Native	1	34	16.4128	28.8258	41.2535	0	41.2535	51.8242	51.8242
6	0.548974	37.701	-32.267	Med Dense Native	1	34	20.6069	36.1919	52.174	0	52.174	65.1846	65.1846
7	0.548974	44.9196	-31.7533	Med Dense Native	1	34	24.6086	43.2201	62.5939	0	62.5939	77.8241	77.8241
8	0.548974	51.6909	-31.2425	Med Dense Native	1	34	28.4172	49.9092	72.5108	0	72.5108	89.7497	89.7497
9	0.548974	58.0223	-30.7344	Med Dense Native	1	34	32.0319	56.2577	81.9229	0	81.9229	100.968	100.968
10	0.548974	63.9207	-30.2289	Med Dense Native	1	34	35.452	62.2643	90.8281	0	90.8281	111.486	111.486
11	0.548974	69.3928	-29.7261	Med Dense Native	1	34	38.6766	67.9277	99.2243	0	99.2243	121.308	121.308
12	0.548974	74.445	-29.2257	Med Dense Native	1	34	41.7049	73.2463	107.109	0	107.109	130.442	130.442
13	0.548974	79.0835	-28.7278	Med Dense Native	1	34	44.5361	78.2187	114.481	0	114.481	138.892	138.892
14	0.548974	83.3143	-28.2323	Med Dense Native	1	34	47.1693	82.8435	121.338	0	121.338	146.664	146.664
15	0.548974	87.143	-27.739	Med Dense Native	1	34	49.6037	87.119	127.677	0	127.677	153.762	153.762
16	0.548974	90.5751	-27.248	Med Dense Native	1	34	51.8384	91.0438	133.495	0	133.495	160.192	160.192
17	0.548974	93.6159	-26.7591	Med Dense Native	1	34	53.8725	94.6162	138.792	0	138.792	165.956	165.956
18	0.548974	96.2705	-26.2723	Med Dense Native	1	34	55.7049	97.8345	143.563	0	143.563	171.061	171.061
19	0.548974	98.5438	-25.7875	Med Dense Native	1	34	57.3348	100.697	147.807	0	147.807	175.508	175.508
20	0.548974	100.44	-25.3048	Med Dense Native	1	34	58.761	103.202	151.521	0	151.521	179.303	179.303
21	0.548974	101.965	-24.8239	Med Dense Native	1	34	59.9829	105.348	154.702	0	154.702	182.449	182.449
22	0.548974	103.122	-24.3449	Med Dense Native	1	34	60.9993	107.133	157.348	0	157.348	184.948	184.948

23	0.548974	103.915	-23.8677	Med Dense Native	1	34	61.8083	108.554	159.456	0	159.456	186.804	186.804
24	0.548974	104.348	-23.3922	Med Dense Native	1	34	62.4102	109.611	161.022	0	161.022	188.019	188.019
25	0.548974	104.426	-22.9185	Med Dense Native	1	34	62.8025	110.3	162.044	0	162.044	188.597	188.597
26	0.548974	104.152	-22.4464	Med Dense Native	1	34	62.9847	110.62	162.519	0	162.519	188.539	188.539
27	0.548974	103.53	-21.9759	Med Dense Native	1	34	62.9556	110.569	162.443	0	162.443	187.848	187.848
28	0.548974	102.563	-21.507	Med Dense Native	1	34	62.7142	110.145	161.813	0	161.813	186.526	186.526
29	0.548974	101.255	-21.0395	Med Dense Native	1	34	62.2582	109.344	160.626	0	160.626	184.574	184.574
30	0.548974	99.6081	-20.5736	Med Dense Native	1	34	61.5869	108.165	158.879	0	158.879	181.995	181.995
31	0.548974	97.6265	-20.109	Med Dense Native	1	34	60.6986	106.605	156.566	0	156.566	178.79	178.79
32	0.548974	95.3128	-19.6458	Med Dense Native	1	34	59.5923	104.662	153.686	0	153.686	174.959	174.959
33	0.548974	92.67	-19.184	Med Dense Native	1	34	58.2662	102.333	150.233	0	150.233	170.505	170.505
34	0.548974	89.7008	-18.7234	Med Dense Native	1	34	56.7191	99.6157	146.204	0	146.204	165.428	165.428
35	0.548974	86.4079	-18.2641	Med Dense Native	1	34	54.9489	96.5067	141.595	0	141.595	159.729	159.729
36	0.548974	82.794	-17.806	Med Dense Native	1	34	52.9542	93.0034	136.401	0	136.401	153.408	153.408
37	0.548974	78.8615	-17.3491	Med Dense Native	1	34	50.7332	89.1028	130.618	0	130.618	146.467	146.467
38	0.548974	74.6129	-16.8933	Med Dense Native	1	34	48.2844	84.8019	124.241	0	124.241	138.905	138.905
39	0.548974	70.0503	-16.4387	Med Dense Native	1	34	45.6058	80.0974	117.267	0	117.267	130.723	130.723
40	0.548974	65.1762	-15.985	Med Dense Native	1	34	42.6956	74.9862	109.689	0	109.689	121.92	121.92
41	0.548974	59.9926	-15.5324	Med Dense Native	1	34	39.5518	69.4649	101.503	0	101.503	112.496	112.496
42	0.548974	54.5016	-15.0808	Med Dense Native	1	34	36.1726	63.5299	92.7044	0	92.7044	102.452	102.452
43	0.548974	48.7051	-14.6302	Med Dense Native	1	34	32.5558	57.1777	83.287	0	83.287	91.7855	91.7855
44	0.548974	42.6051	-14.1805	Med Dense Native	1	34	28.6994	50.4047	73.2454	0	73.2454	80.4971	80.4971
45	0.548974	36.2035	-13.7317	Med Dense Native	1	34	24.6011	43.2069	62.5743	0	62.5743	68.5858	68.5858
46	0.548974	29.5019	-13.2837	Med Dense Native	1	34	20.2588	35.5805	51.2677	0	51.2677	56.0506	56.0506
47	0.591952	24.8223	-12.8191	Topsoil	21	30	25.3443	44.5122	40.7242	0	40.7242	46.4912	46.4912
48	0.591952	18.0848	-12.3378	Topsoil	21	30	21.8517	38.3781	30.0999	0	30.0999	34.8794	34.8794
49	0.591952	11.0546	-11.8575	Topsoil	21	30	18.1653	31.9037	18.8857	0	18.8857	22.6997	22.6997
50	0.591952	3.73327	-11.378	Topsoil	21	30	14.2992	25.1136	7.12499	0	7.12499	10.0025	10.0025

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.75697

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.501879	3.2001	-34.7219	Topsoil	21	30	3.50217	6.1532	-25.7154	0	-25.7154	-23.2884	-23.2884
2	0.501879	9.45183	-34.2388	Topsoil	21	30	15.3111	26.9011	10.221	0	10.221	20.6416	20.6416
3	0.501879	15.4092	-33.7585	Topsoil	21	30	18.5865	32.6559	20.1887	0	20.1887	32.6118	32.6118
4	0.501879	21.0771	-33.2809	Topsoil	21	30	21.6888	38.1066	29.6295	0	29.6295	43.866	43.866
5	0.548974	30.0276	-32.7836	Med Dense Native	1	34	17.5508	30.8363	44.2343	0	44.2343	55.5379	55.5379
6	0.548974	37.701	-32.267	Med Dense Native	1	34	21.7489	38.2121	55.1693	0	55.1693	68.9008	68.9008
7	0.548974	44.9196	-31.7533	Med Dense Native	1	34	25.7049	45.1627	65.4739	0	65.4739	81.3827	81.3827
8	0.548974	51.6909	-31.2425	Med Dense Native	1	34	29.4292	51.7063	75.1752	0	75.1752	93.0281	93.0281
9	0.548974	58.0223	-30.7344	Med Dense Native	1	34	32.9313	57.8593	84.2975	0	84.2975	103.877	103.877
10	0.548974	63.9207	-30.2289	Med Dense Native	1	34	36.2196	63.6368	92.8629	0	92.8629	113.968	113.968
11	0.548974	69.3928	-29.7261	Med Dense Native	1	34	39.3017	69.0519	100.891	0	100.891	123.332	123.332
12	0.548974	74.445	-29.2257	Med Dense Native	1	34	42.184	74.116	108.399	0	108.399	132	132
13	0.548974	79.0835	-28.7278	Med Dense Native	1	34	44.8722	78.8391	115.401	0	115.401	139.996	139.996
14	0.548974	83.3143	-28.2323	Med Dense Native	1	34	47.3708	83.229	121.909	0	121.909	147.344	147.344
15	0.548974	87.143	-27.739	Med Dense Native	1	34	49.6833	87.2921	127.933	0	127.933	154.061	154.061
16	0.548974	90.5751	-27.248	Med Dense Native	1	34	51.8126	91.0331	133.48	0	133.48	160.163	160.163
17	0.548974	93.6159	-26.7591	Med Dense Native	1	34	53.7601	94.4548	138.553	0	138.553	165.661	165.661
18	0.548974	96.2705	-26.2723	Med Dense Native	1	34	55.5267	97.5587	143.154	0	143.154	170.564	170.564
19	0.548974	98.5438	-25.7875	Med Dense Native	1	34	57.1123	100.345	147.284	0	147.284	174.878	174.878
20	0.548974	100.44	-25.3048	Med Dense Native	1	34	58.5161	102.811	150.941	0	150.941	178.607	178.607
21	0.548974	101.965	-24.8239	Med Dense Native	1	34	59.7358	104.954	154.119	0	154.119	181.751	181.751
22	0.548974	103.122	-24.3449	Med Dense Native	1	34	60.77	106.771	156.812	0	156.812	184.308	184.308
23	0.548974	103.915	-23.8677	Med Dense Native	1	34	61.6146	108.255	159.012	0	159.012	186.275	186.275
24	0.548974	104.348	-23.3922	Med Dense Native	1	34	62.2669	109.401	160.711	0	160.711	187.646	187.646
25	0.548974	104.426	-22.9185	Med Dense Native	1	34	62.7216	110.2	161.896	0	161.896	188.414	188.414

26	0.548974	104.152	-22.4464	Med Dense Native	1	34	62.9755	110.646	162.556	0	162.556	188.573	188.573
27	0.548974	103.53	-21.9759	Med Dense Native	1	34	63.0227	110.729	162.68	0	162.68	188.112	188.112
28	0.548974	102.563	-21.507	Med Dense Native	1	34	62.8588	110.441	162.253	0	162.253	187.022	187.022
29	0.548974	101.255	-21.0395	Med Dense Native	1	34	62.4786	109.773	161.262	0	161.262	185.295	185.295
30	0.548974	99.6081	-20.5736	Med Dense Native	1	34	61.877	108.716	159.696	0	159.696	182.921	182.921
31	0.548974	97.6265	-20.109	Med Dense Native	1	34	61.0494	107.262	157.54	0	157.54	179.892	179.892
32	0.548974	95.3128	-19.6458	Med Dense Native	1	34	59.9913	105.403	154.784	0	154.784	176.2	176.2
33	0.548974	92.67	-19.184	Med Dense Native	1	34	58.6988	103.132	151.418	0	151.418	171.84	171.84
34	0.548974	89.7008	-18.7234	Med Dense Native	1	34	57.1686	100.444	147.431	0	147.431	166.808	166.808
35	0.548974	86.4079	-18.2641	Med Dense Native	1	34	55.3973	97.3314	142.817	0	142.817	161.1	161.1
36	0.548974	82.794	-17.806	Med Dense Native	1	34	53.3832	93.7927	137.571	0	137.571	154.716	154.716
37	0.548974	78.8615	-17.3491	Med Dense Native	1	34	51.1249	89.825	131.688	0	131.688	147.66	147.66
38	0.548974	74.6129	-16.8933	Med Dense Native	1	34	48.6222	85.4278	125.169	0	125.169	139.936	139.936
39	0.548974	70.0503	-16.4387	Med Dense Native	1	34	45.8757	80.6022	118.015	0	118.015	131.551	131.551
40	0.548974	65.1762	-15.985	Med Dense Native	1	34	42.8868	75.3509	110.23	0	110.23	122.515	122.515
41	0.548974	59.9926	-15.5324	Med Dense Native	1	34	39.6583	69.6784	101.82	0	101.82	112.842	112.842
42	0.548974	54.5016	-15.0808	Med Dense Native	1	34	36.1935	63.5909	92.7948	0	92.7948	102.548	102.548
43	0.548974	48.7051	-14.6302	Med Dense Native	1	34	32.4969	57.096	83.1657	0	83.1657	91.6488	91.6488
44	0.548974	42.6051	-14.1805	Med Dense Native	1	34	28.5737	50.2032	72.9468	0	72.9468	80.1667	80.1667
45	0.548974	36.2035	-13.7317	Med Dense Native	1	34	24.4301	42.9229	62.1533	0	62.1533	68.123	68.123
46	0.548974	29.5019	-13.2837	Med Dense Native	1	34	20.0726	35.2669	50.8027	0	50.8027	55.5416	55.5416
47	0.591952	24.8223	-12.8191	Topsoil	21	30	24.546	43.1265	38.3242	0	38.3242	43.9095	43.9095
48	0.591952	18.0848	-12.3378	Topsoil	21	30	20.9335	36.7795	27.3308	0	27.3308	31.9095	31.9095
49	0.591952	11.0546	-11.8575	Topsoil	21	30	17.1589	30.1477	15.8442	0	15.8442	19.4469	19.4469
50	0.591952	3.73327	-11.378	Topsoil	21	30	13.2298	23.2443	3.88719	0	3.88719	6.54949	6.54949

Group 2

Global Minimum Query (spencer) - Safety Factor: 1.6934

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.61796	7.51249	-40.02	Topsoil	21	30	13.1642	22.2922	2.23824	0	2.23824	13.2921	13.2921
2	0.61796	22.189	-39.3683	Topsoil	21	30	19.4901	33.0046	20.7926	0	20.7926	36.7839	36.7839
3	0.778385	50.5655	-38.6398	Med Dense Native	1	34	18.1183	30.6815	44.0046	0	44.0046	58.4889	58.4889
4	0.778385	76.9229	-37.8357	Med Dense Native	1	34	27.6147	46.7628	67.8461	0	67.8461	89.2938	89.2938
5	0.778385	101.653	-37.0403	Med Dense Native	1	34	36.7488	62.2304	90.7779	0	90.7779	118.511	118.511
6	0.778385	124.806	-36.2531	Med Dense Native	1	34	45.5169	77.0784	112.791	0	112.791	146.169	146.169
7	0.778385	146.431	-35.4738	Med Dense Native	1	34	53.9156	91.3006	133.876	0	133.876	172.297	172.297
8	0.778385	166.571	-34.7019	Med Dense Native	1	34	61.9411	104.891	154.026	0	154.026	196.919	196.919
9	0.778385	185.269	-33.9372	Med Dense Native	1	34	69.5908	117.845	173.229	0	173.229	220.058	220.058
10	0.778385	202.563	-33.1793	Med Dense Native	1	34	76.8602	130.155	191.48	0	191.48	241.736	241.736
11	0.778385	218.489	-32.4279	Med Dense Native	1	34	83.7463	141.816	208.768	0	208.768	261.973	261.973
12	0.778385	233.082	-31.6827	Med Dense Native	1	34	90.2463	152.823	225.087	0	225.087	280.787	280.787
13	0.778385	246.375	-30.9435	Med Dense Native	1	34	96.3553	163.168	240.425	0	240.425	298.191	298.191
14	0.778385	258.397	-30.2099	Med Dense Native	1	34	102.071	172.847	254.774	0	254.774	314.204	314.204
15	0.778385	269.177	-29.4818	Med Dense Native	1	34	107.389	181.853	268.126	0	268.126	328.839	328.839
16	0.778385	278.742	-28.7588	Med Dense Native	1	34	112.307	190.18	280.47	0	280.47	342.106	342.106
17	0.778385	287.117	-28.0408	Med Dense Native	1	34	116.818	197.82	291.797	0	291.797	354.017	354.017
18	0.778385	294.326	-27.3276	Med Dense Native	1	34	120.921	204.768	302.098	0	302.098	364.584	364.584
19	0.778385	300.392	-26.619	Med Dense Native	1	34	124.611	211.016	311.362	0	311.362	373.814	373.814
20	0.778385	305.336	-25.9147	Med Dense Native	1	34	127.884	216.558	319.577	0	319.577	381.715	381.715
21	0.778385	309.178	-25.2146	Med Dense Native	1	34	130.735	221.386	326.735	0	326.735	388.294	388.294
22	0.778385	311.939	-24.5185	Med Dense Native	1	34	133.159	225.491	332.823	0	332.823	393.559	393.559
23	0.778385	313.635	-23.8262	Med Dense Native	1	34	135.152	228.867	337.827	0	337.827	397.51	397.51

24	0.778385	314.283	-23.1376	Med Dense Native	1	34	136.71	231.505	341.738	0	341.738	400.156	400.156
25	0.778385	313.901	-22.4526	Med Dense Native	1	34	137.827	233.397	344.543	0	344.543	401.499	401.499
26	0.778385	312.504	-21.7709	Med Dense Native	1	34	138.498	234.533	346.227	0	346.227	401.54	401.54
27	0.778385	310.106	-21.0924	Med Dense Native	1	34	138.717	234.904	346.776	0	346.776	400.282	400.282
28	0.778385	306.721	-20.417	Med Dense Native	1	34	138.479	234.5	346.179	0	346.179	397.725	397.725
29	0.778385	302.362	-19.7446	Med Dense Native	1	34	137.778	233.313	344.418	0	344.418	393.871	393.871
30	0.778385	297.042	-19.075	Med Dense Native	1	34	136.607	231.33	341.478	0	341.478	388.716	388.716
31	0.778385	290.773	-18.408	Med Dense Native	1	34	134.96	228.541	337.344	0	337.344	382.26	382.26
32	0.778385	283.565	-17.7437	Med Dense Native	1	34	132.83	224.935	331.997	0	331.997	374.5	374.5
33	0.778385	275.43	-17.0818	Med Dense Native	1	34	130.211	220.5	325.423	0	325.423	365.436	365.436
34	0.778385	266.377	-16.4223	Med Dense Native	1	34	127.096	215.224	317.601	0	317.601	355.061	355.061
35	0.778385	256.415	-15.7649	Med Dense Native	1	34	123.476	209.094	308.512	0	308.512	343.37	343.37
36	0.778385	245.555	-15.1097	Med Dense Native	1	34	119.343	202.096	298.136	0	298.136	330.359	330.359
37	0.778385	233.804	-14.4566	Med Dense Native	1	34	114.69	194.216	286.455	0	286.455	316.023	316.023
38	0.778385	221.17	-13.8053	Med Dense Native	1	34	109.508	185.441	273.445	0	273.445	300.353	300.353
39	0.778385	207.661	-13.1559	Med Dense Native	1	34	103.787	175.753	259.083	0	259.083	283.342	283.342
40	0.778385	193.284	-12.5081	Med Dense Native	1	34	97.5192	165.139	243.346	0	243.346	264.98	264.98
41	0.778385	178.045	-11.862	Med Dense Native	1	34	90.6939	153.581	226.21	0	226.21	245.26	245.26
42	0.778385	161.952	-11.2174	Med Dense Native	1	34	83.3005	141.061	207.649	0	207.649	224.169	224.169
43	0.778385	145.009	-10.5743	Med Dense Native	1	34	75.3295	127.563	187.637	0	187.637	201.7	201.7
44	0.778385	127.223	-9.93246	Med Dense Native	1	34	66.7686	113.066	166.144	0	166.144	177.836	177.836
45	0.778385	108.597	-9.29191	Med Dense Native	1	34	57.6066	97.5511	143.143	0	143.143	152.568	152.568
46	0.778385	89.1384	-8.65253	Med Dense Native	1	34	47.8314	80.9977	118.601	0	118.601	125.88	125.88
47	0.778385	68.85	-8.01424	Med Dense Native	1	34	37.4301	63.3841	92.4882	0	92.4882	97.7582	97.7582
48	0.778385	47.7361	-7.37694	Med Dense Native	1	34	26.3893	44.6876	64.7695	0	64.7695	68.1861	68.1861
49	0.798105	28.6067	-6.73252	Topsoil	21	30	26.3624	44.6421	40.9493	0	40.9493	44.0614	44.0614

50	0.798105	9.65173	-6.08089	Topsoil	21	30	18.2208	30.8552	17.0697	0	17.0697	19.0108	19.0108

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.69401

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.674163	8.22568	-38.888	Topsoil	21	30	7.228	12.2443	-15.1653	0	-15.1653	-9.33552	-9.33552
2	0.674163	24.237	-38.1734	Topsoil	21	30	19.9256	33.7542	22.0909	0	22.0909	37.7559	37.7559
3	0.704642	43.6116	-37.4499	Med Dense Native	1	34	19.5078	33.0464	47.5107	0	47.5107	62.4525	62.4525
4	0.704642	63.2956	-36.7175	Med Dense Native	1	34	27.7765	47.0536	68.2772	0	68.2772	88.9943	88.9943
5	0.704642	81.7995	-35.9921	Med Dense Native	1	34	35.5373	60.2005	87.7683	0	87.7683	113.58	113.58
6	0.704642	99.156	-35.2732	Med Dense Native	1	34	42.8271	72.5495	106.077	0	106.077	136.37	136.37
7	0.704642	115.396	-34.5607	Med Dense Native	1	34	49.6793	84.1573	123.286	0	123.286	157.507	157.507
8	0.704642	130.547	-33.8542	Med Dense Native	1	34	56.124	95.0747	139.471	0	139.471	177.12	177.12
9	0.704642	144.637	-33.1535	Med Dense Native	1	34	62.1879	105.347	154.7	0	154.7	195.322	195.322
10	0.704642	157.692	-32.4583	Med Dense Native	1	34	67.8939	115.013	169.031	0	169.031	212.215	212.215
11	0.704642	169.735	-31.7685	Med Dense Native	1	34	73.2628	124.108	182.514	0	182.514	227.883	227.883
12	0.704642	180.789	-31.0838	Med Dense Native	1	34	78.3112	132.66	195.194	0	195.194	242.404	242.404
13	0.704642	190.876	-30.404	Med Dense Native	1	34	83.0532	140.693	207.102	0	207.102	255.837	255.837
14	0.704642	200.016	-29.7289	Med Dense Native	1	34	87.5001	148.226	218.272	0	218.272	268.239	268.239
15	0.704642	208.227	-29.0583	Med Dense Native	1	34	91.6606	155.274	228.721	0	228.721	279.651	279.651
16	0.704642	215.529	-28.3921	Med Dense Native	1	34	95.5396	161.845	238.463	0	238.463	290.104	290.104
17	0.704642	221.938	-27.73	Med Dense Native	1	34	99.1405	167.945	247.507	0	247.507	299.623	299.623
18	0.704642	227.471	-27.0719	Med Dense Native	1	34	102.463	173.574	255.852	0	255.852	308.222	308.222
19	0.704642	232.143	-26.4176	Med Dense Native	1	34	105.506	178.728	263.493	0	263.493	315.907	315.907
20	0.704642	235.969	-25.7671	Med Dense Native	1	34	108.263	183.399	270.418	0	270.418	322.678	322.678
21	0.704642	238.963	-25.12	Med Dense Native	1	34	110.728	187.575	276.61	0	276.61	328.526	328.526
22	0.704642	241.139	-24.4764	Med Dense Native	1	34	112.892	191.24	282.043	0	282.043	333.435	333.435
23	0.704642	242.509	-23.8361	Med Dense Native	1	34	114.743	194.375	286.691	0	286.691	337.385	337.385
24	0.704642	243.084	-23.1989	Med Dense Native	1	34	116.267	196.958	290.52	0	290.52	340.349	340.349

25	0.704642	242.877	-22.5648	Med Dense Native	1	34	117.452	198.965	293.495	0	293.495	342.301	342.301
26	0.704642	241.899	-21.9335	Med Dense Native	1	34	118.28	200.367	295.574	0	295.574	343.202	343.202
27	0.704642	240.159	-21.305	Med Dense Native	1	34	118.735	201.138	296.716	0	296.716	343.021	343.021
28	0.704642	237.667	-20.6792	Med Dense Native	1	34	118.799	201.247	296.879	0	296.879	341.72	341.72
29	0.704642	234.434	-20.056	Med Dense Native	1	34	118.456	200.665	296.016	0	296.016	339.262	339.262
30	0.704642	230.468	-19.4352	Med Dense Native	1	34	117.688	199.364	294.086	0	294.086	335.612	335.612
31	0.704642	225.777	-18.8169	Med Dense Native	1	34	116.479	197.316	291.05	0	291.05	330.741	330.741
32	0.704642	220.369	-18.2007	Med Dense Native	1	34	114.813	194.494	286.866	0	286.866	324.617	324.617
33	0.704642	214.253	-17.5868	Med Dense Native	1	34	112.677	190.876	281.504	0	281.504	317.218	317.218
34	0.704642	207.435	-16.9749	Med Dense Native	1	34	110.06	186.443	274.93	0	274.93	308.526	308.526
35	0.704642	199.923	-16.365	Med Dense Native	1	34	106.953	181.179	267.126	0	267.126	298.533	298.533
36	0.704642	191.723	-15.757	Med Dense Native	1	34	103.349	175.074	258.075	0	258.075	287.236	287.236
37	0.704642	182.842	-15.1508	Med Dense Native	1	34	99.245	168.122	247.768	0	247.768	274.641	274.641
38	0.704642	173.284	-14.5464	Med Dense Native	1	34	94.6417	160.324	236.208	0	236.208	260.766	260.766
39	0.704642	163.057	-13.9436	Med Dense Native	1	34	89.5426	151.686	223.401	0	223.401	245.633	245.633
40	0.704642	152.165	-13.3424	Med Dense Native	1	34	83.9546	142.22	209.367	0	209.367	229.278	229.278
41	0.704642	140.614	-12.7427	Med Dense Native	1	34	77.8886	131.944	194.132	0	194.132	211.746	211.746
42	0.704642	128.407	-12.1443	Med Dense Native	1	34	71.3585	120.882	177.733	0	177.733	193.089	193.089
43	0.704642	115.55	-11.5474	Med Dense Native	1	34	64.3821	109.064	160.212	0	160.212	173.366	173.366
44	0.704642	102.048	-10.9517	Med Dense Native	1	34	56.9798	96.5243	141.621	0	141.621	152.647	152.647
45	0.704642	87.903	-10.3572	Med Dense Native	1	34	49.1736	83.3006	122.016	0	122.016	131.003	131.003
46	0.704642	73.1199	-9.76379	Med Dense Native	1	34	40.9886	69.4351	101.459	0	101.459	108.513	108.513
47	0.704642	57.7021	-9.17146	Med Dense Native	1	34	32.451	54.9723	80.0172	0	80.0172	85.2565	85.2565
48	0.704642	41.6527	-8.58012	Med Dense Native	1	34	23.5877	39.9578	57.7574	0	57.7574	61.3163	61.3163
49	0.854308	30.6547	-7.9271	Topsoil	21	30	24.0192	40.6887	34.1019	0	34.1019	37.4464	37.4464
50	0.854308	10.3649	-7.21252	Topsoil	21	30	15.9958	27.0971	10.5605	0	10.5605	12.5848	12.5848

Group 3

Global Minimum Query (spencer) - Safety Factor: 1.36003

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	1.089	25.8638	-41.4982	Topsoil	21	30	18.1241	24.6493	6.32074	0	6.32074	22.3545	22.3545
2	0.179881	9.39604	-40.8348	Med Dense Native	1	34	17.4928	23.7907	33.7886	0	33.7886	48.9065	48.9065
3	0.892854	52.901	-25.0836	Weak Layer	1	27	19.1592	26.0571	49.1773	0	49.1773	58.1454	58.1454
4	0.892854	56.9717	-25.0836	Weak Layer	1	27	20.5801	27.9896	52.9702	0	52.9702	62.6034	62.6034
5	0.892854	61.0425	-25.0836	Weak Layer	1	27	22.0011	29.9222	56.7631	0	56.7631	67.0615	67.0615
6	0.892854	65.1132	-25.0836	Weak Layer	1	27	23.4221	31.8548	60.556	0	60.556	71.5195	71.5195
7	0.892854	69.184	-25.0836	Weak Layer	1	27	24.8431	33.7874	64.3489	0	64.3489	75.9776	75.9776
8	0.892854	73.2547	-25.0836	Weak Layer	1	27	26.2641	35.72	68.1418	0	68.1418	80.4356	80.4356
9	0.892854	77.3255	-25.0836	Weak Layer	1	27	27.6851	37.6526	71.9348	0	71.9348	84.8938	84.8938
10	0.892854	81.3962	-25.0836	Weak Layer	1	27	29.1061	39.5852	75.7276	0	75.7276	89.3518	89.3518
11	0.892854	85.4669	-25.0836	Weak Layer	1	27	30.527	41.5177	79.5206	0	79.5206	93.8098	93.8098
12	0.892854	89.5377	-25.0836	Weak Layer	1	27	31.948	43.4503	83.3134	0	83.3134	98.2678	98.2678
13	0.892854	93.6084	-25.0836	Weak Layer	1	27	33.369	45.3829	87.1064	0	87.1064	102.726	102.726
14	0.892854	97.6792	-25.0836	Weak Layer	1	27	34.79	47.3155	90.8993	0	90.8993	107.184	107.184
15	0.892854	101.75	-25.0836	Weak Layer	1	27	36.211	49.2481	94.6922	0	94.6922	111.642	111.642
16	0.892854	105.821	-25.0836	Weak Layer	1	27	37.632	51.1807	98.4851	0	98.4851	116.1	116.1
17	0.892854	109.891	-25.0836	Weak Layer	1	27	39.053	53.1133	102.278	0	102.278	120.558	120.558
18	0.892854	113.962	-25.0836	Weak Layer	1	27	40.474	55.0458	106.071	0	106.071	125.017	125.017
19	0.892854	118.033	-25.0836	Weak Layer	1	27	41.895	56.9784	109.864	0	109.864	129.475	129.475
20	0.892854	122.104	-25.0836	Weak Layer	1	27	43.316	58.911	113.657	0	113.657	133.932	133.932
21	0.892854	126.174	-25.0836	Weak Layer	1	27	44.737	60.8436	117.45	0	117.45	138.39	138.39
22	0.892854	130.245	-25.0836	Weak Layer	1	27	46.158	62.7762	121.242	0	121.242	142.848	142.848
23	0.892854	134.316	-25.0836	Weak Layer	1	27	47.579	64.7088	125.035	0	125.035	147.306	147.306
24	0.892854	138.387	-25.0836	Weak Layer	1	27	48.9999	66.6413	128.828	0	128.828	151.764	151.764
25	0.892854	142.457	-25.0836	Weak Layer	1	27	50.4209	68.5739	132.622	0	132.622	156.223	156.223
26	0.892854	146.528	-25.0836	Weak Layer	1	27	51.8419	70.5065	136.414	0	136.414	160.681	160.681
27	0.892854	150.599	-25.0836	Weak Layer	1	27	53.2629	72.4391	140.207	0	140.207	165.139	165.139
28	0.892854	154.67	-25.0836	Weak Layer	1	27	54.6839	74.3717	144	0	144	169.597	169.597
29	0.892854	158.74	-25.0836	Weak Layer	1	27	56.1049	76.3043	147.793	0	147.793	174.055	174.055
30	0.892854	162.811	-25.0836	Weak Layer	1	27	57.5259	78.2369	151.585	0	151.585	178.512	178.512
31	0.892854	166.882	-25.0836	Weak Layer	1	27	58.9468	80.1694	155.379	0	155.379	182.971	182.971
32	0.892854	170.953	-25.0836	Weak Layer	1	27	60.3678	82.102	159.172	0	159.172	187.429	187.429

33	0.892854	175.023	-25.0836	Weak Layer	1	27	61.7888	84.0346	162.965	0	162.965	191.887	191.887
34	0.892854	179.094	-25.0836	Weak Layer	1	27	63.2098	85.9672	166.758	0	166.758	196.345	196.345
35	0.892854	183.165	-25.0836	Weak Layer	1	27	64.6308	87.8998	170.55	0	170.55	200.803	200.803
36	0.892854	187.236	-25.0836	Weak Layer	1	27	66.0518	89.8324	174.343	0	174.343	205.261	205.261
37	0.892854	191.306	-25.0836	Weak Layer	1	27	67.4728	91.765	178.136	0	178.136	209.719	209.719
38	0.892854	195.377	-25.0836	Weak Layer	1	27	68.8937	93.6975	181.93	0	181.93	214.178	214.178
39	0.892854	199.448	-25.0836	Weak Layer	1	27	70.3147	95.6301	185.722	0	185.722	218.636	218.636
40	0.892854	203.519	-25.0836	Weak Layer	1	27	71.7357	97.5627	189.515	0	189.515	223.093	223.093
41	0.892854	207.589	-25.0836	Weak Layer	1	27	73.1567	99.4953	193.308	0	193.308	227.551	227.551
42	0.892854	211.66	-25.0836	Weak Layer	1	27	74.5778	101.428	197.101	0	197.101	232.009	232.009
43	0.895832	201.605	-9.06992	Med Dense Native	1	34	114.18	155.288	228.741	0	228.741	246.968	246.968
44	0.895832	175.387	-8.35909	Med Dense Native	1	34	100.433	136.592	201.023	0	201.023	215.781	215.781
45	0.895832	147.95	-7.64955	Med Dense Native	1	34	85.7011	116.556	171.319	0	171.319	182.829	182.829
46	0.895832	119.3	-6.94119	Med Dense Native	1	34	69.9599	95.1475	139.579	0	139.579	148.097	148.097
47	0.895832	89.442	-6.2339	Med Dense Native	1	34	53.1853	72.3336	105.756	0	105.756	111.566	111.566
48	0.895832	58.382	-5.52756	Med Dense Native	1	34	35.3511	48.0785	69.7968	0	69.7968	73.2179	73.2179
49	0.724646	25.9404	-4.88941	Topsoil	21	30	32.9644	44.8326	41.2793	0	41.2793	44.0992	44.0992
50	0.724646	8.73009	-4.31921	Topsoil	21	30	22.4905	30.5878	16.6065	0	16.6065	18.3051	18.3051

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.34062

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.715731	16.9986	-48.3442	Topsoil	21	30	11.595	15.5445	-9.44926	0	-9.44926	3.58489	3.58489
2	0.090778	4.64575	-47.7424	Med Dense Native	1	34	17.442	23.3831	33.1844	0	33.1844	52.3814	52.3814
3	0.933673	53.4414	-25.0836	Weak Layer	1	27	19.5707	26.2369	49.5302	0	49.5302	58.691	58.691
4	0.933673	57.8929	-25.0836	Weak Layer	1	27	21.0247	28.1862	53.3559	0	53.3559	63.1973	63.1973
5	0.933673	62.3443	-25.0836	Weak Layer	1	27	22.4681	30.1212	57.1536	0	57.1536	67.6706	67.6706
6	0.933673	66.7958	-25.0836	Weak Layer	1	27	23.9019	32.0433	60.926	0	60.926	72.1141	72.1141
7	0.933673	71.2472	-25.0836	Weak Layer	1	27	25.3271	33.954	64.6759	0	64.6759	76.5311	76.5311
8	0.933673	75.6987	-25.0836	Weak Layer	1	27	26.7449	35.8548	68.4064	0	68.4064	80.9253	80.9253
9	0.933673	80.1502	-25.0836	Weak Layer	1	27	28.1567	37.7474	72.1209	0	72.1209	85.3007	85.3007
10	0.933673	84.6016	-25.0836	Weak Layer	1	27	29.5638	39.6338	75.8231	0	75.8231	89.6614	89.6614
11	0.933673	89.0531	-25.0836	Weak Layer	1	27	30.9675	41.5157	79.5165	0	79.5165	94.012	94.012
12	0.933673	93.5046	-25.0836	Weak Layer	1	27	32.3695	43.3952	83.2053	0	83.2053	98.357	98.357
13	0.933673	97.956	-25.0836	Weak Layer	1	27	33.7712	45.2744	86.8934	0	86.8934	102.701	102.701
14	0.933673	102.407	-25.0836	Weak Layer	1	27	35.1742	47.1553	90.585	0	90.585	107.05	107.05
15	0.933673	106.859	-25.0836	Weak Layer	1	27	36.5802	49.0402	94.2842	0	94.2842	111.407	111.407
16	0.933673	111.31	-25.0836	Weak Layer	1	27	37.9907	50.9311	97.9953	0	97.9953	115.778	115.778
17	0.933673	115.762	-25.0836	Weak Layer	1	27	39.4074	52.8303	101.723	0	101.723	120.169	120.169
18	0.933673	120.213	-25.0836	Weak Layer	1	27	40.8318	54.7399	105.47	0	105.47	124.583	124.583
19	0.933673	124.665	-25.0836	Weak Layer	1	27	42.2655	56.662	109.243	0	109.243	129.027	129.027
20	0.933673	129.116	-25.0836	Weak Layer	1	27	43.7101	58.5987	113.043	0	113.043	133.503	133.503
21	0.933673	133.568	-25.0836	Weak Layer	1	27	45.1672	60.5521	116.878	0	116.878	138.02	138.02
22	0.933673	138.019	-25.0836	Weak Layer	1	27	46.6383	62.5242	120.748	0	120.748	142.579	142.579
23	0.933673	142.471	-25.0836	Weak Layer	1	27	48.1247	64.5169	124.659	0	124.659	147.185	147.185
24	0.933673	146.922	-25.0836	Weak Layer	1	27	49.6278	66.532	128.613	0	128.613	151.843	151.843
25	0.933673	151.374	-25.0836	Weak Layer	1	27	51.1489	68.5712	132.616	0	132.616	156.558	156.558
26	0.933673	155.825	-25.0836	Weak Layer	1	27	52.6891	70.6361	136.668	0	136.668	161.331	161.331
27	0.933673	160.276	-25.0836	Weak Layer	1	27	54.2498	72.7283	140.775	0	140.775	166.168	166.168
28	0.933673	164.728	-25.0836	Weak Layer	1	27	55.8316	74.849	144.937	0	144.937	171.071	171.071
29	0.933673	169.179	-25.0836	Weak Layer	1	27	57.4357	76.9995	149.158	0	149.158	176.042	176.042
30	0.933673	173.631	-25.0836	Weak Layer	1	27	59.0627	79.1807	153.438	0	153.438	181.085	181.085
31	0.933673	178.082	-25.0836	Weak Layer	1	27	60.7133	81.3935	157.781	0	157.781	186.2	186.2
32	0.933673	182.534	-25.0836	Weak Layer	1	27	62.388	83.6386	162.187	0	162.187	191.39	191.39
33	0.933673	186.985	-25.0836	Weak Layer	1	27	64.087	85.9163	166.658	0	166.658	196.656	196.656

34	0.933673	191.437	-25.0836	Weak Layer	1	27	65.8106	88.227	171.193	0	171.193	201.998	201.998
35	0.933673	195.888	-25.0836	Weak Layer	1	27	67.5587	90.5705	175.792	0	175.792	207.415	207.415
36	0.933673	200.34	-25.0836	Weak Layer	1	27	69.3311	92.9467	180.456	0	180.456	212.908	212.908
37	0.933673	204.791	-25.0836	Weak Layer	1	27	71.1275	95.355	185.183	0	185.183	218.476	218.476
38	0.933673	209.243	-25.0836	Weak Layer	1	27	72.9473	97.7946	189.97	0	189.97	224.115	224.115
39	0.933673	213.694	-25.0836	Weak Layer	1	27	74.7896	100.264	194.818	0	194.818	229.826	229.826
40	0.933673	218.145	-25.0836	Weak Layer	1	27	76.6533	102.763	199.721	0	199.721	235.602	235.602
41	0.933673	222.597	-25.0836	Weak Layer	1	27	78.5375	105.289	204.679	0	204.679	241.441	241.441
42	0.933673	227.048	-25.0836	Weak Layer	1	27	80.4411	107.841	209.687	0	209.687	247.341	247.341
43	0.933673	231.5	-25.0836	Weak Layer	1	27	82.3619	110.416	214.74	0	214.74	253.293	253.293
44	0.933673	235.951	-25.0836	Weak Layer	1	27	84.2976	113.011	219.833	0	219.833	259.291	259.291
45	0.933673	240.403	-25.0836	Weak Layer	1	27	86.2467	115.624	224.962	0	224.962	265.332	265.332
46	1.05671	248.393	-1.96677	Med Dense Native	1	34	131.159	175.834	259.202	0	259.202	263.706	263.706
47	1.05671	194.746	-0.916976	Med Dense Native	1	34	101.88	136.582	201.008	0	201.008	202.639	202.639
48	1.05671	138.643	0.132509	Med Dense Native	1	34	71.8463	96.3186	141.315	0	141.315	141.149	141.149
49	1.05671	80.0862	1.18204	Med Dense Native	1	34	41.323	55.3984	80.649	0	80.649	79.7964	79.7964
50	1.07602	25.5555	2.24156	Topsoil	21	30	26.7816	35.9039	25.8144	0	25.8144	24.7661	24.7661

Group 4

Global Minimum Query (spencer) - Safety Factor: 1.69247

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.730096	8.9152	-37.8701	Topsoil	21	30	13.5359	22.9091	3.30661	0	3.30661	13.8327	13.8327
2	0.730096	26.255	-37.1717	Topsoil	21	30	19.9267	33.7253	22.0409	0	22.0409	37.1505	37.1505
3	0.735338	45.1098	-36.4773	Med Dense Native	1	34	17.6962	29.9503	42.9206	0	42.9206	56.0043	56.0043
4	0.735338	64.8728	-35.7866	Med Dense Native	1	34	25.4686	43.1048	62.4229	0	62.4229	80.7824	80.7824
5	0.735338	83.4518	-35.1018	Med Dense Native	1	34	32.9319	55.7363	81.15	0	81.15	104.297	104.297
6	0.735338	100.877	-34.4228	Med Dense Native	1	34	40.0837	67.8405	99.0952	0	99.0952	126.564	126.564
7	0.735338	117.176	-33.7492	Med Dense Native	1	34	46.9212	79.4128	116.252	0	116.252	147.602	147.602
8	0.735338	132.376	-33.0808	Med Dense Native	1	34	53.4418	90.4487	132.614	0	132.614	167.426	167.426
9	0.735338	146.502	-32.4175	Med Dense Native	1	34	59.6428	100.944	148.173	0	148.173	186.049	186.049
10	0.735338	159.577	-31.7591	Med Dense Native	1	34	65.5214	110.893	162.923	0	162.923	203.483	203.483
11	0.735338	171.625	-31.1053	Med Dense Native	1	34	71.0754	120.293	176.859	0	176.859	219.743	219.743
12	0.735338	182.666	-30.4559	Med Dense Native	1	34	76.3015	129.138	189.972	0	189.972	234.838	234.838
13	0.735338	192.72	-29.8109	Med Dense Native	1	34	81.1967	137.423	202.256	0	202.256	248.778	248.778
14	0.735338	201.807	-29.17	Med Dense Native	1	34	85.7593	145.145	213.703	0	213.703	261.573	261.573
15	0.735338	209.945	-28.5331	Med Dense Native	1	34	89.9851	152.297	224.307	0	224.307	273.232	273.232
16	0.735338	217.151	-27.9	Med Dense Native	1	34	93.8717	158.875	234.059	0	234.059	283.761	283.761
17	0.735338	223.442	-27.2706	Med Dense Native	1	34	97.4162	164.874	242.952	0	242.952	293.169	293.169
18	0.735338	228.833	-26.6447	Med Dense Native	1	34	100.615	170.288	250.979	0	250.979	301.462	301.462
19	0.735338	233.339	-26.0223	Med Dense Native	1	34	103.465	175.112	258.132	0	258.132	308.645	308.645
20	0.735338	236.974	-25.4031	Med Dense Native	1	34	105.963	179.34	264.4	0	264.4	314.722	314.722
21	0.735338	239.752	-24.7871	Med Dense Native	1	34	108.106	182.967	269.778	0	269.778	319.701	319.701
22	0.735338	241.686	-24.1741	Med Dense Native	1	34	109.891	185.987	274.254	0	274.254	323.581	323.581
23	0.735338	242.787	-23.5641	Med Dense Native	1	34	111.312	188.393	277.822	0	277.822	326.37	326.37

24	0.735338	243.069	-22.9569	Med Dense Native	1	34	112.368	190.179	280.47	0	280.47	328.068	328.068
25	0.735338	242.541	-22.3524	Med Dense Native	1	34	113.053	191.339	282.19	0	282.19	328.677	328.677
26	0.735338	241.214	-21.7505	Med Dense Native	1	34	113.364	191.866	282.97	0	282.97	328.199	328.199
27	0.735338	239.098	-21.1511	Med Dense Native	1	34	113.297	191.752	282.801	0	282.801	326.635	326.635
28	0.735338	236.204	-20.5542	Med Dense Native	1	34	112.847	190.99	281.672	0	281.672	323.985	323.985
29	0.735338	232.54	-19.9595	Med Dense Native	1	34	112.01	189.574	279.573	0	279.573	320.251	320.251
30	0.735338	228.116	-19.3671	Med Dense Native	1	34	110.782	187.495	276.49	0	276.49	315.431	315.431
31	0.735338	222.939	-18.7769	Med Dense Native	1	34	109.157	184.745	272.413	0	272.413	309.524	309.524
32	0.735338	217.017	-18.1887	Med Dense Native	1	34	107.13	181.315	267.328	0	267.328	302.527	302.527
33	0.735338	210.358	-17.6025	Med Dense Native	1	34	104.698	177.198	261.224	0	261.224	294.441	294.441
34	0.735338	202.97	-17.0182	Med Dense Native	1	34	101.853	172.383	254.086	0	254.086	285.261	285.261
35	0.735338	194.86	-16.4357	Med Dense Native	1	34	98.5914	166.863	245.901	0	245.901	274.985	274.985
36	0.735338	186.033	-15.8549	Med Dense Native	1	34	94.9063	160.626	236.655	0	236.655	263.609	263.609
37	0.735338	176.497	-15.2758	Med Dense Native	1	34	90.7927	153.664	226.333	0	226.333	251.13	251.13
38	0.735338	166.256	-14.6983	Med Dense Native	1	34	86.2438	145.965	214.919	0	214.919	237.542	237.542
39	0.735338	155.318	-14.1223	Med Dense Native	1	34	81.2534	137.519	202.398	0	202.398	222.841	222.841
40	0.735338	143.687	-13.5478	Med Dense Native	1	34	75.8152	128.315	188.752	0	188.752	207.02	207.02
41	0.735338	131.368	-12.9747	Med Dense Native	1	34	69.9215	118.34	173.964	0	173.964	190.074	190.074
42	0.735338	118.367	-12.4028	Med Dense Native	1	34	63.5663	107.584	158.018	0	158.018	171.997	171.997
43	0.735338	104.687	-11.8323	Med Dense Native	1	34	56.7415	96.0333	140.893	0	140.893	152.78	152.78
44	0.735338	90.3334	-11.2629	Med Dense Native	1	34	49.4395	83.6749	122.571	0	122.571	132.416	132.416
45	0.735338	75.3101	-10.6946	Med Dense Native	1	34	41.6524	70.4954	103.031	0	103.031	110.898	110.898
46	0.735338	59.6209	-10.1275	Med Dense Native	1	34	33.3718	56.4807	82.2535	0	82.2535	88.2145	88.2145
47	0.735338	43.2694	-9.56126	Med Dense Native	1	34	24.589	41.6161	60.2159	0	60.2159	64.3577	64.3577
48	0.606828	24.1657	-9.04534	Topsoil	21	30	27.1627	45.9721	43.2529	0	43.2529	47.5771	47.5771
49	0.606828	14.7029	-8.57948	Topsoil	21	30	21.8533	36.9861	27.6888	0	27.6888	30.9858	30.9858
50	0.606828	4.94934	-8.11419	Topsoil	21	30	16.4617	27.8609	11.8834	0	11.8834	14.2304	14.2304

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.68996

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.730096	8.9152	-37.8701	Topsoil	21	30	7.77237	13.135	-13.6226	0	-13.6226	-7.57845	-7.57845
2	0.730096	26.255	-37.1717	Topsoil	21	30	20.1163	33.9958	22.5094	0	22.5094	37.7629	37.7629
3	0.735338	45.1098	-36.4773	Med Dense Native	1	34	19.5437	33.0281	47.4837	0	47.4837	61.9333	61.9333
4	0.735338	64.8728	-35.7866	Med Dense Native	1	34	27.5828	46.6138	67.6253	0	67.6253	87.5088	87.5088
5	0.735338	83.4518	-35.1018	Med Dense Native	1	34	35.1288	59.3662	86.5315	0	86.5315	111.222	111.222
6	0.735338	100.877	-34.4228	Med Dense Native	1	34	42.2159	71.3432	104.288	0	104.288	133.218	133.218
7	0.735338	117.176	-33.7492	Med Dense Native	1	34	48.8752	82.5971	120.972	0	120.972	153.629	153.629
8	0.735338	132.376	-33.0808	Med Dense Native	1	34	55.1346	93.1753	136.655	0	136.655	172.571	172.571
9	0.735338	146.502	-32.4175	Med Dense Native	1	34	61.0186	103.119	151.399	0	151.399	190.148	190.148
10	0.735338	159.577	-31.7591	Med Dense Native	1	34	66.5495	112.466	165.256	0	165.256	206.452	206.452
11	0.735338	171.625	-31.1053	Med Dense Native	1	34	71.7455	121.247	178.274	0	178.274	221.562	221.562
12	0.735338	182.666	-30.4559	Med Dense Native	1	34	76.6219	129.488	190.491	0	190.491	235.546	235.546
13	0.735338	192.72	-29.8109	Med Dense Native	1	34	81.1925	137.212	201.942	0	201.942	248.462	248.462
14	0.735338	201.807	-29.17	Med Dense Native	1	34	85.4659	144.434	212.65	0	212.65	260.356	260.356
15	0.735338	209.945	-28.5331	Med Dense Native	1	34	89.4506	151.168	222.633	0	222.633	271.268	271.268
16	0.735338	217.151	-27.9	Med Dense Native	1	34	93.1501	157.42	231.903	0	231.903	281.223	281.223
17	0.735338	223.442	-27.2706	Med Dense Native	1	34	96.5674	163.195	240.464	0	240.464	290.243	290.243
18	0.735338	228.833	-26.6447	Med Dense Native	1	34	99.7006	168.49	248.313	0	248.313	298.337	298.337
19	0.735338	233.339	-26.0223	Med Dense Native	1	34	102.547	173.301	255.446	0	255.446	305.511	305.511
20	0.735338	236.974	-25.4031	Med Dense Native	1	34	105.101	177.617	261.846	0	261.846	311.759	311.759
21	0.735338	239.752	-24.7871	Med Dense Native	1	34	107.356	181.428	267.495	0	267.495	317.072	317.072
22	0.735338	241.686	-24.1741	Med Dense Native	1	34	109.301	184.715	272.368	0	272.368	321.431	321.431
23	0.735338	242.787	-23.5641	Med Dense Native	1	34	110.925	187.459	276.438	0	276.438	324.817	324.817
24	0.735338	243.069	-22.9569	Med Dense Native	1	34	112.215	189.639	279.669	0	279.669	327.202	327.202

25	0.735338	242.541	-22.3524	Med Dense Native	1	34	113.156	191.229	282.026	0	282.026	328.556	328.556
26	0.735338	241.214	-21.7505	Med Dense Native	1	34	113.733	192.204	283.471	0	283.471	328.847	328.847
27	0.735338	239.098	-21.1511	Med Dense Native	1	34	113.929	192.535	283.963	0	283.963	328.041	328.041
28	0.735338	236.204	-20.5542	Med Dense Native	1	34	113.728	192.196	283.46	0	283.46	326.104	326.104
29	0.735338	232.54	-19.9595	Med Dense Native	1	34	113.114	191.158	281.921	0	281.921	323	323
30	0.735338	228.116	-19.3671	Med Dense Native	1	34	112.071	189.395	279.306	0	279.306	318.701	318.701
31	0.735338	222.939	-18.7769	Med Dense Native	1	34	110.583	186.881	275.58	0	275.58	313.176	313.176
32	0.735338	217.017	-18.1887	Med Dense Native	1	34	108.638	183.594	270.707	0	270.707	306.402	306.402
33	0.735338	210.358	-17.6025	Med Dense Native	1	34	106.224	179.515	264.659	0	264.659	298.361	298.361
34	0.735338	202.97	-17.0182	Med Dense Native	1	34	103.332	174.627	257.412	0	257.412	289.04	289.04
35	0.735338	194.86	-16.4357	Med Dense Native	1	34	99.9544	168.919	248.949	0	248.949	278.435	278.435
36	0.735338	186.033	-15.8549	Med Dense Native	1	34	96.0875	162.384	239.261	0	239.261	266.551	266.551
37	0.735338	176.497	-15.2758	Med Dense Native	1	34	91.7306	155.021	228.346	0	228.346	253.399	253.399
38	0.735338	166.256	-14.6983	Med Dense Native	1	34	86.8867	146.835	216.21	0	216.21	239.001	239.001
39	0.735338	155.318	-14.1223	Med Dense Native	1	34	81.5611	137.835	202.866	0	202.866	223.386	223.386
40	0.735338	143.687	-13.5478	Med Dense Native	1	34	75.7627	128.036	188.339	0	188.339	206.595	206.595
41	0.735338	131.368	-12.9747	Med Dense Native	1	34	69.5052	117.461	172.661	0	172.661	188.676	188.676
42	0.735338	118.367	-12.4028	Med Dense Native	1	34	62.8039	106.136	155.871	0	155.871	169.683	169.683
43	0.735338	104.687	-11.8323	Med Dense Native	1	34	55.6774	94.0925	138.015	0	138.015	149.679	149.679
44	0.735338	90.3334	-11.2629	Med Dense Native	1	34	48.1465	81.3656	119.147	0	119.147	128.735	128.735
45	0.735338	75.3101	-10.6946	Med Dense Native	1	34	40.2345	67.9947	99.3238	0	99.3238	106.922	106.922
46	0.735338	59.6209	-10.1275	Med Dense Native	1	34	31.9661	54.0215	78.6075	0	78.6075	84.3173	84.3173
47	0.735338	43.2694	-9.56126	Med Dense Native	1	34	23.3668	39.489	57.0623	0	57.0623	60.9983	60.9983
48	0.606828	24.1657	-9.04534	Topsoil	21	30	25.2666	42.6995	37.5846	0	37.5846	41.607	41.607
49	0.606828	14.7029	-8.57948	Topsoil	21	30	20.0022	33.8029	22.1752	0	22.1752	25.1929	25.1929
50	0.606828	4.94934	-8.11419	Topsoil	21	30	14.6026	24.6779	6.37026	0	6.37026	8.45221	8.45221

Interslice Data

Group 1

Global Minimum Query (spencer) - Safety Factor: 1.7563

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	18.0014	376.34	0	0	0
2	18.5032	375.992	-44.0598	-12.4992	15.838
3	19.0051	375.65	-48.1856	-13.6697	15.838
4	19.507	375.315	-50.8093	-14.414	15.838
5	20.0089	374.986	-52.0966	-14.7792	15.838
6	20.5579	374.632	-46.5229	-13.198	15.838
7	21.1068	374.285	-39.7542	-11.2778	15.838
8	21.6558	373.946	-31.9998	-9.07797	15.838
9	22.2048	373.613	-23.4555	-6.65405	15.838
10	22.7538	373.286	-14.3043	-4.05795	15.838
11	23.3027	372.966	-4.71655	-1.33803	15.838
12	23.8517	372.653	5.14924	1.46078	15.838
13	24.4007	372.346	15.1464	4.29684	15.838
14	24.9497	372.045	25.1394	7.13174	15.838
15	25.4986	371.75	35.0039	9.93019	15.838
16	26.0476	371.461	44.6263	12.66	15.8381
17	26.5966	371.179	53.9033	15.2917	15.838
18	27.1456	370.902	62.7418	17.7991	15.838
19	27.6945	370.631	71.0586	20.1585	15.838
20	28.2435	370.366	78.7802	22.349	15.838
21	28.7925	370.106	85.8427	24.3525	15.838
22	29.3415	369.852	92.1913	26.1536	15.838
23	29.8904	369.604	97.7806	27.7392	15.838
24	30.4394	369.361	102.574	29.099	15.838
25	30.9884	369.123	106.543	30.225	15.838
26	31.5373	368.891	109.67	31.112	15.838
27	32.0863	368.664	111.943	31.7569	15.838
28	32.6353	368.443	113.36	32.159	15.8381
29	33.1843	368.227	113.928	32.3201	15.838
30	33.7332	368.015	113.662	32.2444	15.8379
31	34.2822	367.809	112.583	31.9383	15.8379
32	34.8312	367.608	110.722	31.4105	15.838
33	35.3802	367.412	108.119	30.672	15.838
34	35.9291	367.221	104.819	29.736	15.8381
35	36.4781	367.035	100.879	28.6182	15.838
36	37.0271	366.854	96.3602	27.3362	15.838
37	37.5761	366.678	91.3334	25.9102	15.838
38	38.125	366.506	85.8773	24.3624	15.838
39	38.674	366.34	80.0783	22.7172	15.838
40	39.223	366.178	74.0305	21.0016	15.838
41	39.772	366.02	67.8364	19.2444	15.838
42	40.3209	365.868	61.6059	17.4768	15.838
43	40.8699	365.72	55.4572	15.7325	15.838
44	41.4189	365.577	49.5165	14.0472	15.838
45	41.9679	365.438	43.9179	12.459	15.838
46	42.5168	365.304	38.8036	11.0081	15.838
47	43.0658	365.174	34.3243	9.73738	15.838
48	43.6578	365.039	24.8037	7.03652	15.838
49	44.2497	364.91	15.7629	4.47174	15.838
50	44.8417	364.786	7.35475	2.08645	15.838
51	45.4336	364.667	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.75697

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	18.0014	376.34	0	0	0
2	18.5032	375.992	-47.5078	-0.774201	0.933626
3	19.0051	375.65	-51.701	-1.68229	1.86368
4	19.507	375.315	-54.2571	-2.6409	2.7866
5	20.0089	374.986	-55.3816	-3.58032	3.69892
6	20.5579	374.632	-49.377	-4.04275	4.68066
7	21.1068	374.285	-42.195	-4.16795	5.64128
8	21.6558	373.946	-34.0612	-3.92697	6.57668
9	22.2048	373.613	-25.1822	-3.30765	7.48289
10	22.7538	373.286	-15.7462	-2.31292	8.35628
11	23.3027	372.966	-5.92516	-0.958962	9.19336
12	23.8517	372.653	4.12406	0.726512	9.99096
13	24.4007	372.346	14.2587	2.70611	10.7462
14	24.9497	372.045	24.3487	4.9345	11.4564
15	25.4986	371.75	34.2762	7.36018	12.1192
16	26.0476	371.461	43.9343	9.92718	12.7325
17	26.5966	371.179	53.2266	12.5767	13.2944
18	27.1456	370.902	62.0663	15.2486	13.8032
19	27.6945	370.631	70.3761	17.8832	14.2576
20	28.2435	370.366	78.0875	20.4223	14.6563
21	28.7925	370.106	85.1402	22.8108	14.9985
22	29.3415	369.852	91.4827	24.9976	15.283
23	29.8904	369.604	97.0711	26.9373	15.5094
24	30.4394	369.361	101.87	28.5902	15.677
25	30.9884	369.123	105.851	29.9239	15.7855
26	31.5373	368.891	108.994	30.9137	15.8348
27	32.0863	368.664	111.288	31.5428	15.8245
28	32.6353	368.443	112.728	31.803	15.7549
29	33.1843	368.227	113.318	31.6945	15.6261
30	33.7332	368.015	113.071	31.226	15.4382
31	34.2822	367.809	112.008	30.4144	15.1917
32	34.8312	367.608	110.157	29.2843	14.8873
33	35.3802	367.412	107.556	27.8673	14.5257
34	35.9291	367.221	104.252	26.2011	14.1077
35	36.4781	367.035	100.299	24.3286	13.6344
36	37.0271	366.854	95.7616	22.297	13.1071
37	37.5761	366.678	90.7114	20.1557	12.5274
38	38.125	366.506	85.2293	17.9558	11.8969
39	38.674	366.34	79.4047	15.7478	11.2175
40	39.223	366.178	73.3349	13.5807	10.4916
41	39.772	366.02	67.1253	11.4998	9.72145
42	40.3209	365.868	60.889	9.54579	8.90994
43	40.8699	365.72	54.7461	7.75256	8.06003
44	41.4189	365.577	48.8238	6.14621	7.17497
45	41.9679	365.438	43.2558	4.74361	6.25828
46	42.5168	365.304	38.1817	3.55125	5.31375
47	43.0658	365.174	33.7465	2.5643	4.34539
48	43.6578	365.039	24.3782	1.39682	3.27934
49	44.2497	364.91	15.5249	0.59531	2.19596
50	44.8417	364.786	7.3366	0.140987	1.10091
51	45.4336	364.667	0	0	0

Group 2

Global Minimum Query (spencer) - Safety Factor: 1.6934

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	8.31635	380.461	0	0	0
2	8.93431	379.942	-43.7812	-16.7983	20.9912
3	9.55227	379.435	-45.2851	-17.3753	20.9912
4	10.3307	378.813	-32.0082	-12.2812	20.9913
5	11.109	378.208	-12.4903	-4.79237	20.9912
6	11.8874	377.621	12.224	4.69019	20.9912
7	12.6658	377.05	41.1689	15.796	20.9912
8	13.4442	376.495	73.4526	28.1829	20.9912
9	14.2226	375.956	108.252	41.535	20.9912
10	15.001	375.433	144.809	55.5616	20.9913
11	15.7794	374.924	182.428	69.9953	20.9912
12	16.5577	374.429	220.467	84.5906	20.9912
13	17.3361	373.949	258.344	99.1233	20.9912
14	18.1145	373.482	295.524	113.389	20.9912
15	18.8929	373.029	331.526	127.202	20.9911
16	19.6713	372.589	365.913	140.396	20.9912
17	20.4497	372.162	398.294	152.821	20.9913
18	21.228	371.747	428.324	164.343	20.9912
19	22.0064	371.345	455.697	174.845	20.9912
20	22.7848	370.955	480.149	184.227	20.9912
21	23.5632	370.577	501.456	192.403	20.9912
22	24.3416	370.21	519.432	199.3	20.9912
23	25.12	369.855	533.927	204.861	20.9912
24	25.8984	369.511	544.831	209.045	20.9912
25	26.6767	369.179	552.065	211.821	20.9912
26	27.4551	368.857	555.59	213.173	20.9912
27	28.2335	368.546	555.398	213.1	20.9912
28	29.0119	368.246	551.518	211.611	20.9912
29	29.7903	367.956	544.011	208.73	20.9912
30	30.5687	367.677	532.973	204.495	20.9912
31	31.3471	367.408	518.533	198.955	20.9912
32	32.1254	367.149	500.854	192.172	20.9912
33	32.9038	366.899	480.133	184.221	20.9912
34	33.6822	366.66	456.598	175.191	20.9912
35	34.4606	366.431	430.515	165.183	20.9912
36	35.239	366.211	402.18	154.312	20.9913
37	36.0174	366.001	371.927	142.704	20.9912
38	36.7958	365.8	340.122	130.501	20.9912
39	37.5741	365.609	307.168	117.857	20.9913
40	38.3525	365.427	273.503	104.94	20.9912
41	39.1309	365.254	239.603	91.9328	20.9912
42	39.9093	365.091	205.979	79.0318	20.9912
43	40.6877	364.937	173.183	66.4481	20.9912
44	41.4661	364.791	141.802	54.4078	20.9912
45	42.2444	364.655	112.467	43.1524	20.9913
46	43.0228	364.528	85.8488	32.9392	20.9912
47	43.8012	364.409	62.6592	24.0416	20.9912
48	44.5796	364.3	43.655	16.7499	20.9912
49	45.358	364.199	29.6375	11.3715	20.9911
50	46.1561	364.105	12.4518	4.7776	20.9912
51	46.9542	364.019	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.69401

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	7.59878	380.766	0	0	0
2	8.27294	380.223	-49.9253	-1.14311	1.31164
3	8.94711	379.693	-51.6504	-2.361	2.61723
4	9.65175	379.153	-39.7546	-2.75826	3.96894
5	10.3564	378.627	-23.4439	-2.17519	5.30088
6	11.061	378.116	-3.56555	-0.41297	6.60669
7	11.7657	377.617	19.1264	2.6473	7.88029
8	12.4703	377.132	43.9605	7.05391	9.11598
9	13.175	376.659	70.3377	12.7934	10.3086
10	13.8796	376.199	97.723	19.7988	11.4532
11	14.5842	375.751	125.638	27.9582	12.5456
12	15.2889	375.314	153.655	37.1216	13.5819
13	15.9935	374.89	181.39	47.1088	14.5587
14	16.6982	374.476	208.498	57.7163	15.4731
15	17.4028	374.074	234.67	68.7236	16.3228
16	18.1074	373.682	259.631	79.8996	17.1054
17	18.8121	373.301	283.132	91.0087	17.8193
18	19.5167	372.931	304.952	101.816	18.4629
19	20.2214	372.571	324.894	112.094	19.0353
20	20.926	372.221	342.785	121.626	19.5356
21	21.6307	371.881	358.476	130.21	19.9626
22	22.3353	371.55	371.835	137.666	20.3163
23	23.0399	371.229	382.757	143.838	20.5959
24	23.7446	370.918	391.153	148.596	20.8014
25	24.4492	370.616	396.959	151.841	20.9324
26	25.1539	370.323	400.132	153.506	20.9887
27	25.8585	370.039	400.652	153.559	20.9705
28	26.5631	369.765	398.521	152.003	20.8777
29	27.2678	369.499	393.769	148.874	20.7103
30	27.9724	369.241	386.447	144.245	20.4686
31	28.6771	368.993	376.636	138.222	20.1527
32	29.3817	368.753	364.443	130.942	19.763
33	30.0864	368.521	350.001	122.57	19.3002
34	30.791	368.298	333.475	113.294	18.7646
35	31.4956	368.083	315.055	103.324	18.1572
36	32.2003	367.876	294.963	92.8831	17.4791
37	32.9049	367.677	273.448	82.2018	16.7314
38	33.6096	367.486	250.788	71.5136	15.9158
39	34.3142	367.303	227.286	61.0467	15.0342
40	35.0189	367.128	203.273	51.017	14.089
41	35.7235	366.961	179.103	41.6215	13.0827
42	36.4281	366.802	155.153	33.0311	12.0185
43	37.1328	366.65	131.819	25.3846	10.9001
44	37.8374	366.506	109.517	18.782	9.73147
45	38.5421	366.37	88.6756	13.2799	8.51722
46	39.2467	366.241	69.7382	8.88701	7.26228
47	39.9513	366.12	53.1575	5.56101	5.97221
48	40.656	366.006	39.3938	3.20613	4.65286
49	41.3606	365.9	28.9131	1.6724	3.31043
50	42.2149	365.781	12.4494	0.361084	1.66135
51	43.0692	365.673	0	0	0

Group 3

Global Minimum Query (spencer) - Safety Factor: 1.36003

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.585606	383.751	0	0	0
2	1.67461	382.787	-50.4846	-14.3219	15.838
3	1.85449	382.632	-48.3833	-13.7258	15.838
4	2.74734	382.214	-44.9635	-12.7556	15.838
5	3.64019	381.796	-41.2292	-11.6962	15.838
6	4.53305	381.378	-37.1805	-10.5477	15.8381
7	5.4259	380.96	-32.8173	-9.30988	15.838
8	6.31875	380.542	-28.1396	-7.98287	15.838
9	7.21161	380.124	-23.1475	-6.56666	15.838
10	8.10446	379.706	-17.8409	-5.06124	15.838
11	8.99732	379.288	-12.2198	-3.4666	15.838
12	9.89017	378.871	-6.2842	-1.78275	15.838
13	10.783	378.453	-0.0341664	-0.0096926	15.838
14	11.6759	378.035	6.53034	1.85258	15.838
15	12.5687	377.617	13.4093	3.80406	15.838
16	13.4616	377.199	20.6028	5.84476	15.838
17	14.3544	376.781	28.1107	7.97467	15.838
18	15.2473	376.363	35.9331	10.1938	15.838
19	16.1401	375.945	44.07	12.5021	15.838
20	17.033	375.527	52.5213	14.8997	15.838
21	17.9259	375.109	61.2871	17.3864	15.838
22	18.8187	374.691	70.3674	19.9624	15.838
23	19.7116	374.273	79.7622	22.6276	15.838
24	20.6044	373.855	89.4714	25.382	15.838
25	21.4973	373.437	99.4951	28.2256	15.838
26	22.3901	373.02	109.833	31.1584	15.838
27	23.283	372.602	120.486	34.1804	15.838
28	24.1758	372.184	131.453	37.2916	15.838
29	25.0687	371.766	142.735	40.4921	15.838
30	25.9615	371.348	154.331	43.7817	15.838
31	26.8544	370.93	166.241	47.1606	15.838
32	27.7472	370.512	178.466	50.6287	15.838
33	28.6401	370.094	191.006	54.186	15.838
34	29.5329	369.676	203.86	57.8325	15.838
35	30.4258	369.258	217.028	61.5682	15.838
36	31.3187	368.84	230.511	65.3932	15.838
37	32.2115	368.422	244.308	69.3073	15.838
38	33.1044	368.004	258.42	73.3107	15.838
39	33.9972	367.586	272.846	77.4032	15.838
40	34.8901	367.168	287.587	81.585	15.838
41	35.7829	366.751	302.642	85.856	15.838
42	36.6758	366.333	318.012	90.2162	15.838
43	37.5686	365.915	333.696	94.6656	15.838
44	38.4645	365.772	263.963	74.8831	15.838
45	39.3603	365.64	200.313	56.8263	15.838
46	40.2561	365.52	144.033	40.8603	15.838
47	41.152	365.411	96.4856	27.3718	15.838
48	42.0478	365.313	59.1153	16.7703	15.838
49	42.9436	365.226	33.4483	9.48889	15.838
50	43.6683	365.164	12.0825	3.42767	15.838
51	44.3929	365.109	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.34062

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.63365	383.73	0	0	0
2	1.34938	382.926	-52.7158	-1.23895	1.34634
3	1.44016	382.826	-50.9852	-1.35011	1.51686
4	2.37383	382.389	-47.6292	-2.71638	3.26415
5	3.3075	381.952	-43.9602	-3.8401	4.99234
6	4.24118	381.515	-39.9804	-4.6907	6.69163
7	5.17485	381.078	-35.692	-5.24045	8.35273
8	6.10852	380.641	-31.0966	-5.46472	9.96703
9	7.04219	380.204	-26.196	-5.34232	11.5266
10	7.97587	379.767	-20.9915	-4.85573	13.0245
11	8.90954	379.33	-15.4839	-3.99134	14.4547
12	9.84321	378.893	-9.67419	-2.73964	15.8116
13	10.7769	378.456	-3.56259	-1.09539	17.0911
14	11.7106	378.018	2.85081	0.942228	18.2894
15	12.6442	377.581	9.5663	3.3695	19.4036
16	13.5779	377.144	16.5845	6.17814	20.4316
17	14.5116	376.707	23.9064	9.35519	21.3717
18	15.4452	376.27	31.5333	12.8831	22.2227
19	16.3789	375.833	39.4669	16.7395	22.9838
20	17.3126	375.396	47.7091	20.8976	23.6544
21	18.2463	374.959	56.2624	25.3261	24.2345
22	19.1799	374.522	65.1295	29.9891	24.7239
23	20.1136	374.085	74.3132	34.8464	25.1225
24	21.0473	373.648	83.817	39.854	25.4305
25	21.981	373.211	93.6444	44.9636	25.6481
26	22.9146	372.774	103.799	50.1233	25.7753
27	23.8483	372.337	114.286	55.2777	25.8121
28	24.782	371.9	125.108	60.3684	25.7587
29	25.7156	371.463	136.272	65.3337	25.6147
30	26.6493	371.026	147.78	70.1098	25.3806
31	27.583	370.589	159.639	74.6304	25.0558
32	28.5167	370.152	171.853	78.8275	24.6405
33	29.4503	369.715	184.428	82.6317	24.1344
34	30.384	369.278	197.368	85.9726	23.5377
35	31.3177	368.841	210.68	88.7796	22.8503
36	32.2514	368.404	224.368	90.9816	22.0726
37	33.185	367.967	238.438	92.5087	21.2052
38	34.1187	367.53	252.894	93.2915	20.2488
39	35.0524	367.093	267.742	93.2626	19.2048
40	35.986	366.655	282.987	92.3568	18.0748
41	36.9197	366.218	298.633	90.5117	16.8614
42	37.8534	365.781	314.685	87.6683	15.5673
43	38.7871	365.344	331.147	83.7717	14.1965
44	39.7207	364.907	348.022	78.772	12.7535
45	40.6544	364.47	365.314	72.6242	11.2438
46	41.5881	364.033	383.026	65.2897	9.67353
47	42.6448	363.997	253.699	34.899	7.83249
48	43.7015	363.98	149.335	15.5242	5.9349
49	44.7582	363.982	72.9936	5.09609	3.99366
50	45.8149	364.004	27.5257	0.972092	2.02261
51	46.8909	364.046	0	0	0

Group 4

Global Minimum Query (spencer) - Safety Factor: 1.69247

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	10.5755	379.5	0	0	0
2	11.3056	378.932	-44.8135	-17.1944	20.9912
3	12.0357	378.378	-47.1631	-18.0959	20.9912
4	12.771	377.835	-36.844	-14.1366	20.9912
5	13.5064	377.305	-22.4869	-8.62794	20.9912
6	14.2417	376.788	-4.76677	-1.82895	20.9912
7	14.977	376.284	15.6883	6.01941	20.9912
8	15.7124	375.793	38.2948	14.6933	20.9913
9	16.4477	375.314	62.5115	23.9849	20.9912
10	17.1831	374.847	87.8372	33.7021	20.9912
11	17.9184	374.391	113.809	43.6673	20.9913
12	18.6537	373.948	140.002	53.717	20.9912
13	19.3891	373.515	166.023	63.7012	20.9913
14	20.1244	373.094	191.517	73.4829	20.9912
15	20.8598	372.684	216.159	82.9374	20.9912
16	21.5951	372.284	239.654	91.9523	20.9912
17	22.3304	371.894	261.74	100.427	20.9913
18	23.0658	371.515	282.184	108.271	20.9913
19	23.8011	371.146	300.781	115.406	20.9912
20	24.5364	370.787	317.352	121.764	20.9912
21	25.2718	370.438	331.748	127.288	20.9912
22	26.0071	370.099	343.845	131.929	20.9912
23	26.7425	369.769	353.545	135.651	20.9912
24	27.4778	369.448	360.776	138.425	20.9912
25	28.2131	369.136	365.49	140.234	20.9912
26	28.9485	368.834	367.665	141.069	20.9913
27	29.6838	368.541	367.303	140.93	20.9912
28	30.4192	368.256	364.429	139.827	20.9912
29	31.1545	367.98	359.094	137.78	20.9912
30	31.8898	367.713	351.372	134.817	20.9912
31	32.6252	367.455	341.359	130.975	20.9912
32	33.3605	367.205	329.177	126.301	20.9912
33	34.0958	366.963	314.971	120.85	20.9911
34	34.8312	366.73	298.909	114.688	20.9912
35	35.5665	366.505	281.183	107.887	20.9913
36	36.3019	366.288	262.01	100.53	20.9912
37	37.0372	366.079	241.63	92.7105	20.9912
38	37.7725	365.878	220.307	84.5292	20.9912
39	38.5079	365.685	198.33	76.097	20.9912
40	39.2432	365.5	176.014	67.5345	20.9912
41	39.9786	365.323	153.697	58.9716	20.9912
42	40.7139	365.154	131.743	50.5483	20.9912
43	41.4492	364.992	110.544	42.4143	20.9912
44	42.1846	364.838	90.5152	34.7296	20.9912
45	42.9199	364.692	72.1017	27.6646	20.9912
46	43.6552	364.553	55.7746	21.4001	20.9913
47	44.3906	364.421	42.0335	16.1278	20.9913
48	45.1259	364.297	31.4068	12.0504	20.9912
49	45.7328	364.201	19.0985	7.32787	20.9912
50	46.3396	364.109	8.36936	3.21122	20.9912
51	46.9464	364.023	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.68996

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	10.5755	379.5	0	0	0
2	11.3056	378.932	-50.2151	-1.21423	1.38517
3	12.0357	378.378	-52.441	-2.53106	2.76323
4	12.771	377.835	-40.9971	-2.96524	4.13689
5	13.5064	377.305	-25.4333	-2.44413	5.48925
6	14.2417	376.788	-6.54253	-0.781725	6.8136
7	14.977	376.284	14.9673	2.13112	8.10359
8	15.7124	375.793	38.4632	6.3354	9.35339
9	16.4477	375.314	63.3792	11.8124	10.5575
10	17.1831	374.847	89.208	18.4918	11.7109
11	17.9184	374.391	115.495	26.2595	12.8093
12	18.6537	373.948	141.832	34.9651	13.8487
13	19.3891	373.515	167.854	44.429	14.8255
14	20.1244	373.094	193.231	54.4497	15.7371
15	20.8598	372.684	217.668	64.8098	16.5807
16	21.5951	372.284	240.9	75.2828	17.3544
17	22.3304	371.894	262.691	85.6389	18.0563
18	23.0658	371.515	282.83	95.6505	18.6851
19	23.8011	371.146	301.129	105.098	19.2397
20	24.5364	370.787	317.427	113.774	19.719
21	25.2718	370.438	331.58	121.489	20.1225
22	26.0071	370.099	343.469	128.074	20.4497
23	26.7425	369.769	352.996	133.387	20.7001
24	27.4778	369.448	360.084	137.312	20.8735
25	28.2131	369.136	364.677	139.766	20.9698
26	28.9485	368.834	366.744	140.697	20.9887
27	29.6838	368.541	366.274	140.089	20.9304
28	30.4192	368.256	363.282	137.96	20.7948
29	31.1545	367.98	357.809	134.363	20.582
30	31.8898	367.713	349.918	129.386	20.2924
31	32.6252	367.455	339.701	123.146	19.9262
32	33.3605	367.205	327.278	115.792	19.4839
33	34.0958	366.963	312.795	107.497	18.9661
34	34.8312	366.73	296.427	98.4565	18.3736
35	35.5665	366.505	278.377	88.8809	17.7074
36	36.3019	366.288	258.877	78.9919	16.9687
37	37.0372	366.079	238.187	69.0151	16.159
38	37.7725	365.878	216.591	59.1734	15.2805
39	38.5079	365.685	194.403	49.6802	14.3353
40	39.2432	365.5	171.959	40.7322	13.3261
41	39.9786	365.323	149.618	32.5022	12.2562
42	40.7139	365.154	127.76	25.1332	11.1292
43	41.4492	364.992	106.783	18.7314	9.94935
44	42.1846	364.838	87.1018	13.3617	8.72137
45	42.9199	364.692	69.1449	9.04213	7.45033
46	43.6552	364.553	53.3516	5.74124	6.14204
47	44.3906	364.421	40.1701	3.375	4.80258
48	45.1259	364.297	30.055	1.80587	3.43851
49	45.7328	364.201	18.3531	0.736857	2.29913
50	46.3396	364.109	8.24513	0.165744	1.15161
51	46.9464	364.023	0	0	0

Discharge Sections

Entity Information

Group 1

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 384 0, 383.5 0, 355 66, 355 66, 358 66, 359.5 66, 360 47, 364
Material Boundary	0, 383.5 47, 363.5 66, 359.5
Material Boundary	0, 383.5 47, 361.5 66, 358

Group 2

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 384 0, 383.5 0, 380.749 0, 355 66, 355 66, 357.5 66, 359.5 66, 360 54.6259, 362.395 47, 364 12.7654, 378.568
Material Boundary	0, 383.5 47, 363.5 57.4694, 361.296 66, 359.5
Material Boundary	54.6259, 362.395 57.4694, 361.296
Material Boundary	0, 380.749 46.971, 357.778 66, 357.5

Group 3

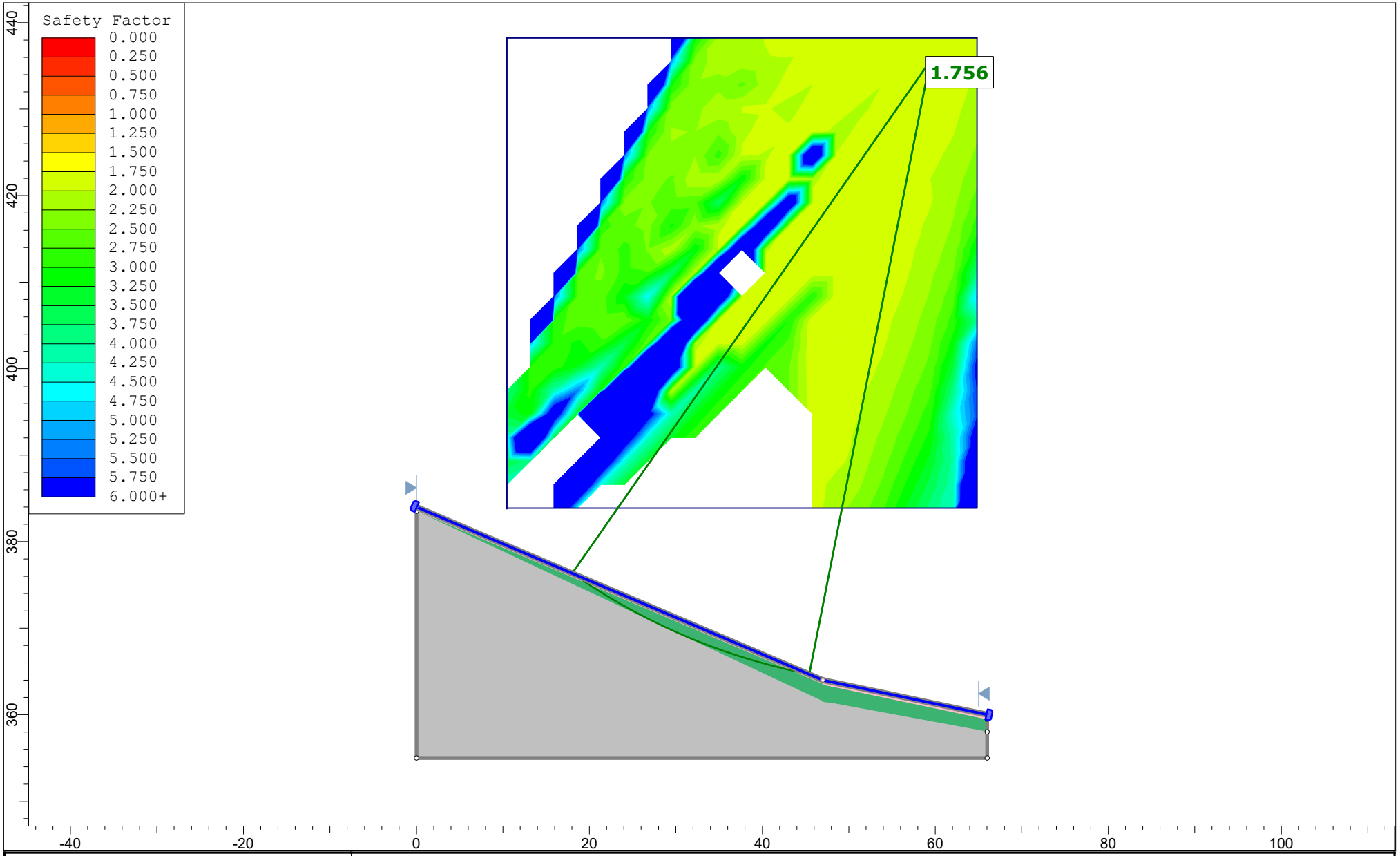
Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 384 0, 383.5 0, 355 66, 355 66, 358 66, 359.5 66, 360 47, 364
Material Boundary	0, 383.5 47, 363.5 66, 359.5
Material Boundary	0, 383.5 47, 361.5 66, 358

Group 4

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 384 0, 383.5 0, 355 66, 355 66, 358 66, 359.5 66, 360 47, 364
Material Boundary	0, 383.5 47, 363.5 66, 359.5
Material Boundary	0, 383.5 9.99964, 378.819 47, 361.5 66, 358
Material Boundary	9.99964, 378.819 10, 377.819 20.01, 373.133 20.01, 372.133
Material Boundary	20.01, 372.133 30, 367.46 30, 366.46 40, 361.771 40, 360.771 50, 356.771 50, 355.771 66, 355



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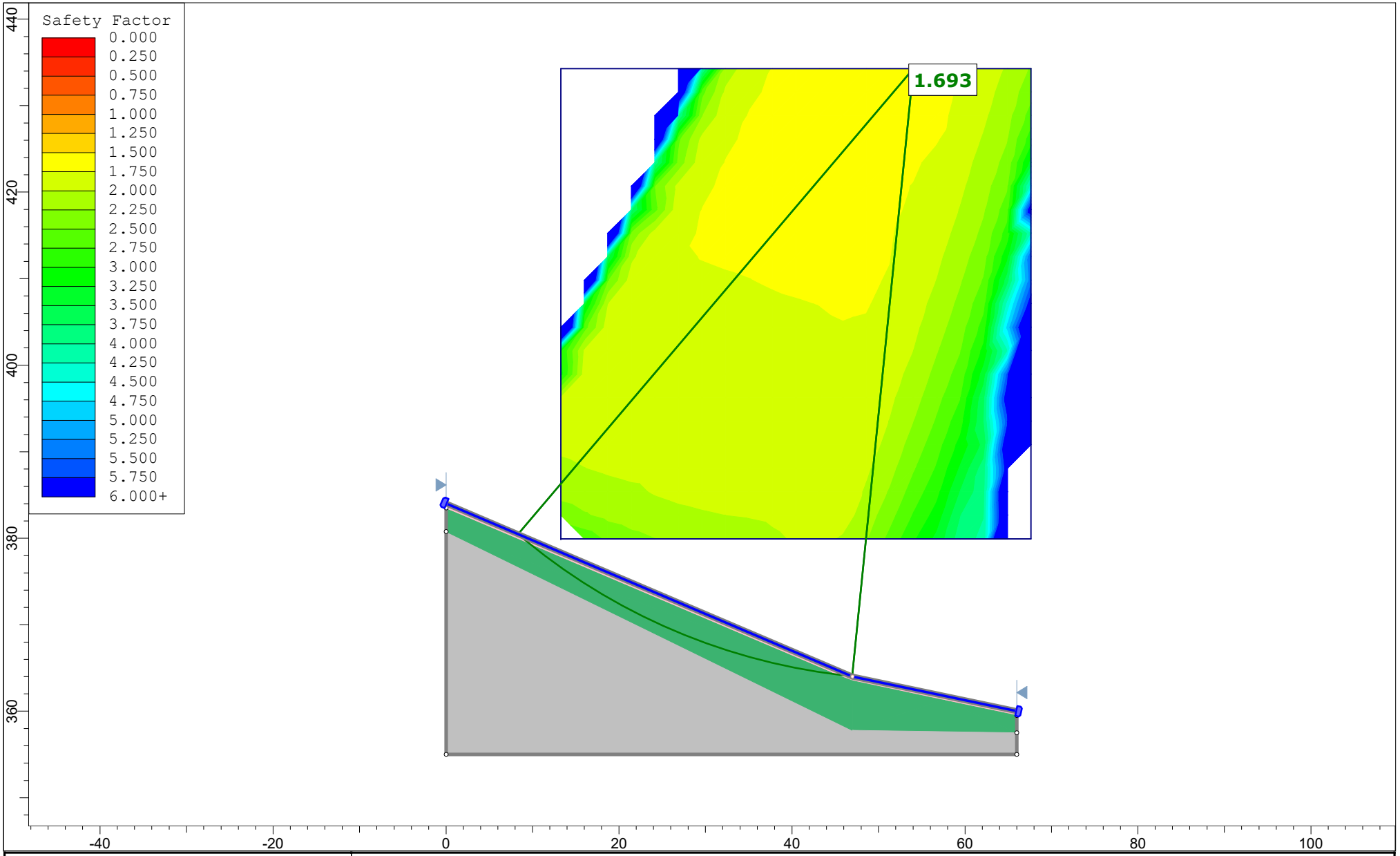
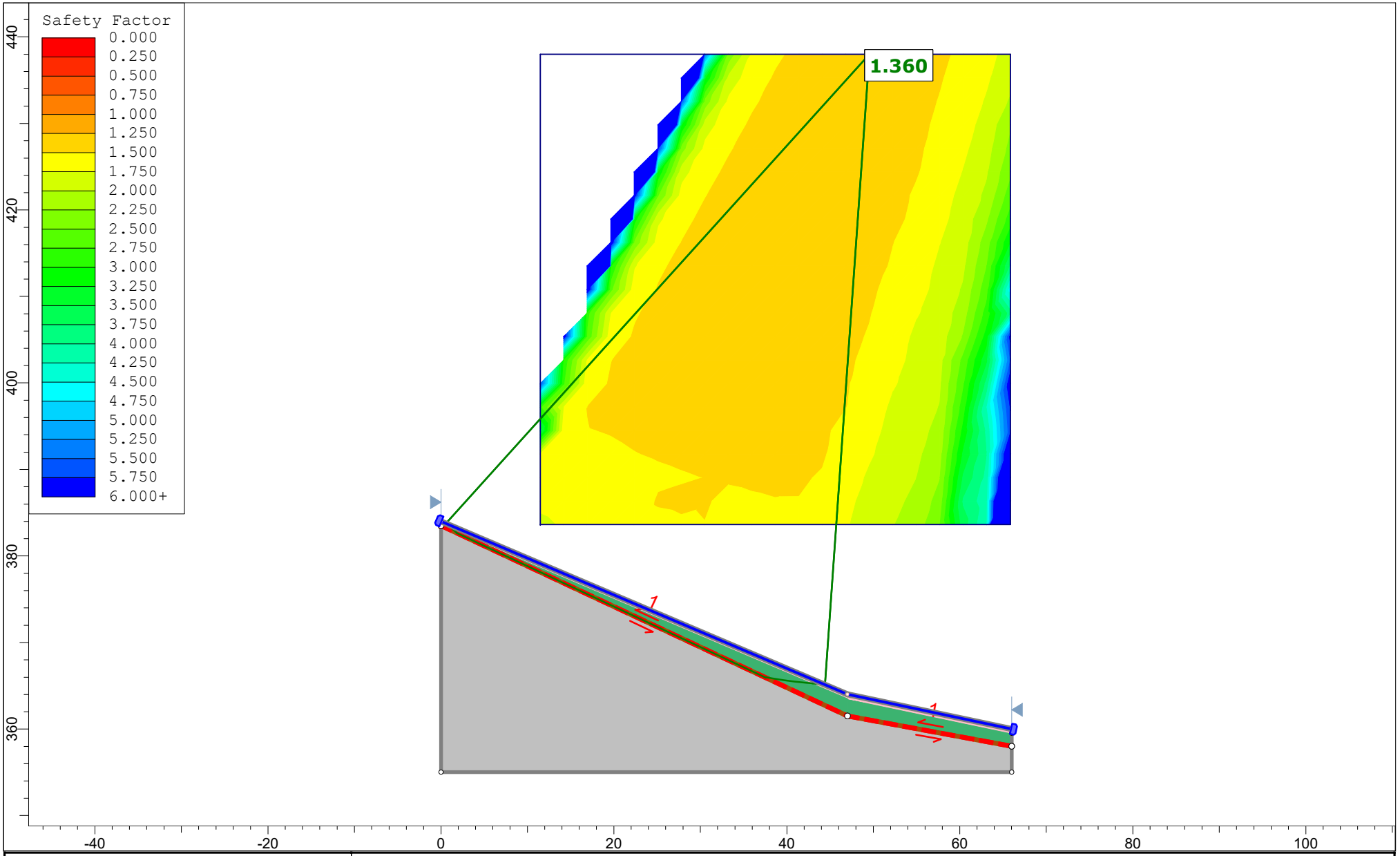
	Group	Group 1	*Scenario* Master Scenario
	Drawn By	Scott Cohen, P.E.	*Company* Tectonic Engineering Consultants
	Date	7/12/2023, 11:38:10 AM	*File Name* Cross Section A-A.slmd

SLIDEINTERPRET 9.027



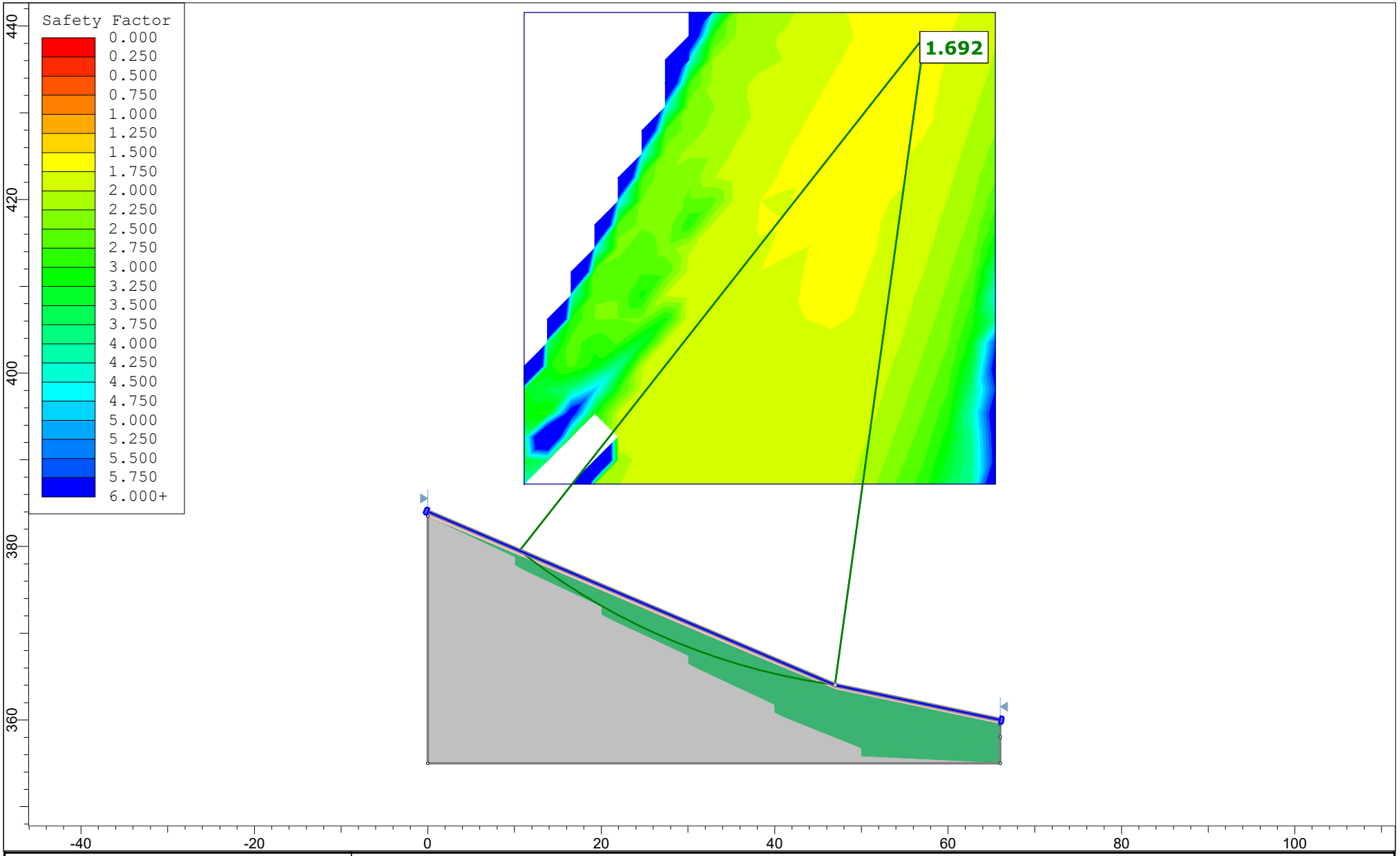
rocscience	*Project*	Homeland Towers - New Canaan, CT	
	Group	Group 2	*Scenario* Master Scenario
	Drawn By	Scott Cohen, P.E.	*Company* Tectonic Engineering Consultants
	Date	7/12/2023, 11:38:10 AM	*File Name* Cross Section A-A.slmd

SLIDEINTERPRET 9.027



rocscience	Project	Homeland Towers - New Canaan, CT	
	Group	Group 3	Scenario: Master Scenario
	Drawn By	Scott Cohen, P.E.	Company: Tectonic Engineering Consultants
	Date	7/12/2023, 11:38:10 AM	File Name: Cross Section A-A.slmd

SLIDEINTERPRET 9.027



rocscience

SLIDEINTERPRET 9.027

Project	Homeland Towers - New Canaan, CT		
Group	Group 4	*Scenario*	Master Scenario
Drawn By	Scott Cohen, P.E.	*Company*	Tectonic Engineering Consultants
Date	7/12/2023, 11:38:10 AM	*File Name*	Cross Section A-A.slmd

Our Story

For the past 30 years, Tectonic has delivered quality professional services in a timely and cost effective manner by pooling its talented staff into project teams that think, act, and perform as one integral unit. By carefully listening and collaborating with its clients, the firm is able to identify the key issues and assure stakeholder objectives are met in the final deliverables. Through innovating and adopting technological advances, the firm is able to generate unique solutions to improve our nation's deteriorating infrastructure and build safe sustainable communities.

As the world evolves, and its challenges grow more complex, Tectonic continues to innovate and provide the practical solutions and exceptional customer service its clients have trusted since its founding.

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Tectonic

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STORMWATER MANAGEMENT REPORT

PROPOSED WIRELESS

TELECOMMUNICATIONS FACILITY

NEW CANAAN NORTHWEST
1837 PONUS RIDGE ROAD
NEW CANAAN, CONNECTICUT 06840

Prepared for:

Homeland Towers, LLC
9 Harmony Street, 9th Floor
Danbury, CT

Prepared by:

All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension, Suite 311
Waterford, CT 06385

September 2023

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Tables

Appendices

Introduction

At the request of Homeland Towers, LLC, APT Engineering, P.C. ("APT") has undertaken analysis of and design to address stormwater impacts resulting from development of a proposed wireless telecommunications facility at 1837 Ponus Ridge Road in New Canaan, Connecticut (the "Project"). The Project, known as New Canaan Northwest, involves the installation of a fenced 3,515 SF gravel telecommunications equipment compound with a 110' AGL Monopine and associated utilities off Ponus Ridge Road in New Canaan, Connecticut ("Site").

The purpose of this report is to provide an analysis of the potential stormwater drainage impacts associated with the Project, as well as a description of the design to mitigate such potential stormwater drainage impacts. The design is intended to be in full compliance with the State and Town regulations while taking prevailing site conditions and practical factors into account.

Existing Site Conditions

The Site is a privately-owned irregular shaped 5.16± acres mostly wooded residential parcel located at 1837 Ponus Ridge Road in New Canaan, Connecticut. The southern portion of the site is developed with a residential building, driveway and associated lawn areas.

The Site's existing topography generally slopes downward from northeast to southwest to Ponus Ridge Road and ultimately to Laurel Reservoir. Within the project area, the topography slopes downward to the southwest from the property line and includes slopes that range from approximately 5 to 50 percent throughout. Elevations within the Site range from approximately 412 feet AMSL in the northeast corner of the site to approximately 322 feet AMSL in the northwest corner of the site at an existing culvert which directs flows from an existing stream under Ponus Ridge Road to Laurel Reservoir. Elevations within the project area range from approximately 408 feet AMSL to the northeast of the project area to approximately 339 feet AMSL on the southwest side of the project area.

Developed Site Conditions

The Project will be constructed to the north of the residence at 1837 Ponus Ridge Road in an existing wooded area. Access to the site will be provided via a 460'± (250'± paved and 210'± gravel) access drive off the paved driveway for the residence. The project includes the installation of a 3,515± SF irregularly shaped fenced gravel equipment compound with a 110' AGL Monopine and associated utilities. 103 trees are required to be removed within the project area. Fourteen (14) evergreen trees are proposed along the fenced equipment compound.

Stormwater Management

Analysis Methodology

The hydrologic analysis was performed using the HydroCAD stormwater modeling system computer program developed by HydroCAD Software Solutions, LLC.

Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method with a Type III rainfall distribution. Hydrographs were developed for the NOAA Atlas 14, Volume 10, Version 2 Precipitation 2-, 5-, 10-, and 25-year storm event with rainfall depths of 3.64, 4.65, 5.50 and 6.65 inches respectively.

The existing and proposed drainage areas used in the calculations are illustrated on the Existing and Proposed Drainage Area Maps (EDA-1 & PDA-1). These maps and the corresponding HydroCAD output are attached in Appendix B & Appendix C.

Existing Drainage Patterns

The proposed Project area drains from the east of the project area overland through existing woodland to Ponus Ridge Road and eventually to Laurel Reservoir.

The Site was modeled with two drainage areas which both drain to one (1) Analysis Point ("AP-1") at Laurel Reservoir. Peak discharges have been computed at the analysis point for the 2-, 5-, 10-, and 25-year storm events.

The project site soils identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Service consist of Map Unit Symbol 60D, named "Canton and Charlton soils, 15 to 25 percent slopes," 61B, named "Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony" 62D, named "Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony", 73E, named "Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky" and 3, named "Ridgebury, Leicester and Whitman Soils, 0 to 8 percent slopes, extremely stony". Map Unit Symbol 60D, 61B, 62D and 73E are classified in the HSG rating of "B". Map Unit Symbol 3 is classified in the HSG rating of "D".

The pre-developed discharges at AP-1 are tabulated in Table 1.

Table 1

Analysis Point	**Pre-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**5-year**	**10-year**	**25-year**
AP-1	9.40	16.67	23.44	33.23

Proposed Drainage Patterns

The Project will require the clearing of an existing wooded area and the installation of a 3,515± SF irregularly shaped fenced gravel equipment compound with a 110' AGL Monopine, a 460' long (250'± paved and 210'± gravel) 12' wide access drive and associated utilities.

To manage the increase in post-development runoff due to the change in cover type associated with converting woodland to grass, gravel and concrete equipment pads, the gravel equipment compound has been designed to be 14" thick crushed stone with 40% voids. The crushed stone gravel compound will store the increased runoff created by the change in ground cover and allow the increased runoff to infiltrate into the ground.

The infiltration rate for the crushed stone equipment compound is modeled with a rate of 2.70 inches/hour. The infiltration rate was determined from the Saturated Hydraulic Conductivity Maps by the United States Department of Agriculture (USDA) Natural Resources Conservation Service. The infiltration rate for the 61B was shown to be 4.60 inches/hour (32.44 micrometers/second) and 73E was shown to be 2.70 inches/hour (19.06 micrometers/second). Since most of the compound is on the 73E soils, the 2.70 inches/hour was used for this analysis.

The access drive has been designed with a riprap lined swale with stone check dams to handle the increased runoff created by the access drive. The swale will outlet in 3 locations to riprap lined stilling basins which will promote the runoff to turn into sheet flow before the runoff reaches Ponus Ridge Road.

Since the proposed development mimics the existing conditions, the post-development condition was modeled using the same Analysis Point. Peak discharges have been computed at AP-1 for the 2-year, 5-year, 10-year, and 25-year storm events and are tabulated in Table 2.

Table 2

Analysis Point	**Post-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**5-year**	**10-year**	**25-year**
AP-1	9.10	16.11	22.64	32.07

The reduction in runoff achieved by the post-development discharges in comparison with the pre-development discharges are tabulated in Table 3.

Table 3

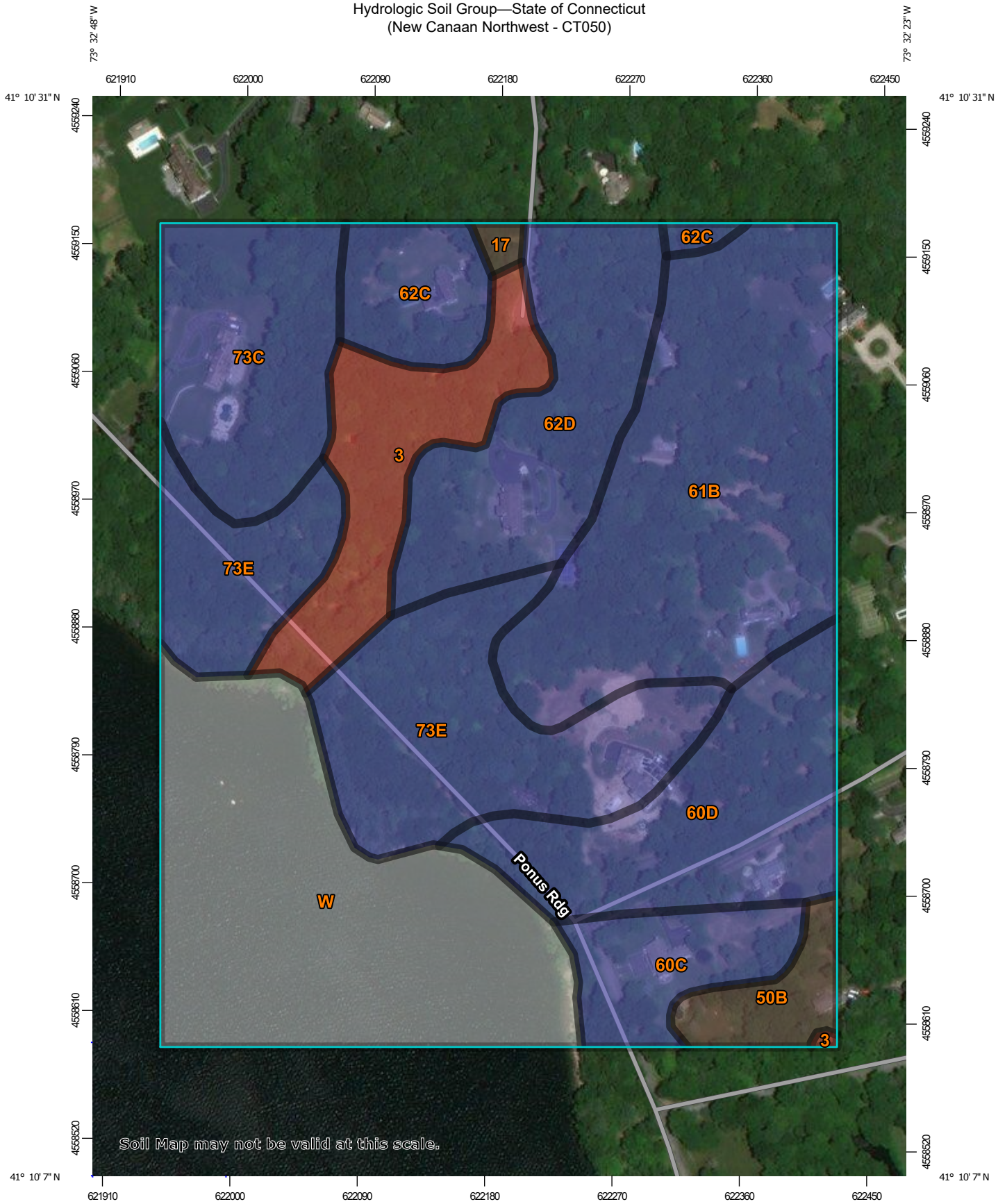
Analysis Point	**Pre vs. Post Peak Storm Runoff (Q) Reduction**			
	2-year	**5-year**	**10-year**	**25-year**
AP-1	3.00%	3.04%	3.11%	2.70%

Conclusion

The stormwater management for the proposed site has been designed such that the post-development peak discharges to the waters of the State of Connecticut for the 2-, 5-, 10-, and 25-year storm events are less than the pre-development peak discharges. As a result, the proposed telecommunication facility will not result in any adverse conditions to the surrounding areas and properties.

APPENDIX A: NRCS SOIL SURVEY

Hydrologic Soil Group—State of Connecticut
(New Canaan Northwest - CT050)



Map Scale: 1:3,710 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 50, 100, 200, 300

Feet: 0, 150, 300, 600, 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	4.7	6.9%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	B/D	0.2	0.4%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	B/D	1.6	2.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	2.8	4.1%
60D	Canton and Charlton soils, 15 to 25 percent slopes	B	6.9	10.0%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	B	13.2	19.1%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	B	2.7	3.9%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	B	6.7	9.7%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	5.8	8.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	11.1	16.1%
W	Water		13.1	19.1%
Totals for Area of Interest			**68.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

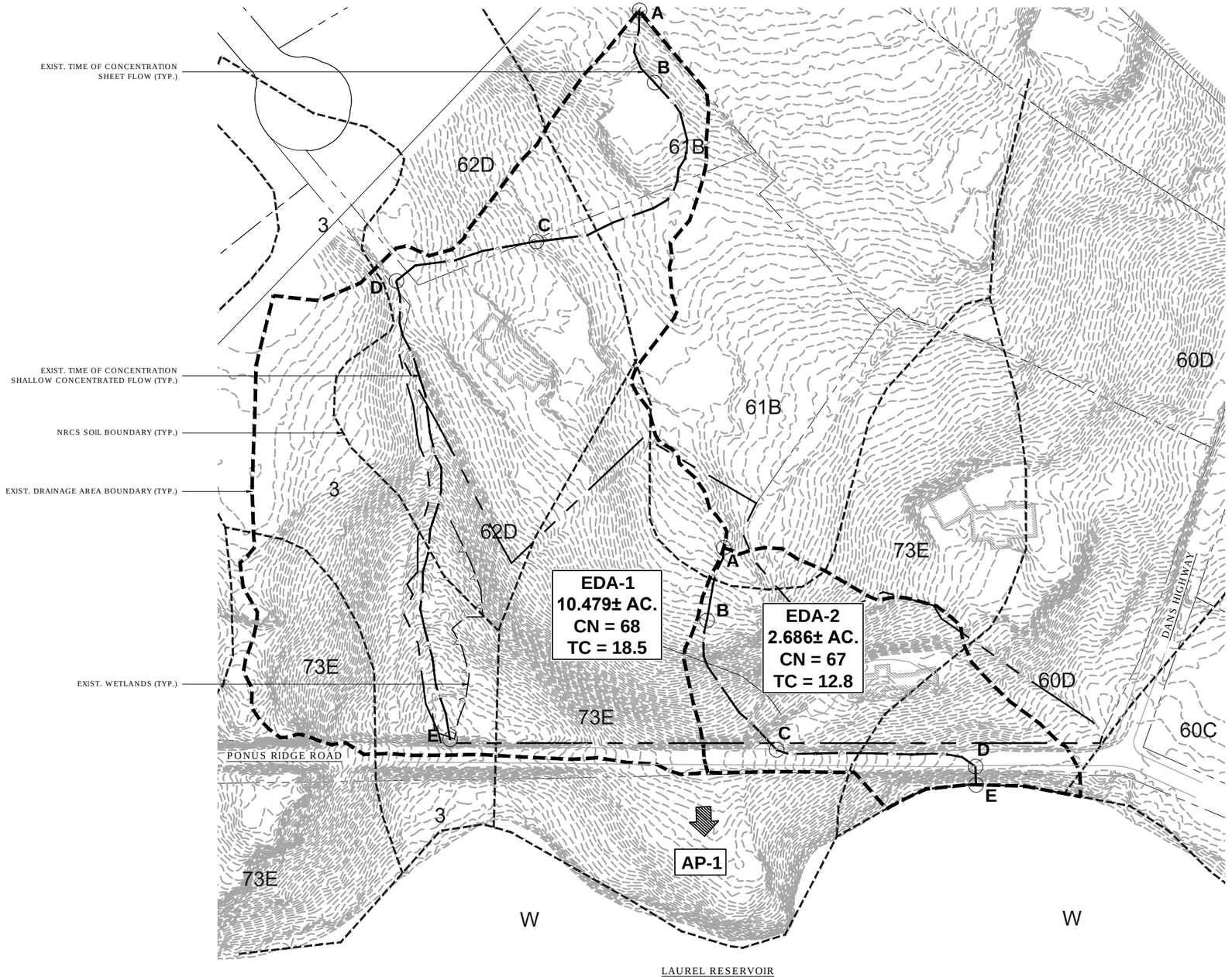
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B: EXISTING DRAINAGE AREA MAP (EDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

EXISTING DRAINAGE AREAS

	TOTAL AREA (AC)	COMPOSITE CN	TC (MINS.)
EDA-1	10.479	68	18.5
EDA-2	2.686	67	12.8



1 EDA-1 **EXISTING DRAINAGE AREA MAP**
SCALE : 1" = 80'-0"
80 0 40 80 160
(IN FEET) 1 inch = 80 ft.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

NO	DATE	REVISION
0		
1		
2		
3		
4		
5		
6		
7		
8		

DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

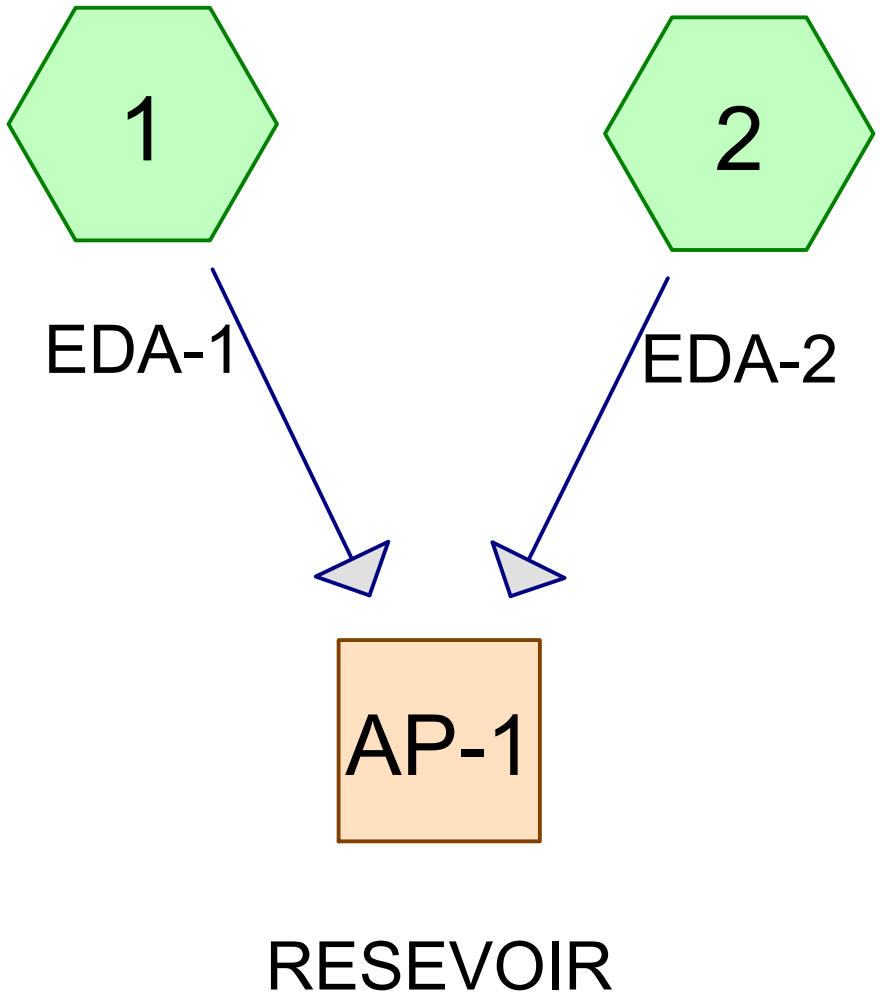
SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: | DRAWN BY:
| CHECKED BY: RCB

SHEET TITLE:
EXISTING DRAINAGE AREA MAP

SHEET NUMBER:
EDA-1



Subcat Reach Pond Link

Routing Diagram for CT283860 - New Canaan NW CT050-EX_Rev1
Prepared by All-Points Technology, Printed 9/1/2023
HydroCAD® 10.00-26 s/n 07402 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.297	61	>75% Grass cover, Good, HSG B (1)
1.343	98	Paved parking, HSG B (1, 2)
0.038	98	Paved parking, HSG D (1)
8.181	60	Woods, Fair, HSG B (1, 2)
2.306	79	Woods, Fair, HSG D (1)
13.165	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
10.821	HSG B	1, 2
0.000	HSG C	
2.344	HSG D	1
0.000	Other	
13.165		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.297	0.000	0.000	0.000	1.297	>75% Grass cover, Good	1
0.000	1.343	0.000	0.038	0.000	1.381	Paved parking	1, 2
0.000	8.181	0.000	2.306	0.000	10.487	Woods, Fair	1, 2
0.000	**10.821**	**0.000**	**2.344**	**0.000**	**13.165**	**TOTAL AREA**	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: EDA-1 Runoff Area=10.479 ac 8.48% Impervious Runoff Depth=0.98"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=7.54 cfs 0.859 af

Subcatchment 2: EDA-2 Runoff Area=2.686 ac 18.32% Impervious Runoff Depth=0.93"
Flow Length=614' Tc=12.6 min CN=67 Runoff=2.07 cfs 0.208 af

Reach AP-1: RESEVOIR Inflow=9.40 cfs 1.067 af
Outflow=9.40 cfs 1.067 af

Total Runoff Area = 13.165 ac Runoff Volume = 1.067 af Average Runoff Depth = 0.97"
89.51% Pervious = 11.784 ac 10.49% Impervious = 1.381 ac

Summary for Subcatchment 1: EDA-1

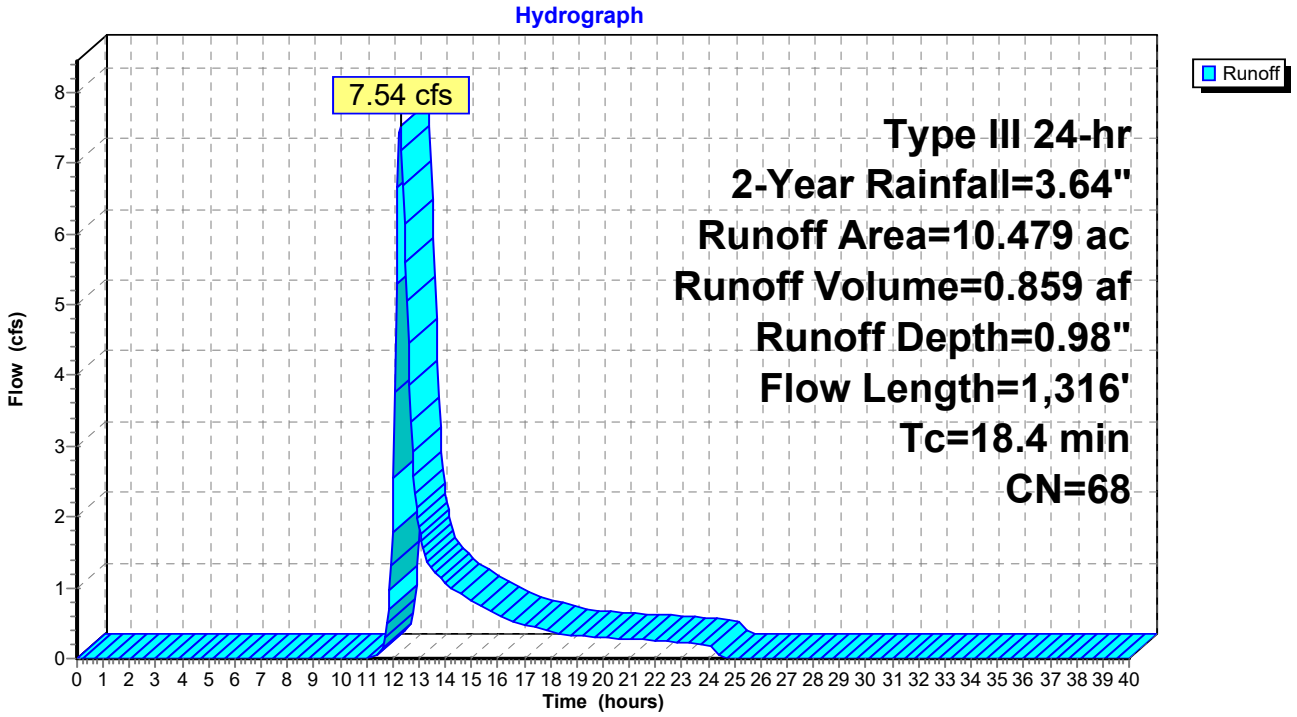
Runoff = 7.54 cfs @ 12.29 hrs, Volume= 0.859 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
5.987	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
10.479	68	Weighted Average
9.590		91.52% Pervious Area
0.889		8.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1: EDA-1



Summary for Subcatchment 2: EDA-2

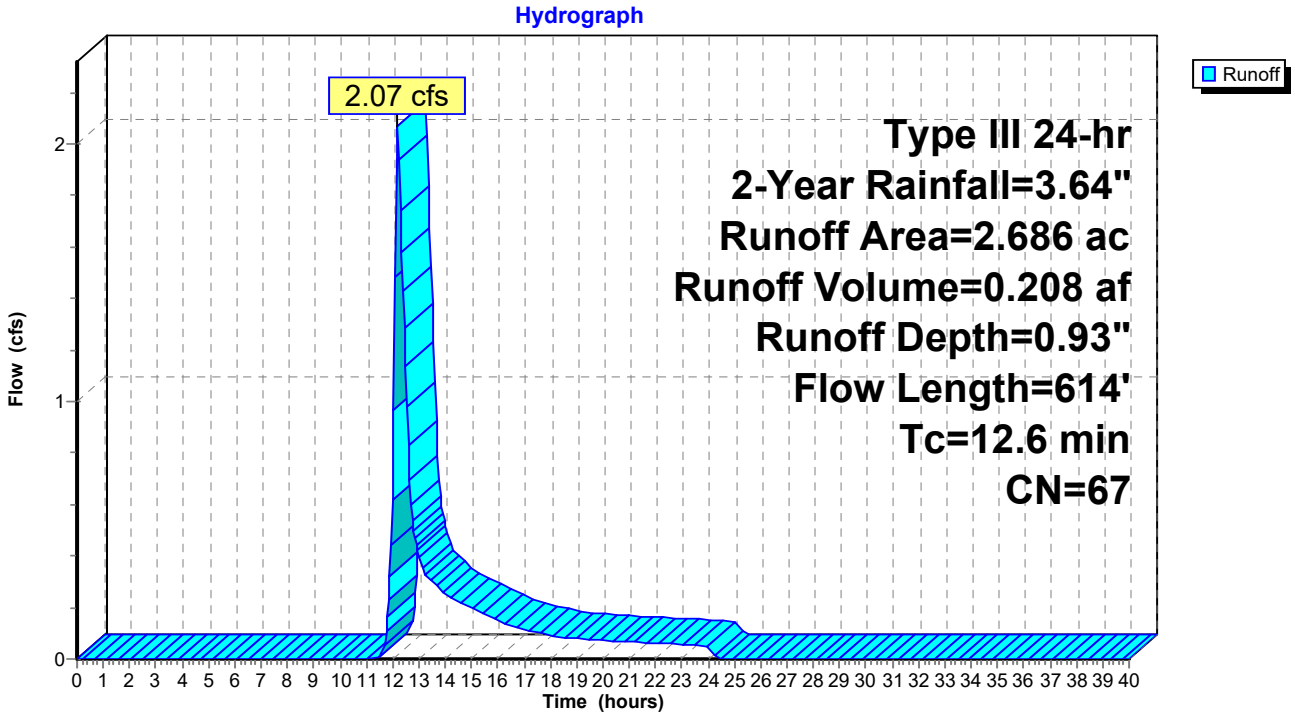
Runoff = 2.07 cfs @ 12.20 hrs, Volume= 0.208 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
2.194	60	Woods, Fair, HSG B
0.492	98	Paved parking, HSG B
2.686	67	Weighted Average
2.194		81.68% Pervious Area
0.492		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.4	213	0.2723	2.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.9	276	0.0650	5.18		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
12.6	614	Total			

Subcatchment 2: EDA-2



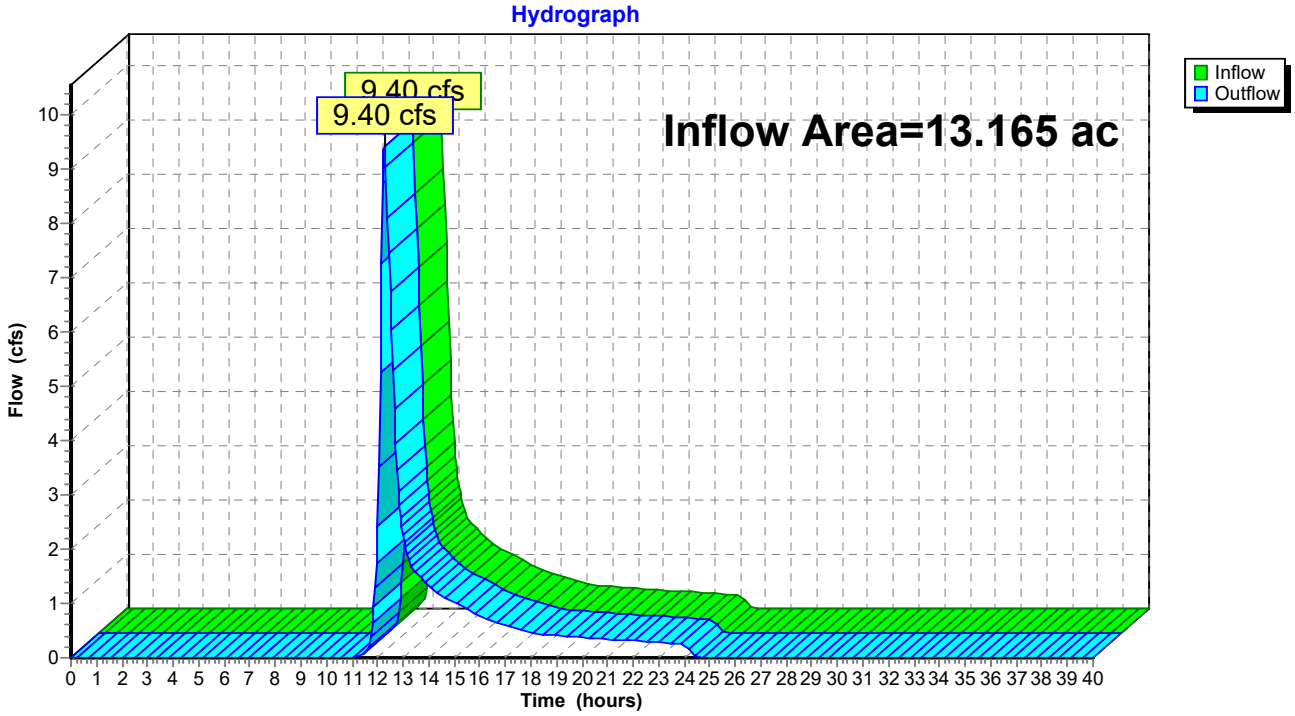
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 10.49% Impervious, Inflow Depth = 0.97" for 2-Year event
Inflow = 9.40 cfs @ 12.27 hrs, Volume= 1.067 af
Outflow = 9.40 cfs @ 12.27 hrs, Volume= 1.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: EDA-1 Runoff Area=10.479 ac 8.48% Impervious Runoff Depth=1.63"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=13.36 cfs 1.427 af

Subcatchment 2: EDA-2 Runoff Area=2.686 ac 18.32% Impervious Runoff Depth=1.56"
Flow Length=614' Tc=12.6 min CN=67 Runoff=3.73 cfs 0.350 af

Reach AP-1: RESEVOIR Inflow=16.67 cfs 1.777 af
Outflow=16.67 cfs 1.777 af

Total Runoff Area = 13.165 ac Runoff Volume = 1.777 af Average Runoff Depth = 1.62"
89.51% Pervious = 11.784 ac 10.49% Impervious = 1.381 ac

Summary for Subcatchment 1: EDA-1

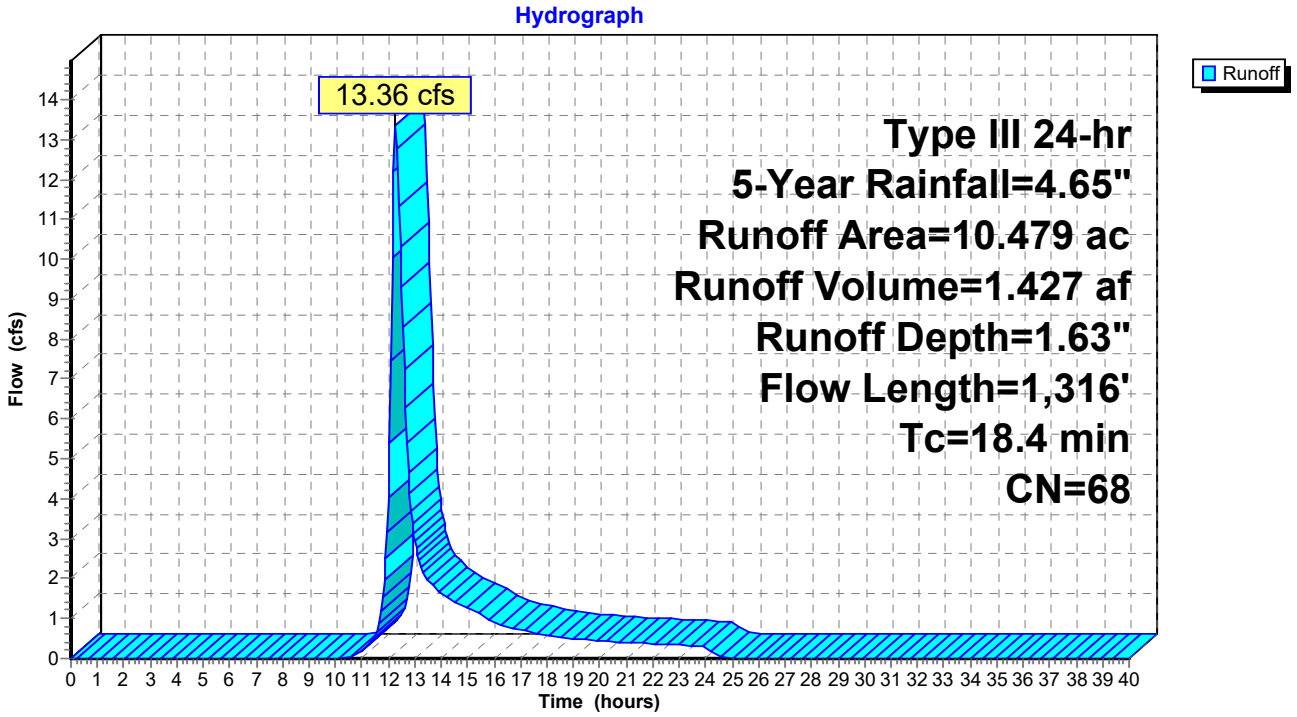
Runoff = 13.36 cfs @ 12.27 hrs, Volume= 1.427 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
5.987	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
10.479	68	Weighted Average
9.590		91.52% Pervious Area
0.889		8.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1: EDA-1



Summary for Subcatchment 2: EDA-2

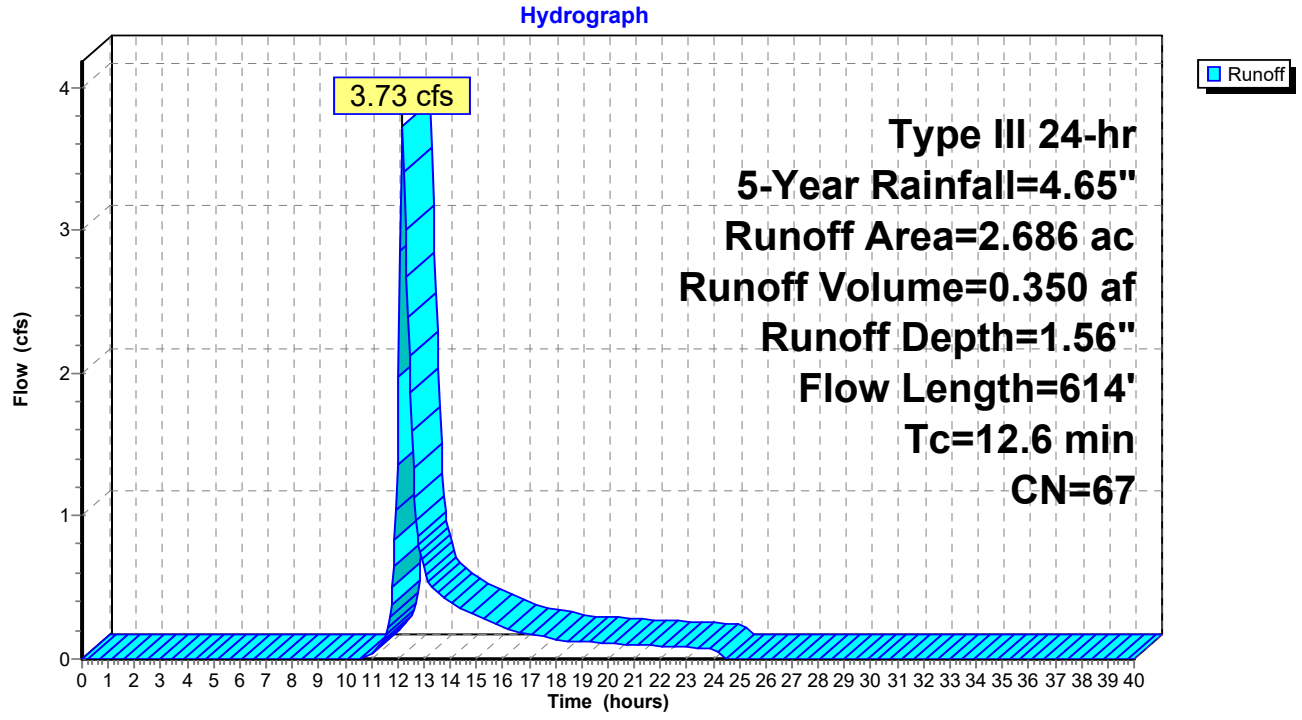
Runoff = 3.73 cfs @ 12.19 hrs, Volume= 0.350 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
2.194	60	Woods, Fair, HSG B
0.492	98	Paved parking, HSG B
2.686	67	Weighted Average
2.194		81.68% Pervious Area
0.492		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.4	213	0.2723	2.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.9	276	0.0650	5.18		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
12.6	614	Total			

Subcatchment 2: EDA-2



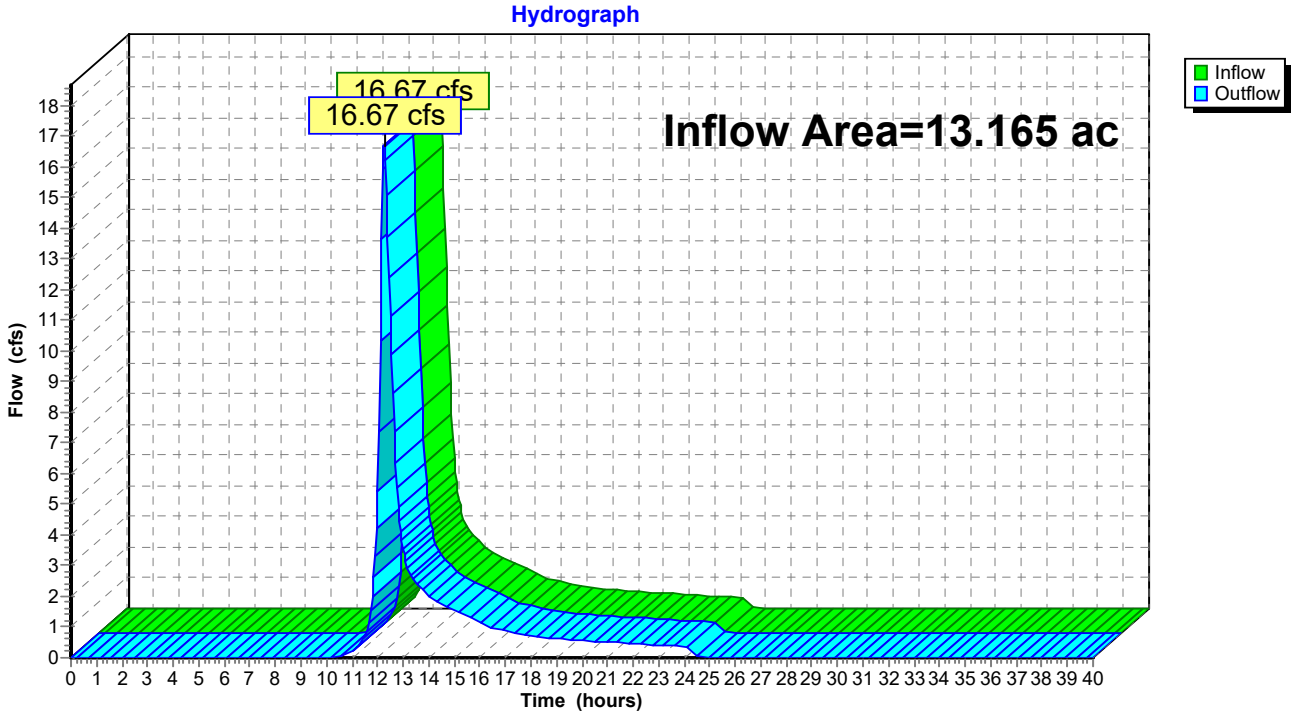
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 10.49% Impervious, Inflow Depth = 1.62" for 5-Year event
Inflow = 16.67 cfs @ 12.26 hrs, Volume= 1.777 af
Outflow = 16.67 cfs @ 12.26 hrs, Volume= 1.777 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: EDA-1 Runoff Area=10.479 ac 8.48% Impervious Runoff Depth=2.24"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=18.75 cfs 1.959 af

Subcatchment 2: EDA-2 Runoff Area=2.686 ac 18.32% Impervious Runoff Depth=2.16"
Flow Length=614' Tc=12.6 min CN=67 Runoff=5.29 cfs 0.483 af

Reach AP-1: RESEVOIR Inflow=23.44 cfs 2.442 af
Outflow=23.44 cfs 2.442 af

Total Runoff Area = 13.165 ac Runoff Volume = 2.442 af Average Runoff Depth = 2.23"
89.51% Pervious = 11.784 ac 10.49% Impervious = 1.381 ac

Summary for Subcatchment 1: EDA-1

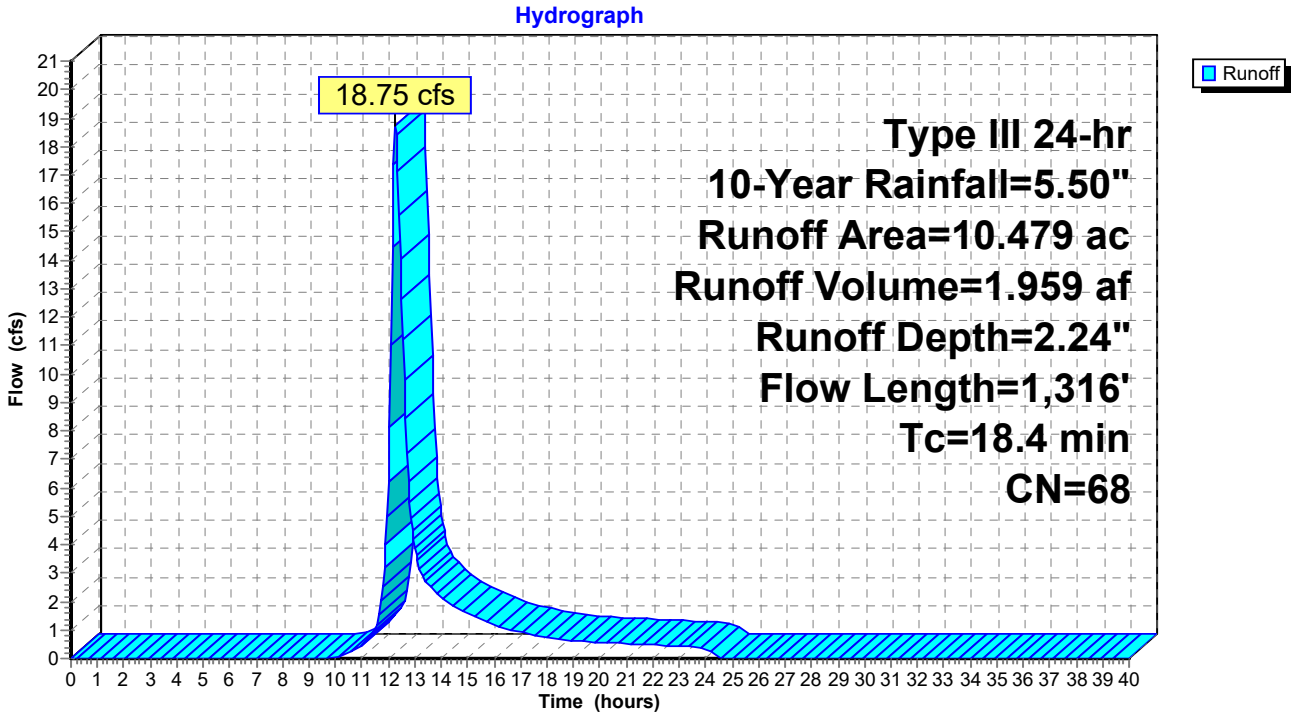
Runoff = 18.75 cfs @ 12.27 hrs, Volume= 1.959 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
5.987	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
10.479	68	Weighted Average
9.590		91.52% Pervious Area
0.889		8.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1: EDA-1



Summary for Subcatchment 2: EDA-2

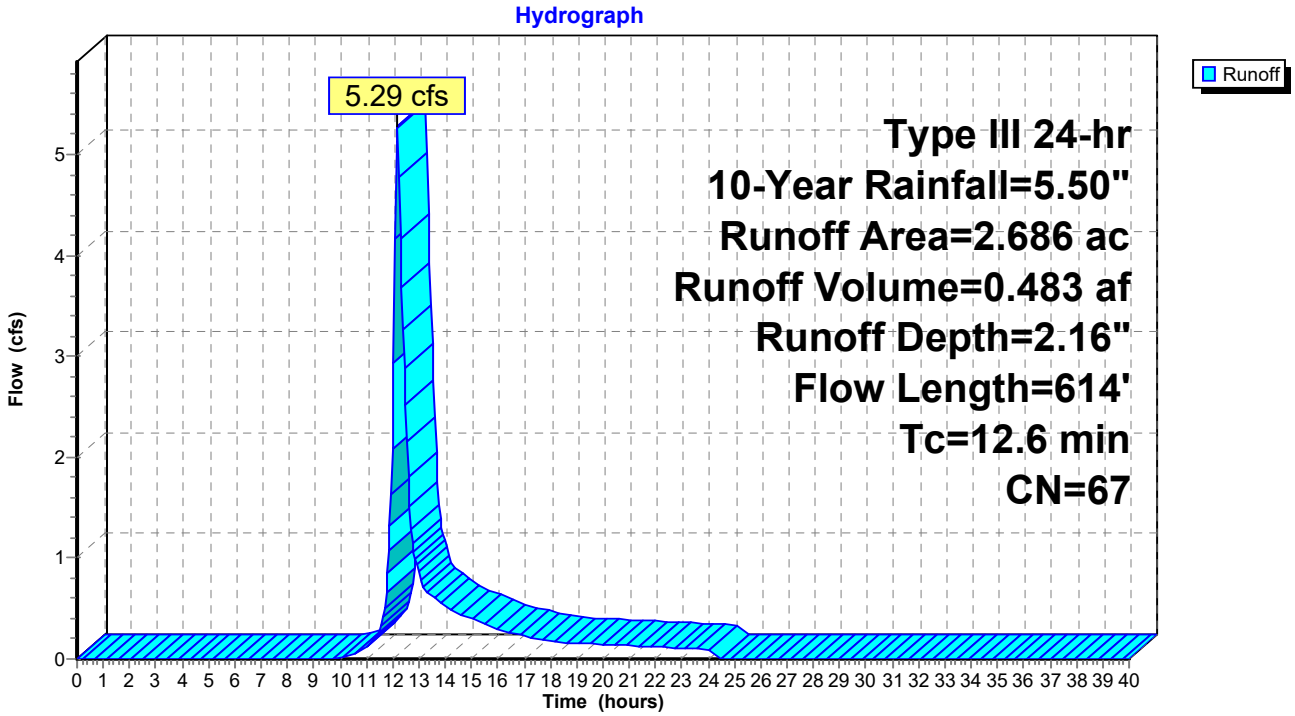
Runoff = 5.29 cfs @ 12.19 hrs, Volume= 0.483 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
2.194	60	Woods, Fair, HSG B
0.492	98	Paved parking, HSG B
2.686	67	Weighted Average
2.194		81.68% Pervious Area
0.492		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.4	213	0.2723	2.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.9	276	0.0650	5.18		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
12.6	614	Total			

Subcatchment 2: EDA-2



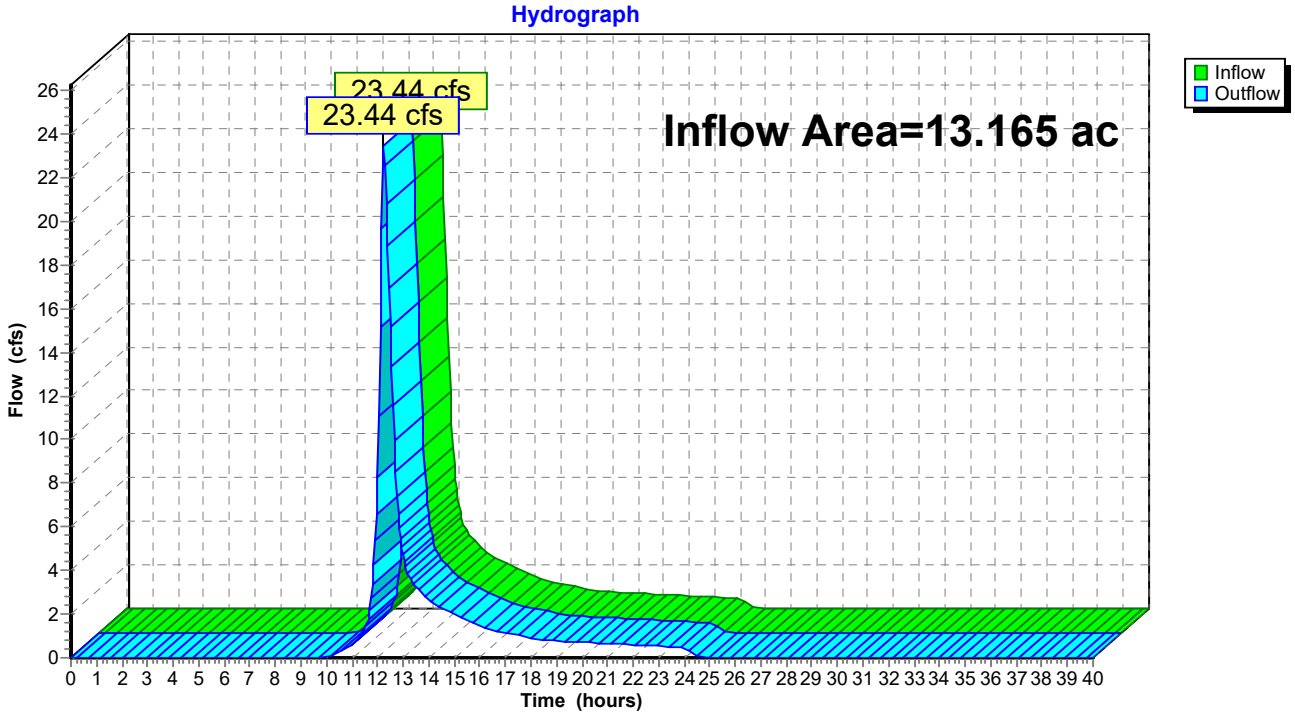
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 10.49% Impervious, Inflow Depth = 2.23" for 10-Year event
Inflow = 23.44 cfs @ 12.25 hrs, Volume= 2.442 af
Outflow = 23.44 cfs @ 12.25 hrs, Volume= 2.442 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: EDA-1 Runoff Area=10.479 ac 8.48% Impervious Runoff Depth=3.13"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=26.54 cfs 2.733 af

Subcatchment 2: EDA-2 Runoff Area=2.686 ac 18.32% Impervious Runoff Depth=3.03"
Flow Length=614' Tc=12.6 min CN=67 Runoff=7.54 cfs 0.678 af

Reach AP-1: RESEVOIR Inflow=33.23 cfs 3.411 af
Outflow=33.23 cfs 3.411 af

Total Runoff Area = 13.165 ac Runoff Volume = 3.411 af Average Runoff Depth = 3.11"
89.51% Pervious = 11.784 ac 10.49% Impervious = 1.381 ac

Summary for Subcatchment 1: EDA-1

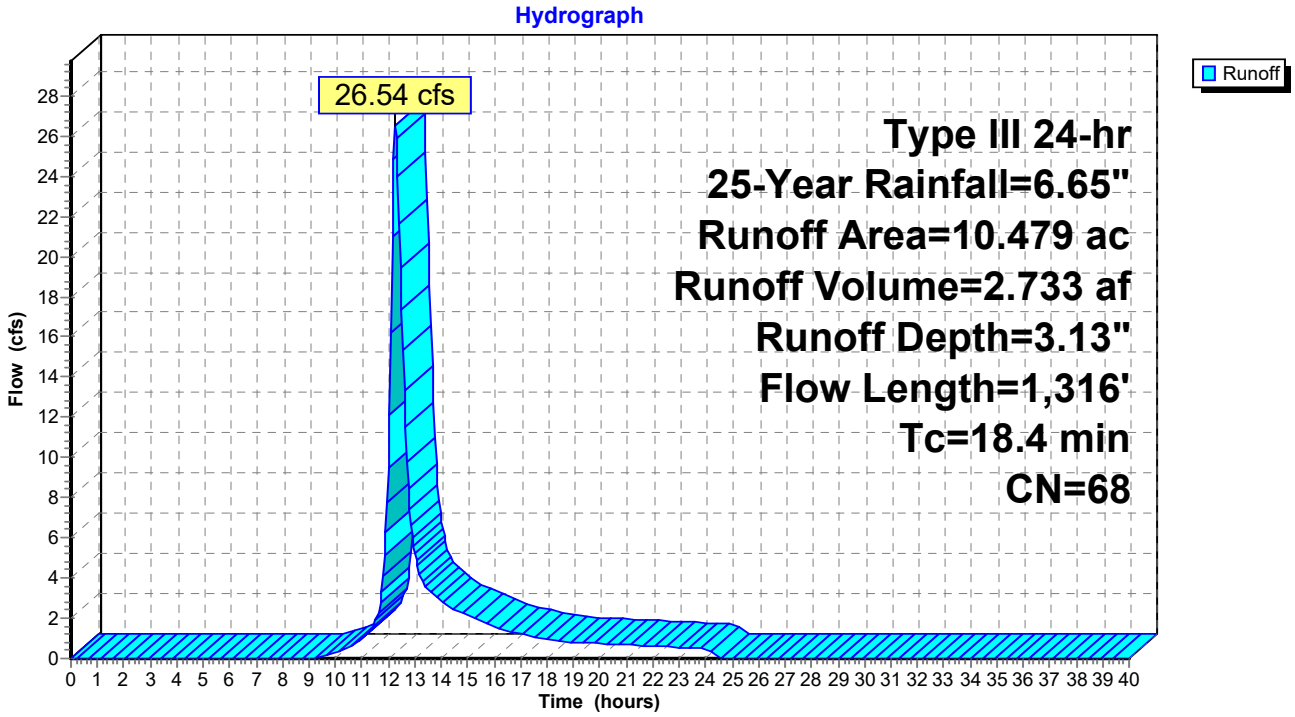
Runoff = 26.54 cfs @ 12.26 hrs, Volume= 2.733 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
5.987	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
10.479	68	Weighted Average
9.590		91.52% Pervious Area
0.889		8.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1: EDA-1



Summary for Subcatchment 2: EDA-2

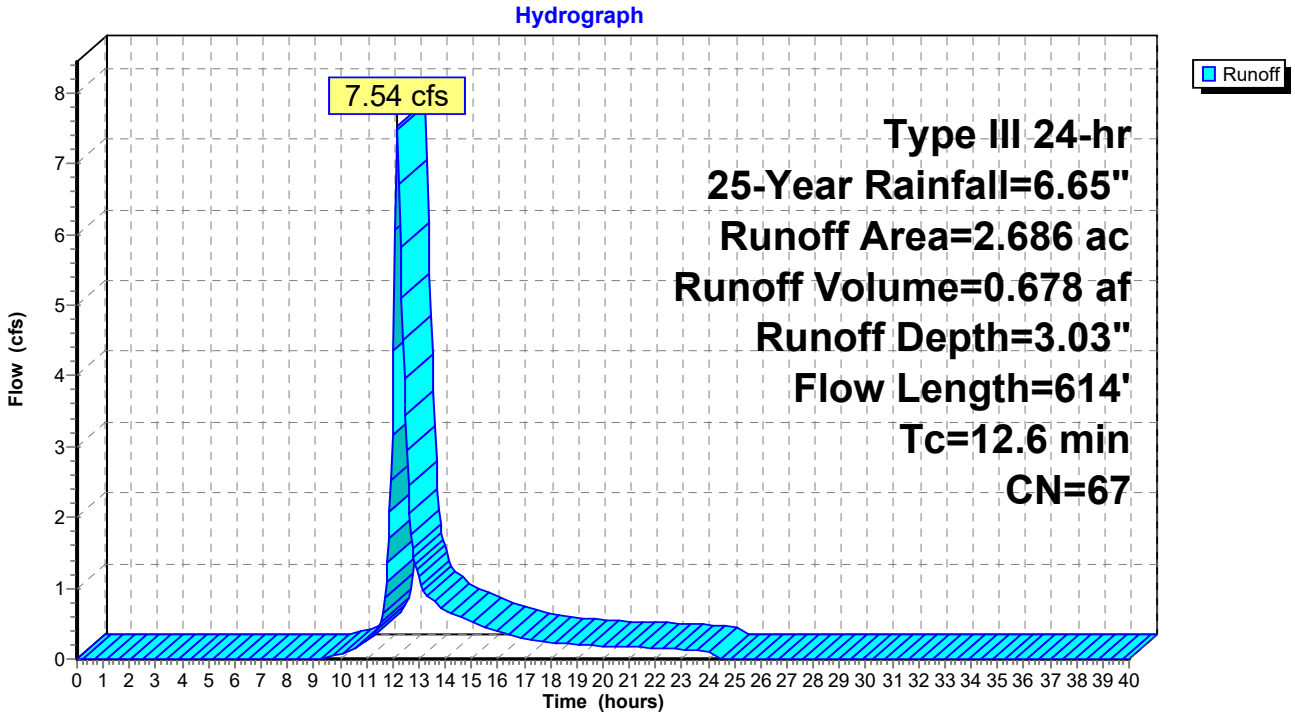
Runoff = 7.54 cfs @ 12.18 hrs, Volume= 0.678 af, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
2.194	60	Woods, Fair, HSG B
0.492	98	Paved parking, HSG B
2.686	67	Weighted Average
2.194		81.68% Pervious Area
0.492		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.4	213	0.2723	2.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.9	276	0.0650	5.18		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
12.6	614	Total			

Subcatchment 2: EDA-2



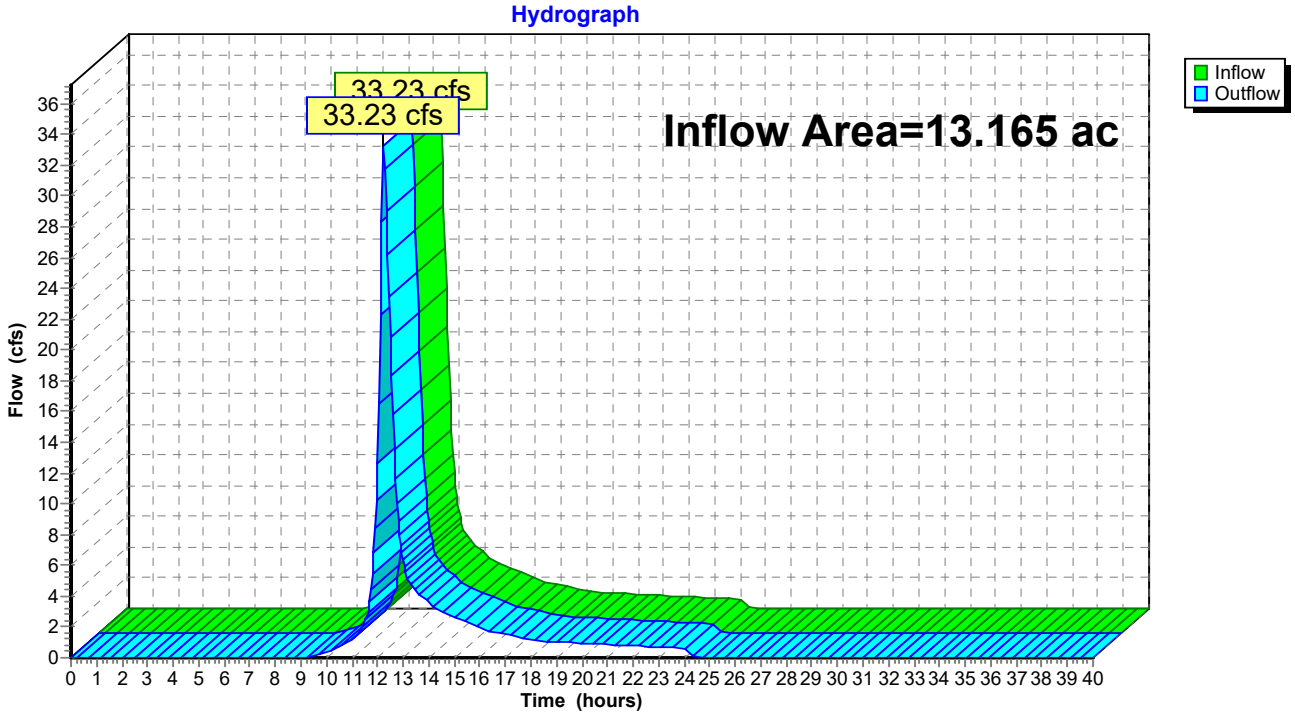
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 10.49% Impervious, Inflow Depth = 3.11" for 25-Year event
Inflow = 33.23 cfs @ 12.24 hrs, Volume= 3.411 af
Outflow = 33.23 cfs @ 12.24 hrs, Volume= 3.411 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

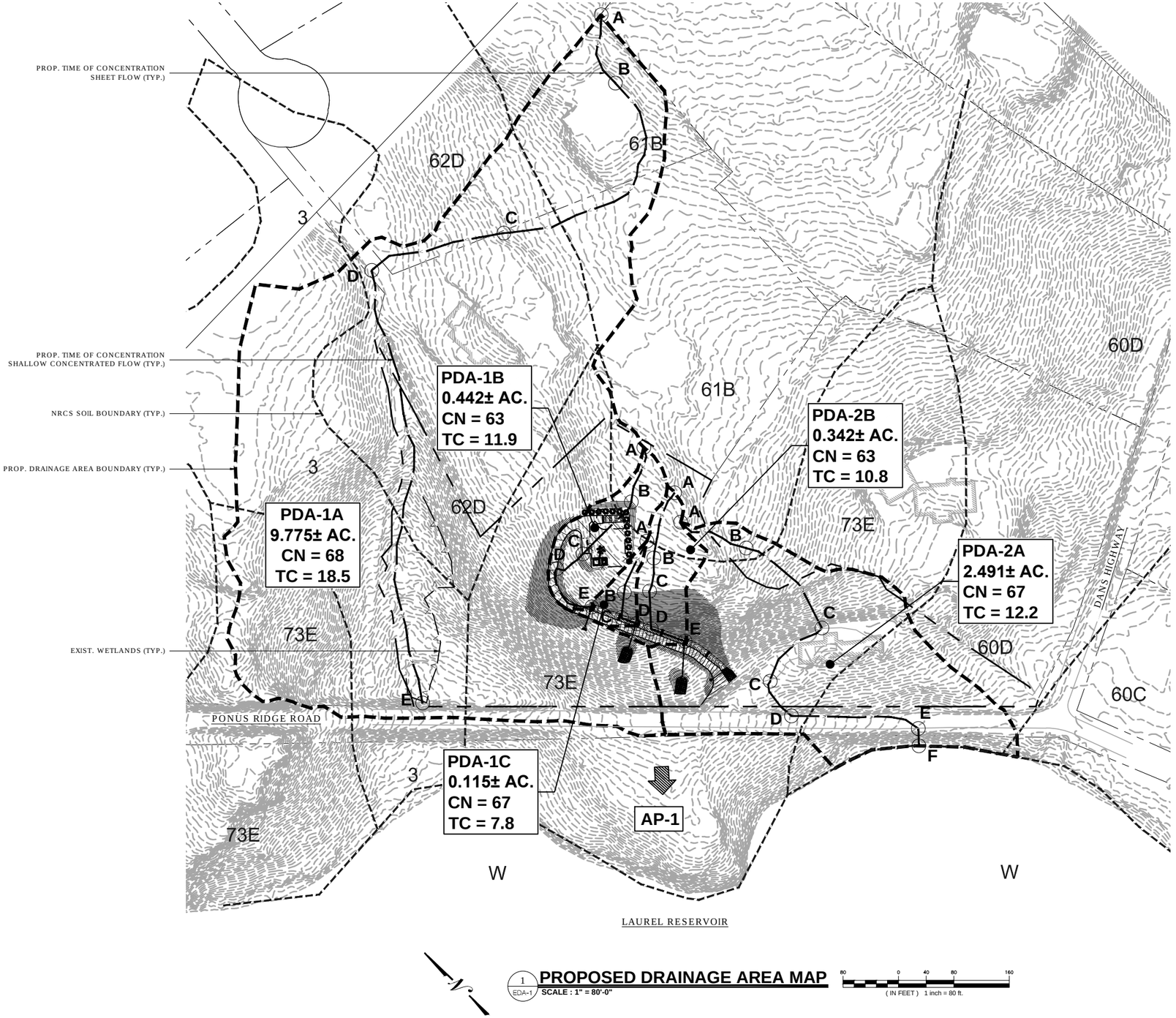
Reach AP-1: RESEVOIR



APPENDIX C: PROPOSED DRAINAGE AREA MAP (PDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

PROPOSED DRAINAGE AREAS

	TOTAL AREA (AC)	COMPOSITE CN	TC (MINS.)
PDA-1A	9.775	68	18.5
PDA-1B	0.442	63	11.9
PDA-1C	0.115	67	7.8
PDA-2A	2.491	67	12.2
PDA-2B	0.342	63	12.6



1 EDA-1 **PROPOSED DRAINAGE AREA MAP**
SCALE : 1" = 80'-0"

80 0 40 80 160
(IN FEET) 1 inch = 80 ft.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	07/26/21	FOR REVIEW: RCB
1		
2		
3		
4		
5		
6		
7		
8		

DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

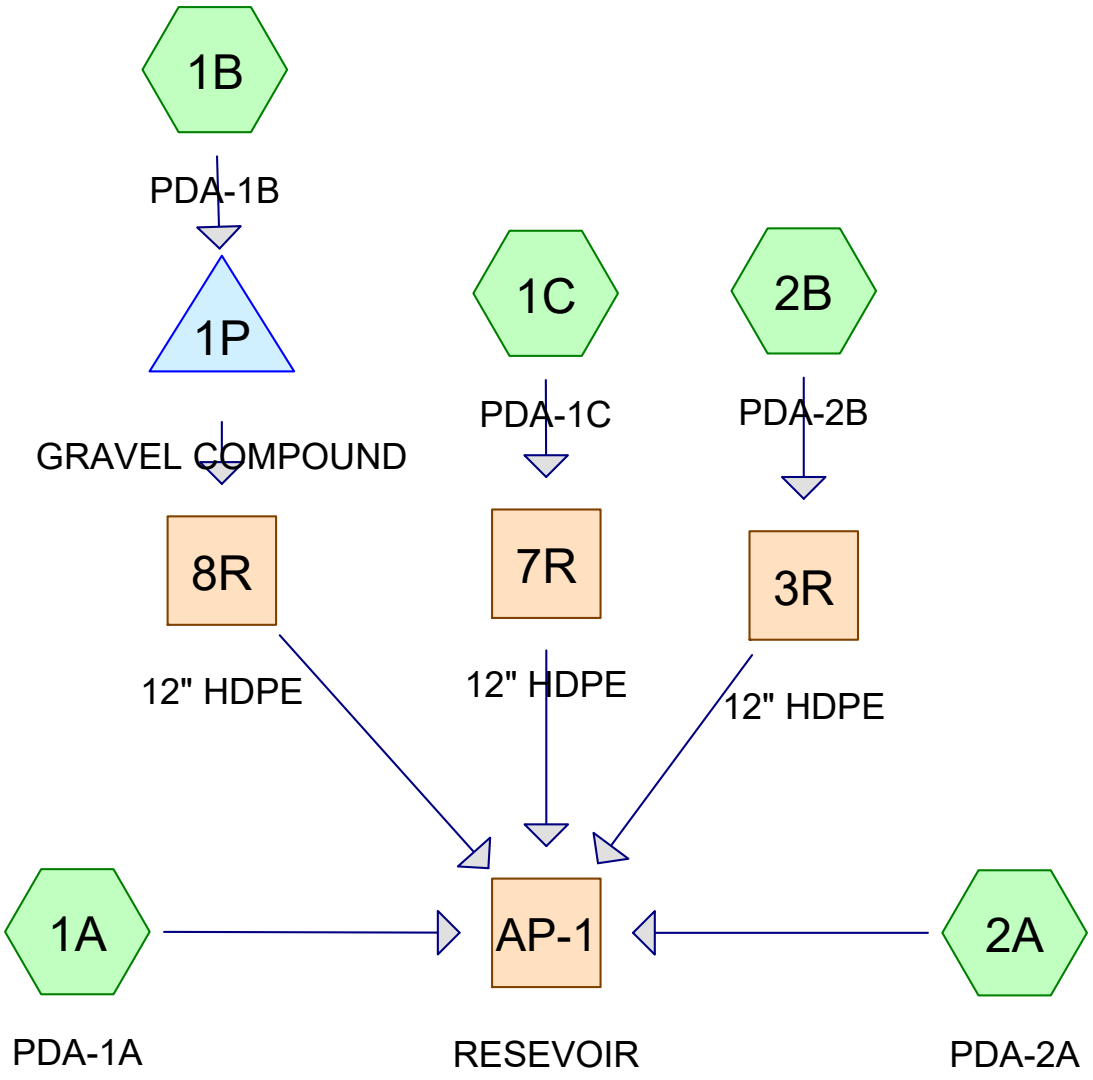
APT FILING NUMBER: CT283860

DATE: XX/XX/22 DRAWN BY: CSH

CHECKED BY: RCB

SHEET TITLE:
PROPOSED DRAINAGE AREA MAP

SHEET NUMBER:
PDA-1



Subcat Reach Pond Link

Routing Diagram for CT283860 - New Canaan NW CT050-PR_Rev1
Prepared by All-Points Technology, Printed 9/1/2023
HydroCAD® 10.00-26 s/n 07402 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.551	61	>75% Grass cover, Good, HSG B (1A, 1B, 1C, 2B)
0.147	85	Gravel roads, HSG B (1B)
1.419	98	Paved parking, HSG B (1A, 1C, 2A, 2B)
0.038	98	Paved parking, HSG D (1A)
7.704	60	Woods, Fair, HSG B (1A, 1B, 1C, 2A, 2B)
2.306	79	Woods, Fair, HSG D (1A)
13.165	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
10.821	HSG B	1A, 1B, 1C, 2A, 2B
0.000	HSG C	
2.344	HSG D	1A
0.000	Other	
13.165		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.551	0.000	0.000	0.000	1.551	>75% Grass cover, Good	1A, 1B, 1C, 2B
0.000	0.147	0.000	0.000	0.000	0.147	Gravel roads	1B
0.000	1.419	0.000	0.038	0.000	1.457	Paved parking	1A, 1C, 2A, 2B
0.000	7.704	0.000	2.306	0.000	10.010	Woods, Fair	1A, 1B, 1C, 2A, 2B
0.000	**10.821**	**0.000**	**2.344**	**0.000**	**13.165**	**TOTAL AREA**	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: PDA-1A Runoff Area=9.775 ac 9.09% Impervious Runoff Depth=0.98"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=7.03 cfs 0.801 af

Subcatchment 1B: PDA-1B Runoff Area=0.442 ac 0.00% Impervious Runoff Depth=0.98"
Flow Length=326' Tc=11.7 min CN=68 Runoff=0.37 cfs 0.036 af

Subcatchment 1C: PDA-1C Runoff Area=0.115 ac 16.52% Impervious Runoff Depth=0.93"
Flow Length=141' Tc=7.6 min CN=67 Runoff=0.10 cfs 0.009 af

Subcatchment 2A: PDA-2A Runoff Area=2.491 ac 21.20% Impervious Runoff Depth=0.98"
Flow Length=656' Tc=11.9 min CN=68 Runoff=2.10 cfs 0.204 af

Subcatchment 2B: PDA-2B Runoff Area=0.342 ac 6.14% Impervious Runoff Depth=0.73"
Flow Length=255' Tc=12.4 min CN=63 Runoff=0.19 cfs 0.021 af

Reach 3R: 12" HDPE Avg. Flow Depth=0.14' Max Vel=2.77 fps Inflow=0.19 cfs 0.021 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0150 '/' Capacity=4.36 cfs Outflow=0.19 cfs 0.021 af

Reach 7R: 12" HDPE Avg. Flow Depth=0.10' Max Vel=2.61 fps Inflow=0.10 cfs 0.009 af
12.0" Round Pipe n=0.013 L=35.0' S=0.0214 '/' Capacity=5.22 cfs Outflow=0.10 cfs 0.009 af

Reach 8R: 12" HDPE Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
12.0" Round Pipe n=0.013 L=28.0' S=0.0536 '/' Capacity=8.25 cfs Outflow=0.00 cfs 0.000 af

Reach AP-1: RESEVOIR Inflow=9.10 cfs 1.035 af
Outflow=9.10 cfs 1.035 af

Pond 1P: GRAVEL COMPOUND Peak Elev=394.13' Storage=0.004 af Inflow=0.37 cfs 0.036 af
Discarded=0.20 cfs 0.036 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.036 af

Total Runoff Area = 13.165 ac Runoff Volume = 1.071 af Average Runoff Depth = 0.98"
88.93% Pervious = 11.708 ac 11.07% Impervious = 1.457 ac

Summary for Subcatchment 1A: PDA-1A

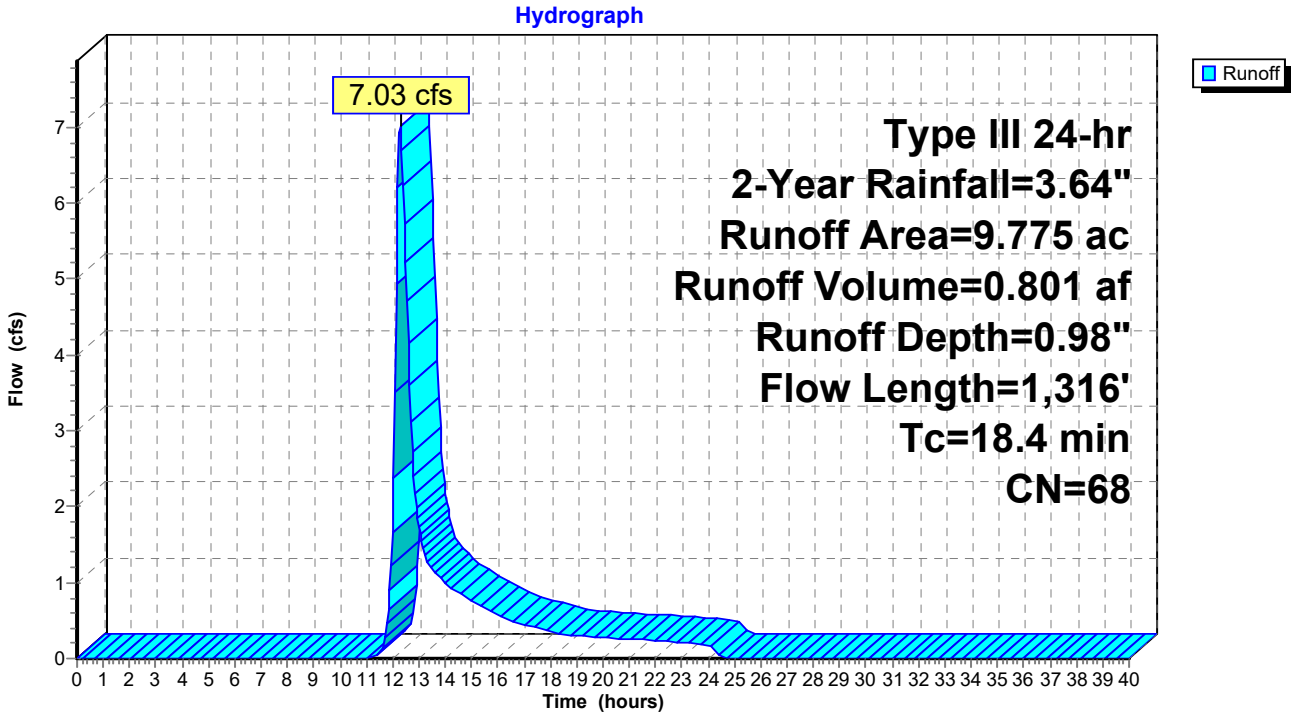
Runoff = 7.03 cfs @ 12.29 hrs, Volume= 0.801 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
5.283	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
9.775	68	Weighted Average
8.886		90.91% Pervious Area
0.889		9.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1A: PDA-1A



Summary for Subcatchment 1B: PDA-1B

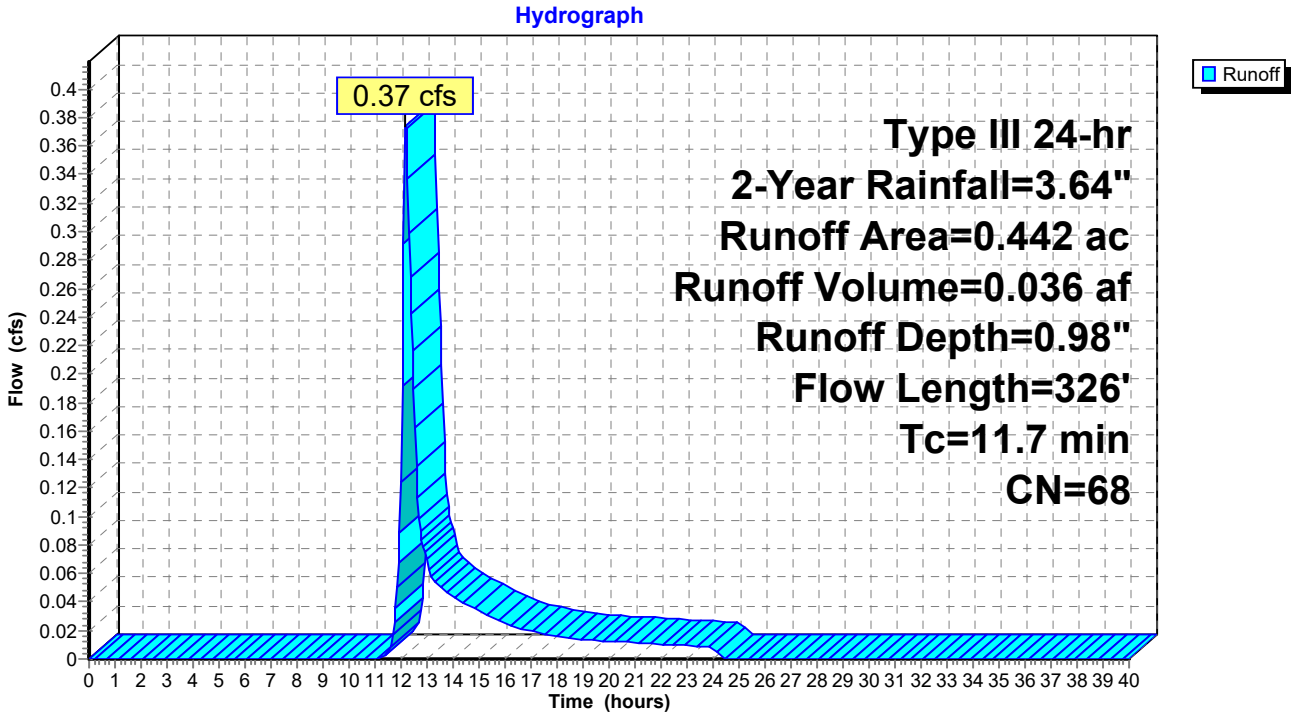
Runoff = 0.37 cfs @ 12.18 hrs, Volume= 0.036 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
0.217	60	Woods, Fair, HSG B
0.078	61	>75% Grass cover, Good, HSG B
0.147	85	Gravel roads, HSG B
0.442	68	Weighted Average
0.442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	85	0.0710	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.4	103	0.0670	4.17		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
0.3	46	0.3000	2.74		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.3	92	0.0980	5.04		**Shallow Concentrated Flow, D-E** Unpaved Kv= 16.1 fps
11.7	326	Total			

Subcatchment 1B: PDA-1B



Summary for Subcatchment 1C: PDA-1C

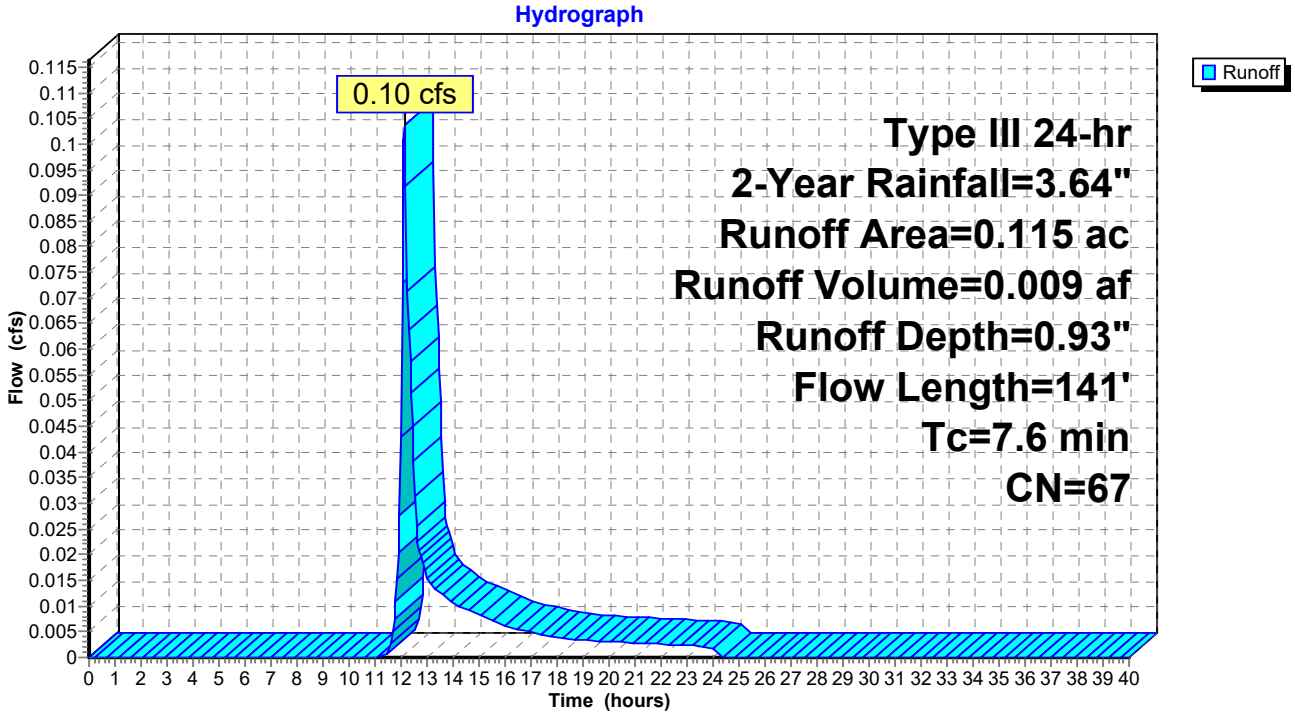
Runoff = 0.10 cfs @ 12.12 hrs, Volume= 0.009 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
0.039	60	Woods, Fair, HSG B
0.057	61	>75% Grass cover, Good, HSG B
0.019	98	Paved parking, HSG B
0.115	67	Weighted Average
0.096		83.48% Pervious Area
0.019		16.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	81	0.1600	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.1	36	0.5000	4.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.2100	6.87		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.6	141	Total			

Subcatchment 1C: PDA-1C



Summary for Subcatchment 2A: PDA-2A

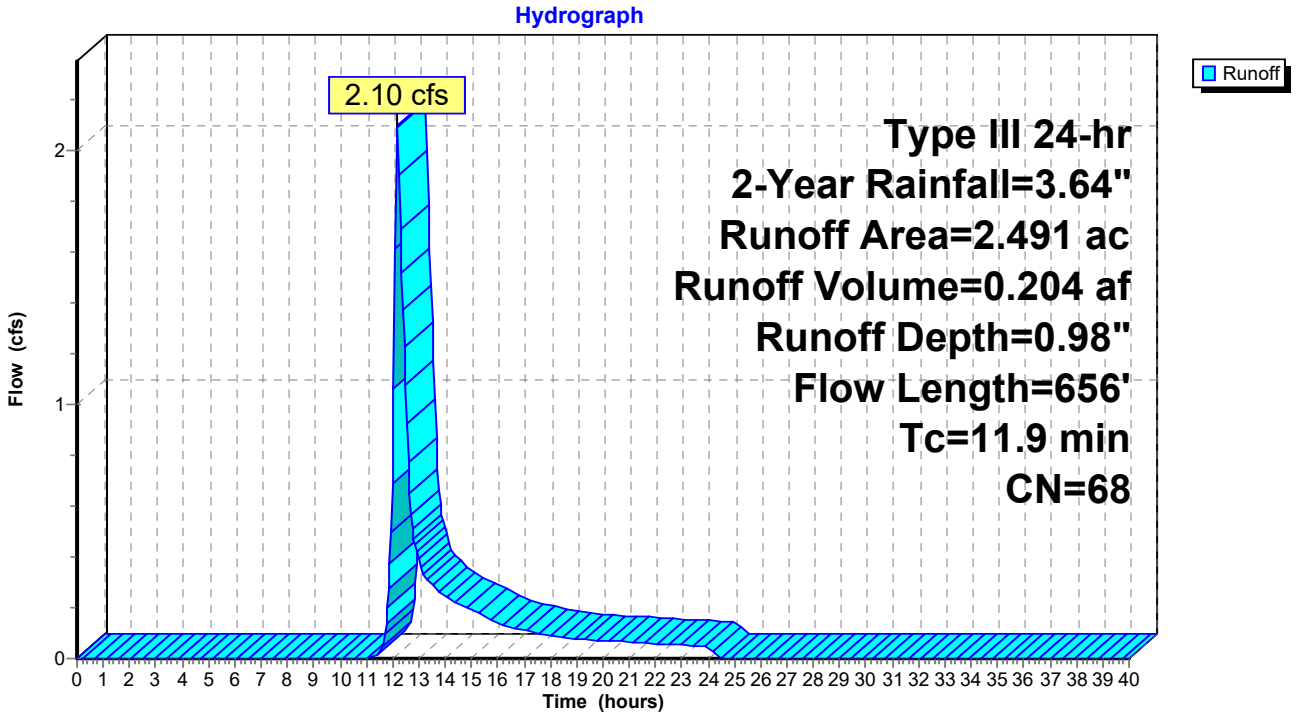
Runoff = 2.10 cfs @ 12.19 hrs, Volume= 0.204 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
1.963	60	Woods, Fair, HSG B
0.528	98	Paved parking, HSG B
2.491	68	Weighted Average
1.963		78.80% Pervious Area
0.528		21.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1400	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.1	166	0.2650	2.57		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	113	0.0619	5.05		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.5	64	0.1720	2.07		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.6	188	0.0585	4.91		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, F-G** Woodland Kv= 5.0 fps
11.9	656	Total			

Subcatchment 2A: PDA-2A



Summary for Subcatchment 2B: PDA-2B

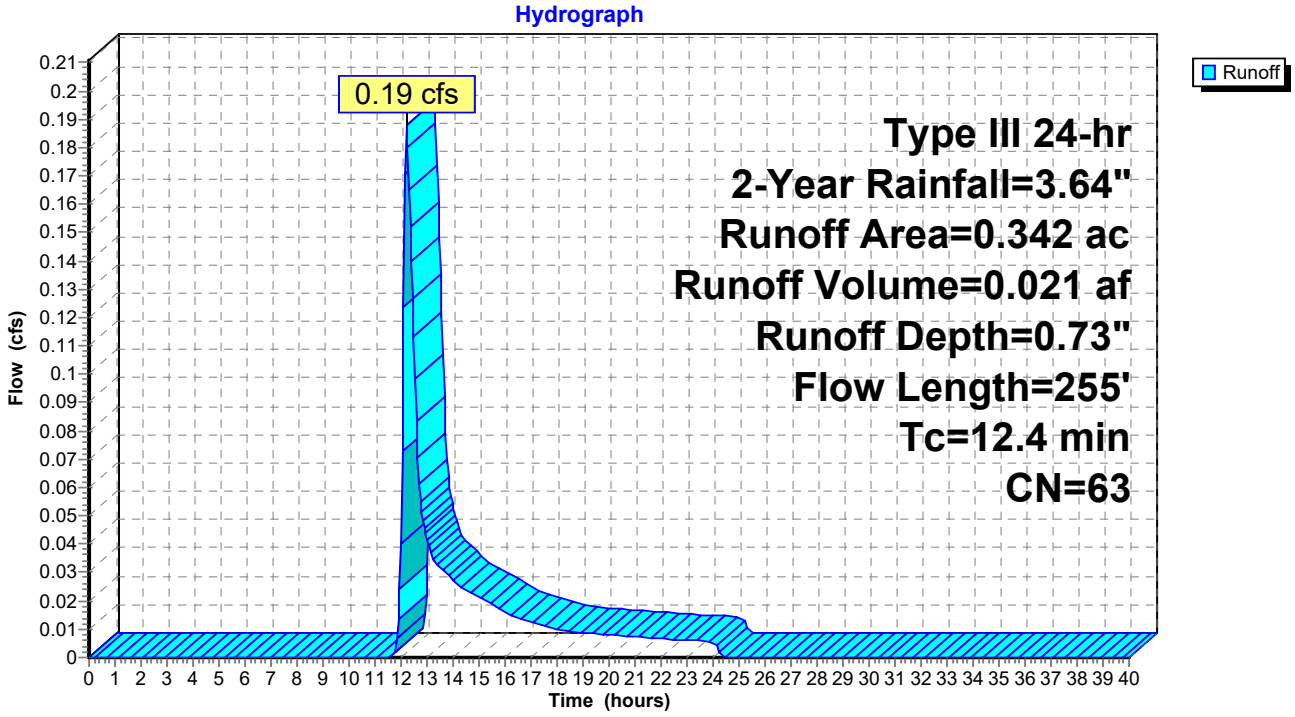
Runoff = 0.19 cfs @ 12.21 hrs, Volume= 0.021 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.64"

Area (ac)	CN	Description
0.202	60	Woods, Fair, HSG B
0.021	98	Paved parking, HSG B
0.119	61	>75% Grass cover, Good, HSG B
0.342	63	Weighted Average
0.321		93.86% Pervious Area
0.021		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0800	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.5	48	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	55	0.5000	4.95		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.2100	6.87		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
12.4	255	Total			

Subcatchment 2B: PDA-2B



Summary for Reach 3R: 12" HDPE

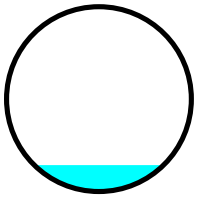
[52] Hint: Inlet/Outlet conditions not evaluated

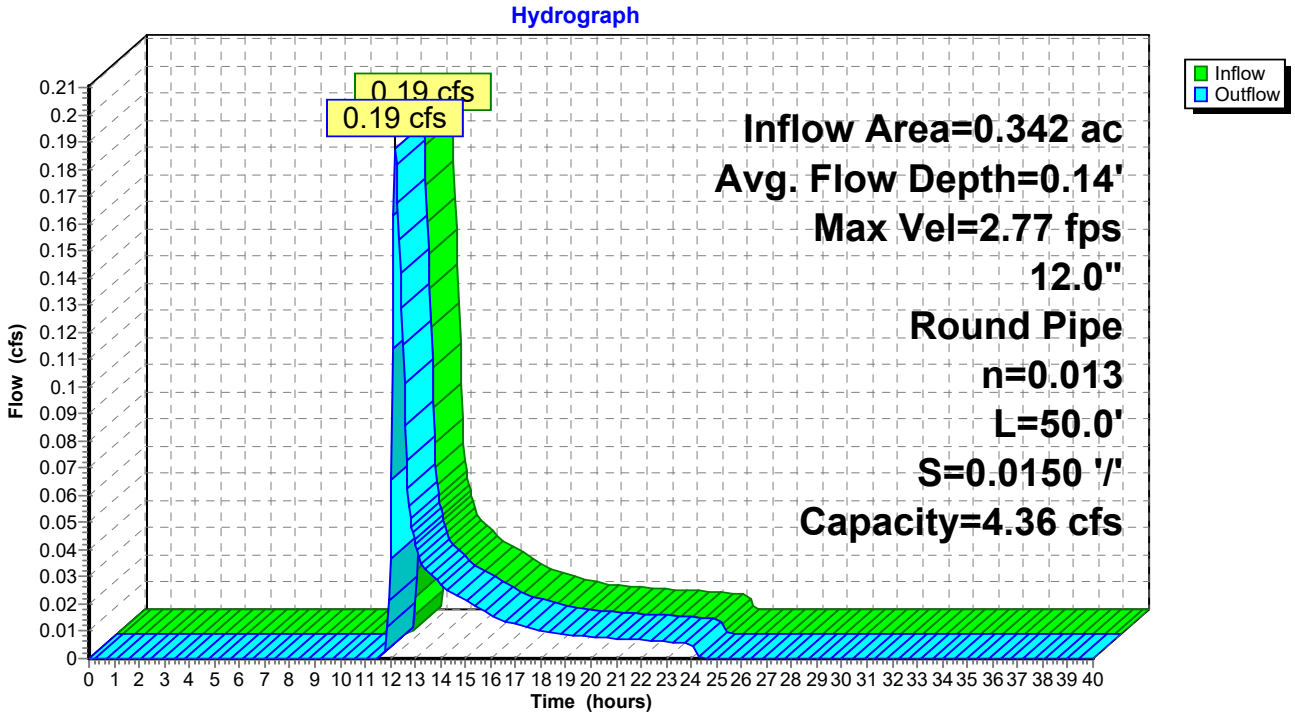
Inflow Area = 0.342 ac, 6.14% Impervious, Inflow Depth = 0.73" for 2-Year event
Inflow = 0.19 cfs @ 12.21 hrs, Volume= 0.021 af
Outflow = 0.19 cfs @ 12.22 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.7 min

Peak Storage= 3 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.36 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0150 '/'
Inlet Invert= 351.75', Outlet Invert= 351.00'





Summary for Reach 7R: 12" HDPE

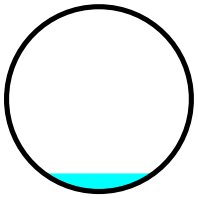
[52] Hint: Inlet/Outlet conditions not evaluated

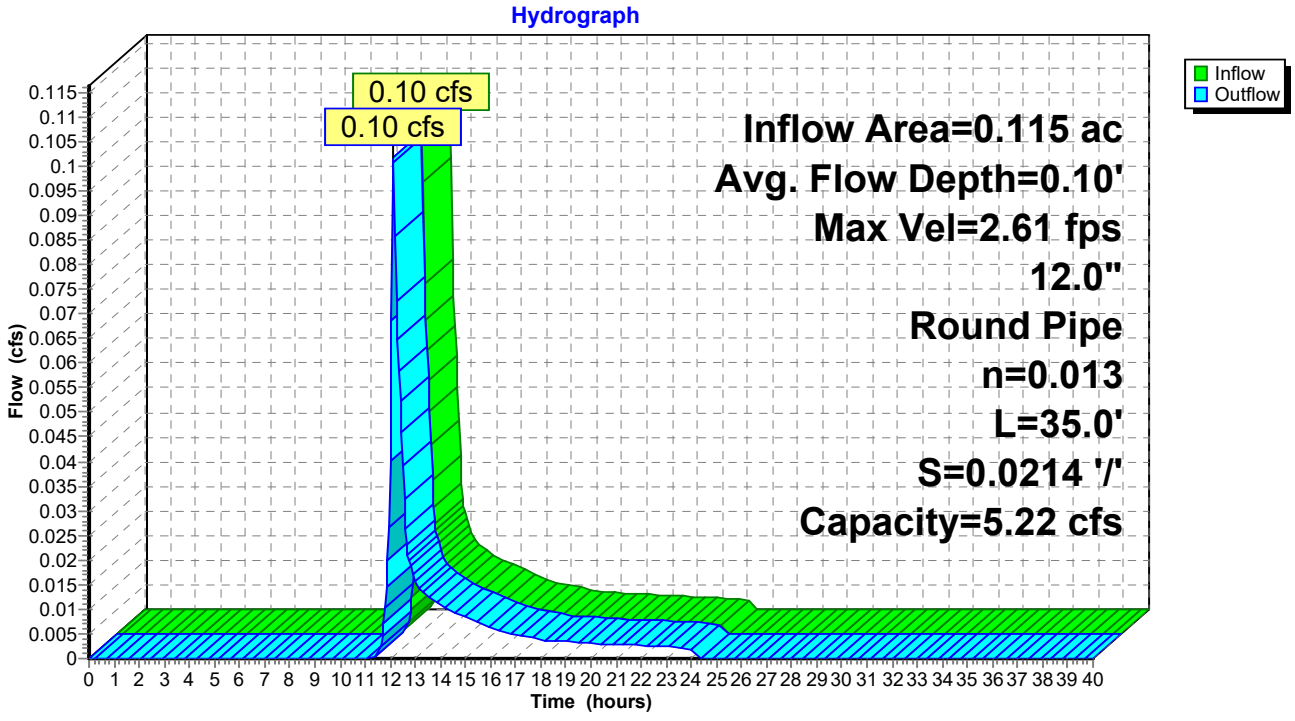
Inflow Area = 0.115 ac, 16.52% Impervious, Inflow Depth = 0.93" for 2-Year event
Inflow = 0.10 cfs @ 12.12 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.13 hrs, Volume= 0.009 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.22 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 35.0' Slope= 0.0214 '/'
Inlet Invert= 366.75', Outlet Invert= 366.00'





Summary for Reach 8R: 12" HDPE

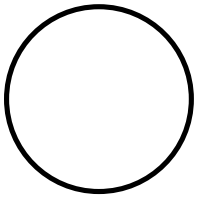
[52] Hint: Inlet/Outlet conditions not evaluated

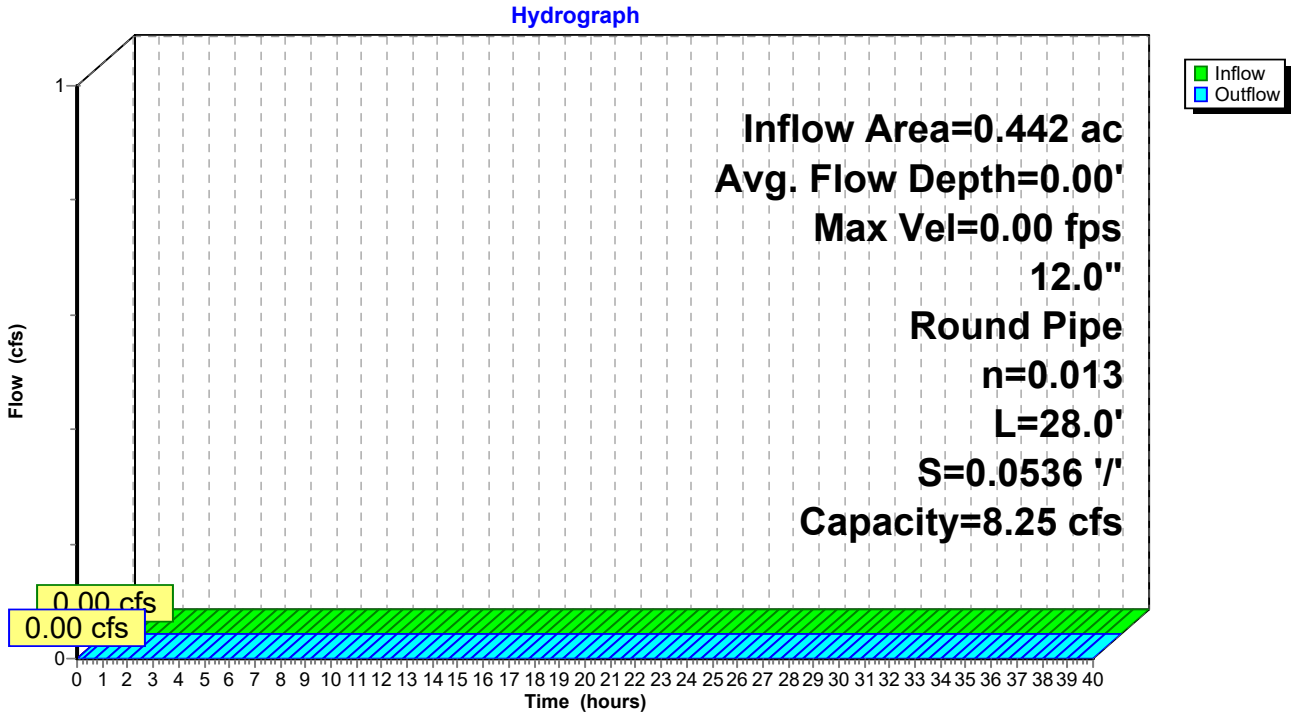
Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.25 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 28.0' Slope= 0.0536 '/'
Inlet Invert= 373.50', Outlet Invert= 372.00'





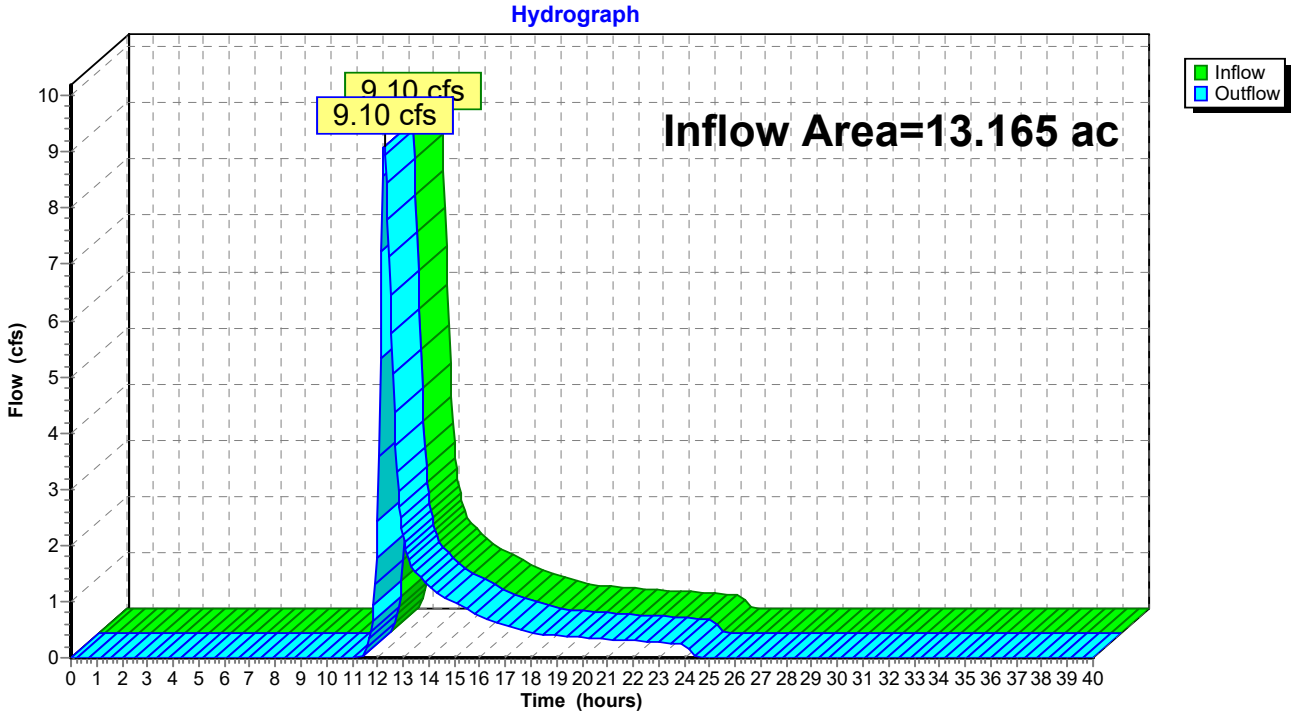
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 11.07% Impervious, Inflow Depth = 0.94" for 2-Year event
Inflow = 9.10 cfs @ 12.26 hrs, Volume= 1.035 af
Outflow = 9.10 cfs @ 12.26 hrs, Volume= 1.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Summary for Pond 1P: GRAVEL COMPOUND

Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 0.98" for 2-Year event
Inflow = 0.37 cfs @ 12.18 hrs, Volume= 0.036 af
Outflow = 0.20 cfs @ 12.48 hrs, Volume= 0.036 af, Atten= 47%, Lag= 17.9 min
Discarded = 0.20 cfs @ 12.48 hrs, Volume= 0.036 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 394.13' @ 12.48 hrs Surf.Area= 0.072 ac Storage= 0.004 af

Plug-Flow detention time= 4.1 min calculated for 0.036 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (882.6 - 878.4)

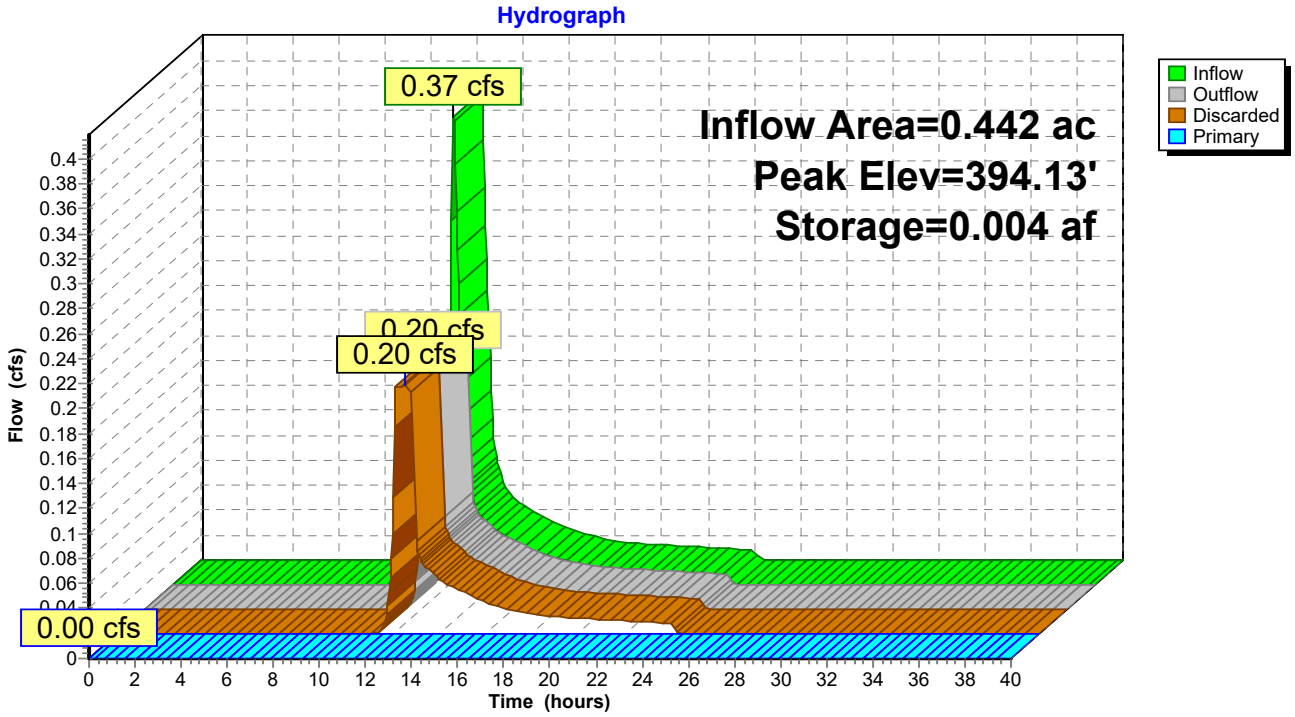
Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	0.034 af	**63.00'W x 50.00'L x 1.16'H Prismatoid** 0.084 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	394.00'	**2.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 380.00'
#2	Primary	395.00'	**2.0' long x 50.0' 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=0.20 cfs @ 12.48 hrs HW=394.12' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=394.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: GRAVEL COMPOUND



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: PDA-1A Runoff Area=9.775 ac 9.09% Impervious Runoff Depth=1.63"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=12.46 cfs 1.332 af

Subcatchment 1B: PDA-1B Runoff Area=0.442 ac 0.00% Impervious Runoff Depth=1.63"
Flow Length=326' Tc=11.7 min CN=68 Runoff=0.67 cfs 0.060 af

Subcatchment 1C: PDA-1C Runoff Area=0.115 ac 16.52% Impervious Runoff Depth=1.56"
Flow Length=141' Tc=7.6 min CN=67 Runoff=0.19 cfs 0.015 af

Subcatchment 2A: PDA-2A Runoff Area=2.491 ac 21.20% Impervious Runoff Depth=1.63"
Flow Length=656' Tc=11.9 min CN=68 Runoff=3.71 cfs 0.339 af

Subcatchment 2B: PDA-2B Runoff Area=0.342 ac 6.14% Impervious Runoff Depth=1.29"
Flow Length=255' Tc=12.4 min CN=63 Runoff=0.38 cfs 0.037 af

Reach 3R: 12" HDPE Avg. Flow Depth=0.20' Max Vel=3.41 fps Inflow=0.38 cfs 0.037 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0150 '/' Capacity=4.36 cfs Outflow=0.38 cfs 0.037 af

Reach 7R: 12" HDPE Avg. Flow Depth=0.13' Max Vel=3.11 fps Inflow=0.19 cfs 0.015 af
12.0" Round Pipe n=0.013 L=35.0' S=0.0214 '/' Capacity=5.22 cfs Outflow=0.19 cfs 0.015 af

Reach 8R: 12" HDPE Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
12.0" Round Pipe n=0.013 L=28.0' S=0.0536 '/' Capacity=8.25 cfs Outflow=0.00 cfs 0.000 af

Reach AP-1: RESEVOIR Inflow=16.11 cfs 1.723 af
Outflow=16.11 cfs 1.723 af

Pond 1P: GRAVEL COMPOUND Peak Elev=394.43' Storage=0.012 af Inflow=0.67 cfs 0.060 af
Discarded=0.20 cfs 0.060 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.060 af

Total Runoff Area = 13.165 ac Runoff Volume = 1.783 af Average Runoff Depth = 1.63"
88.93% Pervious = 11.708 ac 11.07% Impervious = 1.457 ac

Summary for Subcatchment 1A: PDA-1A

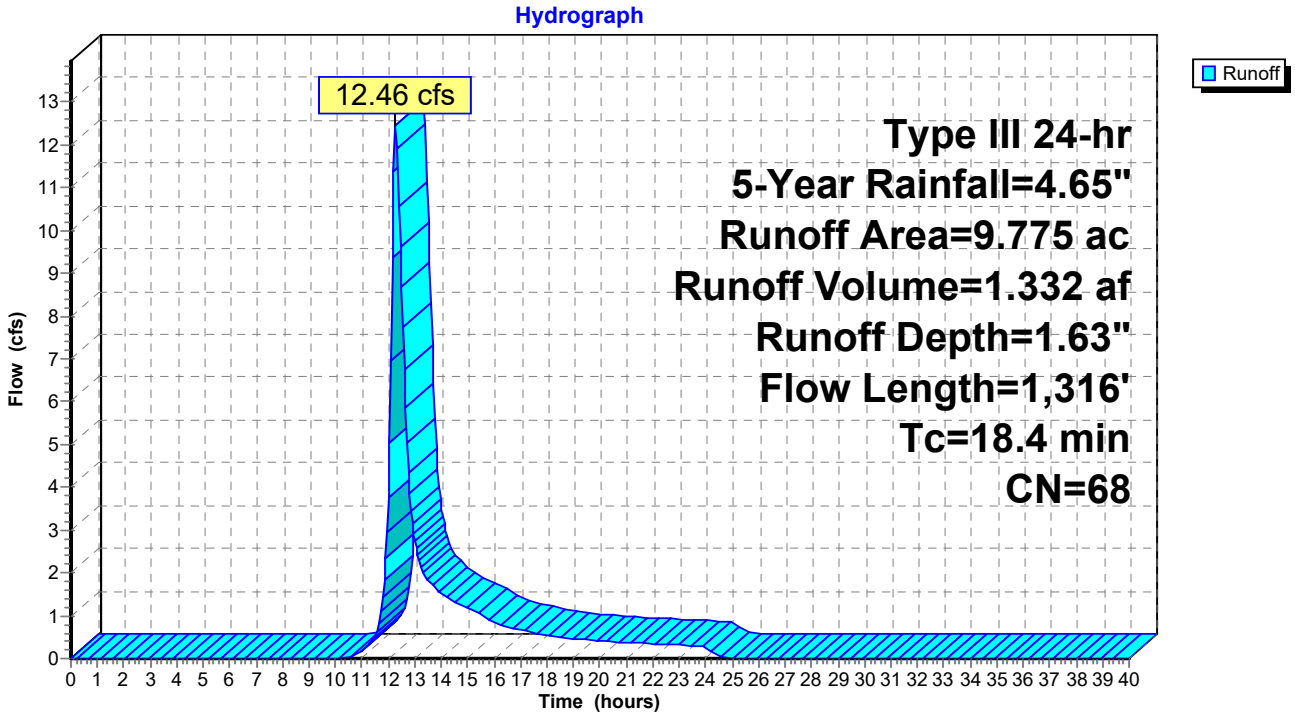
Runoff = 12.46 cfs @ 12.27 hrs, Volume= 1.332 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
5.283	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
9.775	68	Weighted Average
8.886		90.91% Pervious Area
0.889		9.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1A: PDA-1A



Summary for Subcatchment 1B: PDA-1B

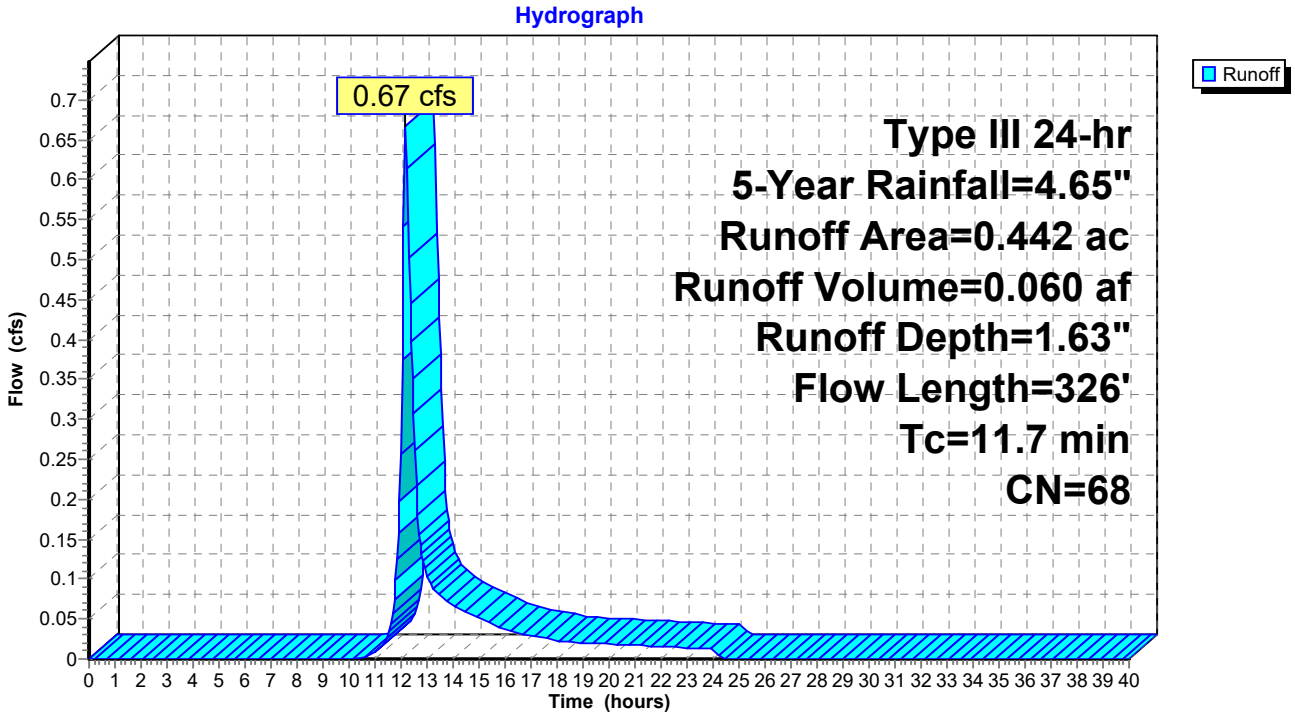
Runoff = 0.67 cfs @ 12.17 hrs, Volume= 0.060 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
0.217	60	Woods, Fair, HSG B
0.078	61	>75% Grass cover, Good, HSG B
0.147	85	Gravel roads, HSG B
0.442	68	Weighted Average
0.442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	85	0.0710	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.4	103	0.0670	4.17		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
0.3	46	0.3000	2.74		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.3	92	0.0980	5.04		**Shallow Concentrated Flow, D-E** Unpaved Kv= 16.1 fps
11.7	326	Total			

Subcatchment 1B: PDA-1B



Summary for Subcatchment 1C: PDA-1C

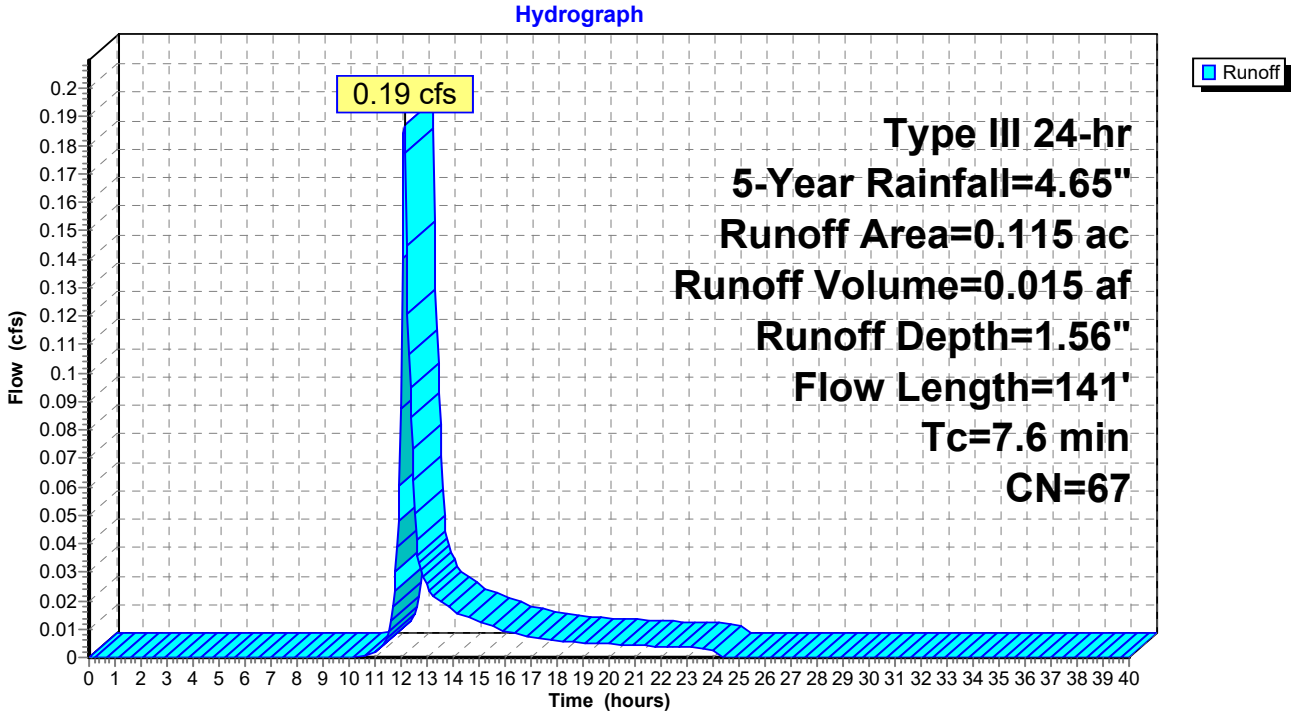
Runoff = 0.19 cfs @ 12.12 hrs, Volume= 0.015 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
0.039	60	Woods, Fair, HSG B
0.057	61	>75% Grass cover, Good, HSG B
0.019	98	Paved parking, HSG B
0.115	67	Weighted Average
0.096		83.48% Pervious Area
0.019		16.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	81	0.1600	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.1	36	0.5000	4.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.2100	6.87		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.6	141	Total			

Subcatchment 1C: PDA-1C



Summary for Subcatchment 2A: PDA-2A

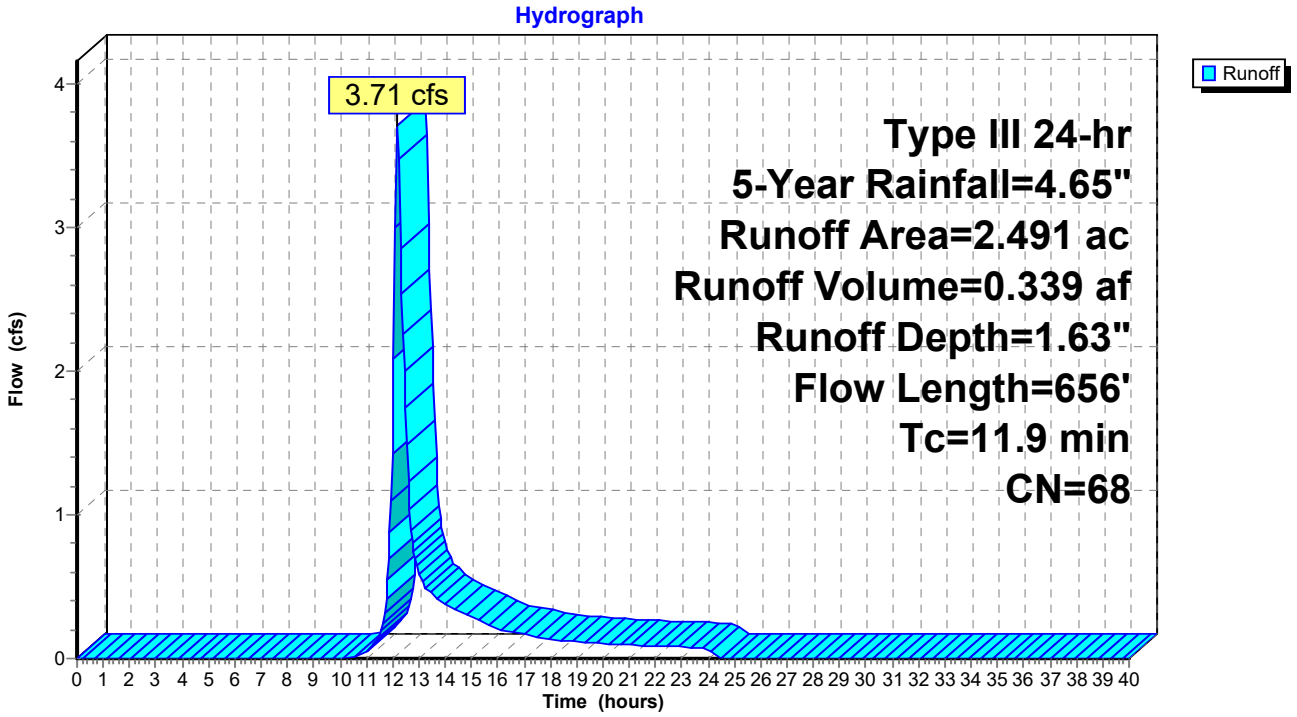
Runoff = 3.71 cfs @ 12.18 hrs, Volume= 0.339 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
1.963	60	Woods, Fair, HSG B
0.528	98	Paved parking, HSG B
2.491	68	Weighted Average
1.963		78.80% Pervious Area
0.528		21.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1400	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.1	166	0.2650	2.57		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	113	0.0619	5.05		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.5	64	0.1720	2.07		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.6	188	0.0585	4.91		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, F-G** Woodland Kv= 5.0 fps
11.9	656	Total			

Subcatchment 2A: PDA-2A



Summary for Subcatchment 2B: PDA-2B

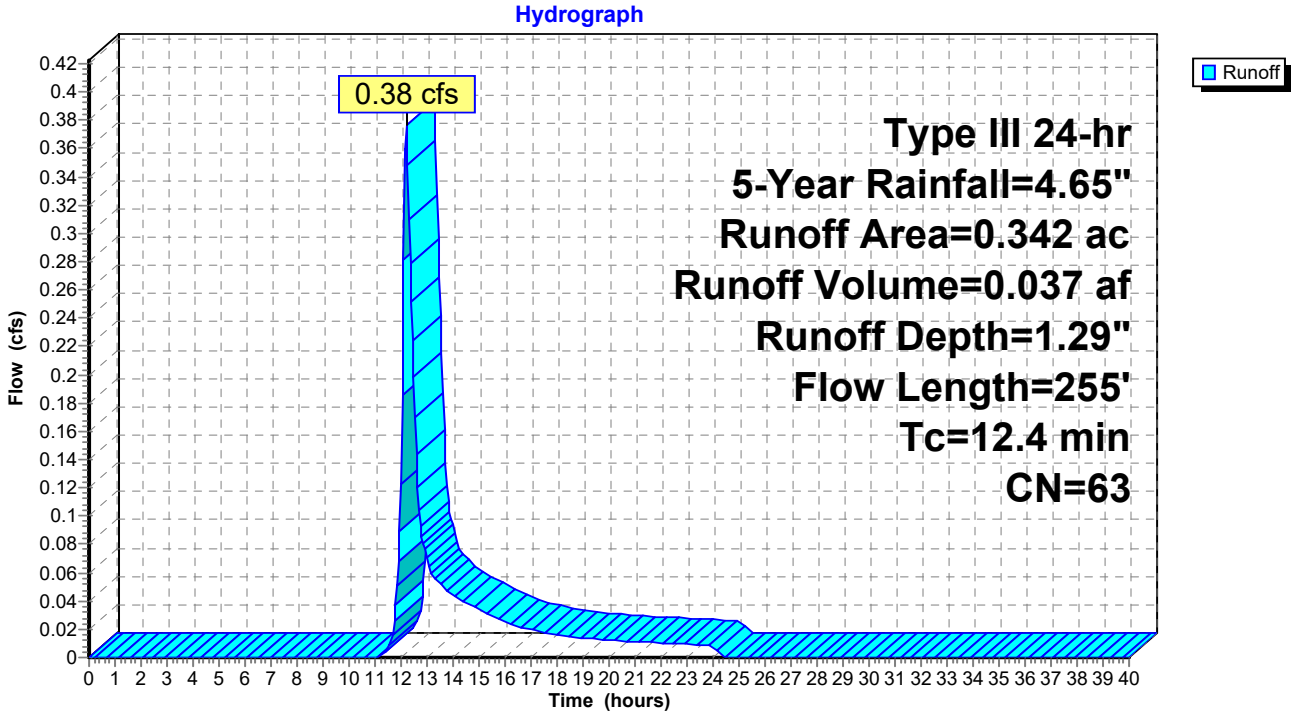
Runoff = 0.38 cfs @ 12.19 hrs, Volume= 0.037 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.65"

Area (ac)	CN	Description
0.202	60	Woods, Fair, HSG B
0.021	98	Paved parking, HSG B
0.119	61	>75% Grass cover, Good, HSG B
0.342	63	Weighted Average
0.321		93.86% Pervious Area
0.021		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0800	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.5	48	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	55	0.5000	4.95		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.2100	6.87		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
12.4	255	Total			

Subcatchment 2B: PDA-2B



Summary for Reach 3R: 12" HDPE

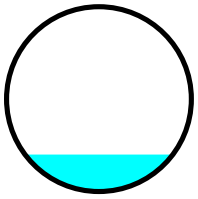
[52] Hint: Inlet/Outlet conditions not evaluated

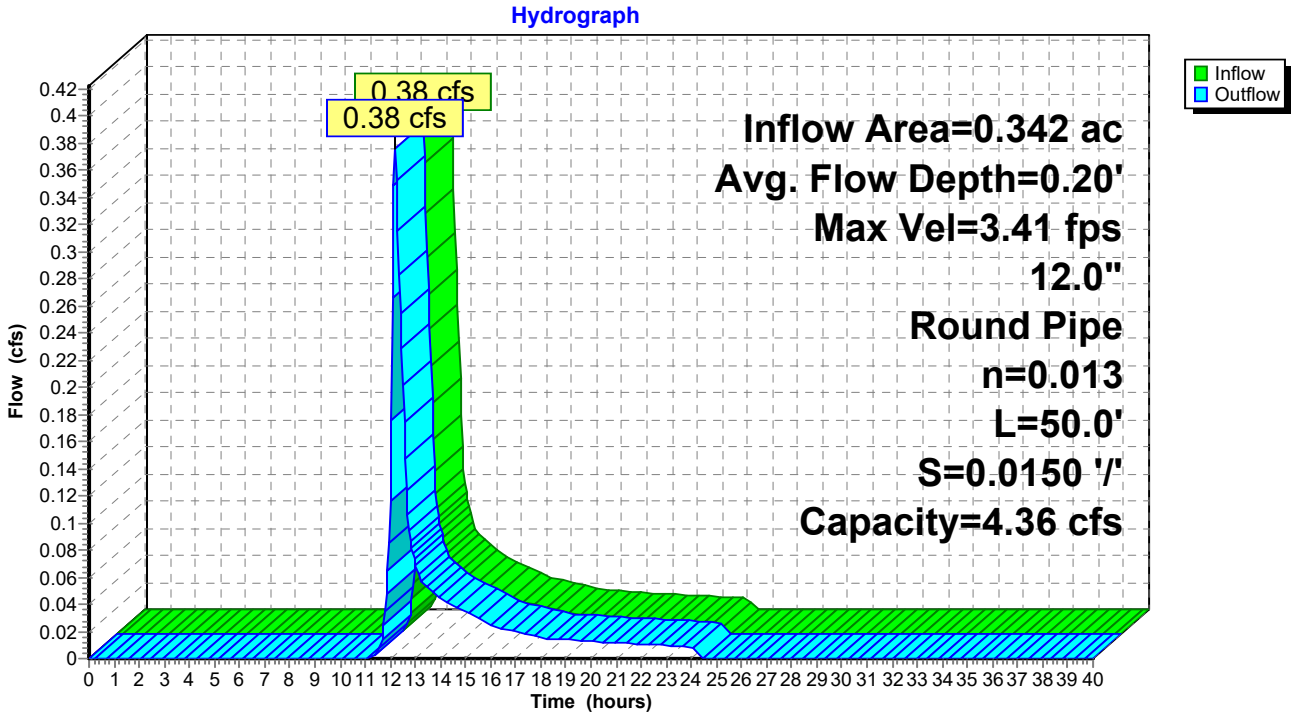
Inflow Area = 0.342 ac, 6.14% Impervious, Inflow Depth = 1.29" for 5-Year event
Inflow = 0.38 cfs @ 12.19 hrs, Volume= 0.037 af
Outflow = 0.38 cfs @ 12.20 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.41 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.6 min

Peak Storage= 6 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.36 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0150 '/'
Inlet Invert= 351.75', Outlet Invert= 351.00'





Summary for Reach 7R: 12" HDPE

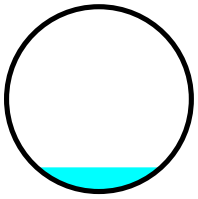
[52] Hint: Inlet/Outlet conditions not evaluated

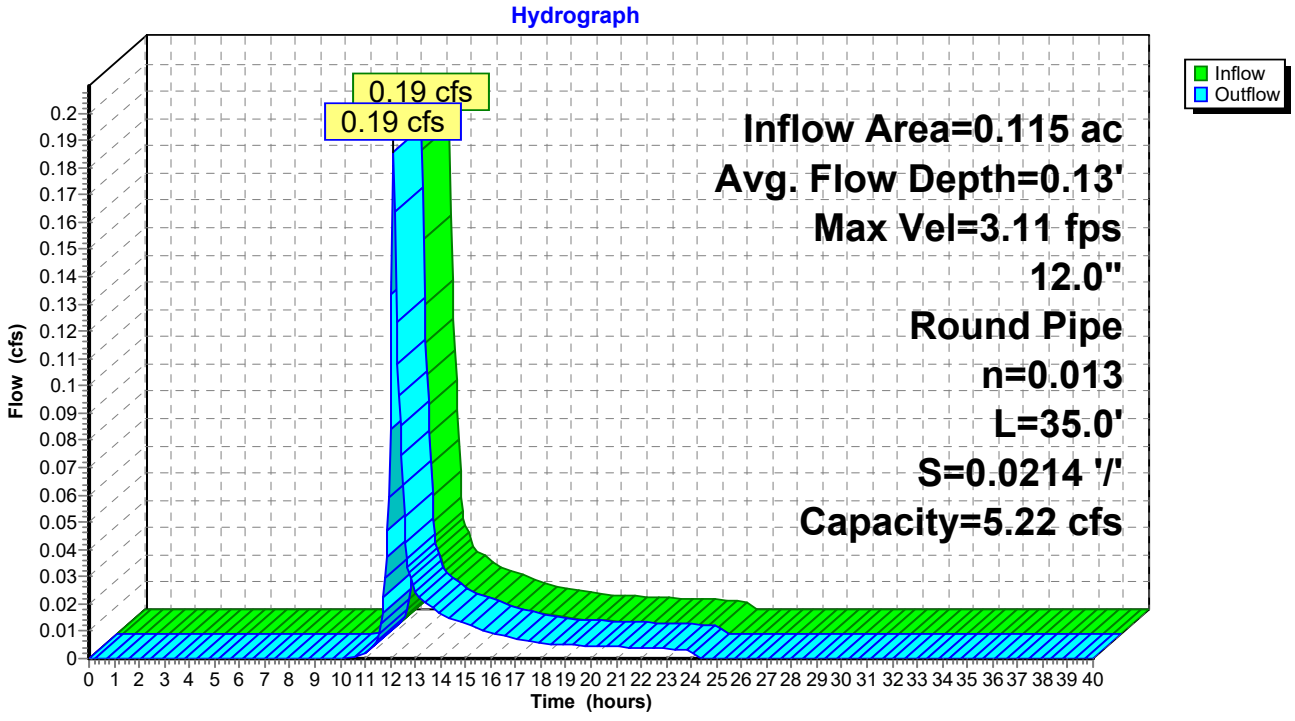
Inflow Area = 0.115 ac, 16.52% Impervious, Inflow Depth = 1.56" for 5-Year event
Inflow = 0.19 cfs @ 12.12 hrs, Volume= 0.015 af
Outflow = 0.19 cfs @ 12.12 hrs, Volume= 0.015 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.11 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.5 min

Peak Storage= 2 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.22 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 35.0' Slope= 0.0214 '/'
Inlet Invert= 366.75', Outlet Invert= 366.00'





Summary for Reach 8R: 12" HDPE

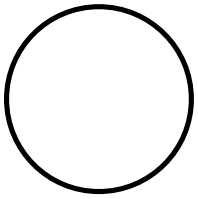
[52] Hint: Inlet/Outlet conditions not evaluated

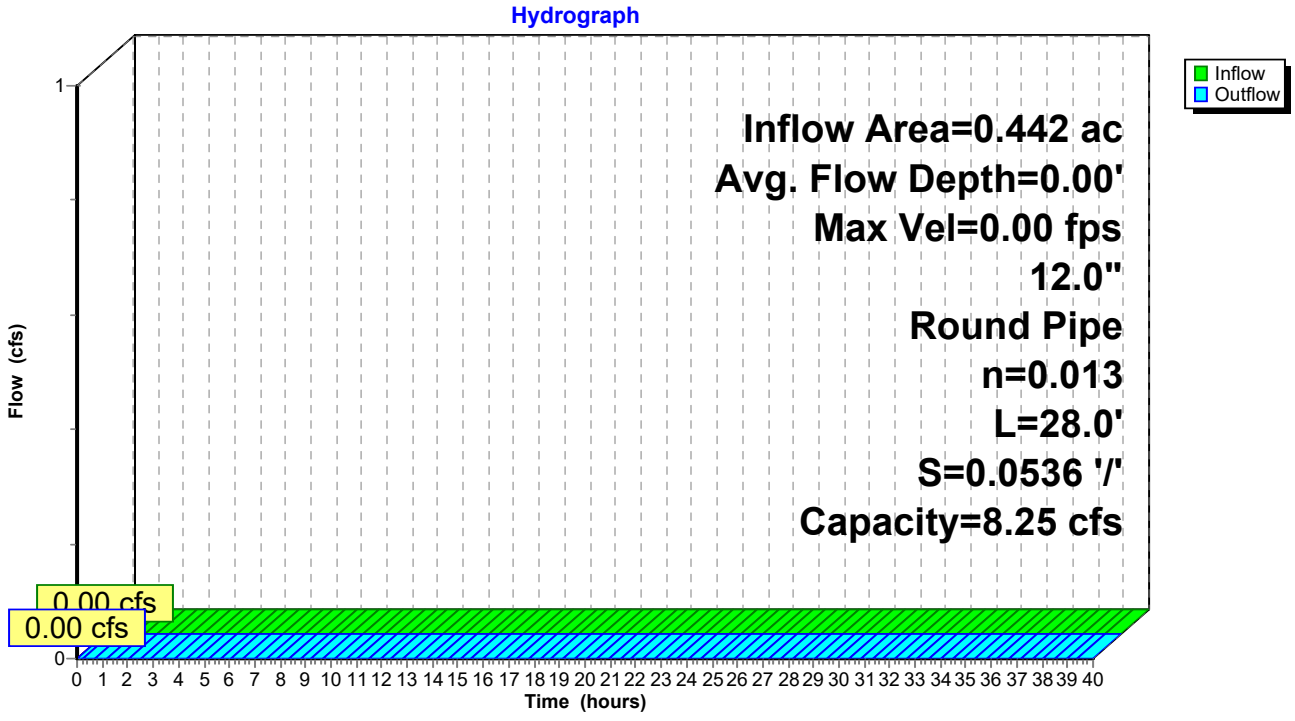
Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 0.00" for 5-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.25 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 28.0' Slope= 0.0536 '/'
Inlet Invert= 373.50', Outlet Invert= 372.00'





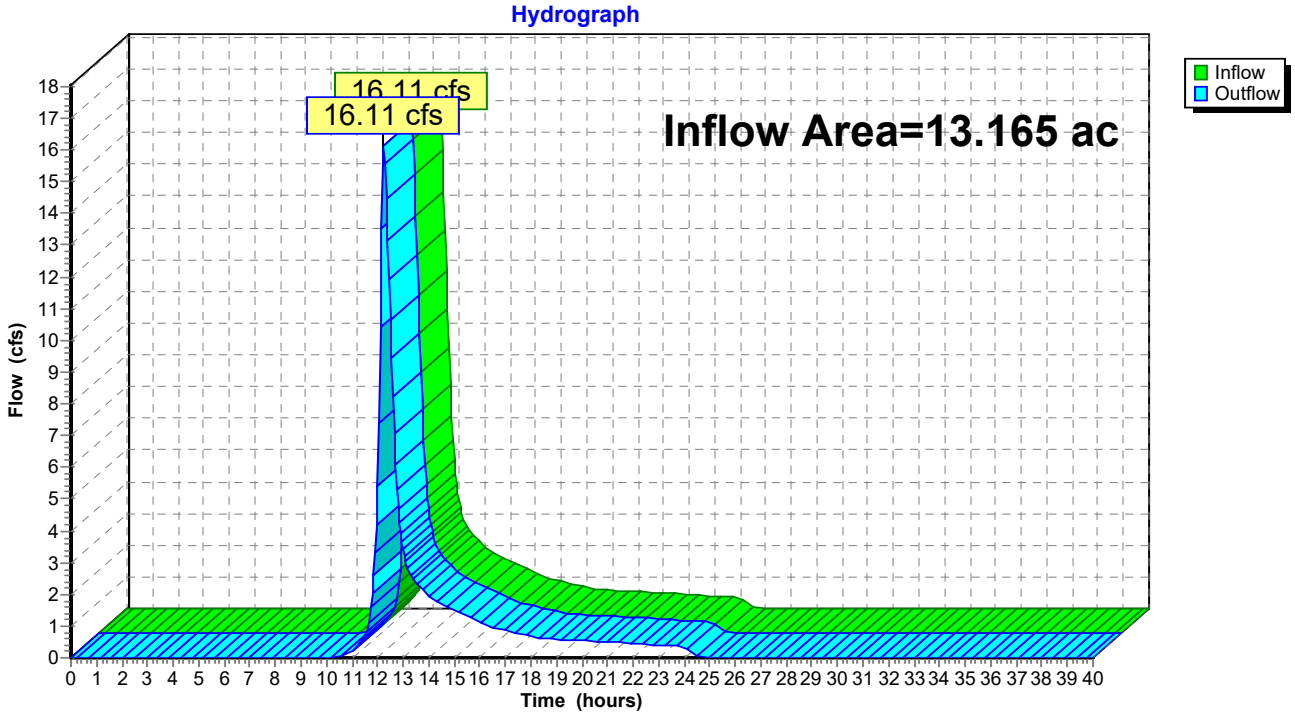
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 11.07% Impervious, Inflow Depth = 1.57" for 5-Year event
Inflow = 16.11 cfs @ 12.25 hrs, Volume= 1.723 af
Outflow = 16.11 cfs @ 12.25 hrs, Volume= 1.723 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Summary for Pond 1P: GRAVEL COMPOUND

Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 1.63" for 5-Year event
Inflow = 0.67 cfs @ 12.17 hrs, Volume= 0.060 af
Outflow = 0.20 cfs @ 12.62 hrs, Volume= 0.060 af, Atten= 70%, Lag= 26.8 min
Discarded = 0.20 cfs @ 12.62 hrs, Volume= 0.060 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 394.43' @ 12.62 hrs Surf.Area= 0.072 ac Storage= 0.012 af

Plug-Flow detention time= 16.1 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 15.4 min (877.8 - 862.4)

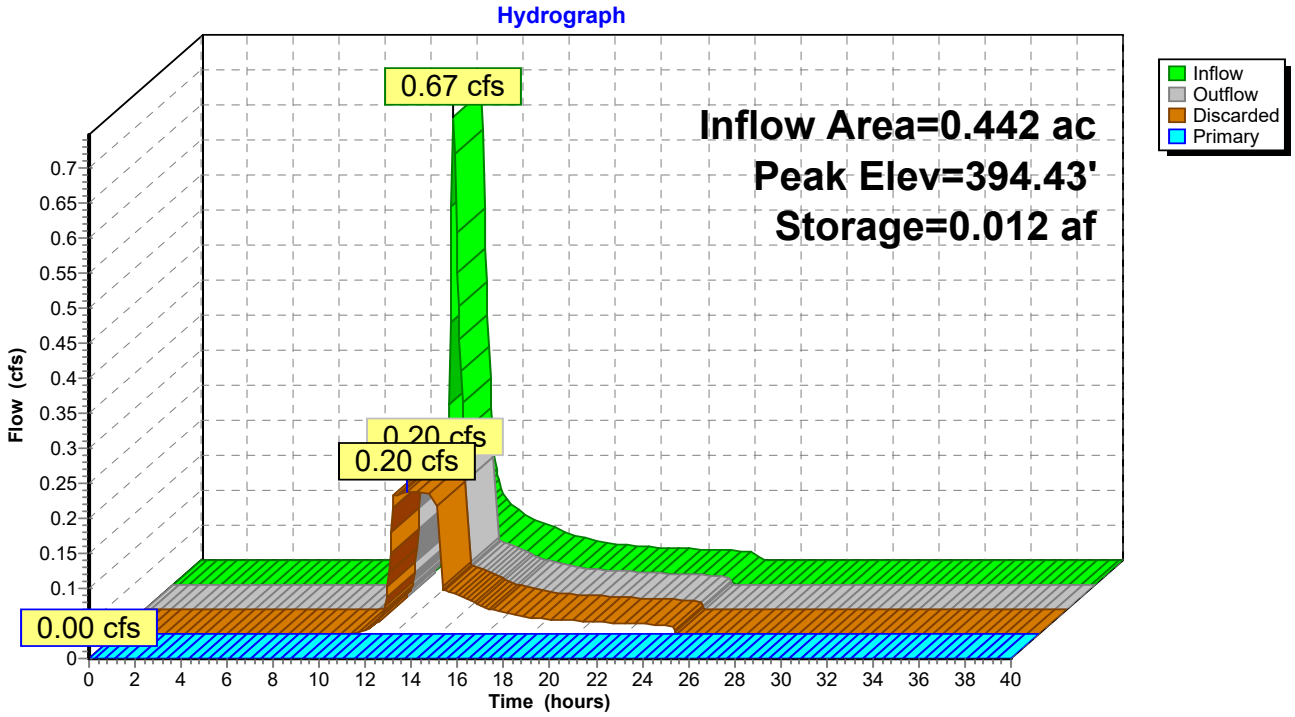
Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	0.034 af	**63.00'W x 50.00'L x 1.16'H Prismatoid** 0.084 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	394.00'	**2.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 380.00'
#2	Primary	395.00'	**2.0' long x 50.0' 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=0.20 cfs @ 12.62 hrs HW=394.43' (Free Discharge)
1=Exfiltration (Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=394.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: GRAVEL COMPOUND



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: PDA-1A Runoff Area=9.775 ac 9.09% Impervious Runoff Depth=2.24"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=17.49 cfs 1.827 af

Subcatchment 1B: PDA-1B Runoff Area=0.442 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=326' Tc=11.7 min CN=68 Runoff=0.94 cfs 0.083 af

Subcatchment 1C: PDA-1C Runoff Area=0.115 ac 16.52% Impervious Runoff Depth=2.16"
Flow Length=141' Tc=7.6 min CN=67 Runoff=0.27 cfs 0.021 af

Subcatchment 2A: PDA-2A Runoff Area=2.491 ac 21.20% Impervious Runoff Depth=2.24"
Flow Length=656' Tc=11.9 min CN=68 Runoff=5.25 cfs 0.466 af

Subcatchment 2B: PDA-2B Runoff Area=0.342 ac 6.14% Impervious Runoff Depth=1.83"
Flow Length=255' Tc=12.4 min CN=63 Runoff=0.56 cfs 0.052 af

Reach 3R: 12" HDPE Avg. Flow Depth=0.24' Max Vel=3.82 fps Inflow=0.56 cfs 0.052 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0150 '/' Capacity=4.36 cfs Outflow=0.56 cfs 0.052 af

Reach 7R: 12" HDPE Avg. Flow Depth=0.15' Max Vel=3.46 fps Inflow=0.27 cfs 0.021 af
12.0" Round Pipe n=0.013 L=35.0' S=0.0214 '/' Capacity=5.22 cfs Outflow=0.26 cfs 0.021 af

Reach 8R: 12" HDPE Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
12.0" Round Pipe n=0.013 L=28.0' S=0.0536 '/' Capacity=8.25 cfs Outflow=0.00 cfs 0.000 af

Reach AP-1: RESEVOIR Inflow=22.64 cfs 2.366 af
Outflow=22.64 cfs 2.366 af

Pond 1P: GRAVEL COMPOUND Peak Elev=394.76' Storage=0.022 af Inflow=0.94 cfs 0.083 af
Discarded=0.21 cfs 0.083 af Primary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.083 af

Total Runoff Area = 13.165 ac Runoff Volume = 2.449 af Average Runoff Depth = 2.23"
88.93% Pervious = 11.708 ac 11.07% Impervious = 1.457 ac

Summary for Subcatchment 1A: PDA-1A

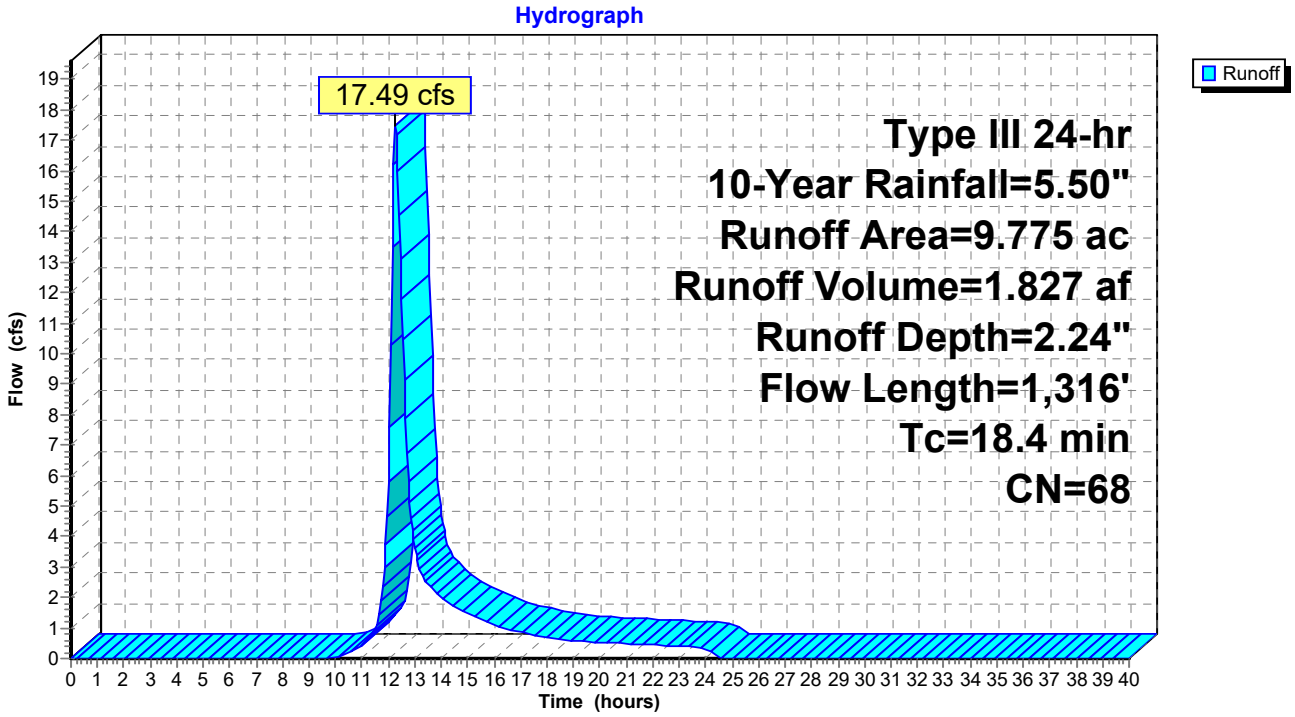
Runoff = 17.49 cfs @ 12.27 hrs, Volume= 1.827 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
5.283	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
9.775	68	Weighted Average
8.886		90.91% Pervious Area
0.889		9.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1A: PDA-1A



Summary for Subcatchment 1B: PDA-1B

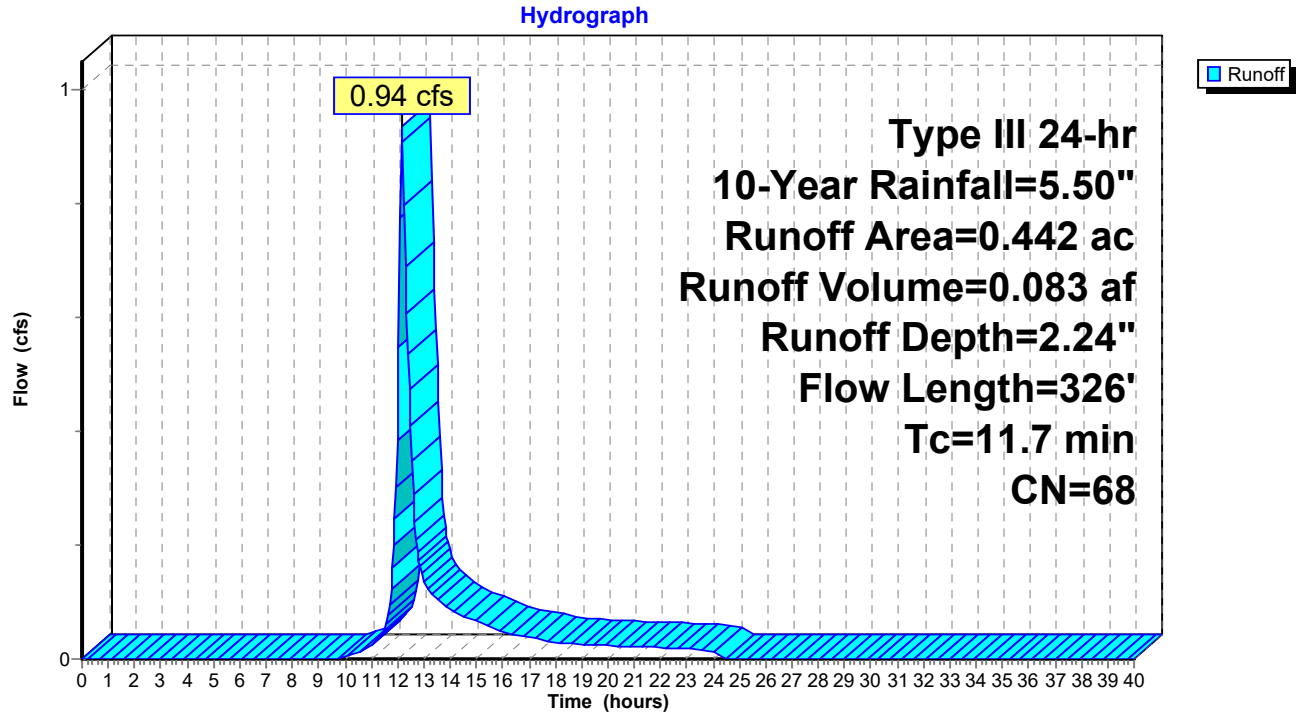
Runoff = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
0.217	60	Woods, Fair, HSG B
0.078	61	>75% Grass cover, Good, HSG B
0.147	85	Gravel roads, HSG B
0.442	68	Weighted Average
0.442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	85	0.0710	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.4	103	0.0670	4.17		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
0.3	46	0.3000	2.74		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.3	92	0.0980	5.04		**Shallow Concentrated Flow, D-E** Unpaved Kv= 16.1 fps
11.7	326	Total			

Subcatchment 1B: PDA-1B



Summary for Subcatchment 1C: PDA-1C

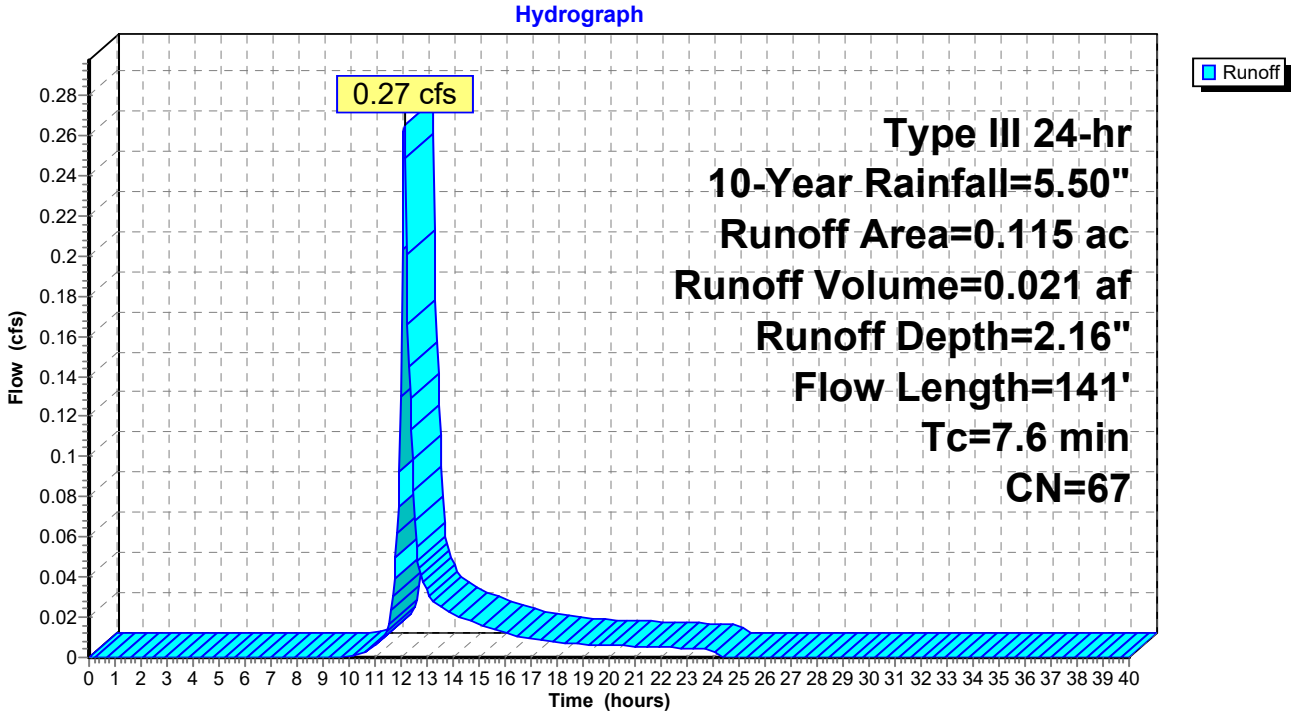
Runoff = 0.27 cfs @ 12.12 hrs, Volume= 0.021 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
0.039	60	Woods, Fair, HSG B
0.057	61	>75% Grass cover, Good, HSG B
0.019	98	Paved parking, HSG B
0.115	67	Weighted Average
0.096		83.48% Pervious Area
0.019		16.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	81	0.1600	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.1	36	0.5000	4.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.2100	6.87		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.6	141	Total			

Subcatchment 1C: PDA-1C



Summary for Subcatchment 2A: PDA-2A

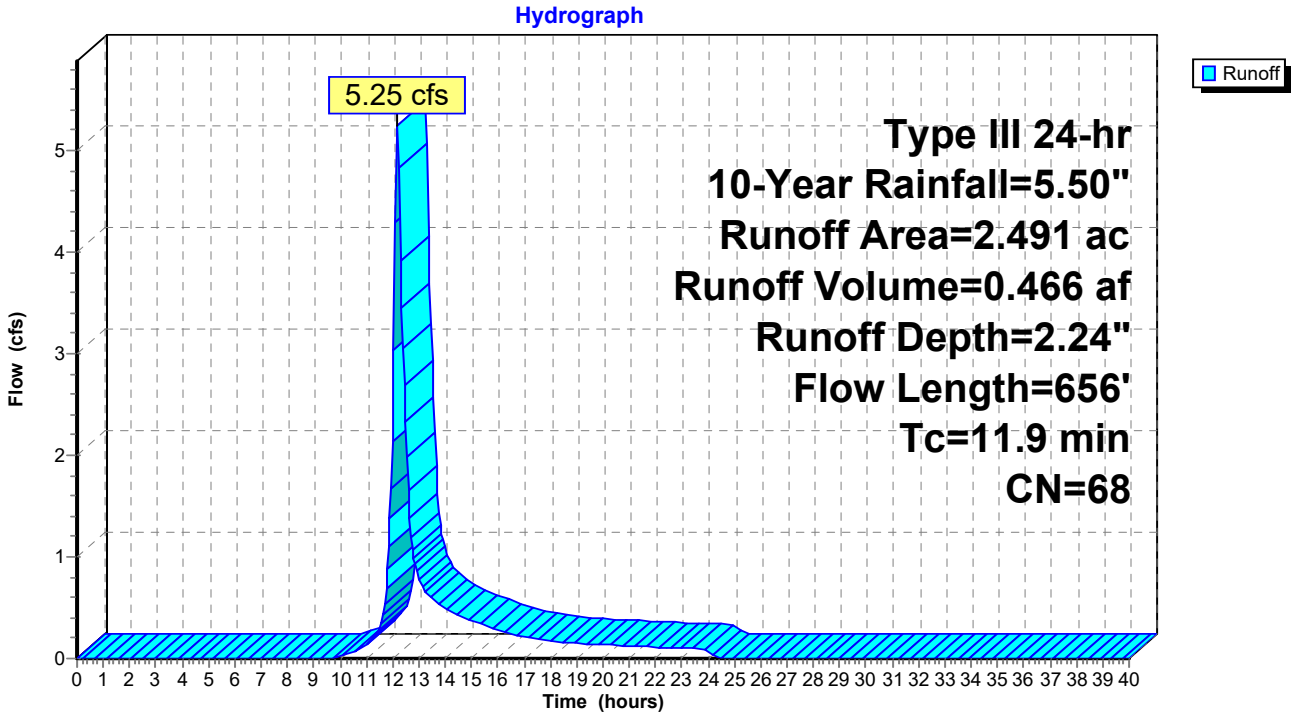
Runoff = 5.25 cfs @ 12.17 hrs, Volume= 0.466 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
1.963	60	Woods, Fair, HSG B
0.528	98	Paved parking, HSG B
2.491	68	Weighted Average
1.963		78.80% Pervious Area
0.528		21.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1400	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.1	166	0.2650	2.57		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	113	0.0619	5.05		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.5	64	0.1720	2.07		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.6	188	0.0585	4.91		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, F-G** Woodland Kv= 5.0 fps
11.9	656	Total			

Subcatchment 2A: PDA-2A



Summary for Subcatchment 2B: PDA-2B

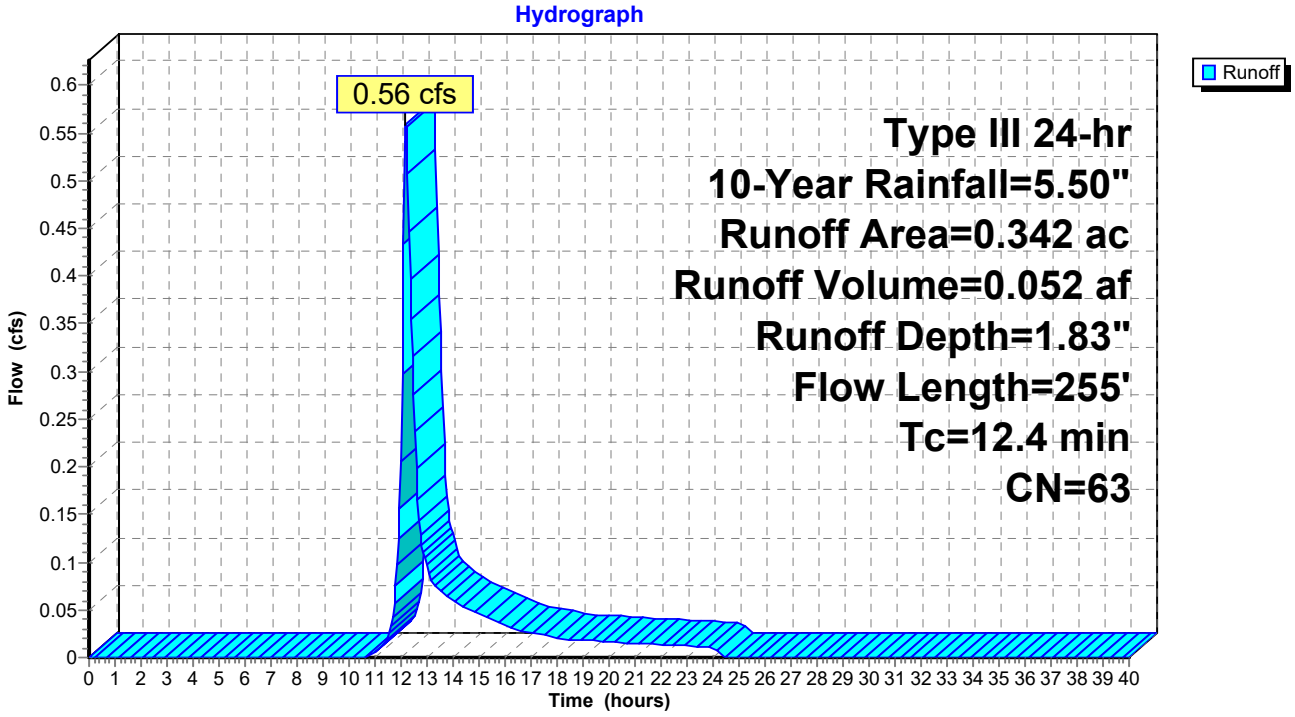
Runoff = 0.56 cfs @ 12.19 hrs, Volume= 0.052 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.50"

Area (ac)	CN	Description
0.202	60	Woods, Fair, HSG B
0.021	98	Paved parking, HSG B
0.119	61	>75% Grass cover, Good, HSG B
0.342	63	Weighted Average
0.321		93.86% Pervious Area
0.021		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0800	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.5	48	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	55	0.5000	4.95		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.2100	6.87		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
12.4	255	Total			

Subcatchment 2B: PDA-2B



Summary for Reach 3R: 12" HDPE

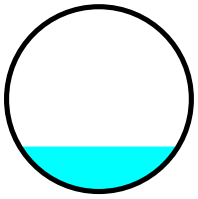
[52] Hint: Inlet/Outlet conditions not evaluated

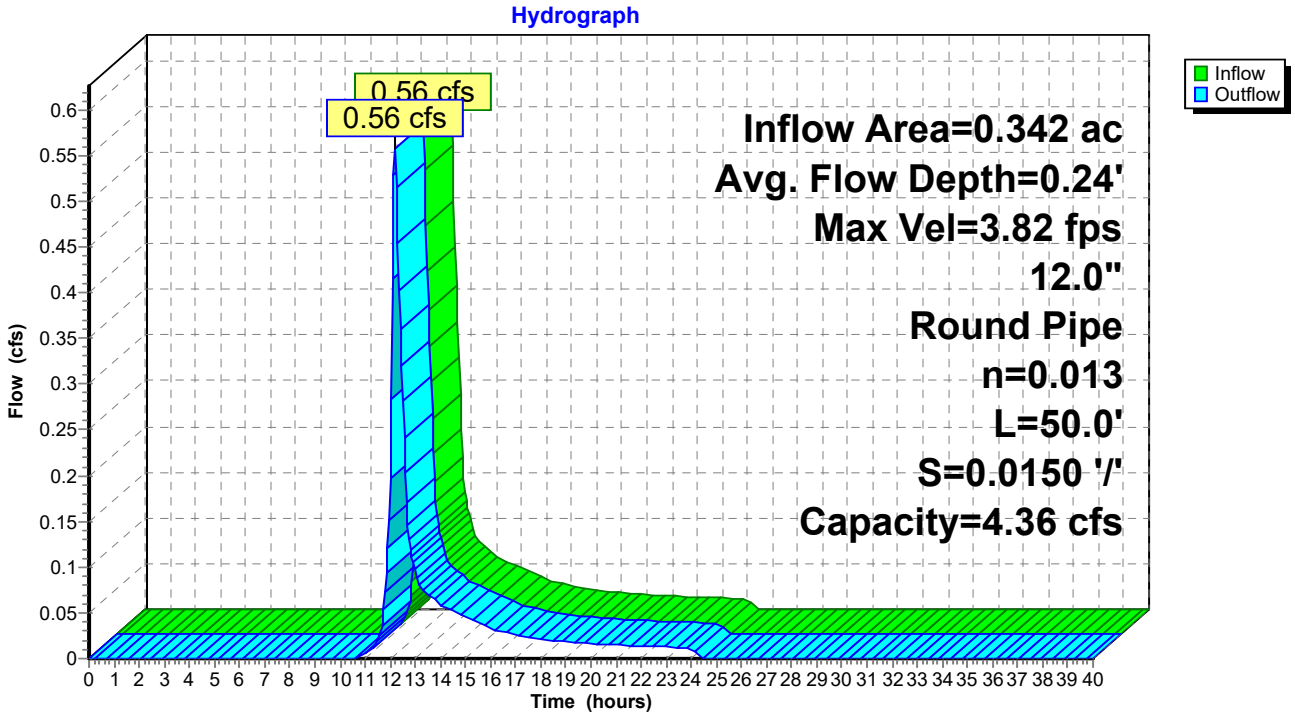
Inflow Area = 0.342 ac, 6.14% Impervious, Inflow Depth = 1.83" for 10-Year event
Inflow = 0.56 cfs @ 12.19 hrs, Volume= 0.052 af
Outflow = 0.56 cfs @ 12.19 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.82 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 0.5 min

Peak Storage= 7 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.36 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0150 '/'
Inlet Invert= 351.75', Outlet Invert= 351.00'





Summary for Reach 7R: 12" HDPE

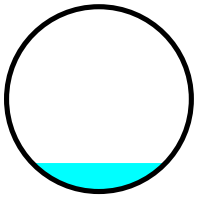
[52] Hint: Inlet/Outlet conditions not evaluated

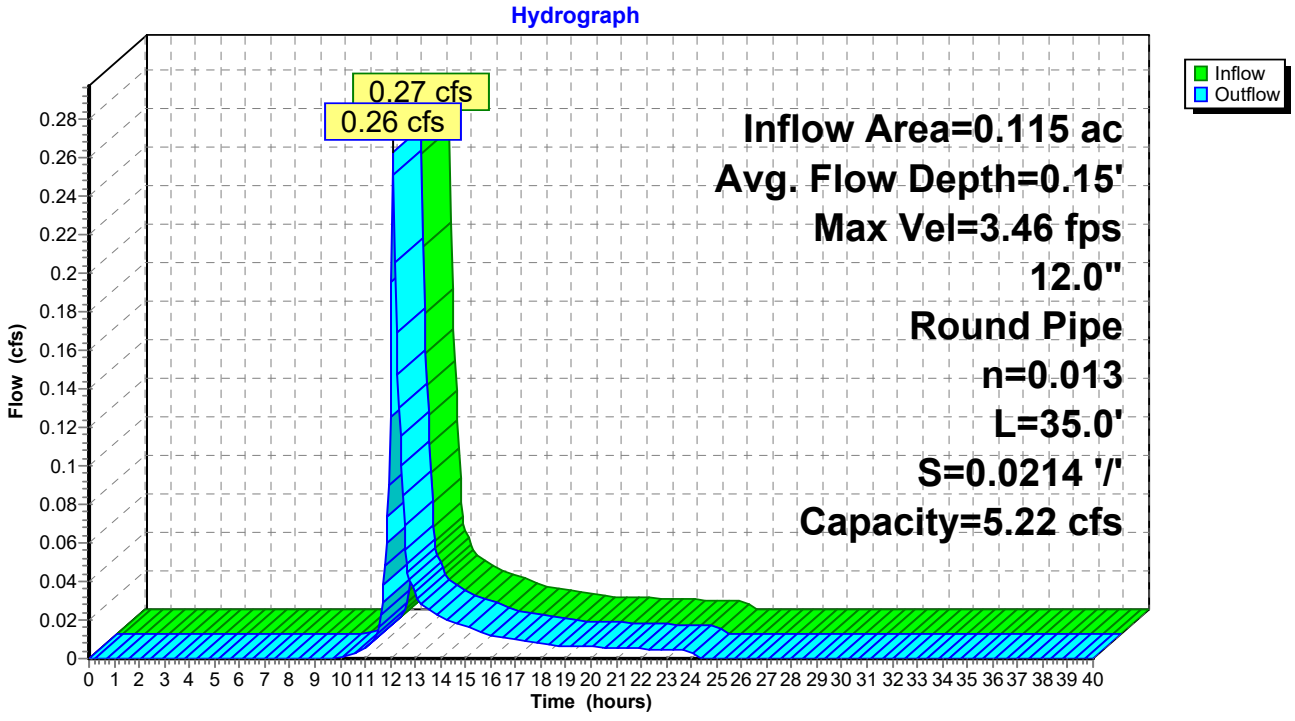
Inflow Area = 0.115 ac, 16.52% Impervious, Inflow Depth = 2.16" for 10-Year event
Inflow = 0.27 cfs @ 12.12 hrs, Volume= 0.021 af
Outflow = 0.26 cfs @ 12.12 hrs, Volume= 0.021 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.22 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 35.0' Slope= 0.0214 '/'
Inlet Invert= 366.75', Outlet Invert= 366.00'





Summary for Reach 8R: 12" HDPE

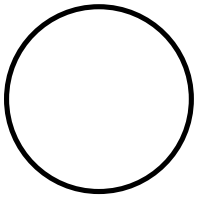
[52] Hint: Inlet/Outlet conditions not evaluated

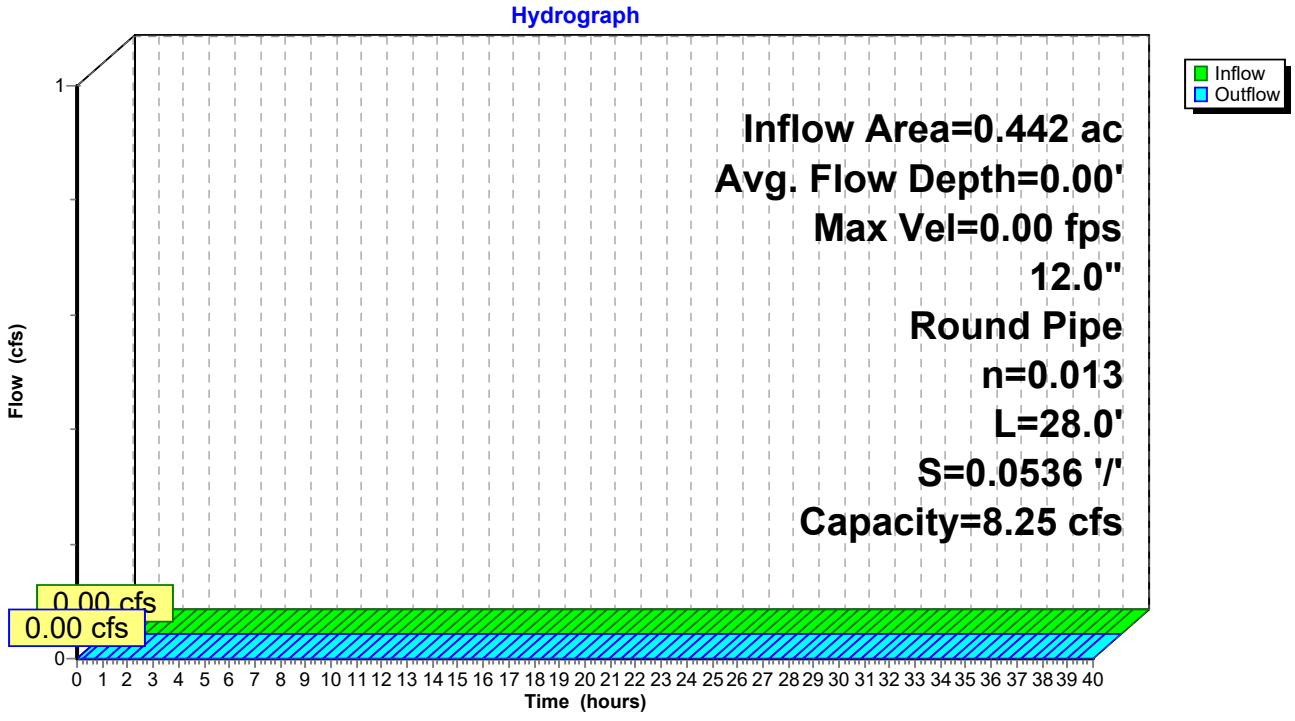
Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.25 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 28.0' Slope= 0.0536 '/'
Inlet Invert= 373.50', Outlet Invert= 372.00'





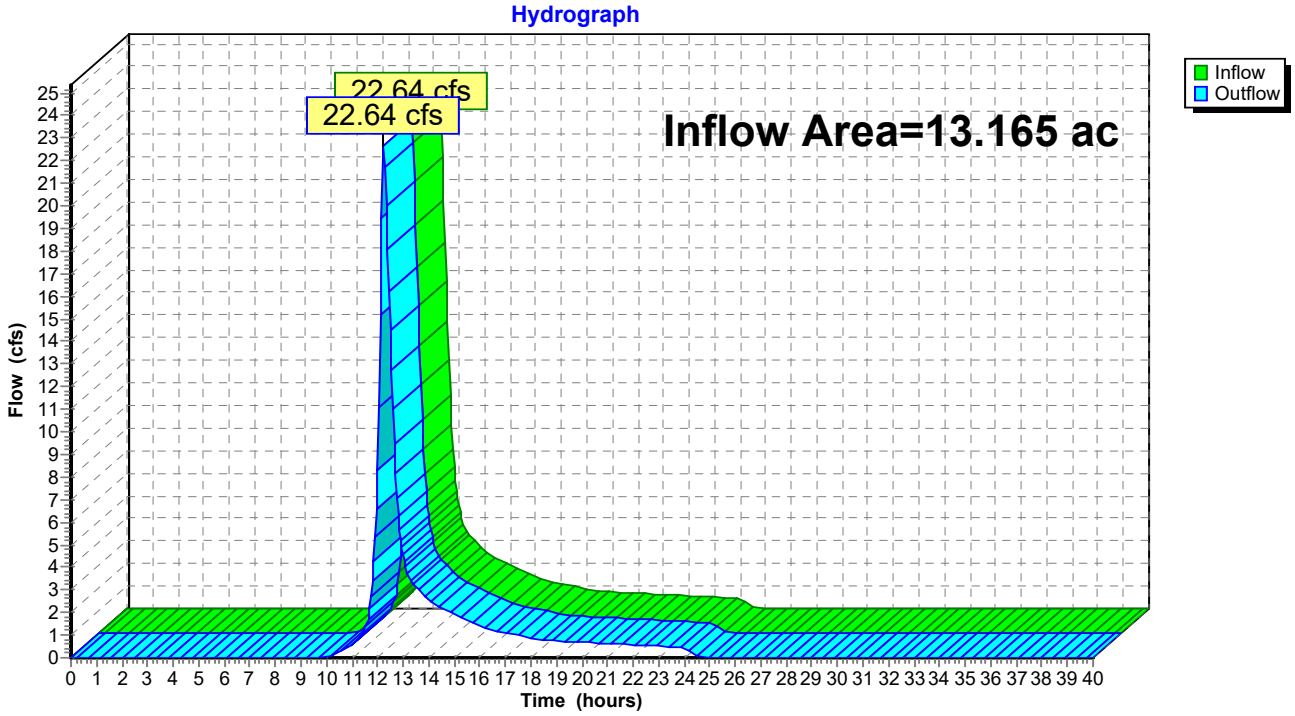
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 11.07% Impervious, Inflow Depth = 2.16" for 10-Year event
Inflow = 22.64 cfs @ 12.24 hrs, Volume= 2.366 af
Outflow = 22.64 cfs @ 12.24 hrs, Volume= 2.366 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Summary for Pond 1P: GRAVEL COMPOUND

Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 2.24" for 10-Year event
Inflow = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af
Outflow = 0.21 cfs @ 12.71 hrs, Volume= 0.083 af, Atten= 78%, Lag= 32.2 min
Discarded = 0.21 cfs @ 12.71 hrs, Volume= 0.083 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 394.76' @ 12.71 hrs Surf.Area= 0.072 ac Storage= 0.022 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 30.9 min (883.7 - 852.8)

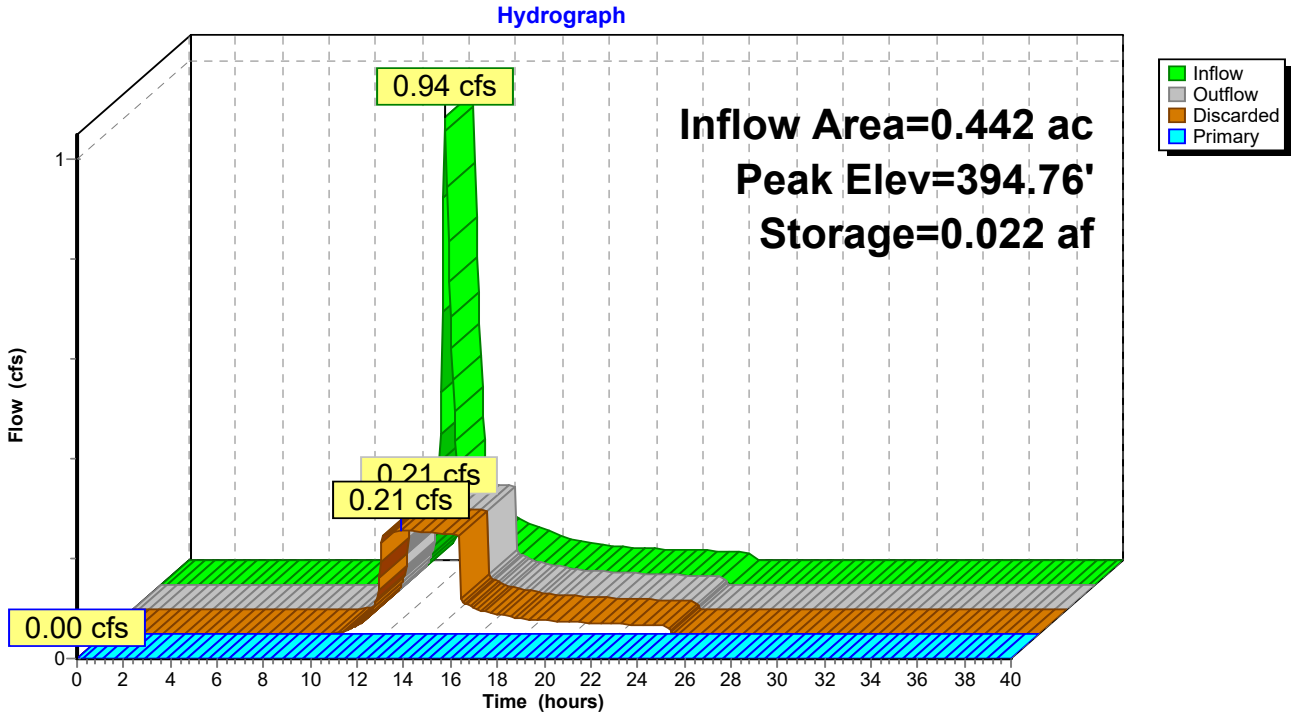
Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	0.034 af	**63.00'W x 50.00'L x 1.16'H Prismatoid** 0.084 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	394.00'	**2.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 380.00'
#2	Primary	395.00'	**2.0' long x 50.0' 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=0.21 cfs @ 12.71 hrs HW=394.76' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=394.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: GRAVEL COMPOUND



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: PDA-1A Runoff Area=9.775 ac 9.09% Impervious Runoff Depth=3.13"
Flow Length=1,316' Tc=18.4 min CN=68 Runoff=24.76 cfs 2.549 af

Subcatchment 1B: PDA-1B Runoff Area=0.442 ac 0.00% Impervious Runoff Depth=3.13"
Flow Length=326' Tc=11.7 min CN=68 Runoff=1.33 cfs 0.115 af

Subcatchment 1C: PDA-1C Runoff Area=0.115 ac 16.52% Impervious Runoff Depth=3.03"
Flow Length=141' Tc=7.6 min CN=67 Runoff=0.38 cfs 0.029 af

Subcatchment 2A: PDA-2A Runoff Area=2.491 ac 21.20% Impervious Runoff Depth=3.13"
Flow Length=656' Tc=11.9 min CN=68 Runoff=7.43 cfs 0.650 af

Subcatchment 2B: PDA-2B Runoff Area=0.342 ac 6.14% Impervious Runoff Depth=2.64"
Flow Length=255' Tc=12.4 min CN=63 Runoff=0.83 cfs 0.075 af

Reach 3R: 12" HDPE Avg. Flow Depth=0.30' Max Vel=4.27 fps Inflow=0.83 cfs 0.075 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0150 '/' Capacity=4.36 cfs Outflow=0.83 cfs 0.075 af

Reach 7R: 12" HDPE Avg. Flow Depth=0.18' Max Vel=3.85 fps Inflow=0.38 cfs 0.029 af
12.0" Round Pipe n=0.013 L=35.0' S=0.0214 '/' Capacity=5.22 cfs Outflow=0.38 cfs 0.029 af

Reach 8R: 12" HDPE Avg. Flow Depth=0.12' Max Vel=4.73 fps Inflow=0.25 cfs 0.008 af
12.0" Round Pipe n=0.013 L=28.0' S=0.0536 '/' Capacity=8.25 cfs Outflow=0.25 cfs 0.008 af

Reach AP-1: RESEVOIR Inflow=32.07 cfs 3.311 af
Outflow=32.07 cfs 3.311 af

Pond 1P: GRAVEL COMPOUND Peak Elev=395.13' Storage=0.033 af Inflow=1.33 cfs 0.115 af
Discarded=0.21 cfs 0.108 af Primary=0.25 cfs 0.008 af Outflow=0.47 cfs 0.115 af

Total Runoff Area = 13.165 ac Runoff Volume = 3.418 af Average Runoff Depth = 3.12"
88.93% Pervious = 11.708 ac 11.07% Impervious = 1.457 ac

Summary for Subcatchment 1A: PDA-1A

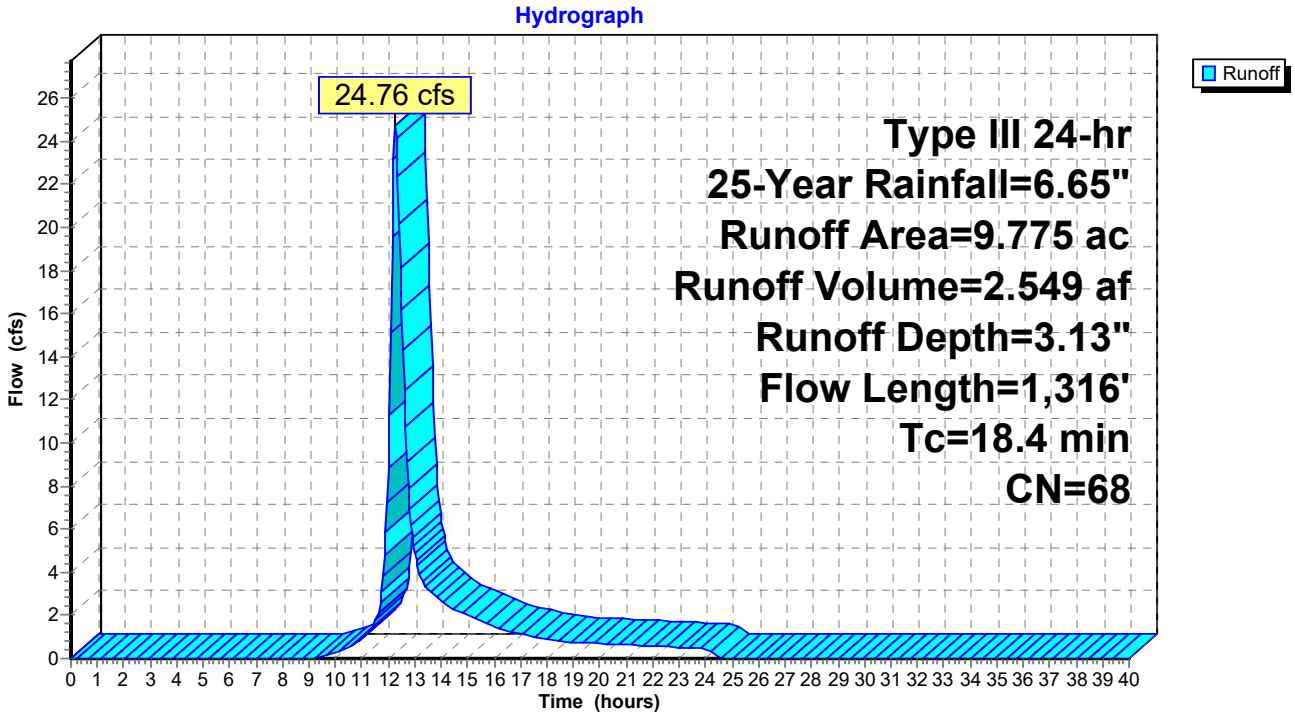
Runoff = 24.76 cfs @ 12.26 hrs, Volume= 2.549 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
5.283	60	Woods, Fair, HSG B
1.297	61	>75% Grass cover, Good, HSG B
0.851	98	Paved parking, HSG B
2.306	79	Woods, Fair, HSG D
0.038	98	Paved parking, HSG D
9.775	68	Weighted Average
8.886		90.91% Pervious Area
0.889		9.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0900	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.64"
4.7	370	0.0700	1.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.6	202	0.0940	2.15		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
7.1	644	0.0920	1.52		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
18.4	1,316	Total			

Subcatchment 1A: PDA-1A



Summary for Subcatchment 1B: PDA-1B

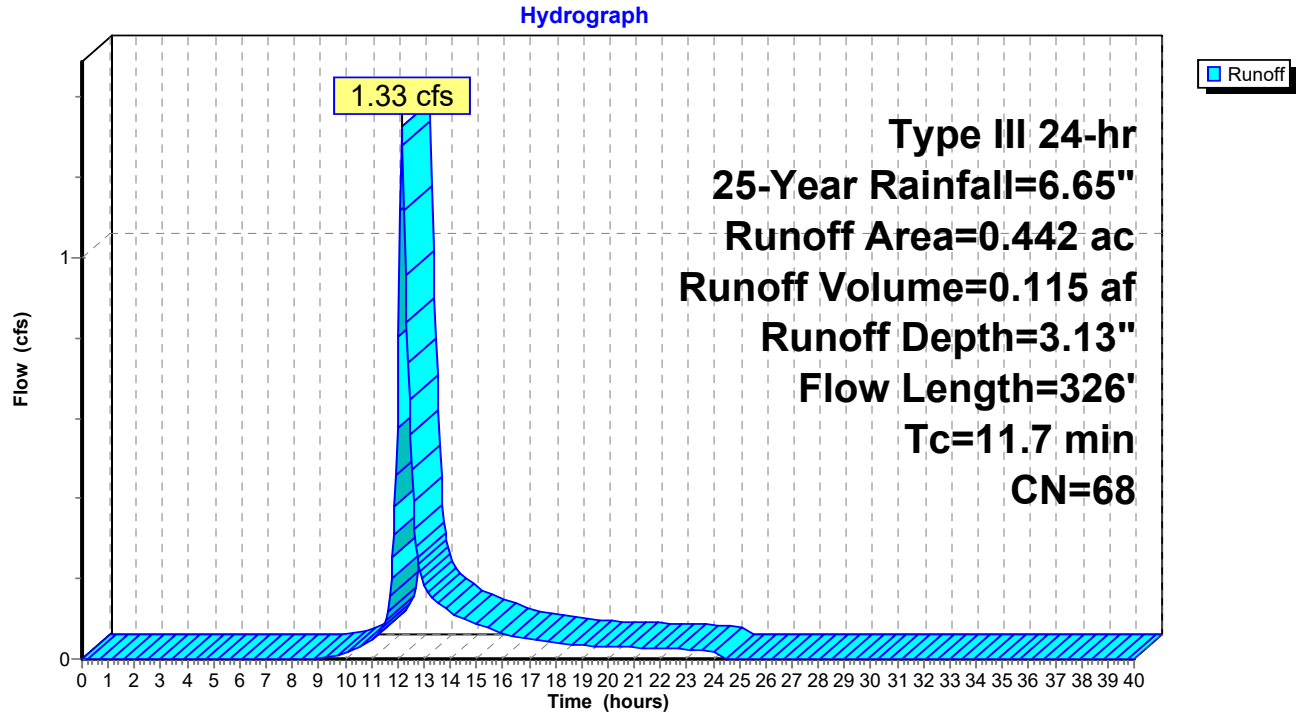
Runoff = 1.33 cfs @ 12.17 hrs, Volume= 0.115 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
0.217	60	Woods, Fair, HSG B
0.078	61	>75% Grass cover, Good, HSG B
0.147	85	Gravel roads, HSG B
0.442	68	Weighted Average
0.442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	85	0.0710	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.4	103	0.0670	4.17		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
0.3	46	0.3000	2.74		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.3	92	0.0980	5.04		**Shallow Concentrated Flow, D-E** Unpaved Kv= 16.1 fps
11.7	326	Total			

Subcatchment 1B: PDA-1B



Summary for Subcatchment 1C: PDA-1C

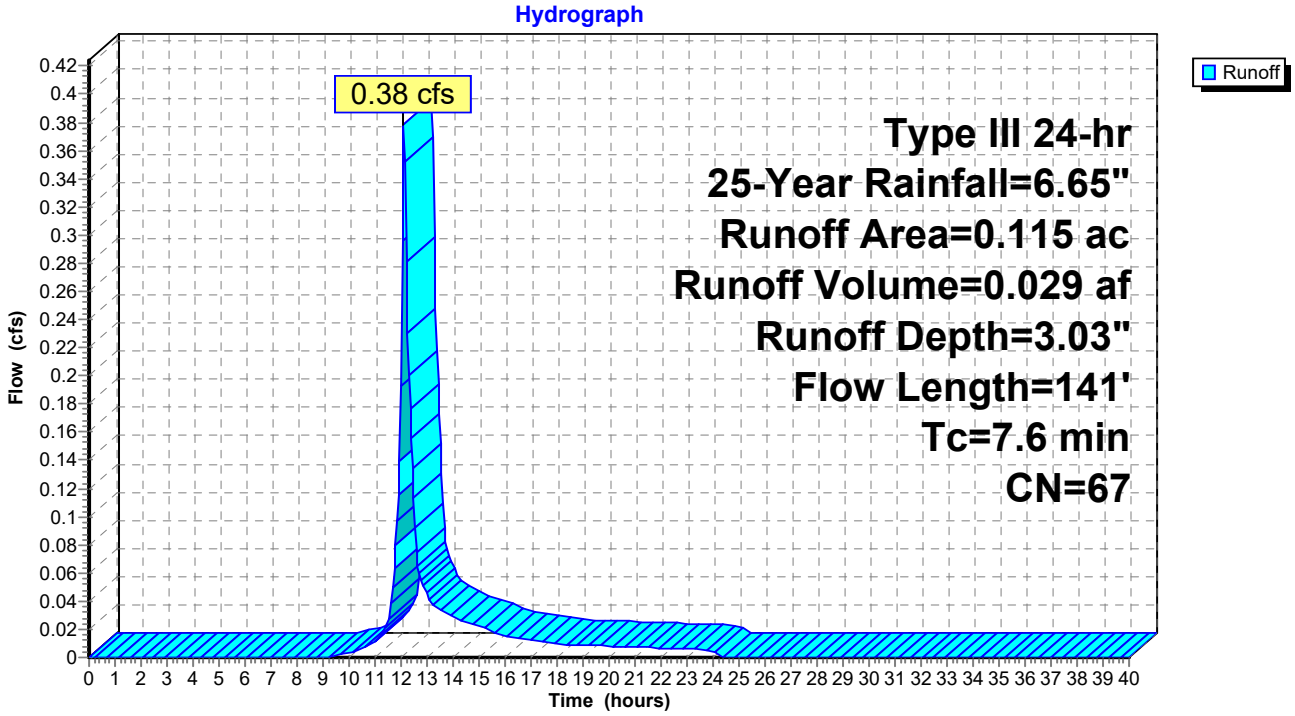
Runoff = 0.38 cfs @ 12.11 hrs, Volume= 0.029 af, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
0.039	60	Woods, Fair, HSG B
0.057	61	>75% Grass cover, Good, HSG B
0.019	98	Paved parking, HSG B
0.115	67	Weighted Average
0.096		83.48% Pervious Area
0.019		16.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	81	0.1600	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.1	36	0.5000	4.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.2100	6.87		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.6	141	Total			

Subcatchment 1C: PDA-1C



Summary for Subcatchment 2A: PDA-2A

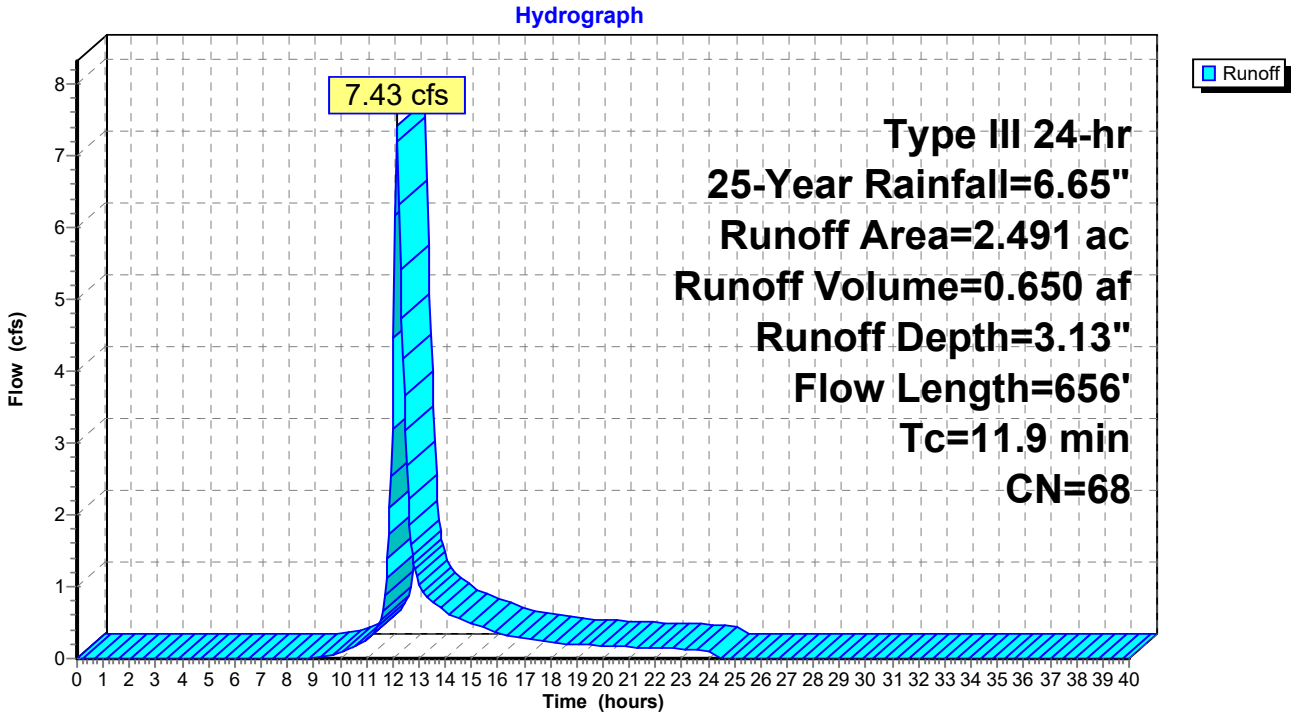
Runoff = 7.43 cfs @ 12.17 hrs, Volume= 0.650 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
1.963	60	Woods, Fair, HSG B
0.528	98	Paved parking, HSG B
2.491	68	Weighted Average
1.963		78.80% Pervious Area
0.528		21.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1400	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
1.1	166	0.2650	2.57		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	113	0.0619	5.05		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.5	64	0.1720	2.07		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.6	188	0.0585	4.91		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	25	0.4400	3.32		**Shallow Concentrated Flow, F-G** Woodland Kv= 5.0 fps
11.9	656	Total			

Subcatchment 2A: PDA-2A



Summary for Subcatchment 2B: PDA-2B

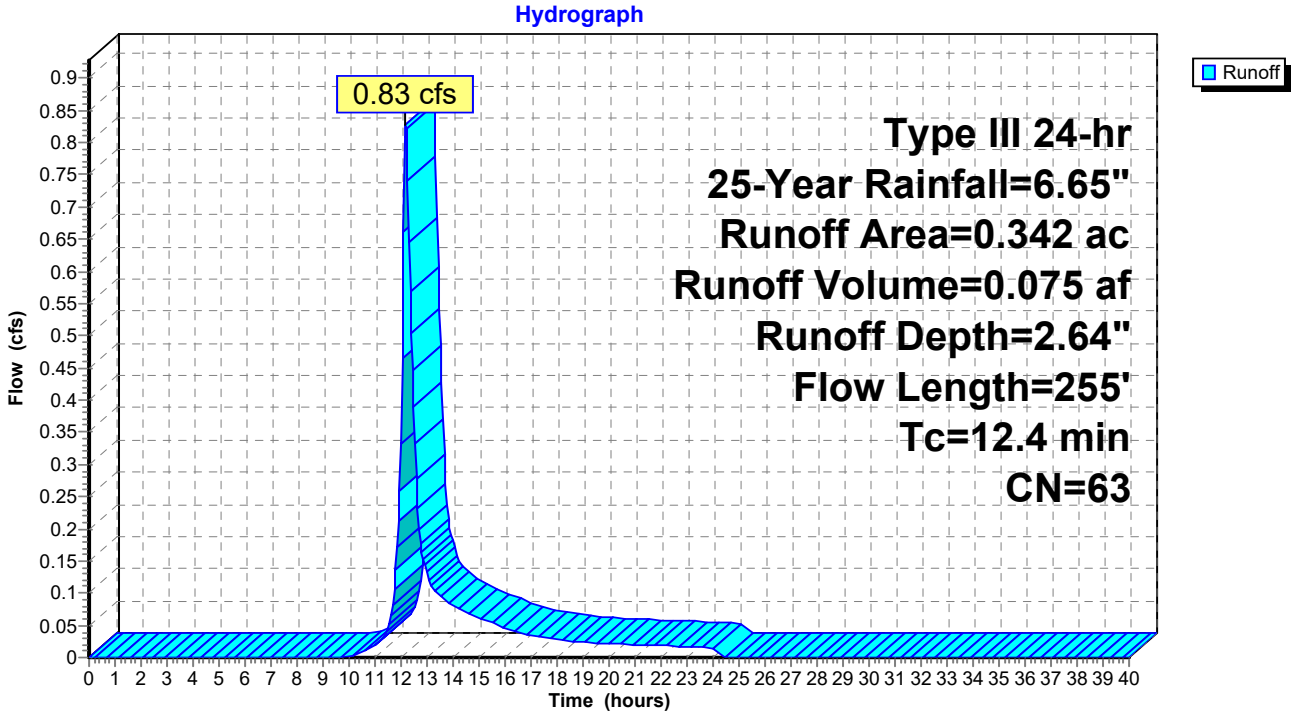
Runoff = 0.83 cfs @ 12.18 hrs, Volume= 0.075 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.65"

Area (ac)	CN	Description
0.202	60	Woods, Fair, HSG B
0.021	98	Paved parking, HSG B
0.119	61	>75% Grass cover, Good, HSG B
0.342	63	Weighted Average
0.321		93.86% Pervious Area
0.021		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0800	0.14		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.64"
0.5	48	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	55	0.5000	4.95		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.2100	6.87		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
12.4	255	Total			

Subcatchment 2B: PDA-2B



Summary for Reach 3R: 12" HDPE

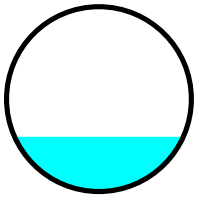
[52] Hint: Inlet/Outlet conditions not evaluated

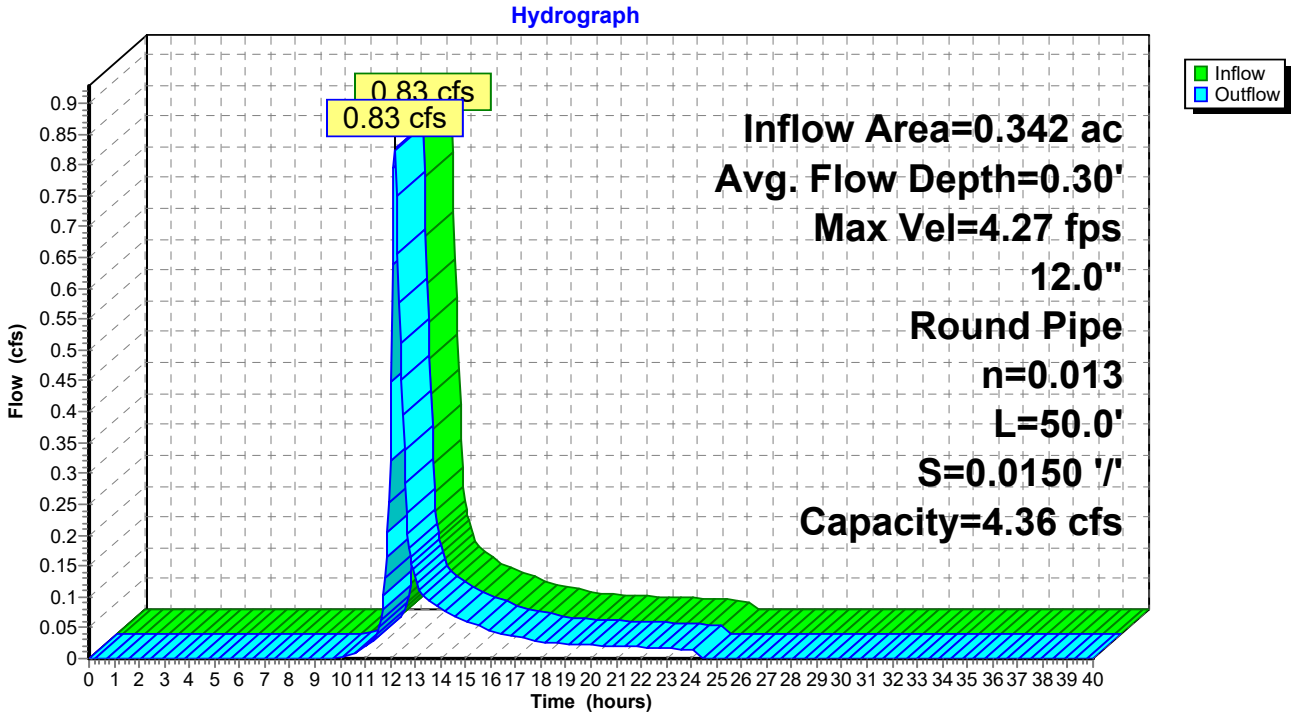
Inflow Area = 0.342 ac, 6.14% Impervious, Inflow Depth = 2.64" for 25-Year event
Inflow = 0.83 cfs @ 12.18 hrs, Volume= 0.075 af
Outflow = 0.83 cfs @ 12.19 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.27 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 0.5 min

Peak Storage= 10 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.36 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0150 '/'
Inlet Invert= 351.75', Outlet Invert= 351.00'





Summary for Reach 7R: 12" HDPE

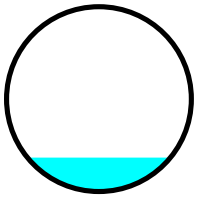
[52] Hint: Inlet/Outlet conditions not evaluated

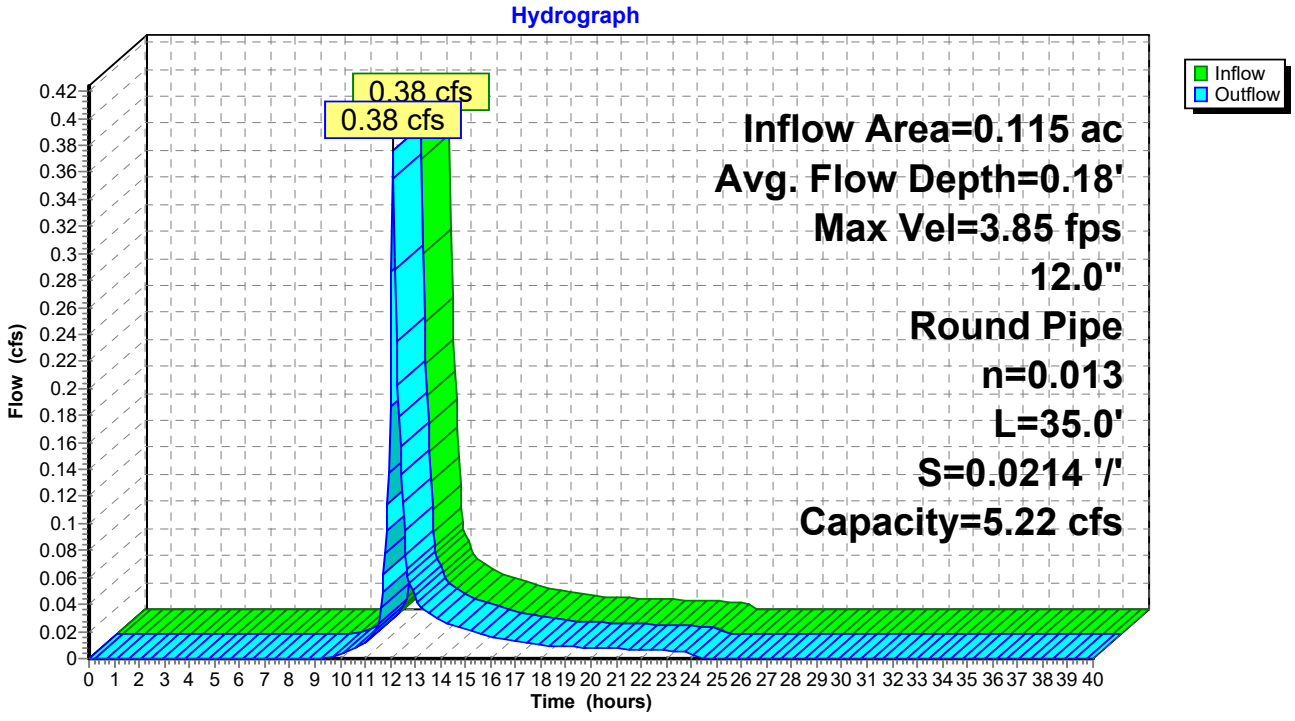
Inflow Area = 0.115 ac, 16.52% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 0.38 cfs @ 12.11 hrs, Volume= 0.029 af
Outflow = 0.38 cfs @ 12.12 hrs, Volume= 0.029 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.85 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.22 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 35.0' Slope= 0.0214 '/'
Inlet Invert= 366.75', Outlet Invert= 366.00'





Summary for Reach 8R: 12" HDPE

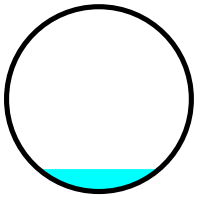
[52] Hint: Inlet/Outlet conditions not evaluated

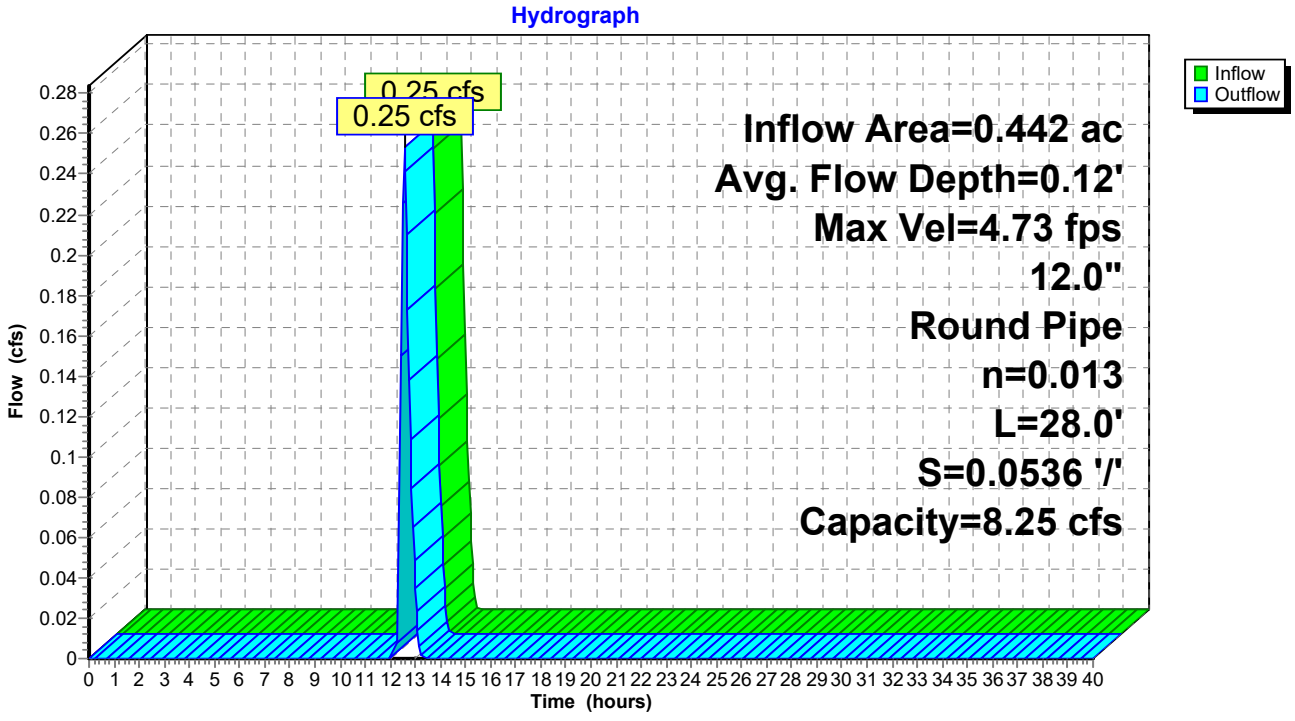
Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 0.20" for 25-Year event
Inflow = 0.25 cfs @ 12.56 hrs, Volume= 0.008 af
Outflow = 0.25 cfs @ 12.56 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.73 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.16 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.25 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 28.0' Slope= 0.0536 '/'
Inlet Invert= 373.50', Outlet Invert= 372.00'





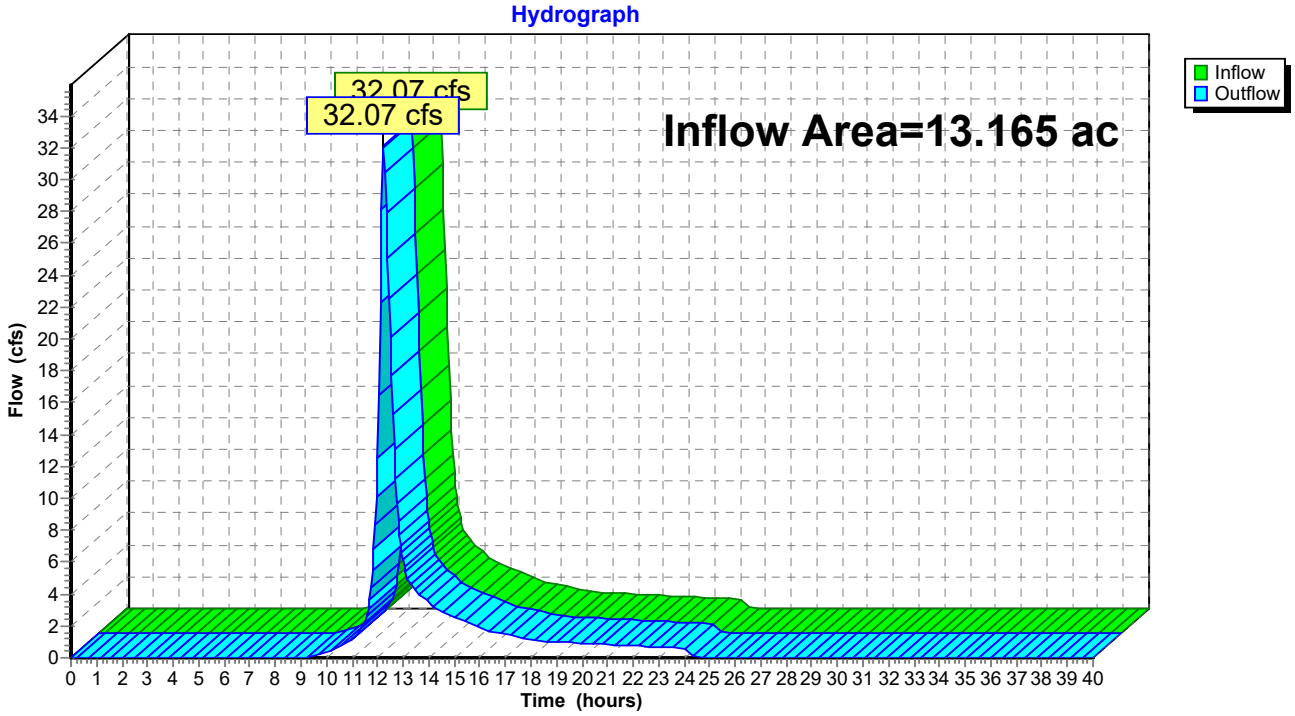
Summary for Reach AP-1: RESEVOIR

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.165 ac, 11.07% Impervious, Inflow Depth = 3.02" for 25-Year event
Inflow = 32.07 cfs @ 12.24 hrs, Volume= 3.311 af
Outflow = 32.07 cfs @ 12.24 hrs, Volume= 3.311 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach AP-1: RESEVOIR



Summary for Pond 1P: GRAVEL COMPOUND

Inflow Area = 0.442 ac, 0.00% Impervious, Inflow Depth = 3.13" for 25-Year event
Inflow = 1.33 cfs @ 12.17 hrs, Volume= 0.115 af
Outflow = 0.47 cfs @ 12.56 hrs, Volume= 0.115 af, Atten= 65%, Lag= 23.4 min
Discarded = 0.21 cfs @ 12.56 hrs, Volume= 0.108 af
Primary = 0.25 cfs @ 12.56 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 395.13' @ 12.56 hrs Surf.Area= 0.072 ac Storage= 0.033 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 44.2 min (887.3 - 843.1)

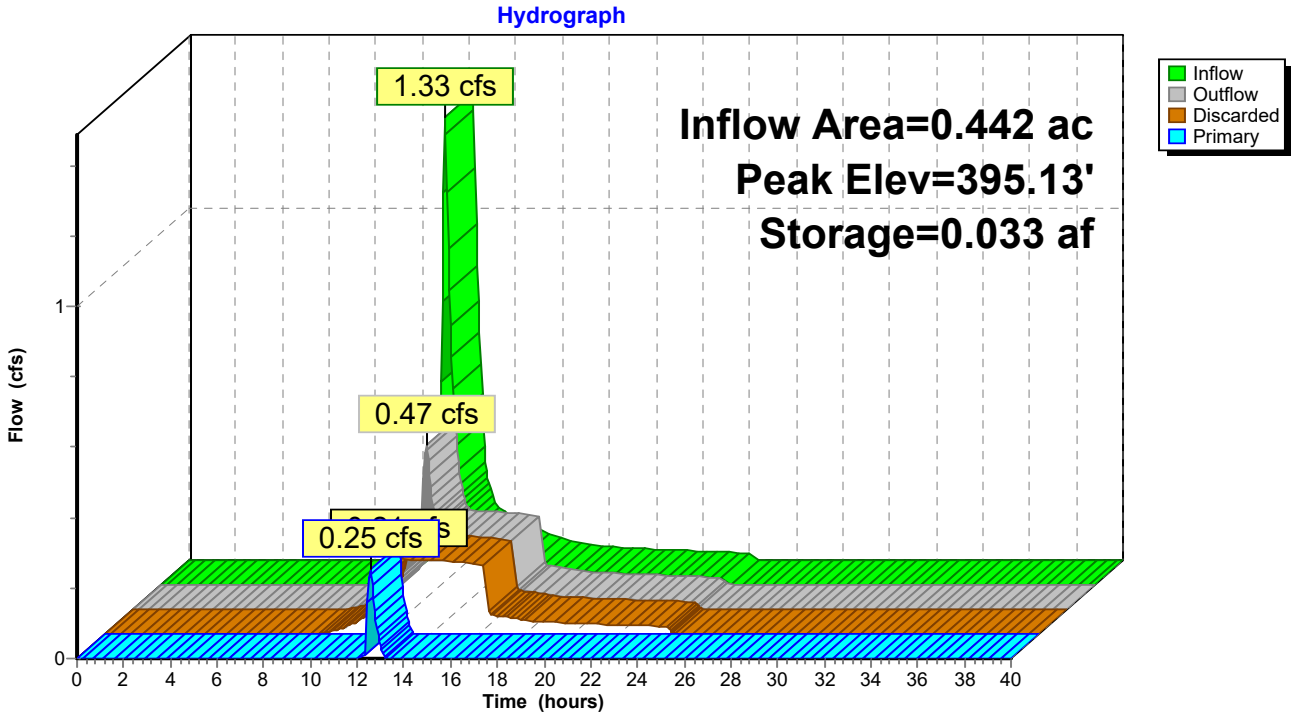
Volume	Invert	Avail.Storage	Storage Description
#1	394.00'	0.034 af	**63.00'W x 50.00'L x 1.16'H Prismatoid** 0.084 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	394.00'	**2.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 380.00'
#2	Primary	395.00'	**2.0' long x 50.0' 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=0.21 cfs @ 12.56 hrs HW=395.13' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.21 cfs)

Primary OutFlow Max=0.25 cfs @ 12.56 hrs HW=395.13' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.25 cfs @ 0.97 fps)

Pond 1P: GRAVEL COMPOUND



APPENDIX D: EXTREME PRECIPITATION FREQUENCY TABLE

NOAA Atlas 14, Volume 10, Version 3
Location name: New Canaan, Connecticut, USA*
Latitude: 41.1718°, Longitude: -73.5435°
Elevation: 404.6 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.360** (0.274-0.462)	**0.420** (0.319-0.540)	**0.518** (0.393-0.668)	**0.600** (0.453-0.777)	**0.712** (0.522-0.952)	**0.798** (0.574-1.08)	**0.886** (0.619-1.24)	**0.981** (0.657-1.40)	**1.11** (0.719-1.63)	**1.22** (0.770-1.81)
10-min	**0.510** (0.388-0.655)	**0.595** (0.453-0.765)	**0.734** (0.557-0.947)	**0.850** (0.641-1.10)	**1.01** (0.740-1.35)	**1.13** (0.812-1.53)	**1.25** (0.878-1.75)	**1.39** (0.930-1.98)	**1.58** (1.02-2.30)	**1.72** (1.09-2.56)
15-min	**0.600** (0.457-0.770)	**0.700** (0.532-0.900)	**0.864** (0.655-1.11)	**1.00** (0.755-1.30)	**1.19** (0.870-1.59)	**1.33** (0.955-1.80)	**1.48** (1.03-2.06)	**1.63** (1.09-2.33)	**1.85** (1.20-2.71)	**2.03** (1.28-3.01)
30-min	**0.850** (0.647-1.09)	**0.988** (0.751-1.27)	**1.21** (0.920-1.57)	**1.40** (1.06-1.81)	**1.66** (1.22-2.22)	**1.86** (1.33-2.52)	**2.06** (1.44-2.86)	**2.27** (1.52-3.23)	**2.57** (1.66-3.75)	**2.80** (1.77-4.16)
60-min	**1.10** (0.837-1.41)	**1.28** (0.970-1.64)	**1.56** (1.19-2.02)	**1.80** (1.36-2.33)	**2.13** (1.56-2.84)	**2.38** (1.71-3.23)	**2.64** (1.84-3.67)	**2.91** (1.95-4.14)	**3.28** (2.12-4.79)	**3.57** (2.26-5.30)
2-hr	**1.42** (1.09-1.81)	**1.66** (1.27-2.13)	**2.07** (1.58-2.65)	**2.40** (1.82-3.09)	**2.86** (2.11-3.80)	**3.20** (2.32-4.33)	**3.57** (2.51-4.96)	**3.97** (2.67-5.61)	**4.54** (2.95-6.60)	**5.01** (3.18-7.39)
3-hr	**1.63** (1.26-2.08)	**1.93** (1.48-2.45)	**2.41** (1.85-3.08)	**2.81** (2.14-3.60)	**3.36** (2.49-4.46)	**3.77** (2.74-5.09)	**4.21** (2.98-5.85)	**4.70** (3.17-6.62)	**5.41** (3.52-7.84)	**6.00** (3.82-8.83)
6-hr	**2.06** (1.60-2.60)	**2.45** (1.90-3.10)	**3.09** (2.38-3.91)	**3.61** (2.77-4.60)	**4.34** (3.23-5.73)	**4.88** (3.57-6.55)	**5.46** (3.89-7.56)	**6.12** (4.14-8.57)	**7.09** (4.63-10.2)	**7.90** (5.04-11.5)
12-hr	**2.56** (1.99-3.21)	**3.05** (2.38-3.83)	**3.86** (3.00-4.86)	**4.54** (3.50-5.73)	**5.46** (4.09-7.16)	**6.15** (4.53-8.20)	**6.89** (4.94-9.47)	**7.73** (5.25-10.8)	**8.98** (5.87-12.8)	**10.0** (6.41-14.5)
24-hr	**3.02** (2.37-3.76)	**3.64** (2.85-4.54)	**4.65** (3.63-5.82)	**5.50** (4.27-6.90)	**6.65** (5.02-8.67)	**7.52** (5.57-9.98)	**8.44** (6.09-11.6)	**9.52** (6.49-13.2)	**11.1** (7.31-15.8)	**12.5** (8.02-18.0)
2-day	**3.40** (2.69-4.21)	**4.16** (3.28-5.16)	**5.41** (4.25-6.72)	**6.44** (5.03-8.03)	**7.86** (5.97-10.2)	**8.91** (6.65-11.8)	**10.0** (7.32-13.7)	**11.4** (7.80-15.7)	**13.5** (8.89-19.1)	**15.3** (9.84-21.9)
3-day	**3.68** (2.92-4.54)	**4.52** (3.58-5.58)	**5.88** (4.64-7.28)	**7.01** (5.50-8.71)	**8.57** (6.53-11.1)	**9.72** (7.28-12.8)	**11.0** (8.02-15.0)	**12.5** (8.55-17.1)	**14.8** (9.76-20.8)	**16.8** (10.8-23.9)
4-day	**3.95** (3.14-4.86)	**4.83** (3.83-5.94)	**6.27** (4.96-7.74)	**7.47** (5.87-9.25)	**9.11** (6.96-11.7)	**10.3** (7.75-13.6)	**11.6** (8.53-15.8)	**13.2** (9.09-18.1)	**15.7** (10.4-22.0)	**17.7** (11.5-25.2)
7-day	**4.72** (3.77-5.77)	**5.68** (4.53-6.95)	**7.26** (5.77-8.91)	**8.57** (6.77-10.6)	**10.4** (7.95-13.3)	**11.7** (8.81-15.3)	**13.2** (9.63-17.7)	**14.9** (10.2-20.1)	**17.4** (11.5-24.2)	**19.6** (12.7-27.7)
10-day	**5.47** (4.38-6.66)	**6.49** (5.19-7.91)	**8.16** (6.51-9.97)	**9.54** (7.57-11.7)	**11.5** (8.80-14.6)	**12.9** (9.70-16.7)	**14.4** (10.5-19.2)	**16.1** (11.1-21.8)	**18.7** (12.4-26.0)	**20.9** (13.5-29.4)
20-day	**7.72** (6.23-9.34)	**8.88** (7.15-10.7)	**10.8** (8.64-13.1)	**12.3** (9.84-15.0)	**14.5** (11.2-18.2)	**16.1** (12.2-20.6)	**17.8** (13.0-23.4)	**19.6** (13.6-26.3)	**22.1** (14.8-30.5)	**24.1** (15.7-33.7)
30-day	**9.57** (7.75-11.5)	**10.8** (8.75-13.0)	**12.9** (10.4-15.6)	**14.6** (11.7-17.7)	**16.9** (13.1-21.1)	**18.7** (14.1-23.7)	**20.5** (14.9-26.6)	**22.3** (15.6-29.8)	**24.8** (16.6-33.9)	**26.6** (17.4-37.1)
45-day	**11.8** (9.63-14.2)	**13.2** (10.7-15.9)	**15.4** (12.5-18.6)	**17.3** (13.9-20.9)	**19.8** (15.3-24.6)	**21.7** (16.4-27.4)	**23.7** (17.2-30.5)	**25.6** (17.9-33.9)	**28.0** (18.8-38.2)	**29.7** (19.4-41.3)
60-day	**13.7** (11.2-16.4)	**15.2** (12.3-18.2)	**17.5** (14.2-21.0)	**19.5** (15.7-23.5)	**22.1** (17.2-27.4)	**24.2** (18.4-30.4)	**26.3** (19.2-33.7)	**28.2** (19.8-37.3)	**30.6** (20.6-41.7)	**32.3** (21.1-44.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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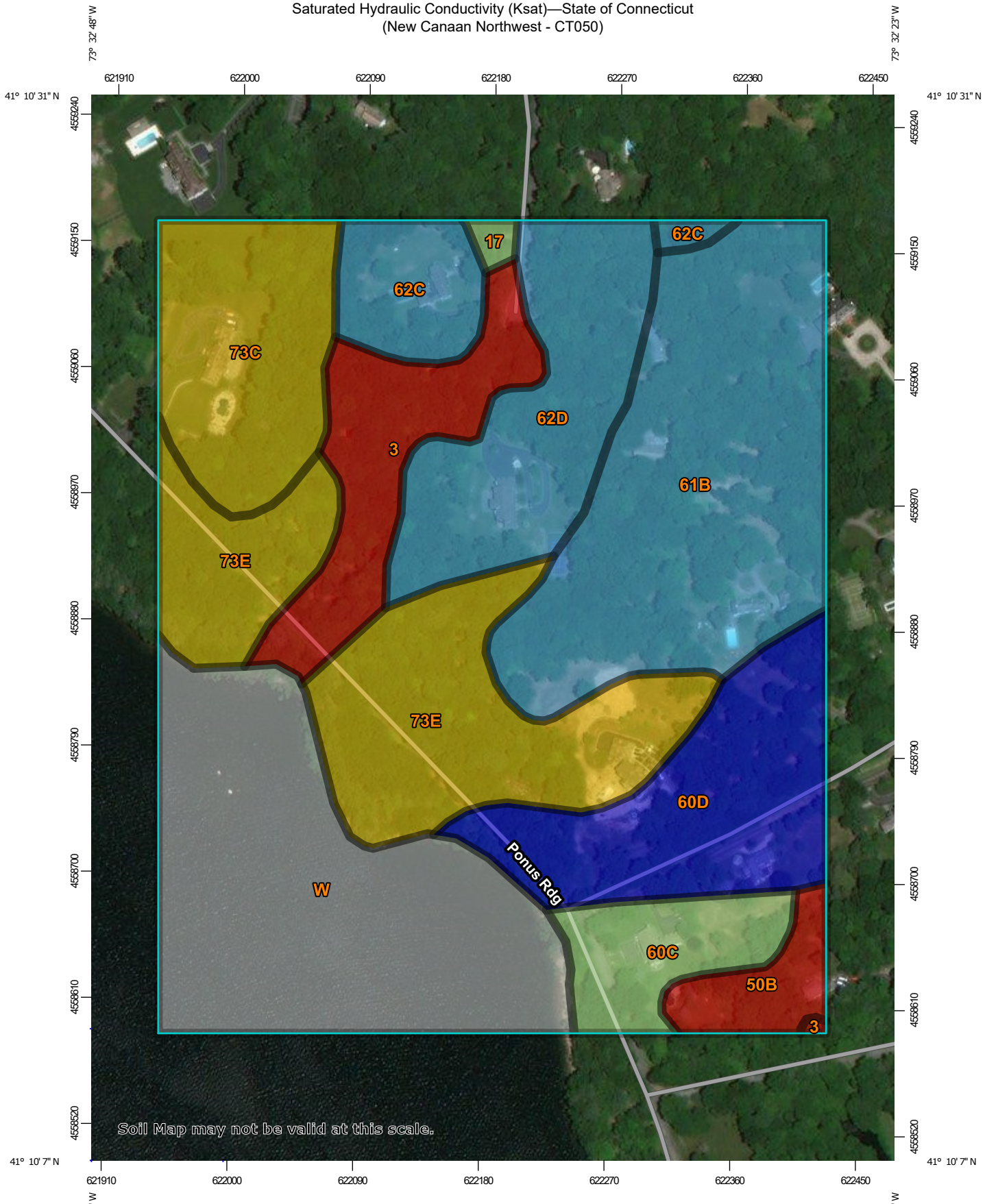
PF graphical

APPENDIX E: NRCS SATURATED HYDRAULIC CONDUCTIVITY

Saturated Hydraulic Conductivity (Ksat)—State of Connecticut
(New Canaan Northwest - CT050)



Map Scale: 1:3,710 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 9.6786
- > 9.6786 and <= 19.0624
- > 19.0624 and <= 27.8763
- > 27.8763 and <= 34.5447
- > 34.5447 and <= 39.8609
- Not rated or not available

Soil Rating Lines

- <= 9.6786
- > 9.6786 and <= 19.0624
- > 19.0624 and <= 27.8763
- > 27.8763 and <= 34.5447
- > 34.5447 and <= 39.8609
- Not rated or not available

Soil Rating Points

- <= 9.6786
- > 9.6786 and <= 19.0624
- > 19.0624 and <= 27.8763
- > 27.8763 and <= 34.5447
- > 34.5447 and <= 39.8609
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	8.3462	4.7	6.9%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	26.0590	0.2	0.4%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	9.6786	1.6	2.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	27.8763	2.8	4.1%
60D	Canton and Charlton soils, 15 to 25 percent slopes	39.8609	6.9	10.0%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	32.4399	13.2	19.1%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	32.4399	2.7	3.9%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	34.5447	6.7	9.7%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	14.6650	5.8	8.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	19.0624	11.1	16.1%
W	Water		13.1	19.1%
Totals for Area of Interest			**68.8**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

HOMELAND TOWERS

EXHIBIT C

(Color Swatch of brown monopole, carrier antennas and mounts – Sherwin Williams Thunder Grey SW7645
Photo of similar tree design- conical shaped with branch density of 3 branches per vertical foot)

SW7645 – Thunder Grey

Color Name: Thunder Gray
Color Number: SW 7645

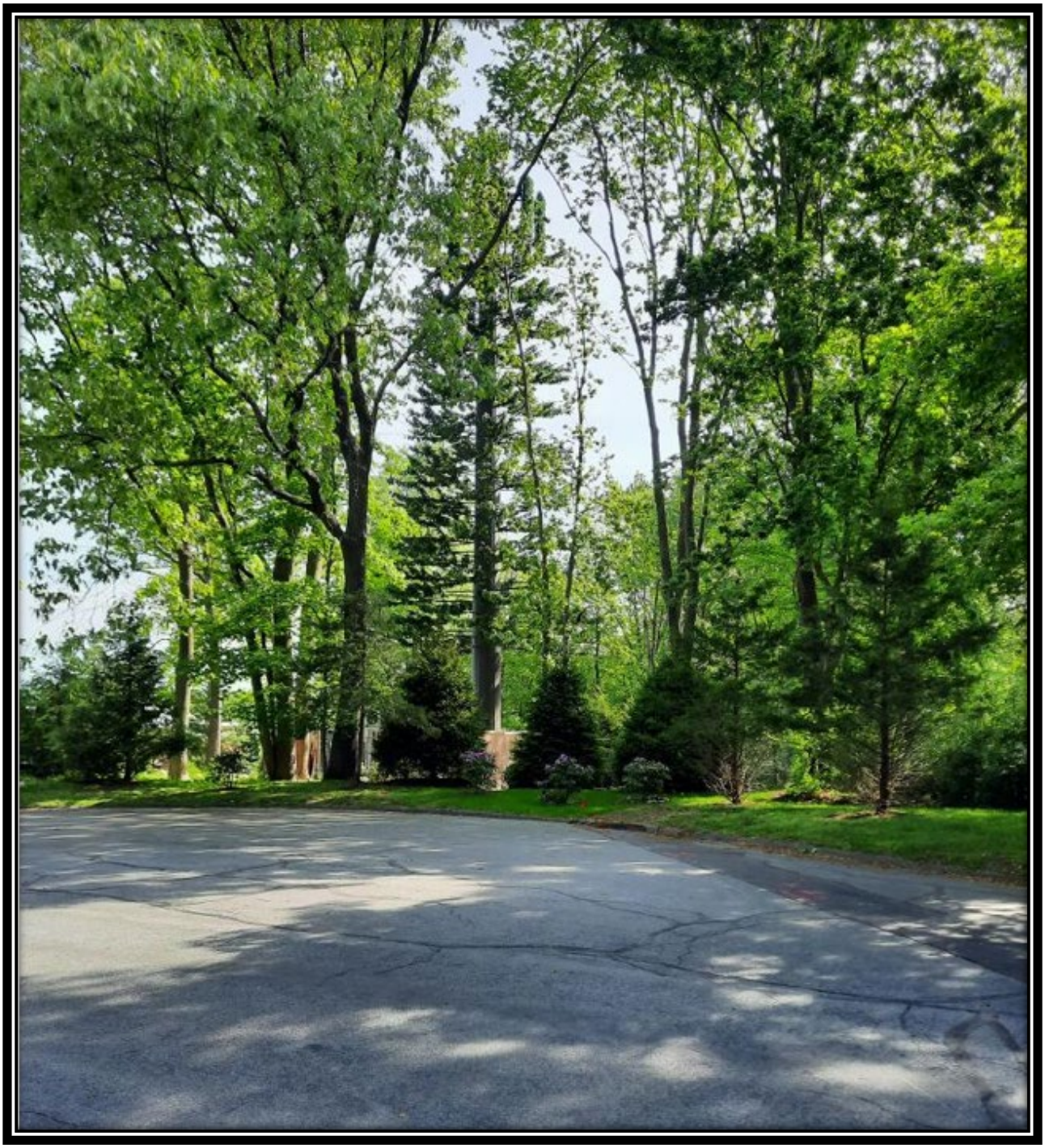
Collection(s):
Violet

Color Information:
Color Family: Cool Neutral

Store Strip Location: null

RGB Value:
R: 88
G: 85
B: 78

Hex Value:
58554e



Homeland Towers, 90’ faux monopine cell tower located at 183 Soundview Lane, New Canaan, CT

Monopine is conical in shape with 3 branches per vertical foot.

HOMELAND TOWERS

EXHIBIT D

(Carrier Commitment Letter)

August 28, 2023

Ms. Melanie Bachman,
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: DOCKET NO. 509 - Homeland Towers, LLC and New Cingular Wireless PCS, LLC d/b/a AT&T application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 1837 Ponus Ridge Road, New Canaan, Connecticut.

Dear Attorney Bachman:

In accordance with condition 2a of the Siting Council's Decision and Order ("D&O") in Docket No. 509, this letter serves as AT&T's commitment to install and operate its wireless facility on the approved monopole facility upon completion of construction by Homeland Towers, LLC. AT&T anticipates that its New Canaan facility will be operational within the eighteen-month timeframe included in the D&O.

Thank you for your consideration of this information.

Very truly yours,

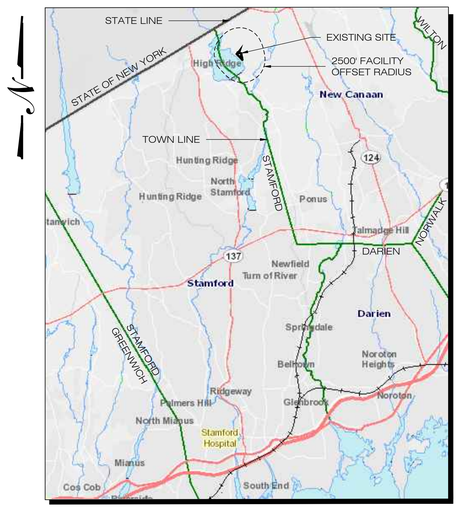
Rachelle Biden-Lewis
Sr. Manager, Real Estate & Construction
AT&T Mobility New England

D&M Plan Drawings

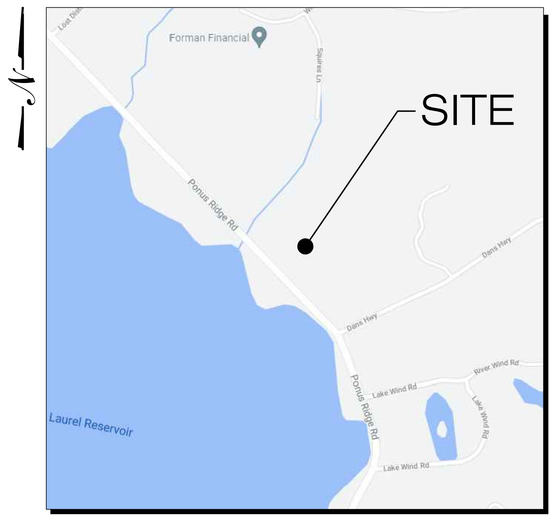
HOMELAND TOWERS, LLC

WIRELESS TELECOMMUNICATIONS FACILITY

NEW CANAAN NORTHWEST
1837 PONUS RIDGE ROAD
NEW CANAAN, CT 06840



MUNICIPAL NOTIFICATION LIMIT MAP
SCALE : 1" = 1.5 Miles



VICINITY MAP
SCALE: 1" = 500'

DRAWING INDEX

SITE INFORMATION

PROJECT LOCATION:	1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840
PROJECT DESCRIPTION:	RAWLAND SITE W/ GROUND EQUIPMENT WITHIN 3,515± SF TELECOMMUNICATIONS EQUIPMENT COMPOUND W/ NEW 110'± AGL MONOPINE.
PROPERTY DEVELOPER:	HOMELAND TOWERS, LLC 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810
DEVELOPER CONTACT:	RAY VERGATI (203) 297-6345
ENGINEER CONTACT:	ROBERT C. BURNS, P.E. (860) 552-2036
LATITUDE:	41° 10' 18.89"N (41.171914)
LONGITUDE:	73° 32' 36.90"W (-73.543583)
ELEVATION:	394'± AMSL
MAP:	23
BLOCK:	27
LOT:	57
ZONE:	4 ACRE RESIDENCE ZONE

OWNER:

1837 LLC
C/O RUCCI LAW GROUP
19 OLD KINGS HIGHWAY SOUTH
DARIEN, CT 06820

APPLICANTS:

HOMELAND TOWERS, LLC
9 HARMONY STREET
2ND FLOOR
DANBURY, CT 06810
RAY VERGATI
(203) 297-6345

AT&T
340 MOUNT KEMBLE AVE.
MORRISTOWN, NJ 07960

HOMELAND PROJECT ATTORNEY:

CUDDY & FEDER, LLP
445 HAMILTON AVENUE
14 FLOOR
WHITE PLAINS, NY 10601
(914) 761-1300

POWER PROVIDER:

EVERSOURCE: (800) 286-2000

TELCO PROVIDER:

FRONTIER (800) 921-8102

CALL BEFORE YOU DIG:

(800) 922-4455

GOVERNING CODES:

CONNECTICUT STATE BUILDING CODE, LATEST EDITION
NATIONAL ELECTRIC CODE, LATEST EDITION
TIA-222-H

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
1		
2		
3		
4		
5		
6		
7		
8		

DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:

CHECKED BY: RCB

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

STATE OF CONNECTICUT · ROBERT C. BURNS · 20071 · LICENSED PROFESSIONAL ENGINEER

SITE SURVEY
'CT050'
1837 PONUS RIDGE ROAD
NEW CANAAN, CT 06840
FAIRFIELD COUNTY

SITE LOCATION

LOCATION MAP
(NOT TO SCALE)

40 20 0 40 80

GENERAL NOTES:

1. SUBSURFACE UTILITIES WERE NOT LOCATED OR SURVEYED BY NORTHEAST TOWER SURVEYING, INC. AS PART OF THIS SURVEY. PERSONS DEPENDING ON THIS DOCUMENT SHOULD CONTACT THE LOCAL UNDERGROUND UTILITY LOCATING AGENCY PRIOR TO COMMENCING ANY EARTH MOVING OPERATIONS OR OTHER NEW CONSTRUCTION ACTIVITIES OR CALL 811 OR 1-800-922-4455.
2. VERTICAL DATUM IS NAVD 1988 AND ESTABLISHED BY GPS OBSERVATIONS REFERENCED TO THE NGS CORS NETWORK. PERMANENT SITE CONTROL HAS BEEN ESTABLISHED ON SITE.
3. HORIZONTAL DATUM IS NAD 83, STATE PLANE COORDINATES OF CONNECTICUT AND ESTABLISHED GPS OBSERVATIONS REFERENCED TO THE NGS CORS NETWORK. DEED BEARINGS ARE SHOWN HEREON AND NOT RELATED TO CURRENT HORIZONTAL CONTROL.
4. SURVEY MAY BE SUBJECT TO EASEMENTS AND RIGHT-OF-WAYS OF RECORD, BOTH RECORDED AND UNRECORDED.
5. ONLY COPIES FROM THE ORIGINAL SURVEY MAP EMBOSSED WITH AN ORIGINAL OF THE LAND SURVEYOR'S STAMP AND SIGNATURE SHALL BE CONSIDERED TO BE TRUE AND VALID COPIES.
6. SURVEY NOT INTENDED FOR THE CONVEYANCE OF THE REAL PROPERTY. SURVEY ONLY PROVIDED IN CONJUNCTION WITH PLANNING, ZONING AND PERMITTING REQUIREMENTS. USE OF THIS SURVEY BY ANYONE OTHER THAN HOMELAND TOWER, LLC IS STRICTLY PROHIBITED.
7. PROPERTY LINES ESTABLISHED USING A COMBINATION OF EXISTING FIELD MONUMENTATION, PARENT PARCEL DEED AND OTHER RECORD DOCUMENTATION.
8. TOPOGRAPHIC FEATURES SHOWN HEREON ARE BASED UPON ACTUAL FIELD DATA COLLECTED ON APRIL 12-15, 2021.
9. ADDITIONAL BOUNDARY INFORMATION SHOWN HEREON IS BASED ON THE TOWN OF NEW CANAAN GIS DATA AS OF MAY 7, 2021 AND IS NOT INTENDED TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD BOUNDARY SURVEY.
10. FOR REFERENCE, SEE MAP NUMBER 5246 FILED IN THE TOWN OF NEW CANAAN CLERK'S OFFICE AND IS ENTITLED "MAP SHOWING SUBDIVISION OF PROPERTY OWNED BY THE STAMFORD WATER COMPANY, NEW CANAAN, CONNECTICUT."

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

E C Newman 15616

EARLE C. NEWMAN, L.S. LICENSE NO.

THIS DOCUMENT AND COPIES THEREOF ARE VALID ONLY IF THEY BEAR THE SIGNATURE AND EMBOSSED SEAL OF THE DESIGNATED LICENSED PROFESSIONAL. UNAUTHORIZED ALTERATIONS TO THIS PLAN RENDER THE DECLARATION HEREON NULL AND VOID.

LEGEND

MH	MANHOLE
GM	GAS METER
LP	LIGHT STANDARD
DS	DRAINAGE STRUCT.
HYD.	FIRE HYDRANT
ICV	VALVE / IRRIGATION CONTROL VALVE
I.P. \ MON.	EXISTING IRON PIPE
UP	UTILITY POLE
PL	PROPERTY LINE
	EASEMENT LINE
	CENTERLINE
	SUBLOT LINE
	GUIDE RAIL
	ROW LINE
	FENCE
	TREE
	EDGE OF WOODS
	BRUSH LINE
E/T/C	OVERHEAD UTILITIES

PLANS PREPARED FOR:

HOMELAND TOWERS
9 Harmony Street
Danbury, Connecticut 06810

SURVEY LICENSE:

STATE OF CONNECTICUT — EARLE C. NEWMAN — No. 15616 — LICENSED LAND SURVEYOR

EARLE C. NEWMAN P.L.S.- NO. LS 15616

CONSULTANT:

Northeast Tower Surveying, Inc.
140 West Maplemere Road Williamsville, New York 14221
(716) 548-2894
Norteast Tower Surveying, Inc. Project #21-025

DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF HOMELAND TOWERS AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF HOMELAND TOWERS

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISION 1 - ADD SIGNATURE BOX	09/14/22	DSA	ECN
ISSUED FINAL	11/30/21	DSA	ECN
ISSUED DRAFT	05/07/21	DSA	ECN

SITE NAME:

NEW CANAAN NORTHWEST

SITE NUMBER:

CT050

SITE ADDRESS:

1837 PONUS RIDGE ROAD
NEW CANAAN, CT 06840
FAIRFIELD COUNTY

SHEET DESCRIPTION:

SITE SURVEY

SHEET NUMBER:

EX-1

REFERENCE	TREE SIZE / SPECIES	Note
1	36" Oak	
2	14" Unknown	
3	6" Unknown	
4	10" Oak	
5	30" Oak	
6	6" Unknown	
7	6" Unknown	
8	42" Oak	
9	12" Birch	
10	36" / 30" Two Bole Oak	
11	34" Oak	
12	6" Birch	
13	28" Oak	
14	6" Beech	
15	30" Stump	
16	12" Oak	
17	12" Unknown	
18	6" Unkown	
19	12" Maple	
20	6" Unkown	
21	12" Maple	
22	26" Oak	
23	8" Maple	
24	12" Beech	
25	18" Oak	
26	8" Unknown	Dead
27	10" Unknown	Dead
28	Two Bole 6" 6" Beech	
29	10" Oak	
30	8" Unknown	
31	8" Unknown	
32	20" Oak	
33	16" Oak	
34	6" Beech	
35	12" Beech	
36	6" Maple	
37	Two Bole 12" & 4" Beech	
38	8" Oak	
39	12" Oak	
40	14" Oak	
41	16" Oak	
42	8" Unknown	
43	10" Oak	
44	10" Oak	
45	6" Unknown	
46	14" Beech	
47	8" Unknown	
48	14" Unknown	
49	10" Unknown	
50	6" Unknown	
51	8" Unknown	
52	Three Bole 4", 4" & 2" Beech	
53	24" Oak	
54	6" Unknown	
55	Three Bole 6", 6" & 4" Beech	
56	10" Beech	
57	20" Oak	
58	20" Oak	
59	14" Oak	
60	6" Unknown	Dead
61	20" Oak	
62	Two Bole 8" & 6" Beech	
63	14" Oak	
64	18" Oak	
65	16" Oak	
66	20" Birch	
67	20" Birch	
68	8" Birch	
69	24" Oak	
70	20" Oak	
71	6" Beech	
72	12" Unknown	
73	10" Beech	
74	Two Bole 20" & 18" Oak	
75	Two Bole 14" & 10" Oak	
76	22" Oak	
77	10" Maple	
78	18" Maple	
79	14" Maple	
80	6" Beech	
81	Two Bole 6" & 4" Maple	
82	28" Oak	
83	Two Bole 8" & 12" Maple	
84	8" Maplw	
85	Two Bole 16" & 14" Maple	
86	22" Birch	
87	Two Bole 12" & 10" Maple	
88	8" Oak	
89	8" OAk	
90	6" Maple	
91	22" Oak	
92	24" Oak	
93	8" Oak	
94	6" Oak	
95	10" Birch	
96	14" Oak	
97	8" Unknown	Dead
98	10" Birch	
99	16" Oak	
100	6" Oak	
101	16" Oak	
102	8" Beech	
103	12" Maple	
104	6" Beech	
105	8" Beech	
106	24" Oak	
107	26" Oak	
108	6" Oak	
109	8" Oak	
110	10" Beech	
111	14" Oak	
112	Two Bole 12" & 6" Maple	
113	6" Unknown	
114	18" Oak	
115	24" Oak	
116	6" Birch	
117	Two Bole 6" & 6" Maple	
118	18" Oak	
119	8" Birch	
120	Two Bole 4" & 8" Maple	
121	6" Maple	
122	26" Oak	
123	10" Oak	
124	14" Oak	
125	16" Oak	
126	26" Oak	
127	30" Oak	
128	10" Unknown	
129	20" Oak	
130	20" Oak	
131	10" Maple	
132	8" Maple	
133	6" Maple	
134	6" Maple	
135	6" Maple	
136	6" Oak	
137	12" Maple	
138	8" Birch	
139	10" Maple	
140	10" Maple	
141	16" Maple	
142	8" Oak	
143	8" Oak	
144	6" Birch	
145	14" Oak	
146	12" Birch	
147	Two Bole 18" & 14" Oak	
148	8" Birch	
149	20" Maple	
150	Two Bole 8" & 4" Oak	
151	24" Hickory Stump	
152	20" Maple	
153	Two Bole 14" & 4" Maple	
154	8" Birch	
155	8" Oak	
156	18" Maple	
157	14" Oak	
158	22" Oak	
159	Three Bole 10", 6" & 4" Oak	
160	14" Oak	
161	Two Bole 6" & 6" Maple	
162	12" Birch	
163	16" Oak	
164	8" Birch	
165	10" Oak	
166	10" Maple	
167	20" Oak	
168	28" Oak	
169	8" Oak	
170	24" Maple	
171	Two Bole 6" & 8" Maple	
172	8" Birch	
173	8" Birch	
174	14" Oak	
175	6" Birch	
176	6" Birch	
177	10" Hemlock	
178	22" Oak	
179	10" Birch	
180	10" Oak	
181	6" Oak	
182	10" Oak	
183	10" Birch	
184	6" Oak	
185	14" Oak	
186	10" Oak	
187	40" Unknown	Dead
188	8" Beech	
189	26" Beech	
190	32 Beech	
191	16" Beech	
192	14" Oak	
193	12" Oak	
194	8" Hemlock	
195	30" Oak	Dead
196	8" Beech	
197	24" Henlock	
198	8" Oak	
199	30" Unknown	Dead
200	24" Oak	
201	8" Maple	
202	Two Bole 14" & 6" Oak	
203	8" Maple	
204	24" Oak	
205	10" Oak	
206	6" Maple	
207	24" OAk	
208	14" Unknown	Dead
209	6" Beech	
210	12" Oak	
211	14" Birch	
212	22" Oak	
213	22" Oak	
214	18" Oak	
215	18" Oak	
216	18" Oak	
217	14" Beech	
218	10" Birch	
219	18" Oak	
220	8" Oak	
221	10 Oak	
222	6" Oak	
223	10" Birch	
224	26" Oak	
225	8" Oak	
226	28" Oak	
227	6" Maple	
228	14" Birch	
229	16" Maple	
230	14" Oak	
231	6" Birch	
232	6" Maple	
233	16" Oak	
234	32" Oak	
235	14" Oak	
236	14" Oak	
237	16" Oak	
238	10" Beech	
239	10" Oak	
240	18" Oak	
241	16" Birch	
242	10" Oak	
243	Two Bole 12" & 8" Beech	
244	14" Unknown	Dead
245	10" Oak	
246	36" Oak	
247	6" Oak	
248	14" Oak	
249	10" Beech	
250	26" Oak	
251	6" Birch	
252	20" Oak	
253	8" Oak	
254	10" Oak	
255	14" Beech	
256	6" Birch	
257	8" Maple	
258	10" Birch	
259	14" Birch	
260	10" Beech	
261	32" Oak	
262	12" Oak	
263	6" Beech	
264	8" Beech	
265	6" Maple	
266	8" Birch	
267	26" Oak	
268	20" Maple	
269	24" Oak	
270	20" Oak	
271	20" Oak	
272	8" Birch	
273	16" Oak	
274	8" Beech	
275	20" Oak	
276	20" Oak	
277	6" Beech	
278	Two Bole 4" & 4" Beech	
279	20" Beech	
280	18" Unknown	Dead
281	6" Beech	
282	20" Oak	
283	6" Beech	
284	30" Beech	
285	16" Beech	
286	14" Oak	
287	28 Beech	
288	22" Beech	
289	6" Beech	
290	6" Beech	
291	6" Beech	
292	38" Oak	
293	8" Beech	
294	24" Oak	
295	8" Oak	
296	8" Beech	
297	12" Birch	
298	6" Unknown	
299	26" Oak	
300	8" Beech	
301	8" Unknown	
302	10" Birch	
303	10" Beech	
304	8" Oak	
305	8" Beech	
306	8" Beech	
307	8" Beech	
308	8" Beech	
309	18" Beech	
310	18" Oak	
311	20" Oak	
312	Two Bole 10" & 6" Oak	
313	8" Oak	
314	14" Birch	
315	6" Maple	
316	22" Oak	
317	22" Oak	
318	16" Beech	
319	14" Oak	
320	12" Birch	
321	8" Beech	
322	10" Beech	
323	14" Unknown	
324	Two Bole 12" & 6" Oak	
325	16" Oak	
326	10" Maple	
327	20" Oak	
328	8" Birch	
329	16" Oak	
330	10" Beech	
331	12" Beech	
332	14" Oak	
333	16" Birch	
334	6" Maple	
335	16" Beech	
336	20" Oak	
337	12" Beech	
338	6" Beech	
339	6" Beech	
340	14" Beech	
341	6" Beech	
342	18" Beech	
343	8" Beech	
344	24" Beech	
345	14" Beech	
346	6" Beech	
347	22" Beech	
348	10" Beech	
349	6" Beech	
350	28" Beech	
351	30" Beech	
352	14" Beech	
353	14" Beech	
354	12" Beech	
355	10" Beech	
356	6" Beech	
357	16" Beech	
358	8" Beech	
359	8" Beech	
360	6" Beech	
361	16" Beech	
362	6" Beech	
363	20" Beech	
364	10" Beech	
365	10" Beech	
366	24" Beech	
367	6" Beech	
368	6" Beech	
369	16" Beech	
370	Two Bole 14" & 8" Maple	
371	16" Beech	
372	6" Beech	
373	14" Beech	
374	18" Beech	
375	8" Beech	

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

E C Newman — 15616

EARLE C. NEWMAN, L.S. — LICENSE NO.

THIS DOCUMENT AND COPIES THEREOF ARE VALID ONLY IF THEY BEAR THE SIGNATURE AND EMBOSSED SEAL OF THE DESIGNATED LICENSED PROFESSIONAL. UNAUTHORIZED ALTERATIONS TO THIS PLAN RENDER THE DECLARATION HEREON NULL AND VOID.

PLANS PREPARED FOR:

HOMELAND TOWERS
9 Harmony Street
Danbury, Connecticut 06810

SURVEY LICENSE:

STATE OF CONNECTICUT — EARLE C. NEWMAN — 15616 — LICENSED LAND SURVEYOR

EARLE C. NEWMAN P.L.S.- NO. LS 15616

CONSULTANT:

Northeast Tower Surveying, Inc.
140 West Maplemere Road Williamsville, New York 14221
(716) 548-2894
Norteast Tower Surveying, Inc. Project #21-025

DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF HOMELAND TOWERS AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF HOMELAND TOWERS

REVISIONS:

DESCRIPTION	DATE	BY	REV
REVISION 1 - ADD SIGNATURE BOX	09/14/22	DSA	ECN
ISSUED FINAL	11/30/21	DSA	ECN
ISSUED DRAFT	05/07/21	DSA	ECN

SITE NAME:

NEW CANAAN NORTHWEST

SITE NUMBER:

CT050

SITE ADDRESS:

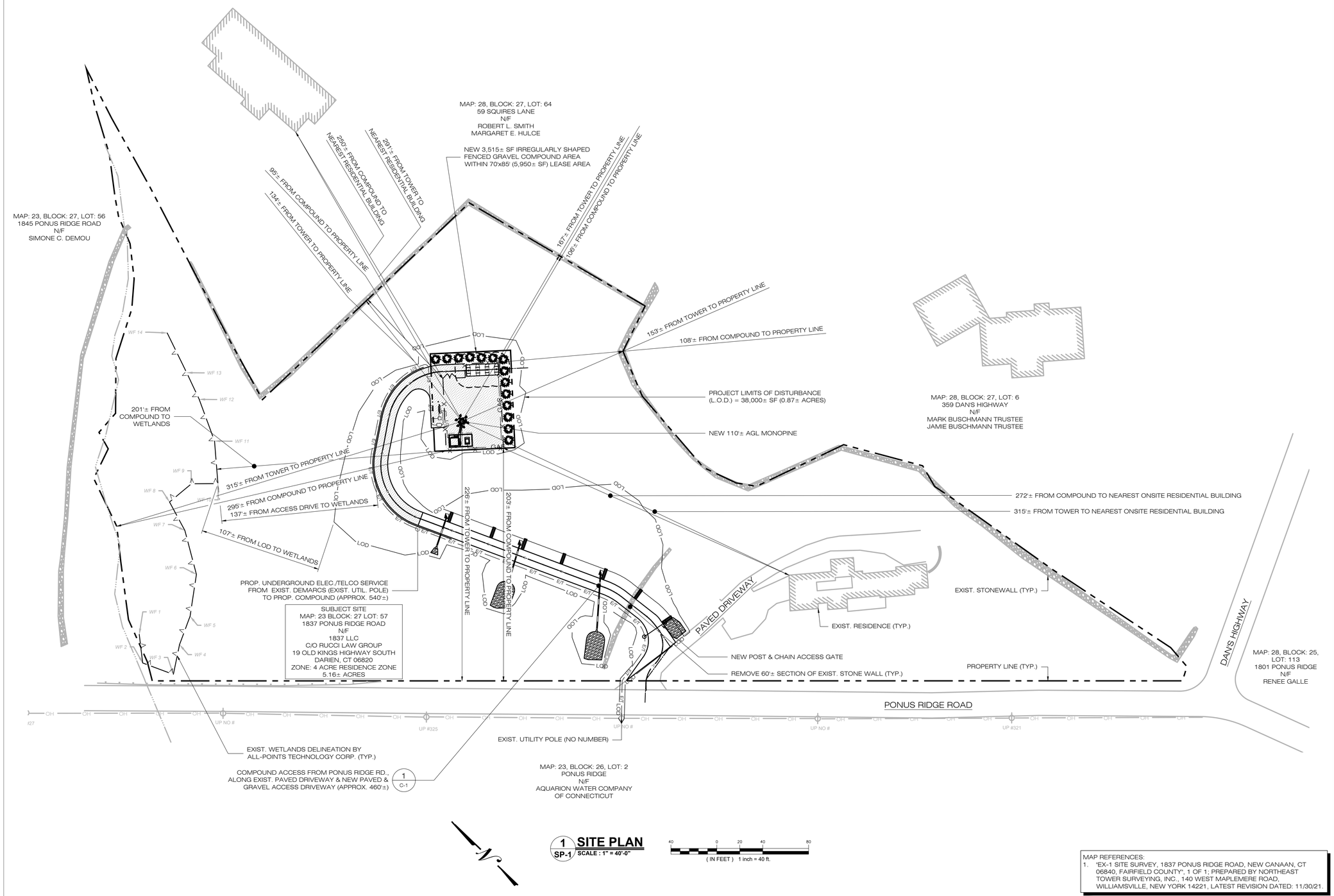
1837 PONUS RIDGE ROAD
NEW CANAAN, CT 06840
FAIRFIELD COUNTY

SHEET DESCRIPTION:

TREE SURVEY TABLE

SHEET NUMBER:

EX-2



1 **SITE PLAN**
SP-1 SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

MAP REFERENCES:
1. "EX-1 SITE SURVEY, 1837 PONUS RIDGE ROAD, NEW CANAAN, CT 06840, FAIRFIELD COUNTY", 1 OF 1; PREPARED BY NORTHEAST TOWER SURVEYING, INC., 140 WEST MAPLEMERE ROAD, WILLIAMSVILLE, NEW YORK 14221, LATEST REVISION DATED: 11/30/21.

HOMELAND TOWERS, LLC
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2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

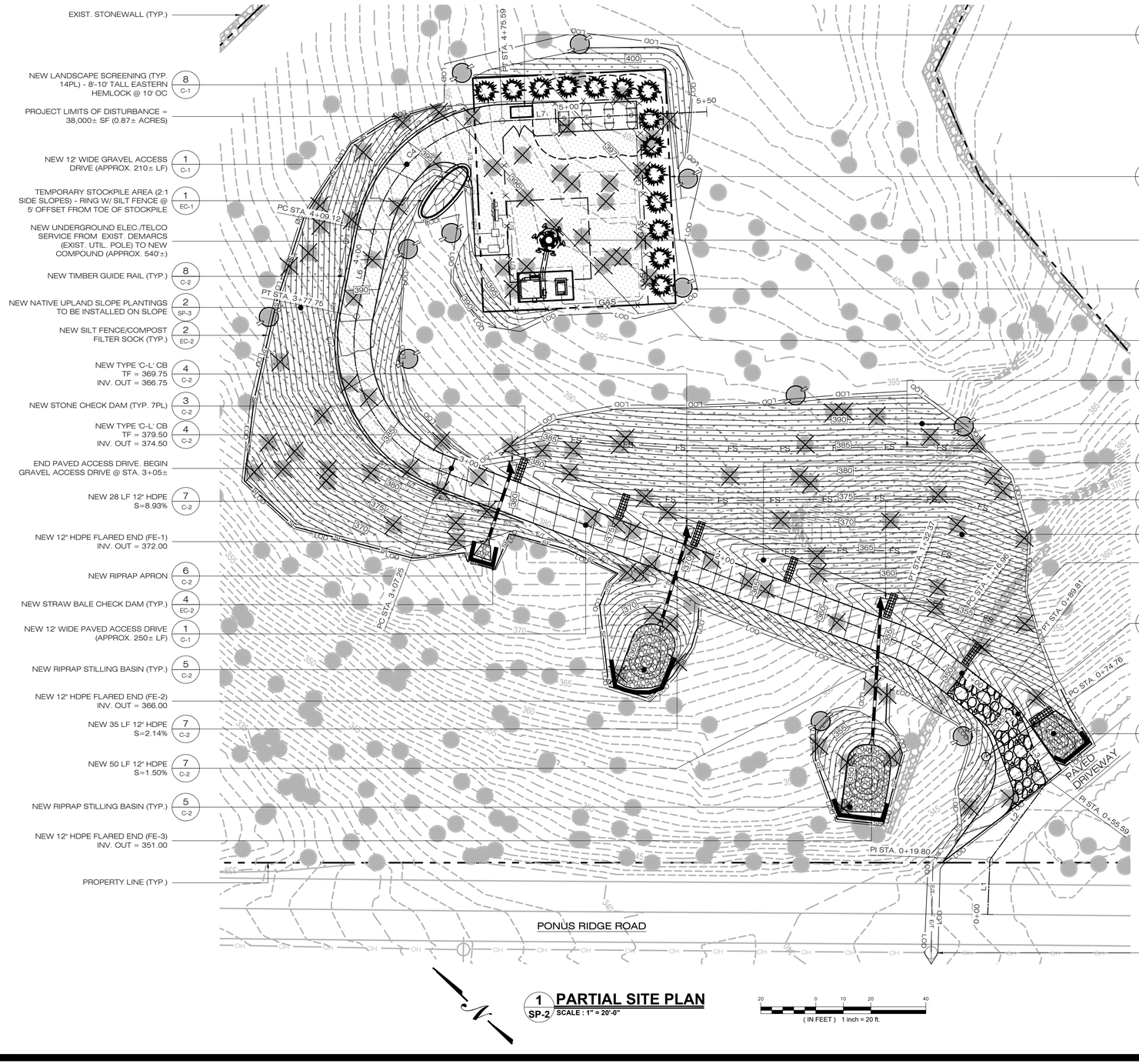
DATE: 09/14/23 DRAWN BY:

CHECKED BY: RCB

SHEET TITLE:
SITE PLAN & ABUTTERS MAP

SHEET NUMBER:
SP-1

STATE OF CONNECTICUT · ROBERT CHARLES BURNS · 20071 · LICENSED PROFESSIONAL ENGINEER



1 SP-2 **PARTIAL SITE PLAN**
SCALE : 1" = 20'-0"

20 0 10 20 40
(IN FEET) 1 inch = 20 ft.

LEGEND

- PROPERTY LINE
- EXIST. WETLAND
- 100' WETLAND SETBACK
- LIMIT OF DISTURBANCE
- NEW WOOD SHADOWBOX FENCE
- NEW TIMBER GUIDE RAIL
- NEW ELEC./TELCO LINE
- NEW FILTER SOCK
- NEW FILTER SOCK
- NEW HAYBALE CHECK DAM
- EXIST. TREE TO REMAIN
- EXIST. TREE TO BE REMOVED
- EXIST. TREE TO BE PROTECTED
- EROSION CONTROL BLANKET
- NEW EASTERN HEMLOCK
- STONE CHECK DAM

NOTE:
103 TREES WILL NEED TO BE REMOVED IN CONSTRUCTION OF THE FACILITY.

6"-10" DIA.	52 TREES
10"-14" DIA.	19 TREES
>14" DIA.	32 TREES
	103 TREES

SITE AREAS & VOLUMES OF EARTHWORK

SITEWORK ENTAILS APPROXIMATELY 3,550 CUBIC YARDS OF EXCAVATION AND 1,500 CUBIC YARDS OF FILL. THE COMPOUND & ACCESS DRIVEWAY WILL IMPORT APPROXIMATELY 250 CUBIC YARDS OF CLEAN BROKEN STONE. THE UTILITY TRENCH FROM THE DEMARC TO THE COMPOUND WILL EXCAVATE APPROXIMATELY 340 CUBIC YARDS OF MATERIAL THAT WILL BE USED TO BACKFILL THE TRENCH.

COMPOUND AREA SLOPES:
EXISTING - 6%-15%
PROPOSED - 3%-5%

TOTAL AREA OF DISTURBANCE = 38,000± SF

STORMWATER VELOCITY:
PRIOR TO GROUND COVER < 3.0 FT/SEC
FOLLOWING GROUND COVER < 3.0 FT/SEC

STORMWATER VOLUME:
PROPOSED IMPERVIOUS AREA = 4,880 SF
WATER QUALITY STD VOLUME (1") = 407 CF
STORAGE VOLUME (6' DEPTH, 40% VOIDS) = 600 CF

GROUND COVER TO BE ESTABLISHED AS FOLLOWS (U.O.N):
- WHITE CLOVER @ 0.20#/- SF
- TALL FESCUE @ 0.45#/- SF
- RYEGRASS @ 0.10#/- SF

MAP REFERENCES:
1. "EX-1 SITE SURVEY, 1837 PONUS RIDGE ROAD, NEW CANAAN, CT 06840, FAIRFIELD COUNTY", 1 OF 1, PREPARED BY NORTHEAST TOWER SURVEYING, INC., 140 WEST MAPLEMERE ROAD, WILLIAMSVILLE, NEW YORK 14221, LATEST REVISION DATED: 11/30/21.

HOMELAND TOWERS, LLC
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at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:
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SHEET TITLE:
PARTIAL SITE PLAN

SHEET NUMBER:
SP-2

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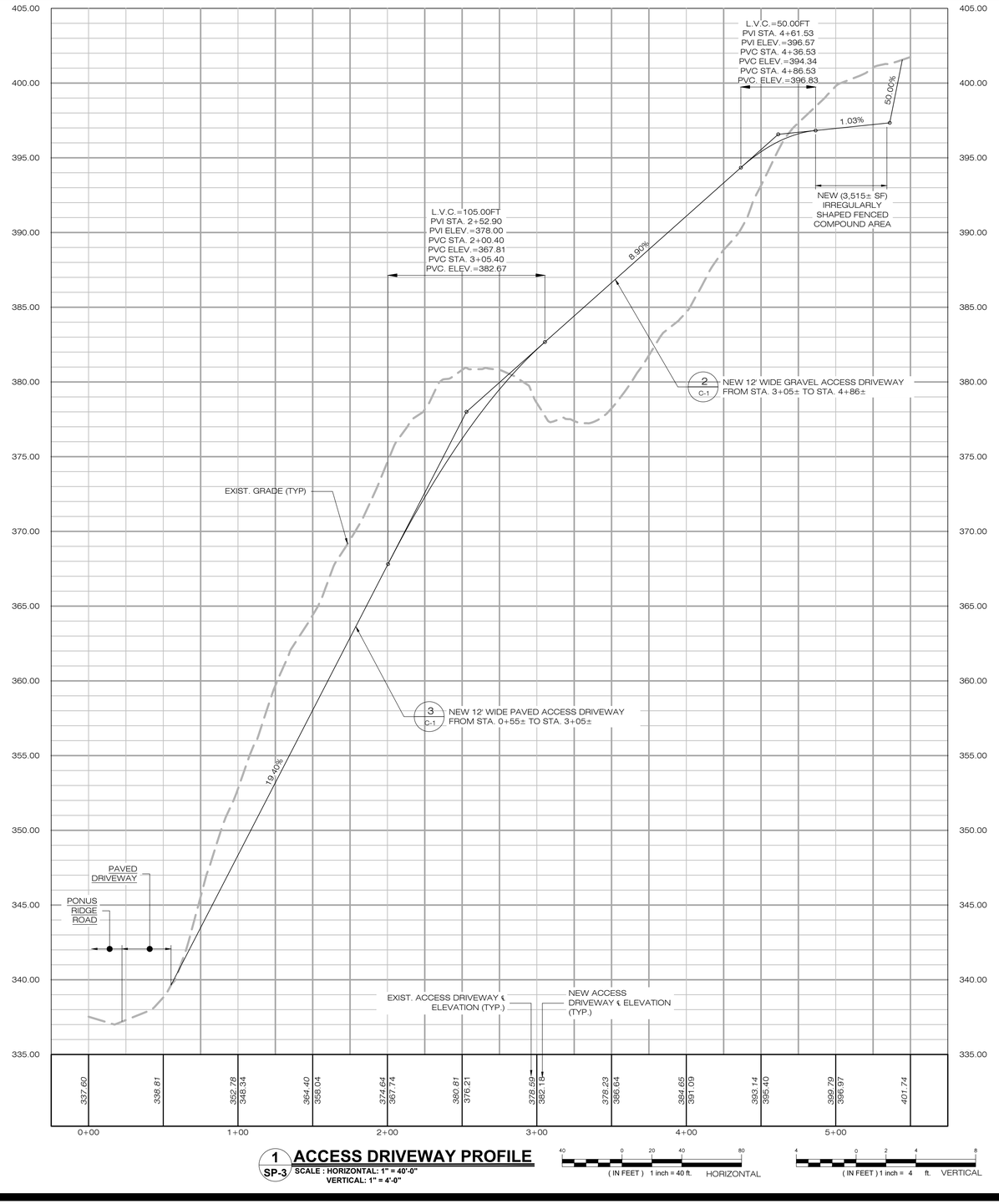

1 SP-3 ACCESS DRIVEWAY PROFILE
SCALE : HORIZONTAL: 1" = 40'-0"
VERTICAL: 1" = 4'-0"

(IN FEET) 1 inch = 40 ft. HORIZONTAL

(IN FEET) 1 inch = 4 ft. VERTICAL

NATIVE UPLAND SLOPES PLANTING SCHEDULE

Quantity	Botanical Name	Common Name	Size[1]	Spacing[2]
		Trees		
10	*Acer negundo*	Box Elder Maple	3-4'	12 feet
10	*Juniperus virginiana*	Eastern Red Cedar	3-4'	12 feet
10	*Prunus virginiana*	Chokecherry	3-4'	4-6 feet
10	*Quercus prinus*	Chestnut Oak	3-4'	4-6 feet
		Shrubs		
30	*Juniperus communis*	Common Juniper	2-3'	7 feet
30	*Vaccinium angustifolium*	Lowbush Blueberry	2-3'	7 feet
30	*Viburnum acerfolium*	Maple Leaf Viburnum	2-3'	7 feet
30	*Viburnum lentago*	Nannyberry	2-3'	7 feet

Notes:

1. The Native Upland Slopes Planting Area of ±18,000 SF will be planted as follows: 50% upland meadow; 30% shrubs; 20% trees.
2. The native upland slopes area shall be sown with a 50/50 blend of New England Conservation/Wildlife Seed Mix and New England Erosion Control/Restoration Mix for Dry Sites Seed Mix (New England Wetland Plants, Inc. (413) 548-8000, or approved equivalent) at the manufacturer's recommended seeding rate and protected with an erosion control blanket composed of processed fibers mechanically bound together to form a continuous matrix (netless) or netting composed of planar woven natural biodegradable fiber to avoid/minimize wildlife entanglement.
3. Planting stock used in the Wetland Enhancement Area and Valley Brook Buffer Enhancement Area shall be inspected for pests, disease and overall health to ensure suitable specimens are used. Unsuitable specimens will be rejected and replaced with suitable specimens. Any planting substitutions must be approved by a wetland scientist.
4. All plant materials installed shall meet or exceed the specifications of the "American Standards for Nursery Stock" by the American Association of Nurserymen. All woody plant stock shall be container-grown or burlap balled. Only plant materials native and indigenous to Connecticut shall be used. Invasive plant species or cultivars of native plants shall not be accepted.
5. All plantings to be spaced generally as noted on the planting schedule to simulate natural growth patterns.

2 SP-3 SLOPE PLANTING SCHEDULE
SCALE : N.T.S.

NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Erosion Control/Restoration Mix for Dry Sites

Botanical Name	Common Name	Indicator
Elymus canadensis	Canada Wild Rye	FACU+
Festuca rubra	Red Fescue	FACU
Lolium multiflorum	Annual Ryegrass	
Lolium perenne	Perrenial Ryegrass	
Schizachyrium scoparium	Little Bluestem	FACU
Panicum virgatum	Switch Grass	FAC
Sorghastrum nutans	Indian Grass	UPL

PRICE PER LB. $18.00 MIN. QUANITY 5 LBS. **TOTAL:** $90.00 APPLY: 35 LBS/ACRE :1250 sq ft/lb

The New England Erosion Control/Restoration Mix For Dry Sites provides an appropriate selection of native and naturalized grasses to ensure that dry and recently disturbed sites will be quickly revegetated and the soil surface stabilized. It is an appropriate seed mix for road cuts, pipelines, steeper slopes, and areas requiring quick cover during the ecological restoration process. The mix may be applied by hydro-seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper soil-seed contact. Best results are obtained with a Spring or late Summer seeding. Late Spring through Mid-Summer seeding will benefit from a light mulching of weed-free straw to conserve moisture. If conditions are drier than usual, watering will be required. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free seed bed is necessary for optimal results.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is $/bulk pound, FOB warehouse, Plus SH and applicable taxes.

NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Conservation/Wildlife Mix

Botanical Name	Common Name	Indicator
Elymus virginicus	Virginia Wild Rye	FACW-
Schizachyrium scoparium	Little Bluestem	FACU
Andropogon gerardii	Big Bluestem	FAC
Festuca rubra	Red Fescue	FACU
Sorghastrum nutans	Indian Grass	UPL
Panicum virgatum	Switch Grass	FAC
Chamaecrista fasciculata	Partridge Pea	FACU
Desmodium canadense	Showy Tick Trefoil	FAC
Asclepias tuberosa	Butterfly Milkweed	NI
Bidens frondosa	Beggar Ticks	FACW
Eupatorium purpureum (Eutrochium maculatum)	Purple Joe Pye Weed	FAC
Rudbeckia hirta	Black Eyed Susan	FACU-
Aster pilosus (Symphyotrichum pilosum)	Heath (or Hairy) Aster	UPL
Solidago juncea	Early Goldenrod	

PRICE PER LB. $39.50 MIN. QUANITY 2 LBS. **TOTAL:** $79.00 APPLY: 25 LBS/ACRE :1750 sq ft/lb

The New England Conservation/Wildlife Mix provides a permanent cover of grasses, wildflowers, and legumes
For both good erosion control and wildlife habitat value. The mix is designed to be a no maintenance seeding, and is appropriate for cut and fill slopes, detention basin side slopes, and disturbed areas adjacent to commercial and residential projects.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is $/bulk pound, FOB warehouse, Plus SH and applicable taxes.

3 SP-3 SEED MIXES
SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

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WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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DESIGN PROFESSIONALS OF RECORD

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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

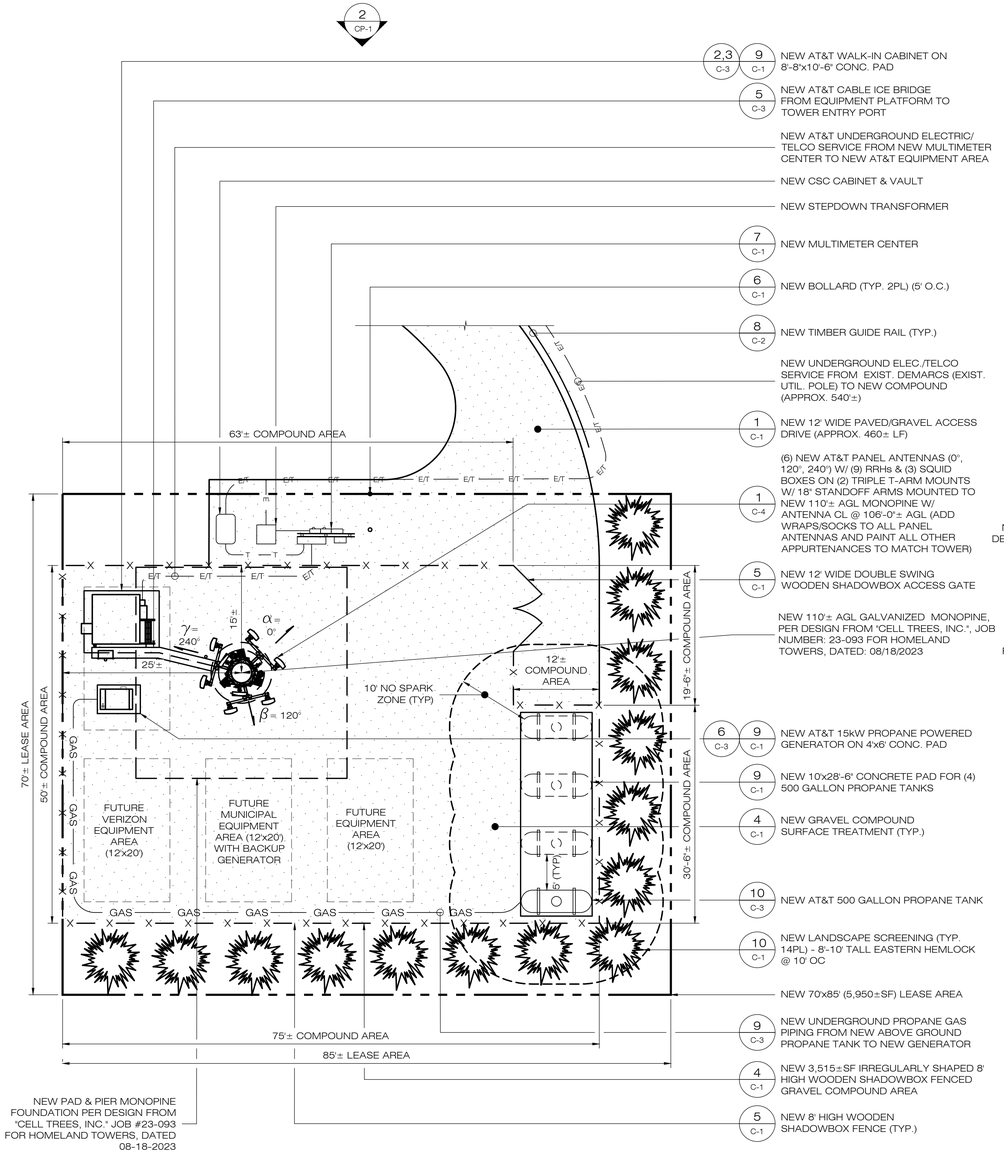
APT FILING NUMBER: CT283860

DATE: 09/14/23 DRAWN BY:
CHECKED BY: RCB

SHEET TITLE:
ACCESS DRIVEWAY PROFILE & PLANTING DETAILS

SHEET NUMBER:
SP-3

STATE OF CONNECTICUT ROBERT C. BURNS 20071 LICENSED PROFESSIONAL ENGINEER



2,3 C-3 — 9 C-1 NEW AT&T WALK-IN CABINET ON 8'-8"x10'-6" CONC. PAD

5 C-3 NEW AT&T CABLE ICE BRIDGE FROM EQUIPMENT PLATFORM TO TOWER ENTRY PORT

NEW AT&T UNDERGROUND ELECTRIC/ TELCO SERVICE FROM NEW MULTIMETER CENTER TO NEW AT&T EQUIPMENT AREA

NEW CSC CABINET & VAULT

NEW STEPDOWN TRANSFORMER

7 C-1 NEW MULTIMETER CENTER

6 C-1 NEW BOLLARD (TYP. 2PL) (5' O.C.)

8 C-2 NEW TIMBER GUIDE RAIL (TYP.)

NEW UNDERGROUND ELEC./TELCO SERVICE FROM EXIST. DEMARCS (EXIST. UTIL. POLE) TO NEW COMPOUND (APPROX. 540'±)

1 C-1 NEW 12' WIDE PAVED/GRAVEL ACCESS DRIVE (APPROX. 460± LF)

1 C-4 (6) NEW AT&T PANEL ANTENNAS (0°, 120°, 240°) W/ (9) RRHs & (3) SQUID BOXES ON (2) TRIPLE T-ARM MOUNTS W/ 18" STANDOFF ARMS MOUNTED TO NEW 110'± AGL MONOPINE W/ ANTENNA CL @ 106'-0"± AGL (ADD WRAPS/SOCKS TO ALL PANEL ANTENNAS AND PAINT ALL OTHER APPURTENANCES TO MATCH TOWER)

5 C-1 NEW 12' WIDE DOUBLE SWING WOODEN SHADOWBOX ACCESS GATE

NEW 110'± AGL GALVANIZED MONOPINE, PER DESIGN FROM "CELL TREES, INC.", JOB NUMBER: 23-093 FOR HOMELAND TOWERS, DATED: 08/18/2023

6 C-3 — 9 C-1 NEW AT&T 15kW PROPANE POWERED GENERATOR ON 4'x6' CONC. PAD

9 C-1 NEW 10'x28'-6" CONCRETE PAD FOR (4) 500 GALLON PROPANE TANKS

4 C-1 NEW GRAVEL COMPOUND SURFACE TREATMENT (TYP.)

10 C-3 NEW AT&T 500 GALLON PROPANE TANK

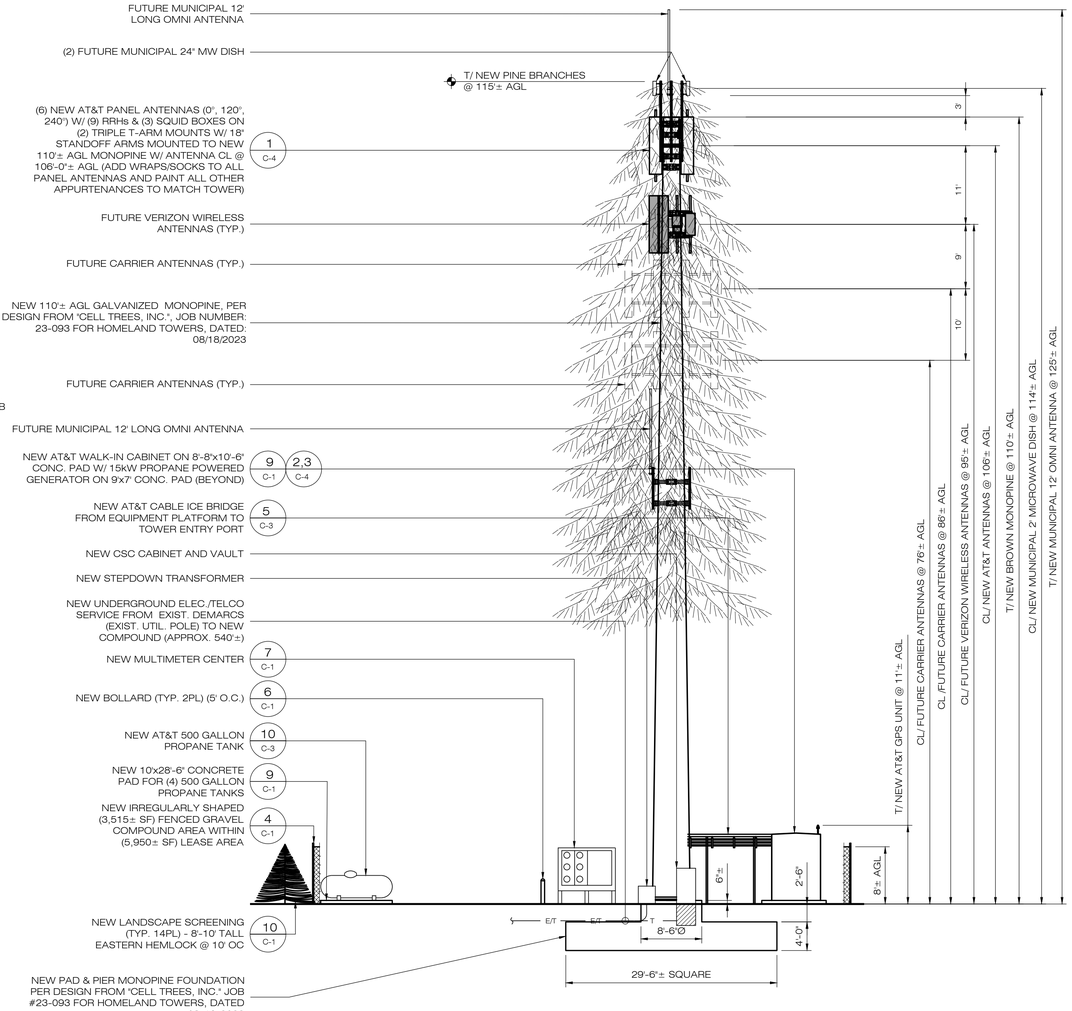
10 C-1 NEW LANDSCAPE SCREENING (TYP. 14PL) - 8'-10' TALL EASTERN HEMLOCK @ 10' OC

NEW 70'x85' (5,950±SF) LEASE AREA

9 C-3 NEW UNDERGROUND PROPANE GAS PIPING FROM NEW ABOVE GROUND PROPANE TANK TO NEW GENERATOR

4 C-1 NEW 3,515±SF IRREGULARLY SHAPED 8' HIGH WOODEN SHADOWBOX FENCED GRAVEL COMPOUND AREA

5 C-1 NEW 8' HIGH WOODEN SHADOWBOX FENCE (TYP.)



1 CP-1 **COMPOUND PLAN** SCALE : 1" = 10'-0"

10 0 5 10 20
(IN FEET) 1 inch = 10 ft.

2 CP-1 **NORTHWEST ELEVATION** SCALE : 1" = 10'-0"

10 0 5 10 20
(IN FEET) 1 inch = 10 ft.

HOMELAND TOWERS, LLC
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ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

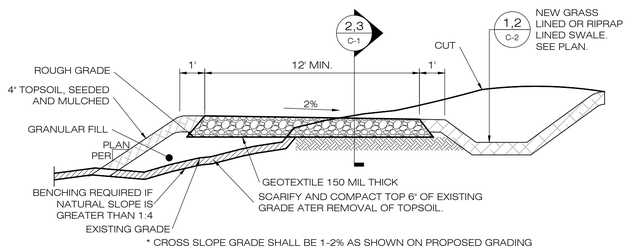
APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:
CHECKED BY: RCB

SHEET TITLE:
COMPOUND PLAN & TOWER ELEVATION

SHEET NUMBER:
CP-1

STATE OF CONNECTICUT · ROBERT CHARLES BURNS · 20071 · LICENSED PROFESSIONAL ENGINEER

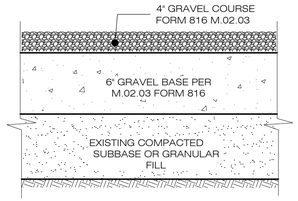


* CROSS SLOPE GRADE SHALL BE 1-2% AS SHOWN ON PROPOSED GRADING

* WHERE CUT OR FILL EMBANKMENTS ARE STEEPER THAN 3:1 USE A STAPLED IN PLACE, BIODEGRADABLE EROSION CONTROL BLANKET OR A BONDED FIBER MATRIX HYDROSEED APPLICATION.

1 C-1 TYPICALDRIVEWAY CROSS SECTION

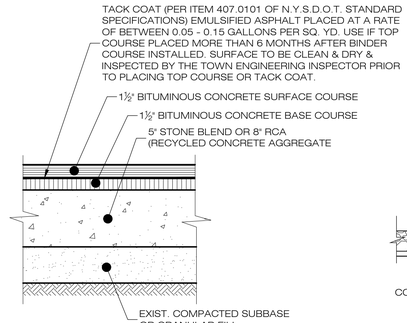
SCALE : N.T.S.



NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

2 C-1 GRAVEL DRIVE/PARKING SECTION

SCALE : N.T.S.



NOTES:
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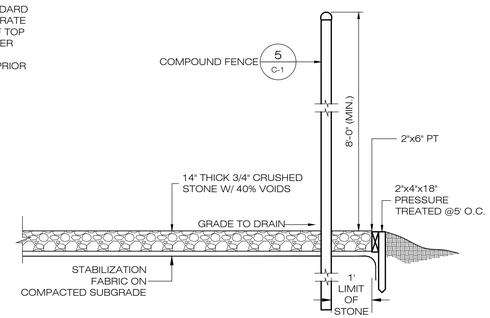
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

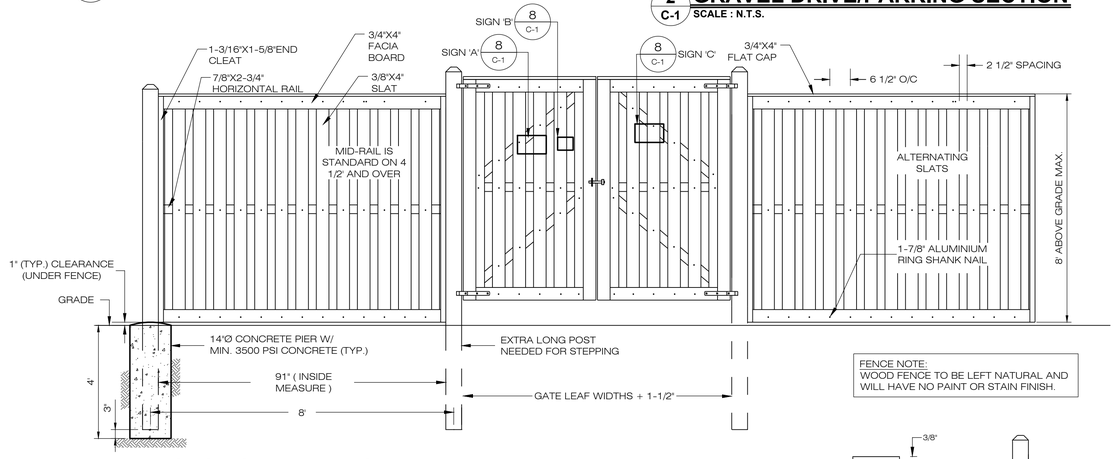
3 C-1 PAVED DRIVEWAY SECTION

SCALE : N.T.S.



4 C-1 COMPOUND DETAIL

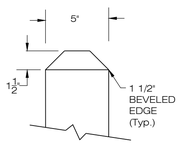
SCALE : N.T.S.



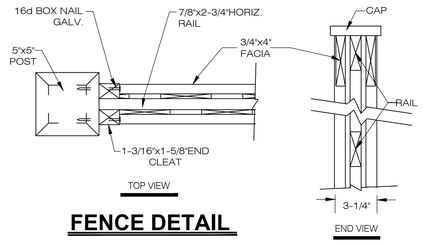
FENCE NOTE:
WOOD FENCE TO BE LEFT NATURAL AND WILL HAVE NO PAINT OR STAIN FINISH.

SECTION-FRAME SIDE

DOUBLE GATE FRAME SIDE



POST
(ROUGH SAWN)

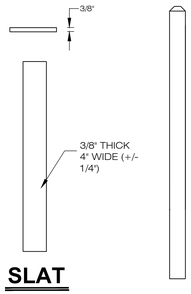


FENCE DETAIL

5 C-1 SHADOWBOX FENCE

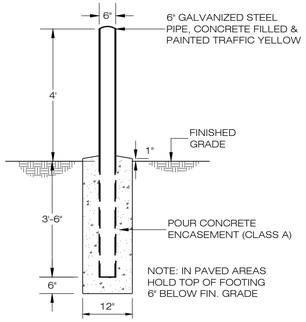
Typ. 8' Section Length - Northern White Cedar

SCALE : N.T.S.



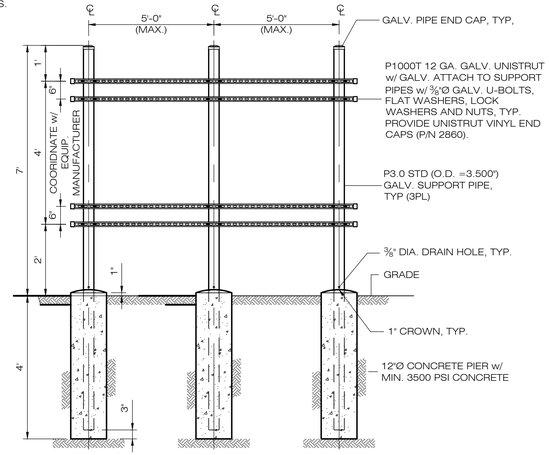
SLAT

FENCE POST



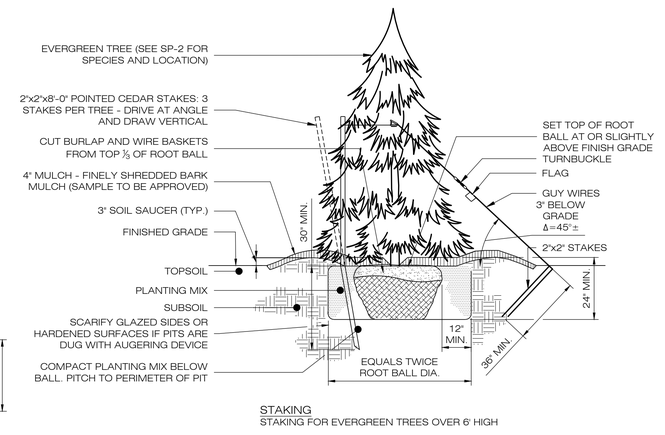
6 C-1 BOLLARD DETAIL

SCALE : N.T.S.



7 C-1 UTILITY BACKBOARD FRAME DETAIL

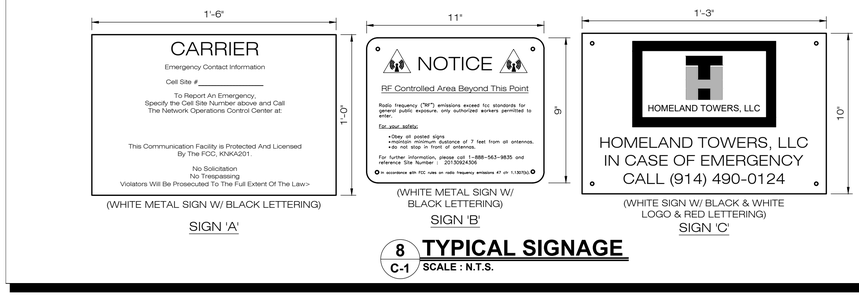
SCALE : N.T.S.



STAKING
STAKING FOR EVERGREEN TREES OVER 6' HIGH

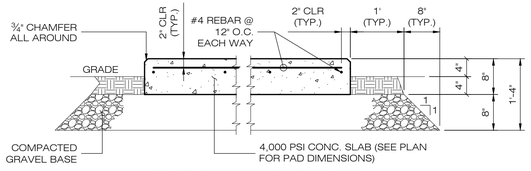
10 C-1 EVERGREEN TREE PLANTING

SCALE : N.T.S.



8 C-1 TYPICAL SIGNAGE

SCALE : N.T.S.



9 C-1 EQUIPMENT PAD

SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:

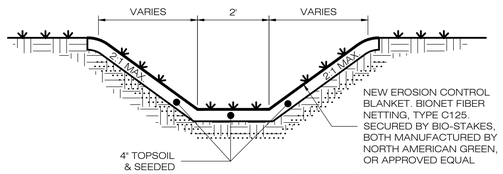
CHECKED BY: RCB

SHEET TITLE:

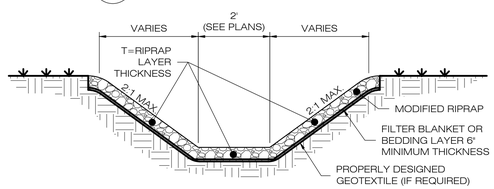
SITE DETAILS

SHEET NUMBER: C-1

STATE OF CONNECTICUT ROBERT C. BURNS 20071 LICENSED PROFESSIONAL ENGINEER

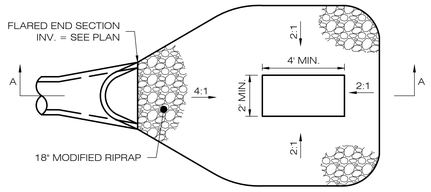


1 C-2 GRASS LINED SWALE
SCALE : N.T.S.

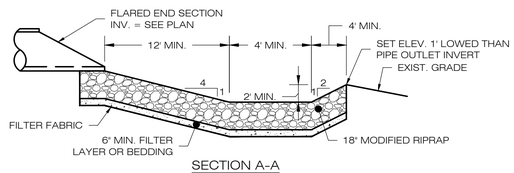


NOTES:
1. T=1.5 TIMES THE MAXIMUM STONE SIZE BUT NOT LESS THAN 12 INCHES.
2. THE TOTAL HEIGHT OF THE LINING IS DEPENDENT UPON THE DESIGN DEPTH OF FLOW PLUS RUNUP DUE TO CHANNEL CURVATURE, PLUS FREEBOARD
3. IN CHANNELS WITH SIGNIFICANT BOTTOM WIDTHS LOW FLOW CHANNELS MAY BE INCORPORATED
4. SIDE SLOPES STEEPER THAN 2:1 OR SLOPES WITH UNSUITABLE MATERIAL WILL REQUIRE ADDITIONAL ANALYSIS.
5. STONE CHECK DAMS SHALL BE INSTALLED IN ALL SWALES

2 C-2 RIPRAP LINED SWALE
SCALE : N.T.S.

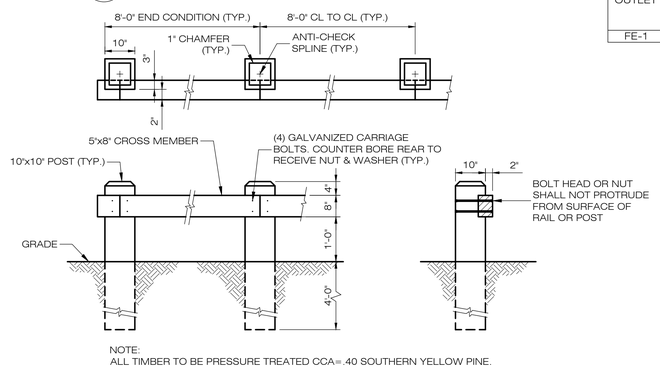


PLAN



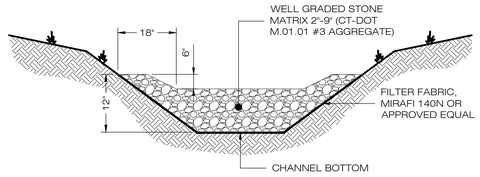
SECTION A-A

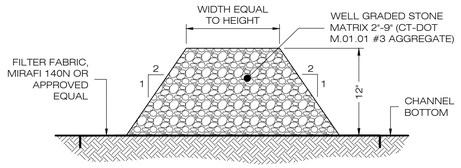
5 C-2 RIPRAP STILLING BASIN
SCALE : N.T.S.



NOTE:
ALL TIMBER TO BE PRESSURE TREATED CCA=.40 SOUTHERN YELLOW PINE.

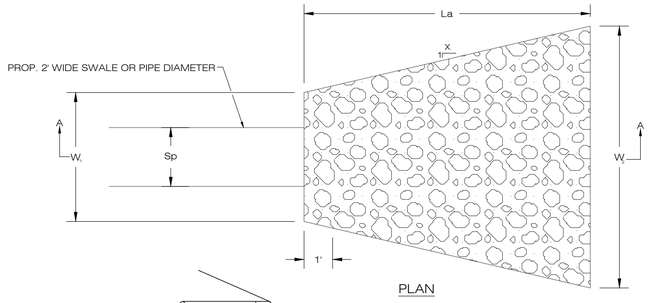
8 C-2 TIMBER GUIDE RAIL
SCALE : N.T.S.



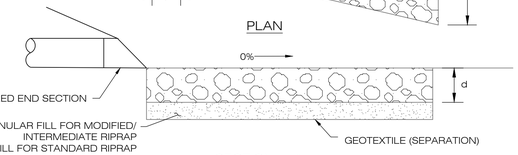


CROSS SECTION

3 C-2 STONE CHECK DAM
SCALE : N.T.S.



PLAN



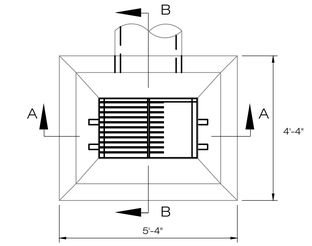
SECTION A-A

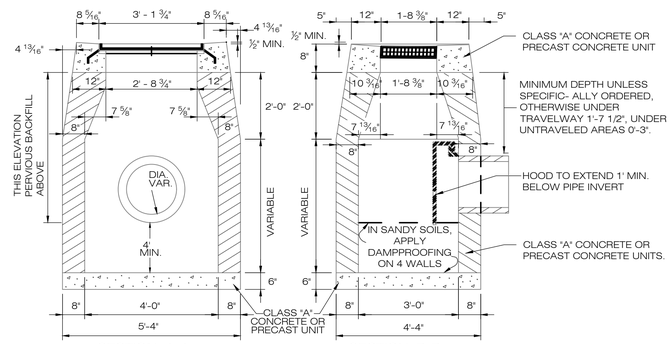
LEGEND
Sp= INSIDE PIPE DIAMETER
La= LENGTH OF RIPRAP APRON
d= 12" MODIFIED RIPRAP
18" INTERMEDIATE RIPRAP
36" STANDARD RIPRAP

	X	W_1	W_2
TYPE A RIPRAP APRON	3	3Sp	3Sp + 0.7 La
TYPE B RIPRAP APRON	5	3Sp	3Sp + 0.4 La

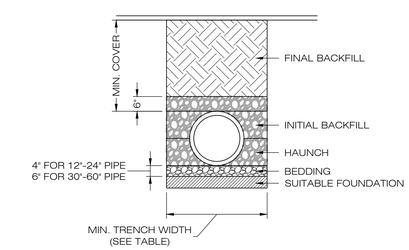
OUTLET	SWALE WIDTH/ PIPE DIAMETER Sp (FT)	APRON LENGTH La (FT)	APRON INITIAL WIDTH W1 (FT)	APRON TERMINAL WIDTH W2 (FT)	RIPRAP SPECIFICATION
FE-1	1	5	3	6.5	MODIFIED

6 C-2 RIPRAP APRON
SCALE : N.T.S.





4 C-2 PRECAST TYPE 'C-L' CATCH BASIN WITH HOOD
SCALE : N.T.S.



RECOMMENDED MIN. TRENCH WIDTH	
PIPE DIA.	MIN. TRENCH WIDTH
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
48"	80"
60"	96"

NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 , "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (7S0mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

7 C-2 HDPE STORM DRAINAGE TRENCH DETAIL
SCALE : N.T.S.

HOMELAND TOWERS, LLC
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(203) 297-6345

at&t
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ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

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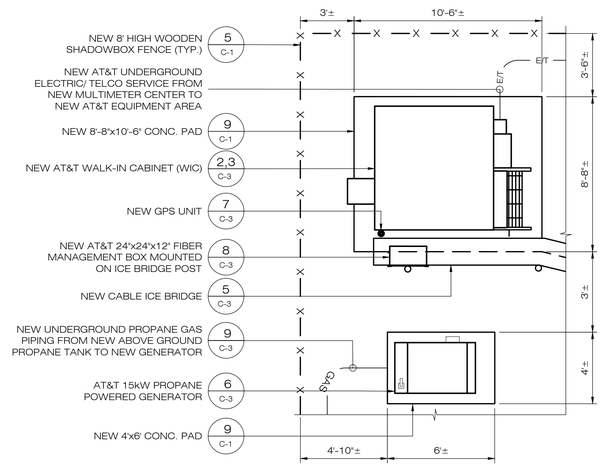
SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
C-2

STATE OF CONNECTICUT · ROBERT CHARLES BURNS · No. 20071 · LICENSED PROFESSIONAL ENGINEER



1 C-3 AT&T EQUIPMENT AREA

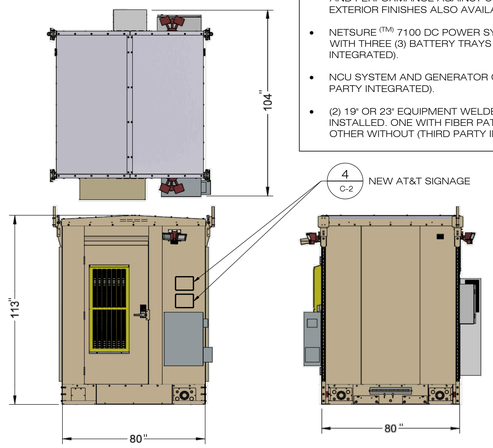
SCALE : ¼" = 1'-0"

4' 0 2' 4' 8'

½" SCALE: 1 INCH= 4'-0"

WALK-IN CABINET SPECIFICATIONS:

- COLOR - PEBBLE GRAY, RAL7032
- FINISH - STANDARD FINISH IS MULTI-STAGE DRY POWER POLYESTER PAINT FOR MAXIMUM DURABILITY AND PERFORMANCE AGAINST CORROSION. OPTIONAL EXTERIOR FINISHES ALSO AVAILABLE UPON REQUEST.
- NETSURE (TM) 7100 DC POWER SYSTEM IN 23" RACK WITH THREE (3) BATTERY TRAYS (THIRD PARTY INTEGRATED).
- NCU SYSTEM AND GENERATOR CONTROL (THIRD PARTY INTEGRATED).
- (2) 19" OR 23" EQUIPMENT WELDED FRAMES INSTALLED. ONE WITH FIBER PATCH PANEL AND THE OTHER WITHOUT (THIRD PARTY INTEGRATED).

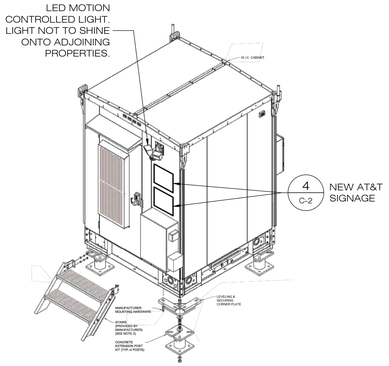


2 C-3 AT&T SMARTMOD WALK-IN CABINET (WIC) DETAILS

SCALE : ¼" = 1'-0"

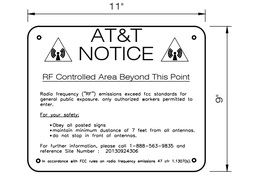
WALK-IN CABINET NOTES:

1. WALK-IN CABINET(WIC) TO BE INSTALLED ACCORDING TO MANUFACTURER RECOMMENDATIONS & SPECIFICATIONS.
2. CONTRACTOR TO CONFIRM PARTS & HARDWARE PRIOR TO CONSTRUCTION & COORDINATE w/ AT&T CM.
3. FOUNDATION TO BE FLUSH w/ EXISTING GRADE. CONTRACTOR SHALL MAINTAIN A MAXIMUM OF 18" CLEARANCE FROM GRADE TO BOTTOM OF WIC TO ACCOMMODATE STAIRS. VERIFY IN FIELD PRIOR TO INSTALLATION.
4. COORDINATE POWER & TELCO CONDUIT STUB UP PLACEMENT WITH ELECTRICAL TRADES. SEE E-1 FOR ADDITIONAL INFORMATION.
5. PROVIDE HVAC & ELECTRICAL WORKING SPACE CLEARANCES PER MANUFACTURER RECOMMENDATIONS & NEC REQUIREMENTS.
6. WIC DIMENSIONS: 6'-8"(W) x 6'-8"(L) x 9'-6"(H) (NO BASE). WIC WEIGHT: 5500lbs (EMPTY; 7500lbs (FULLY INTEGRATED).
7. CONTRACTOR SHALL PROVIDE & INSTALL SPECIFIED CONCRETE ANCHORS.



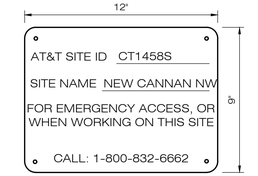
3 C-3 AT&T SMARTMOD WALK-IN CABINET (WIC)

SCALE : N.T.S.



(WHITE METAL SIGN W/ BLACK LETTERING)

RF NOTICE SIGN

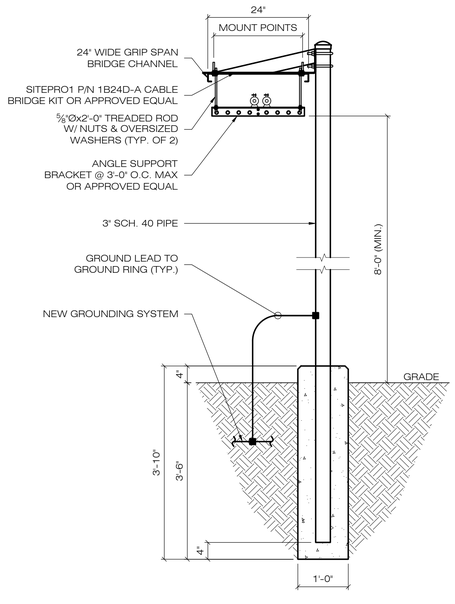


(WHITE METAL SIGN W/ BLUE LETTERING)

EMERGENCY SIGN

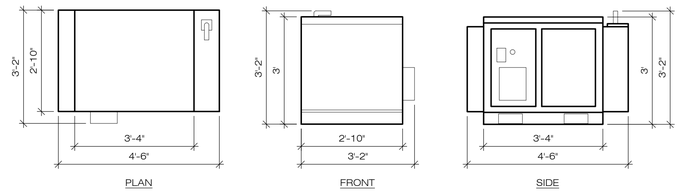
4 C-3 TYPICAL SIGNAGE

SCALE : N.T.S.



5 C-3 CABLE BRIDGE DETAIL

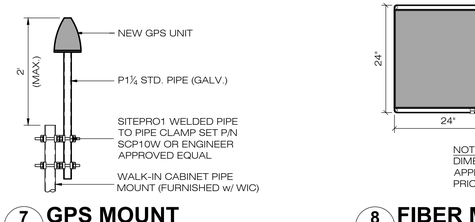
SCALE : N.T.S.



POLAR POWER INC.
15kW PROPANE DC POWER GENERATOR
MODEL #8340-100-LP-15-03, 120/240V, 1Ø, 60Hz
AL ENCLOSURE - KUBOTA DG972 W/ SUMP
DRY WEIGHT = 608lbs
CONFORMS TO UL STD 2000
CERTIFIED TO CSA STD C22.2 No. 100

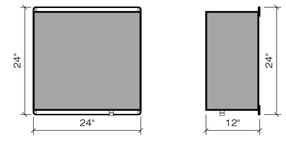
6 C-3 GENERATOR

SCALE : N.T.S.



7 C-3 GPS MOUNT

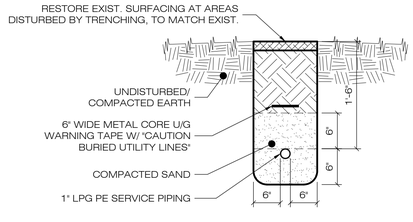
SCALE : N.T.S.



NOTE:
DIMENSIONS SHOWN ARE APPROXIMATE. VERIFY W/ CM PRIOR TO CONSTRUCTION

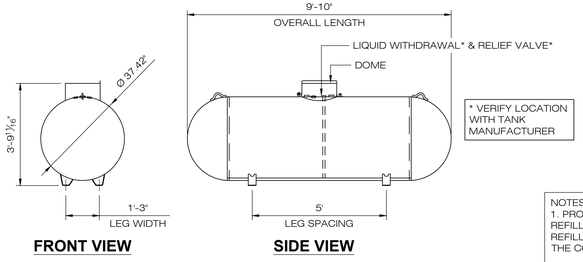
8 C-3 FIBER MANAGEMENT BOX

SCALE : ¾" = 1'-0"



9 C-3 PROPANE GAS TRENCH

SCALE : NTS



FRONT VIEW SIDE VIEW

500 USWG AMSE VIII, DIV. 1 ABOVE GROUND LPG TANK

- WEIGHT (EMPTY) = 871 lbs

NOTE:
PROVIDE TANK MANUFACTURER SHOP DRAWING FOR REVIEW BY ENGINEER OF RECORD PRIOR TO PURCHASE

NOTES:
1. PROPANE TANKS SHALL BE REFILLED FROM HOSE PULLED FROM A REFILLING VEHICLE PARKED OUTSIDE THE COMPOUND.

2. PER NFPA 58 TABLE 5.9.4.1(B) FILLER VALVE REQUIRED ON ALL TANKS BUT MAY BE MANUAL OR BACKFLOW CHECK VALVE, NFPA 58 5.9.4.1(C)(7).

3. ALL ABOVE-GROUND GAS SERVICE LINES MUST MEET LOCAL CODE REGULATIONS.

10 C-3 ABOVE GROUND PROPANE TANK DETAIL

SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
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DESIGN PROFESSIONALS OF RECORD

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ADD: 567 VAUXHALL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

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HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:

CHECKED BY: RCB

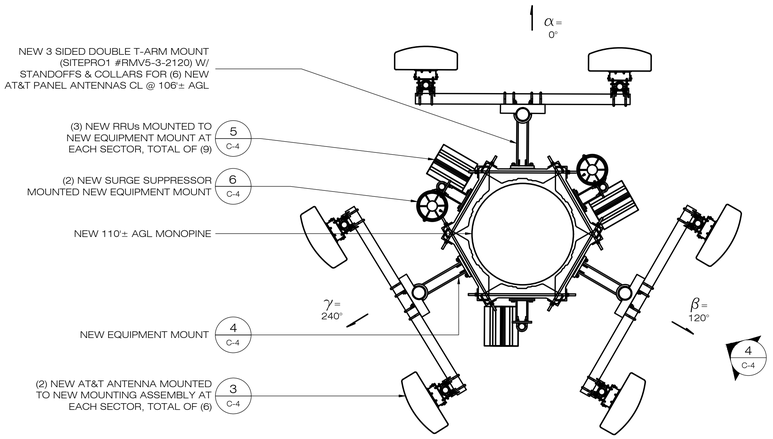
SHEET TITLE:

AT&T EQUIPMENT PLAN & DETAILS

SHEET NUMBER:

C-3

STATE OF CONNECTICUT ROBERT C. BURNS 20071 LICENSED PROFESSIONAL ENGINEER

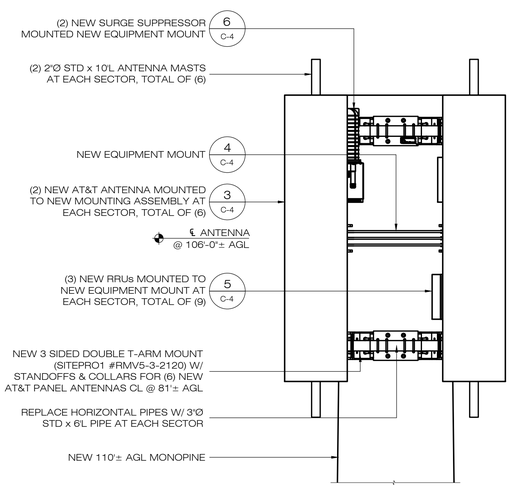


2 C-4

NOTE:
PAINT MOUNTS, ANTENNAS, CABLING & APPURTENANCES TO MATCH TREE & INSTALL ANTENNA SOCKS ON ALL ANTENNAS.

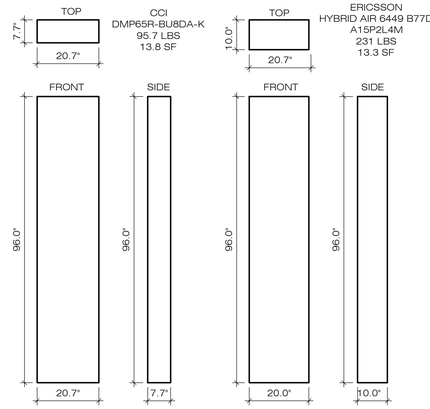
1 C-4 ANTENNA PLAN
SCALE : ½" = 1'-0"

NOTE:
CONTRACTOR TO VERIFY DIAMETER OF MONOPINE PRIOR TO ORDERING T-ARM MOUNT & RING MOUNT



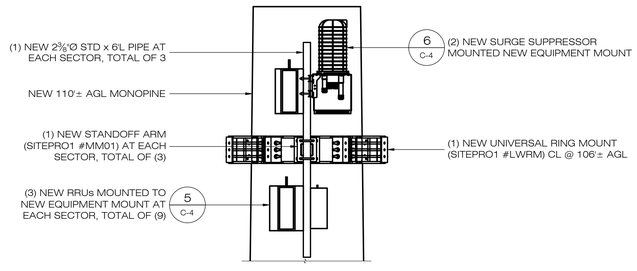
NOTE:
PAINT MOUNTS, ANTENNAS, CABLING & APPURTENANCES TO MATCH TREE & INSTALL ANTENNA SOCKS ON ALL ANTENNAS.

2 C-4 ANTENNA MOUNTING DETAIL
SCALE : ½" = 1'-0"

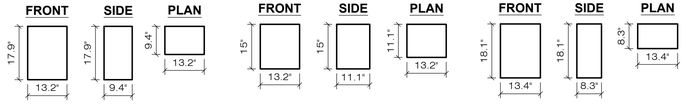


PANEL ANTENNAS

3 C-4 ANTENNA DETAIL
SCALE : ½" = 1'-0"

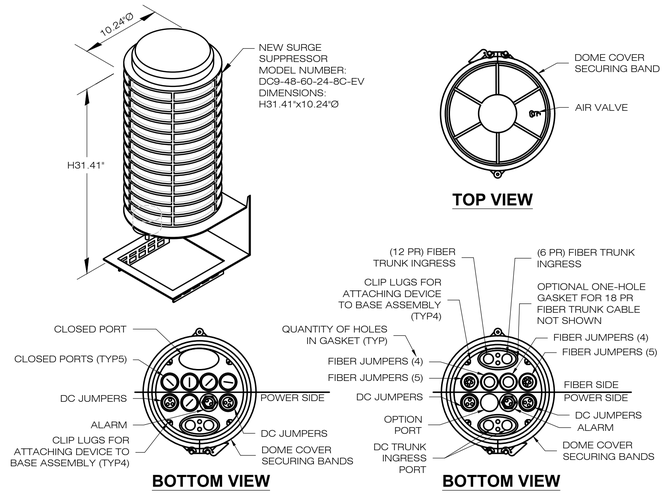


4 C-4 EQUIPMENT MOUNT
SCALE : ½" = 1'-0"



NOTES:
1. DIMENSIONS SUBJECT TO CHANGE BASED UPON AVAILABILITY AT TIME OF CONSTRUCTION.
2. REFER TO MANUFACTURER RECOMMENDATION FOR ALL RRH CLEARANCES.

5 C-4 RRU EQUIPMENT
SCALE : ½" = 1'-0"



RAYCAP DC9-48-60-24-8C-EV (SURGE SUPPRESSOR)
HxDia. = 31.41"x10.24"Ø (26.2 Lbs)
(OR EQUAL)
COLOR: GRAY

NOTES:
1. MOUNT PER MANUFACTURERS SPECIFICATIONS.
2. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC TO 1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP

6 C-4 TYPICAL SURGE SUPPRESSOR
SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
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DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:
CHECKED BY: RCB

SHEET TITLE:
AT&T ANTENNA PLAN & DETAILS

SHEET NUMBER:
C-4

STATE OF CONNECTICUT ROBERT C. BURNS 20071 LICENSED PROFESSIONAL ENGINEER

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF NEW CANAAN AND/OR PERMITTEE. ALL PERIMETER SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING AND DEMOLITION OPERATIONS.

2. THESE DRAWINGS ARE ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL MEASURES FOR THIS SITE. SEE CONSTRUCTION SEQUENCE FOR ADDITIONAL INFORMATION. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN AS REQUIRED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL EROSION CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO STORM DRAINAGE SYSTEMS AND/OR WATERCOURSES. ACTUAL SITE CONDITIONS OR SEASONAL AND CLIMATIC CONDITIONS MAY WARRANT ADDITIONAL CONTROLS OR CONFIGURATIONS, AS REQUIRED, AND AS DIRECTED BY THE PERMITTEE AND/OR SWPCP MONITOR. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

3. A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.

4. THE CONTRACTOR SHALL APPLY THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN IN CONJUNCTION WITH CONSTRUCTION SEQUENCING, SUCH THAT ALL ACTIVE WORK ZONES ARE PROTECTED. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, SITE ENGINEER, MUNICIPAL OFFICIALS, OR ANY GOVERNING AGENCY. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR INSTALLED SEDIMENTATION AND EROSION CONTROL MEASURES. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS WEEKLY AND WITHIN 24 HOURS OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS AS NECESSARY IN A TIMELY MANOR.

6. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (SILT FENCE, COMPOST FILTER SOCK, EROSION CONTROL BLANKET, ETC.) ON-SITE FOR PERIODIC MAINTENANCE AND EMERGENCY REPAIRS.

7. ALL FILL MATERIAL PLACED ADJACENT TO ANY WETLAND AREA SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN), SHALL BE PLACED IN MAXIMUM ONE FOOT LIFTS, AND SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. PROTECT EXISTING TREES THAT ARE TO BE SAVED BY FENCING, ORANGE SAFETY FENCE, CONSTRUCTION TAPE, OR EQUIVALENT FENCING/TAPE. ANY LIMB TRIMMING SHOULD BE DONE AFTER CONSULTATION WITH AN ARBORIST AND BEFORE CONSTRUCTION BEGINS IN THAT AREA; FENCING SHALL BE MAINTAINED AND REPAIRED DURING CONSTRUCTION.

9. CONSTRUCTION ENTRANCES (ANTI-TRACKING PADS) SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR CONSTRUCTION ACTIVITY AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF ALL CONSTRUCTION IF REQUIRED. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED. CONTRACTOR SHALL ENSURE THAT ALL VEHICLES EXITING THE SITE ARE PASSING OVER THE ANTI-TRACKING PADS PRIOR TO EXISTING.

10. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SEDIMENT BARRIER UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE BARRIER.

11. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS. ALL SLOPES SHALL BE SEEDED AND BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

12. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE CONFORMING TO THE GUIDELINES WITHIN THE APPROVED LIMIT OF DISTURBANCE IF REQUIRED. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE PERMITTEE OR MUNICIPALITY.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS ON THE SITE. PROPER SANITARY DEVICES SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SECURED APPROPRIATELY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS ON THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION AND RESPONSE/CONTAINMENT.

14. MINIMIZE LAND DISTURBANCES. SEED AND MULCH DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SWALES WITH LOOSE HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.

15. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS TO KEEP THE TRAVELWAYS DAMP. CALCIUM CHLORIDE MAY ALSO BE APPLIED TO ACCESS ROADS. DUMP TRUCK LOADS EXITING THE SITE SHALL BE COVERED.

16. VEGETATIVE ESTABLISHMENT SHALL OCCUR ON ALL DISTURBED SOIL, UNLESS THE AREA IS UNDER ACTIVE CONSTRUCTION, IT IS COVERED IN STONE OR SCHEDULED FOR PAVING WITHIN 30 DAYS. TEMPORARY SEEDING OR NON-LIVING SOIL PROTECTION OF ALL EXPOSED SOILS AND SLOPES SHALL BE INITIATED WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK IN AREAS TO BE LEFT LONGER THAN 30 DAYS.

17. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP CONCRETE PADS, CLEAN THE STORMWATER MANAGEMENT SYSTEMS AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS ONCE THE SITE IS FULLY STABILIZED AND APPROVAL HAS BEEN RECEIVED FROM PERMITTEE OR THE MUNICIPALITY.

18. SEEDING MIXTURES SHALL BE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX, OR APPROVED EQUAL BY OWNER.

19. MONTHLY MONITORING OF THE EROSION & SEDIMENTATION CONTROLS BY A CIVIL ENGINEER INDEPENDENT OF THE CONTRACTOR IS REQUIRED.

SEDIMENT & EROSION CONTROL NARRATIVE

1. THE PROJECT INCLUDES THE INSTALLATION OF A 110'± AGL MONOPINE WITH ASSOCIATED GROUND MOUNTED EQUIPMENT. ALL DISTURBED AREAS ARE TO BE SEEDED AND STABILIZED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT.

   THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION:
   A. CONSTRUCTION OF 110'± AGL MONOPINE.
   C. CONSTRUCTION OF IRREGULARLY SHAPED' (3,515± SF) FENCED EQUIPMENT COMPOUND W/ GRAVEL SURFACE TREATMENT AND ASSOCIATED UTILITIES.
   D. CONSTRUCTION OF 460'± 12' WIDE PAVED (250'±) & GRAVEL (210'±) ACCESS DRIVE.
   E. CONSTRUCTION OF 8'-8"x10'-6"CONCRETE PAD W/ WIC CABINET, 9'x7' CONCRETE EQUIPMENT PAD W/ GENERATOR, & 10'x28'-6" CONCRETE EQUIPMENT PAD W/ 500 GALLON PROPANE TANK.
   F. THE STABILIZATION OF PERVIOUS DISTURBED AREAS WITH PERMANENT GRASS TREATMENTS.

2. FOR THIS PROJECT, THERE ARE APPROXIMATELY 37,000± SF OF THE SITE BEING DISTURBED.

3. A GEOTECHNICAL ENGINEERING REPORT BY TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C. DATED FEBRUARY 28, 2023 HAS BEEN COMPLETED FOR THIS PROJECT IS AVAILABLE UNDER SEPARATE COVER.

4. IT IS ANTICIPATED THAT CONSTRUCTION WILL BE COMPLETED IN APPROXIMATELY 12 WEEKS.

5. TREE CLEARING WILL NOT BE ALLOWED BETWEEN APRIL 1 AND OCTOBER 1.

6. REFER TO THE CONSTRUCTION SEQUENCING AND EROSION AND SEDIMENTATION NOTES FOR INFORMATION REGARDING SEQUENCING OF MAJOR OPERATIONS IN THE ON-SITE CONSTRUCTION PHASES.

7. MEASURES ARE BASED UPON ENGINEERING PRACTICE, JUDGEMENT AND THE APPLICABLE SECTIONS OF THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

8. DETAILS FOR THE TYPICAL EROSION AND SEDIMENTATION MEASURES ARE SHOWN ON PLAN SHEET EC-2 OR PROVIDED AS SEPARATE SUPPORT DOCUMENTATION FOR REVIEW IN THIS PLAN.

9. CONSERVATION PRACTICES TO BE USED DURING CONSTRUCTION AREA:
   A. STAGED CONSTRUCTION;
   B. MINIMIZE THE DISTURBED AREAS DURING CONSTRUCTION;
   C. STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE WITH TEMPORARY OR PERMANENT MEASURES;
   D. MINIMIZE IMPERVIOUS AREAS;
   E. UTILIZE APPROPRIATE CONSTRUCTION EROSION AND SEDIMENTATION MEASURES.

SUGGESTED CONSTRUCTION SEQUENCE

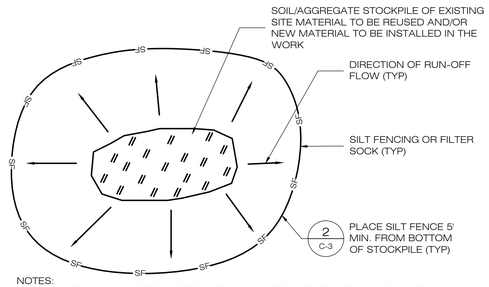
THE FOLLOWING SUGGESTED SEQUENCE OF CONSTRUCTION ACTIVITIES IS PROJECTED BASED UPON ENGINEERING JUDGEMENT AND BEST MANAGEMENT PRACTICES. THE CONTRACTOR MAY ELECT TO ALTER THE SEQUENCING TO BEST MEET THE CONSTRUCTION SCHEDULE, THE EXISTING SITE ACTIVITIES AND WEATHER CONDITIONS. THE CONTRACTOR SHALL SUBMIT THE FINAL CONSTRUCTION SCHEDULE TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO MOBILIZING TO THE SITE AND INITIATING CONSTRUCTION ACTIVITIES. THE CONSTRUCTION SEQUENCE IS ALSO SUBJECT TO REQUIREMENTS AS NOTED IN THE RESOURCE PROTECTION MEASURES.

1. CONTACT THE OWNER TO SCHEDULE A PRE-CONSTRUCTION MEETING. PHYSICALLY FLAG THE TREES TO BE REMOVED IN THE FIELD AS NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.
2. CONDUCT A PRE-CONSTRUCTION MEETING TO DISCUSS THE PROPOSED WORK AND EROSION AND SEDIMENTATION CONTROL MEASURES. THE MEETING SHOULD BE ATTENDED BY THE OWNER, THE OWNER REPRESENTATIVE(S), THE GENERAL CONTRACTOR, DESIGNATED SUB-CONTRACTORS AND THE PERSON, OR PERSONS, RESPONSIBLE FOR THE IMPLEMENTATION, OPERATION, MONITORING AND MAINTENANCE OF THE EROSION AND SEDIMENTATION MEASURES. THE CONSTRUCTION PROCEDURES FOR THE ENTIRE PROJECT SHALL BE REVIEWED AT THIS MEETING.
3. NOTIFY THE OWNER AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT. NOTIFY CALL BEFORE YOU DIG CONNECTICUT AT (800) 922-4455.
4. CLEAR AND GRUB AS REQUIRED, TO INSTALL THE PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES AND, IF APPLICABLE, TREE PROTECTION.
5. INSTALL CONSTRUCTION ENTRANCE.
6. PERFORM THE REMAINING CLEARING AND GRUBBING AS NECESSARY. REMOVE CUT WOOD AND STUMPS. CHIP BRUSH AND STOCKPILE FOR FUTURE USE OR REMOVE OFF-SITE. REMOVE AND DISPOSE OF DEMOLITION DEBRIS OFF-SITE.
7. TEMPORARILY SEED DISTURBED AREAS NOT UNDER CONSTRUCTION FOR THIRTY (30) DAYS OR MORE.
8. EXCAVATE AND ROUGH GRADE NEW ACCESS DRIVE, DRAINAGE SWALES, RIPRAP STILLING BASINS, RIPRAP APRONS, DRAINAGE STRUCTURES & PIPING.
9. AS ACCESS DRIVEWAY IS CONSTRUCTED, CONSTRUCT ADJACENT DRAINAGE FEATURES IN SEQUENCE TO CONTROL AND TREAT STORMWATER RUNOFF AS SITE CONSTRUCTION PROGRESSES TOWARDS THE TOWER LOCATION.
10. INSTALL TIMBER GUIDE RAIL.
11. INSTALL ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES AS DICTATED BY SITE CONDITIONS IN ORDER TO PROPERLY CONTROL AND TREAT RUNOFF.
12. INSTALL UTILITY CONDUITS.
13. EXCAVATE, GRADE AND INSTALL RIPRAP STILLING BASINS.
14. EXCAVATE AND ROUGH GRADE EQUIPMENT COMPOUND.
15. EXCAVATE FOR TOWER FOUNDATION & EQUIPMENT PADS.
16. FINALIZE ACCESS ROAD AND DRAINAGE SWALE GRADES.
17. PAVE PORTION OF ACCESS DRIVE AND INSTALL GRAVEL SURFACE ON THE REMAINDER OF THE DRIVEWAY.
18. INSTALL STONE CHECK DAMS WITHIN THE DRAINAGE SWALES.
19. PREPARE SUBGRADE AND INSTALL FORMS, STEEL REINFORCING, & CONCRETE FOR TOWER FOUNDATION & EQUIPMENT PADS.
20. INSTALL BURIED GROUND RINGS, GROUND RODS, GROUND LEADS, & UTILITY EQUIPMENT.
21. BACKFILL TOWER FOUNDATION.
22. ERECT MONOPOLE.
23. INSTALL TELECOMMUNICATIONS EQUIPMENT ON TOWER & COMPOUND.
24. INSTALL COMPOUND GRAVEL SURFACES.
25. INSTALL FENCING.
26. CONNECT GROUNDING LEADS & LIGHTNING PROTECTION.
27. FINAL GRADE AROUND COMPOUND.
28. INSTALL PROPOSED LANDSCAPING.
29. LOAM & SEED DISTURBED AREAS OUTSIDE COMPOUND, AS REQUIRED.
30. TEST ALL NEW EQUIPMENT.
31. AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE OWNER, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS.
32. PERFORM FINAL PROJECT CLEANUP.

NOTE: CONSTRUCTION OF THE FACILITY WILL ONLY TAKE PLACE BETWEEN THE HOURS OF 8:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY

CONSTRUCTION OPERATION AND MAINTENANCE PLAN - BY CONTRACTOR

E&S MEASURE	INSPECTION SCHEDULE	MAINTENANCE REQUIRED
CONSTRUCTION ENTRANCE	DAILY	PLACE ADDITIONAL STONE, EXTEND THE LENGTH OR REMOVE AND REPLACE THE STONE. CLEAN PAVED SURFACES OF TRACKED SEDIMENT.
HAY BALES	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REPAIR/REPLACE WHEN FAILURE, OR OBSERVED DETERIORATION, IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE BALE.
SILT FENCE/FILTER SOCKS	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REPAIR/REPLACE WHEN FAILURE, OR OBSERVED DETERIORATION, IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE FENCE.
SILT SACKS	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REPAIR/REPLACE WHEN FAILURE, OR OBSERVED DETERIORATION, IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE SACK.
TOPSOIL/BORROW STOCKPILES	DAILY	REPAIR/REPLACE SEDIMENT BARRIERS AS NECESSARY.
WATER BARS	DAILY	REPAIR/RESHAPE AS NECESSARY. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE WATER BAR.
TEMPORARY DIVERSION DITCHES	DAILY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REPAIR/RESHAPE AS NECESSARY. REVIEW CONDITIONS IF REPETITIVE FAILURES OCCUR.
TEMPORARY SEDIMENT TRAPS/BASINS	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REMOVE SEDIMENT WHEN IT REACHES 1/2 OF THE MINIMUM REQUIRED WET STORAGE VOLUME.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.2"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RESEED AND MULCH.



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.

2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

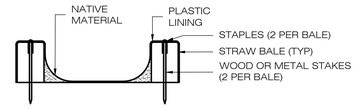
3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.

4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

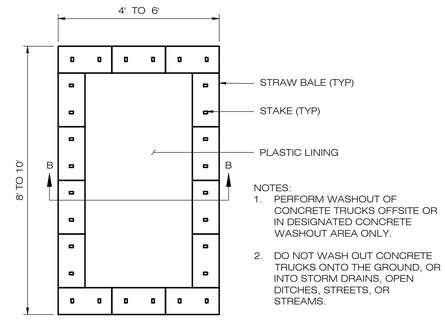
5. ANY SOIL IN STOCKPILES IN EXCESS OF SEVEN (7) DAYS SHALL BE SEEDED AND MULCHED OR COVERED.

1 EC-1 TEMPORARY STOCKPILE DETAIL

SCALE : N.T.S.



SECTION B



PLAN VIEW

NOTES:
1. PERFORM WASHOUT OF CONCRETE TRUCKS OFFSITE OR IN DESIGNATED CONCRETE WASHOUT AREA ONLY.
2. DO NOT WASH OUT CONCRETE TRUCKS ONTO THE GROUND, OR INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
3. DO NOT ALLOW EXCESS CONCRETE TO BE DUMPED ONSITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREA.

2 EC-1 CONCRETE WASHOUT DETAIL

SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
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D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
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DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS
NEW CANAAN NORTHWEST

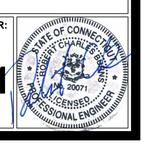
SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

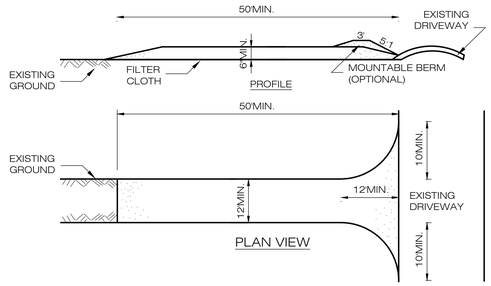
APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:
CHECKED BY: RCB

SHEET TITLE:
EROSION CONTROL NOTES

SHEET NUMBER:
EC-1

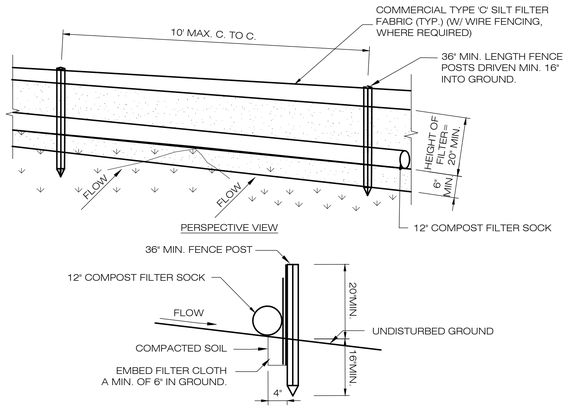




CONSTRUCTION SPECIFICATIONS:

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

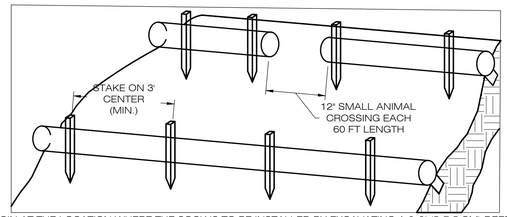
1 (CE) CONSTRUCTION ENTRANCE DETAIL
EC-2 SCALE : N.T.S.



CONSTRUCTION SPECIFICATIONS

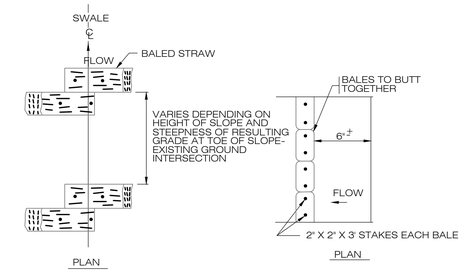
1. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

2 GEOTEXTILE SILT FENCE/FILTER SOCK DETAIL
EC-2 SCALE : N.T.S.



1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP SLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPHILL SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT SOCK.
3. SECURE THE SOCK WITH 18-24" (45.7-61 CM) STAKES EVERY 3-4' (0.9 -1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE SOCK. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

3 COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER
EC-2 SCALE : N.T.S.



NOTE:
TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE TOE OF THE EMBANKMENT.

NOTE:
TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF THE EMBANKMENT

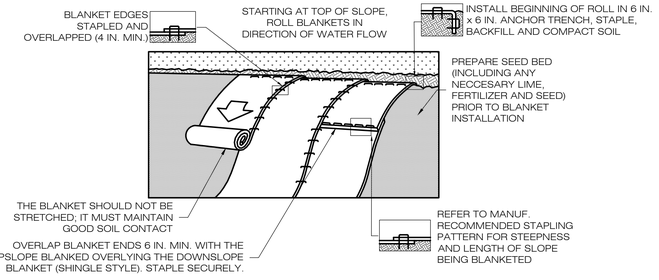
4 STRAW BALE CHECK DAM SEDIMENTATION CONTROL BARRIER
EC-2 SCALE : N.T.S.

EROSION CONTROL BLANKET INSTALLATION

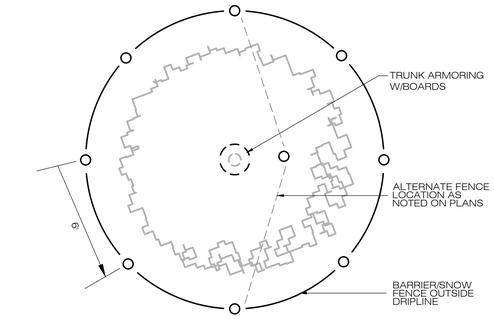
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPS IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECPS EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPS WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" PORTION OF RECPS BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECPS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECPS.
3. ROLL THE RECPS DOWN HORIZONTALLY ACROSS THE SLOPE. RECPS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL RECPS MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON THE RECPS TYPE.
5. CONSECUTIVE RECPS SPLICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECPS WIDTH.

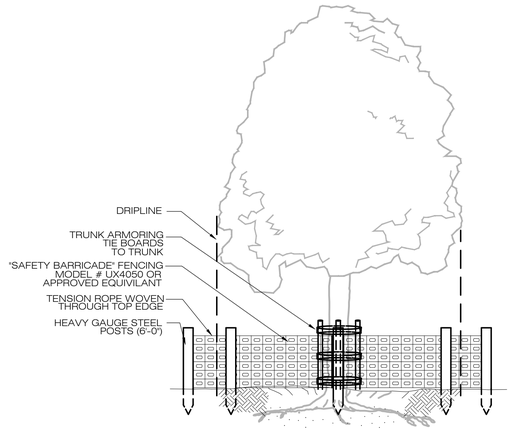
NOTES:

1. BLANKETS MUST USE 100% NATURAL FIBER BLANKETS.
2. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
5. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.



5 EROSION CONTROL BLANKET STEEP SLOPES
EC-2 SCALE : N.T.S.





6 TREE PROTECTION
EC-2 SCALE : N.T.S.

HOMELAND TOWERS, LLC
9 HARMONY STREET
2nd FLOOR
DANBURY, CT 06810
(203) 297-6345

at&t
340 MOUNT KEMBLE AVENUE
MORRISTOWN, NEW JERSEY 07960

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
1		
2		
3		
4		
5		
6		
7		
8		

DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE311 WATERFORD, CT 06385

DEVELOPER: HOMELAND TOWERS, LLC
ADDRESS: 9 HARMONY STREET 2ND FLOOR DANBURY, CT 06810

HOMELAND TOWERS NEW CANAAN NORTHWEST

SITE ADDRESS: 1837 PONUS RIDGE ROAD NEW CANAAN, CT 06840

APT FILING NUMBER: CT283860

DATE: 09/14/23 | DRAWN BY:
CHECKED BY: RCB

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
EC-2

STATE OF CONNECTICUT ROBERT C. BURNS 20071 LICENSED PROFESSIONAL ENGINEER

DESIGN BASIS:

GOVERNING CODES/DESIGN STANDARDS:

2015 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2018 CONNECTICUT STATE BUILDING CODE
ASCE 7-10
TIA-222-H

DESIGN CRITERIA:

RISK CATEGORY (CANOPY) :	II	(IBC 2015 TABLE 1604.5)
RISK CATEGORY (MOUNTS):	II	(TIA-222-H, TABLE 2-1)

WIND LOADS:

ULTIMATE BASIC WIND SPEED, V_{ULT}: (3-SECOND GUST)	130 MPH	(2018 CSBC APPENDIX N)
EXPOSURE CATEGORY	C	(2015 IBC SEC. 1609.4.3)

ICE LOAD

BASIC WIND SPEED (V_i) = W/ ICE 3-SEC GUST	50 MPH	(TIA-222-H, ANNEX B)
DESIGN ICE THICKNESS (T_i) =	1.00"	(TIA-222-H, ANNEX B)

LIVE LOAD

ROOF LIVE LOAD, (LLR)	20 PSF	(IBC 2015 TABLE 1607.1)

SNOW LOAD

GROUND SNOW LOAD (P_G) =	30 PSF	(2018 CSBC APPENDIX N)
ROOF SNOW LOAD (P_F) =	30 PSF	(MIN. PER 2018 CSBC ADD 1608.1.1) (ASCE 7-10 EQ. 7.3-1, SEC 7.3.4)

SEISMIC LOAD:

REFER TO SECTION 1613 OF THE 2015 IBC/2018 CONNECTICUT STATE BUILDING CODE FOR SEISMIC CLASSIFICATION AND LOADING DETERMINATION.

01 GENERAL:

ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:

ACI	AMERICAN CONCRETE INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWS	AMERICAN WELDING SOCIETY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN STANDARDS AND TESTING METHODS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
ICC-ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL	UNDERWIRTERS LABORATORIES
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS.

THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY IN, ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APPROPRIATE OR REQUIRED TO AVOID CONFLICTS. RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS. COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNER'S SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AHJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED PRIOR TO COMMENCING ANY WORK.

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTRACTOR SHALL VISIT THE SITE TO MANAGE AND GAIN APPROVAL FOR ALL TENANT DISRUPTIONS, POWER OUTAGES, WORK SCHEDULES, DEFINITION OF WORK AREA AND WORK STORAGE, PROPER BUILDING/SITE ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING/SITE MANAGEMENT PRIOR TO ALL WORK. ANY DISRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE IMPLEMENTED ONLY UPON WRITTEN APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING ANY HAZARD AFFECTING TENANT EGRESS OR COMPROMISING SITE SECURITY MEASURES.

PRIOR TO ALL BELOW-GRADE WORK AND ANY SURFACE WORK IN A NEW AREA FOR STRUCTURES OR VEHICLES, CONTRACTOR SHALL ENGAGE A MARKOUT SERVICE TO IDENTIFY ANY UNDERGROUND STRUCTURES, CONDUITS, AND PIPELINES IN THE AREA. ALL EXISTING SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UNDERGROUND UTILITIES IDENTIFIED OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN DIGGING OR EXCAVATING IN ANY MANNER AROUND OR NEAR SUCH UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPAIRS, REPLACEMENT, AND ALL DAMAGES DUE TO DAMAGE OF UTILITIES BY HIS OPERATIONS.

ALL EXISTING AND NEW EQUIPMENT AND MATERIAL LOCATIONS, ROUTING, ORIENTATION, MOUNTING, SPECIFICATIONS AND GENERAL INSTALLED CHARACTERISTICS SHALL BE CONSIDERED DIAGRAMMATIC ON THE PLANS. EXACT CONDITIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO ANY INSTALLATION. ANY DIFFERENCES THAT MAY CAUSE SCHEDULE, COST, OR QUALITY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER PRIOR TO ANY WORK.

ALL REFERENCES HEREIN TO VERIFICATION OF ANY CONDITION OF SITE, FIELD, PLANS, OR SPECIFICATIONS PRIOR TO ANY WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. ANY AND ALL ADDITIONS, MODIFICATIONS, CHANGES, REPAIR, OR DEMOLITION AS A RESULT OF FAILURE TO BRING ANY EXISTING CONDITION PROPERLY TO THE ATTENTION OF THE OWNER OR ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR WITHOUT DELAY, COST, OR CHANGES IN QUALITY.

ALL NOTES THIS SHEET SHALL APPLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE INCLUDED DRAWINGS OR IN SEPARATE PROJECT SPECIFICATIONS AS APPLICABLE. ALL SPECIFICATIONS SHALL BE CONSIDERED REQUIRED UNLESS APPROVED EQUAL BY THE OWNER, CONSTRUCTION MANAGER, OR ENGINEER AS APPLICABLE.

THE WORDS "PROVIDE" OR "INSTALL" SHALL MEAN FURNISH AND INSTALL.

CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF HIS WORK. ANY PATCHING SHALL MATCH EXISTING SURROUNDING AREA IN ALL RESPECTS. ALL REMOVED MATERIAL SHALL BE REMOVED FROM THE PREMISES DAILY IN AN APPROVED SAFE MANNER.

ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE PROMPTLY WHEN DEEMED TO BE SURPLUS.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK AND NEWLY INSTALLED OR EXISTING WORK, INCLUDING PROTECTION OF THE SITE, ALL STRUCTURES, AND ALL OCCUPANTS. FURNISH, INSTALL, MAINTAIN, AND REMOVE AS APPROPRIATE, ALL APPROPRIATE BARRIERS, SAFETY GUARDS, SIGNAGE, AND SECURITY AS REQUIRED.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR RESPECTIVE FEES, PERMITS, INSPECTIONS, TESTING, CERTIFICATES, AND ALL MANAGEMENT OF SAME REQUIRED FOR COMPLETION OF AND LEGAL OCCUPANCY OF THE FINISHED PROJECT.

ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP BY THEM TO BE FREE OF DEFECTS AND MAINTAINED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION BY THE OWNER AND ENGINEER.

ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

ANY DEVIATION, MODIFICATION, ADDITION, OR CHANGE IN DESIGN SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER OR ENGINEER.

ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR DEFECT, AND SUITABLE AND LISTED FOR THE INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR SPECIFICATIONS. ALL ITEMS OF EQUIPMENT OR MATERIAL THAT ARE OF ONE GENERIC TYPE SHALL BE ONE MANUFACTURER THROUGHOUT.

ALL MATERIALS, EQUIPMENT, TOOLS, AND ITEMS UNDER THE CONTRACTOR'S RESPONSIBILITY ON THE JOBSITE SHALL BE ADEQUATELY SECURED, MAINTAINED, AND PROTECTED, SO AS NOT TO BECOME DAMAGED OR CREATE ANY HAZARD TO PERSONNEL OR PROPERTY.

THE CONTRACTORS HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY THE OWNER.

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL OF HIS CREW AND INSURE THAT EVERY CREW MEMBER FOLLOWS SAVE WORK PRACTICES. SAFETY TRAINING SHALL INCLUDE, BUT NOT BE LIMITED TO, FALL PROTECTION, CONFINED SPACE ENTRY, ELECTRICAL SAFETY, AND TRENCHING/EXCAVATION SAFETY WHERE SUCH WORK IS EXECUTED OR ENCOUNTERED.

ALL TEMPORARY WORK REQUIRED OR SPECIFIED AS A PART OF THIS WORK, SHALL MEET ALL OF THE SAME REQUIREMENTS AS PERMANENT INSTALLATIONS, SHALL MEET ALL APPLICABLE CODE REQUIREMENTS, AND SHALL BE COMPLETELY REMOVED AFTER ITS PURPOSES HAVE BEEN SERVED.

ANY EXISTING UTILITY, SERVICE, STRUCTURE, EQUIPMENT, OR FIXTURE OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER.

IF ASBESTOS IS ENCOUNTERED DURING WORK EXECUTION, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND CEASE ALL ACTIVITIES IN AFFECTED AREAS UNTIL NOTIFIED BY THE CONSTRUCTION TO RESUME OPERATIONS.

EXIST. ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

04 CONCRETE:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

ALL CONCRETE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE (ACI) CODES 301 & 318, LATEST REVISION.

ALL CONCRETE USED SHALL BE 4000 PSI (28 DAY COMP STRENGTH). THE CONCRETE MIX SHALL BE BASED ON USING THE FOLLOWING MATERIALS AND PARAMETERS:

PORTLAND CEMENT:	ASTM C150, T1
AGGREGATE:	ASTM C33, 1 INCH MAX
WATER:	POTABLE
ADMIXTURE:	NON-CHLORIDE
AIR:	6%*
SLUMP:	4 INCH

*ALL CONCRETE EXPOSED TO FREEZING WEATHER SHALL CONTAIN ENTRAINED AIR PER ACI 211 TABLE 4.2.1 OF ACI 318-05.

ALL REINFORCING STEEL SHALL BE ASTM A615, GR 60 (DEFORMED). WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC. SPLICES SHALL BE CLASS 'B' AND ALL HOOKS SHALL BE ACI STANDARD UNO. REINFORCING BARS SHALL BE COLD BENT WHERE REQUIRED AND TIED (NOT WELDED).

THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL:

- CONCRETE CAST AGAINST EARTH = 3 IN.
- CONCRETE EXPOSED TO EARTH OR WEATHER:
  - #6 AND LARGER = 2 IN.
  - #5 AND SMALLER = 1 1/2 IN.
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
  - SLAB AND WALL = 3/4 IN.
  - BEAMS AND COLUMNS = 1 1/2 IN.

A 3/4 IN. CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

CONCRETE SHALL BE PLACED IN A UNIFORM MANNER AND CONSOLIDATED IN PLACE.

CONCRETE FOOTINGS SHALL BE CAST AGAINST LEVEL, COMPACTED, NON-FROZEN BASE SOIL FREE OF STANDING WATER.

05 ANCHORS:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

EXPANSION ANCHORS SHALL BE USED WHERE ATTACHING TO CONCRETE. MASONRY MOUNTS SHALL HAVE INJECTION ADHESIVE ANCHORING.

EXPANSION BOLTS SHALL BE HILTI KWIK BOLT 3 OR EQUAL. MINIMUM EMBEDMENT 4 INCHES.

INJECTION ADHESIVE ANCHORING IN MASONRY WITH VOIDS SHALL BE HILTI HIT HY-70 OR EQUAL WITH THREADED ROD AND SCREEN TUBES. ANCHORING IN BRICKS WITH HOLES SHALL HAVE ANCHORS SPACED 2 COMPLETE BRICKS APART MINIMUM, SHALL MAINTAIN 2 COMPLETE BRICKS OR 16 INCHES FROM FREE EDGES (WHICHEVER IS LESS), AND SHALL BE EMBEDDED 3-1/2 INCHES MINIMUM. ANCHORING IN HOLLOW CONCRETE BLOCK SHALL USE 50% MORE ANCHORS THAN SHOWN IN DETAIL, SHALL LIMIT ONE ANCHOR MAXIMUM PER BLOCK CELL, SHALL MAINTAIN 12" SPACING FROM FREE EDGES, AND SHALL BE EMBEDDED THROUGH FACE.

INJECTION ADHESIVE ANCHORING IN SOLID MASONRY AND GROUT FILLED BLOCK SHALL BE HILTI HIT HY-200 OR EQUAL WITH THREADED ROD. MAINTAIN 12 INCHES BETWEEN ANCHORS AND ALL FREE EDGES. MINIMUM SPACING BETWEEN ANCHORS IS 8 INCHES.

ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SHALL NOT BE INSTALLED IN MORTAR JOINTS.

GRATING SHALL BE ATTACHED USING FOUR GRATING CLAMPS OR 1/4 FILLET WELDS PER SECTION.

05 STEEL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

MATERIALS:

WIDE FLANGE	ASTM A992, GR 50
TUBING	ASTM A500, GR B
PIPE	ASTM A53, GR B
BOLTS	ASTM A325
GRATING	TYPE GW-2 (1-1/4"x3/16" BARS)
EXISTING METALS	ASTM A36

PROVIDE CERTIFICATION THAT WELDERS TO BE USED IN WORK ARE LICENSED AND HAVE SATISFACTORILY PASSED AWS QUALIFICATION TEST UNDER THE PROVISIONS OF APPENDIX D, PARTS II AND III OF THE AWS CODE FOR WELDING IN BUILDING CONSTRUCTION.

ALL BUILDING CONNECTION POINTS TO BE CENTERED ON EXISTING STRUCTURAL BEARING POINTS AND THE LOCATIONS ARE TO BE VERIFIED IN FIELD PRIOR TO THE FABRICATION OF STEEL.

DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF AISC SPECIFICATION FOR *"THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS"*.

NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.

ALL STEEL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS WITH A COATING WEIGHT OF 2 OZ/SF.

ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE."

DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY TOUCHING UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", OR "ZINC IT", IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION.

STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE MINIMUM 3/4" DIAMETER AND EACH CONNECTION SHALL HAVE MINIMUM TWO BOLTS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

ALL U-BOLTED CONNECTIONS SHALL BE COMPLETED WITH DOUBLE NUTS OR A LOCK WASHER.

CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS *"STANDARD QUALIFICATION PROCEDURES"*. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE LARGER OF 1/4" FILLET OR MINIMUM SIZE PER TABLE J2.4 IN THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE REGARDING DAMAGED GALVANIZED SURFACES.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AWS.

SEAL ALL PENETRATIONS AND SEAMS BETWEEN MASONRY AND STEEL WITH DOW CORNING 790 SILICONE BUILDING SEALANT OR EQUAL.

26 ELECTRICAL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

ALL ELECTRICAL CONDUCTORS:

- INSULATION SHALL BE MINIMUM 600V TYPE THHN, THWN-2, OR XHHW.
- BRANCH CIRCUIT CONDUCTORS SHALL BE SOFT DRAWN 98% MINIMUM CONDUCTIVITY PROPERLY REFINED COPPER.
- FEEDER CIRCUIT CONDUCTORS SHALL BE EITHER COPPER OR ALUMINUM OF THE APPROPRIATE SIZE FOR THE APPLICATION, OR AS SPECIFICALLY NOTED.
- PERMANENTLY LABEL OR TAG ALL CONDUCTORS WITH THEIR CIRCUIT DESIGNATION AT ALL TERMINATION ENDS, SPLICES, AND VISIBLE AS PASS-THROUGH IN ALL ENCLOSURES.

ALL CONDUIT, RACEWAY, WIREWAYS, DUCTS, ETC. SHALL BE LISTED AND SUITABLE FOR THE APPLICATION. ONLY THE FOLLOWING CONDUITS AS APPROVED AND LISTED FOR THE APPLICATION SHALL BE ACCEPTABLE:

- ELECTRICAL METALLIC TUBING (EMT).
- COMPRESSION COUPLINGS AND CONNECTORS ONLY MADE UP WRENCH TIGHT.
- FLEXIBLE METAL CONDUIT (FMC) AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC).
- FINAL CONNECTIONS TO VIBRATING OR ADJUSTABLE EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, HVAC UNITS, TRANSFORMERS, MOTORS, ETC. OR WHERE EQUIPMENT IS PLACED UPON SLAB ON-GRADE.
- RIGID GALVANIZED STEEL (RGS).
- ALL FITTINGS, CONNECTORS, AND COUPLINGS SHALL BE THREADED MADE UP WRENCH TIGHT.
- RIGID POLYVINYL CHLORIDE (PVC) SCHEDULE 40 OR SCHEDULE 80.
- MAY BE USED FOR SERVICES, EXTERIOR, BELOW GRADE, AND WET LOCATIONS.
- SHALL NOT BE USED IN CONCRETE SLABS NOR EXPOSED WITHIN A BUILDING OR STRUCTURE.
- METAL-CLAD CABLE (MC)
- CONCEALED INSTALLATIONS ONLY.
- WITHIN A DUCT WITH SMOOTH OR CORRUGATED METAL JACKET AND NO OUTER COVERING OVER THE METAL JACKET.

IN FINISHED SPACES, ALL CONDUITS SHALL BE CONCEALED EXCEPT TO MAKE A FINAL CONNECTION TO EQUIPMENT NOT MOUNTED IN OR AGAINST FINISH MATERIAL.

ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A SEPARATE PROPERLY SIZED AND MARKED GROUNDING CONDUCTOR, PER APPLICABLE CODES, THAT BONDS ALL ENCLOSURES, BOXES, ETC. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING CONDUCTOR.

IF EXISTING ELECTRIC SERVICE IS TO REMAIN, CONTRACTOR SHALL BE VERIFY THAT IT MEETS PROJECT REQUIREMENTS WITHOUT MODIFICATION. IF IT IS TO BE ADDED OR REPLACED AS A PART OF THIS WORK, CONTRACTOR SHALL ORDER FROM, COORDINATE WITH, AND GAIN APPROVAL FROM THE ELECTRICAL UTILITY. ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED AND AS APPROVED BY THE LOCAL UTILITY WHERE APPLICABLE.

ALL EQUIPMENT, ENCLOSURES, ETC. SHALL BE SUITABLE FOR THE INSTALLED ENVIRONMENT, MINIMUM NEMA 3R FOR ALL EXTERIOR INSTALLATIONS.

WIRING DEVICES SHALL BE SPECIFICATION GRADE AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED. COLOR SHALL BE IVORY. ALL DEVICES AND COVER PLATES SHALL BE OF THE SAME MANUFACTURER.

ALL FIRE-RATED PENETRATIONS SHALL BE SEALED USING A SUITABLE AND LISTED FIRE SEALING DEVICE OR GROUT THAT WILL MAINTAIN THE FIRE RATING OF THE STRUCTURE PENETRATED.

PROVIDE PERMANENTLY AFFIXED ENGRAVED NAMEPLATES FOR ALL CODE REQUIRED LABELING AND ON ALL PANELS, METERING, DISCONNECTS, AND ELECTRICAL EQUIPMENT THAT IDENTIFIES EQUIPMENT SERVED, ELECTRICAL SOURCE WITH CIRCUIT IDENTIFICATION, AND VOLTAGES WITHIN.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL FINAL TERMINATIONS TO ALL EQUIPMENT.

ALL ELECTRICAL APPURTENANCES THAT ARE DISCONNECTED SHALL BE COMPLETELY REMOVED WITH EXISTING STRUCTURES TO REMAIN, REPAIRED, FINISHED, FILLED, PAINTED, ETC. ALL PANEL SCHEDULES, EQUIPMENT LABELING, AND CODE-REQUIRED LABELING, SHALL BE VERIFIED AND PROPERLY COMPLETED TO MATCH THE INSTALLATION.

26 GROUNDING:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

GROUND ALL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH BEST INDUSTRY PRACTICE, THE REQUIREMENTS OF THE NFPA 70 NATIONAL ELECTRICAL CODE (NEC), AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

ALL GROUNDING ELECTRODES PRESENT AT EACH SERVICE LOCATION SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.

ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED BY THE INSTALLATION OF A SEPARATE GROUNDING CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS THAT IS SIZED PER CODE OR IS OF THE SIZE INDICATED ON THE DRAWINGS, SHALL BE CONTINUOUS IN LENGTH, AND SHALL BE BONDED TO EACH ENCLOSURE PASSED THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING WIRE OR CIRCUIT.

BOND ALL METALLIC CONDUITS TOGETHER THAT ARE CONNECTED TO NON-METALLIC ENCLOSURES, IN-GROUND BOXES, AND TO AN ENCLOSURE WHERE A GROUND BUS IS SPECIFIED OR SUPPLIED. ACCOMPLISH THIS BOND WITH GROUNDING CONDUCTORS MINIMUM SIZED TO THE LARGEST GROUNDING CONDUCTOR PRESENT IN THE ENCLOSURE CONNECTED TO A GROUNDING TYPE BUSHING EQUALLY SIZED OR MAXIMUM GROUND WIRE ACCOMMODATION AVAILABLE IN STANDARD MANUFACTURE FOR THE CONDUIT SIZE, WHICHEVER IS LESS.

EQUIPMENT GROUNDING AND LOAD SIDE BONDING CONDUCTORS SHALL BE SIZED PER THE CIRCUIT'S OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUIT'S OCPD, INCREASE THE GROUNDING CONDUCTOR PROPORTIONATELY TO THE CROSS-SECTIONAL AREA OF THE UNGROUNDED CONDUCTORS.

SERVICE MAIN BONDING JUMPERS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED AND INSTALLED PER THE MINIMUM OF ALL APPLICABLE CODES AND REGULATIONS.

26 LIGHTNING PROTECTION:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS AND THE GROUNDING SPECIFICATIONS HEREIN.

THE LIGHTNING PROTECTION GROUNDING SYSTEM (LPGS) SHALL CONSIST OF BONDING ALL EQUIPMENT AND CONDUCTIVE STRUCTURES TO LOCALIZED SINGLE-POINT GROUNDING CONNECTIONS (TYPICALLY GROUND BARS) WHICH ARE BONDED TOGETHER AND TO AN IN-GROUND SYSTEM. IF THE LPGS IS ON A BUILDING, IT SHALL BE EFFECTIVELY BONDED TO THE ELECTRICAL SERVICE MAIN BONDING JUMPER AND TO ADDITIONAL IN-GROUND ELECTRODES AS MAY BE REQUIRED OR INDICATED. IF THE LPGS IS ON A DEDICATED COMMUNICATION SITE, ALL EQUIPMENT AREAS AND TOWERS SHALL EACH HAVE THEIR OWN IN-GROUND RING WITH EVERY RING BONDED TOGETHER, AND ALL CONDUCTIVE STRUCTURES IN CLOSE PROXIMITY (FENCES, ICE BRIDGES, ISOLATED EQUIPMENT, ETC.) ALSO BONDED TO PROVIDE A COMMON ELECTRICAL EQUIPOTENTIAL SYSTEM FOR ALL CONDUCTIVE ELEMENTS AND STRUCTURES.

CONDUCTORS:

- MIN #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL IN-GROUND CONDUCTORS.
- MIN #2 AWG COPPER GREEN STRANDED FOR BONDING STRUCTURES, AND FOR INTER-SYSTEM BONDING OF INDIVIDUAL ELEMENTS SUCH AS GROUND BAR TO GROUND BAR.
- MIN #6 AWG COPPER GREEN STRANDED OR ALL EQUIPMENT BONDING.
- INSTALL ALL IN-GROUND CONDUCTORS IN THE SAME HORIZONTAL PLANE OR IN A DOWNWARD DIRECTION AWAY FROM THE TOWER AND EQUIPMENT AREAS.
- AVOID LONG RUNS. MAKE DIRECT RUNS AS MUCH AS POSSIBLE.
- PLACE THROUGH NON-METALLIC SLEEVES WHEN PASSING THROUGH FLOORS, WALLS, CEILINGS, AND SIMILAR STRUCTURES.
- MAKE ALL CONNECTIONS IN CONTACT WITH EARTH WITH EXOTHERMIC WELDING. MAKE ALL OTHER CONNECTIONS WITH EXOTHERMIC WELDING, IRREVERSIBLE COMPRESSION CONNECTORS, OR LISTED COMPRESSION TWO-HOLE LUGS.
- INSTALL ALL CONDUCTORS WITH A MINIMUM 18 INCH BEND RADIUS AND NO BEND LONGER THAN A 90 DEGREE ARC. ALL BENDS SHALL BE HORIZONTAL, OR DOWNWARD TOWARDS EARTH.
- ALL CONDUCTORS PASSING FROM ABOVE-GROUND TO IN-GROUND CONNECTIONS, WHERE EXPOSED, SHALL BE COVERED AND PROTECTED WITH A NON-METALLIC CONDUIT SEALED AT BOTH ENDS.
- IF 2 OR MORE IN-GROUND CONDUCTOS ARE IN THE SAME PATH (2 RINGS OVERLAPPING, BONDING FOLLOWING ANOTHER RING OR RADIAL, OR SIMILAR), COMBINE WITH A SHARED SINGLE CONDUCTOR.

EQUIPMENT AND TOWER GROUND RINGS SHALL BE:

- BONDED TO ANY CONDUCTIVE OBJECT OR STRUCTURE WITHIN 5 FEET OF EQUIPMENT GROUND RINGS AND WITHIN 20 FEET OF TOWER GROUND RINGS.
- INSTALLED MINIMUM 18 INCHES FROM FOUNDATIONS, FOOTINGS, AND SIMILAR.

INSTALL ALL IN-GROUND RINGS, RADIALS, BONDS CONNECTING THEM, AND ALL SIMILAR GROUNDING:

- MIN 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE, WHICHEVER IS GREATER DEPTH.
- MIN 2 FEET FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND SIMILAR STRUCTURES, EXCEPT WHEN MAKING A BOND TO ANY OF THESE STRUCTURES. DO NOT BOND TO FOUNDATION INTERNAL REINFORCEMENT.

ALL EQUIPMENT GROUPED IN A COMMON AREA, COMPOUND, STRUCTURE, OR SIMILAR SHALL BE BONDED TO A SINGLE-POINT GROUND, PREFERABLY AN ISOLATED GROUND BAR. BOND THE GROUND BAR TO THE SYSTEM WITH MINIMUM SINGLE BONDING CONDUCTOR. IF BONDING TO AN IN-GROUND RING, INSTALL 2 BONDING CONDUCTORS MINIMUM WITH EACH CONDUCTOR INSTALLED DIRECTIONALLY AWAY FROM EACH OTHER AND PARALLEL TO THE IN-GROUND CONDUCTOR, WITH NO TEE CONNECTIONS.

TOWER GROUNDING:

- EACH TOWER LEG SHALL BE BONDED TO ITS RING. SINGLE-LEGGED TOWERS, OR MONOPOLES, SHALL HAVE 2 BONDS ON OPPOSITE SIDES.
- BOND TO TOWER BASE, NOT TO VERTICAL TOWER STRUCTURE, AWAY FROM TOWER MOUNTING HARDWARE.
- EACH BOND SHALL HAVE A CORRESPONDING GROUND ROD ON THE RING.
- EACH BOND SHALL CONSIST OF 2 CONDUCTORS FROM THE TOWER TO ITS RING WITH EACH CONDUCTOR DIRECTED IN OPPOSITE DIRECTIONS WITH A PARALLEL CONNECTION ON THE RING ON OPPOSITE SIDES OF THE GROUND ROD.

EQUIPMENT AREA GROUNDING:

- COMMUNICATION AREAS ON EARTH SHALL HAVE A GROUND RING.
- BOND ALL EQUIPMENT TO A SINGLE-POINT GROUND (GROUND BAR).
- BOND THE EQIPMENT SINGLE-POINT GROUND TO THE EQUIPMENT GROUND RING WITH MINIMUM 2 CONDUCTORS DIRECTED IN OPPOSITE DIRECTIONS WITH PARALLEL CONNECTIONS ON THE RING.
- IF EQUIPMENT IS ENCLOSED IN A SHELTER:
- IF THE SHELTER IS CONSIDERED TO BE EXPOSED TO A DIRECT LIGHTNING STRIKE, INSTALL A BUILDING LIGHTNING PROTECTION SYSTEM PER APPLICABLE VERSION OF NFPA 780.
- BOND ALL FIXED CONDUCTIVE BUILDING COMPONENTS TOGETHER AND TO THE BUILDING RING GROUND AT THE CORNERS. THIS IS TYPICALLY CALLED THE HALO GROUND. DO NOT BOND EQUIPMENT TO THE HALO GROUND.
- BOND ALL EQUIPMENT TOGETHER TO A SINGLE-POINT OR INTERIOR EQUIPMENT RING GROUND (IEGR). BOND THE SINGLE-POINT OR IEGR TO THE EXTERNAL EQUIPMENT RING GROUND.
- PLACE GROUND RODS AT THE EQUIPMENT GROUND RING CORNERS.

GROUND RODS:

- SEPARATION SPACE BETWEEN ANY 2 GROUND RODS SHALL BE NO CLOSER THAN THEIR DEPTH. THIS APPLIES TO ALL RODS IN THE COMPLETE SYSTEM.
- DRIVE VERTICALLY IN UNDISTURBED SOIL WITH THE TOP AT SAME DEPTH AS THE IN-GROUND CONDUCTOR. IF NOT POSSIBLE TO INSTALL VERTICALLY, PLACE AS CLOSE TO VERTICAL AS POSSIBLE AND IN A DIRECTION AWAY FROM THE NEAREST ABOVE-GROUND CONDUCTIVE ELEMENT (TOWER, EQUIPMENT, ETC.).

RADIALS (TYP. NEW DEDICATED COMMUNICATION SITES):

- WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL A MINIMUM OF 4, MAXIMUM 10 RING RADIALS.
- EACH RADIAL'S LENGTH SHALL BE MIN 20 FT, MAX 80 FT.
- EXTEND RADIALS PERPENDICULAR FROM RINGS IN AS STRAIGHT LINE AS POSSIBLE, AWAY FROM OTHER RING GROUNDS, RADIALS, BONDS, AND SIMILAR.
- A COMMON PRACTICE IS TO PLACE 4 RADIALS FROM THE TOWER RING TO THE 4 CORNERS OF THE AVAILABLE AREA.

AT A MINIMUM, BOND ALL COMPOUND CONDUCTIVE FENCE CORNER POSTS AND GATE POSTS TO THE LPGS. PREFERABLY, INSTALL A GROUND RING THAT FOLLOWS THE FENCE LINE, BONDING ALL POSTS TO THE RING.

27 ANTENNAS & CABLES:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNT AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER. COORDINATE LENGTH OF JUMPER CABLES WITH OWNER. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH OWNER PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.

AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM / SWEEP TESTED FOR PROPER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR SHALL OBTAIN AND USE LATEST TESTING PROCEDURES FROM OWNER OR MANUFACTURER PRIOR TO BIDDING.

ANTENNA CABLES SHALL BE UNIQUELY COLOR-CODED AT THE ANTENNAS, BOTH SIDES OF EQUIPMENT SHELTER WALL, AND JUMPER CABLES AT THE EQUIPMENT.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS, ASSOCIATED CABLE MOUNTING AND GROUNDING HARDWARE, WALL MOUNTS, STANDOFFS, AND ALL ASSOCIATED HARDWARE TO INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURER'S AND OWNER'S SPECIFICATIONS.

ANTENNA CABLES SHALL BE FOAM DIELECTRIC COAXIAL CABLES AS FOLLOWS:

- BASE STATION ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 100 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 100 FT.
  - GPS ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 200 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 200 FT.

MINIMUM BENDING RADIUS FOR COAXIAL CABLES SHALL BE:

- 15 FT FOR 7/8" COAXIAL CABLES.
- 25 FT FOR 1-5/8" COAXIAL CABLES.

CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.

ALL EXTERIOR CABLE CONNECTIONS SHALL BE COVERED WITH A WATERPROOF SPLICING KIT.

CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.

CABLE SHALL BE FURNISHED AND INSTALLED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

27 CABLE TRAY:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.

CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.

CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORDANCE WITH NEC AND NEMA 11-15-84.

CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC. OR EQUAL.

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

31 EXCAVATION & FILL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CONTRACTOR SHALL GRADE ONLY AREAS SHOWN TO BE MODIFIED AS A PART OF THIS WORK AND ONLY TO THE EXTENT REQUIRED TO SHED OVERLAND WATER FLOW AWAY FROM SITE. ALL MADE SLOPES SHALL NOT BE STEEPER THAN 3:1 (HORIZONTAL:VERTICAL). SEDIMENTATION AND EROSION CONTROLS SHOWN AND SPECIFIED SHALL BE ESTABLISHED BEFORE STRIPPING EXISTING VEGETATION.

ORGANIC MATERIAL AND DEBRIS SHALL BE STRIPPED AND STOCKPILED BEFORE ADDING FILL MATERIAL.

NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

ALL FILL SHALL BE PLACED IN ONE FOOT LIFTS AND COMPACTED IN PLACE. STRUCTURAL FILL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DRY UNIT WEIGHT TESTED IN ACCORDANCE WITH ASTM D1557.

EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE CONSTRUCTION MANAGER.

TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.

TOWER FOUNDATION EXCAVATION, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH TOWER MANUFACTURER'S DESIGNS AND SPECIFICATIONS.

NATIVE GRAVEL MATERIAL MAY BE USED FOR TRENCH BACKFILL WHERE SELECT MATERIAL IS NOT SPECIFIED. GRAVEL MATERIAL FOR CONDUIT TRENCH BACKFILL SHALL NOT CONTAIN ROCK GREATER THAN 2 INCHES IN DIAMETER.

BANK OR CRUSHED GRAVEL SHALL CONSIST OF TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE OF SOFT, THIN, ELONGATED OR LAMINATED PIECES AND MEET THE SPECIFIED GRADATION.

PROCESSED AGGREGATE BASE SHALL CONSIST OF COURSE AND FINE AGGREGATES COMBINED AND MIXED SO THAT THE RESULTING MATERIAL CONFORMS TO THE GRADATION. COURSE AGGREGATE SHALL BE EITHER GRAVEL OR BROKEN STONE AND FINE AGGREGATE SHALL CONSIST OF SAND.

BANK GRAVEL FILL SHALL PASS WITH THE FOLLOWING SIZE SQUARE MESH SIEVES:

25-60% WITH PASS 1/4"
15-45% WITH PASS #10
2-25% WITH PASS #40
0-10% WITH PASS #100
0-5% WITH PASS #200

BANK GRAVEL BASE SHALL PASS WITH THE FOLLOWING SIZE SQUARE MESH SIEVES:

100%	WITH PASS 5"
100%	WITH PASS 3-1/2"
100%	WITH PASS 2-1/4"
95-100%	WITH PASS 2"
55-100%	WITH PASS 1-1/2"
25-60%	WITH PASS 1/4"
15-45%	WITH PASS #10
5-25%	WITH PASS #40
0-10%	WITH PASS #100
0-5%	WITH PASS #200

PROCESSED AGG BASE SHALL PASS WITH THE FOLLOWING SIZE SQUARE MESH SIEVES:

90-100%	WITH PASS 3-1/2"
55-95%	WITH PASS 1-1/2"
50-75%	WITH PASS 3/4"
25-45%	WITH PASS 1/4"
5-20%	WITH PASS #40
2-12%	WITH PASS #100

FILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, ICE, TRASH AND DEBRIS. REFER TO GEOTECHNICAL ENGINEERING AS APPLICABLE FOR ALL FILL MATERIAL REQUIREMENTS.

31 SEDIMENTATION & EROSION CONTROL:

THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE TOWN OF PERMITTEE AND/OR SWPCP MONITOR. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE SUCH AS TEMPORARY SEDIMENT TRAPS OR GRASS FILTERS WITHIN THE APPROVED LIMIT OF DISTURBANCE. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE ENGINEER.

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXIST. SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENTATION CONTROL.

LIMITS OF CLEARING AND GRUBBING SHALL BE CLEARLY MARKED BEFORE COMMENCING WITH SUCH WORK.

SEDIMENTATION AND EROSION CONTROL (SEC) MEASURES SHOWN SHALL BE INSTALLED PRIOR TO LAND CLEARING, EXCAVATION OR GRADING OPERATIONS. REQUIREMENTS OF LOCAL WETLAND AGENCY SHALL BE MET PRIOR TO EARTHWORK OPERATIONS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN SEC MEASURES THROUGHOUT DURATION OF PROJECT UNTIL DISTURBED LAND IS THOROUGHLY VEGETATED.

FAILURE OF THE SEC SYSTEMS SHALL BE CORRECTED IMMEDIATELY AND SUPPLEMENTED WITH ADDITIONAL MEASURES AS NEEDED.

TOPSOIL SHALL BE SPREAD TO FINISH GRADES AND SEEDED AS SOON AS FINISHED GRADES ARE ESTABLISHED. STRAW MULCH, JUTE NETTING OR MATS SHALL BE USED WHERE THE NEW SEED IS PLACED.

VEGETATIVE SEEDING:

- AREA TO BE SEEDED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF 3". TOPSOIL SHALL BE LOOSENED BY RAKING OR DISKING BEFORE SEEDING. APPLY 50 Lbs. OF DOLOMITIC LIMESTONE AND 25 Lbs. OF 10-10-10 FERTILIZER PER 1000 SF. HARROW LIME AND FERTILIZER INTO LOOSE SOIL.
- APPLY COMMON BERMUDA AND RYE GRASS AT 50 LBS PER ACRE. USE CYCLONE SEED DRILL CULTIPACKER SEEDER OR HYDROSEEDER (SEED & FERTILIZER SLURRY) FOR STEEP SLOPES. IRRIGATE UNTIL VEGETATION IS COMPLETELY ESTABLISHED.

ENVIRONMENTAL NOTES - RESOURCES PROTECTION MEASURES

WETLAND, RARE SPECIES, INVASIVE SPECIES CONTROL PLAN, AND PUBLIC WATER SUPPLY WATERSHED PROTECTION PROGRAM

AS A RESULT OF THE PROJECT'S LOCATION IN THE VICINITY OF SENSITIVE WETLAND RESOURCES, RARE SPECIES HABITAT, AND WITHIN A PUBLIC WATER SUPPLY WATERSHED, THE FOLLOWING BEST MANAGEMENT PRACTICES ("BMPS") SHALL BE IMPLEMENTED BY THE CONTRACTOR TO AVOID UNINTENTIONAL IMPACTS TO THESE RESOURCES DURING CONSTRUCTION ACTIVITIES. BMP'S ASSOCIATED WITH THESE RESOURCES WILL BE IMPLEMENTED REGARDLESS OF THE TIME OF YEAR WHILE SOME OF THE RARE SPECIES PROTECTION MEASURES COINCIDE WITH SPECIES ACTIVITY/INACTIVITY DATES.

LITTLE BROWN BAT (*MYOTIS LUCIFUGUS*), RED BAT (*LASIURUS BOREALIS*), AND EASTERN BOX TURTLE (*TERRAPENE CAROLINA CAROLINA*), ALL STATE-LISTED RARE SPECIES AFFORDED PROTECTION UNDER THE CONNECTICUT ENDANGERED SPECIES ACT, MAY BE INFLUENCED BY ACTIVITIES WITHIN THE PROPOSED PROJECT AREA. THE RARE SPECIES PROTECTION MEASURES INCLUDED HEREIN SATISFY REQUIREMENTS FROM THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION ("DEEP") WILDLIFE DIVISION IN ACCORDANCE WITH THEIR NATURAL DIVERSITY DATA BASE ("NDDB") DETERMINATION LETTER (NO. 202112676) DATED JANUARY 7, 2022; THIS DETERMINATION IS VALID UNTIL JANUARY 7, 2024 PROVIDED THE SCOPE OF THE PROJECT HAS NOT CHANGED AND WORK HAS BEGUN ON THE PROJECT PRIOR TO THE EXPIRATION DATE. THE PROTECTION MEASURES RECOMMENDED HEREIN FOR PROTECTION OF LITTLE BROWN BAT AND RED BAT WOULD ALSO BE EQUALLY PROTECTIVE OF NORTHERN LONG-EARED BAT ("NLEB"; *MYOTIS SEPTENTRIONALIS*), A STATE ENDANGERED AND FEDERAL THREATENED SPECIES, ALTHOUGH NLEB WAS NOT IDENTIFIED IN THE NDDB DETERMINATION LETTER AS A SPECIES OF CONCERN FOR THIS PROJECT.

THE PUBLIC WATER SUPPLY WATERSHED PROTECTION MEASURES INCLUDED HEREIN SATISFY SOME OF THE CONCERNS AND RECOMMENDATIONS FROM THE DRINKING WATER SECTION OF THE DEPARTMENT OF PUBLIC HEALTH AS NOTED IN THEIR JUNE 1, 2022 LETTER TO THE CONNECTICUT SITING COUNCIL (DOCKET NO. 509). THIS PROJECT IS CONTAINED WITHIN THE PUBLIC WATER SUPPLY WATERSHED OF LAUREL RESERVOIR, AN ACTIVE SOURCE OF DRINKING WATER FOR AQUARION WATER COMPANY (PWSID CT1350011), WITH LAUREL RESERVOIR LOCATED ±70 FEET SOUTHWEST AND DOWNGRADIENT FROM THE PROPERTY LINE OF THE PROPOSED ACTIVITY.

IT IS OF THE UTMOST IMPORTANCE THAT THE CONTRACTOR COMPLIES WITH THE REQUIREMENT FOR THE INSTALLATION OF PROTECTIVE MEASURES AND THE EDUCATION OF ITS EMPLOYEES AND SUBCONTRACTORS PERFORMING WORK ON THE PROJECT SITE. ALL-POINTS TECHNOLOGY CORPORATION, P.C. ("APT") WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT THESE PROTECTION MEASURES ARE IMPLEMENTED PROPERLY AND WILL PROVIDE AN EDUCATION SESSION ON THE PROJECT'S PROXIMITY TO SENSITIVE WETLAND RESOURCES, RARE SPECIES, AND THE SITE'S LOCATION WITHIN A PUBLIC WATER SUPPLY WATERSHED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONTACT DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST AT APT, AT LEAST 5 BUSINESS DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. MR. GUSTAFSON CAN BE REACHED BY PHONE AT (860) 552-2033 OR VIA EMAIL AT DGUSTAFSON@ALLPOINTSTECH.COM.

THE AQUARION WATER COMPANY WILL BE CONTACTED AT LEAST 3 BUSINESS DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING WITH AN INVITATION TO ATTEND THE PRE-CONSTRUCTION MEETING. THE AQUARION WATER COMPANY PERSONNEL SHALL ALSO BE ALLOWED TO PERIODICALLY INSPECT THIS PROJECT DURING CONSTRUCTION TO ENSURE THAT DRINKING WATER QUALITY IS NOT BE ADVERSELY IMPACTED.

THIS RESOURCES PROTECTION PROGRAM CONSISTS OF SEVERAL COMPONENTS INCLUDING: EDUCATION OF ALL CONTRACTORS AND SUB-CONTRACTORS PRIOR TO INITIATION OF WORK ON THE SITE; INSTALLATION OF EROSION CONTROLS; PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION; PROTECTIVE MEASURES; RARE SPECIES PROTECTION MEASURES; INVASIVE SPECIES CONTROL PLAN, HERBICIDE, PESTICIDE, AND SALT RESTRICTIONS; AND, REPORTING.

1. CONTRACTOR EDUCATION:

   a. PRIOR TO WORK ON SITE AND INITIAL DEPLOYMENT/MOBILIZATION OF EQUIPMENT AND MATERIALS, THE CONTRACTOR SHALL ATTEND AN EDUCATIONAL SESSION AT THE PRE-CONSTRUCTION MEETING WITH APT. THIS ORIENTATION AND EDUCATIONAL SESSION WILL CONSIST OF INFORMATION SUCH AS, BUT NOT LIMITED TO: IDENTIFICATION OF WETLAND RESOURCES PROXIMATE TO WORK AREAS, CONNECTICUT AND FEDERAL LISTING STATUS OF SPECIES THAT COULD BE ENCOUNTERED, TYPICAL SPECIES BEHAVIOR, AND PROPER PROCEDURES IF SPECIES ARE ENCOUNTERED, THE ENVIRONMENTALLY SENSITIVE NATURE OF THE DEVELOPMENT SITE, AND THE NEED TO FOLLOW THE WATERSHED PROTECTION MEASURES.

   b. THE CONTRACTOR WILL BE PROVIDED WITH PHONE (24 HOUR CONTACT) AND EMAIL FOR AQUARION WATER COMPANY PERSONNEL TO IMMEDIATELY REPORT ANY RELEASES OF SEDIMENT, FUEL OR HAZARDOUS MATERIALS.

   c. THE MEETING WILL FURTHER EMPHASIZE THE NON-AGGRESSIVE NATURE OF THE RARE SPECIES, THE ABSENCE OF NEED TO DESTROY SUCH ANIMALS AND THE NEED TO FOLLOW PROTECTIVE MEASURES AS DESCRIBED IN FOLLOWING SECTIONS. THE CONTRACTOR WILL DESIGNATE ONE OF ITS WORKERS AS THE "PROJECT MONITOR", WHO WILL RECEIVE MORE INTENSE TRAINING ON THE IDENTIFICATION AND PROTECTION OF POSSIBLE EASTERN BOX TURTLES THAN MAY BE ENCOUNTERED.

   d. THE CONTRACTOR WILL DESIGNATE A MEMBER OF ITS CREW AS THE PROJECT MONITOR TO BE RESPONSIBLE FOR THE PERIODIC "SWEEPS" FOR TURTLES (AND OTHER POSSIBLE WILDLIFE) WITHIN THE CONSTRUCTION ZONE EACH MORNING AND FOR ANY GROUND DISTURBANCE WORK. THIS INDIVIDUAL WILL RECEIVE MORE INTENSE TRAINING FROM APT ON THE IDENTIFICATION AND PROTECTION OF EASTERN BOX TURTLE IN ORDER TO PERFORM SWEEPS. ANY TURTLES (OR OTHER WILDLIFE) DISCOVERED WOULD BE TRANSLOCATED OUTSIDE THE WORK ZONE IN THE GENERAL DIRECTION THE ANIMAL WAS ORIENTED.

   e. THE CONTRACTOR'S PROJECT MONITOR WILL BE PROVIDED WITH CELL PHONE AND EMAIL CONTACTS FOR APT PERSONNEL TO IMMEDIATELY REPORT ANY ENCOUNTERS WITH TURTLES. EDUCATIONAL POSTER MATERIALS WILL BE PROVIDED BY APT AND DISPLAYED ON THE JOB SITE TO MAINTAIN WORKER AWARENESS AS THE PROJECT PROGRESSES.

   f. APT WILL ALSO POST CAUTION SIGNS THROUGHOUT THE PROJECT SITE FOR THE DURATION OF THE CONSTRUCTION PROJECT PROVIDING NOTICE OF THE ENVIRONMENTALLY SENSITIVE NATURE OF THE WORK AREA, THE POTENTIAL FOR ENCOUNTERING EASTERN BOX TURTLE AND PRECAUTIONS TO BE TAKEN TO AVOID INJURY TO OR MORTALITY OF THESE ANIMALS.

2. EROSION AND SEDIMENTATION CONTROLS/ISOLATION BARRIERS

   a. PLASTIC NETTING USED IN A VARIETY OF EROSION CONTROL PRODUCTS (I.E., EROSION CONTROL BLANKETS, FIBER ROLLS [WATTLES], REINFORCED SILT FENCE) HAS BEEN FOUND TO ENTANGLE WILDLIFE, INCLUDING REPTILES, AMPHIBIANS, BIRDS AND SMALL MAMMALS. NO PERMANENT EROSION CONTROL PRODUCTS OR REINFORCED SILT FENCE WILL BE USED ON THE PROJECT. TEMPORARY EROSION CONTROL PRODUCTS THAT WILL BE EXPOSED AT THE GROUND SURFACE AND REPRESENT A POTENTIAL FOR WILDLIFE ENTANGLEMENT WILL USE EITHER EROSION CONTROL BLANKETS AND FIBER ROLLS COMPOSED OF PROCESSED FIBERS MECHANICALLY BOUND TOGETHER TO FORM A CONTINUOUS MATRIX (NETLESS) OR NETTING COMPOSED OF PLANAR WOVEN NATURAL BIODEGRADABLE FIBER TO AVOID/MINIMIZE WILDLIFE ENTANGLEMENT.

   b. INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS, REQUIRED FOR EROSION CONTROL COMPLIANCE AND CREATION OF A BARRIER TO POSSIBLE MIGRATING/DISPERSING WILDLIFE, SHALL BE PERFORMED BY THE CONTRACTOR IF ANY SOIL DISTURBANCE OCCURS OR HEAVY MACHINERY IS ANTICIPATED TO BE USED ON SLOPES. THE ENVIRONMENTAL MONITOR WILL INSPECT THE WORK ZONE AREA PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION. IN ADDITION, WORK ZONES WILL BE INSPECTED PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION TO ENSURE THE AREA IS FREE OF EASTERN BOX TURTLES AND OTHER WILDLIFE AND SATISFACTORILY INSTALLED. THE INTENT OF THE BARRIER IS TO SEGREGATE THE MAJORITY OF THE WORK ZONE FROM POSSIBLE TURTLES AND OTHER WILDLIFE SPECIES, IN ADDITION TO SERVING AS AN EROSION CONTROL DEVICE. OFTENTIMES COMPLETE ISOLATION OF A WORK ZONE IS NOT FEASIBLE DUE TO ACCESSIBILITY NEEDS AND LOCATIONS OF STAGING/MATERIAL STORAGE AREAS, ETC. IN THOSE CIRCUMSTANCES, THE BARRIERS WILL BE POSITIONED TO DEFLECT MIGRATING/DISPERSAL ROUTES AWAY FROM THE WORK ZONE TO MINIMIZE POTENTIAL ENCOUNTERS WITH TURTLES/WILDLIFE AT THE DISCRETION OF THE ENVIRONMENTAL MONITOR.

   c. THE CONTRACTOR IS RESPONSIBLE FOR DAILY INSPECTIONS OF THE SEDIMENTATION AND EROSION CONTROLS FOR TEARS OR BREECHES AND ACCUMULATION LEVELS OF SEDIMENT, PARTICULARLY FOLLOWING STORM EVENTS THAT GENERATE A DISCHARGE, AS DEFINED BY AND IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THE CONTRACTOR SHALL NOTIFY THE APT ENVIRONMENTAL MONITOR WITHIN 24 HOURS OF ANY BREECHES OF THE SEDIMENTATION AND EROSION CONTROLS AND ANY SEDIMENT RELEASES BEYOND THE PERIMETER CONTROLS THAT IMPACT LAUREL RESERVOIR, WETLANDS OR AREAS WITHIN 100 FEET OF WETLANDS. THE APT ENVIRONMENTAL MONITOR WILL PROVIDE PERIODIC INSPECTIONS OF THE SEDIMENTATION AND EROSION CONTROLS THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES ONLY AS IT PERTAINS TO THEIR FUNCTION TO PROTECT NEARBY WETLANDS. SUCH INSPECTIONS WILL GENERALLY OCCUR ONCE PER MONTH. THE FREQUENCY OF MONITORING MAY INCREASE DEPENDING UPON SITE CONDITIONS, LEVEL OF CONSTRUCTION ACTIVITIES IN PROXIMITY TO SENSITIVE RECEPTORS, OR AT THE REQUEST OF REGULATORY AGENCIES. IF THE ENVIRONMENTAL MONITOR IS NOTIFIED BY THE CONTRACTOR OF A SEDIMENT RELEASE, AN INSPECTION WILL BE SCHEDULED SPECIFICALLY TO INVESTIGATE AND EVALUATE POSSIBLE IMPACTS TO WETLAND RESOURCES.

   d. THIRD PARTY MONITORING OF SEDIMENTATION AND EROSION CONTROLS WILL BE PERFORMED BY OTHER PARTIES, AS NECESSARY, UNDER APPLICABLE LOCAL, STATE AND/OR FEDERAL REGULATIONS AND PERMIT CONDITIONS.

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D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
1		
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DESIGN PROFESSIONALS OF RECORD

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DATE: 09/14/23	DRAWN BY:
	CHECKED BY: RCB

SHEET TITLE:
NOTES, SPECIFICATIONS & ENVIRONMENTAL NOTES

SHEET NUMBER:
N-1

STATE OF CONNECTICUT ROBERT CHARLES BURNS No. 20071 LICENSED PROFESSIONAL ENGINEER

ENVIRONMENTAL NOTES - RESOURCES PROTECTION MEASURES (CONT'D FROM DRAWING N-1)

e. THE EXTENT OF THE EROSION CONTROLS WILL BE AS SHOWN ON THE SITE PLANS. THE CONTRACTOR SHALL HAVE ADDITIONAL EROSION CONTROL MATERIALS SHOULD FIELD CONDITIONS WARRANT EXTENDING THE FENCING AS DIRECTED BY THE ENVIRONMENTAL MONITOR.

f. NO EQUIPMENT, VEHICLES OR CONSTRUCTION MATERIALS SHALL BE STORED WITHIN 100 FEET OF LAUREL RESERVOIR OR WETLAND RESOURCES.

g. ALL SILT FENCING AND OTHER EROSION CONTROL DEVICES SHALL BE REMOVED WITHIN 30 DAYS OF COMPLETION OF WORK AND PERMANENT STABILIZATION OF SITE SOILS. IF FIBER ROLLS/WATTLES, STRAW BALES, OR OTHER NATURAL MATERIAL EROSION CONTROL PRODUCTS ARE USED, SUCH DEVICES WILL NOT BE LEFT IN PLACE TO BIODEGRADE AND SHALL BE PROMPTLY REMOVED AFTER SOILS ARE STABLE SO AS NOT TO CREATE A BARRIER TO WILDLIFE MOVEMENT. SEED FROM SEEDING OF SOILS SHOULD NOT SPREAD OVER FIBER ROLLS/WATTLES AS IT MAKES THEM HARDER TO REMOVE ONCE SOILS ARE STABILIZED BY VEGETATION.

3. PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION

a. CERTAIN PRECAUTIONS ARE NECESSARY TO STORE PETROLEUM MATERIALS, REFUEL AND CONTAIN AND PROPERLY CLEAN UP ANY INADVERTENT FUEL OR PETROLEUM (I.E., OIL, HYDRAULIC FLUID, ETC.) SPILL DUE TO THE PROJECT'S LOCATION WITHIN A PUBLIC WATER SUPPLY WATERSHED AND IN PROXIMITY TO WETLAND RESOURCES AND RARE SPECIES HABITAT.

b. A SPILL CONTAINMENT KIT CONSISTING OF A SUFFICIENT SUPPLY OF ABSORBENT PADS AND ABSORBENT MATERIAL WILL BE MAINTAINED BY THE CONTRACTOR AT THE CONSTRUCTION SITE THROUGHOUT THE DURATION OF THE PROJECT. IN ADDITION, A WASTE DRUM WILL BE KEPT ON SITE TO CONTAIN ANY USED ABSORBENT PADS/MATERIAL FOR PROPER AND TIMELY DISPOSAL OFF SITE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL LAWS.

c. SERVICING OF MACHINERY SHALL ONLY BE COMPLETED OUTSIDE OF THE PUBLIC WATER SUPPLY WATERSHED PROTECTION ZONE.

d. AT A MINIMUM, THE FOLLOWING PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING RESTRICTIONS AND SPILL RESPONSE PROCEDURES WILL BE ADHERED TO BY THE CONTRACTOR.

i. PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING
1. REFUELING OF VEHICLES OR MACHINERY SHALL OCCUR A MINIMUM OF 100 FEET FROM WETLANDS AND LAUREL RESERVOIR AND SHALL TAKE PLACE ON AN IMPERVIOUS PAD WITH SECONDARY CONTAINMENT DESIGNED TO CONTAIN FUELS.
2. FUEL AND OTHER HAZARDOUS MATERIALS SHALL NOT BE STORED WITHIN THE PUBLIC WATER SUPPLY WATERSHED, WHICH ENCOMPASSES THE ENTIRE SUBJECT PROPERTY, DURING NON-WORKING HOURS.
3. ANY FUEL OR HAZARDOUS MATERIALS THAT MUST BE KEPT ON SITE DURING WORKING HOURS SHALL BE STORED ON AN IMPERVIOUS SURFACE UTILIZING SECONDARY CONTAINMENT A MINIMUM OF 100 FEET FROM WETLANDS AND LAUREL RESERVOIR.

ii. INITIAL SPILL RESPONSE PROCEDURES
1. STOP OPERATIONS AND SHUT OFF EQUIPMENT.
2. REMOVE ANY SOURCES OF SPARK OR FLAME.
3. CONTAIN THE SOURCE OF THE SPILL.
4. DETERMINE THE APPROXIMATE VOLUME OF THE SPILL.
5. IDENTIFY THE LOCATION OF NATURAL FLOW PATHS TO PREVENT THE RELEASE OF THE SPILL TO SENSITIVE NEARBY LAUREL RESERVOIR, WATERWAYS, AND WETLANDS.
6. ENSURE THAT FELLOW WORKERS ARE NOTIFIED OF THE SPILL.

iii. SPILL CLEAN UP & CONTAINMENT
1. OBTAIN SPILL RESPONSE MATERIALS FROM THE ON-SITE SPILL RESPONSE KIT. PLACE ABSORBENT MATERIALS DIRECTLY ON THE RELEASE AREA.
2. LIMIT THE SPREAD OF THE SPILL BY PLACING ABSORBENT MATERIALS AROUND THE PERIMETER OF THE SPILL.
3. ISOLATE AND ELIMINATE THE SPILL SOURCE.
4. CONTACT THE AQUARION WATER COMPANY ALONG WITH APPROPRIATE LOCAL, STATE AND/OR FEDERAL AGENCIES, AS NECESSARY.
5. CONTACT A DISPOSAL COMPANY TO PROPERLY DISPOSE OF CONTAMINATED MATERIALS.

iv. REPORTING
1. COMPLETE AN INCIDENT REPORT.
2. SUBMIT A COMPLETED INCIDENT REPORT TO LOCAL, STATE AND FEDERAL AGENCIES, AS NECESSARY, INCLUDING THE AQUARION WATER COMPANY AND THE CONNECTICUT SITING COUNCIL.

4. WETLAND PROTECTIVE MEASURES

a. A THOROUGH COVER SEARCH OF THE CONSTRUCTION AREA WILL BE PERFORMED BY APT'S ENVIRONMENTAL MONITOR PRIOR TO AND FOLLOWING INSTALLATION OF THE SILT FENCING BARRIER TO REMOVE ANY WILDLIFE FROM THE WORK ZONE PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITIES. ANY WILDLIFE DISCOVERED WOULD BE TRANSLOCATED OUTSIDE THE WORK ZONE IN THE GENERAL DIRECTION THE ANIMAL WAS ORIENTED. PERIODIC INSPECTIONS WILL BE PERFORMED BY APT'S ENVIRONMENTAL MONITOR THROUGHOUT THE DURATION OF THE CONSTRUCTION, GENERALLY ON A MONTHLY BASIS.

b. ALTHOUGH NO VERNAL POOL HABITAT IS KNOWN TO OCCUR ON OR ADJACENT TO THE SUBJECT PROPERTY, AS A PRECAUTION ANY STORMWATER MANAGEMENT FEATURES, RUTS OR ARTIFICIAL DEPRESSIONS THAT COULD HOLD WATER CREATED INTENTIONALLY OR UNINTENTIONALLY BY SITE CLEARING/CONSTRUCTION ACTIVITIES WILL BE PROPERLY FILLED IN AND PERMANENTLY STABILIZED WITH VEGETATION TO AVOID THE CREATION OF "DECOY POOLS" THAT COULD INTERCEPT AMPHIBIANS POTENTIALLY MOVING THROUGH THE PROJECT AREA. STORMWATER MANAGEMENT FEATURES SUCH AS LEVEL SPREADERS WILL BE CAREFULLY REVIEWED IN THE FIELD TO ENSURE THAT STANDING WATER DOES NOT ENDURE FOR MORE THAN A 24-HOUR PERIOD TO AVOID CREATION OF DECOY POOLS AND MAY BE SUBJECT TO FIELD DESIGN CHANGES. ANY SUCH PROPOSED DESIGN CHANGES WILL BE REVIEWED BY THE DESIGN ENGINEER TO ENSURE STORMWATER MANAGEMENT FUNCTIONS ARE MAINTAINED.

c. EROSION CONTROL MEASURES WILL BE REMOVED NO LATER THAN 30 DAYS FOLLOWING FINAL SITE STABILIZATION SO AS NOT TO IMPEDE WILDLIFE MOVEMENTS.

5. RARE BATS SITE MANAGEMENT MEASURES (TREE CLEARING RESTRICTION)

a. TREE CLEARING IS RESTRICTED TO OCCUR ONLY BETWEEN NOVEMBER 1ST THROUGH MARCH 30TH, DURING THE BAT'S NON-ROOSTING PERIOD, WHEN BATS WOULD NOT BE PRESENT ON THE SITE.

b. SINCE TREE CLEARING RESTRICTIONS REQUIRE REMOVAL OUTSIDE OF THE GROWING SEASON AND SOIL STABILIZATION IS A CONCERN FOR THIS SITE DUE TO ITS LOCATION WITHIN A PUBLIC WATER SUPPLY WATERSHED AND PROXIMITY TO A PUBLIC DRINKING WATER SUPPLY RESERVOIR, NO STUMPING OR GRUBBING SHOULD OCCUR WITH THE TREE REMOVAL OPERATION AND SOIL DISTURBANCE SHOULD BE KEPT TO A MINIMUM. TREES SHOULD BE CUT NEAR GROUND LEVEL WITH STUMPS LEFT IN PLACE UNTIL THE GROWING SEASON AT WHICH TIME VEGETATIVE SOIL STABILIZATION TECHNIQUES COULD BE EMPLOYED IN ACCORDANCE WITH THE EROSION CONTROL AND CONSTRUCTION SEQUENCE PLAN.

6. TURTLE PROTECTION MEASURES

a. PRIOR TO CONSTRUCTION AND FOLLOWING INSTALLATION OF ISOLATION BARRIERS, THE CONSTRUCTION AREA WILL BE SWEPT BY APT AND ANY TURTLES OCCURRING WITHIN THE WORK AREA WILL BE RELOCATED TO SUITABLE HABITAT OUTSIDE OF THE ISOLATION BARRIERS.

b. PRIOR TO THE START OF CONSTRUCTION EACH DAY, THE CONTRACTOR SHALL SEARCH THE ENTIRE WORK AREA FOR TURTLES.

c. IF A TURTLE IS FOUND, IT SHALL BE IMMEDIATELY MOVED, UNHARMED, BY BEING CAREFULLY GRASPED IN BOTH HANDS, ONE ON EACH SIDE OF THE SHELL, BETWEEN THE TURTLE'S FORELIMBS AND THE HIND LIMBS, AND PLACED JUST OUTSIDE OF THE ISOLATION BARRIER IN THE SAME APPROXIMATE DIRECTION IT WAS HEADING. EASTERN BOX TURTLES ARE PROTECTED BY LAW AND NO TURTLES SHOULD BE RELOCATED FROM THE PROPERTY.

d. SPECIAL CARE SHALL BE TAKEN BY THE CONTRACTOR DURING EARLY MORNING AND EVENING HOURS SO THAT POSSIBLE BASKING OR FORAGING TURTLES ARE NOT HARMED BY CONSTRUCTION ACTIVITIES.

e. THE CONTRACTOR SHALL BE PARTICULARLY DILIGENT DURING THE MONTHS OF MAY AND JUNE WHEN TURTLES ARE ACTIVELY SELECTING NESTING SITES WHICH RESULTS IN AN INCREASE IN TURTLE MOVEMENT ACTIVITY.

7. INVASIVE SPECIES CONTROL PLAN

THE SETTING FOR THE PROPOSED FACILITY CONSISTS PRIMARILY OF A MATURE FOREST WITH NATIVE TREES, SHRUBS AND FORBS THAT CONTAINS MINIMAL INVASIVE PLANT SPECIES, PARTICULARLY WITHIN THE INTERIOR OF THE SUBJECT PROPERTY WHERE THE PROPOSED FACILITY AND ACCESS ARE PROPOSED. AS SUCH, CERTAIN PRECAUTIONS ARE RECOMMENDED DURING CONSTRUCTION IN ORDER TO AVOID/MINIMIZE THE IMPORTATION OF INVASIVE PLANT SEEDS/MATERIAL THAT COULD COLONIZE THE INTERIOR OF THIS FOREST COMMUNITY AND DIMINISH ITS WILDLIFE HABITAT VALUE. PROPOSED SOIL DISTURBANCES DURING CONSTRUCTION PROVIDE AN OPPORTUNITY FOR INVASIVE PLANTS TO GAIN A FOOTHOLD AND SPREAD INTO THE SURROUNDING FORESTED HABITAT. THIS CAN OCCUR THROUGH THE IMPORTATION OF SOIL THAT CONTAINS INVASIVE PLANT SEED STOCK OR CARRIED BY CONSTRUCTION EQUIPMENT THAT HAS PICKED UP SOIL WITH INVASIVE SEED STOCK. THE INVASIVE SPECIES PLAN INCLUDES THE FOLLOWING:

a. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING TO REVIEW THE REQUIREMENTS OF THE INVASIVE SPECIES CONTROL PLAN PRIOR TO MOBILIZATION OF EQUIPMENT, VEHICLES, MATERIALS, ETC. ONTO THE PROPERTY.

b. PRIOR TO ENTRY ONTO THE PROPERTY, ALL EQUIPMENT AND VEHICLES SHALL BE PRESSURE WASHED BY THE CONTRACTOR AT ITS STORAGE YARD IN ORDER TO REMOVE ANY LOOSE SOIL THAT MAY BE CARRYING INVASIVE PLANT SEEDS.

a. IMPORTATION OF TOPSOIL ONTO THE PROPERTY SHALL BE MINIMIZED. ANY TOPSOIL IMPORTED SHALL BE FREE OF INVASIVE PLANT SEEDS.

b. ANY CLEAN FILL MATERIAL IMPORTED ONTO THE PROPERTY SHALL BE FREE OF INVASIVE PLANT SEEDS.

c. USE OF HAYBALES IS PROHIBITED ON THIS PROJECT. NATURAL EROSION CONTROL MATERIALS SHALL BE EITHER STRAW BALES OR STRAW- OR COMPOST-FILLED SOCKS/WATTLES.

d. TOPSOIL REMOVED FROM THE PROPOSED ACCESS DRIVE AND FACILITY COMPOUND SHALL BE RETAINED AND TEMPORARILY STOCKPILED ON THE PROPERTY TO RESTORE AND PERMANENTLY STABILIZE DISTURBED AREAS. TEMPORARILY STOCKPILED TOPSOIL SHALL BE IMMEDIATELY SEEDED WITH EITHER ANNUAL RYE OR WINTER RYE IF IT WILL NOT BE USED WITHIN ONE (1) WEEK.

e. ALL RESTORED AREAS WILL BE INSPECTED DURING THE GROWING SEASON FOR TWO (2) YEARS FOLLOWING ESTABLISHMENT OF PERMANENT VEGETATION TO MONITOR FOR POSSIBLE COLONIZATION BY INVASIVE PLANTS SPECIES. INVASIVE PLANTS ARE THOSE LISTED AS NON-NATIVE INVASIVE WOODY PLANTS BY THE CONNECTICUT INVASIVE PLANT WORKING GROUP.

f. PERFORMANCE STANDARD: IF INVASIVE WOODY PLANTS ARE IDENTIFIED TO HAVE MORE THAN 10% AERIAL COVERAGE IN THE RESTORED AREAS, A CONTROL PLAN FOR REMOVAL OF THE INVASIVE WOODY PLANTS WILL BE IMPLEMENTED.

8. HERBICIDE, PESTICIDE, AND SALT RESTRICTIONS

a. THE USE OF HERBICIDES AND PESTICIDES AT THE FACILITY SHALL BE AVOIDED WHEN POSSIBLE. IN THE EVENT HERBICIDES AND/OR PESTICIDES ARE REQUIRED AT THE FACILITY, THEIR USE WILL BE USED IN ACCORDANCE WITH CURRENT INTEGRATED PEST MANAGEMENT ("IPM") PRINCIPLES WITH PARTICULAR ATTENTION TO AVOID APPLICATIONS WITHIN 100 FEET OF WETLAND AND WATERCOURSE RESOURCES AND LAUREL RESERVOIR.

b. MAINTENANCE OF THE FACILITY DURING THE WINTER MONTHS SHALL NOT INCLUDE THE APPLICATION OF SALT OR SIMILAR PRODUCTS FOR MELTING SNOW OR ICE.

9. ACID ROCK DRAINAGE

a. ACID ROCK DRAINAGE ("ARD") IS CAUSED BY THE PRESENCE OF BEDROCK CONTAINING HIGH LEVELS OF IRON SULFIDE, PARTICULARLY WHEN SUCH ROCK IS FRESHLY EXPOSED OR CRUSHED AND SUBJECTED TO PRECIPITATION. UNDER THESE CONDITIONS, THERE IS AN ELEVATED RISK FOR MOBILIZING NATURALLY-OCCURRING IRON, MANGANESE, AND SULFUR, WHICH MAY ADVERSELY AFFECT GROUNDWATER AND DRINKING WATER QUALITY. THE FOLLOWING RECOMMENDATIONS FOLLOW GUIDANCE PROVIDED IN DEEP'S *GUIDANCE DOCUMENT FOR EVALUATING POTENTIAL HYDROGEOLOGIC IMPACTS ASSOCIATED WITH BLASTING & DEVELOPMENT ACTIVITIES*, DATED DECEMBER 2019 (REV. 12-12-19).

b. THE GEOTECHNICAL INVESTIGATION TO BE PERFORMED AT THE SITE WILL INCLUDE AN EVALUATION OF THE UNDERLYING BEDROCK IN TERMS OF ITS POTENTIAL TO CAUSE ARD. A QUALIFIED ENVIRONMENTAL PROFESSIONAL WILL EVALUATE THE POTENTIAL IMPACTS OF ARD THROUGH TESTING THE MINERALOGY AND CHEMISTRY OF THE BEDROCK MATERIAL UNDERLYING THE SITE.

c. BASED ON THE RESULTS OF THIS ANALYSIS, THE ENVIRONMENTAL PROFESSIONAL WILL PROVIDE AN OPINION ON THE POTENTIAL FOR ARD IMPACTING GROUNDWATER AND DRINKING WATER QUALITY AND MAKE RECOMMENDATIONS TO ALLOW ON SITE USE OF REMOVED BEDROCK INCORPORATED INTO THE FILL OR IF REMOVAL AND OFFSITE DISPOSAL IS NECESSARY.

10. REPORTING

a. COMPLIANCE MONITORING REPORTS (BRIEF NARRATIVE AND APPLICABLE PHOTOS) DOCUMENTING EACH APT INSPECTION WILL BE SUBMITTED BY APT TO HOMELAND TOWERS FOR COMPLIANCE VERIFICATION WITH RESPECT TO THE RARE SPECIES, WETLAND, AND PUBLIC WATER SUPPLY WATERSHED PROTECTION PROVISIONS NOTED IN THESE ENVIRONMENTAL NOTES. ANY OBSERVATIONS OF EASTERN BOX TURTLES (OR OTHER WILDLIFE), IMPACTS, OR CORRECTIVE ACTIONS WILL BE INCLUDED IN THE REPORTS.

b. FOLLOWING COMPLETION OF THE CONSTRUCTION PROJECT, APT WILL PROVIDE A FINAL COMPLIANCE MONITORING REPORT TO HOMELAND TOWERS DOCUMENTING IMPLEMENTATION OF THE RESOURCES PROTECTION PROGRAM AND MONITORING OBSERVATIONS. HOMELAND TOWERS WILL PROVIDE A COPY OF THE COMPLIANCE MONITORING SUMMARY REPORT TO THE CONNECTICUT SITING COUNCIL FOR COMPLIANCE VERIFICATION.

c. ANY OBSERVATIONS OF RARE SPECIES WILL BE REPORTED TO CTDEEP BY APT, WITH PHOTO-DOCUMENTATION (IF POSSIBLE) AND WITH SPECIFIC INFORMATION ON THE LOCATION AND DISPOSITION OF THE ANIMAL.

d. AN ANNUAL REPORT WILL BE PREPARED FOR EACH OF THE TWO YEARS OF POST-CONSTRUCTION MONITORING ASSOCIATED WITH THE INVASIVE SPECIES CONTROL PLAN. THIS REPORT WILL DOCUMENT THE CONDITION OF THE SITE POST CONSTRUCTION STARTING THE GROWING SEASON FOLLOWING COMPLETION OF CONSTRUCTION, NOTING THE PRESENCE OF ANY WOODY INVASIVE PLANTS THAT MAY HAVE BEEN INTRODUCED DURING CONSTRUCTION ACTIVITIES. THE REPORT WILL BE ISSUED TO HOMELAND TOWERS AT THE END OF EACH GROWING SEASON DOCUMENTING THE PRESENCE/ABSENCE OF WOODY INVASIVE PLANTS AND IF CORRECTIVE ACTIONS WERE NECESSARY TO ACHIEVE THE PERFORMANCE STANDARD. HOMELAND TOWERS WILL PROVIDE A COPY OF THE REPORTS TO THE CONNECTICUT SITING COUNCIL FOR COMPLIANCE VERIFICATION.

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D&M DOCUMENTS

NO	DATE	REVISION
0	09/14/23	FOR REVIEW: RCB
1		
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DESIGN PROFESSIONALS OF RECORD

PROF: ROBERT C. BURNS P.E.
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APT FILING NUMBER: CT283860

DATE: 09/14/23	DRAWN BY:
	CHECKED BY: RCB

SHEET TITLE:

ENVIRONMENTAL NOTES

SHEET NUMBER:

N-2

STATE OF CONNECTICUT ROBERT CHARLES BURNS 20071 LICENSED PROFESSIONAL ENGINEER