CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, October 21, 2021**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for Brueckner Group Use, Inc., Assessor's Map E, Lots 27F, zoned IT-Innovation Technology, located at 50 Education Way. (Proposal is for a change-of-use Site Plan which will change from office/warehouse use to office/warehouse/showroom tech center.) (P21-74)

2. 11:15 AM – 12:00 PM: Site Review for CIP Management, LLC, Assessor's Map 22, Lots 1-2 & 1-4, zoned CWD, located at River Street. (Proposal is for construction of three (3) mixed use buildings, two (2) multi-family buildings and three (3) clusters of townhouses. The buildings are identified as A through F and include 416 residential units & approximately 26,000 s.f. commercial space). Two CUPs and a Subdivision will also appear before the Planning Board. (P21-69)

CHRISTOPHER G. PARKER, AICP
Assistant City Manager
Planning & Strategic Initiatives
c.parker@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6008
Fax: (603) 516-6049
www.dover.nh.gov

City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

IMPORTANT: PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE FILLING OUT ATTACHED APPLICATION.
INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED FOR REVIEW.

Dear Applicant:

This will serve to briefly inform you regarding the process to have the Dover Planning Board (the Board) review a land use application. Please refer to the NH Statutes on Land Use and Regulation the Dover Code, and our Developer's Handbook for more specific information.

The Board primarily reviews 5 types of applications:

1. **Site Plans** - A site plan is a professionally rendered drawing which delineates the proposed development of a site. This plan is required for non-residential development, creation of multi-family residential structures, and for extensions of parking lots and alteration of an acre or more of land. These plans require meeting with the Technical Review Committee before Planning Board review.

2. **Subdivisions** - A subdivision is the division of the lot, tract, or parcel of land into two (2) or more lots, plats, sites or other divisions of land for the purpose, whether immediate or future, of sale, rent, lease or building development. It includes re-subdivision and, when appropriate to the context, relates to the process of subdividing or to the land or territory subdivided. Major subdivision plans (4+) require meeting with the Technical Review Committee before Planning Board review.

3. **Lot Line Adjustments** - A lot line adjustment alters the size of two (2) or more lots, but does not create a new buildable lot.

4. **Conditional Use Permits** - A conditional use permit is required for any alteration of wetlands, wetland buffers or work within the City's conservation district. Additionally, a conditional use permit could be issued as to offer relief in the Central Business District, for plans in the Residential Mixed Use Overlay District, or parking relief. Environmental Conditional Use Permits are acted on after Conservation Commission review.

5. **Excavation Permits** – NH RSA Chapter 155-E grants municipalities the authority to regulate earth excavations within their borders. This authority rests with the Planning Board.

The Board cannot and will not review applications that do not meet zoning requirements. **Please review the need to apply to the Zoning Board of Adjustment prior to applying to the Board.**

Professional agents will prepare your application; however, you may represent yourself or authorize, in writing, someone else to represent you before the Planning Board.

In most cases, the first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, and a PDF, need to be provided, along with payment of plan review fees. These meetings occur on Thursday, and materials and payment must be submitted three (3) weeks prior to meeting. Meetings are scheduled, upon receipt of completed applications with the full checklist and payment.

The next step would be to provide, two weeks prior to Planning Board, the final plan sets (three (3) full size and twelve (12) half size (11x 17), folded, copies of the plan), and 15 copies, and a PDF, of all supporting materials, including response to TRC comments. Please print all materials on both sides of paper.

For projects not appearing before the Technical Review Committee, Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and 15 copies, plus a PDF, of plans and materials, 3 weeks prior to the Planning Board meeting. Please print all materials on both sides of paper.

Staff will generate an abutter list, and Abutter/Notice Fees will be invoiced. They are due 28 hours prior to Planning Board. If they are not paid, the application will not be heard.

Once an item is placed upon an agenda the following process is used:

- The Board will hold a public hearing on your application at a regularly scheduled meeting
    - Typically the second or fourth Tuesday of the Month.
- Public notice of the hearing will be posted at the City Clerk's office and the Planning Department office and printed in the newspaper.
- Certified letters will be mailed to you and to all abutters at least ten days before the date of the hearing.
- 28 hours prior to the meeting, abutter/notice fees must be paid
- At the meeting
    - Staff will introduce your project
    - You and all other parties will be invited to appear in person or by agent or counsel to present your application.
        - Your project will be pre-loaded onto a laptop for review by the Board and public
    - The Board may ask clarifying questions
    - The Board will vote to accept jurisdiction on the application
    - If accepted:
        - The Board will hold a public hearing
        - The Board may ask additional questions
        - The Board will deliberate on your application
            - Typically decisions are made the night of the presentation, but an application may be tabled
        - After deliberation, a decision will be made.
            - You will be sent a notice of the decision.

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Brueckner Group USE, INC. Telephone # (603) 766-6359

Address of Applicant: 200 International Dr. Suite 105, Portsmouth, NH 03801

E-Mail Address: Ulrike Bauer ulrike.bauer@brueckner-use.com

Name of Property Owner (*if different from applicant*): 171 Watson Rd of Dover Holding Corp

Address of Property Owner: 9115 Westside Parkway Alpharette, GA 30009

PROPERTY INFORMATION

Address of Property: 50 Education Way

Assessor's Map # E Lot(s) # 27F

Zoning District(s) Innovative Technology (IT) Overlay District(s) none

Size of Parcel: _____sq. ft. 9.025 ac. Property Deed: Book _____ Page: _____

Existing Use of Property: Office building and Warehouse

SITE PLAN INFORMATION

Describe Proposed Use: Warehouse, Office, Showroom Tech Center

Area of Parcel to be Developed: Change of Use - Existing Building sq. ft.

If Multi-family Residential: Number of Units N/A & Buildings Proposed N/A

If lodging: Number of Units N/A & number of Buildings N/A

Number of Parking Spaces: Existing 224 Proposed 224

Highway Access (check where applicable): X City Street ____ State Highway

Number of Employees Total: 75 In Maximum Shift: 1-Shift

Disposition of Parcel:

Building Footprint 45,000 sq. ft.

Total Building Area 73,465 sq. ft.

Paved Area 108,650 sq. ft.

Building Setbacks:

Front Yard 85.0 ft.

Rear Yard 71.8 ft.

Side Yard: Right 243' ft. Left 297' ft.

City Water? x Yes ___ No How far is city water from the property? At the site

City Sewer? x Yes ___ No How far is city sewer from the property? At the site

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

□ Residential □ Residential (reduced size) □ Industrial | □ Purchase □ Land Preservation

Relief sought (Check All That Apply):

□ Lot Size □ Frontage □ Setback □ 30' Buffer □ Increase by _____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

none

BUILDING INFORMATION

Type of Building to be Built: Existing Building

Height of Building: Existing Finished Floor Elevation: 162.58'

Number of Seats (where applicable) N/A

Estimated value of construction: _____Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____

Justification for waiver request(s) (*attach additional sheets as needed*):

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Hans Mertsch (TFMoran, INC.)

Address 48 Constitution Drive, Bedford, NH 03110 Telephone #: 603-472-4488

Professional License #: NO. 787 E-mail address: hmertsch@tfmoran.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Bob Duval (TFMoran, INC.)

Address 48 Constitution Drive, Bedford, NH 03110 Telephone #: 603-472-4488

Professional License #: 7105 E-mail address: jkevan@tfmoran.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Matthew Wirth (PROCON, INC.

Address 1359 Hooksett Rd Ste 16, Hooksett, NH 03106 Telephone #: 603-518-2152

Professional License #: _____ E-mail address: mwirth@proconinc.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) none

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) N/A

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 9/30/2021

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 9/30/2021

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 9/30/2021

DocuSign Envelope ID: 25CDC34A-6CED-470D-AE0B-BB3488876D7F

171 Watson Road of Dover Holding Corporation
100 Education Way
Dover NH 03820
603-749-9102

September 3, 2021

City of Dover, New Hampshire
288 Central Avenue
Dover, New Hampshire 03820
Attn: City of Dover Planning Board

Re: Owner Authorization with Respect to Application for Subdivision of 50 and 100 Education Way (the "Property") Filed by The Kane Company, Inc.

Dear Members of the City of Dover Planning Board,

171 Watson Road of Dover Holding Corporation ("Owner") is the fee owner of the above-referenced Property. Owner has been advised that The Kane Company, Inc. ("Applicant") intends to file a subdivision application ("Application") with the City of Dover requesting Planning Board approval of a subdivision plan with respect to the Property.

Owner hereby authorizes Applicant to file the Application with the City of Dover and to provide the City of Dover with any other ancillary documentation reasonably requested by the Planning Board in connection with the Application. This authorization shall be effective from the date hereof through November 30, 2021, or until property purchase closing date which may be prior to that date.

If you have any questions regarding this authorization, please contact Patti Ayer, VP Legal Operations at patti.ayer@cognia.org or 603-749-9102 ext. 7230 or by cell 207-450-9945.

Very truly yours,

Mark A. Elgart

Mark A. Elgart
President and CEO

Cc: Ken Bergman, COO and CLO
Mindy Cohn, Corporate The Kane Company, Inc.

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
E	27F	171 Watson Rd of Dover Holding Corp	9115 Westside Parkway Alpharette, GA 30009

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Ulrike Bauer	Brueckner Group USE, INC.	200 International Dr. Suite 105, Portsmouth, NH 03801

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Jeff Kevan	(TFMoran, INC.)	48 Constitution Drive, Bedford, NH 03110

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $ 200
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $ 0

SUBTOTAL PLAN REVIEW FEE (A) = $ 200

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: Michael Kane (The Kane Company, INC) File Number: _____

PROJECT TITLE: CHANGE-OF-USE SITE PLAN

PROPERTY LOCATION: 50 Education Way Tax Map: E Lot: 27F

	Where/How Provided	Reviewed
1. Completed and signed Application form	Hard copy delivered	
2. Plan Review Fees are provided	Check delivered	
3. Electronic copy of the engineered/surveyed plan layout	CD Provided	
4. Electronic copy of supplementary materials and application	CD Provided	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	N/A	
6. Waiver requests to the Site Plan Review Regulations, with written justification	N/A	
7. Conditional Use Permit applications	N/A	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	Colored Arch. exterior view provided	
9. A colored architectural plan showing all sides of buildings	Hard copy delivered	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	Hard copy delivered	
Location map at appropriate scale	On Plans	
Proposed Project name and title and Planning File #	On Plans	
Date, north arrow and scale	On Plans	
Names of all abutting property owners	On Plans	
Name and address of owners and/or applicants	On Plans	
Signature & stamp of NH licensed land surveyor and/or engineer		
Zoning District boundaries, including any special or overlay districts	N/A	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	On Plans	
Location and widths of existing & proposed easements & right of ways	On Plans	
Location and width of existing and proposed access/egress ways	On Plans	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	On Plans	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	On Plans	
Existing and proposed topographic information at two foot intervals	On Plans	
Existing and proposed buildings and structure locations	On Plans	
Minimum building setbacks or build to lines on all lots	On Plans	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	On Plans	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	On Plans	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	On Plans	
Existing and proposed stormwater lines and facilities	On Plans	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Existing	
Location of Flood Hazard Zone		
Location of all bodies of water and watercourses	On Plans	
Location of wetlands and buffers	On Plans	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	N/A, Existing	
Existing natural features and/or significant vegetation on property	Waiver	
Depict existing contours up to 100 ft. beyond project limits	Waiver	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Existing	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	On Plans	
Location, material and size of existing and proposed pavement area	Existing	
Location of proposed fire lanes		
Specify finished floor elevations of buildings	On Plans	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	On Plans	
Depict all service, storage, loading bays and utility areas	On Plans	
All applicable Dover Common Site Plan notes	On Plans	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	N/A, Existing	
Stormwater Management System Operation and Maintenance Plan	N/A, Existing	
Letter to Serve from Public and Private Utilities	N/A, Existing	
Erosion and Sedimentation Control Plan	N/A, Existing	
Landscape Operation and Maintenance Plan	N/A, Existing	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A, Existing	
If wetland buffer, indicate placards locations, as applicable		
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	N/A, Existing	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	PDF and Hard Copy Delivered	

REVIEWED BY: _____ DATE_____ TRC DATE_____

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

September 30, 2021

To: Donna Benton
City of Dover
Planning Department
288 Central Ave
Dover, NH 03820

Re: Proposed Change of Use Site Plan & Application
50 Education Way, Dover, NH
Map E Lot 27F

Dear Donna,

A Change-of-Use Site Plan is being proposed on lot E-27F. The use will change from office/warehouse use to office/warehouse/showroom tech center. There are no proposed improvements to the site.

Based on our conversation, we are filing for Administrative Review of this minor site change.

We appreciate your consideration in this matter. If you have any questions or comments, please do not hesitate to contact me at (603) 472-4488 or email jkevan@tfmoran.com

Sincerely,
TFMoran Inc.

Jeffrey Kevan
Senior Project Manager

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

September 30, 2021

To: Donna Benton
City of Dover
Planning Department
288 Central Ave
Dover, NH 03820

Re: Proposed Change of Use Site Plan & Application – Waiver Request
50 Education Way, Dover, NH
Map E Lot 27F

Dear Donna,

A Change-of-Use Site Plan is being proposed on lot E-27F. The use will change from office/warehouse use to office/warehouse/showroom tech center. There are no proposed improvements to the site.

We respectfully request the waivers for the following Site Plan Checklist items:

- Existing natural features and/or significant vegetation on property
- Depict existing contours up to 100 ft. beyond project limits

We feel that the specific circumstances relative to the change of use site plan, (in that the site is currently developed, no improvements are proposed for the site and the buildings will continue with similar allowed uses), indicate that the waiver will properly carry out the spirit and intent of the regulations.

We appreciate your consideration in this matter. If you have any questions or comments, please do not hesitate to contact me at (603) 472-4488 or email jkevan@tfmoran.com

Sincerely,
TFMoran Inc.

Jeffrey Kevan
Senior Project Manager

BRÜCKNER
GROUP USA

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GROUP USA

BRÜCKNER
GROUP USA
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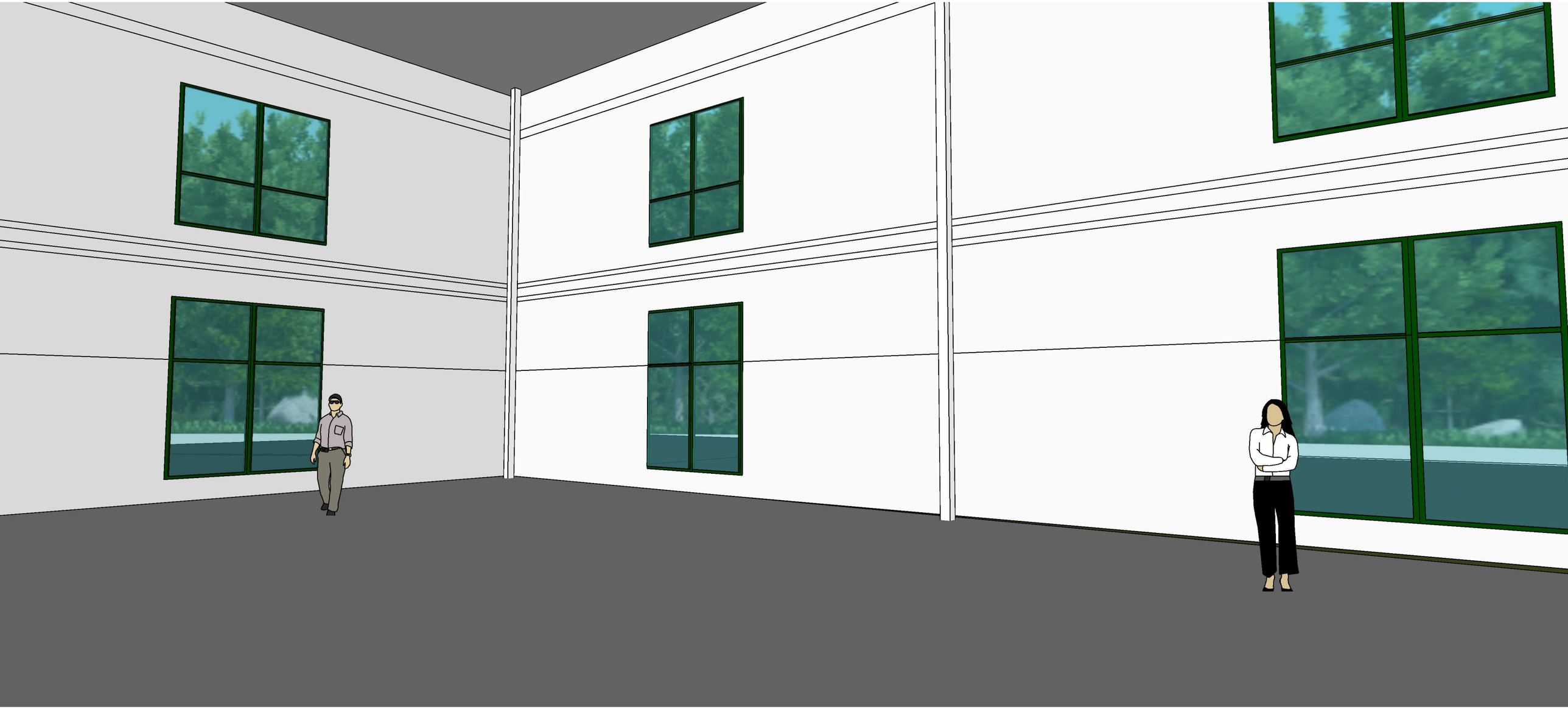

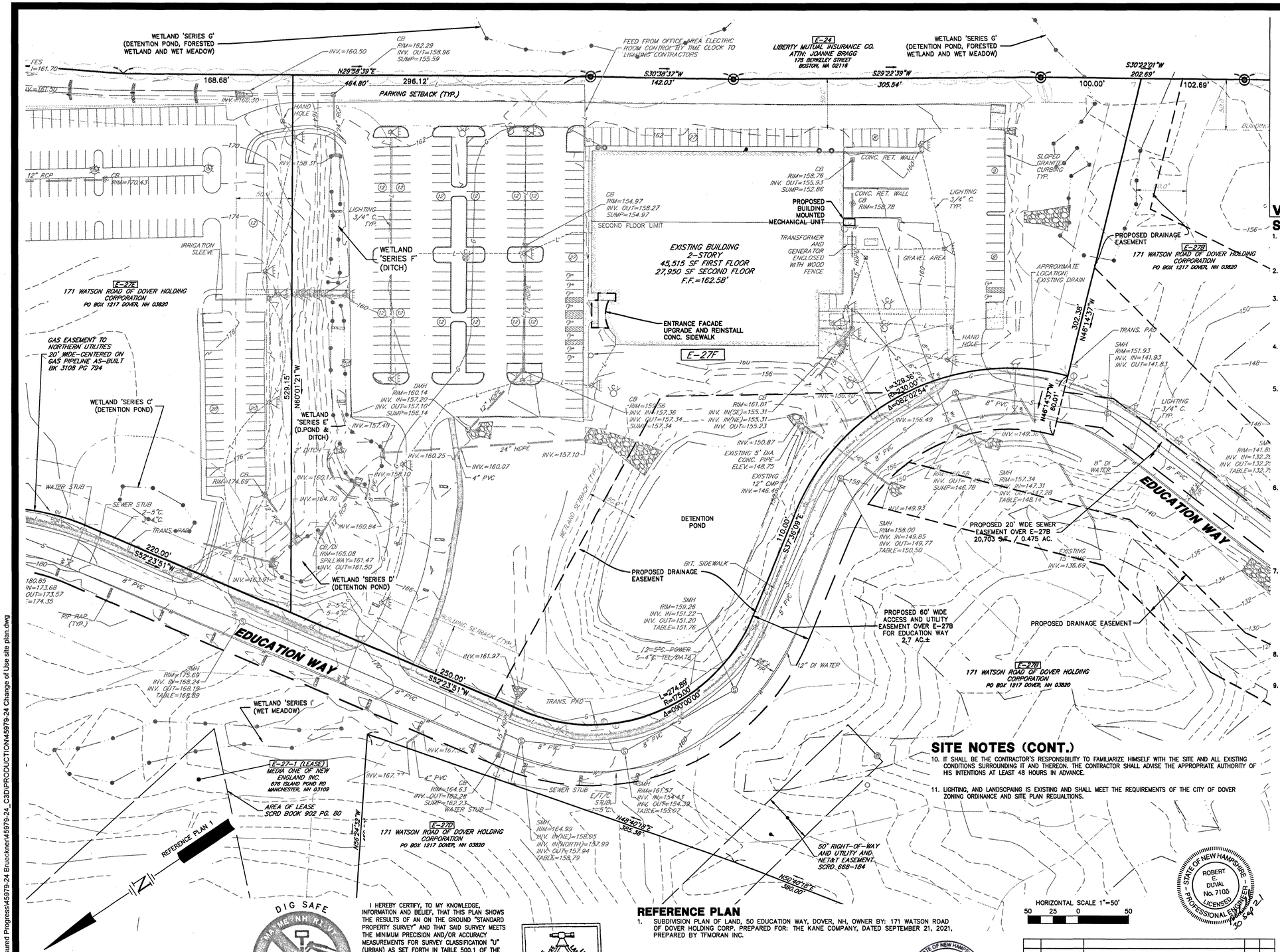

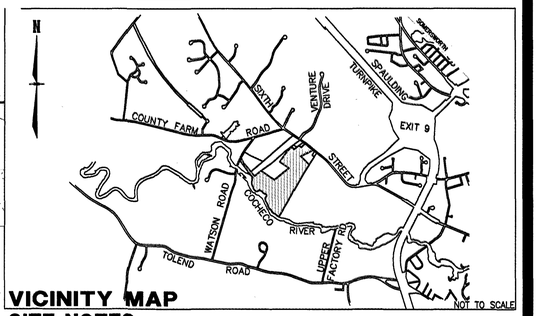

VICINITY MAP

NOT TO SCALE

SITE NOTES

1. OWNER OF RECORD OF MAP E LOT 27F: 171 WATSON ROAD OF DOVER HOLDING CORP., 9915 WESTIDE PARKWAY, ALPHARETTA, GA 30009. PARCEL ADRESS: 50 EDUCATION WAY, DOVER, NH. STRAFFORD COUNTY REGISTRY OF DEED REFERENCE TO PARCEL IS BK PG AREA OF PARCEL = 8.956± ACRES
2. ZONED: INNOVATIVE TECHNOLOGY (IT)
   EXISTING USE: OFFICE/WAREHOUSE
   PROPOSED USE: OFFICE, WAREHOUSE, SHOWROOM TECH CENTER
3. THE PURPOSE OF THIS PLAN IS TO SHOW A CHANGE-OF-USE FOR 50 EDUCATION WAY FROM A OFFICE/WAREHOUSE TO A OFFICE, WAREHOUSE, SHOWROOM TECH CENTER, AND TO PROPOSE MINOR UPGRADE TO THE FRONT ENTRANCE FACADE.

   THE PROPOSED FACILITY WILL HAVE UP TO 75 EMPLOYEES
   TYPICAL HOURS OF OPERATION: 7 AM TO 5 PM.
4. EASEMENTS:
   a. ACCESS AND UTILITIES SERVICING LOT E-27F AREA BY WAY OF EDUCATION WAY, BEING A PRIVATE ROAD EASEMENT SHOWN ON REFERENCE PLAN #1.
   b. SEWER SERVICING LOT E-27F AREA THROUGH EDUCATION WAY AND A 30' WIDE SEWER EASEMENT TO THE SOUTH SHOWN ON PLAN REFERENCE #1.
5. DIMENSIONAL REQUIREMENTS (IT ZONE)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	2 AC	8.956± AC
LOT FRONTAGE *	200 FT	964' (ALONG EDUCATION WAY)
FRONT	50' FT	85.0 FT
SIDE	50' FT	236.2 FT
REAR	50' FT	71.8 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	55 FT	2-STORY
LOT COVERAGE (GREEN SPACE)	33%	60%

   *NOTE: FRONTAGE IS NOT APPLICABLE TO LOTS OFF INTERNAL OR PRIVATE ROADWAY.
6. PARKING REQUIREMENTS

   REQUIRED PARKING RATIO

OFFICE	39,465SF X 1 SPACE PER 300SF	= 131.55 SPACES
WAREHOUSE	15,430SF X 1 SPACE PER 800SF	= 19.3 SPACES
TECH SHOWROOM	18,570SF X 1 SPACE PER 300SF	= 61.9 SPACES
TOTAL		= 213 SPACES
PROVIDED/EXISTING (INCLUDES 10 ADA PARKING SPACES)		= 224 SPACES

   WE DO NOT ANTICIPATE A CHANGE IN PARKING NEEDS BECAUSE THE PROPOSED USE IS SIMILAR TO THE PREVIOUS USE IN THE BUILDING.
7. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:
   DRAINAGE: PRIVATE
   SEWER: MUNICIPAL
   WATER: MUNICIPAL
   GAS: UNITIL
   ELECTRIC: EVERSOURCE
   TELEPHONE: CONSOLIDATED COMMUNICATIONS
   ESTIMATED WATER USE AND SEWER DISCHARGE: 75 EMPLOYEES X 20 GPD/EMPLOYEE = 1,500 GPD
   WE DO NOT ANTICIPATE A CHANGE IN WATER OR SEWER DISCHAGRE BECAUSE THE PROPOSED USE IS SIMILAR TO THE PREVIOUS USE.
8. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR STRAFFORD COUNTY, NEW HAMPSHIRE, (ALL JURISDICTIONS) MAP NUMBERS 33017C0310E EFFECTIVE DATE: SEPTEMBER 30, 2015, INDICATES THAT NO PORTION OF THE PROPOSED LOT E-27F IS LOCATED WITHIN FLOOD ZONE A.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.

SITE NOTES (CONT.)

10. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE SITE AND ALL EXISTING CONDITIONS SURROUNDING IT AND THEREON. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF HIS INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
11. LIGHTING, AND LANDSCPAING IS EXISTING AND SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER ZONING ORDINANCE AND SITE PLAN REGUALTIONS.

OWNERS SIGNATURE

OWNER OR REPRESENTATIVE — DATE

TAX MAP E LOT 27F

CHANGE-OF-USE SITE PLAN

50 EDUCATION WAY

DOVER, NEW HAMPSHIRE

OWNED BY

171 WATSON ROAD OF DOVER HOLDING CORP.
PO BOX 1217 DOVER, NH 03820

PREPARED FOR

BRUECHNER PROPERTY USA INC.
200 INTERNATIONAL DR STA 105, PORTSMOUTH, NH

SCALE: 1"=50' **SEPTEMBER 21, 2021**

REFERENCE PLAN

1. SUBDIVISION PLAN OF LAND, 50 EDUCATION WAY, DOVER, NH, OWNER BY: 171 WATSON ROAD OF DOVER HOLDING CORP. PREPARED FOR: THE KANE COMPANY, DATED SEPTEMBER 21, 2021, PREPARED BY TFMORAN INC.

WETLAND CERTIFICATION

JURISDICTIONAL WETLANDS DESIGNATED AS "SERIES A" THROUGH "SERIES I" SHOWN ON THIS PLAN WERE DELINEATED IN JULY 2021 BY JAMES P. GOVE CWS #051. ALL OTHER WETLANDS SHOWN FROM RECORD PLANS.
THE WETLANDS WERE DELINEATED ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2, JANUARY 2012.

STATE OF NEW HAMPSHIRE — JAMES P. GOVE — 9/7/2021 — No. 0051 — CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE — ROBERT E. DUVAL No. 7105 LICENSED PROFESSIONAL ENGINEER — 10 SEP 21

STATE OF NEW HAMPSHIRE — No. 787 — LICENSED LAND SURVEYOR — HANS-GEORG A. MERTSCH, JR. — 9/30/2021

DIG SAFE — CALL 811 — UTILITIES UNDER GROUND PLANT DAMAGE PREVENTION SYSTEM

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

I HEREBY CERTIFY, TO MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THIS PLAN SHOWS THE RESULTS OF AN ON THE GROUND "STANDARD PROPERTY SURVEY" AND THAT SAID SURVEY MEETS THE MINIMUM PRECISION AND/OR ACCURACY MEASUREMENTS FOR SURVEY CLASSIFICATION "U" (URBAN) AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS ADOPTED 8/23/01, EFFECTIVE 8/24/01.

I FURTHER CERTIFY THAT THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE ON THE GROUND AND HAS A MAXIMUM ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND ON ALL PROPERTY LINES WITHIN AND BORDERING THE SUBJECT PROPERTY.

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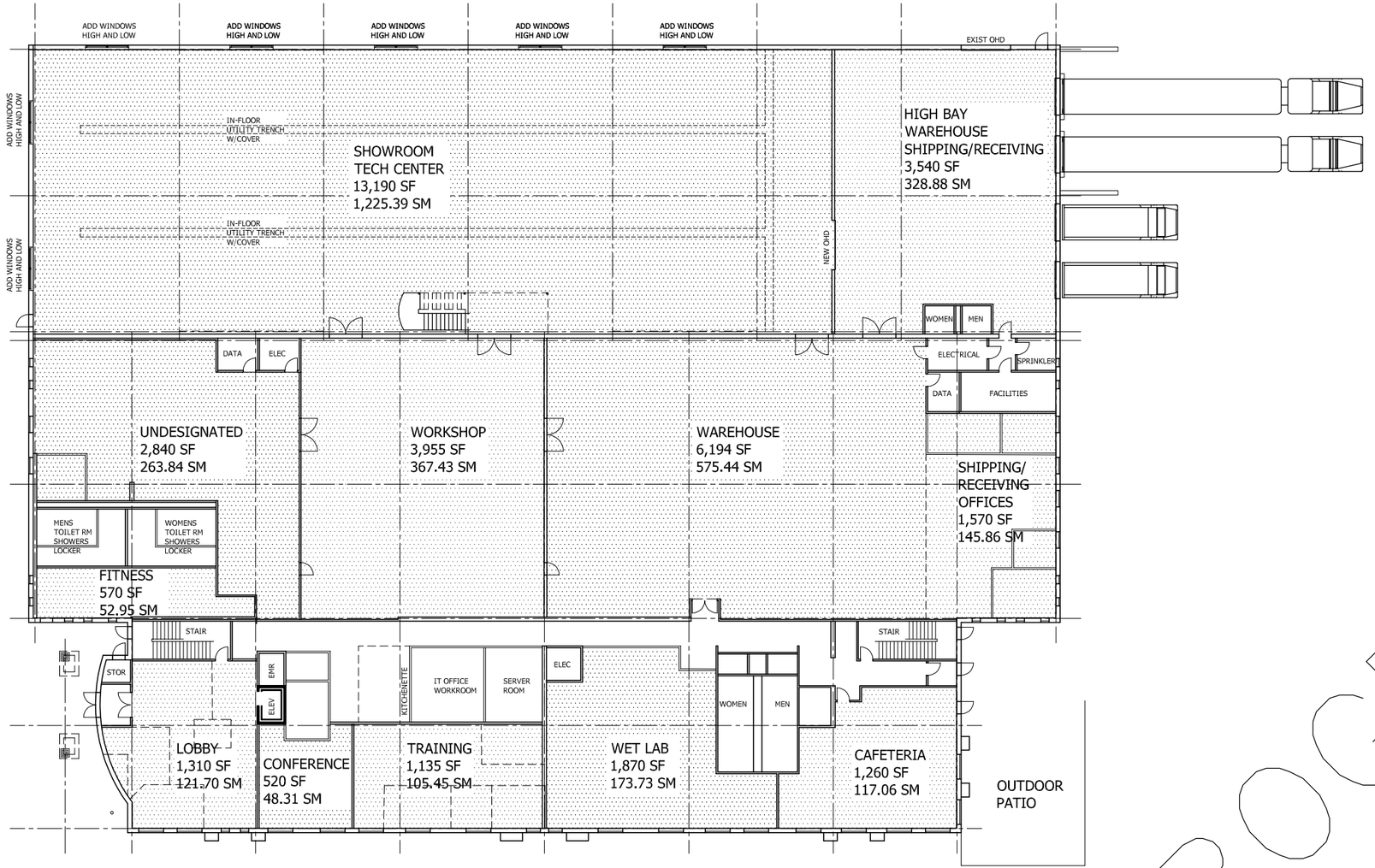
48 Constitution Drive, Bedford, N.H. 03110
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	DR	AJC	FB	-	
45979.22	CK	JK	CADFILE	45979-24 CHANGE OF USE SITE PLAN	C-1

Sep 30, 2021 - 1:22pm
F:\TFM Projects\45979 Measured Progress\45979-24 Brueckner\45979-24_C3D\PRODUCTION\45979-24 Change of Use site plan.dwg



FIRST FLOOR PLAN
45,515 SF
4,228.48 SM

0 8 16 32

0 10 20 50

PROGRESS

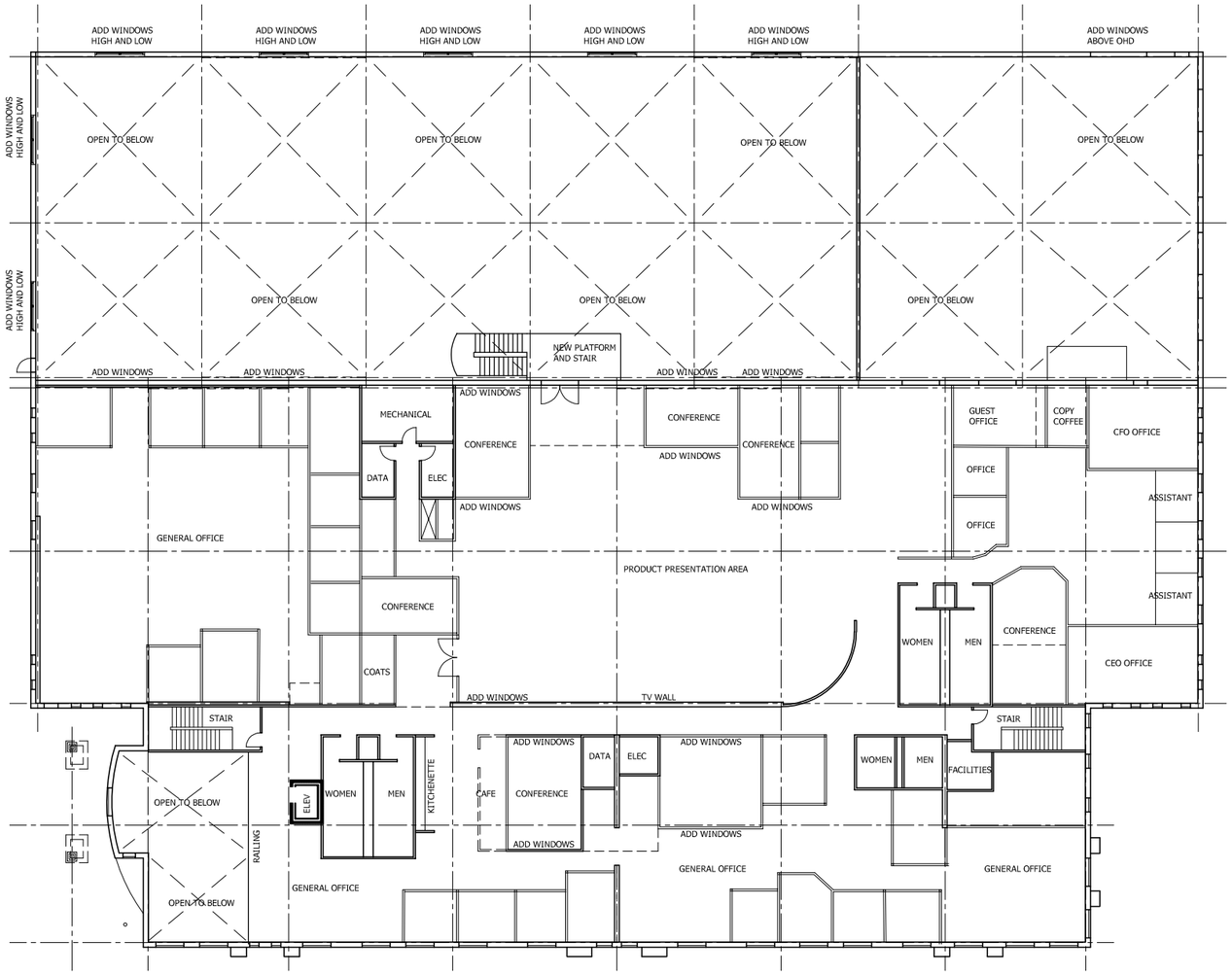
BRÜCKNER GROUP USA

FIRST FLOOR CONCEPT PLAN

50 EDUCATION WAY

DOVER, NH 05-18-2021

PROCON
CONNECT • CREATE • CONSTRUCT
PO BOX 4430 | MANCHESTER NH | 03108 | 603.623.8811 | PROCONINC.COM



SECOND FLOOR PLAN
27,950 SF
2,596.64 SM

0 8 16 32
0 10 20 50

PROCON
CONNECT • CREATE • CONSTRUCT
PO BOX 4430 | MANCHESTER NH | 03108 | 603.623.8811 | PROCONINC.COM

PROGRESS

BRÜCKNER GROUP USA

SECOND FLOOR CONCEPT PLAN

50 EDUCATION WAY
DOVER, NH 05-18-2021

C0960-007
September 16, 2021

Mr. Christopher G. Parker, AICP
Assistant City Manager: Director of Planning and Strategic Initiatives
City of Dover Planning and Community Development
288 Central Avenue
Dover, New Hampshire 03820

Re: Site Plan Review Application – Cochecho Waterfront Development
Mixed-Use Development – River Street, Dover, NH

Dear Chris:

On behalf of CPI Management, LLC, we are pleased to submit the following materials to the Technical Review Committee (TRC) in support of a Site Review Permit Application for the above referenced project:

- Eight (8) copies of the Site Review Application, dated September 16, 2021
- Eight (8) copies of the Site Plan Set, dated September 16, 2021
- Eight (8) copies of the Conditional Use Permit Application – Building Height, dated September 16, 2021
- Eight (8) copies of the Conditional Use Permit Application – Unit Density, dated September 16, 2021
- Eight (8) copies of the Drainage Report, dated September 16, 2021
- Eight (8) copies of the Long-Term Operation and Maintenance Manual, dated September 16, 2021
- Eight (8) copies of the Projected Water and Wastewater Flows and Investment Fee Memo, dated September 16, 2021
- Eight (8) copies of the Initial Traffic Evaluation Memorandum – Proposed Cochecho Waterfront Development, dated September 7, 2021
- Eight (8) copies of the Fire Truck Turning Exhibit, dated September 16, 2021
- Eight (8) copies of the Eversource Will Serve letter, dated August 24, 2021
- Eight (8) copies of the Unitil Will Serve letter, dated August 5, 2021
- Plan Review Fee Check in the amount of $48,769.87, payable to the City Dover
- One (1) CD containing digital (PDF) copies of the above listed information

The proposed project is a multi-family, mixed-use development located on parcels of land along River Street on properties identified as Map 22, Lots 1-2 & 1-4 on the City of Dover Tax Maps. The proposed parcels are 4.07 acres and 8.16 acres, respectively and are owned by the City of Dover along the Cochecho River waterfront that will be redeveloped under a land development agreement reached between the applicant and City for the Cochecho Waterfront Development. Map 22 Lot 1-4 is proposed to be further subdivided as part of this project to create a new City roadway, being designed by the City, and four additional development lots. The total proposed development area is between Lot 22-1-2 and the 4 proposed parcels is 10.45 acres.

The private development portion of the project includes the construction of three (3) mixed use buildings, two (2) multi-family buildings, and three (3) clusters of townhouses. The buildings are identified as Buildings A through F on the enclosed site plans. The buildings include a total of 416 residential units and approximately 26,000 SF of commercial space. The project will include associated site improvements such as paving, stormwater management, utilities, lighting, landscaping.

The mixed-use buildings identified as Building A, Building C, Building D, and one (1) multi-family building identified as Building F require the granting of a conditional use permit (CUP) for increased building height above the 55-foot maximum height allowed in the Cochecho Waterfront District (CWD). The proposed Lot 22-1-4 that includes the buildings identified as Building C and Building D requires the granting of a CUP for increased building unit density above the forty-three (43) dwelling units per acre allowed in the CWD. Both CUP requests are included as part of this submission package.

The Cochecho Waterfront Development Advisory Committee (CWDAC) provided conditional approval to the development plans at its meeting on August 31, 2021, which has allowed the project to move forward to Planning Board review process. CWDAC also recommended the project receive a Conditional Use Permit from the Planning Board for building heights exceeding 55 feet, which is the maximum for the CWD.

We respectfully request to be placed on the Technical Review Committee (TRC) meeting agenda for October 7, 2021. Please contact us by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com or nahansen@tighebond.com if you have any questions or need any additional information..

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

Copy: CPI Management, LLC (via E-mail)

J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Report_Evaluation\Applications\City of Dover\20210916 TRC Submission\C0960-007 Building Height CUP Letter 20210916.docx

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CHRISTOPHER G. PARKER, AICP
Assistant City Manager
Planning & Strategic Initiatives
c.parker@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6008
Fax: (603) 516-6049
www.dover.nh.gov

City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

IMPORTANT: PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE FILLING OUT ATTACHED APPLICATION.
INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED FOR REVIEW.

Dear Applicant:

This will serve to briefly inform you regarding the process to have the Dover Planning Board (the Board) review a land use application. Please refer to the NH Statutes on Land Use and Regulation the Dover Code, and our Developer's Handbook for more specific information.

The Board primarily reviews 5 types of applications:

1. **Site Plans** - A site plan is a professionally rendered drawing which delineates the proposed development of a site. This plan is required for non-residential development, creation of multi-family residential structures, and for extensions of parking lots and alteration of an acre or more of land. These plans require meeting with the Technical Review Committee before Planning Board review.

2. **Subdivisions** - A subdivision is the division of the lot, tract, or parcel of land into two (2) or more lots, plats, sites or other divisions of land for the purpose, whether immediate or future, of sale, rent, lease or building development. It includes re-subdivision and, when appropriate to the context, relates to the process of subdividing or to the land or territory subdivided. Major subdivision plans (4+) require meeting with the Technical Review Committee before Planning Board review.

3. **Lot Line Adjustments** - A lot line adjustment alters the size of two (2) or more lots, but does not create a new buildable lot.

4. **Conditional Use Permits** - A conditional use permit is required for any alteration of wetlands, wetland buffers or work within the City's conservation district. Additionally, a conditional use permit could be issued as to offer relief in the Central Business District, for plans in the Residential Mixed Use Overlay District, or parking relief. Environmental Conditional Use Permits are acted on after Conservation Commission review.

5. **Excavation Permits** – NH RSA Chapter 155-E grants municipalities the authority to regulate earth excavations within their borders. This authority rests with the Planning Board.

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The Board cannot and will not review applications that do not meet zoning requirements. **Please review the need to apply to the Zoning Board of Adjustment prior to applying to the Board.**

Professional agents will prepare your application; however, you may represent yourself or authorize, in writing, someone else to represent you before the Planning Board.

In most cases, the first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, and a PDF, need to be provided, along with payment of plan review fees. These meetings occur on Thursday, and materials and payment must be submitted three (3) weeks prior to meeting. Meetings are scheduled, upon receipt of completed applications with the full checklist and payment.

The next step would be to provide, two weeks prior to Planning Board, the final plan sets (three (3) full size and twelve (12) half size (11x 17), folded, copies of the plan), and 15 copies, and a PDF, of all supporting materials, including response to TRC comments. Please print all materials on both sides of paper.

For projects not appearing before the Technical Review Committee, Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and 15 copies, plus a PDF, of plans and materials, 3 weeks prior to the Planning Board meeting. Please print all materials on both sides of paper.

Staff will generate an abutter list, and Abutter/Notice Fees will be invoiced. They are due 28 hours prior to Planning Board. If they are not paid, the application will not be heard.

Once an item is placed upon an agenda the following process is used:

- The Board will hold a public hearing on your application at a regularly scheduled meeting
    - Typically the second or fourth Tuesday of the Month.
- Public notice of the hearing will be posted at the City Clerk's office and the Planning Department office and printed in the newspaper.
- Certified letters will be mailed to you and to all abutters at least ten days before the date of the hearing.
- 28 hours prior to the meeting, abutter/notice fees must be paid
- At the meeting
    - Staff will introduce your project
    - You and all other parties will be invited to appear in person or by agent or counsel to present your application.
        - Your project will be pre-loaded onto a laptop for review by the Board and public
    - The Board may ask clarifying questions
    - The Board will vote to accept jurisdiction on the application
    - If accepted:
        - The Board will hold a public hearing
        - The Board may ask additional questions
        - The Board will deliberate on your application
            - Typically decisions are made the night of the presentation, but an application may be tabled
        - After deliberation, a decision will be made.
            - You will be sent a notice of the decision.

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City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: CPI Management, LLC Telephone # 617.840.4778

Address of Applicant: 6 Liberty Sq PMB 90767, Boston, MA 02109

E-Mail Address: robs@cathartes.com

Name of Property Owner (*if different from applicant*): City of Dover Telephone #_____

Address of Property Owner: 288 Central Ave, Dover, NH 03820

PROPERTY INFORMATION

Address of Property: River Street

Assessor's Map # 22 Lot(s) # 1-2 & 1-4

Zoning District(s) Cochecho Waterfront Overlay District(s) _____
1-2: 177,105 1-2: 4.07

Size of Parcel: 1-4: 355,658 sq. ft. 1-4: 8.16 ac. Property Deed: Book _____ Page: _____

Existing Use of Property: Vacant

SITE PLAN INFORMATION

Describe Proposed Use: Mixed-use Development

Area of Parcel to be Developed: ±455,200 sq. ft.

If Multi-family Residential: Number of Units 416 & Buildings Proposed 8

If lodging: Number of Units _____ & number of Buildings _____

Number of Parking Spaces: Existing 0 Proposed 553

Highway Access (check where applicable): X City Street ____ State Highway

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel: Building Setbacks:

Building Footprint BLDG A: 28,700 BLDG B: 18,850 BLDG C: 27,100 BLDG D: 30,900 BLDG E: 2,450 BLDG F: 16,500 sq. ft. Front Yard N/A ft.

Total Building Area BLDG A: 142,700 BLDG B: 73,200 BLDG C: 132,500 BLDG D: 149,900 BLDG E: 53,900 BLDG F: 80,300 TOTAL: 632,500 sq. ft. Rear Yard N/A ft.

Paved Area 169,139 sq. ft. Side Yard: Right N/A ft. Left N/A ft.

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City Water? X Yes ___ No How far is city water from the property? ±15 ft

City Sewer? X Yes ___ No How far is city sewer from the property? ±15 ft

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

□ Residential □ Residential (reduced size) □ Industrial | □ Purchase □ Land Preservation

Relief sought (Check All That Apply):

□ Lot Size □ Frontage □ Setback □ 30' Buffer □ Increase by _____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: Mixed-use Development

Height of Building: BLDG A: 56.16' BLDG B: 50.75' BLDG C: 65.42' BLDG D: 65.0' BLDG E: 33.00' BLDG F: 56.56'

Finished Floor Elevation: BLDG A: 26.50' BLDG B: 25.10' BLDG C: 19.75' BLDG D: 19.40' BLDG E: Varies BLDG F: 17.00'

Number of Seats (where applicable) _____

Estimated value of construction: _____Refuse removal: Public/(Private) (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____

Justification for waiver request(s) (*attach additional sheets as needed*):

_____

_____

_____

_____

_____

_____

_____

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SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Doucet Survey, Inc.

Address 102 Kent Place, Newmarket, NH 03857 Telephone #: 603-659-6560

Professional License #: _____ E-mail address: _____

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Patrick Crimmins, PE | Tighe & Bond, Inc.

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: 12378 E-mail address: pmcrimmins@tighebond.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Daniel Riggs | Embarc Studio

Address 580 Harrison Ave, Suite 2W, Boston, MA 02118 Telephone #: 617-765-8000

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Halvorson | Tighe & Bond, Inc.

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) _____

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

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SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Rob Simmons F303420CFE6043A... Date: 9/15/2021

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Rob Simmons F303420CFE6043A... Date: 9/15/2021

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Rob Simmons F303420CFE6043A... Date: 9/15/2021

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CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
		City of Dover	

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Rob Simmons	CPI Management, LLC	6 Liberty Sq PMB 90767, Boston, MA 02109

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Patrick Crimmins	Tighe & Bond, Inc.	177 Corporate Drive, Portsmouth, NH 03801
	Doucet Survey, Inc.	102 Kent Place, Newmarket, NH 03857
Daniel Riggs	Embarc Studio	580 Harrison Ave, Suite 2W, Boston, MA 02118

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

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PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # 3 new lots created = $650.00
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $N/A
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $N/A
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x #416 per dwelling unit = $41,800.00
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $N/A
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $N/A
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $N/A
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $N/A
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # 2 per Application = $400.00
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $N/A
  - Permit fee $75.00= $N/A
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $N/A
- ☐ REQUEST FOR REZONING Application fee $200.00 = $N/A
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $N/A

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # 169,139 sq. ft. = $5,919.87

*50% reduction for providing EVSE

SUBTOTAL PLAN REVIEW FEE (A) = $48,769.87

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # 5 of x $8.00= $40.00
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

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City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: CPI Management, LLC File Number: _____

PROJECT TITLE: Cochecho Waterfront Development

PROPERTY LOCATION: River Street Tax Map: ____ Lot: ____

	Where/How Provided	Reviewed
1. Completed and signed Application form	Enclosed	
2. Plan Review Fees are provided	Enclosed	
3. Electronic copy of the engineered/surveyed plan layout	Enclosed	
4. Electronic copy of supplementary materials and application	Enclosed	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	Enclosed	
6. Waiver requests to the Site Plan Review Regulations, with written justification	N/A	
7. Conditional Use Permit applications	Enclosed	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	See Architectural Plans	
9. A colored architectural plan showing all sides of buildings	See Architectural Plans	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	Enclosed	
Location map at appropriate scale	See Cover Sheet	
Proposed Project name and title and Planning File #	See Site Plans	
Date, north arrow and scale	See Site Plans	
Names of all abutting property owners	See Site Plans	
Name and address of owners and/or applicants	See Existing Conditions Plans	
Signature & stamp of NH licensed land surveyor and/or engineer	See Site Plans	
Zoning District boundaries, including any special or overlay districts	See Site Plans	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	See Site Plans	
Location and widths of existing & proposed easements & right of ways	See Site Plans	
Location and width of existing and proposed access/egress ways	See Site Plans	

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	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	See Site Plans	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	See Site Plans	
Existing and proposed topographic information at two foot intervals	See Grading & Drainage Plans	
Existing and proposed buildings and structure locations	See Site Plans	
Minimum building setbacks or build to lines on all lots	See Site Plans	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	See Utility Plans	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	See Utility Plans	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	See Utility Plans	
Existing and proposed stormwater lines and facilities	See Grading & Drainage Plans	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	See Photometric Plan	
Location of Flood Hazard Zone	See Site Plans	
Location of all bodies of water and watercourses	See Site Plans	
Location of wetlands and buffers	See Existing Conditions Plans	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	See Neighborhood Plan	
Existing natural features and/or significant vegetation on property	See Existing Conditions Plans	
Depict existing contours up to 100 ft. beyond project limits	See Existing Conditions Plans	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	See Landscape Plans	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	See Site Plans	
Location, material and size of existing and proposed pavement area	See Site Plans	
Location of proposed fire lanes	See Site Plans	
Specify finished floor elevations of buildings	See Grading & Drainage Plans	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	See Site Plans	
Depict all service, storage, loading bays and utility areas	See Site Plans	
All applicable Dover Common Site Plan notes	See Site Plans	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	Enclosed	
Stormwater Management System Operation and Maintenance Plan	Enclosed	
Letter to Serve from Public and Private Utilities	Enclosed	
Erosion and Sedimentation Control Plan	Enclosed	
Landscape Operation and Maintenance Plan	See Landscape Plans	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	See Cover Sheet	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	See Existing Conditions Plans	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required		

REVIEWED BY: _____ DATE_____ TRC DATE_____

DocuSign Envelope ID: 6C0F4247-BC89-4B9C-9DAF-449C21CF0ADD

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: CPI Management, LLC Telephone # 617.840.4778

Address of Applicant: 6 Liberty Sq PMB 90767, Boston, MA 02109

E-Mail Address: robs@cathartes.com

Name of Property Owner (if different from applicant): City of Dover Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 22 Lot(s) # 1-2 & 1-4

Address of Property: River Street

Zoning District(s) Cochecho Waterfront Overlay District(s) _____

Existing Use of Property: Vacant

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☐ Wetland Protection District	☒ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See Narrative Attached

DocuSign Envelope ID: 6C0F4247-BC89-4B9C-9DAF-449C21CF0ADD

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: _____

_____

Name of Professional That Prepared Plans: Patrick Crimmins, PE | Tighe & Bond, Inc.

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: 12378 E-mail address: pmcrimmins@tighebond.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (if different from owner): DocuSigned by: Rob Simmons F303420CFE6043A... Date: 9/15/2021

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

DocuSign Envelope ID: 6C0F4247-BC89-4B9C-9DAF-449C21CF0ADD

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
		City of Dover	

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Rob Simmons	CPI Management, LLC	6 Liberty Sq PMB 90767, Boston, MA 02109

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Patrick Crimmins	Tighe & Bond, Inc.	177 Corporate Drive, Portsmouth, NH 03801

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

C0960-007
September 16, 2021

Mr. Christopher G. Parker, AICP
Assistant City Manager: Director of Planning and Strategic Initiatives
City of Dover Planning and Community Development
288 Central Avenue
Dover, New Hampshire 03820

Re: Conditional Use Permit Application – Building Height
Mixed-Use Development – River Street, Dover, NH

Dear Chris:

On behalf of CPI Management, LLC, we are pleased to submit the following request for a Conditional Use Permit (CUP) to allow for increased building heights. Tighe & Bond, Inc. (Tighe & Bond) has prepared the following CUP request to summarize how the Project compiles with the standards for a conditional use permit allowed under section 170-20.B of the City of Dover Zoning Ordinance.

Additionally, the Cochecho Waterfront Development Advisory Committee (CWDAC) has reviewed the CUP request and has voted unanimously to recommend the approval of the CUP for increased building height.

Project Background

The proposed project is a multi-family, mixed-use development located on a parcel of land along River Street. The proposed project is part of a larger development by the City of Dover along the Cochecho River waterfront. This project is being developed as part of a land development agreement between the applicant and City for the Cochecho Waterfront Development.

The private development portion of the project includes the construction of three (3) mixed use buildings, two (2) multi-family buildings, and three (3) clusters of townhouses. The buildings are identified as Buildings A through F on the enclosed site plans. The mixed-use buildings identified as Building A, Building C, Building D, and one (1) multi-family building identified as Building F require the granting of a conditional use permit for increased building height above the 55-foot maximum height allowed in the Cochecho Waterfront District (CWD). Limiting the building heights of 55 feet would be detrimental to the overall design and development goals of the Cochecho Waterfront. In order to have a viable Commercial Storefront, which has a 14-foot floor to floor height, as well room for varied architectural roof lines, relief on the height is necessary.

Building A

Building A has height of 56.17 feet above the average grade level to the highest level of the front parapet. The parapet extends 3 feet above the height of the main roof line.

Building C

Building C has height of 65.42 feet above the average grade level to the highest level of the front corner parapet. The corner parapet extends 5.25 feet above the height of the low parapet. The low parapet is 60.17 feet above the average grade level.

Building D

Building D has height of 65.00 feet above the average grade level to the highest level of the front parapet. The front parapet extends 4.33 feet above the height of the low parapet. The low parapet is 60.67 feet above the average grade level.

Building F

Building F has height of 56.58 feet above the average grade level to the highest level of the hip roof. Using the hip roof line increases the height of the building above the average grade level by 5.44 feet above the lowest end of the roof slope.

Conditional Use Permit

Within the Cochecho Waterfront District (CWD) regulations, the maximum allowed height for buildings is 55 feet. However, "deviations from these requirements are permitted by Conditional Use Permit, subject to the requirements to Section 170-20.B(1)". The following has been provided to demonstrate that the project meets the requirements of the City Dover Zoning Ordinance 170 Section 20.B(1).

Conditional Use Permit Criteria

Based on the above described and enclosed materials, the following addresses how the proposed project compiles with the standards identified in Section 170-20.B(1) of the Zoning Ordinance:

(a) That both public and private BUILDINGS and landscaping shall contribute to the physical definition of RIGHTS OF WAY as CIVIC SPACES.

The project is designed with commercial storefronts which establish the pedestrian right of ways and landscaped plazas for public gathering areas. This, in addition to the City's Offsite improvement of the Right-of-way and streetscape will help define the public areas.

(b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.

The project site plans have driveways and parking areas which have been designed in accordance with city standards. The project has located parking within and behind the buildings to allow for a more pedestrian friendly scale and to help define and enhance the street edge.

(c) That the design of streets and BUILDINGS shall reinforce safe environments, but not at the expense of accessibility.

The site is extremely accessible to pedestrians. Pedestrian areas are well lit and properly monitored to address any safety concerns.

(d) That architecture and landscape design shall grow from local climate, topography, history, and BUILDING practice.

The landscape plans have been prepared by a certified Landscape Architect who selected plants suited to the Dover, NH climate and are salt tolerant.

(e) That BUILDINGS shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

The buildings are being designed using the most current energy efficient design methods. In addition, although the Cochecho Waterfront District has no

requirements for Solar-Ready buildings, the project intends on incorporating roof top solar on several of the buildings and at the very least the buildings will be solar-ready. Also, although the regulations call for "EV-Ready" car charging stations, the project will be installing several EV stations within the proposed garages.

(f) That CIVIC BUILDINGS and public gathering places shall be provided as locations that reinforce community identity and activity.

This is not applicable to the parcel however as part of the City's offsite improvements, a public pavilion will be built to help encourage community activity and identity.

(g) That CIVIC BUILDINGS shall be distinctive and appropriate to a role more important than the other BUILDINGS that constitute the fabric of the city.

This is not applicable to the parcel however as part of the City's offsite improvements, a public pavilion will be built to help encourage community activity and identity.

(h) That the preservation and renewal of historic BUILDINGS shall be facilitated.

This is site is a vacant lot however the design of the new buildings will be done in the fabric of the surrounding historical buildings.

(i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.

Limiting the buildings to a height of 55' would be detrimental to the overall design and development goals of the Cochecho Waterfront District. In order to have a viable Commercial Storefront as well room for a varied architectural roof line, relief on the height is necessary.

Conclusion

We trust the above described and enclosed materials address the criteria to grant a Conditional Use Permit for the proposed project. As stated previously, the CWDAC has reviewed the CUP request and has voted unanimously to recommend the approval of the CUP for increased building height.

The applicant respectfully requests a Conditional Use Permit be granted for increased building height. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

Copy: CPI Management, LLC (via E-mail)

DocuSign Envelope ID: 6C0F4247-BC89-4B9C-9DAF-449C21CF0ADD

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: CPI Management, LLC Telephone # 617.840.4778

Address of Applicant: 6 Liberty Sq PMB 90767, Boston, MA 02109

E-Mail Address: robs@cathartes.com

Name of Property Owner (if different from applicant): City of Dover Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 22 Lot(s) # 1-4

Address of Property: River Street

Zoning District(s) Cochecho Waterfront Overlay District(s) _____

Existing Use of Property: Vacant

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District ☐ RCM Use Overlay District ☐ Gateway District

☐ Groundwater Protection ☐ Off-Street Parking and Loading ☐ Alternative Treatment Center

☐ Wetland Protection District ☒ Central Business District ☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See Narrative Attached

DocuSign Envelope ID: 6C0F4247-BC89-4B9C-9DAF-449C21CF0ADD

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: _____

_____

Name of Professional That Prepared Plans: Patrick Crimmins, PE | Tighe & Bond, Inc.

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: 12378 E-mail address: pmcrimmins@tighebond.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (if different from owner): DocuSigned by: Rob Simmons F303420CFE6043A... Date: 9/15/2021

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

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CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
		City of Dover	

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Rob Simmons	CPI Management, LLC	6 Liberty Sq PMB 90767, Boston, MA 02109

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Patrick Crimmins	Tighe & Bond, Inc.	177 Corporate Drive, Portsmouth, NH 03801

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

C0960-007
September 16, 2021

Mr. Christopher G. Parker, AICP
Assistant City Manager: Director of Planning and Strategic Initiatives
City of Dover Planning and Community Development
288 Central Avenue
Dover, New Hampshire 03820

Re: Conditional Use Permit Application – Unit Density
Mixed-Use Development – River Street, Dover, NH

Dear Chris:

On behalf of CPI Management, LLC, we are pleased to submit the following request for a Conditional Use Permit (CUP) to allow for increased building unit density. Tighe & Bond, Inc. (Tighe & Bond) has prepared the following CUP request to summarize how the Project compiles with the standards for a conditional use permit allowed under section 170-20.B of the City of Dover Zoning Ordinance.

Project Background

The proposed project is a multi-family, mixed-use development located on a parcel of land along River Street. The proposed project is part of a larger development by the City of Dover along the Cochecho River waterfront. This project is being developed as part of a land development agreement between the applicant and City for the Cochecho Waterfront Development.

The private development portion of the project includes the construction of three (3) mixed use buildings, two (2) multi-family buildings, and three (3) clusters of townhouses. The buildings are identified as Buildings A through F on the enclosed site plans. Proposed Lot 22-1-4 that includes the mixed-use buildings identified as Building C and Building D requires the granting of a conditional use permit for increased building unit density above the forty-three (43) dwelling units per acre allowed in the Cochecho Waterfront District (CWD). The density of the Overall Cochecho Waterfront Development will be under the maximum allowed density. Relief is needed due to the phasing of the project and the subdivision of the individual lots that encompass the total development area. Relief from this requirement allows for design to not be driven by density per subdivision but rather what is best for the overall project design.

Proposed Lot 22-1-4 is a total of 3.61 acres and includes a total of 194 dwelling units between Building C and Building D. That makes the unit density of Proposed Lot 22-1-4 53.74 units per acre. The total development area includes 10.45 acres and 416 units between Buildings A through F. This equates to 39.8 units per acre for the development as a whole.

Conditional Use Permit

Within the Cochecho Waterfront District (CWD) regulations, the maximum allowed building unit density is forty-three (43) dwelling units per acre. However, "deviations from these requirements are permitted by Conditional Use Permit, subject to the requirements to Section 170-20.B(1)". The following has been provided to demonstrate that the project meets the requirements of the City Dover Zoning Ordinance 170 Section 20.B(1).

Conditional Use Permit Criteria

Based on the above described and enclosed materials, the following addresses how the proposed project compiles with the standards identified in Section 170-20.B(1) of the Zoning Ordinance:

(a) That both public and private BUILDINGS and landscaping shall contribute to the physical definition of RIGHTS OF WAY as CIVIC SPACES.

The project is designed with commercial storefronts which establish the pedestrian right of ways and landscaped plazas for public gathering areas. This, in addition to the City's Offsite improvement of the Right-of-way and streetscape will help define the public areas.

(b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.

The project site plans have driveways and parking areas which have been designed in accordance with city standards. The project has located parking within and behind the buildings to allow for a more pedestrian friendly scale and to help define and enhance the street edge.

(c) That the design of streets and BUILDINGS shall reinforce safe environments, but not at the expense of accessibility.

The site is extremely accessible to pedestrians. Pedestrian areas are well lit and properly monitored to address any safety concerns.

(d) That architecture and landscape design shall grow from local climate, topography, history, and BUILDING practice.

The landscape plans have been prepared by a certified Landscape Architect who selected plants suited to the Dover, NH climate and are salt tolerant.

(e) That BUILDINGS shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

The buildings are being designed using the most current energy efficient design methods. In addition, although the Cochecho Waterfront District has no requirements for Solar-Ready buildings, the project intends on incorporating roof top solar on several of the buildings and at the very least the buildings will be solar-ready. Also, although the regulations call for "EV-Ready" car charging stations, the project will be installing several EV stations within the proposed garages.

(f) That CIVIC BUILDINGS and public gathering places shall be provided as locations that reinforce community identity and activity.

This is not applicable to the parcel however as part of the City's offsite improvements, a public pavilion will be built to help encourage community activity and identity.

(g) That CIVIC BUILDINGS shall be distinctive and appropriate to a role more important than the other BUILDINGS that constitute the fabric of the city.

This is not applicable to the parcel however as part of the City's offsite improvements, a public pavilion will be built to help encourage community activity and identity.

(h) That the preservation and renewal of historic BUILDINGS shall be facilitated.

This is site is a vacant lot however the design of the new buildings will be done in the fabric of the surrounding historical buildings.

(i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.

The density of the Overall Cochecho Waterfront Development will be under the max density of 43 dwelling units per acre. Where relief is needed is when the project is phased and there are subdivisions. Relief from this requirement allows for design to not be driven by density per subdivision but rather what is best for the overall project design.

Conclusion

We trust the above described and enclosed materials address the criteria to grant a Conditional Use Permit for the proposed project. The applicant respectfully requests a Conditional Use Permit be granted for increased building unit density. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

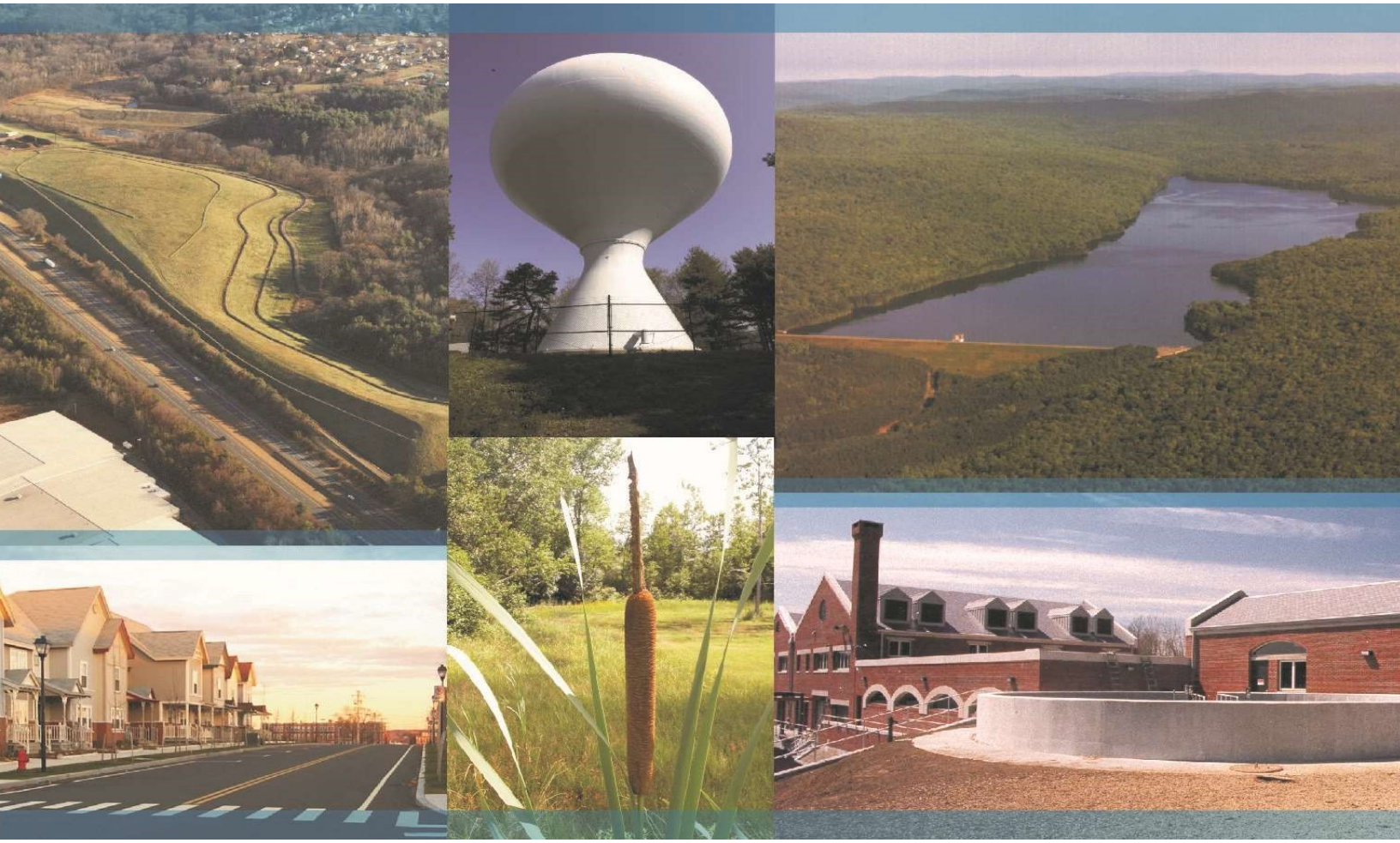
Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

Copy: CPI Management, LLC (via E-mail)

J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Report_Evaluation\Applications\City of Dover\20210916 TRC Submission\C0960-007 Unit Density CUP Letter 20210916.docx



STATE OF NEW HAMPSHIRE
PATRICK
CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER

09/16/21

STATE OF NEW HAMPSHIRE
BRADLEE
MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER

9-16-21

Cochecho Waterfront Development

River Street, Dover, NH

Drainage Report

Prepared For:

CPI Management, LLC
C/O Cathartes
6 Liberty Sq, PMB 90767
Boston, MA 02109

September 16, 2021

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Appendices

A Extreme Precipitation Tables
B Watershed Plans (22”x34”)

Section 1
Narrative

The proposed project is a multi-family, mixed-use development located on parcels of land along River Street on properties identified as Map 22, Lots 1-2 & 1-4 on the City of Dover Tax Maps. The proposed parcels are 4.07 acres and 8.16 acres, respectively and are owned by the City of Dover along the Cochecho River waterfront that will be redeveloped under a land development agreement reached between the applicant and City for the Cochecho Waterfront Development. Map 22 Lot 1-4 is proposed to be further subdivided as part of this project to create a new City roadway, being designed by the City, and four additional development lots. The total proposed development area is between Lot 22-1-2 and the 4 proposed parcels is 10.45 acres.

The private development portion of the project includes the construction of three (3) mixed use buildings, two (2) multi-family buildings, and three (3) clusters of townhouses. The buildings are identified as Buildings A through F on the enclosed site plans. The buildings include a total of 416 residential units and approximately 26,000 SF of commercial space. The project will include associated site improvements such as paving, stormwater management, utilities, lighting, landscaping.

1.1 On-Site Soil Description

The majority of the site's topography slopes from east to west. On the south lot (Lot 1-2) there is a ledge-faced wall on the eastern limits of this lot (approximate maximum height of about 42 feet) that runoff sheet flows from above onto the site. The site is currently composed of gravel with shallow bedrock below.

The topography on Lot 1-4 slopes from the East to the West. The site is currently comprised of small pockets of trees, gravel parking lots, miscellaneous utilities and one (1) existing building. As part of the City's road construction all existing trees, utilities, parking areas and buildings will be removed and the proposed grades will be taken down to pad ready elevations.

1.2 Pre- & Post-Development Flow Comparison

For the purposes of this analysis, runoff generated by the site has been analyzed at one (1) distinct point of analysis (PA-1). This point of analysis was chosen to be able to compare the Pre and Post-development flows. PA-1 is located at Cochecho River directly to the North and West of the project site.

The peak discharge rates at this point of analysis were determined by analyzing Type III 24-hour storm events. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center at Cornell University which can be found in Appendix A. Furthermore, the site is located within a Coastal and Great Bay Community, therefore an added factor of safety of 15% was included as required by Env-Wq 1503.08(l).

Table 1.2

Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	51.17	88.83	119.22	147.71
Post-Development Watershed				
PA-1	45.97	79.05	106.10	131.62

The Peak Runoff Control Requirements of Env-Wq 1507.06 are not required to be met for the point of analysis due to the stormwater system discharging to tidal waters. However, runoff from the project is tying utilizing the roadway stormwater infrastructure being constructed by the City, therefore peak flow mitigation measures have been utilized. As shown in Table 1.2 the Post-development flows are decreased from the Pre-development flows for the point of analysis.

The Channel Protection requirements of Env-Wq 1507.05 are not required to be met for points of analysis 1 per the requirements described in 1507.05.b.1.c.

1.3 Best Management Practices

All soil erosion and sediment control measures have been designed in accordance with the *NH Stormwater Manual, Volume 3: Erosion and Sediment Controls During Construction*. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and improve stormwater quality from the site. Best Management Practices for this project include:

- Temporary erosion and sediment control practices to be implemented during construction;
- Permanent stabilization practices to be implemented prior to the completion of construction;
- Stormwater treatment practices including (Contech CDS units, Jellyfish Filter Units and Filterra Tree Box Filter Units);
- Stormwater detention practices including (Underground Detention Basins)

Section 2
Groundwater Recharge Volume Calculations

Subgrade material of the development site is comprised of shallow bedrock. A wavier from NHDES Alteration of Terrain Regulation Env-Wq 1504.12 to provide groundwater recharge is required as infiltration is not practical due to the shallow bedrock.

Section 3
BMP Worksheets

The calculations for water quality volume (WQV) are provided on the following pages. These calculations comply with the requirements of the NHDES Alteration of Terrain Bureau and have been developed for each of the proposed stormwater management systems.

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

2.14	ac	A = Area draining to the practice
1.74	ac	A_I = Impervious area draining to the practice
0.81	decimal	I = percent impervious area draining to the practice, in decimal form
0.78	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
1.67	ac-in	WQV= 1" x Rv x A
6,073	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.78	inches	Q = water quality depth. Q = WQV/A
98	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.2	inches	S = potential maximum retention. S = (1000/CN) - 10
0.043	inches	Ia = initial abstraction. Ia = 0.2S
12.5	minutes	T_c = Time of Concentration
375.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.980	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: JELLYFISH FILTER - 01

Pretreatment: Offline Deep Sump Catch Basins

Treatment: (1) Contech Jellyfish Model JFpd0806-7-2- design cpacity of 1.43 cfs

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

1.65	ac	A = Area draining to the practice
1.50	ac	A_I = Impervious area draining to the practice
0.91	decimal	I = percent impervious area draining to the practice, in decimal form
0.87	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
1.43	ac-in	WQV= 1" x Rv x A
5,200	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.87	inches	Q = water quality depth. Q = WQV/A
99	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.1	inches	S = potential maximum retention. S = (1000/CN) - 10
0.024	inches	Ia = initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
640.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
1.433	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: JELLYFISH FILTER - 02

Pretreatment: Offline Deep Sump Catch Basins

Treatment: (1) Contech Jellyfish Model JF8-7-2- design cpacity of 1.43 cfs

Treatment structures located post-detention

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

4.03	ac	A = Area draining to the practice
3.42	ac	A_I = Impervious area draining to the practice
0.85	decimal	I = percent impervious area draining to the practice, in decimal form
0.81	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
3.28	ac-in	WQV= 1" x Rv x A
11,905	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.81	inches	Q = water quality depth. Q = WQV/A
98	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.2	inches	S = potential maximum retention. S = (1000/CN) - 10
0.036	inches	Ia = initial abstraction. Ia = 0.2S
5.1	minutes	T_c = Time of Concentration
600.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
3.075	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: JELLYFISH FILTER - 03

Pretreatment: (1) Contech CDS unit 3035-6 design capacity 3.80 cfs

Treatment: (1) Contech Jellyfish Model JFPD0811-1-6-4- design cpacity of 3.21 cfs

Treatment structures located post-detention

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

1.24	ac	A = Area draining to the practice
0.81	ac	A_I = Impervious area draining to the practice
0.65	decimal	I = percent impervious area draining to the practice, in decimal form
0.64	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.79	ac-in	WQV= 1" x Rv x A
2,871	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.64	inches	Q = water quality depth. Q = WQV/A
96	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.4	inches	S = potential maximum retention. S = (1000/CN) - 10
0.081	inches	Ia = initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
650.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.803	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: JELLYFISH FILTER - 04

Pretreatment: (1) Contech CDS Model 2020-5 design capacity 1.10 cfs

Treatment: (1) Contech Jellyfish Model JFPD0806-7-2- design cpacity of 1.43 cfs

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.24	ac	A = Area draining to the practice
0.20	ac	A_I = Impervious area draining to the practice
0.83	decimal	I = percent impervious area draining to the practice, in decimal form
0.80	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.19	ac-in	WQV= 1" x Rv x A
697	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.80	inches	Q = water quality depth. Q = WQV/A
98	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.2	inches	S = potential maximum retention. S = (1000/CN) - 10
0.039	inches	Ia = initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
650.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.195	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: TREE BOX FILTER 1

Pretreatment: N/A

Treatment: (1) Contech Filterra Tree Box Filter FTIBC0806-C

General Calculations - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.24	ac	A = Area draining to the practice
0.17	ac	A_I = Impervious area draining to the practice
0.70	decimal	I = percent impervious area draining to the practice, in decimal form
0.68	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.16	ac-in	WQV= 1" x Rv x A
596	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.68	inches	Q = water quality depth. Q = WQV/A
97	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.3	inches	S = potential maximum retention. S = (1000/CN) - 10
0.068	inches	Ia = initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
650.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.167	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: TREE BOX FILTER 2

Pretreatment: N/A

Treatment: (1) Contech Filterra Tree Box Filter FTIBC0806-C

General Calculations - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.16	ac	A = Area draining to the practice
0.08	ac	A_I = Impervious area draining to the practice
0.50	decimal	I = percent impervious area draining to the practice, in decimal form
0.50	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.08	ac-in	WQV= 1" x Rv x A
290	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = amount of rainfall. For WQF in NH, P = 1".
0.50	inches	Q = water quality depth. Q = WQV/A
94	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.6	inches	S = potential maximum retention. S = (1000/CN) - 10
0.129	inches	Ia = initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
650.0	$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.081	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer's Notes: TREE BOX FILTER 3

Pretreatment: N/A

Treatment: (1) Contech Filterra Tree Box Filter FTIBC0806-C

Section 4
Drainage Analysis

4.1 Calculation Methods

The design storms analyzed in this study are the 2-year, 10-year, 25-year and 50-year 24-hour duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. The peak discharge rates were determined by analyzing Type III 24-hour storm events. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center at Cornell University, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l).

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow and channel flow. Runoff curve numbers were calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.

References:

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.

2. New Hampshire Stormwater Management Manual, Volume 2, Post-Construction Best Management Practices Selection and Design, December 2008.

3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

4.2 Pre-Development Conditions

To analyze the pre-development condition, the site has been modeled utilizing one (1) distinct point of analysis (PA-1). This point of analysis and watersheds are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

The point of analysis and its contributing watershed areas are described below:

Point of Analysis One (PA-1)

Point of analysis 1 is comprised of seven (7) subcatchment areas (PRE-1.0, PRE-1.1, PRE-1.2, PRE-2.0, PRE-2.1, PRE-3.0, and PRE-4.0). The areas for subcathcments PRE-1.0, PRE-1.1 and PRE-1.2 include the mostly gravel area with some portions of grass and woods on the Southeast corner of site along River Street as well as a portion of River Street. Runoff from this area travels southeast via overland flow to the closed drainage system (DMH-400 and DMH-401) ultimately discharging to the Cochecho River.

Subcatchments PRE-2.0, PRE-3.0 and PRE-4.0 are comprised of areas within the loop road construction as well as portions directly uphill and on the outer limits of

the loop road. These areas are comprised mostly of grass and impervious pavement cover. The runoff travels toward the loop road via overland flow ultimately captured by the closed drainage system prior to discharging to the Cochecho river. Portions of the closed drainage system have been modeled (DMH-101, DMH-100, and DMH-100A) to analyze pipe capacities in the post development condition.

Subcatchment PRE-2.1 is comprised of mostly wooded and grassed area directly to the East of the project site and sheets via overland flow to the loop road's closed drainage system ultimately discharging to the Cochecho River.

4.2.1 Pre-Development Watershed Plan

4.2.2 Pre-Development Calculation

PA-1

PRE 1.0

PRE 1.1

PRE 1.2

PRE 2.0

PRE 2.1

PRE 3.0

PRE 4.0

STREET A

CROSS STREET

RIVER STREET

LEGEND

PRE-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

PRE POND 1 — PRE-DEVELOPMENT POND DESIGNATION

PA-1 — POINT OF ANALYSIS

Tighe&Bond

N

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

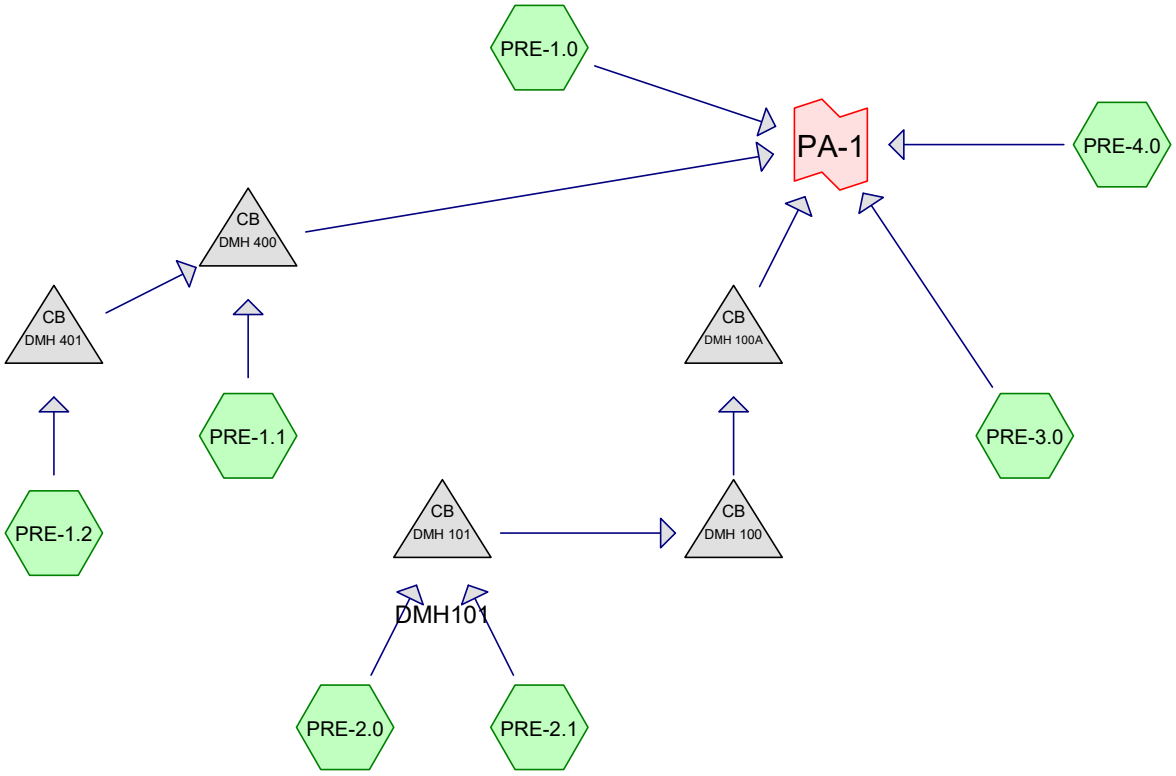
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Save Date: September 16, 2021 - 9:52 AM By: CKRZCIUK
Plot Date: Thursday, September 16, 2021 - 12:27 PM By: CKRZCIUK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-HYDRO.dwg Layout Tab: C-801



Subcat Reach Pond Link

Routing Diagram for C0960-007_Pre
Prepared by Tighe & Bond, Printed 9/16/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
306,823	86	<50% Grass cover, Poor, HSG C (PRE-2.0, PRE-3.0, PRE-4.0)
18,828	89	<50% Grass cover, Poor, HSG D (PRE-2.0, PRE-3.0, PRE-4.0)
125,484	74	>75% Grass cover, Good, HSG C (PRE-1.1, PRE-1.2, PRE-2.0, PRE-2.1, PRE-3.0, PRE-4.0)
50	80	>75% Grass cover, Good, HSG D (PRE-4.0)
181,344	98	Ledge, HSG C (PRE-1.0, PRE-1.1, PRE-1.2)
10,398	98	Paved parking, HSG C (PRE-1.0)
2,164	98	Roofs, HSG C (PRE-1.2)
141,460	98	Unconnected pavement, HSG C (PRE-1.1, PRE-1.2, PRE-2.0, PRE-2.1, PRE-3.0, PRE-4.0)
571	98	Unconnected pavement, HSG D (PRE-4.0)
1,282	98	Unconnected roofs, HSG C (PRE-2.1)
10,925	98	Water Surface, HSG D (PRE-2.1)
252,688	70	Woods, Good, HSG C (PRE-1.0, PRE-2.1, PRE-4.0)
1,052,017	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,021,643	HSG C	PRE-1.0, PRE-1.1, PRE-1.2, PRE-2.0, PRE-2.1, PRE-3.0, PRE-4.0
30,374	HSG D	PRE-2.0, PRE-2.1, PRE-3.0, PRE-4.0
0	Other	
1,052,017		**TOTAL AREA**

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE-1.0: Runoff Area=72,611 sf 94.94% Impervious Runoff Depth=3.27"
Flow Length=377' Tc=5.0 min CN=97 Runoff=5.84 cfs 19,808 cf

Subcatchment PRE-1.1: Runoff Area=16,502 sf 94.94% Impervious Runoff Depth=3.27"
Flow Length=182' Tc=5.0 min CN=97 Runoff=1.33 cfs 4,502 cf

Subcatchment PRE-1.2: Runoff Area=137,307 sf 95.89% Impervious Runoff Depth=3.27"
Flow Length=769' Tc=5.0 min CN=97 Runoff=11.04 cfs 37,457 cf

Subcatchment PRE-2.0: Runoff Area=145,400 sf 25.91% Impervious Runoff Depth=2.29"
Flow Length=626' Tc=5.0 min UI Adjusted CN=87 Runoff=8.92 cfs 27,754 cf

Subcatchment PRE-2.1: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=1.26"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=9.68 cfs 39,593 cf

Subcatchment PRE-3.0: Runoff Area=117,675 sf 21.34% Impervious Runoff Depth=2.29"
Flow Length=706' Tc=5.0 min UI Adjusted CN=87 Runoff=7.22 cfs 22,462 cf

Subcatchment PRE-4.0: Runoff Area=185,746 sf 18.05% Impervious Runoff Depth=2.12"
Flow Length=470' Tc=5.0 min UI Adjusted CN=85 Runoff=10.60 cfs 32,835 cf

Pond DMH 100: Peak Elev=8.43' Inflow=16.16 cfs 67,347 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=16.16 cfs 67,347 cf

Pond DMH 100A: Peak Elev=7.98' Inflow=16.16 cfs 67,347 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=16.16 cfs 67,347 cf

Pond DMH 101: DMH101 Peak Elev=9.76' Inflow=16.16 cfs 67,347 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=16.16 cfs 67,347 cf

Pond DMH 400: Peak Elev=7.67' Inflow=12.37 cfs 41,959 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=12.37 cfs 41,959 cf

Pond DMH 401: Peak Elev=9.21' Inflow=11.04 cfs 37,457 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=11.04 cfs 37,457 cf

Link PA-1: Inflow=51.17 cfs 184,411 cf
Primary=51.17 cfs 184,411 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 184,411 cf Average Runoff Depth = 2.10"
66.91% Pervious = 703,873 sf 33.09% Impervious = 348,144 sf

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE-1.0: Runoff Area=72,611 sf 94.94% Impervious Runoff Depth=5.11"
Flow Length=377' Tc=5.0 min CN=97 Runoff=8.92 cfs 30,894 cf

Subcatchment PRE-1.1: Runoff Area=16,502 sf 94.94% Impervious Runoff Depth=5.11"
Flow Length=182' Tc=5.0 min CN=97 Runoff=2.03 cfs 7,021 cf

Subcatchment PRE-1.2: Runoff Area=137,307 sf 95.89% Impervious Runoff Depth=5.11"
Flow Length=769' Tc=5.0 min CN=97 Runoff=16.86 cfs 58,420 cf

Subcatchment PRE-2.0: Runoff Area=145,400 sf 25.91% Impervious Runoff Depth=4.00"
Flow Length=626' Tc=5.0 min UI Adjusted CN=87 Runoff=15.39 cfs 48,496 cf

Subcatchment PRE-2.1: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=2.65"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=21.15 cfs 83,096 cf

Subcatchment PRE-3.0: Runoff Area=117,675 sf 21.34% Impervious Runoff Depth=4.00"
Flow Length=706' Tc=5.0 min UI Adjusted CN=87 Runoff=12.46 cfs 39,248 cf

Subcatchment PRE-4.0: Runoff Area=185,746 sf 18.05% Impervious Runoff Depth=3.80"
Flow Length=470' Tc=5.0 min UI Adjusted CN=85 Runoff=18.81 cfs 58,751 cf

Pond DMH 100: Peak Elev=9.81' Inflow=32.10 cfs 131,592 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=32.10 cfs 131,592 cf

Pond DMH 100A: Peak Elev=8.98' Inflow=32.10 cfs 131,592 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=32.10 cfs 131,592 cf

Pond DMH 101: DMH101 Peak Elev=10.84' Inflow=32.10 cfs 131,592 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=32.10 cfs 131,592 cf

Pond DMH 400: Peak Elev=8.49' Inflow=18.89 cfs 65,441 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=18.89 cfs 65,441 cf

Pond DMH 401: Peak Elev=12.04' Inflow=16.86 cfs 58,420 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=16.86 cfs 58,420 cf

Link PA-1: Inflow=88.83 cfs 325,925 cf
Primary=88.83 cfs 325,925 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 325,925 cf Average Runoff Depth = 3.72"
66.91% Pervious = 703,873 sf 33.09% Impervious = 348,144 sf

Summary for Subcatchment PRE-1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 8.92 cfs @ 12.07 hrs, Volume= 30,894 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	10,398	98	Paved parking, HSG C
	3,676	70	Woods, Good, HSG C
*	58,537	98	Ledge, HSG C
	72,611	97	Weighted Average
	3,676		5.06% Pervious Area
	68,935		94.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0345	1.82		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
1.4	277	0.0428	3.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	377	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-1.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.03 cfs @ 12.07 hrs, Volume= 7,021 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
*	6,394	98	Unconnected pavement, HSG C
	835	74	>75% Grass cover, Good, HSG C
*	9,273	98	Ledge, HSG C
	16,502	97	Weighted Average
	835		5.06% Pervious Area
	15,667		94.94% Impervious Area
	6,394		40.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0840	2.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.1	18	0.0380	3.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	64	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.9	182	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-1.2:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 16.86 cfs @ 12.07 hrs, Volume= 58,420 cf, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
*	15,967	98	Unconnected pavement, HSG C
	5,642	74	>75% Grass cover, Good, HSG C
*	113,534	98	Ledge, HSG C
	2,164	98	Roofs, HSG C
	137,307	97	Weighted Average
	5,642		4.11% Pervious Area
	131,665		95.89% Impervious Area
	15,967		12.13% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	27	1.0000	5.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
3.5	453	0.0176	2.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	56	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	233	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
4.6	769	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 15.39 cfs @ 12.07 hrs, Volume= 48,496 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Adj	Description
5,414	74		>75% Grass cover, Good, HSG C
37,669	98		Unconnected pavement, HSG C
100,854	86		<50% Grass cover, Poor, HSG C
1,463	89		<50% Grass cover, Poor, HSG D
145,400	89	87	Weighted Average, UI Adjusted
107,731			74.09% Pervious Area
37,669			25.91% Impervious Area
37,669			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.11		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
1.6	261	0.0300	2.79		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	12	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	253	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.0	626	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-2.1:

Runoff = 21.15 cfs @ 12.18 hrs, Volume= 83,096 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Adj	Description
1,282	98		Unconnected roofs, HSG C
106,217	74		>75% Grass cover, Good, HSG C
23,367	98		Unconnected pavement, HSG C
234,985	70		Woods, Good, HSG C
10,925	98		Water Surface, HSG D
376,776	74	73	Weighted Average, UI Adjusted
341,202			90.56% Pervious Area
35,574			9.44% Impervious Area
24,649			69.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9					**Direct Entry, From Existing Model**
2.0	668	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
12.9	668	Total			

Summary for Subcatchment PRE-3.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 12.46 cfs @ 12.07 hrs, Volume= 39,248 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Adj	Description
1,370	74		>75% Grass cover, Good, HSG C
25,108	98		Unconnected pavement, HSG C
81,747	86		<50% Grass cover, Poor, HSG C
9,450	89		<50% Grass cover, Poor, HSG D
117,675	89	87	Weighted Average, UI Adjusted
92,567			78.66% Pervious Area
25,108			21.34% Impervious Area
25,108			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0900	2.67		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
2.0	218	0.0126	1.81		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	8	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	380	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.7	706	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE-4.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 18.81 cfs @ 12.07 hrs, Volume= 58,751 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Adj	Description
6,006	74		>75% Grass cover, Good, HSG C
32,955	98		Unconnected pavement, HSG C
14,027	70		Woods, Good, HSG C
124,222	86		<50% Grass cover, Poor, HSG C
50	80		>75% Grass cover, Good, HSG D
571	98		Unconnected pavement, HSG D
7,915	89		<50% Grass cover, Poor, HSG D
185,746	87	85	Weighted Average, UI Adjusted
152,220			81.95% Pervious Area
33,526			18.05% Impervious Area
33,526			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0850	2.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.9	142	0.0280	2.69		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	11	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	217	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
2.3	470	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond DMH 100:

Inflow Area = 522,176 sf, 14.03% Impervious, Inflow Depth = 3.02" for 10-Year event
Inflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf
Outflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf, Atten= 0%, Lag= 0.0 min
Primary = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.81' @ 12.16 hrs
Flood Elev= 17.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.30'	**36.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.30' / 6.05' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=28.74 cfs @ 12.12 hrs HW=9.66' TW=8.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.74 cfs @ 4.07 fps)

Summary for Pond DMH 100A:

Inflow Area = 522,176 sf, 14.03% Impervious, Inflow Depth = 3.02" for 10-Year event
Inflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf
Outflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf, Atten= 0%, Lag= 0.0 min
Primary = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.98' @ 12.12 hrs
Flood Elev= 12.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.05'	**36.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.05' / 5.90' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=31.51 cfs @ 12.12 hrs HW=8.94' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 31.51 cfs @ 5.75 fps)

Summary for Pond DMH 101: DMH101

Inflow Area = 522,176 sf, 14.03% Impervious, Inflow Depth = 3.02" for 10-Year event
Inflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf
Outflow = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf, Atten= 0%, Lag= 0.0 min
Primary = 32.10 cfs @ 12.12 hrs, Volume= 131,592 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.84' @ 12.18 hrs
Flood Elev= 15.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**36.0" Round Culvert** L= 141.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.95' / 7.30' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=28.81 cfs @ 12.12 hrs HW=10.74' TW=9.66' (Dynamic Tailwater)
1=Culvert (Outlet Controls 28.81 cfs @ 5.48 fps)

Summary for Pond DMH 400:

Inflow Area = 153,809 sf, 95.79% Impervious, Inflow Depth = 5.11" for 10-Year event
Inflow = 18.89 cfs @ 12.07 hrs, Volume= 65,441 cf
Outflow = 18.89 cfs @ 12.07 hrs, Volume= 65,441 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.89 cfs @ 12.07 hrs, Volume= 65,441 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.49' @ 12.07 hrs
Flood Elev= 14.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.95'	**24.0" Round Culvert** L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 5.95' / 5.44' S= 0.0165 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.07 hrs HW=8.40' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 18.20 cfs @ 5.79 fps)

Summary for Pond DMH 401:

Inflow Area = 137,307 sf, 95.89% Impervious, Inflow Depth = 5.11" for 10-Year event
Inflow = 16.86 cfs @ 12.07 hrs, Volume= 58,420 cf
Outflow = 16.86 cfs @ 12.07 hrs, Volume= 58,420 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.86 cfs @ 12.07 hrs, Volume= 58,420 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 12.04' @ 12.09 hrs
Flood Elev= 13.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**18.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 6.60' / 6.20' S= 0.0093 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=15.40 cfs @ 12.07 hrs HW=11.67' TW=8.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 15.40 cfs @ 8.72 fps)

Summary for Link PA-1:

Inflow Area = 1,052,017 sf, 33.09% Impervious, Inflow Depth = 3.72" for 10-Year event
Inflow = 88.83 cfs @ 12.08 hrs, Volume= 325,925 cf
Primary = 88.83 cfs @ 12.08 hrs, Volume= 325,925 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE-1.0: Runoff Area=72,611 sf 94.94% Impervious Runoff Depth=6.55"
Flow Length=377' Tc=5.0 min CN=97 Runoff=11.33 cfs 39,647 cf

Subcatchment PRE-1.1: Runoff Area=16,502 sf 94.94% Impervious Runoff Depth=6.55"
Flow Length=182' Tc=5.0 min CN=97 Runoff=2.57 cfs 9,010 cf

Subcatchment PRE-1.2: Runoff Area=137,307 sf 95.89% Impervious Runoff Depth=6.55"
Flow Length=769' Tc=5.0 min CN=97 Runoff=21.42 cfs 74,972 cf

Subcatchment PRE-2.0: Runoff Area=145,400 sf 25.91% Impervious Runoff Depth=5.39"
Flow Length=626' Tc=5.0 min UI Adjusted CN=87 Runoff=20.44 cfs 65,338 cf

Subcatchment PRE-2.1: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=3.86"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=30.98 cfs 121,127 cf

Subcatchment PRE-3.0: Runoff Area=117,675 sf 21.34% Impervious Runoff Depth=5.39"
Flow Length=706' Tc=5.0 min UI Adjusted CN=87 Runoff=16.54 cfs 52,879 cf

Subcatchment PRE-4.0: Runoff Area=185,746 sf 18.05% Impervious Runoff Depth=5.17"
Flow Length=470' Tc=5.0 min UI Adjusted CN=85 Runoff=25.28 cfs 79,973 cf

Pond DMH 100: Peak Elev=11.58' Inflow=45.45 cfs 186,465 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=45.45 cfs 186,465 cf

Pond DMH 100A: Peak Elev=9.91' Inflow=45.45 cfs 186,465 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=45.45 cfs 186,465 cf

Pond DMH 101: DMH101 Peak Elev=13.07' Inflow=45.45 cfs 186,465 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=45.45 cfs 186,465 cf

Pond DMH 400: Peak Elev=9.44' Inflow=24.00 cfs 83,983 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=24.00 cfs 83,983 cf

Pond DMH 401: Peak Elev=15.16' Inflow=21.42 cfs 74,972 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=21.42 cfs 74,972 cf

Link PA-1: Inflow=119.22 cfs 442,946 cf
Primary=119.22 cfs 442,946 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 442,946 cf Average Runoff Depth = 5.05"
66.91% Pervious = 703,873 sf 33.09% Impervious = 348,144 sf

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PRE-1.0: Runoff Area=72,611 sf 94.94% Impervious Runoff Depth=7.90"
Flow Length=377' Tc=5.0 min CN=97 Runoff=13.57 cfs 47,803 cf

Subcatchment PRE-1.1: Runoff Area=16,502 sf 94.94% Impervious Runoff Depth=7.90"
Flow Length=182' Tc=5.0 min CN=97 Runoff=3.08 cfs 10,864 cf

Subcatchment PRE-1.2: Runoff Area=137,307 sf 95.89% Impervious Runoff Depth=7.90"
Flow Length=769' Tc=5.0 min CN=97 Runoff=25.66 cfs 90,395 cf

Subcatchment PRE-2.0: Runoff Area=145,400 sf 25.91% Impervious Runoff Depth=6.70"
Flow Length=626' Tc=5.0 min UI Adjusted CN=87 Runoff=25.11 cfs 81,218 cf

Subcatchment PRE-2.1: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=5.04"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=40.42 cfs 158,277 cf

Subcatchment PRE-3.0: Runoff Area=117,675 sf 21.34% Impervious Runoff Depth=6.70"
Flow Length=706' Tc=5.0 min UI Adjusted CN=87 Runoff=20.33 cfs 65,732 cf

Subcatchment PRE-4.0: Runoff Area=185,746 sf 18.05% Impervious Runoff Depth=6.46"
Flow Length=470' Tc=5.0 min UI Adjusted CN=85 Runoff=31.28 cfs 100,060 cf

Pond DMH 100: Peak Elev=13.50' Inflow=57.68 cfs 239,496 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=57.68 cfs 239,496 cf

Pond DMH 100A: Peak Elev=10.71' Inflow=57.68 cfs 239,496 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=57.68 cfs 239,496 cf

Pond DMH 101: DMH101 Peak Elev=16.01' Inflow=57.68 cfs 239,496 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=57.68 cfs 239,496 cf

Pond DMH 400: Peak Elev=10.53' Inflow=28.74 cfs 101,259 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=28.74 cfs 101,259 cf

Pond DMH 401: Peak Elev=18.73' Inflow=25.66 cfs 90,395 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=25.66 cfs 90,395 cf

Link PA-1: Inflow=147.71 cfs 554,350 cf
Primary=147.71 cfs 554,350 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 554,350 cf Average Runoff Depth = 6.32"
66.91% Pervious = 703,873 sf 33.09% Impervious = 348,144 sf

4.3 Post-Development Conditions

The post-development drainage condition is characterized by seventeen (17) watershed areas modeled at the same point of analysis (PA-1) as the pre-development condition. This point of analysis and watersheds are depicted on the plan entitled "Post Development Watershed Plan", Sheet C-802.

The point of analysis and it's contributing watershed areas are described below:

Point of Analysis One (PA-1)

POST-1.0 and POST-1.1 are comprised mainly of paved parking areas. Runoff from these watershed travels via overland flow to two separate tree box filters (PTBF-1 and PTBF-2) discharging to a closed drainage system that leads to the Cochecho River.

POST-1.2, POST-1.6 and POST-1.7 are located to the West of proposed Building A and are comprised of grassed areas, and existing pavement road. The subcatchments travel via overland flow to separate inlets to the existing closed drainage system.

POST-1.3 and POST-1.4 are compromised solely of grassed lawn areas. The areas are captured by two separate yard drains that discharge to the Cochecho river utilizing an existing outfall pipe.

POST-1.5 is located along the base of the existing ledge-faced wall on the southeast portion of the site. This subcacthment is comprised of proposed paved parking areas, proposed Building A, small portions of grass along the base of the wall as well as existing trees at the top of the ledge-faced wall that sheet directly over the wall. Runoff is conveyed via either a grassed lined drainage swale or sheets directly to catch basins or yard drains. This runoff is treated utilizing a Jellyfish Filter unit (PJFF-1.)

POST-2.0 is comprised mainly of proposed parking areas around the proposed Buildings A and B. Runoff from these subcatchments travels via overland flow to the proposed closed drainage system utilizing offline catch basins for pretreatment methods, before entering an underground detention basin (UDB-1.) This detention basins is used to mitigate peak flows to the existing drainage system outside of the project area. Runoff is treated immediately downstream of the detention basin by a Jelly Fish Filter unit (PJFF-2) before connecting to the existing closed drainage system.

POST-2.1 is comprised mostly of the existing roadway and grassed areas surrounding the roadway. This runoff travels via overland flow to the existing closed drainage system which discharges to the Cochecho River.

POST-2.2 is similar in nature to POST-2.0 and is comprised mainly of proposed parking areas around proposed Buildings C and D. Runoff from this subcatchment travels via overland flow to the proposed closed drainage system before entering an underground detention basin (UDB-2.) Runoff is treated utilizing a CDS pretreatment unit and treated utilizing a Jellyfish Filter unit PJFF-2.) Flows from these treatment units and underground detention basin are split to two separate outfall pipes (PDMH 10) utilizing the existing closed drainage system. Both outfall

pipes discharges to Cochecho River.

POST-2.3 is comprised mainly of paved parking areas as well as roof runoff. Runoff from this watershed travels vial overland flow to a tree box filter (PTBF 3) discharging to an existing closed drainage system that leads to the Cochecho River.

POST-2.4 is comprised of mostly wooded and grassed area directly to the East of the project site and sheets via overland flow to the loop road's closed drainage system ultimately discharging to the Cochecho River.

POST-3.0 and POST-4.1 are comprised mostly of the loop road pavement areas. And small portions of grassed areas from the project site. Runoff from these areas travels via overland flow to the existing closed drainage system discharging to the Cochecho River.

POST-4.0 is located on the Northeaster portion of the proposed project site. This area contains runoff from Building F and Building E (townhouses) as well as their associated parking areas. A portion of the sloped grassed area behind the townhouse travels via overland flow to a closed drainage system. The closed drainage system captures runoff from the grassed area as well as the building and paved parking areas. At the end of the closed drainage system is a CDS pretreatment unit as well as a Jellyfish Filter treatment unit (PJFF-4) providing water quality treatment. Immediately after the treatment units the closed drainage system is connected to the existing drainage system from the loop road which discharges to the Cochecho River.

POST-4.2 is comprised mostly of wooded and grassed areas to the northeast of the proposed project site. Runoff from this area sheets via overland flow directly to the Cochecho river.

4.3.1 Post-Development Watershed Plan

4.3.2 Post-Development Calculation

PA-1

POST 1.0
POST 1.1
POST 1.2
POST 1.3
POST 1.4
POST 1.5
POST 1.6
POST 1.7
POST 2.0
POST 2.1
POST 2.2
POST 2.3
POST 2.4
POST 3.0
POST 4.0
POST 4.1
POST 4.2

POST POND PTBF 1
POST POND PTBF 2
POST POND PTBF 3
POST POND PDMH 02
POST POND PJFF 1
POST POND PJFF 2
POST POND PJFF 3
POST POND PJFF 4
POST POND PDMH 11
POST POND UDB 1
POST POND UDB 2

RIVER STREET
STREET A
STREET B
CROSS STREET

LEGEND

POST-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

POST POND 1 — POST-DEVELOPMENT POND DESIGNATION

PA-1 — POINT OF ANALYSIS

Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

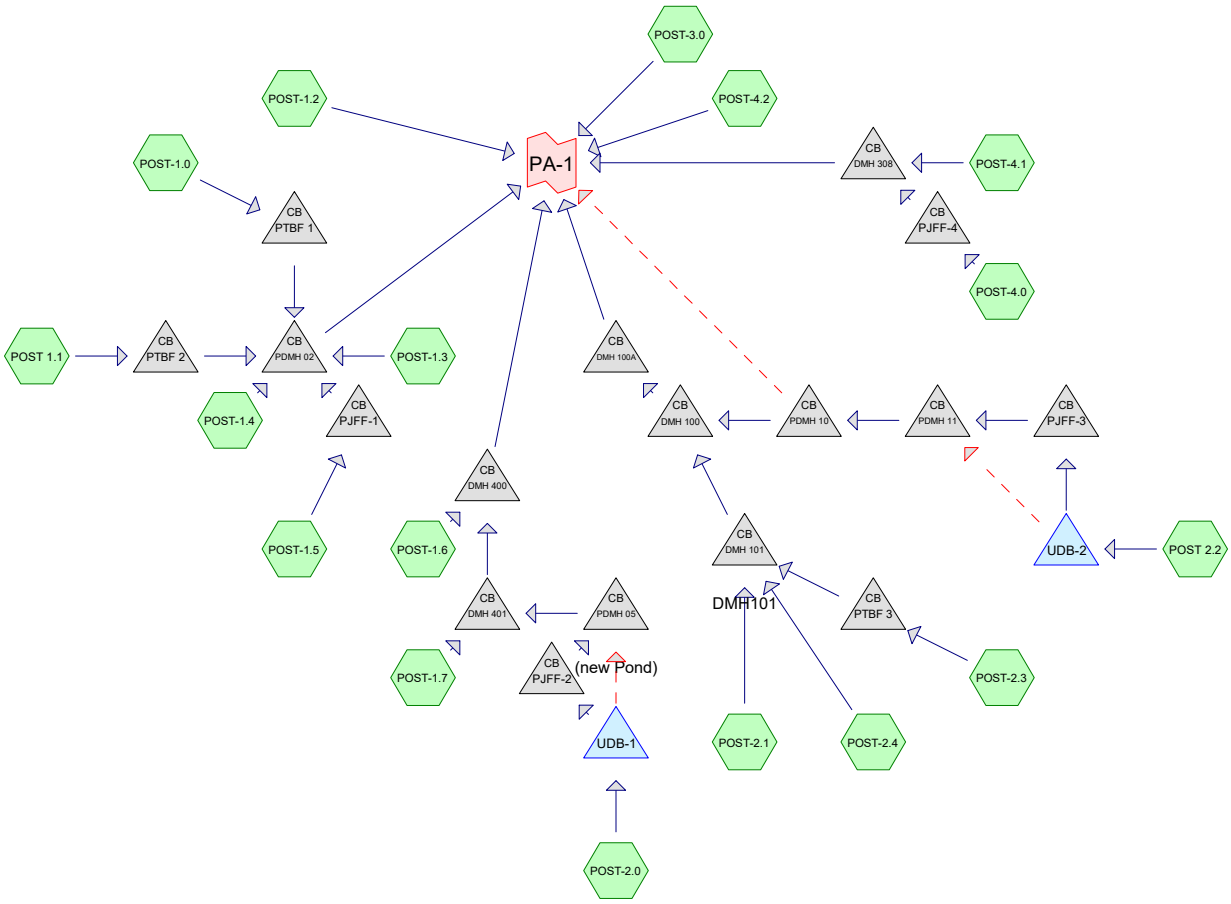
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Save Date: September 16, 2021 9:52 AM By: CKRZCIUK
Plot Date/Time: Thursday, September 16, 2021 9:52:46 AM By: CKRZCIUK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-HYDRO.dwg Layout Tab: C-802



Routing Diagram for C0960-007_Post

Prepared by Tighe & Bond, Printed 9/16/2021

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
285,063	74	>75% Grass cover, Good, HSG C (POST 1.1, POST 2.2, POST-1.0, POST-1.2, POST-1.3, POST-1.4, POST-1.5, POST-1.6, POST-1.7, POST-2.0, POST-2.1, POST-2.3, POST-2.4, POST-3.0, POST-4.0, POST-4.1, POST-4.2)
4,233	80	>75% Grass cover, Good, HSG D (POST 2.2, POST-4.0, POST-4.1, POST-4.2)
34,425	98	Ledge, HSG C (POST-1.4, POST-1.5)
280,563	98	Paved parking, HSG C (POST 1.1, POST 2.2, POST-1.0, POST-1.5, POST-2.0, POST-2.1, POST-2.3, POST-3.0, POST-4.0, POST-4.1, POST-4.2)
11,636	98	Paved parking, HSG D (POST 2.2, POST-4.1, POST-4.2)
3,275	98	Roofs, HSG C (POST-1.7, POST-2.1)
45,971	98	Unconnected pavement, HSG C (POST-1.6, POST-1.7, POST-2.4)
126,420	98	Unconnected roofs, HSG C (POST 2.2, POST-1.5, POST-2.0, POST-2.3, POST-2.4, POST-4.0, POST-4.1)
3,580	98	Unconnected roofs, HSG D (POST-4.0)
10,925	98	Water Surface, HSG D (POST-2.4)
245,926	70	Woods, Good, HSG C (POST-2.4, POST-4.2)
1,052,017	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,021,643	HSG C	POST 1.1, POST 2.2, POST-1.0, POST-1.2, POST-1.3, POST-1.4, POST-1.5, POST-1.6, POST-1.7, POST-2.0, POST-2.1, POST-2.3, POST-2.4, POST-3.0, POST-4.0, POST-4.1, POST-4.2
30,374	HSG D	POST 2.2, POST-2.4, POST-4.0, POST-4.1, POST-4.2
0	Other	
1,052,017		**TOTAL AREA**

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST 1.1: Runoff Area=10,232 sf 72.10% Impervious Runoff Depth=2.65"
Flow Length=126' Slope=0.0200 '/' Tc=3.0 min CN=91 Runoff=0.77 cfs 2,264 cf

Subcatchment POST 2.2: Runoff Area=175,713 sf 84.90% Impervious Runoff Depth=2.95"
Flow Length=243' Tc=5.1 min CN=94 Runoff=13.29 cfs 43,235 cf

Subcatchment POST-1.0: Runoff Area=10,398 sf 83.62% Impervious Runoff Depth=2.95"
Flow Length=279' Tc=3.0 min CN=94 Runoff=0.85 cfs 2,558 cf

Subcatchment POST-1.2: Runoff Area=1,496 sf 0.00% Impervious Runoff Depth=1.32"
Flow Length=21' Slope=0.0876 '/' Tc=3.0 min CN=74 Runoff=0.06 cfs 165 cf

Subcatchment POST-1.3: Runoff Area=3,464 sf 0.00% Impervious Runoff Depth=1.32"
Flow Length=107' Slope=0.0670 '/' Tc=3.5 min CN=74 Runoff=0.13 cfs 382 cf

Subcatchment POST-1.4: Runoff Area=10,044 sf 35.62% Impervious Runoff Depth=1.96"
Flow Length=136' Tc=3.0 min CN=83 Runoff=0.58 cfs 1,640 cf

Subcatchment POST-1.5: Runoff Area=93,299 sf 81.53% Impervious Runoff Depth=2.95"
Flow Length=692' Tc=12.5 min CN=94 Runoff=5.70 cfs 22,957 cf

Subcatchment POST-1.6: Runoff Area=7,202 sf 88.41% Impervious Runoff Depth=3.06"
Flow Length=162' Tc=3.0 min CN=95 Runoff=0.60 cfs 1,835 cf

Subcatchment POST-1.7: Runoff Area=38,795 sf 47.43% Impervious Runoff Depth=2.12"
Flow Length=436' Tc=5.0 min CN=85 Runoff=2.21 cfs 6,858 cf

Subcatchment POST-2.0: Runoff Area=71,880 sf 91.06% Impervious Runoff Depth=3.16"
Flow Length=417' Tc=3.6 min CN=96 Runoff=6.02 cfs 18,952 cf

Subcatchment POST-2.1: Runoff Area=71,818 sf 54.78% Impervious Runoff Depth=2.29"
Flow Length=739' Tc=3.9 min CN=87 Runoff=4.65 cfs 13,709 cf

Subcatchment POST-2.3: Runoff Area=7,344 sf 50.26% Impervious Runoff Depth=2.20"
Flow Length=112' Tc=3.0 min CN=86 Runoff=0.47 cfs 1,349 cf

Subcatchment POST-2.4: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=1.26"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=9.68 cfs 39,593 cf

Subcatchment POST-3.0: Runoff Area=30,773 sf 92.49% Impervious Runoff Depth=3.16"
Flow Length=490' Tc=3.0 min CN=96 Runoff=2.62 cfs 8,114 cf

Subcatchment POST-4.0: Runoff Area=54,412 sf 65.23% Impervious Runoff Depth=2.56"
Flow Length=565' Tc=3.6 min CN=90 Runoff=3.93 cfs 11,610 cf

Subcatchment POST-4.1: Runoff Area=51,554 sf 75.40% Impervious Runoff Depth=2.75"
Flow Length=474' Tc=3.0 min CN=92 Runoff=4.01 cfs 11,822 cf

Subcatchment POST-4.2: Runoff Area=36,817 sf 0.69% Impervious Runoff Depth=1.26"
Flow Length=258' Tc=6.3 min CN=73 Runoff=1.17 cfs 3,869 cf

Pond DMH 100: Peak Elev=8.66' Inflow=17.81 cfs 88,738 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=17.81 cfs 88,738 cf

Pond DMH 100A: Peak Elev=8.21' Inflow=17.81 cfs 88,738 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=17.81 cfs 88,738 cf

Pond DMH 101: DMH101 Peak Elev=9.55' Inflow=12.29 cfs 54,651 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=12.29 cfs 54,651 cf

Pond DMH 308: Peak Elev=9.32' Inflow=7.93 cfs 23,432 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=7.93 cfs 23,432 cf

Pond DMH 400: Peak Elev=7.15' Inflow=7.10 cfs 27,644 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=7.10 cfs 27,644 cf

Pond DMH 401: Peak Elev=8.05' Inflow=6.61 cfs 25,810 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=6.61 cfs 25,810 cf

Pond PDMH 02: Peak Elev=10.04' Inflow=6.87 cfs 29,802 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=6.87 cfs 29,802 cf

Pond PDMH 05: (new Pond) Peak Elev=16.48' Inflow=4.49 cfs 18,952 cf
18.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/' Outflow=4.49 cfs 18,952 cf

Pond PDMH 10: Peak Elev=9.19' Inflow=10.99 cfs 43,235 cf
Primary=5.76 cfs 34,087 cf Secondary=5.42 cfs 9,148 cf Outflow=10.99 cfs 43,235 cf

Pond PDMH 11: Peak Elev=10.15' Inflow=10.99 cfs 43,235 cf
30.0" Round Culvert n=0.013 L=128.0' S=0.0051 '/' Outflow=10.99 cfs 43,235 cf

Pond PJFF-1: Peak Elev=12.21' Inflow=5.70 cfs 22,957 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0333 '/' Outflow=5.70 cfs 22,957 cf

Pond PJFF-2: Peak Elev=17.65' Inflow=3.28 cfs 17,890 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0333 '/' Outflow=3.28 cfs 17,890 cf

Pond PJFF-3: Peak Elev=13.46' Inflow=6.43 cfs 38,616 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=6.43 cfs 38,616 cf

Pond PJFF-4: Peak Elev=9.50' Inflow=3.93 cfs 11,610 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=3.93 cfs 11,610 cf

Pond PTBF 1: Peak Elev=10.41' Inflow=0.85 cfs 2,558 cf
10.0" Round Culvert n=0.013 L=19.0' S=0.0158 '/' Outflow=0.85 cfs 2,558 cf

Pond PTBF 2: Peak Elev=10.06' Inflow=0.77 cfs 2,264 cf
10.0" Round Culvert n=0.013 L=49.0' S=0.0051 '/' Outflow=0.77 cfs 2,264 cf

Pond PTBF 3: Peak Elev=23.76' Inflow=0.47 cfs 1,349 cf
10.0" Round Culvert n=0.013 L=13.0' S=0.0308 '/' Outflow=0.47 cfs 1,349 cf

Pond UDB-1: Peak Elev=18.39' Storage=1,566 cf Inflow=6.02 cfs 18,952 cf
Primary=3.28 cfs 17,890 cf Secondary=1.21 cfs 1,062 cf Outflow=4.49 cfs 18,952 cf

Pond UDB-2: Peak Elev=13.98' Storage=0.075 af Inflow=13.29 cfs 43,235 cf
Primary=6.43 cfs 38,616 cf Secondary=4.62 cfs 4,619 cf Outflow=10.99 cfs 43,235 cf

Link PA-1: Inflow=45.97 cfs 190,912 cf
Primary=45.97 cfs 190,912 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 190,912 cf Average Runoff Depth = 2.18"
50.88% Pervious = 535,222 sf 49.12% Impervious = 516,795 sf

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST 1.1: Runoff Area=10,232 sf 72.10% Impervious Runoff Depth=4.43"
Flow Length=126' Slope=0.0200 '/' Tc=3.0 min CN=91 Runoff=1.26 cfs 3,777 cf

Subcatchment POST 2.2: Runoff Area=175,713 sf 84.90% Impervious Runoff Depth=4.76"
Flow Length=243' Tc=5.1 min CN=94 Runoff=20.86 cfs 69,733 cf

Subcatchment POST-1.0: Runoff Area=10,398 sf 83.62% Impervious Runoff Depth=4.76"
Flow Length=279' Tc=3.0 min CN=94 Runoff=1.33 cfs 4,127 cf

Subcatchment POST-1.2: Runoff Area=1,496 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=21' Slope=0.0876 '/' Tc=3.0 min CN=74 Runoff=0.12 cfs 341 cf

Subcatchment POST-1.3: Runoff Area=3,464 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=107' Slope=0.0670 '/' Tc=3.5 min CN=74 Runoff=0.27 cfs 790 cf

Subcatchment POST-1.4: Runoff Area=10,044 sf 35.62% Impervious Runoff Depth=3.59"
Flow Length=136' Tc=3.0 min CN=83 Runoff=1.05 cfs 3,007 cf

Subcatchment POST-1.5: Runoff Area=93,299 sf 81.53% Impervious Runoff Depth=4.76"
Flow Length=692' Tc=12.5 min CN=94 Runoff=8.95 cfs 37,026 cf

Subcatchment POST-1.6: Runoff Area=7,202 sf 88.41% Impervious Runoff Depth=4.88"
Flow Length=162' Tc=3.0 min CN=95 Runoff=0.93 cfs 2,926 cf

Subcatchment POST-1.7: Runoff Area=38,795 sf 47.43% Impervious Runoff Depth=3.80"
Flow Length=436' Tc=5.0 min CN=85 Runoff=3.93 cfs 12,271 cf

Subcatchment POST-2.0: Runoff Area=71,880 sf 91.06% Impervious Runoff Depth=4.99"
Flow Length=417' Tc=3.6 min CN=96 Runoff=9.26 cfs 29,890 cf

Subcatchment POST-2.1: Runoff Area=71,818 sf 54.78% Impervious Runoff Depth=4.00"
Flow Length=739' Tc=3.9 min CN=87 Runoff=7.97 cfs 23,954 cf

Subcatchment POST-2.3: Runoff Area=7,344 sf 50.26% Impervious Runoff Depth=3.90"
Flow Length=112' Tc=3.0 min CN=86 Runoff=0.82 cfs 2,386 cf

Subcatchment POST-2.4: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=2.65"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=21.15 cfs 83,096 cf

Subcatchment POST-3.0: Runoff Area=30,773 sf 92.49% Impervious Runoff Depth=4.99"
Flow Length=490' Tc=3.0 min CN=96 Runoff=4.03 cfs 12,796 cf

Subcatchment POST-4.0: Runoff Area=54,412 sf 65.23% Impervious Runoff Depth=4.32"
Flow Length=565' Tc=3.6 min CN=90 Runoff=6.47 cfs 19,593 cf

Subcatchment POST-4.1: Runoff Area=51,554 sf 75.40% Impervious Runoff Depth=4.54"
Flow Length=474' Tc=3.0 min CN=92 Runoff=6.43 cfs 19,502 cf

Subcatchment POST-4.2: Runoff Area=36,817 sf 0.69% Impervious Runoff Depth=2.65"
Flow Length=258' Tc=6.3 min CN=73 Runoff=2.55 cfs 8,120 cf

Pond DMH 100: Peak Elev=10.14' Inflow=32.75 cfs 158,436 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=32.75 cfs 158,436 cf

Pond DMH 100A: Peak Elev=9.25' Inflow=32.75 cfs 158,436 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=32.75 cfs 158,436 cf

Pond DMH 101: DMH101 Peak Elev=10.86' Inflow=25.71 cfs 109,436 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=25.71 cfs 109,436 cf

Pond DMH 308: Peak Elev=10.01' Inflow=12.89 cfs 39,095 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=12.89 cfs 39,095 cf

Pond DMH 400: Peak Elev=7.49' Inflow=10.45 cfs 45,087 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=10.45 cfs 45,087 cf

Pond DMH 401: Peak Elev=8.72' Inflow=9.44 cfs 42,161 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=9.44 cfs 42,161 cf

Pond PDMH 02: Peak Elev=10.91' Inflow=10.92 cfs 48,727 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=10.92 cfs 48,727 cf

Pond PDMH 05: (new Pond) Peak Elev=16.69' Inflow=5.90 cfs 29,890 cf
18.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/' Outflow=5.90 cfs 29,890 cf

Pond PDMH 10: Peak Elev=10.84' Inflow=17.97 cfs 69,733 cf
Primary=7.93 cfs 49,001 cf Secondary=10.38 cfs 20,732 cf Outflow=17.97 cfs 69,733 cf

Pond PDMH 11: Peak Elev=11.30' Inflow=17.97 cfs 69,733 cf
30.0" Round Culvert n=0.013 L=128.0' S=0.0051 '/' Outflow=17.97 cfs 69,733 cf

Pond PJFF-1: Peak Elev=12.85' Inflow=8.95 cfs 37,026 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0333 '/' Outflow=8.95 cfs 37,026 cf

Pond PJFF-2: Peak Elev=17.99' Inflow=3.95 cfs 26,971 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0333 '/' Outflow=3.95 cfs 26,971 cf

Pond PJFF-3: Peak Elev=13.76' Inflow=7.96 cfs 58,195 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=7.96 cfs 58,195 cf

Pond PJFF-4: Peak Elev=10.43' Inflow=6.47 cfs 19,593 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=6.47 cfs 19,593 cf

Pond PTBF 1: Peak Elev=10.96' Inflow=1.33 cfs 4,127 cf
10.0" Round Culvert n=0.013 L=19.0' S=0.0158 '/' Outflow=1.33 cfs 4,127 cf

Pond PTBF 2: Peak Elev=10.97' Inflow=1.26 cfs 3,777 cf
10.0" Round Culvert n=0.013 L=49.0' S=0.0051 '/' Outflow=1.26 cfs 3,777 cf

Pond PTBF 3: Peak Elev=23.90' Inflow=0.82 cfs 2,386 cf
10.0" Round Culvert n=0.013 L=13.0' S=0.0308 '/' Outflow=0.82 cfs 2,386 cf

Pond UDB-1: Peak Elev=18.96' Storage=2,751 cf Inflow=9.26 cfs 29,890 cf
Primary=3.95 cfs 26,971 cf Secondary=1.95 cfs 2,919 cf Outflow=5.90 cfs 29,890 cf

Pond UDB-2: Peak Elev=14.56' Storage=0.108 af Inflow=20.86 cfs 69,733 cf
Primary=7.96 cfs 58,195 cf Secondary=10.10 cfs 11,538 cf Outflow=17.97 cfs 69,733 cf

Link PA-1: Inflow=79.05 cfs 333,335 cf
Primary=79.05 cfs 333,335 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 333,335 cf Average Runoff Depth = 3.80"
50.88% Pervious = 535,222 sf 49.12% Impervious = 516,795 sf

Summary for Subcatchment POST 1.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.26 cfs @ 12.05 hrs, Volume= 3,777 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG C
	2,855	74	>75% Grass cover, Good, HSG C
	7,377	98	Paved parking, HSG C
*	0	98	Ledge, HSG C
	10,232	91	Weighted Average
	2,855		27.90% Pervious Area
	7,377		72.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.2	26	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	126	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST 2.2:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 20.86 cfs @ 12.07 hrs, Volume= 69,733 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
59,783	98	Unconnected roofs, HSG C
24,728	74	>75% Grass cover, Good, HSG C
78,140	98	Paved parking, HSG C
1,812	80	>75% Grass cover, Good, HSG D
11,250	98	Paved parking, HSG D
175,713	94	Weighted Average
26,540		15.10% Pervious Area
149,173		84.90% Impervious Area
59,783		40.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	54	0.0370	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.0	17	0.2370	7.30		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	18	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	154	0.0100	4.54	3.56	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.1	243	Total			

Summary for Subcatchment POST-1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.33 cfs @ 12.05 hrs, Volume= 4,127 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG C
	1,703	74	>75% Grass cover, Good, HSG C
	8,695	98	Paved parking, HSG C
*	0	98	Ledge, HSG C
	10,398	94	Weighted Average
	1,703		16.38% Pervious Area
	8,695		83.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0340	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.7	179	0.0490	4.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	279	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.2:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.12 cfs @ 12.05 hrs, Volume= 341 cf, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
1,496	74	>75% Grass cover, Good, HSG C
0	98	Paved parking, HSG C
1,496	74	Weighted Average
1,496		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	21	0.0876	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
1.5	21	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.3:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.27 cfs @ 12.06 hrs, Volume= 790 cf, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG C
	3,464	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	0	98	Ledge, HSG C
	3,464	74	Weighted Average
	3,464		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0670	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.2	57	0.0670	3.88		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.5	107	Total			

Summary for Subcatchment POST-1.4:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.05 cfs @ 12.05 hrs, Volume= 3,007 cf, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG C
	6,466	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	3,578	98	Ledge, HSG C
	10,044	83	Weighted Average
	6,466		64.38% Pervious Area
	3,578		35.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	58	1.0000	6.27		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.5	78	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.7	136	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.5:

Runoff = 8.95 cfs @ 12.17 hrs, Volume= 37,026 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
	26,062	98	Unconnected roofs, HSG C
	17,236	74	>75% Grass cover, Good, HSG C
	19,154	98	Paved parking, HSG C
*	30,847	98	Ledge, HSG C
	93,299	94	Weighted Average
	17,236		18.47% Pervious Area
	76,063		81.53% Impervious Area
	26,062		34.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.0188	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
6.0	465	0.0075	1.30		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	177	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.5	692	Total			

Summary for Subcatchment POST-1.6:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.93 cfs @ 12.05 hrs, Volume= 2,926 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
*	6,367	98	Unconnected pavement, HSG C
	835	74	>75% Grass cover, Good, HSG C
*	0	98	Ledge, HSG C
	7,202	95	Weighted Average
	835		11.59% Pervious Area
	6,367		88.41% Impervious Area
	6,367		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	97	0.0250	1.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.2	65	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.2	162	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.7:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.93 cfs @ 12.07 hrs, Volume= 12,271 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

	Area (sf)	CN	Description
*	16,237	98	Unconnected pavement, HSG C
	20,394	74	>75% Grass cover, Good, HSG C
	2,164	98	Roofs, HSG C
	38,795	85	Weighted Average
	20,394		52.57% Pervious Area
	18,401		47.43% Impervious Area
	16,237		88.24% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0530	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.3	77	0.0780	4.19		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	76	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	233	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
5.0	436	Total			

Summary for Subcatchment POST-2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 9.26 cfs @ 12.05 hrs, Volume= 29,890 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
17,362	98	Unconnected roofs, HSG C
6,429	74	>75% Grass cover, Good, HSG C
48,089	98	Paved parking, HSG C
71,880	96	Weighted Average
6,429		8.94% Pervious Area
65,451		91.06% Impervious Area
17,362		26.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.5	42	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	275	0.0080	4.06	3.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.6	417	Total			

Summary for Subcatchment POST-2.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.97 cfs @ 12.06 hrs, Volume= 23,954 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
1,111	98	Roofs, HSG C
32,478	74	>75% Grass cover, Good, HSG C
38,229	98	Paved parking, HSG C
71,818	87	Weighted Average
32,478		45.22% Pervious Area
39,340		54.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	50	0.5000	0.57		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.1	52	0.5000	10.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.7	82	0.0190	2.07		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.0	9	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	546	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.9	739	Total			

Summary for Subcatchment POST-2.3:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.82 cfs @ 12.05 hrs, Volume= 2,386 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
991	98	Unconnected roofs, HSG C
3,653	74	>75% Grass cover, Good, HSG C
2,700	98	Paved parking, HSG C
7,344	86	Weighted Average
3,653		49.74% Pervious Area
3,691		50.26% Impervious Area
991		26.85% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0200	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
1.0	82	0.0210	1.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.1	12	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	112	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-2.4:

Runoff = 21.15 cfs @ 12.18 hrs, Volume= 83,096 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Adj	Description
1,282	98		Unconnected roofs, HSG C
106,217	74		>75% Grass cover, Good, HSG C
23,367	98		Unconnected pavement, HSG C
234,985	70		Woods, Good, HSG C
10,925	98		Water Surface, HSG D
376,776	74	73	Weighted Average, UI Adjusted
341,202			90.56% Pervious Area
35,574			9.44% Impervious Area
24,649			69.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9					**Direct Entry, From Existing Model**
2.0	668	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
12.9	668	Total			

Summary for Subcatchment POST-3.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 4.03 cfs @ 12.05 hrs, Volume= 12,796 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
0	98	Unconnected roofs, HSG C
2,310	74	>75% Grass cover, Good, HSG C
28,463	98	Paved parking, HSG C
30,773	96	Weighted Average
2,310		7.51% Pervious Area
28,463		92.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	24	0.0280	1.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
1.4	466	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013

1.7 490 Total, Increased to minimum Tc = 3.0 min

Summary for Subcatchment POST-4.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.47 cfs @ 12.05 hrs, Volume= 19,593 cf, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
16,260	98	Unconnected roofs, HSG C
18,246	74	>75% Grass cover, Good, HSG C
15,654	98	Paved parking, HSG C
3,580	98	Unconnected roofs, HSG D
672	80	>75% Grass cover, Good, HSG D
54,412	90	Weighted Average
18,918		34.77% Pervious Area
35,494		65.23% Impervious Area
19,840		55.90% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	23	0.5000	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
1.6	27	0.1240	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.6	183	0.1140	5.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	332	0.0360	8.61	6.76	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.6	565	Total			

Summary for Subcatchment POST-4.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.43 cfs @ 12.05 hrs, Volume= 19,502 cf, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
4,680	98	Unconnected roofs, HSG C
12,546	74	>75% Grass cover, Good, HSG C
33,873	98	Paved parking, HSG C
135	80	>75% Grass cover, Good, HSG D
320	98	Paved parking, HSG D
51,554	92	Weighted Average
12,681		24.60% Pervious Area
38,873		75.40% Impervious Area
4,680		12.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	56	0.0467	1.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.5	44	0.0354	1.56		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.62"
0.4	103	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	271	0.0250	9.40	16.61	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
1.9	474	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-4.2:

Runoff = 2.55 cfs @ 12.10 hrs, Volume= 8,120 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.46"

Area (sf)	CN	Description
0	98	Unconnected roofs, HSG C
24,007	74	>75% Grass cover, Good, HSG C
189	98	Paved parking, HSG C
10,941	70	Woods, Good, HSG C
1,614	80	>75% Grass cover, Good, HSG D
66	98	Paved parking, HSG D
36,817	73	Weighted Average
36,562		99.31% Pervious Area
255		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0160	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.5	208	0.2120	6.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	258	Total			

Summary for Pond DMH 100:

Inflow Area = 631,651 sf, 36.06% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf
Outflow = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf, Atten= 0%, Lag= 0.0 min
Primary = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.14' @ 12.16 hrs
Flood Elev= 17.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.30'	**36.0" Round Culvert** L= 47.0' Ke= 0.500 Inlet / Outlet Invert= 6.30' / 6.05' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=29.38 cfs @ 12.13 hrs HW=9.97' TW=9.22' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 29.38 cfs @ 4.16 fps)

Summary for Pond DMH 100A:

Inflow Area = 631,651 sf, 36.06% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf
Outflow = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf, Atten= 0%, Lag= 0.0 min
Primary = 32.75 cfs @ 12.13 hrs, Volume= 158,436 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.25' @ 12.13 hrs
Flood Elev= 12.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.05'	**36.0" Round Culvert** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.05' / 5.90' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=32.39 cfs @ 12.13 hrs HW=9.22' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 32.39 cfs @ 5.38 fps)

Summary for Pond DMH 101: DMH101

Inflow Area = 455,938 sf, 17.24% Impervious, Inflow Depth = 2.88" for 10-Year event
Inflow = 25.71 cfs @ 12.16 hrs, Volume= 109,436 cf
Outflow = 25.71 cfs @ 12.16 hrs, Volume= 109,436 cf, Atten= 0%, Lag= 0.0 min
Primary = 25.71 cfs @ 12.16 hrs, Volume= 109,436 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.86' @ 12.20 hrs
Flood Elev= 15.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**36.0" Round Culvert** L= 141.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.95' / 7.30' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=21.47 cfs @ 12.16 hrs HW=10.72' TW=10.11' (Dynamic Tailwater)
1=Culvert (Outlet Controls 21.47 cfs @ 4.12 fps)

Summary for Pond DMH 308:

[80] Warning: Exceeded Pond PJFF-4 by 0.07' @ 12.00 hrs (2.22 cfs 400 cf)

Inflow Area = 105,966 sf, 70.18% Impervious, Inflow Depth = 4.43" for 10-Year event
Inflow = 12.89 cfs @ 12.05 hrs, Volume= 39,095 cf
Outflow = 12.89 cfs @ 12.05 hrs, Volume= 39,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.89 cfs @ 12.05 hrs, Volume= 39,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.01' @ 12.05 hrs
Flood Elev= 11.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.85'	**24.0" Round Culvert** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.85' / 7.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=12.86 cfs @ 12.05 hrs HW=10.01' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.86 cfs @ 4.09 fps)

Summary for Pond DMH 400:

Inflow Area = 117,877 sf, 76.54% Impervious, Inflow Depth = 4.59" for 10-Year event
Inflow = 10.45 cfs @ 12.07 hrs, Volume= 45,087 cf
Outflow = 10.45 cfs @ 12.07 hrs, Volume= 45,087 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.45 cfs @ 12.07 hrs, Volume= 45,087 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 7.49' @ 12.07 hrs
Flood Elev= 14.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.95'	**24.0" Round Culvert** L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 5.95' / 5.44' S= 0.0165 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=10.15 cfs @ 12.07 hrs HW=7.45' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 10.15 cfs @ 5.55 fps)

Summary for Pond DMH 401:

Inflow Area = 110,675 sf, 75.76% Impervious, Inflow Depth = 4.57" for 10-Year event
Inflow = 9.44 cfs @ 12.08 hrs, Volume= 42,161 cf
Outflow = 9.44 cfs @ 12.08 hrs, Volume= 42,161 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.44 cfs @ 12.08 hrs, Volume= 42,161 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.72' @ 12.08 hrs
Flood Elev= 13.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**18.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 6.60' / 6.20' S= 0.0093 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=9.34 cfs @ 12.08 hrs HW=8.69' TW=7.45' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.34 cfs @ 5.29 fps)

Summary for Pond PDMH 02:

[80] Warning: Exceeded Pond PTBF 1 by 0.06' @ 12.05 hrs (0.54 cfs 192 cf)
[80] Warning: Exceeded Pond PTBF 2 by 0.18' @ 12.05 hrs (1.00 cfs 491 cf)

Inflow Area = 127,437 sf, 75.11% Impervious, Inflow Depth = 4.59" for 10-Year event
Inflow = 10.92 cfs @ 12.13 hrs, Volume= 48,727 cf
Outflow = 10.92 cfs @ 12.13 hrs, Volume= 48,727 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.92 cfs @ 12.13 hrs, Volume= 48,727 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.91' @ 12.13 hrs
Flood Elev= 16.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.40'	**18.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 8.40' / 8.25' S= 0.0060 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=10.84 cfs @ 12.13 hrs HW=10.89' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 10.84 cfs @ 6.13 fps)

Summary for Pond PDMH 05: (new Pond)

Inflow Area = 71,880 sf, 91.06% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 5.90 cfs @ 12.14 hrs, Volume= 29,890 cf
Outflow = 5.90 cfs @ 12.14 hrs, Volume= 29,890 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.90 cfs @ 12.14 hrs, Volume= 29,890 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Peak Elev= 16.69' @ 12.14 hrs
Flood Elev= 26.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**18.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.40' / 14.90' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.85 cfs @ 12.14 hrs HW=16.68' TW=8.52' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.85 cfs @ 4.88 fps)

Summary for Pond PDMH 10:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf
Outflow = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.93 cfs @ 12.10 hrs, Volume= 49,001 cf
Secondary = 10.38 cfs @ 12.15 hrs, Volume= 20,732 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.84' @ 12.15 hrs
Flood Elev= 17.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**18.0" Round Culvert** L= 173.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 6.40' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	7.85'	**18.0" Round Culvert** L= 142.0' Ke= 0.500 Inlet / Outlet Invert= 7.85' / 7.15' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.92 cfs @ 12.10 hrs HW=10.61' TW=9.80' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.92 cfs @ 3.35 fps)

Secondary OutFlow Max=10.37 cfs @ 12.15 hrs HW=10.84' TW=0.00' (Dynamic Tailwater)
2=Culvert (Barrel Controls 10.37 cfs @ 5.87 fps)

Summary for Pond PDMH 11:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf
Outflow = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 11.30' @ 12.18 hrs
Flood Elev= 16.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.60'	**30.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.60' / 7.95' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=9.16 cfs @ 12.12 hrs HW=10.93' TW=10.69' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 9.16 cfs @ 2.50 fps)

Summary for Pond PJFF-1:

Inflow Area = 93,299 sf, 81.53% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 8.95 cfs @ 12.17 hrs, Volume= 37,026 cf
Outflow = 8.95 cfs @ 12.17 hrs, Volume= 37,026 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.95 cfs @ 12.17 hrs, Volume= 37,026 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 12.85' @ 12.17 hrs
Flood Elev= 17.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**18.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 11.00' / 10.60' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=8.80 cfs @ 12.17 hrs HW=12.82' TW=10.86' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.80 cfs @ 4.98 fps)

Summary for Pond PJFF-2:

Inflow Area = 71,880 sf, 91.06% Impervious, Inflow Depth = 4.50" for 10-Year event
Inflow = 3.95 cfs @ 12.14 hrs, Volume= 26,971 cf
Outflow = 3.95 cfs @ 12.14 hrs, Volume= 26,971 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.95 cfs @ 12.14 hrs, Volume= 26,971 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 17.99' @ 12.14 hrs
Flood Elev= 26.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 27.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 15.50' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.92 cfs @ 12.14 hrs HW=17.97' TW=16.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.92 cfs @ 4.99 fps)

Summary for Pond PJFF-3:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 3.97" for 10-Year event
Inflow = 7.96 cfs @ 12.10 hrs, Volume= 58,195 cf
Outflow = 7.96 cfs @ 12.10 hrs, Volume= 58,195 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.96 cfs @ 12.10 hrs, Volume= 58,195 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 13.76' @ 12.10 hrs
Flood Elev= 26.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.90'	**18.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.90' / 11.80' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=7.95 cfs @ 12.10 hrs HW=13.75' TW=10.76' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.95 cfs @ 4.65 fps)

Summary for Pond PJFF-4:

Inflow Area = 54,412 sf, 65.23% Impervious, Inflow Depth = 4.32" for 10-Year event
Inflow = 6.47 cfs @ 12.05 hrs, Volume= 19,593 cf
Outflow = 6.47 cfs @ 12.05 hrs, Volume= 19,593 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.47 cfs @ 12.05 hrs, Volume= 19,593 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.43' @ 12.09 hrs
Flood Elev= 16.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.15'	**18.0" Round Culvert** L= 7.0' Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.00' S= 0.0214 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.81 cfs @ 12.05 hrs HW=10.18' TW=9.98' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.81 cfs @ 2.15 fps)

Summary for Pond PTBF 1:

Inflow Area = 10,398 sf, 83.62% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.33 cfs @ 12.05 hrs, Volume= 4,127 cf
Outflow = 1.33 cfs @ 12.05 hrs, Volume= 4,127 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.05 hrs, Volume= 4,127 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.96' @ 12.18 hrs
Flood Elev= 13.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.90'	**10.0" Round Culvert** L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 9.90' / 9.60' S= 0.0158 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=10.62' TW=10.65' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond PTBF 2:

Inflow Area = 10,232 sf, 72.10% Impervious, Inflow Depth = 4.43" for 10-Year event
Inflow = 1.26 cfs @ 12.05 hrs, Volume= 3,777 cf
Outflow = 1.26 cfs @ 12.05 hrs, Volume= 3,777 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.05 hrs, Volume= 3,777 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.97' @ 12.18 hrs
Flood Elev= 12.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.05'	**10.0" Round Culvert** L= 49.0' Ke= 0.500 Inlet / Outlet Invert= 9.05' / 8.80' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=10.48' TW=10.66' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond PTBF 3:

Inflow Area = 7,344 sf, 50.26% Impervious, Inflow Depth = 3.90" for 10-Year event
Inflow = 0.82 cfs @ 12.05 hrs, Volume= 2,386 cf
Outflow = 0.82 cfs @ 12.05 hrs, Volume= 2,386 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.05 hrs, Volume= 2,386 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 23.90' @ 12.05 hrs
Flood Elev= 26.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.40'	**10.0" Round Culvert** L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 23.40' / 23.00' S= 0.0308 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.81 cfs @ 12.05 hrs HW=23.90' TW=10.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.81 cfs @ 2.40 fps)

Summary for Pond UDB-1:

Inflow Area = 71,880 sf, 91.06% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 9.26 cfs @ 12.05 hrs, Volume= 29,890 cf
Outflow = 5.90 cfs @ 12.14 hrs, Volume= 29,890 cf, Atten= 36%, Lag= 5.4 min
Primary = 3.95 cfs @ 12.14 hrs, Volume= 26,971 cf
Secondary = 1.95 cfs @ 12.14 hrs, Volume= 2,919 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Starting Elev= 17.00' Surf.Area= 3,094 sf Storage= 0 cf
Peak Elev= 18.96' @ 12.14 hrs Surf.Area= 3,094 sf Storage= 2,751 cf
Flood Elev= 21.00' Surf.Area= 3,094 sf Storage= 6,582 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.7 min (761.8 - 758.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	0 cf	**34.00'W x 91.00'L x 5.50'H Field A** 17,018 cf Overall - 8,081 cf Embedded = 8,936 cf x 0.0% Voids
#2A	17.00'	6,746 cf	**ADS N-12 48"** x 24 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.86 sf x 20.00'L = 297.1 cf 6 Rows of 4 Chambers 32.00' Header x 12.40 sf x 2 = 793.6 cf Inside
		6,746 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	16.75'	**18.0" Round Culvert** L= 9.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.75' / 16.50' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	17.85'	**15.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	20.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	17.00'	**12.0" Round Culvert** L= 9.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.74 cfs @ 12.14 hrs HW=18.95' TW=17.97' (Dynamic Tailwater)
└**4=Culvert** (Inlet Controls 3.74 cfs @ 4.77 fps)

Secondary OutFlow Max=1.94 cfs @ 12.14 hrs HW=18.95' TW=16.68' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.94 cfs of 10.25 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 1.94 cfs @ 4.65 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UDB-2:

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=38)

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 20.86 cfs @ 12.07 hrs, Volume= 69,733 cf
Outflow = 17.97 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 14%, Lag= 2.7 min
Primary = 7.96 cfs @ 12.10 hrs, Volume= 58,195 cf
Secondary = 10.10 cfs @ 12.12 hrs, Volume= 11,538 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 14.56' @ 12.12 hrs Surf.Area= 0.083 ac Storage= 0.108 af
Flood Elev= 16.00' Surf.Area= 0.083 ac Storage= 0.176 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.3 min (774.5 - 770.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.50'	0.000 af	**39.50'W x 91.00'L x 5.50'H Field A** 0.454 af Overall - 0.217 af Embedded = 0.237 af x 0.0% Voids
#2A	12.00'	0.181 af	**ADS N-12 48"** x 28 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.86 sf x 20.00'L = 297.1 cf 7 Rows of 4 Chambers 37.50' Header x 12.40 sf x 2 = 930.0 cf Inside
		0.181 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**18.0" Round Culvert** L= 4.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.00' / 11.90' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	12.95'	**30.0" Round Culvert** L= 4.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 12.95' / 12.85' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=7.45 cfs @ 12.10 hrs HW=14.52' TW=13.75' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.45 cfs @ 4.22 fps)

Secondary OutFlow Max=9.73 cfs @ 12.12 hrs HW=14.52' TW=10.99' (Dynamic Tailwater)
2=Culvert (Barrel Controls 9.73 cfs @ 4.27 fps)

Summary for Link PA-1:

Inflow Area = 1,052,017 sf, 49.12% Impervious, Inflow Depth = 3.80" for 10-Year event
Inflow = 79.05 cfs @ 12.10 hrs, Volume= 333,335 cf
Primary = 79.05 cfs @ 12.10 hrs, Volume= 333,335 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST 1.1: Runoff Area=10,232 sf 72.10% Impervious Runoff Depth=5.85"
Flow Length=126' Slope=0.0200 '/' Tc=3.0 min CN=91 Runoff=1.63 cfs 4,988 cf

Subcatchment POST 2.2: Runoff Area=175,713 sf 84.90% Impervious Runoff Depth=6.20"
Flow Length=243' Tc=5.1 min CN=94 Runoff=26.77 cfs 90,770 cf

Subcatchment POST-1.0: Runoff Area=10,398 sf 83.62% Impervious Runoff Depth=6.20"
Flow Length=279' Tc=3.0 min CN=94 Runoff=1.71 cfs 5,371 cf

Subcatchment POST-1.2: Runoff Area=1,496 sf 0.00% Impervious Runoff Depth=3.96"
Flow Length=21' Slope=0.0876 '/' Tc=3.0 min CN=74 Runoff=0.17 cfs 494 cf

Subcatchment POST-1.3: Runoff Area=3,464 sf 0.00% Impervious Runoff Depth=3.96"
Flow Length=107' Slope=0.0670 '/' Tc=3.5 min CN=74 Runoff=0.40 cfs 1,144 cf

Subcatchment POST-1.4: Runoff Area=10,044 sf 35.62% Impervious Runoff Depth=4.94"
Flow Length=136' Tc=3.0 min CN=83 Runoff=1.42 cfs 4,137 cf

Subcatchment POST-1.5: Runoff Area=93,299 sf 81.53% Impervious Runoff Depth=6.20"
Flow Length=692' Tc=12.5 min CN=94 Runoff=11.49 cfs 48,196 cf

Subcatchment POST-1.6: Runoff Area=7,202 sf 88.41% Impervious Runoff Depth=6.32"
Flow Length=162' Tc=3.0 min CN=95 Runoff=1.19 cfs 3,791 cf

Subcatchment POST-1.7: Runoff Area=38,795 sf 47.43% Impervious Runoff Depth=5.17"
Flow Length=436' Tc=5.0 min CN=85 Runoff=5.28 cfs 16,703 cf

Subcatchment POST-2.0: Runoff Area=71,880 sf 91.06% Impervious Runoff Depth=6.43"
Flow Length=417' Tc=3.6 min CN=96 Runoff=11.80 cfs 38,539 cf

Subcatchment POST-2.1: Runoff Area=71,818 sf 54.78% Impervious Runoff Depth=5.39"
Flow Length=739' Tc=3.9 min CN=87 Runoff=10.58 cfs 32,272 cf

Subcatchment POST-2.3: Runoff Area=7,344 sf 50.26% Impervious Runoff Depth=5.28"
Flow Length=112' Tc=3.0 min CN=86 Runoff=1.09 cfs 3,231 cf

Subcatchment POST-2.4: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=3.86"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=30.98 cfs 121,127 cf

Subcatchment POST-3.0: Runoff Area=30,773 sf 92.49% Impervious Runoff Depth=6.43"
Flow Length=490' Tc=3.0 min CN=96 Runoff=5.13 cfs 16,499 cf

Subcatchment POST-4.0: Runoff Area=54,412 sf 65.23% Impervious Runoff Depth=5.73"
Flow Length=565' Tc=3.6 min CN=90 Runoff=8.45 cfs 26,004 cf

Subcatchment POST-4.1: Runoff Area=51,554 sf 75.40% Impervious Runoff Depth=5.97"
Flow Length=474' Tc=3.0 min CN=92 Runoff=8.32 cfs 25,631 cf

Subcatchment POST-4.2: Runoff Area=36,817 sf 0.69% Impervious Runoff Depth=3.86"
Flow Length=258' Tc=6.3 min CN=73 Runoff=3.72 cfs 11,836 cf

Pond DMH 100: Peak Elev=12.09' Inflow=45.48 cfs 215,796 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=45.48 cfs 215,796 cf

Pond DMH 100A: Peak Elev=10.40' Inflow=45.48 cfs 215,796 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=45.48 cfs 215,796 cf

Pond DMH 101: DMH101 Peak Elev=13.19' Inflow=37.09 cfs 156,631 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=37.09 cfs 156,631 cf

Pond DMH 308: Peak Elev=10.82' Inflow=16.75 cfs 51,635 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=16.75 cfs 51,635 cf

Pond DMH 400: Peak Elev=7.71' Inflow=12.81 cfs 59,033 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=12.81 cfs 59,033 cf

Pond DMH 401: Peak Elev=9.59' Inflow=11.83 cfs 55,243 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=11.83 cfs 55,243 cf

Pond PDMH 02: Peak Elev=11.89' Inflow=14.09 cfs 63,837 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=14.09 cfs 63,837 cf

Pond PDMH 05: (new Pond) Peak Elev=16.83' Inflow=6.81 cfs 38,539 cf
18.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/' Outflow=6.81 cfs 38,539 cf

Pond PDMH 10: Peak Elev=12.88' Inflow=23.44 cfs 90,770 cf
Primary=9.64 cfs 59,165 cf Secondary=14.41 cfs 31,605 cf Outflow=23.44 cfs 90,770 cf

Pond PDMH 11: Peak Elev=13.50' Inflow=23.44 cfs 90,770 cf
30.0" Round Culvert n=0.013 L=128.0' S=0.0051 '/' Outflow=23.44 cfs 90,770 cf

Pond PJFF-1: Peak Elev=13.66' Inflow=11.49 cfs 48,196 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0333 '/' Outflow=11.49 cfs 48,196 cf

Pond PJFF-2: Peak Elev=18.26' Inflow=4.42 cfs 33,975 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0333 '/' Outflow=4.42 cfs 33,975 cf

Pond PJFF-3: Peak Elev=14.03' Inflow=8.67 cfs 71,841 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=8.67 cfs 71,841 cf

Pond PJFF-4: Peak Elev=11.53' Inflow=8.45 cfs 26,004 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=8.45 cfs 26,004 cf

Pond PTBF 1: Peak Elev=11.98' Inflow=1.71 cfs 5,371 cf
10.0" Round Culvert n=0.013 L=19.0' S=0.0158 '/' Outflow=1.71 cfs 5,371 cf

Pond PTBF 2: Peak Elev=11.99' Inflow=1.63 cfs 4,988 cf
10.0" Round Culvert n=0.013 L=49.0' S=0.0051 '/' Outflow=1.63 cfs 4,988 cf

Pond PTBF 3: Peak Elev=24.00' Inflow=1.09 cfs 3,231 cf
10.0" Round Culvert n=0.013 L=13.0' S=0.0308 '/' Outflow=1.09 cfs 3,231 cf

Pond UDB-1: Peak Elev=19.50' Storage=3,906 cf Inflow=11.80 cfs 38,539 cf
Primary=4.42 cfs 33,975 cf Secondary=2.44 cfs 4,565 cf Outflow=6.81 cfs 38,539 cf

Pond UDB-2: Peak Elev=14.98' Storage=0.132 af Inflow=26.77 cfs 90,770 cf
Primary=8.67 cfs 71,841 cf Secondary=14.82 cfs 18,929 cf Outflow=23.44 cfs 90,770 cf

Link PA-1: Inflow=106.10 cfs 450,736 cf
Primary=106.10 cfs 450,736 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 450,735 cf Average Runoff Depth = 5.14"
50.88% Pervious = 535,222 sf 49.12% Impervious = 516,795 sf

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST 1.1: Runoff Area=10,232 sf 72.10% Impervious Runoff Depth=7.18"
Flow Length=126' Slope=0.0200 '/' Tc=3.0 min CN=91 Runoff=1.98 cfs 6,123 cf

Subcatchment POST 2.2: Runoff Area=175,713 sf 84.90% Impervious Runoff Depth=7.54"
Flow Length=243' Tc=5.1 min CN=94 Runoff=32.23 cfs 110,414 cf

Subcatchment POST-1.0: Runoff Area=10,398 sf 83.62% Impervious Runoff Depth=7.54"
Flow Length=279' Tc=3.0 min CN=94 Runoff=2.06 cfs 6,534 cf

Subcatchment POST-1.2: Runoff Area=1,496 sf 0.00% Impervious Runoff Depth=5.16"
Flow Length=21' Slope=0.0876 '/' Tc=3.0 min CN=74 Runoff=0.22 cfs 643 cf

Subcatchment POST-1.3: Runoff Area=3,464 sf 0.00% Impervious Runoff Depth=5.16"
Flow Length=107' Slope=0.0670 '/' Tc=3.5 min CN=74 Runoff=0.51 cfs 1,489 cf

Subcatchment POST-1.4: Runoff Area=10,044 sf 35.62% Impervious Runoff Depth=6.23"
Flow Length=136' Tc=3.0 min CN=83 Runoff=1.77 cfs 5,211 cf

Subcatchment POST-1.5: Runoff Area=93,299 sf 81.53% Impervious Runoff Depth=7.54"
Flow Length=692' Tc=12.5 min CN=94 Runoff=13.84 cfs 58,627 cf

Subcatchment POST-1.6: Runoff Area=7,202 sf 88.41% Impervious Runoff Depth=7.66"
Flow Length=162' Tc=3.0 min CN=95 Runoff=1.43 cfs 4,597 cf

Subcatchment POST-1.7: Runoff Area=38,795 sf 47.43% Impervious Runoff Depth=6.46"
Flow Length=436' Tc=5.0 min CN=85 Runoff=6.53 cfs 20,899 cf

Subcatchment POST-2.0: Runoff Area=71,880 sf 91.06% Impervious Runoff Depth=7.78"
Flow Length=417' Tc=3.6 min CN=96 Runoff=14.15 cfs 46,603 cf

Subcatchment POST-2.1: Runoff Area=71,818 sf 54.78% Impervious Runoff Depth=6.70"
Flow Length=739' Tc=3.9 min CN=87 Runoff=12.99 cfs 40,117 cf

Subcatchment POST-2.3: Runoff Area=7,344 sf 50.26% Impervious Runoff Depth=6.58"
Flow Length=112' Tc=3.0 min CN=86 Runoff=1.35 cfs 4,029 cf

Subcatchment POST-2.4: Runoff Area=376,776 sf 9.44% Impervious Runoff Depth=5.04"
Flow Length=668' Slope=0.0150 '/' Tc=12.9 min UI Adjusted CN=73 Runoff=40.42 cfs 158,277 cf

Subcatchment POST-3.0: Runoff Area=30,773 sf 92.49% Impervious Runoff Depth=7.78"
Flow Length=490' Tc=3.0 min CN=96 Runoff=6.15 cfs 19,952 cf

Subcatchment POST-4.0: Runoff Area=54,412 sf 65.23% Impervious Runoff Depth=7.06"
Flow Length=565' Tc=3.6 min CN=90 Runoff=10.28 cfs 32,020 cf

Subcatchment POST-4.1: Runoff Area=51,554 sf 75.40% Impervious Runoff Depth=7.30"
Flow Length=474' Tc=3.0 min CN=92 Runoff=10.06 cfs 31,366 cf

Subcatchment POST-4.2: Runoff Area=36,817 sf 0.69% Impervious Runoff Depth=5.04"
Flow Length=258' Tc=6.3 min CN=73 Runoff=4.85 cfs 15,466 cf

Pond DMH 100: Peak Elev=14.81' Inflow=57.82 cfs 272,637 cf
36.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=57.82 cfs 272,637 cf

Pond DMH 100A: Peak Elev=12.17' Inflow=57.82 cfs 272,637 cf
36.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=57.82 cfs 272,637 cf

Pond DMH 101: DMH101 Peak Elev=16.67' Inflow=47.97 cfs 202,423 cf
36.0" Round Culvert n=0.013 L=141.0' S=0.0046 '/' Outflow=47.97 cfs 202,423 cf

Pond DMH 308: Peak Elev=11.74' Inflow=20.32 cfs 63,386 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=20.32 cfs 63,386 cf

Pond DMH 400: Peak Elev=7.93' Inflow=14.95 cfs 72,100 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=14.95 cfs 72,100 cf

Pond DMH 401: Peak Elev=10.48' Inflow=13.74 cfs 67,502 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=13.74 cfs 67,502 cf

Pond PDMH 02: Peak Elev=13.16' Inflow=17.03 cfs 77,984 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0060 '/' Outflow=17.03 cfs 77,984 cf

Pond PDMH 05: (new Pond) Peak Elev=16.97' Inflow=7.66 cfs 46,603 cf
18.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/' Outflow=7.66 cfs 46,603 cf

Pond PDMH 10: Peak Elev=15.91' Inflow=29.89 cfs 110,415 cf
Primary=11.56 cfs 70,214 cf Secondary=19.33 cfs 40,201 cf Outflow=29.89 cfs 110,415 cf

Pond PDMH 11: Peak Elev=16.07' Inflow=29.89 cfs 110,415 cf
30.0" Round Culvert n=0.013 L=128.0' S=0.0051 '/' Outflow=29.89 cfs 110,415 cf

Pond PJFF-1: Peak Elev=15.79' Inflow=13.84 cfs 58,627 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0333 '/' Outflow=13.84 cfs 58,627 cf

Pond PJFF-2: Peak Elev=18.54' Inflow=4.80 cfs 40,424 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0333 '/' Outflow=4.80 cfs 40,424 cf

Pond PJFF-3: Peak Elev=16.68' Inflow=13.05 cfs 82,915 cf
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=13.05 cfs 82,915 cf

Pond PJFF-4: Peak Elev=12.80' Inflow=10.28 cfs 32,020 cf
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=10.28 cfs 32,020 cf

Pond PTBF 1: Peak Elev=13.27' Inflow=2.06 cfs 6,534 cf
10.0" Round Culvert n=0.013 L=19.0' S=0.0158 '/' Outflow=2.06 cfs 6,534 cf

Pond PTBF 2: Peak Elev=13.29' Inflow=1.98 cfs 6,123 cf
10.0" Round Culvert n=0.013 L=49.0' S=0.0051 '/' Outflow=1.98 cfs 6,123 cf

Pond PTBF 3: Peak Elev=24.08' Inflow=1.35 cfs 4,029 cf
10.0" Round Culvert n=0.013 L=13.0' S=0.0308 '/' Outflow=1.35 cfs 4,029 cf

Pond UDB-1: Peak Elev=20.07' Storage=5,097 cf Inflow=14.15 cfs 46,603 cf
Primary=4.80 cfs 40,424 cf Secondary=2.88 cfs 6,180 cf Outflow=7.66 cfs 46,603 cf

Pond UDB-2: Peak Elev=16.00' Storage=0.176 af Inflow=32.23 cfs 110,414 cf
Primary=13.05 cfs 82,915 cf Secondary=19.24 cfs 27,500 cf Outflow=29.89 cfs 110,415 cf

Link PA-1: Inflow=131.62 cfs 562,368 cf
Primary=131.62 cfs 562,368 cf

Total Runoff Area = 1,052,017 sf Runoff Volume = 562,367 cf Average Runoff Depth = 6.41"
50.88% Pervious = 535,222 sf 49.12% Impervious = 516,795 sf

4.4 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates from the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis.

Table 4.4

Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	51.17	88.83	119.22	147.71
Post-Development Watershed				
PA-1	45.97	79.05	106.10	131.62

4.5 Mitigation Description

4.5.1 Mitigation Calculations

The proposed project area has been evaluated to treat the required water quality flow (WQF) per the requirements of Env-Wq 1500. These calculations have been provided in Section 3 of this report (BMP Worksheets).

4.5.2 Pre-Treatment Methods for Protecting Water Quality

Pretreatment methods for protecting water quality on this site include Contech proprietary CDS units.

4.5.3 Treatment Methods for Protecting Water Quality

Treatment for the site is included by means of Contech proprietary Jellyfish Filter and Filtrerra tree box filter units. The treatment units were sized to treat the Water Quality Flow for their respective subcatchment areas.

The BMP Worksheets for this treatment practice have been included in Section 3 of this report.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.870 degrees West
Latitude	43.194 degrees North
Elevation	0 feet
Date/Time	Mon, 16 Dec 2019 13:11:23 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	2.00	2.60	2.87	**1yr**	2.31	2.76	3.16	3.89	4.45	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.15	3.51	**2yr**	2.79	3.38	3.87	4.61	5.24	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.39	3.08	3.98	4.50	**5yr**	3.53	4.33	4.95	5.82	6.57	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.23	1.69	2.18	2.83	3.66	4.75	5.43	**10yr**	4.21	5.22	5.96	6.94	7.81	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.09	2.70	3.53	4.61	6.01	6.96	**25yr**	5.32	6.70	7.63	8.78	9.80	**25yr**
50yr	0.52	0.83	1.06	1.49	2.00	2.67	**50yr**	1.73	2.46	3.18	4.19	5.49	7.18	8.41	**50yr**	6.35	8.09	9.21	10.49	11.65	**50yr**
100yr	0.58	0.94	1.21	1.71	2.33	3.13	**100yr**	2.01	2.89	3.75	4.96	6.53	8.58	10.16	**100yr**	7.59	9.77	11.11	12.54	13.86	**100yr**
200yr	0.64	1.05	1.36	1.96	2.71	3.68	**200yr**	2.34	3.40	4.44	5.90	7.80	10.26	12.28	**200yr**	9.08	11.81	13.40	14.99	16.48	**200yr**
500yr	0.76	1.25	1.63	2.36	3.31	4.55	**500yr**	2.86	4.22	5.51	7.38	9.82	12.99	15.78	**500yr**	11.50	15.18	17.19	19.00	20.75	**500yr**

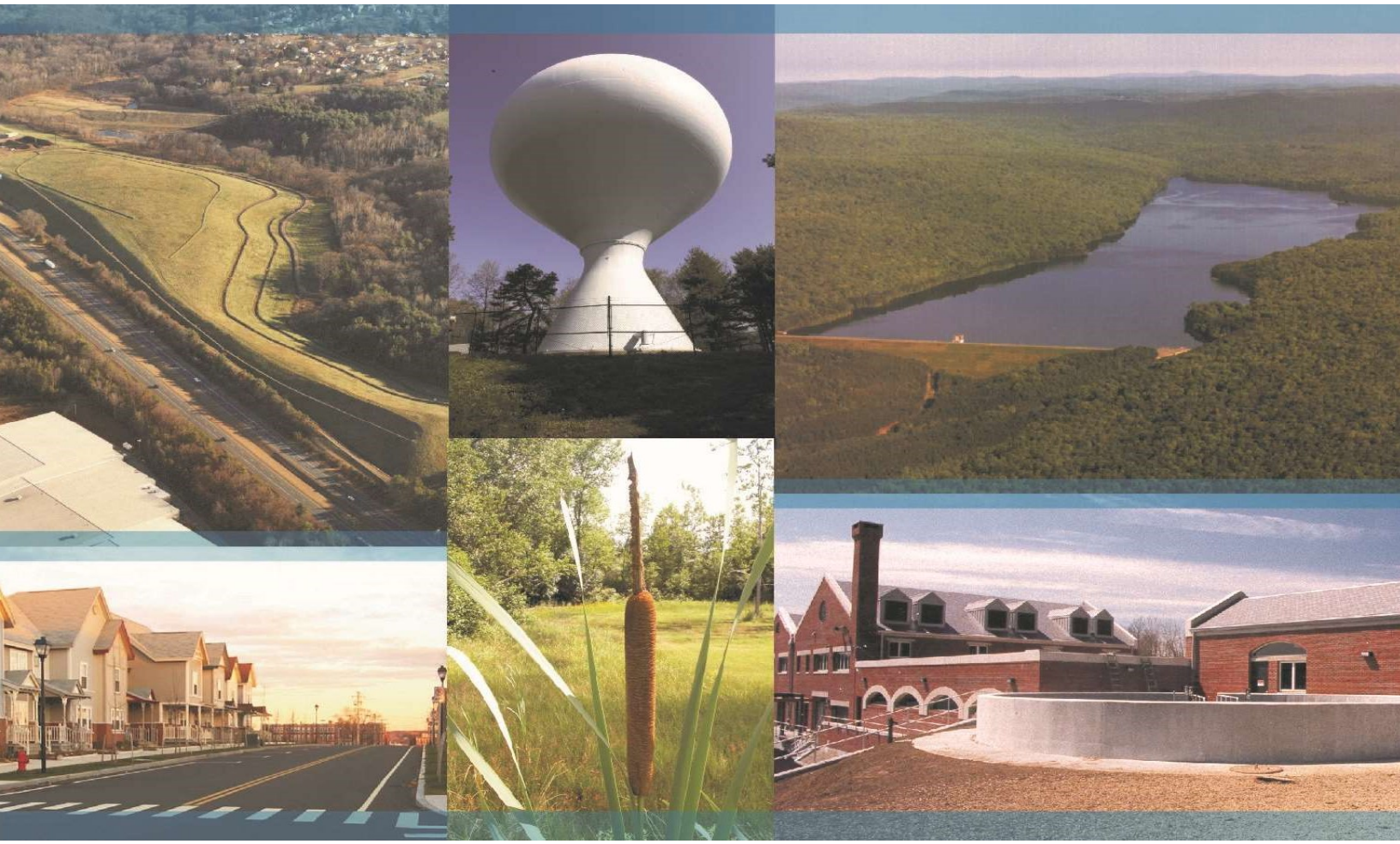
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.92	1.26	1.58	2.14	2.45	**1yr**	1.90	2.36	2.88	3.36	4.03	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.35	3.04	3.40	**2yr**	2.69	3.27	3.75	4.47	5.05	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.77	3.71	4.13	**5yr**	3.29	3.97	4.62	5.41	6.11	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.44	3.12	4.27	4.78	**10yr**	3.78	4.60	5.32	6.24	7.01	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.83	3.64	4.92	5.78	**25yr**	4.36	5.56	6.49	7.54	8.41	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.19	4.09	5.61	6.67	**50yr**	4.97	6.41	7.53	8.69	9.64	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.51	**100yr**	1.73	2.45	2.63	3.56	4.56	6.38	7.68	**100yr**	5.65	7.38	8.73	10.03	11.04	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.87	**200yr**	1.97	2.80	2.93	3.99	5.09	7.26	8.84	**200yr**	6.42	8.50	10.12	11.57	12.66	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.36	3.37	3.40	4.61	5.89	8.57	10.64	**500yr**	7.58	10.23	12.29	13.99	15.12	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.24	1.74	2.21	2.88	3.10	**1yr**	2.55	2.98	3.44	4.23	4.82	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.47	1.95	2.51	3.30	3.64	**2yr**	2.92	3.50	4.01	4.76	5.46	**2yr**
5yr	0.39	0.61	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.86	2.50	3.20	4.25	4.87	**5yr**	3.76	4.68	5.29	6.25	7.01	**5yr**
10yr	0.46	0.70	0.87	1.22	1.57	1.92	**10yr**	1.36	1.88	2.24	3.05	3.86	5.22	6.08	**10yr**	4.62	5.85	6.69	7.67	8.55	**10yr**
25yr	0.56	0.85	1.05	1.50	1.98	2.48	**25yr**	1.71	2.43	2.88	3.97	4.97	7.09	8.18	**25yr**	6.28	7.86	8.97	10.10	11.15	**25yr**
50yr	0.64	0.98	1.22	1.75	2.36	3.00	**50yr**	2.04	2.93	3.50	4.83	6.03	8.76	10.25	**50yr**	7.75	9.86	11.22	12.42	13.63	**50yr**
100yr	0.75	1.13	1.42	2.05	2.81	3.63	**100yr**	2.43	3.54	4.24	5.92	7.34	10.83	12.86	**100yr**	9.58	12.36	14.02	15.31	16.68	**100yr**
200yr	0.87	1.31	1.66	2.40	3.35	4.40	**200yr**	2.89	4.30	5.16	7.24	8.92	13.42	16.14	**200yr**	11.88	15.52	17.55	18.85	20.43	**200yr**
500yr	1.07	1.58	2.04	2.96	4.21	5.65	**500yr**	3.64	5.52	6.67	9.47	11.57	17.84	21.80	**500yr**	15.79	20.96	23.63	24.86	26.74	**500yr**

Powered by ACIS Northeast Regional Climate Center



Cochecho Waterfront Development

River Street, Dover, NH

Long-Term Operation and Maintenance Manual

Prepared For:

CPI Management, LLC
C/O Cathartes
6 Liberty Sq, PMB 90767
Boston, MA 02109

September 16, 2021

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Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

CPI Management, LLC
C/O Cathartes
16 Liberty Sq PMB 90767
Boston, MA 02109

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Underground Detention System
- Contech Jellyfish Filtration System
- Contech CDS Unit
- Filterra Tree Box Filter

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Bi-Annually
Landscaping - Landscaped islands to be maintained per Landscape O&M Plan.	See Landscape Plan Sheet L-100
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Underground Detention Basin - Visual observation of sediment levels within system	Annually
- Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations
- Contech CDS Units	In accordance with Manufacturer's Recommendations
- Filterra Tree Box Filter	In accordance with Manufacturer's Recommendations

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

GENERAL NOTES

1. THE PLANTING DESIGN IS BASED ON CIVIL ENGINEERING DRAWINGS PRODUCED BY TIGHE & BOND. EXISTING BUILDINGS, GRADING, EASEMENTS AND UTILITIES ARE BASED ON SURVEY INFORMATION PROVIDED BY THE OWNER.
2. VERIFY ALL CONDITIONS AT PROJECT SITE AND NOTIFY LANDSCAPE ARCHITECT OF DIMENSIONAL ERRORS, OMISSIONS OR DISCREPANCIES BEFORE BEGINNING WORK.
4. THE LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING OVER OR NEAR EXISTING GAS MAINS AND ELECTRICAL LINES. CONTRACTOR IS TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES, ABOVE AND BELOW GRADE, PRIOR TO EXCAVATION OR TRENCHING. CALL DIG SAFE AT 1-888-344-7233. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS. DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. ARCHITECTURAL ELEMENTS ARE SHOWN ON LANDSCAPE PLANS FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL ARCHITECTURAL INFORMATION. NOTIFY OWNER OR OWNER'S REPRESENTATIVE & LANDSCAPE ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
6. THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR FOR SAFETY PRECAUTIONS OR PROBLEMS UTILIZED IN CONNECTION WITH THE WORK, AND HE WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

LANDSCAPE OPERATION & MAINTENANCE PLAN

WEEKLY TASKS - MAY 15 TO SEPTEMBER 15TH

1. MOW & EDGE LAWN IF GROUND CONDITIONS ARE SUITABLE FOR ACCESS. START MOWING GRASS ONCE IT REACHES 3" HIGH. MOW USING APPROPRIATE MACHINERY INCLUDING PUSH MOWER IF AREA IS TOO STEEP OR TOO SMALL FOR LARGER MACHINERY. DO NOT REMOVE CUTTINGS UNLESS EXCESSIVE AMOUNTS HINDER GRASS GROWTH OR IF DISEASE IS PRESENT. CUTTINGS PROVIDE NITROGEN FERTILIZER.
2. MOW TO A HEIGHT IF ½ OF GRASS BLADE USING SHARP BLADES. MAINTAIN A MINIMUM HEIGHT OF 2" TALL TO WARD OFF WEEDS AND WITHSTAND SUMMER DROUGHT.
3. MANUALLY REMOVE WEEDS LARGER THAN 2" HIGH OR WIDE FROM PLANT BEDS. USE OF CHEMICAL WEED KILLER IS NOT PERMITTED.
4. REPLACE BARK MULCH WHICH HAS BEEN DISPLACED OR WASHED OUT FROM PLANT BEDS.
5. CHECK PLANTS FOR SIGNS OF STRESS, PEST OR DISEASE. UPON APPROVAL & AUTHORIZATION FROM OWNER REPLACE DEAD, DYING OR DISEASED PLANTS THAT CANNOT BE TREATED. CONSULT A LICENSED ARBORIST FOR TREE DISEASES OR TO REVIEW TREE DAMAGE AND APPROPRIATE PRUNING OR REMOVAL AND REPLACEMENT. REPLACEMENTS ARE TO MATCH ORIGINAL PLANT.
6. SWEEP OR BLOW CLEAN HARD SURFACES INCLUDING WALKWAYS, CURBS AND GUTTERS. RAKE LEVEL STONE DUST PATH AND FILL DEPRESSIONS WITH NEW.
6. CHECK IRRIGATION SYSTEM COMPONENTS INCLUDING VALVES, VALVE BOXES ETC. AND MAKE REPAIRS AND REPLACEMENT AS NECESSARY. CHECK IRRIGATION SYSTEM DURING RAIN STORM EVENTS TO ENSURE AUTOMATIC SHUT OFF IS WORKING. ADJUST IRRIGATION TIMES AS NECESSARY BASED ON PLANT NEEDS AND WEATHER CONDITIONS.
7. COMPLETE ITEMS ON THE MONTHLY CHECK LIST.

MONTHLY TASKS

JANUARY
DURING WINTER DROUGHT PERIODS WATER NEWLY PLANTED TREES AND SHRUBS, ESPECIALLY EVERGREENS. TREE BAGS ARE SUGGESTED WHEN TEMPERATURES ARE ABOVE FREEZING.

FEBRUARY
FERTILIZE TREES & SHRUBS AS NEEDED USING DEEP ROOT APPLICATION WITH SLOW RELEASE FERTILIZER. FINISH PRUNING SHADE TREES. SUMMER FLOWERING SHRUBS, AND HEDGES. SPRING BLOOMING SHRUBS MAY BE PRUNED IMMEDIATELY AFTER FLOWERING. PRUNE SHRUBS IN FEBRUARY BASED ON SPECIES. DO NOT SHEAR OR FORM SHRUBS INTO BALLS OR UNNATURAL SHAPES UNLESS OTHERWISE NOTED.

MARCH
APPLY SHREDDED BARK MULCH AT SIZES NOTED TO TREE, SHRUB & PERENNIAL BEDS, OPTIONAL: DIVIDE AND REPLANT SUMMER & FALL BLOOMING PERENNIALS

APRIL
REPLACE MULCH WHICH HAS BEEN WASHED OUT BY RAINS OR SNOW MELTING RUN-OFF. REMOVE EXCESS DEICING SALTS FROM PLANT BEDS. CHECK IRRIGATION SYSTEM AND RETURN TO NORMAL SERVICE. DURING DAYLIGHT OPERATION ON A MONTHLY BASIS UNTIL OCTOBER 15TH CHECK EACH IRRIGATION ZONE OF THE SYSTEM TO ENSURE SYSTEM IS OPERATING CORRECTLY TO CONSERVE WATER AND TO KEEP PLANT HEALTHY.

MAY
INSPECT SHRUBS FOR DAMAGE FROM SNOW AND/OR PLOWING. PRUNE OUT WINTER DAMAGED BRANCHES OR PLANTS THAT HAVE NOT BEGUN TO GROW IN LATE MAY. WATER NEW TRANSPLANTS AND PLANT REPLACEMENTS UNLESS RAINFALL IS ABUNDANT.

JUNE
VIGOROUS, UNWANTED LIMBS SHOULD BE REMOVED OR SHORTENED ON NEW TREES. WATCH FOR FORKS IN THE MAIN TRUNK AND REMOVE THE LEAST DESIRABLE LEADER. WATER PLANTS AS NEEDED. MONITOR IRRIGATION SYSTEM TO MAKE SURE COVERAGE AND QUANTITIES ARE ADEQUATE.

JULY
PRUNE BACK GROUNDCOVER OVERHANGING CURBS OR SIDEWALKS. CONTINUE WATERING YOUNG PLANTS.

AUGUST
WATER PLANTING AREAS THOROUGHLY UNLESS RAINFALL HAS BEEN ADEQUATE. CHECK PLANTS FOR SIGN OF WATER STRESS. NUTRIENT DEFICIENCY OR DISEASE. IDENTIFY AND TREAT AS REQUIRED. PRUNE HEDGES AND SHRUBS IF NECESSARY IN LATE AUGUST. FERTILIZE YOUNG TREES & SHRUBS.

SEPTEMBER
CHECK TREES FOR SIGNS OF WATER STRESS, NUTRIENT DEFICIENCY OR DISEASE AND TREAT ACCORDINGLY. CORE AERATE, TOP DRESS AND OVER SEED LAWNS IF NEEDED.

OCTOBER
REMOVE LEAVES AND LITTER FROM PARKING LOTS, WALKWAYS AND TURF AREAS OR MOW WITH MULCHING MOWER. PRUNE GROUNDCOVER OVERHANGING CURBS OR SIDEWALKS. WINTERIZE IRRIGATION SYSTEM. DRAIN THE SYSTEM AND REPROGRAM AUTOMATIC CONTROLLER.

NOVEMBER
REMOVE LEAVES FROM COOL SEASON GRASSES OR MOW WITH MULCHING MOWER. REMOVE LEAVES FROM TREE, SHRUB AND PERENNIAL BEDS. CONDUCT SOIL TESTS TO CORRECT DEFICIENCIES BEFORE WINTER. PRUNE MOST TREES & SHRUBS BETWEEN NOVEMBER 15TH & MARCH 15TH. REMOVE CONFLICTING & CROWDED BRANCHES, DEAD LIMBS, DOUBLE LEADERS, & UNSIGHTLY BRANCHES. REMOVE DISEASED PLANT MATERIAL FROM THE LANDSCAPE TO REDUCE DISEASE PROBLEM NEXT YEAR.

DECEMBER
PRUNE TREES IN PARKING LOTS AND SIDEWALKS THAT INTERFERE WITH PUBLIC SAFETY. CONTINUE LEAF REMOVAL IF NEEDED. CONTINUE PRUNING TREES & SHRUBS ON OVERALL PROPERTY.

PLANTING NOTES

1. LANDSCAPE ARCHITECT TO APPROVE PLANT MATERIAL PRIOR TO DELIVERY TO SITE.
2. PLANT MATERIAL PROVIDED BY THE CONTRACTOR IS TO CONFORM TO THE HIGHEST STANDARD AS ADOPTED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (ANSI). PLANT MATERIAL IS TO BE HEALTHY SPECIMENS, FREE FROM DISEASE OR DAMAGE.
3. THE CONTRACTOR IS TO FURNISH PLANTS AND SOD SHOWN ON THE DRAWINGS. PLANTS ARE TO CONFORM WITH THE BOTANICAL IDENTIFICATIONS. PLANTS ARE TO BE SOURCED FROM A NURSERY WITHIN THE SAME CLIMATIC ZONE AS THE SITE LOCATION. NO SUBSTITUTIONS OF PLANT SPECIES ARE PERMITTED WITHOUT PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE & THE LANDSCAPE ARCHITECT.
4. SUBSTITUTIONS OF PLANT SPECIES SHALL BE A PLANT OF EQUIVALENT OVERALL FORM, HEIGHT AND BRANCHING HABIT, FLOWER, LEAF, FRUIT, COLOR, TIME OF BLOOM & CLIMATIC LOCATION AS APPROVED BY LANDSCAPE ARCHITECT.
5. LOCATE AND VERIFY EXISTING & PROPOSED UTILITY LINE LOCATIONS PRIOR TO STAKING AND REPORT CONFLICTS TO LANDSCAPE ARCHITECT.
6. PLANTING DEMOLITION DEBRIS, GARBAGE, LUMPS OF CONCRETE, STEEL AND OTHER MATERIALS DELETERIOUS TO PLANT'S HEALTH AS DETERMINED BY LANDSCAPE ARCHITECT SHALL BE REMOVED FROM PLANTING AREAS.
7. THE CONTRACTOR IS TO VERIFY SITE LAYOUT & GRADES & INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CHANGES IN LAYOUT AND/OR GRADING PRIOR TO CONSTRUCTION. NO PLANTING IS TO BE INSTALLED BEFORE ACCEPTANCE OF ROUGH GRADING.
8. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. FINAL LOCATIONS OF PLANTS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.
9. INSTALL PLANTS WITH ROOT FLARES FLUSH WITH FINISHED GRADE. IMMEDIATELY REPLANT PLANTS THAT SETTLE OUT OF PLUMB OR BELOW FINISHED GRADE. PLANT AND STAKES ARE TO BE SET PLUMB UNLESS OTHERWISE NOTED.
10. PLANT UNDER FULL TIME SUPERVISION OF CERTIFIED ARBORIST, NURSERYMAN, OR LICENSED LANDSCAPE ARCHITECT. PROVIDE WRITTEN VERIFICATION OF CERTIFICATION AND/OR LICENSE FOR LANDSCAPE ARCHITECT'S APPROVAL.
11. WATER PLANTS THOROUGHLY AFTER INSTALLATION, A MINIMUM OF TWICE WITHIN THE FIRST 24 HOURS.
12. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN PLANT MATERIALS INCLUDING SOD/SEED AREAS IN A HEALTHY STATE DURING CONSTRUCTION AND DURING REQUIRED WARRANTY PERIODS. ANY DAMAGE TO PLANT MATERIAL DUE TO NEGLECT BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
13. REPAIR DAMAGE DUE TO LANDSCAPE INSTALLATION OPERATIONS INSIDE AND OUTSIDE OF LIMIT OF WORK.
14. SOAK ALL PERENNIALS FOR 24 HOURS PRIOR TO INSTALLATION.
15. A LIST OF PLANTS INCLUDING BOTANICAL NAMES, SIZES, AND SPACING ARE SHOWN ON THE DRAWINGS, QUANTITIES ARE PROVIDED FOR CONTRACTOR'S CONVENIENCE AND ARE TO BE VERIFIED. IN THE EVENT THAT QUANTITIES OR OMISSIONS OCCUR THE PLAN DRAWINGS ARE TO BE FOLLOWED.
16. IRRIGATION: A TEMPORARY UNDERGROUND DRIP AND SPRINKLER IRRIGATION SYSTEM IS TO BE PROVIDED FOR ALL PLANT MATERIAL AND SOD OR SEEDED AREAS.
17. DISTURBED SITE AREAS ARE TO BE DRESSED WITH 6" MIN. OF AMENDED TOPSOIL FOR LAWNS AND 12" MIN. FOR PLANT BEDS. TOPSOIL FOR SEEDED AND/OR SEEDED AREAS IS TO BE TWO PARTS SHARP SAND, ONE PART LOAM AND ONE PART ORGANIC COMPOST.
18. PLANT BEDS ARE TO BE MULCHED TO A DEPTH OF 2" MIN WITH NATURAL BARK MULCH WITH BARK SIZES NO LARGER THAN 3". PERENNIAL PLANT BEDS ARE TO BE MULCHED WITH BARK SIZES NO MORE THAN 1". TREES IN LAWN AREAS ARE TO HAVE MULCH RINGS OF 5' DIA.
19. TREES ADJACENT TO PEDESTRIAN ROUTES AND WITHIN PARKING ISLANDS ARE TO BE LIMBED TO 6' ABOVE GRADE.

LANDSCAPE MATERIALS LEGEND

TAG	DESCRIPTION
PAVING	
A1	DECORATIVE CONCRETE PAVEMENT
A2	STONE DUST SURFACE
CURBS	
B1	4" WIDE GRANITE LANDSCAPE CURB, SAWN/THERMAL FINISH
B2	4" WIDE FLUSH GRANITE CURB
WALLS	
C1	18" WIDE x 20" HIGH PRECAST CONCRETE SEATWALL W/ WOOD SLAT SURFACE
C2	RETAINING WALL, RE. CIVIL ENGINEER'S DRAWINGS
C3	NATURAL GRANITE BOULDERS
FURNISHINGS / IMPROVEMENTS	
D1	WOOD & STEEL BENCHES
PLANTING	
E1	EXISTING VEGETATION TO REMAIN
E2	SOD LAWN
E3	NO MOW LAWN GRASS SEEDED AREA (HARD FESCUE MIX)
E4	PERENNIAL PLANTING @ 18"-24" O.C.
E5	SHRUB, PERENNIALS, GROUNDCOVER PLANTING IN 2" MULCHED BED
E6	DECIDUOUS SHADE TREE - 3.0" CALIPER
E7	ORNAMENTAL & UNDERSTORY TREE - 2.5" CALIPER
E8	EVERGREEN TREE - 10-12'

PLANT SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	2	*Acer saccharum 'Apollo'*	Apollo Sugar Maple	3" caliper, B&B	As Shown	Single stem, matched
AC FR	5	*Acer freemanii 'Autumn Blaze'*	Autumn Blaze Maple	3" caliper, B&B	As Shown	Single stem, matched
AC LE	16	*Acer saccharum 'Legacy'*	Legacy Sugar Maple	3" caliper	As Shown	Single stem, B&B
AM GR	6	*Amelanchier x grandiflora 'Autumn Brilliance'*	Autumn Brilliance Serviceberry	10-12' ht	As Shown	Multi-stem, B&B
BE NI	6	*Betula nigra 'Heritage'*	Heritage River Birch	10-12' ht	As Shown	Multi-stem, B&B
BE PO	4	*Betula populifolia 'Whitespire'*	Whitespire Grey Birch	10-12' ht	As Shown	Multi-stem, B&B
CA CA	21	*Carpinus caroliana 'Palisades'*	Palisade American Hornbeam	3" caliper	As Shown	Single Stem, B&B
CE CA	11	*Cercis canadensis alba*	White Redbud	3" caliper, B&B	As Shown	Single stem, matched
GL TR	7	*Gleditsia triacanthos var. inermis 'Shademaster'*	Shademaster Honeylocust	3" caliper, B&B	As Shown	Single stem, matched
LA LA	1	*Larix laricina*	Tamarack	10-12' ht, B&B	As Shown	Single stem
LI ST	18	*Liquidambar styraciflua 'Slender Silhouette'*	Slender Silhouette Sweetgum	3" Caliper	As Shown	Single stem, B&B
LI TU	2	*Liriodendron tulipifera 'Little Volunteer'*	Little Volunteer Tulip Tree	3" Caliper, B&B	As Shown	Single stem, matched
MA VI	2	*Magnolia virginiana 'Moonglow'*	Moonglow Magnolia	10-12', B&B	As Shown	Heavy
PL AC	10	*Platanus x acerifolia 'Exclamation'*	Exclamation Planetree	3" caliper	As Shown	Single stem, B&B
QU AL	9	*Quercus alba*	White Oak	3" Caliper, B&B	As Shown	Single stem, matched
QU BI	9	*Quercus bicolor*	Swamp White Oak	3" Caliper, B&B	As Shown	Single stem, matched
SY RE	11	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Japanese Lilac Tree	2.5" caliper	As shown	Single stem, matched
	140					
EVERGREEN TREES						
CH OB	11	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	30	*Juniperus virginiana 'Hillspire'*	Hillspire Eastern Red Cedar	10-12' ht	As Shown	B&B
PI GL	7	*Picea glauca*	White Spruce	8-10'	As Shown	Container
PI RI	13	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	29	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH NI	9	*Thuja occidentalis 'Nigra'*	Dark American Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH SM	5	*Thuja occidentalis 'Smaragd'*	Emerald Green Arborvitae	10-12" ht, B&B	As Shown	Container, Matched

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS SHRUBS						
AZ Pe	22	*Azalea periclymenoides*	Pinxterbloom Azalea	#5	48" O.C.	24-30" ht
Az Pru	40	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	51	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	53	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	72	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	53	*Cornus alba 'Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	7	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	187	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	111	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	155	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C	3-4' ht
Hy Ar	37	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	121	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	77	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	48	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	181	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	32	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	215	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	18	*Rosa 'Blushing Knockout'*	Blushing Knockout Rose	#5	24" O.C.	#3 / 18-24" ht
Ro Ic	65	*Rosa 'Iceburg'*	Iceberg Rose	#5	36" O.C.	24" ht.
Ro Ru	125	*Rosa rugosa 'Alba'*	White Beach Rose	#5	48" O.C.	24" ht.
Vi De	30	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	35	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
EVERGREEN SHRUBS						
Ix Ge	180	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	138	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	64	*Ilex glabra 'Strongbox'*	Strongbox Inkberry	#5	30" O.C.	24" ht
Ju Co	96	*Juniperus conferta 'Emerald Sea'*	Emerald Sea Shore Juniper	#2	36" O.C.	18-24" ht
Le Fo	130	*Leucothoe fontanesiana 'Compacta'*	Compact Drooping Leucothoe	#5	48" O.C.	18-24" ht
Le Ax	20	*Leucothoe axillaris*	Coast Leucothoe	#5	48" O.C.	18-24" ht
Rh Ca	68	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	44	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	170	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIALS						
alc mo	X	*Alchemilla mollis*	Common Lady's Mantle	#1	12" O.C.	
ams st	X	*Amsonia 'Stormcloud'*	Stormcloud Blue Star	#1	24" O.C.	
ams hu	X	*Amsonia hubrichtii*	Thread-leafed Bluestar	#1	24" O.C.	
asc he	X	*Asclepias 'Hello Yellow'*	Butterfly Weed	#1	18" O.C.	
ast br	X	*Astilbe 'Bressingham Beauty'*	Bressingham Beauty Astilbe	#1	18" O.C.	
ast mi	X	*Astilbe 'Milk and Honey'*	Milk & Honey Astilbe	#1	24" O.C.	
cor mo	X	*Coreopsis 'Moonbeam'*	Moonbeam Coreopsis	#1	18" O.C.	
den pu	X	*Deenstaedtia punctilobula*	Hay Scented Fern	#2	30" O.C.	
ech pu	X	*Echinacea purpurea*	Purple Coneflower	#2	24" O.C.	
ger ro	X	*Geranium x 'Rozanne'*	Rozanne Cranesbill	#2	24" O.C.	
hem ka	X	*Hemerocallis 'Kansas Kitten'*	Kansas Kitten Daylily	#2	18" O.C.	
hem ste	X	*Hemerocallis 'Stella d'Oro'*	Stella d'Oro Daylily	#2	18" O.C.	
hem he	X	*Hemerocallis 'Heavenly Angel Ice'*	Heavenly Angel Ice Daylilly	#2	24" O.C.	
heu ca	X	*Heuchera 'Caramel'*	Caramel Coral Bells	#2	18" O.C.	
heu li	X	*Heuchera 'Lime Marmalade'*	Lime Marmalade Coral Bells	#2	18" O.C.	
hos ad	X	*Hosta x 'Abiqua Drinking Gourd'*	Hosta	#2	30" O.C.	
hos au	X	*Hosta 'Aureomarginata'*	Gold Edged Plantain Lily	#2	24" O.C.	
rud fu	X	*Rudbeckia fulgida 'American Gold Rush'*	Am. Gold Rush Black-Eyed Susan	#2	24" O.C.	
sal mn	X	*Salvia 'May Night'*	May Night Salvia	#2	24" O.C.	
GRASSES, VINES & GROUND COVERS						
bou gr	X	*Bouteloua gracilis 'Blonde Ambition'*	Side Oats Grama	#2	24" O.C.	
cal ac	X	*Calamagrostis acutiflora 'Karl Foerster'*	Karl Foerster Feather Reed Grass	#2	24" O.C.	
car bo	X	*Carex 'Bowles Golden'*	Bowles Golden Sedge	#2	24" O.C.	
cha la	X	*Chasmanthium latifolium*	Northern Sea Oats	#2	30" O.C.	
des ce	X	*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	#2	24" O.C.	
epi ru	X	*Epimedium x rubrum*	Red Barrenwort	#1	12" O.C.	
hak ma	X	*Hakonechloa macra 'All Gold'*	All Gold Japanese Forest Grass	#2	24" O.C.	
hyd an	X	*Hydrangea anomala petiolaris*	Climbing Hydrangea Vine	#2	30" O.C.	
lir mu	X	*Liriope muscari 'Big Blue'*	Big Blue Lilyturf	Plug	10" O.C.	
mis mo	X	*Miscanthus sinensis 'Morning Light'*	Morning Light Silver Grass	#2	30" O.C.	
pan vir	X	*Panicum virgatum 'Shenandoah'*	Shenandoah Switchgrass	#2	36" O.C.	

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO: C-0960-007
DATE: JULY 26, 2021
FILE: L300 LANDSCAPE PLAN.DWG
DRAWN BY: JO
CHECKED: RU
APPROVED: RU

LANDSCAPE - PLANT SCHEDULE & NOTES

SCALE: AS SHOWN

L-100

1.4 Underground Detention System Maintenance Requirements

Underground Detention System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually
Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

1.5 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

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THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

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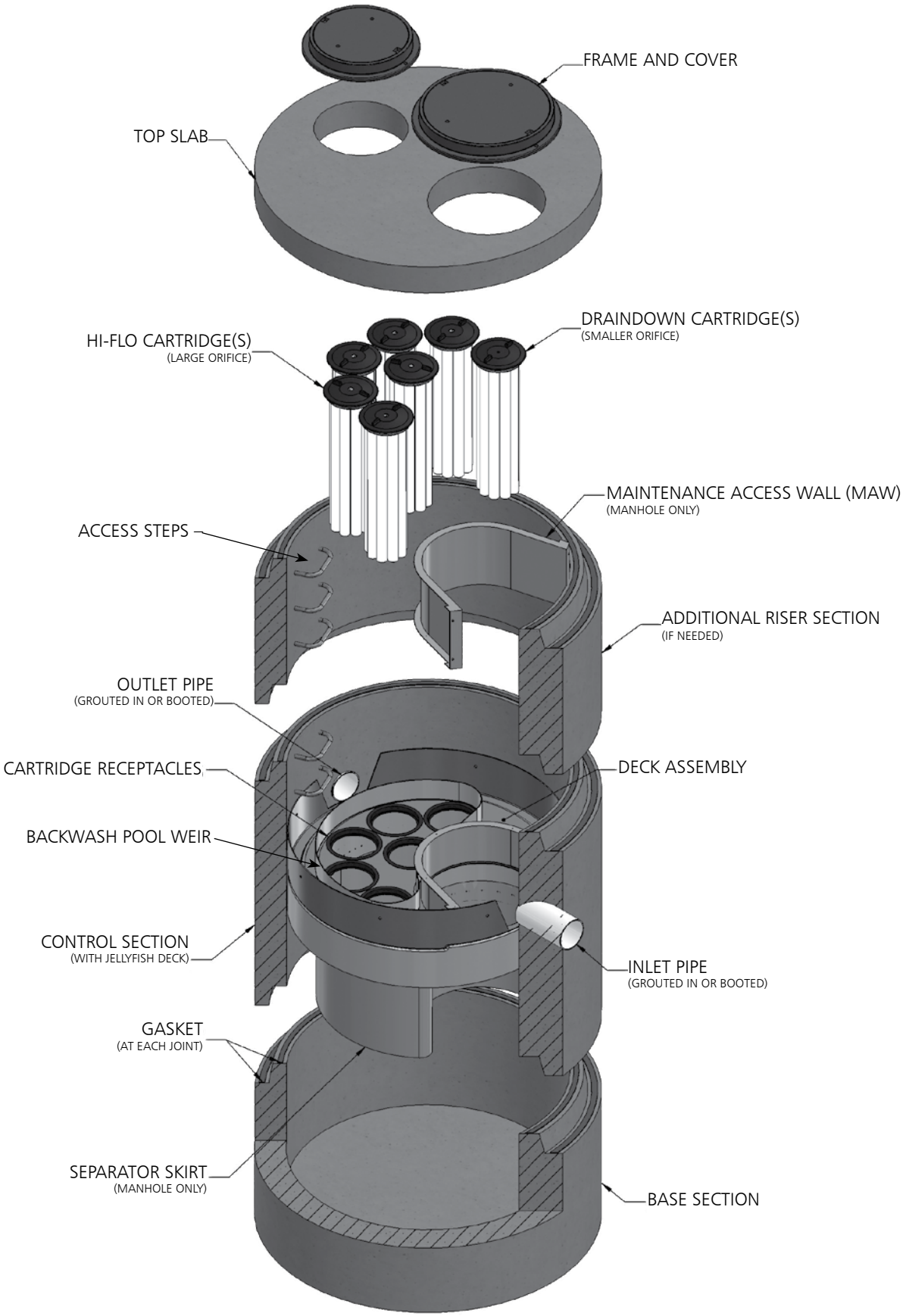

FRAME AND COVER
TOP SLAB
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

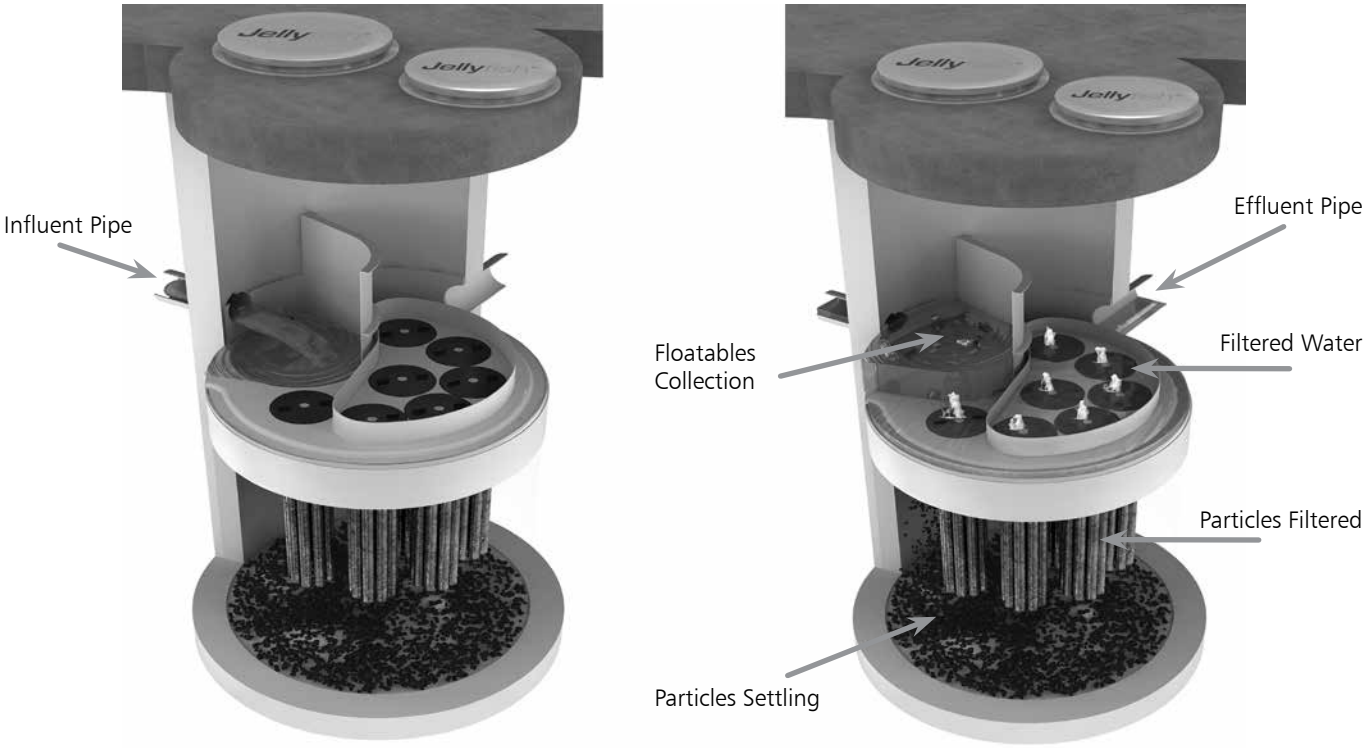
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



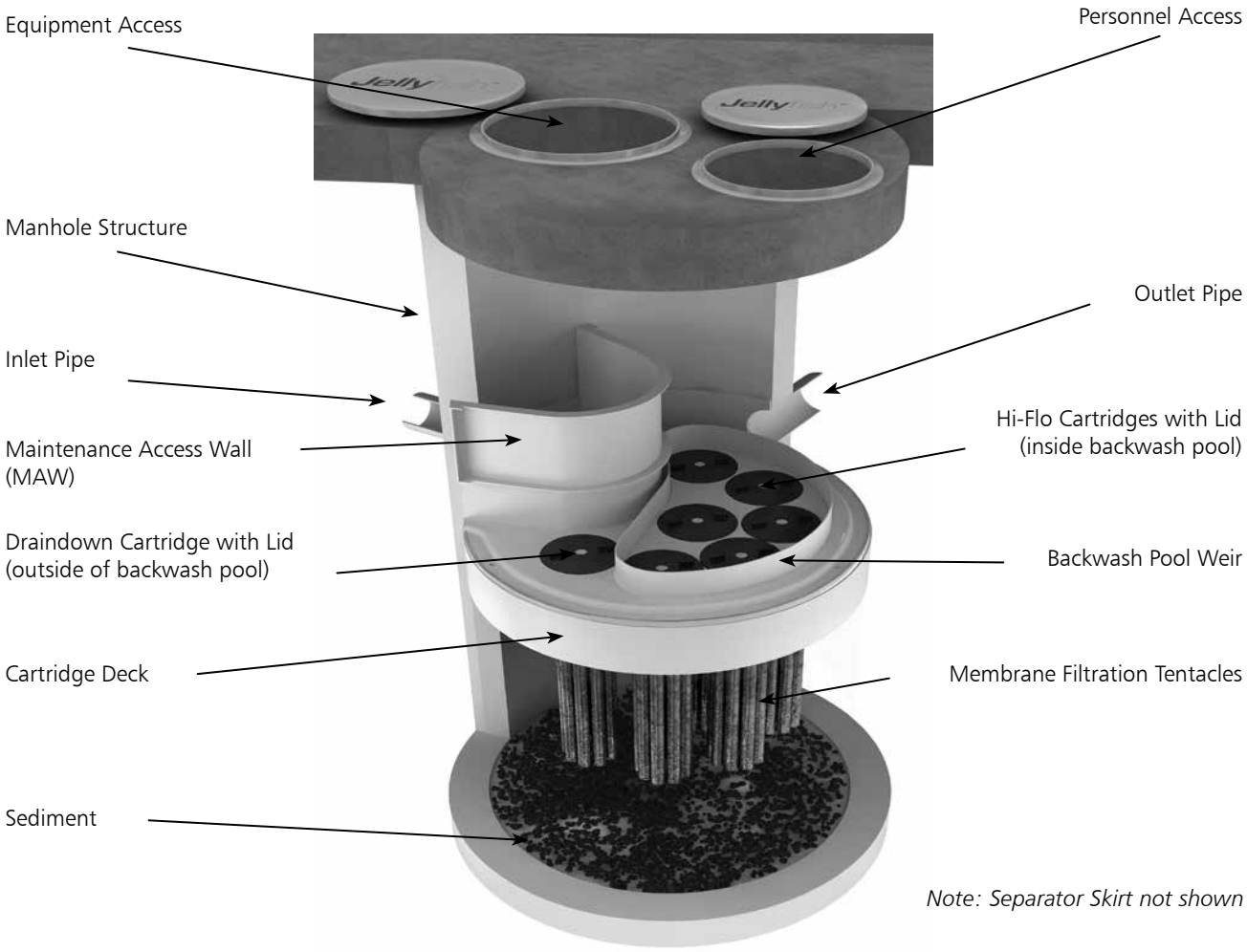
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.

Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

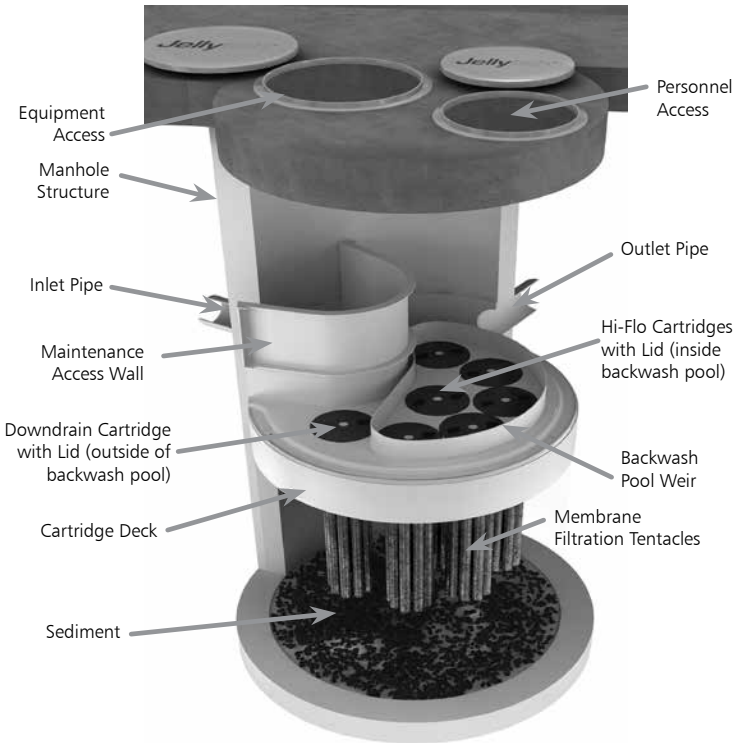
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

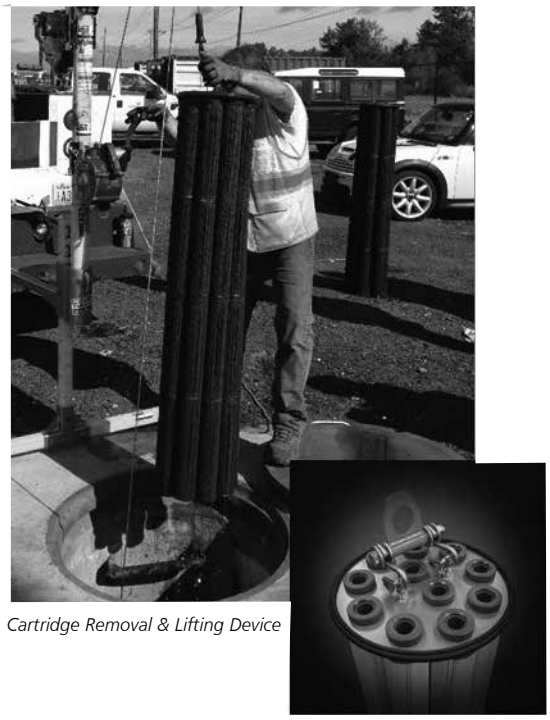
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.



Cartridge Removal & Lifting Device

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

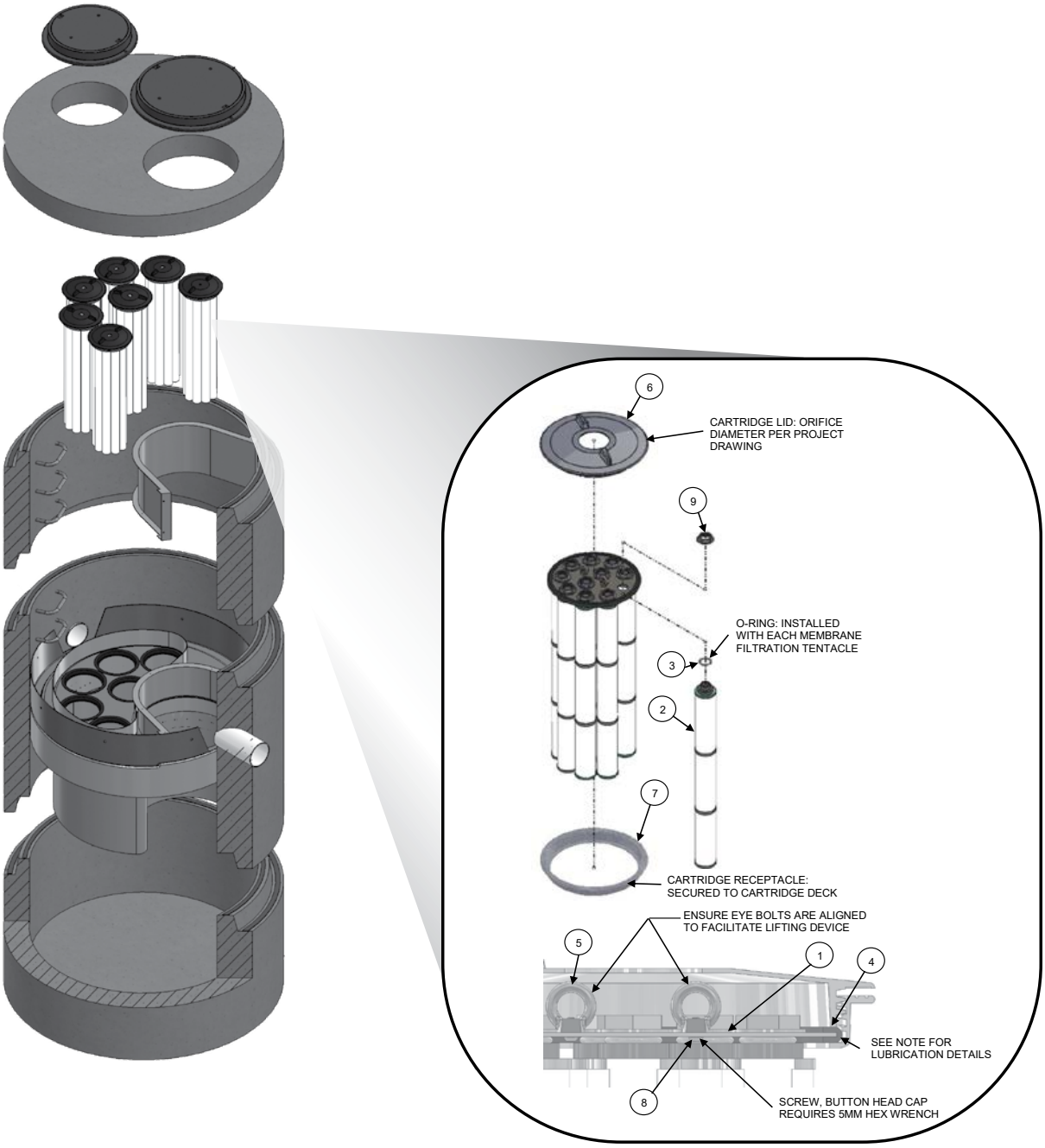


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

1.6 Contech CDS Maintenance Requirements

Contech CDS Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Twice per year at a minimum (spring and fall)	-Visually inspect for blockages or obstruction in the inlet chamber, flumes or outlet channel - Sediment removal once 50% of maximum storage has been reached

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CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.3	3.0	0.9	1.3	1.0
CDS2020	5	1.3	3.5	1.1	1.3	1.0
CDS2025	5	1.3	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

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CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

1.7 Filterra Tree Box Filter Maintenance Requirements

Filterra Owner's Manual

filterra®

Bioretention Systems

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This Owner's Manual applies to all precast Filterra Configurations, including Filterra Bioscape Vault.

filterra®
Bioretention Systems

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CONTECH®
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Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

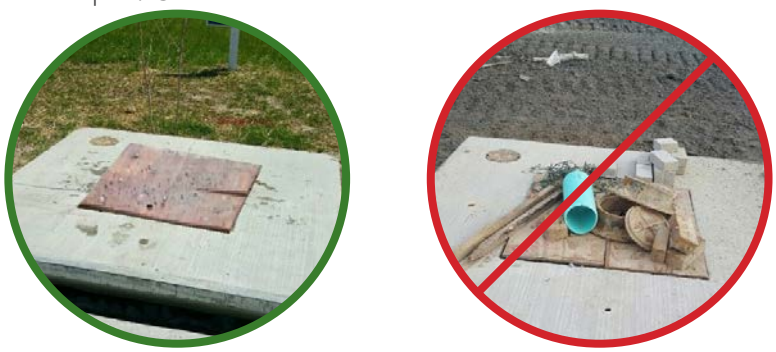
- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.

Minimum Requirements

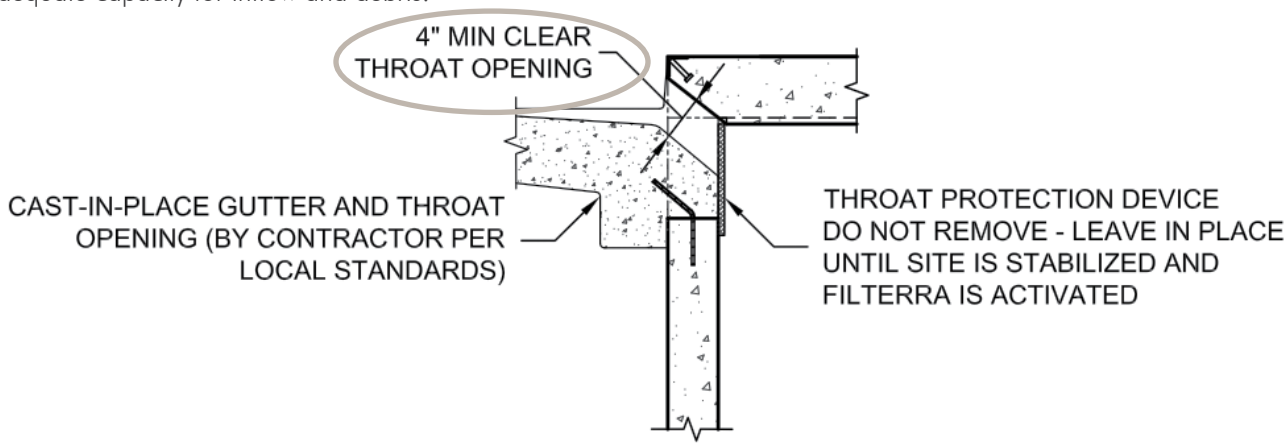
The minimum requirements for Filterra Activation are as follows:

1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.

3. Where curb inlets are included as part of the Filterra system, Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List is available on the Contech website highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the maintenance provider of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate (where applicable) and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates, where applicable (up to 170 lbs each). If tree grate opening expansion is necessary, safety glasses/goggles and a 3lb or greater mini sledgehammer are required. Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Media Bay Length	Media Bay Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Other sizes not listed - 1 bag per 8 ft^2 of media.

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate (if applicable)	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate (if applicable) and erosion control stones

- Remove cast iron grates for access into Filterra box (if applicable).
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____

4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates (if applicable) correctly using appropriate lifting or moving tools, taking care not to damage the plant.
- Where applicable, if 6" tree grate opening is too close to plant trunk, the grate opening may be expanded to 12" using a mini sledgehammer. Refer to instructions in Appendix 3.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above top of Filterra Unit	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____**Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Top of Vault	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3"*	*Lowe's Premium Brown Mulch*	*4'*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	

Attach additional sheets as necessary.

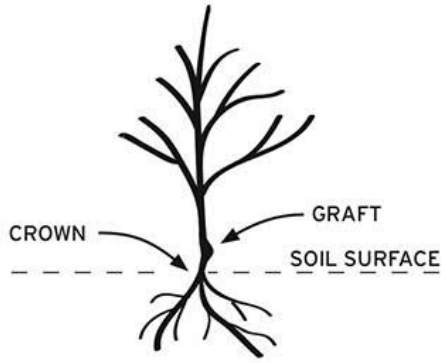
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

_____ _____

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) may require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some with a tree grate of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant foliage from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that meets Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the top/tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.

Appendix 3 – Filterra® Tree Grate Opening Expansion Procedure

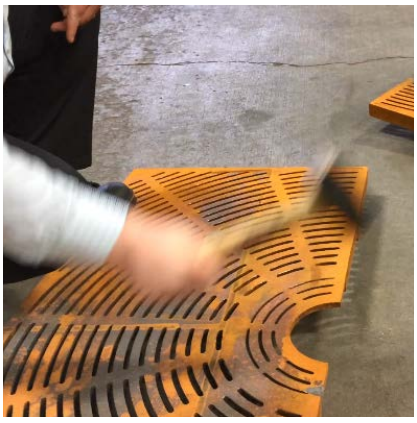
The standard grates used on all Filterra configurations that employ Tree Grates are fabricated with a 6″ opening that is designed with a breakaway section that can be removed, allowing the grate opening to be expanded to 12″ as the tree matures and the trunk widens.

The following tools are required to expand the opening:

- Mini sledgehammer (3 lb. or greater)
- Safety Glasses / Goggles

The following guidelines should be followed to properly expand the tree opening from 6″ to 12″:

1. Remove the grate from the Filterra frame, place it flat on a hard surface, and support the grate by stepping on the edge or using other weighted items such as a few mulch bags if this is being done during a Filterra maintenance event. Put on safety glasses/goggles. Align the mini sledgehammer as shown in the figure to the left. The head of the sledgehammer should be aimed just inside the wide cast iron bar between the larger grate section and the breakaway section.



2. Repeatedly hit the grate at this spot with the mini sledgehammer.

3. After several hits, the breakaway section should snap cleanly off of the larger grate section. Reinstall the grate into the Filterra grate frame. Recycle or dispose of the breakaway section per local guidelines.

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ENGINEERED SOLUTIONS

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PDF 6/21

1.8 Snow & Ice Management for Standard Asphalt and Walkways

The property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas when snow banks exceed 6 feet in height. All snow removal will be hauled off-site and legally disposed of. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted withing the 100' wetland buffer. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

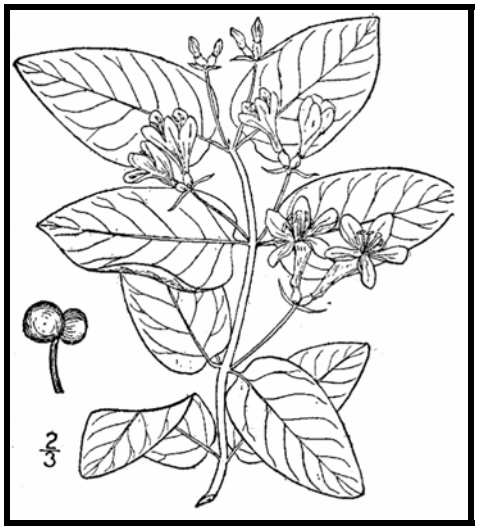
Section 2
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

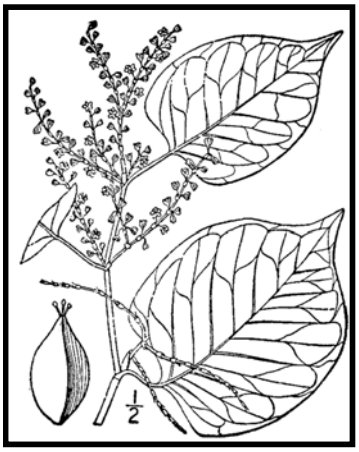
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
 </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.

Using tools to remove woody stems.

Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.

Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.

Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.

Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.

Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 3
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Stormwater Management Report						
Mixed Use Development		**Cochecho Waterfront Development**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Deep Sump CB's			❑Yes ❑No			
Underground Detention 1			❑Yes ❑No			
CDS Unit 1			❑Yes ❑No			
CDS Unit 2			❑Yes ❑No			
Jellyfish Filter 1			❑Yes ❑No			
Jellyfish Filter 2			❑Yes ❑No			
Jellyfish Filter 3			❑Yes ❑No			
Jellyfish Filter 4			❑Yes ❑No			
Filterra Unit 1			❑Yes ❑No			
Filterra Unit 2			❑Yes ❑No			
Filterra Unit 3			❑Yes ❑No			

Cochecho Waterfront Development
Projected Water and Wastewater Flows and Investment Fee

TO: City of Dover, Planning and Community Development
FROM: Neil A. Hansen, PE
Patrick M. Crimmins, PE
COPY: Rob Simmons, Cathartes
DATE: September 16, 2021

The following memo is to provide an estimate of the average, and peak, daily water and wastewater flows anticipated for the above-mentioned project for the purpose of calculating the Water and Sewer Investment Fees for the above referenced project. The flows and fees have been calculated by each individual building proposed as part of the development.

The proposed project consists of a multi-family development. The average daily flow in gallons per day (GPD) has been calculated for the proposed project in accordance with Table 1008-1: Unit Design Flow Figures of NHDES Env-Wq 1000, as required by Appendix B: Dover Utilities Commission Rules as follows:

BUILDING A - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
Studio Apartment	11	225 GPD/Bdrm	2,475 GPD
1 Bedroom Apartment	36	225 GPD/Bdrm	8,100 GPD
1 Bedroom+ Apartment	12	150 GPD/Bdrm	3,600 GPD
2 Bedroom Apartment	31	150 GPD/Bdrm	9,300 GPD
3 Bedroom Apartment	7	150 GPD/Bdrm	3,150 GPD
Restaurant	59 Seats	20 GPD/Seat	1,180 GPD
	12 Emp	20 GPD/Employee	240 GPD
		Total Proposed Building A GPD	**28,045 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building A Water Fee**	**$184,536.10**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building A Sewer Fee**	**$181,170.70**
Total Building A Investment Fee		***$365,706.80***	

BUILDING B - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
Studio Apartment	6	225 GPD/Bdrm	1,350 GPD
1 Bedroom Apartment	18	225 GPD/Bdrm	4,050 GPD
1 Bedroom+ Apartment	7	150 GPD/Bdrm	2,100 GPD
2 Bedroom Apartment	24	150 GPD/Bdrm	7,200 GPD
3 Bedroom Apartment	5	150 GPD/Bdrm	2,250 GPD
		Total Proposed Building B GPD	**16,950 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building B Water Fee**	**$111,531.00**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building B Sewer Fee**	**$109,497.00**
Total Building B Investment Fee		***$221,028.00***	

BUILDING C - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
Studio Apartment	7	225 GPD/Bdrm	1,575 GPD
1 Bedroom Apartment	39	225 GPD/Bdrm	8,775 GPD
1 Bedroom+ Apartment	15	150 GPD/Bdrm	4,500 GPD
2 Bedroom Apartment	26	150 GPD/Bdrm	7,800 GPD
3 Bedroom Apartment	8	150 GPD/Bdrm	3,600 GPD
Office	8,516 SF	5 GPD/100 SF	426 GPD
Restaurant	32 Seats	20 GPD/Seat	640 GPD
	7 Emp	20 GPD/Employee	140 GPD
		Total Proposed Building C GPD	**27,456 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building C Water Fee**	**$180,659.16**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building C Sewer Fee**	**$177,364.47**
Total Building C Investment Fee		***$358,023.63***	

BUILDING D - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
Studio Apartment	6	225 GPD/Bdrm	1,350 GPD
1 Bedroom Apartment	27	225 GPD/Bdrm	6,075 GPD
1 Bedroom+ Apartment	8	150 GPD/Bdrm	2,400 GPD
2 Bedroom Apartment	49	150 GPD/Bdrm	14,700 GPD
3 Bedroom Apartment	9	150 GPD/Bdrm	4,050 GPD
Restaurant	90 Seats	20 GPD/Seat	1,800 GPD
	18 Emp	20 GPD/Employee	360 GPD
		Total Proposed Building D GPD	**30,735 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building D Water Fee**	**$202,236.30**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building D Sewer Fee**	**$198,548.10**
Total Building D Investment Fee		***$400,784.40***	

BUILDING E - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
3 Bedroom Townhouse	23	150 GPD/Bdrm	10,350 GPD
		Total Proposed Building E GPD	**10,350 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building E Water Fee**	**$68,103.00**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building E Sewer Fee**	**$66,861.00**
Total Building E Investment Fee		***$134,964.00***	

BUILDING F - PROPOSED WATER & WASTEWATER AVERAGE DAILY FLOWS (GPD) AND FEES			
Proposed Use	**Units**	**GPD**	**Total GPD**
Studio Apartment	0	225 GPD/Bdrm	GPD
1 Bedroom Apartment	15	225 GPD/Bdrm	3,375 GPD
1 Bedroom+ Apartment	0	150 GPD/Bdrm	GPD
2 Bedroom Apartment	22	150 GPD/Bdrm	6,600 GPD
3 Bedroom Apartment	5	150 GPD/Bdrm	2,250 GPD
		Total Proposed Building F GPD	**12,225 GPD**
Water Investment Fee ($/GPD)	**$6.58**	**Proposed Building F Water Fee**	**$80,440.50**
Sewer Investment Fee ($/GPD)	**$6.46**	**Proposed Building F Sewer Fee**	**$78,973.50**
Total Building F Investment Fee		***$159,414.00***	

Stephen G. Pernaw & Company, Inc.
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Transportation: Engineering • Planning • Design

INITIAL TRAFFIC EVALUATION
PROPOSED COCHECHO WATERFRONT DEVELOPMENT
DOVER, NEW HAMPSHIRE
September 7, 2021

INTRODUCTION

This report has been prepared for Cathartes in order to assess the traffic impacts associated with the proposed Cochecho Waterfront Development site located adjacent to the Washington Street/River Street intersection in downtown Dover, New Hampshire. This evaluation includes: 1) a trip generation analysis for Phase 1 and Phase 2 that quantifies the volume of traffic that will be generated by the subject site, 2) a trip distribution/traffic assignment analysis that identifies the peak hour impacts at several intersections and roadway segments in the downtown area, and 3) includes an evaluation of traffic signal operations at the Washington Street/Central Avenue/Henry Law Avenue intersection. Figure 1 shows the location of the subject site with respect to the area roadway system.

The City of Dover previously requested that consideration be given to full buildout of the subject site, rather than just Phase 1. Based on the traffic impacts that are identified in this evaluation, and the city's "*Traffic Impact Assessment and Analysis Standards,"* the Planning Department may require an "Advanced Analysis" of certain intersections.

PROPOSAL

According to the draft plan entitled *"Overall Site Plan-Cochecho Waterfront Development Phase-I,"* Sheet C-102, dated 6/21/2021, prepared by Tighe & Bond, Inc., access to the Cochecho Waterfront Development site is proposed via four full-access driveways: one on the east side of River Street, two on the north side of Washington Street, and one on the south side of Washington Street (see Attachment 1). The following tabulation summarizes the proposed uses/sizes for each phase of the development project.

	PHASE 1	PHASE 2	TOTAL
Apartments	291 units	125 units	416 units
Office	14,000 sf	-	14,000 sf
Retail	8,287 sf	-	8,287 sf
Restaurant	5,500 sf	-	5,500 sf

EXISTING CONDITIONS

River Street functions as a short two-lane urban street that extends between Washington Street and Henry Law Avenue. River Street currently provides access to the Dover Skate Park and Henry Law Park. A sidewalk is present and parallels the west side of River Street. There are "No Parking" signs along River Street, except at a small parking area located across from the skate park. Washington Street has no outlet east of River Street, and it crosses the Cochecho River west of River Street as a two-lane roadway with sidewalks on both sides.

Pernaw & Company, Inc.

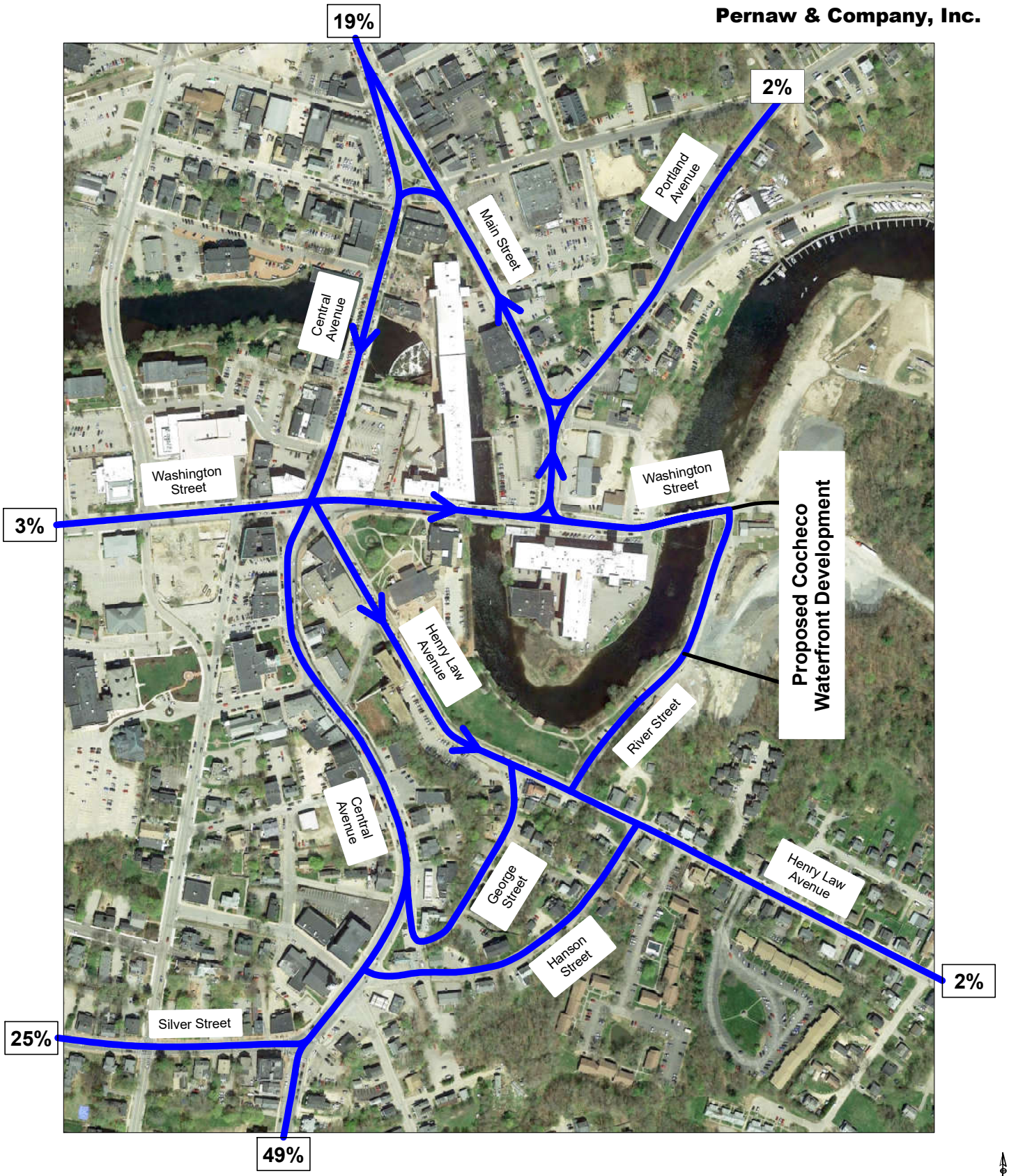

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Figure 1

Primary Access Routes / Trip Distribution Percentages

Traffic Evaluation, Proposed Cochecho Waterfront Development, Dover, New Hampshire

EXISTING TRAVELS ROUTES

Figure 1 also shows the primary travel routes to/from the subject site and the anticipated distribution of site traffic throughout the downtown area. The inbound and outbound travel routes differ in certain instances as a result of the one-way sections on Washington Street, Main Street, Henry Law Avenue and Central Avenue. Washington Street will primarily be used for access to/from points north via NH9, NH108 and US4. River Street will be utilized for access to the Spaulding Turnpike (NH16) and points south and west via NH108, NH155 and NH9 via Hanson Street, Silver Street, and Central Avenue.

TRIP GENERATION

To estimate the quantity of vehicle-trips that will be produced by the proposed development, Pernaw & Company, Inc. considered the standard trip generation rates and equations published by the Institute of Transportation Engineers (ITE)[1]. Land Use Code (LUC) 221 (Multifamily Housing / Mid-Rise) is the most applicable category for the apartments, and the number of dwelling units was used as the independent variable. LUC 710 (General Office) and 712 (Small Office), LUC 820 (Retail) and LUC 932 (High-Turnover Sit-Down Restaurant) were selected for the analysis of the commercial space. The gross floor area of each business was used as the independent variable.

The trip generation analysis is summarized on Table 1 and it indicates that the proposed Phase 1 development will generate approximately 188 vehicle-trips during the AM peak hour period, and 235 vehicle-trips during the PM peak hour period on weekdays; split between the various site driveways on River Street and Washington Street. The Phase 2 development is expected to generate an additional +45 (AM) and +55 (PM) vehicle-trips during the weekday peak hour periods. Comparable traffic levels are anticipated during the weekend peak hour periods. The computations pertaining to the analyses are attached (see Attachments 2-5).

[1] Institute of Transportation Engineers, *Trip Generation*, tenth edition (Washington, D.C., 2017).

Table 1 — Trip Generation Summary - Cocheco Waterfront Development

		PHASE 1						PHASE 2		
		Apartments[1] (291 Units)	Office[2] (10,000 sf)	Sm.Office[3] (4,000 sf)	Retail[4] (8,287 sf)	Restaurant[5] (5,500 sf)	**Phase 1 Subtotal**	Apartments[1] (125 Units)	**Phase 2 Subtotal**	**Full Build-Out Total**
Weekday Total										
	Entering	792 veh	49 veh	33 veh	157 veh	309 veh	**1,340 veh**	340 veh	**340 veh**	1,680 veh
	Exiting	792 veh	49 veh	33 veh	157 veh	309 veh	**1,340 veh**	340 veh	**340 veh**	1,680 veh
	Total	1,584 trips	98 trips	66 trips	314 trips	618 trips	**2,680 trips**	680 trips	**680 trips**	3,360 trips
Weekday AM Peak Hour										
	Entering	27 veh	10 veh	7 veh	5 veh	30 veh	**79 veh**	12 veh	**12 veh**	**91 veh**
	Exiting	78 veh	2 veh	1 veh	3 veh	25 veh	**109 veh**	33 veh	**33 veh**	**142 veh**
	Total	105 trips	12 trips	8 trips	8 trips	55 trips	**188 trips**	45 trips	**45 trips**	**233 trips**
Weekday PM Peak Hour										
	Entering	78 veh	2 veh	3 veh	15 veh	33 veh	**131 veh**	34 veh	**34 veh**	**165 veh**
	Exiting	50 veh	10 veh	7 veh	17 veh	21 veh	**105 veh**	21 veh	**21 veh**	**126 veh**
	Total	128 trips	12 trips	10 trips	32 trips	54 trips	**236 trips**	55 trips	**55 trips**	**291 trips**
Saturday Total										
	Entering	651 veh	11 veh	2 veh	191 veh	337 veh	**1,192 veh**	307 veh	**307 veh**	1,499 veh
	Exiting	651 veh	11 veh	2 veh	191 veh	337 veh	**1,192 veh**	307 veh	**307 veh**	1,499 veh
	Total	1,302 trips	22 trips	4 trips	382 trips	674 trips	**2,384 trips**	614 trips	**614 trips**	2,998 trips
Saturday Peak Hour										
	Entering	63 veh	3 veh	1 veh	19 veh	32 veh	**118 veh**	27 veh	**27 veh**	145 veh
	Exiting	66 veh	2 veh	1 veh	18 veh	30 veh	**117 veh**	28 veh	**28 veh**	145 veh
	Total	129 trips	5 trips	2 trips	37 trips	62 trips	**235 trips**	55 trips	**55 trips**	290 trips
Sunday Total										
	Entering	595 veh	4 veh	0 veh	88 veh	393 veh	**1,080 veh**	256 veh	**256 veh**	1,336 veh
	Exiting	595 veh	4 veh	0 veh	88 veh	393 veh	**1,080 veh**	256 veh	**256 veh**	1,336 veh
	Total	1,190 trips	8 trips	0 trips	176 trips	786 trips	**2,160 trips**	512 trips	**512 trips**	2,672 trips
Sunday Peak Hour										
	Entering	70 veh	1 veh	0 veh	11 veh	78 veh	**160 veh**	30 veh	**30 veh**	190 veh
	Exiting	43 veh	1 veh	0 veh	12 veh	64 veh	**120 veh**	19 veh	**19 veh**	139 veh
	Total	113 trips	2 trips	0 trips	23 trips	142 trips	**280 trips**	49 trips	**49 trips**	329 trips

[1] ITE Land Use Code 221 - Multifamily Housing / Mid-Rise - (Trip Rate Method for Weekday & Sunday, Trip Equation Method for Saturday)
[2] ITE Land Use Code 710 - General Office Building - (Trip Rate Method)
[3] ITE Land Use Code 712 - Small Office Building - (Trip Rate Method)
[4] ITE Land Use Code 820 - Retail - (Trip Rate Method)
[5] ITE Land Use Code 932 - High-Turnover (Sit-Down) Restaurant - (Trip Rate Method)

TRIP DISTRIBUTION

The majority of the site traffic will be generated by the apartment units. To determine in which direction the residents will travel throughout the downtown area, "journey to work" data from the latest census was utilized, as well as our familiarity of the study area. The majority of site traffic is expected to travel to and from the site via the "River Street-Henry Law Avenue-Hanson Street" route, which is south of the subject site.

Trip Distribution Patterns

To / From points north via Central Avenue	19%
To / From points north via Portland Avenue	2%
To / From points east via Henry Law Avenue	2%
To / From points south via Central Avenue	49%
To / From points west via Hanson Street - Silver Street	25%
To / From points west via Washington Street	3%
	100%

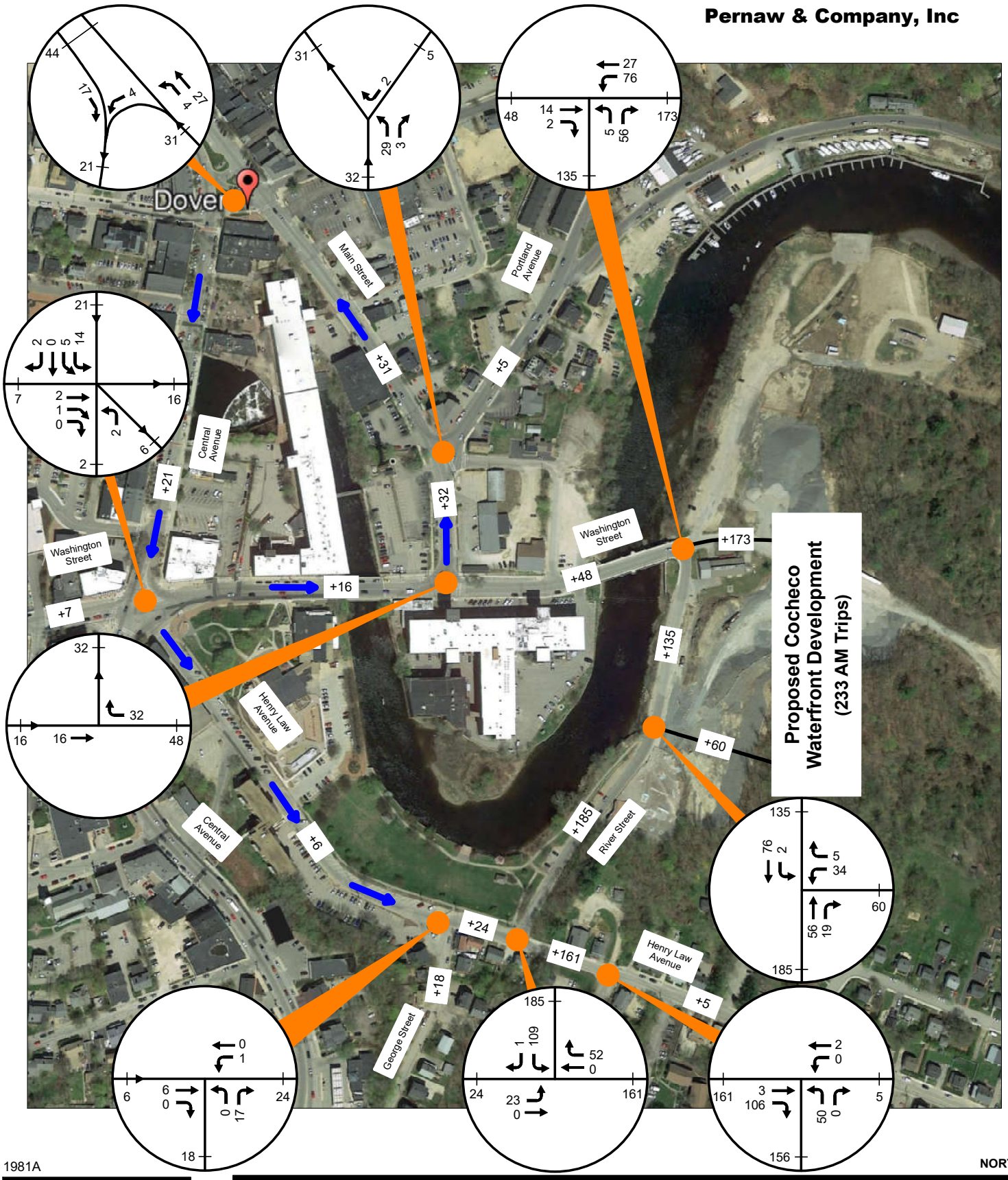
The distribution of the site-generated traffic is summarized schematically on Figure 2 (AM) and Figure 3 (PM) for the weekday peak hour periods. These diagrams show the net increases in traffic volumes throughout the study area as a result of the proposed development (Phase 1 and Phase 2, combined). The derivation of the trip distribution percentages is found in Attachment 6.

The following tabulation summarizes the traffic increases due to full buildout of the Cochecho Waterfront Development site. River Street, short sections of Henry Law Avenue and Hanson Street are expected to be impacted the most.

IMPACT SUMMARY

Roadway Segment	Weekday AM Peak Hour	Weekday PM Peak Hour
Washington Street		
Between River St. & Main St.	+48 veh	+58 veh
Between Main St. & Central Ave.	+16 veh	+30 veh
West of Central Ave.	+7 veh	+9 veh
Main Street		
Between Washington St. & Portland Ave.	+32 veh	+28 veh
Between Portland Ave. & Central St.	+31 veh	+29 veh
Central Avenue		
North of Main St.	+44 veh	+56 veh
Between Main St. & Washington St.	+21 veh	+37 veh
South of Washington St.	+2 veh	+2 veh
Portland Avenue	+5 veh	+5 veh
North of Main St.		
Henry Law Avenue		
Between Washington St, & George St.	+6 veh	+10 veh
Between George St. & River St.	+24 veh	+41 veh
Between River St. & Hanson St.	+161 veh	+192 veh
East of Hanson St.	+5 veh	+5 veh
Hanson Street		
Between Henry Law Ave. & Central Ave.	+156 veh	+187 veh
George Street		
Between Henry Law Ave. & Central Ave.	+18 veh	+30 veh
River Street		
South of Washington St.	+135 veh	+172 veh
North of Henry Law Ave.	+185 veh	+233 veh

Pernaw & Company, Inc



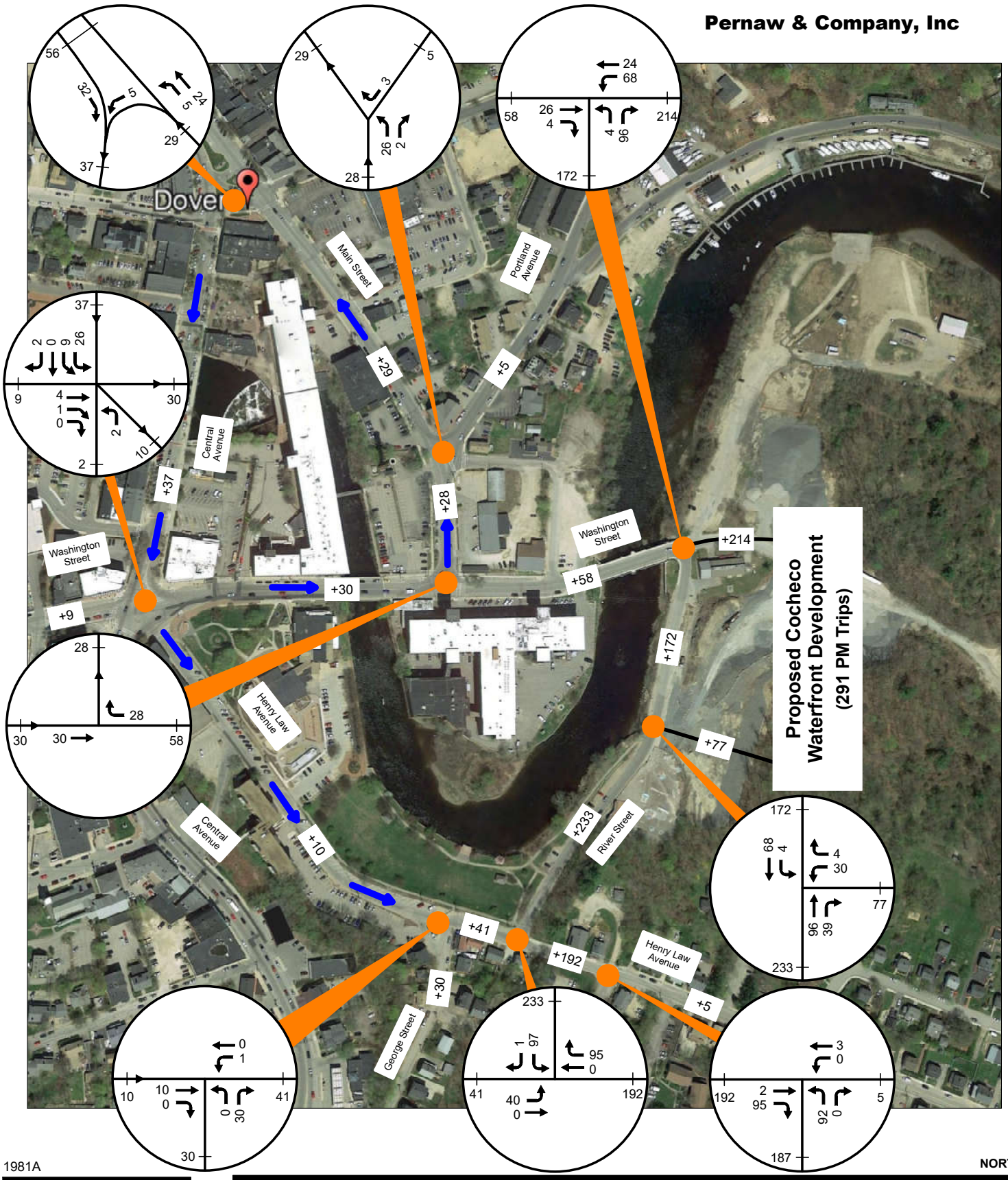
1981A

Figure 2

Site Generated Traffic Volumes - AM Peak Hour

Traffic Evaluation, Proposed Cochecho Waterfront Development, Dover, New Hampshire

Pernaw & Company, Inc



1981A

Figure 3

Site Generated Traffic Volumes - PM Peak Hour

Traffic Evaluation, Proposed Cochecho Waterfront Development, Dover, New Hampshire

INTERSECTION CAPACITY – SIGNALIZED INTERSECTIONS

At the request of the Technical Review Committee, traffic operations at the Central Avenue/Henry Law Avenue/Washington Street signalized intersections were analyzed utilizing the previous traffic study projections from the *"Traffic Evaluation-Fosters Building Redevelopment"* by our office. Utilizing the methods of the *Highway Capacity Manual*, as replicated by the *Synchro Traffic Signal Timing Software* (Version 10), a traffic flow rate, capacity, Level of Service (LOS), and delay estimate was determined for each lane group within the intersection. Levels of Service are simply letter grades (A-F), which categorize the vehicle delays associated with specific lane groups / turning maneuvers. The following table describes the criteria used in this analysis.

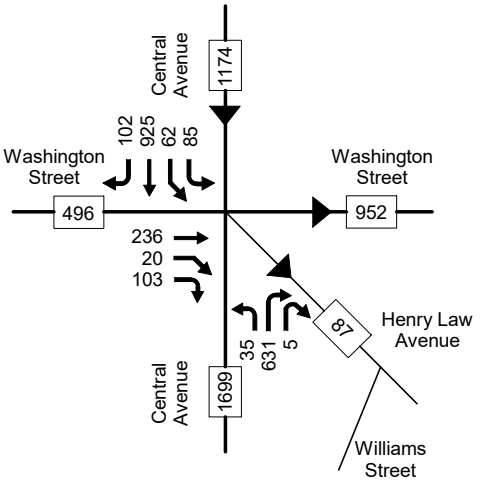
Table 2 — Level-of-Service Criteria for Signalized Intersections

Control Delay (seconds/vehicle)	Level of Service by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 - 20	B	F
> 20 - 35	C	F
> 35 - 55	D	F
> 55 - 80	E	F
> 80	F	F

Source: Transportation Research Board, Highway Capacity Manual 2010.

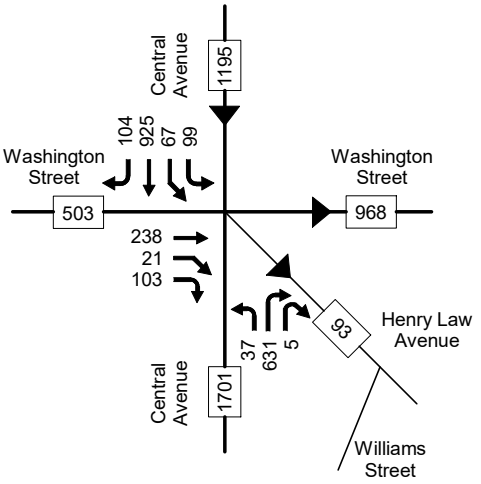
Figure 4 summarizes the No-Build and Build traffic volume projections for this intersection. The capacity and Level of Service analyses are based on the travel lane configuration that was proposed as mitigation for the Kostis project on Washington Street (Fosters building).

Previous Traffic Study Projections*
(w/o Cochecho Waterfront Development)

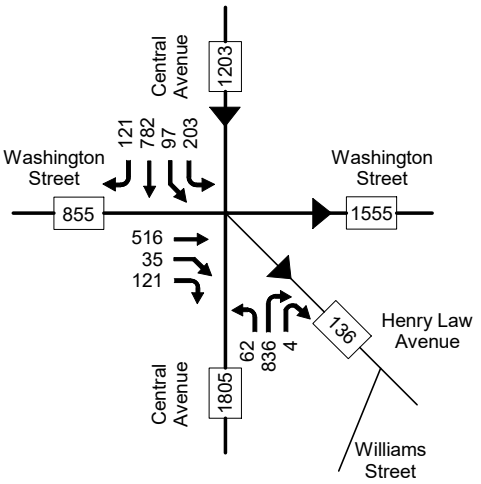


2019 AM No-Build

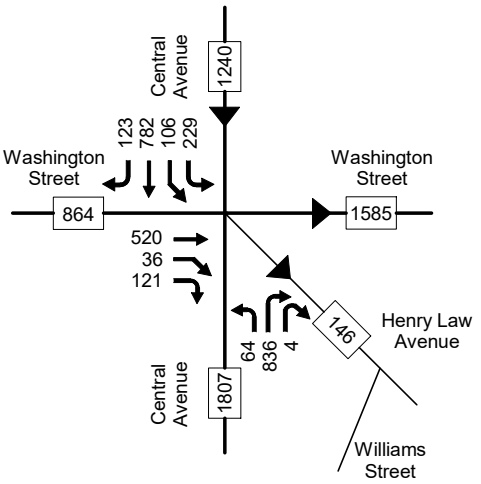
Previous Traffic Study Projections
(with Cochecho Waterfront Development)



2019 AM Build



2019 PM No-Build



2019 PM Build

*Source: "Traffic Evaluation-Proposed Fosters Building Redevelopment," dated 3/20/18, prepared by Pernaw & Co., Inc. for Hellenic Realty Partners, LLC

NORTH

1981A

Figure 4

Future Traffic Volumes - Washington St/Central Ave/Henry Law Ave Intersection

Traffic Evaluation, Proposed Cochecho Waterfront Development, Dover, New Hampshire

Table 3 summarizes the results for this intersection and it shows that there will be incremental increases in vehicle delays (and volume-to-capacity ratios) for certain lane groups; however, the overall intersection will continue to operate below capacity during both peak hour periods (AM = 0.95, PM = 0.84) and at Level of Service D or higher during all hours of the day with full buildout of the subject site and completion of the Kostis mitigation project.

Table 3 — **Signal-Controlled Intersection Capacity Analysis Summary**
Central Avenue / Henry Law Avenue / Washington Street

	2019 No-Build				2019 Build			
	V/C [1]	Delay [2]	LOS [3]	Queue Avg/95th [4]	V/C [1]	Delay [2]	LOS [3]	Queue Avg/95th [4]
Weekday AM Peak Hour								
Washington Street - EB TH	0.65	39.3	D	4 (6)	0.65	39.5	D	4 (6)
Washington Street - EB RT	0.09	0.1	A	0 (0)	0.09	0.1	A	0 (0)
Central Avenue - NB LT	0.46	17.7	B	0 (3)	0.49	18.6	B	0 (3)
Central Avenue - NB RT	0.42	14.3	B	3 (8)	0.42	14.4	B	3 (8)
Central Avenue - SB LT	0.06	36.2	D	0 (1)	0.07	36.2	D	0 (2)
Central Avenue - SB LT	0.44	41.2	D	1 (4)	0.48	41.5	D	2 (4)
Central Avenue - SB TH	1.11	86.6	F	25 (44)	1.12	87.6	F	25 (44)
Central Avenue - SB RT	0.07	2.1	A	0 (0)	0.07	2.1	A	0 (0)
Overall	**0.94**	**48.9**	**D**		**0.95**	**49.2**	**D**	
Cycle Length	**120.0**				**120.0**			
Weekday PM Peak Hour								
Washington Street - EB TH	0.82	42.5	D	6 (12)	0.83	43.6	D	6 (13)
Washington Street - EB RT	0.08	0.1	A	0 (0)	0.08	0.1	A	0 (0)
Central Avenue - NB LT	0.82	66.7	E	1 (5)	0.84	74.1	E	1 (5)
Central Avenue - NB RT	0.61	19.3	B	6 (13)	0.61	19.4	B	6 (13)
Central Avenue - SB LT	0.12	35.9	D	0 (3)	0.14	35.9	D	0 (3)
Central Avenue - SB LT	0.56	42.7	D	2 (5)	0.60	44.2	D	2 (6)
Central Avenue - SB TH	0.90	33.7	C	15 (33)	0.91	34.2	C	15 (33)
Central Avenue - SB RT	0.07	1.8	A	0 (0)	0.07	1.8	A	0 (0)
Overall	**0.83**	**29.5**	**C**		**0.84**	**30.3**	**C**	
Cycle Length	**120.0**				**120.0**			

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

The computations pertaining to these analyses are attached (see Attachments 7-18).

SIGHT DISTANCE

Sight distance at new intersections is an important safety consideration. The operator of a vehicle exiting from each proposed site driveway should have an unobstructed view of approaching vehicles on River Street and Washington Street in order to safely enter the traffic flow on these streets. The sight distance looking left and right from the four proposed site driveways is documented photographically on Attachments 19 & 20. Adequate sight distances are obtainable at all site driveways due to the favorable horizontal and vertical alignment features of Washington Street and River Street in this area.

The Technical Review Committee members indicated a concern with sight distance at the existing Henry Law Avenue/River Street intersection. The photograph below (Google Maps) clearly shows that the view looking left is restricted in summer months due to roadside vegetation.

The photograph below (Bing Maps) shows that clearing said vegetation improves the sight distance considerably. It appears that clearing and maintaining of roadside vegetation is needed both within the City right-of-way and on private property (#80 Henry Law Avenue).

PUBLIC TRANSIT

The Dover Transportation Center on Chestnut Street is located approximately 0.6 miles from the subject site. From this location, rail service is available via Amtrak (Downeaster) and bus service is provided by the COAST regional bus system and Wildcat Transit.

The closest bus stop is located approximately 0.2 miles from the proposed apartment buildings on Washington Street (Henry Law Park stop). Bus Route 33 serves this area. C&J Bus Lines also provides bus service at the Exit 9 Park-and-Ride facility on Indian Brook Road; located approximately 2.6 miles from the subject site.

CONCLUSIONS

From a traffic engineering standpoint, the hourly rate of traffic flow is of most importance. The impacts from Phase 1 and Phase 2 combined, will be greatest during the weekday PM peak hour with +233 additional vehicles expected on River Street (south of the subject site) and +58 additional vehicles on Washington Street (west of the subject site). Increases of this order of magnitude on River Street have the potential to significantly alter the prevailing traffic operations at the Henry Law Avenue/River Street intersection, and forms the basis for the third recommendation below.

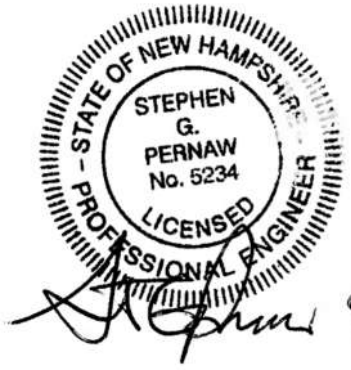
Based on the anticipated traffic increases associated with full buildout of the Cochecho Waterfront Development site, this study recommends:

1. Clear "sight distance triangles" should be established on the site plan at the four proposed site driveway intersections to ensure that there is a line of sight of 305-feet (40 mph design speed) between the operator of a vehicle exiting from the site driveway and the operator of a vehicle approaching from either direction on River Street and Washington Street.

2. Roadside vegetation in the northeast corner of the Henry Law Avenue/River Street intersection should be trimmed and maintained to the extent possible to maximize the available sight distance for drivers looking left from the River Street approach to Henry Law Avenue.

3. Based on the traffic impact magnitudes that are identified on Figures 3 and 4 of this initial evaluation, a reasonable study area for an "Advanced Analysis" would include the 1) Washington Street/River Street and 2) the Henry Law Avenue/River Street intersections; with traffic projections and analyses for the 2023 (opening year) and 2033 (horizon year) Build and No-Build cases.

Attachments



ATTACHMENTS

Tighe&Bond
Engineers | Environmental Specialists
DRAFT
Cochecho Waterfront Development Phase - I
Applicant: CPI Management, LLC c/o Cathartes
Owner: City of Dover
Dover File #: P20-11
Dover, New Hampshire
OVERALL SITE PLAN
SCALE: AS SHOWN
C-102
PROPOSED BUILDING A 4-STORY MULTI-FAMILY FOOTPRINT: 16,000 SF 99 DWELLING UNITS
PROPOSED BUILDING B 4-STORY MULTI-FAMILY FOOTPRINT: 16,000 SF 99 DWELLING UNITS
PROPOSED BUILDING C 4-STORY MULTI-FAMILY FOOTPRINT: 16,000 SF 99 DWELLING UNITS
PROPOSED BUILDING D 4-STORY MULTI-FAMILY FOOTPRINT: 16,000 SF 40 DWELLING UNITS
SURFACE SPACES (345 TOTAL OFF-STREET PARKING SPACES)

Trip Generation Summary

Alternative: Phase 1
Phase: Cochecho Waterfront Development - 1
Project: 1981A

Open Date: 9/3/2021
Analysis Date: 9/3/2021

ITE	Land Use		Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total
221	MID-RISE 1			792	791	1583		27	78	105		78	50	128
	291	Dwelling Units												
710	OFFICEGENERAL 2			49	48	97		10	2	12		2	10	12
	10	1000 Sq. Ft. GFA												
712	OFFICE-SMALL 1			33	32	65		7	1	8		3	7	10
	4	1000 Sq. Ft. GFA												
820	CENTERSHOPPING 2			157	156	313		5	3	8		15	17	32
	8.29	1000 Sq. Ft. GLA												
932	RESTAURANTHT 2			309	308	617		30	25	55		33	21	54
	5.5	1000 Sq. Ft. GFA												
Unadjusted Volume				1340	1335	2675		79	109	188		131	105	236
Internal Capture Trips				0	0	0		15	15	30		33	33	66
Pass-By Trips				0	0	0		0	0	0		6	6	12
Volume Added to Adjacent Streets				1340	1335	2675		64	94	158		92	66	158

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 16 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 28 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Attachment 2
P.

Trip Generation Summary

Alternative: Phase 1
Phase: Cochecho Waterfront Development - 1
Project: 1981A

Open Date: 9/3/2021
Analysis Date: 9/3/2021

ITE	Land Use	Saturday Average Daily Trips *	Enter	Exit	Total	Saturday Peak Hour of Generator *	Enter	Exit	Total	Sunday *	Enter	Exit	Total	Sunday Peak Hour of Generator *	Enter	Exit	Total
221	MID-RISE 1		651	651	1302		63	66	129		595	595	1190		70	43	113
	291 Dwelling Units																
710	OFFICEGENERAL 2		11	11	22		3	2	5		4	3	7		1	1	2
	10 1000 Sq. Ft. GFA																
712	OFFICE-SMALL 1				0		1	1	2				0				0
	4 1000 Sq. Ft. GFA																
820	CENTERSHOPPING 2		191	191	382		19	18	37		88	87	175		11	12	23
	8.29 1000 Sq. Ft. GLA																
932	RESTAURANTHT 2		337	336	673		32	30	62		393	392	785		78	64	142
	5.5 1000 Sq. Ft. GFA																
Unadjusted Volume			1190	1189	2379		118	117	235		1080	1077	2157		160	120	280
Internal Capture Trips			0	0	0		0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			1190	1189	2379		118	117	235		1080	1077	2157		160	120	280

Total Saturday Average Daily Trips Internal Capture = 0 Percent

Total Saturday Peak Hour of Generator Internal Capture = 0 Percent

Total Sunday Internal Capture = 0 Percent

Total Sunday Peak Hour of Generator Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

TRIP GENERATION 10, TRAFFICWARE, LLC

Trip Generation Summary

Alternative: Phase 2
Phase: Cochecho Waterfront Development -2
Project: 1981A

Open Date: 9/2/2021
Analysis Date: 9/2/2021

ITE	Land Use		Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		*	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
221	MID-RISE 2		340	340	680	12	33	45	34	21	55
	125 Dwelling Units										
Unadjusted Volume			340	340	680	12	33	45	34	21	55
Internal Capture Trips			0	0	0	0	0	0	0	0	0
Pass-By Trips			0	0	0	0	0	0	0	0	0
Volume Added to Adjacent Streets			340	340	680	12	33	45	34	21	55

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Trip Generation Summary

Alternative: Phase 2
Phase:
Project: 1981A

Open Date: 9/2/2021
Analysis Date: 9/2/2021

ITE	Land Use	Saturday Average Daily Trips *	Enter	Exit	Total	Saturday Peak Hour of Generator *	Enter	Exit	Total	Sunday *	Enter	Exit	Total	Sunday Peak Hour of Generator *	Enter	Exit	Total
221	MID-RISE 2		307	307	614		27	28	55		256	255	511		30	19	49
	125 Dwelling Units																
Unadjusted Volume			307	307	614		27	28	55		256	255	511		30	19	49
Internal Capture Trips			0	0	0		0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			307	307	614		27	28	55		256	255	511		30	19	49

Total Saturday Average Daily Trips Internal Capture = 0 Percent

Total Saturday Peak Hour of Generator Internal Capture = 0 Percent

Total Sunday Internal Capture = 0 Percent

Total Sunday Peak Hour of Generator Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

TRIP GENERATION 10, TRAFFICWARE, LLC

Attachment 5

TRIP DISTRIBUTION ANALYSIS

A. Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions

Total All Jobs

		Gateway %						Gateway Allocation						
		Wash	Main	Port-Coc	Hanson	H-Law	Silver	Wash	Main	Port-Coc	Hanson	H-Law	Silver	
		A	B	C	D	E	F	A	B	C	D	E	F	
	Count													
Dover city (Strafford, NH)	3,755	0.10	0.35	0.05	0.20	0.05	0.25	376	1314	188	751	188	939	3756
Portsmouth city (Rockingham, NH)	3,102				1.00			0	0	0	3102	0	0	3102
Rochester city (Strafford, NH)	812		0.20				0.80	0	162	0	0	0	650	812
Durham town (Strafford, NH)	722				1.00			0	0	0	722	0	0	722
Somersworth city (Strafford, NH)	660		1.00					0	660	0	0	0	0	660
Newington town (Rockingham, NH)	462				1.00			0	0	0	462	0	0	462
Exeter town (Rockingham, NH)	449				1.00			0	0	0	449	0	0	449
Manchester city (Hillsborough, NH)	423						1.00	0	0	0	0	0	423	423
Concord city (Merrimack, NH)	399						1.00	0	0	0	0	0	399	399
Nashua city (Hillsborough, NH)	363						1.00	0	0	0	0	0	363	363
	11147							376	2136	188	5486	188	2774	11148
								3.4%	19.2%	1.7%	49.2%	1.7%	24.9%	100%
								3	19	2	49	2	25	100

HCM Signalized Intersection Capacity Analysis
1: Central Avenue & Henry Law Avenue & Washington Street

Movement	EBT	EBR	EBR2	NBL	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations	↑↑		↱	↰	↱		↰	↰	↑	↱
Traffic Volume (vph)	236	20	103	35	631	5	85	62	925	102
Future Volume (vph)	236	20	103	35	631	5	85	62	925	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	6.0		4.0	6.0	4.0	6.0
Lane Util. Factor	0.95		1.00	1.00	0.88		1.00	1.00	1.00	1.00
Frt	0.99		0.85	1.00	0.85		1.00	1.00	1.00	0.85
Flt Protected	1.00		1.00	0.95	1.00		0.95	0.95	1.00	1.00
Satd. Flow (prot)	3441		1468	1656	2729		1736	1752	1827	1553
Flt Permitted	1.00		1.00	0.08	1.00		0.95	0.95	1.00	1.00
Satd. Flow (perm)	3441		1468	144	2729		1736	1752	1827	1553
Peak-hour factor, PHF	0.76	0.76	0.76	0.99	0.99	0.99	0.86	0.86	0.86	0.86
Adj. Flow (vph)	311	26	136	35	637	5	99	72	1076	119
RTOR Reduction (vph)	0	0	0	0	58	0	88	0	0	22
Lane Group Flow (vph)	337	0	136	35	584	0	11	72	1076	97
Heavy Vehicles (%)	4%	0%	10%	9%	4%	25%	4%	3%	4%	4%
Turn Type	NA		Free	Perm	Perm		Prot	Prot	NA	custom
Protected Phases	2						5	5	4	4
Permitted Phases			Free	8	8					2 5
Actuated Green, G (s)	11.8		91.4	46.4	46.4		8.5	8.5	46.4	72.7
Effective Green, g (s)	13.8		91.4	48.4	46.4		10.5	8.5	48.4	72.7
Actuated g/C Ratio	0.15		1.00	0.53	0.51		0.11	0.09	0.53	0.80
Clearance Time (s)	6.0			6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	519		1468	76	1385		199	162	967	1337
v/s Ratio Prot	c0.10						0.01	c0.04	c0.59	0.04
v/s Ratio Perm			c0.09	0.24	0.21					0.03
v/c Ratio	0.65		0.09	0.46	0.42		0.06	0.44	1.11	0.07
Uniform Delay, d1	36.5		0.0	13.4	14.1		36.0	39.2	21.5	2.0
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8		0.1	4.4	0.2		0.1	1.9	65.1	0.0
Delay (s)	39.3		0.1	17.7	14.3		36.2	41.2	86.6	2.1
Level of Service	D		A	B	B		D	D	F	A
Approach Delay (s)	28.1								73.1	
Approach LOS	C								E	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

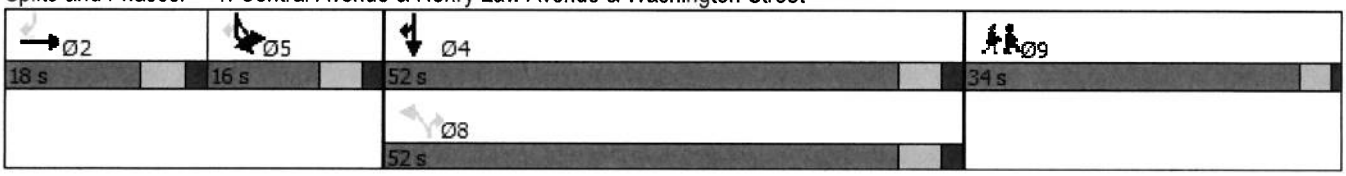
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR	Ø9
Lane Configurations	↑↑	↱	↰	↰↱	↰	↰	↑	↱	
Traffic Volume (vph)	236	103	35	631	85	62	925	102	
Future Volume (vph)	236	103	35	631	85	62	925	102	
Turn Type	NA	Free	Perm	Perm	Prot	Prot	NA	custom	
Protected Phases	2				5	5	4	4	9
Permitted Phases		Free	8	8				2 5	
Detector Phase	2		8	8	5	5	4	4	
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0		22.0	22.0	16.0	16.0	16.0	16.0	34.0
Total Split (s)	18.0		52.0	52.0	16.0	16.0	52.0	52.0	34.0
Total Split (%)	15.0%		43.3%	43.3%	13.3%	13.3%	43.3%	43.3%	28%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-2.0		-2.0	0.0	-2.0	0.0	-2.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	4.0	6.0	4.0	6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Min		None	None	None	None	None	None	None
Act Effct Green (s)	13.9	88.3	48.5	46.4	10.5	8.5	48.5	84.0	
Actuated g/C Ratio	0.16	1.00	0.55	0.53	0.12	0.10	0.55	0.95	
v/c Ratio	0.62	0.09	0.44	0.43	0.32	0.43	1.07	0.08	
Control Delay	41.9	0.1	38.3	12.5	8.6	47.8	72.9	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.9	0.1	38.3	12.5	8.6	47.8	72.9	0.6	
LOS	D	A	D	B	A	D	E	A	
Approach Delay	29.9						60.6		
Approach LOS	C						E		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 88.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 42.2 — Intersection LOS: D
Intersection Capacity Utilization 62.5% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Central Avenue & Henry Law Avenue & Washington Street



Queues
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR
Lane Group Flow (vph)	337	136	35	642	99	72	1076	119
v/c Ratio	0.62	0.09	0.44	0.43	0.32	0.43	1.07	0.08
Control Delay	41.9	0.1	38.3	12.5	8.6	47.8	72.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	0.1	38.3	12.5	8.6	47.8	72.9	0.6
Queue Length 50th (ft)	88	0	10	85	0	37	~628	0
Queue Length 95th (ft)	138	0	#71	200	31	89	#1107	12
Internal Link Dist (ft)	138						301	
Turn Bay Length (ft)			1					
Base Capacity (vph)	550	1468	79	1491	339	200	1002	1482
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.09	0.44	0.43	0.29	0.36	1.07	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Central Avenue & Henry Law Avenue & Washington Street

Movement	EBT	EBR	EBR2	NBL	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	238	21	103	37	631	5	99	67	925	104
Future Volume (vph)	238	21	103	37	631	5	99	67	925	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	6.0		4.0	6.0	4.0	6.0
Lane Util. Factor	0.95		1.00	1.00	0.88		1.00	1.00	1.00	1.00
Frt	0.99		0.85	1.00	0.85		1.00	1.00	1.00	0.85
Flt Protected	1.00		1.00	0.95	1.00		0.95	0.95	1.00	1.00
Satd. Flow (prot)	3439		1468	1656	2729		1736	1752	1827	1553
Flt Permitted	1.00		1.00	0.08	1.00		0.95	0.95	1.00	1.00
Satd. Flow (perm)	3439		1468	144	2729		1736	1752	1827	1553
Peak-hour factor, PHF	0.76	0.76	0.76	0.99	0.99	0.99	0.86	0.86	0.86	0.86
Adj. Flow (vph)	313	28	136	37	637	5	115	78	1076	121
RTOR Reduction (vph)	0	0	0	0	58	0	102	0	0	23
Lane Group Flow (vph)	341	0	136	37	584	0	13	78	1076	98
Heavy Vehicles (%)	4%	0%	10%	9%	4%	25%	4%	3%	4%	4%
Turn Type	NA		Free	Perm	Perm		Prot	Prot	NA	custom
Protected Phases	2						5	5	4	4
Permitted Phases			Free	8	8					2 5
Actuated Green, G (s)	11.9		91.6	46.4	46.4		8.6	8.6	46.4	72.9
Effective Green, g (s)	13.9		91.6	48.4	46.4		10.6	8.6	48.4	72.9
Actuated g/C Ratio	0.15		1.00	0.53	0.51		0.12	0.09	0.53	0.80
Clearance Time (s)	6.0			6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	521		1468	76	1382		200	164	965	1337
v/s Ratio Prot	c0.10						0.01	c0.04	c0.59	0.04
v/s Ratio Perm			c0.09	0.26	0.21					0.03
v/c Ratio	0.65		0.09	0.49	0.42		0.07	0.48	1.12	0.07
Uniform Delay, d1	36.6		0.0	13.7	14.2		36.1	39.4	21.6	2.0
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0		0.1	4.8	0.2		0.1	2.2	66.0	0.0
Delay (s)	39.5		0.1	18.6	14.4		36.2	41.5	87.6	2.1
Level of Service	D		A	B	B		D	D	F	A
Approach Delay (s)	28.3								73.3	
Approach LOS	C								E	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

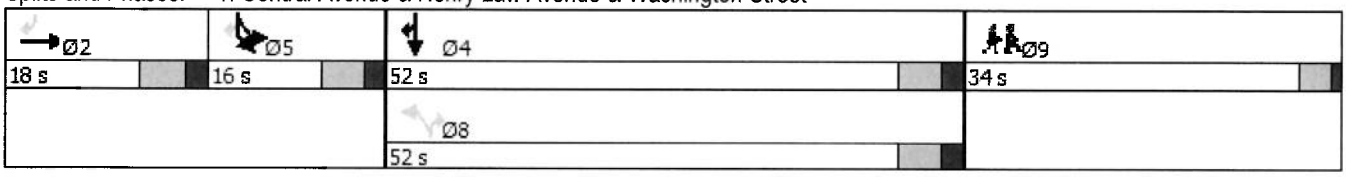
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR	Ø9
Lane Configurations									
Traffic Volume (vph)	238	103	37	631	99	67	925	104	
Future Volume (vph)	238	103	37	631	99	67	925	104	
Turn Type	NA	Free	Perm	Perm	Prot	Prot	NA	custom	
Protected Phases	2				5	5	4	4	9
Permitted Phases		Free	8	8				2 5	
Detector Phase	2		8	8	5	5	4	4	
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0		22.0	22.0	16.0	16.0	16.0	16.0	34.0
Total Split (s)	18.0		52.0	52.0	16.0	16.0	52.0	52.0	34.0
Total Split (%)	15.0%		43.3%	43.3%	13.3%	13.3%	43.3%	43.3%	28%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-2.0		-2.0	0.0	-2.0	0.0	-2.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	4.0	6.0	4.0	6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Min		None	None	None	None	None	None	None
Act Effct Green (s)	13.9	88.4	48.4	46.4	10.6	8.6	48.4	84.1	
Actuated g/C Ratio	0.16	1.00	0.55	0.52	0.12	0.10	0.55	0.95	
v/c Ratio	0.63	0.09	0.47	0.43	0.37	0.46	1.08	0.08	
Control Delay	42.1	0.1	40.8	12.6	11.2	48.6	73.8	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	42.1	0.1	40.8	12.6	11.2	48.6	73.8	0.6	
LOS	D	A	D	B	B	D	E	A	
Approach Delay	30.2						60.8		
Approach LOS	C						E		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 88.4
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 42.6 — Intersection LOS: D
Intersection Capacity Utilization 62.6% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Central Avenue & Henry Law Avenue & Washington Street



Queues

1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR
Lane Group Flow (vph)	341	136	37	642	115	78	1076	121
v/c Ratio	0.63	0.09	0.47	0.43	0.37	0.46	1.08	0.08
Control Delay	42.1	0.1	40.8	12.6	11.2	48.6	73.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	0.1	40.8	12.6	11.2	48.6	73.8	0.6
Queue Length 50th (ft)	90	0	11	85	0	40	~632	0
Queue Length 95th (ft)	140	0	#75	200	44	95	#1107	12
Internal Link Dist (ft)	138						301	
Turn Bay Length (ft)			1					
Base Capacity (vph)	549	1468	79	1488	339	199	1000	1482
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.09	0.47	0.43	0.34	0.39	1.08	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Central Avenue & Henry Law Avenue & Washington Street

Movement	EBT	EBR	EBR2	NBL	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	516	35	121	62	836	4	203	97	782	121
Future Volume (vph)	516	35	121	62	836	4	203	97	782	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	6.0		4.0	6.0	4.0	6.0
Lane Util. Factor	0.95		1.00	1.00	0.88		1.00	1.00	1.00	1.00
Frt	0.99		0.85	1.00	0.85		1.00	1.00	1.00	0.85
Flt Protected	1.00		1.00	0.95	1.00		0.95	0.95	1.00	1.00
Satd. Flow (prot)	3543		1553	1687	2787		1752	1805	1881	1615
Flt Permitted	1.00		1.00	0.09	1.00		0.95	0.95	1.00	1.00
Satd. Flow (perm)	3543		1553	160	2787		1752	1805	1881	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.99	0.99	0.99	0.95	0.95	0.95	0.95
Adj. Flow (vph)	538	36	126	63	844	4	214	102	823	127
RTOR Reduction (vph)	0	0	0	0	59	0	188	0	0	25
Lane Group Flow (vph)	574	0	126	63	789	0	26	102	823	102
Heavy Vehicles (%)	1%	0%	4%	7%	2%	0%	3%	0%	1%	0%
Turn Type	NA		Free	Perm	Perm		Prot	Prot	NA	custom
Protected Phases	2						5	5	4	4
Permitted Phases			Free	8	8					2 5
Actuated Green, G (s)	16.1		91.4	42.3	42.3		9.3	9.3	42.3	73.7
Effective Green, g (s)	18.1		91.4	44.3	42.3		11.3	9.3	44.3	73.7
Actuated g/C Ratio	0.20		1.00	0.48	0.46		0.12	0.10	0.48	0.81
Clearance Time (s)	6.0			6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	701		1553	77	1289		216	183	911	1408
v/s Ratio Prot	c0.16						0.02	c0.06	c0.44	0.03
v/s Ratio Perm			c0.08	0.39	0.28					0.03
v/c Ratio	0.82		0.08	0.82	0.61		0.12	0.56	0.90	0.07
Uniform Delay, d1	35.1		0.0	20.1	18.4		35.6	39.1	21.6	1.8
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	7.4		0.1	46.6	0.9		0.3	3.6	12.1	0.0
Delay (s)	42.5		0.1	66.7	19.3		35.9	42.7	33.7	1.8
Level of Service	D		A	E	B		D	D	C	A
Approach Delay (s)	34.9								31.6	
Approach LOS	C								C	

Intersection Summary

HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

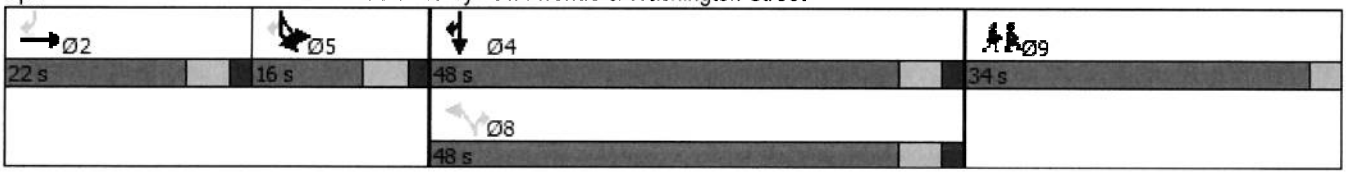
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR	Ø9
Lane Configurations									
Traffic Volume (vph)	516	121	62	836	203	97	782	121	
Future Volume (vph)	516	121	62	836	203	97	782	121	
Turn Type	NA	Free	Perm	Perm	Prot	Prot	NA	custom	
Protected Phases	2				5	5	4	4	9
Permitted Phases		Free	8	8				2 5	
Detector Phase	2		8	8	5	5	4	4	
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0		22.0	22.0	16.0	16.0	16.0	16.0	34.0
Total Split (s)	22.0		48.0	48.0	16.0	16.0	48.0	48.0	34.0
Total Split (%)	18.3%		40.0%	40.0%	13.3%	13.3%	40.0%	40.0%	28%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-2.0		-2.0	0.0	-2.0	0.0	-2.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	4.0	6.0	4.0	6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Min		None	None	None	None	None	None	None
Act Effct Green (s)	18.1	89.1	44.3	42.3	11.3	9.3	44.3	84.9	
Actuated g/C Ratio	0.20	1.00	0.50	0.47	0.13	0.10	0.50	0.95	
v/c Ratio	0.80	0.08	0.80	0.61	0.52	0.54	0.88	0.08	
Control Delay	44.4	0.1	85.0	18.4	10.9	50.9	34.1	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	44.4	0.1	85.0	18.4	10.9	50.9	34.1	0.5	
LOS	D	A	F	B	B	D	C	A	
Approach Delay	36.4						28.2		
Approach LOS	D						C		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 89.1
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 28.5
Intersection LOS: C
Intersection Capacity Utilization 70.0%
ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Central Avenue & Henry Law Avenue & Washington Street



Queues
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR
Lane Group Flow (vph)	574	126	63	848	214	102	823	127
v/c Ratio	0.80	0.08	0.80	0.61	0.52	0.54	0.88	0.08
Control Delay	44.4	0.1	85.0	18.4	10.9	50.9	34.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	0.1	85.0	18.4	10.9	50.9	34.1	0.5
Queue Length 50th (ft)	155	0	26	155	0	53	366	0
Queue Length 95th (ft)	#311	0	#128	316	68	#131	#835	12
Internal Link Dist (ft)	138						301	
Turn Bay Length (ft)			1					
Base Capacity (vph)	721	1553	79	1380	422	203	935	1544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.08	0.80	0.61	0.51	0.50	0.88	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Central Avenue & Henry Law Avenue & Washington Street

Movement	EBT	EBR	EBR2	NBL	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	520	36	121	64	836	4	229	106	782	123
Future Volume (vph)	520	36	121	64	836	4	229	106	782	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	6.0		4.0	6.0	4.0	6.0
Lane Util. Factor	0.95		1.00	1.00	0.88		1.00	1.00	1.00	1.00
Frt	0.99		0.85	1.00	0.85		1.00	1.00	1.00	0.85
Flt Protected	1.00		1.00	0.95	1.00		0.95	0.95	1.00	1.00
Satd. Flow (prot)	3541		1553	1687	2787		1752	1805	1881	1615
Flt Permitted	1.00		1.00	0.09	1.00		0.95	0.95	1.00	1.00
Satd. Flow (perm)	3541		1553	160	2787		1752	1805	1881	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.99	0.99	0.99	0.95	0.95	0.95	0.95
Adj. Flow (vph)	542	38	126	65	844	4	241	112	823	129
RTOR Reduction (vph)	0	0	0	0	59	0	211	0	0	25
Lane Group Flow (vph)	580	0	126	65	789	0	30	112	823	104
Heavy Vehicles (%)	1%	0%	4%	7%	2%	0%	3%	0%	1%	0%
Turn Type	NA		Free	Perm	Perm		Prot	Prot	NA	custom
Protected Phases	2						5	5	4	4
Permitted Phases			Free	8	8					2 5
Actuated Green, G (s)	16.1		91.7	42.3	42.3		9.6	9.6	42.3	74.0
Effective Green, g (s)	18.1		91.7	44.3	42.3		11.6	9.6	44.3	74.0
Actuated g/C Ratio	0.20		1.00	0.48	0.46		0.13	0.10	0.48	0.81
Clearance Time (s)	6.0			6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	698		1553	77	1285		221	188	908	1408
v/s Ratio Prot	c0.16						0.02	c0.06	c0.44	0.03
v/s Ratio Perm			c0.08	0.41	0.28					0.03
v/c Ratio	0.83		0.08	0.84	0.61		0.14	0.60	0.91	0.07
Uniform Delay, d1	35.3		0.0	20.7	18.6		35.6	39.2	21.8	1.8
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	8.3		0.1	53.5	0.9		0.3	5.0	12.4	0.0
Delay (s)	43.6		0.1	74.1	19.4		35.9	44.2	34.2	1.8
Level of Service	D		A	E	B		D	D	C	A
Approach Delay (s)	35.9								32.2	
Approach LOS	D								C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

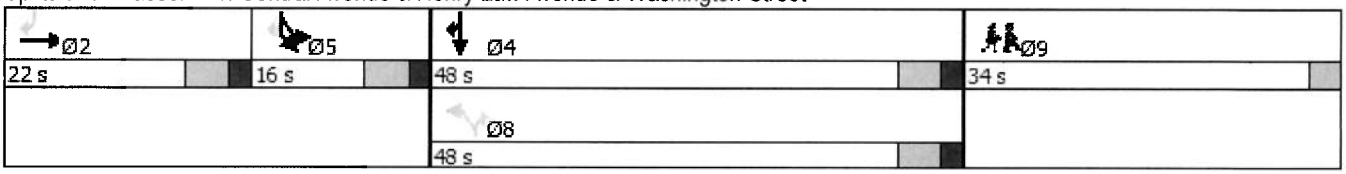
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR	Ø9
Lane Configurations									
Traffic Volume (vph)	520	121	64	836	229	106	782	123	
Future Volume (vph)	520	121	64	836	229	106	782	123	
Turn Type	NA	Free	Perm	Perm	Prot	Prot	NA	custom	
Protected Phases	2				5	5	4	4	9
Permitted Phases		Free	8	8				2 5	
Detector Phase	2		8	8	5	5	4	4	
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0		22.0	22.0	16.0	16.0	16.0	16.0	34.0
Total Split (s)	22.0		48.0	48.0	16.0	16.0	48.0	48.0	34.0
Total Split (%)	18.3%		40.0%	40.0%	13.3%	13.3%	40.0%	40.0%	28%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-2.0		-2.0	0.0	-2.0	0.0	-2.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	4.0	6.0	4.0	6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Min		None	None	None	None	None	None	None
Act Effct Green (s)	18.1	89.3	44.3	42.3	11.6	9.6	44.3	85.0	
Actuated g/C Ratio	0.20	1.00	0.50	0.47	0.13	0.11	0.50	0.95	
v/c Ratio	0.81	0.08	0.82	0.62	0.55	0.58	0.88	0.08	
Control Delay	45.1	0.1	90.0	18.5	10.8	52.6	34.5	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.1	0.1	90.0	18.5	10.8	52.6	34.5	0.5	
LOS	D	A	F	B	B	D	C	A	
Approach Delay	37.1						28.3		
Approach LOS	D						C		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 89.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 28.9 — Intersection LOS: C
Intersection Capacity Utilization 70.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Central Avenue & Henry Law Avenue & Washington Street



Queues

1: Central Avenue & Henry Law Avenue & Washington Street

Lane Group	EBT	EBR2	NBL	NBR	SBL2	SBL	SBT	SBR
Lane Group Flow (vph)	580	126	65	848	241	112	823	129
v/c Ratio	0.81	0.08	0.82	0.62	0.55	0.58	0.88	0.08
Control Delay	45.1	0.1	90.0	18.5	10.8	52.6	34.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	0.1	90.0	18.5	10.8	52.6	34.5	0.5
Queue Length 50th (ft)	157	0	27	155	0	58	366	0
Queue Length 95th (ft)	#315	0	#134	316	72	#150	#835	12
Internal Link Dist (ft)	138						301	
Turn Bay Length (ft)			1					
Base Capacity (vph)	718	1553	79	1376	445	203	933	1544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.08	0.82	0.62	0.54	0.55	0.88	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Pernaw & Company, Inc

Looking Left **Looking Right**

Henry Law Avenue/River Street

River Street/Proposed Site Driveway

Washington Street/Proposed West Site Driveway

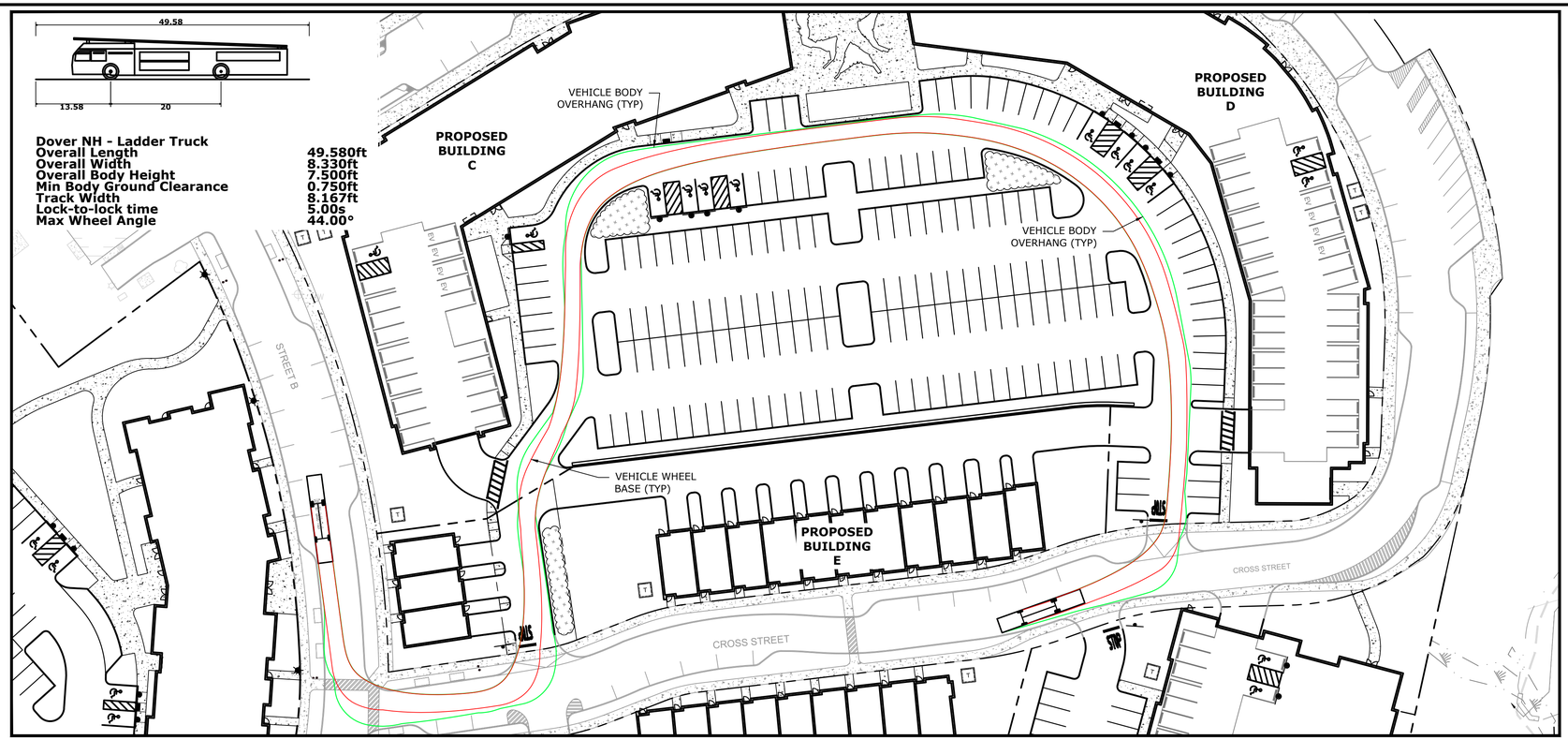
Pernaw & Company, Inc

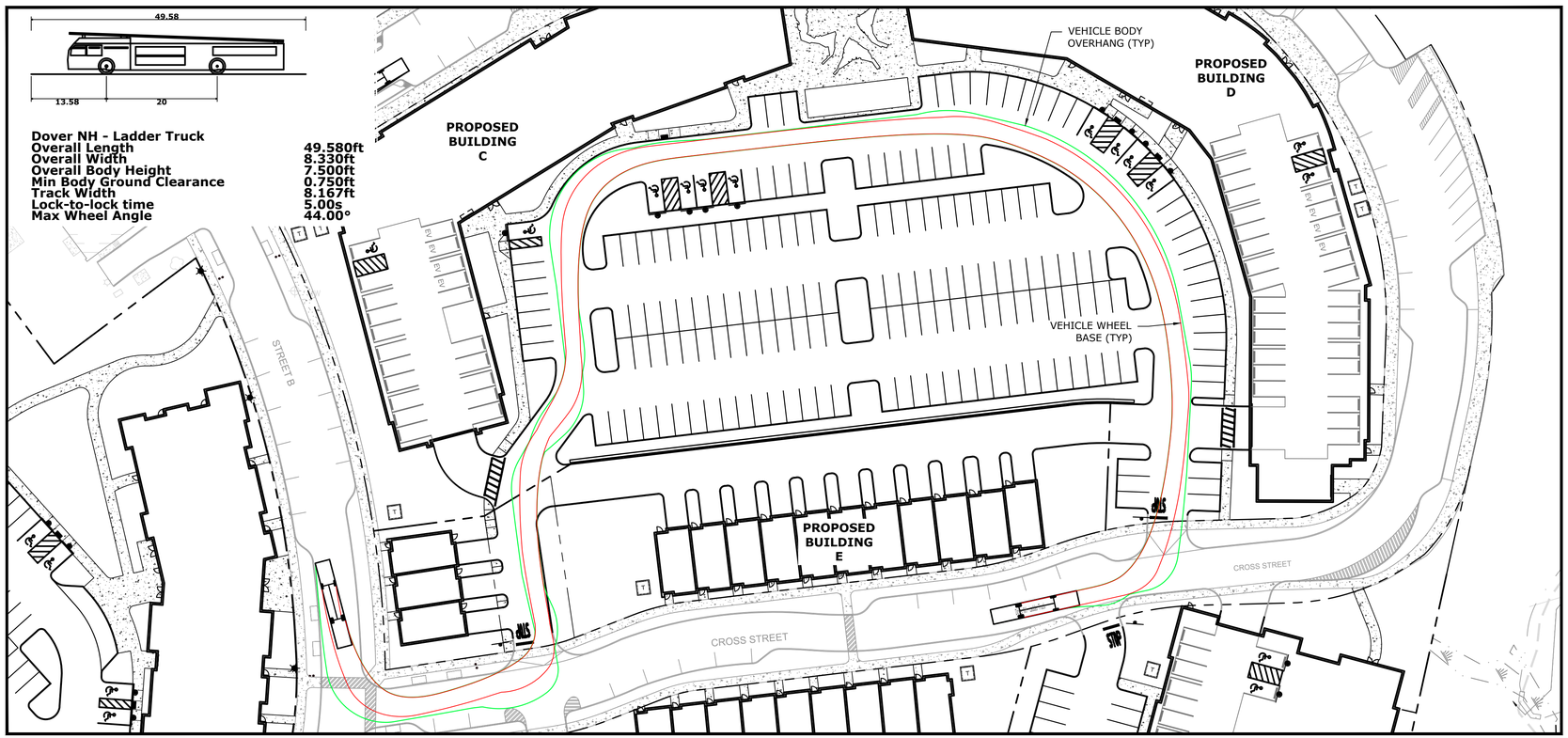
Looking Left **Looking Right**

Washington Street/Proposed Middle Site Driveway

Washington Street/Proposed East Site Driveway

Washington Street/River Street





LEGEND

VEHICLE OVERHANG

VEHICLE WHEEL BASE

Tighe&Bond

N

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

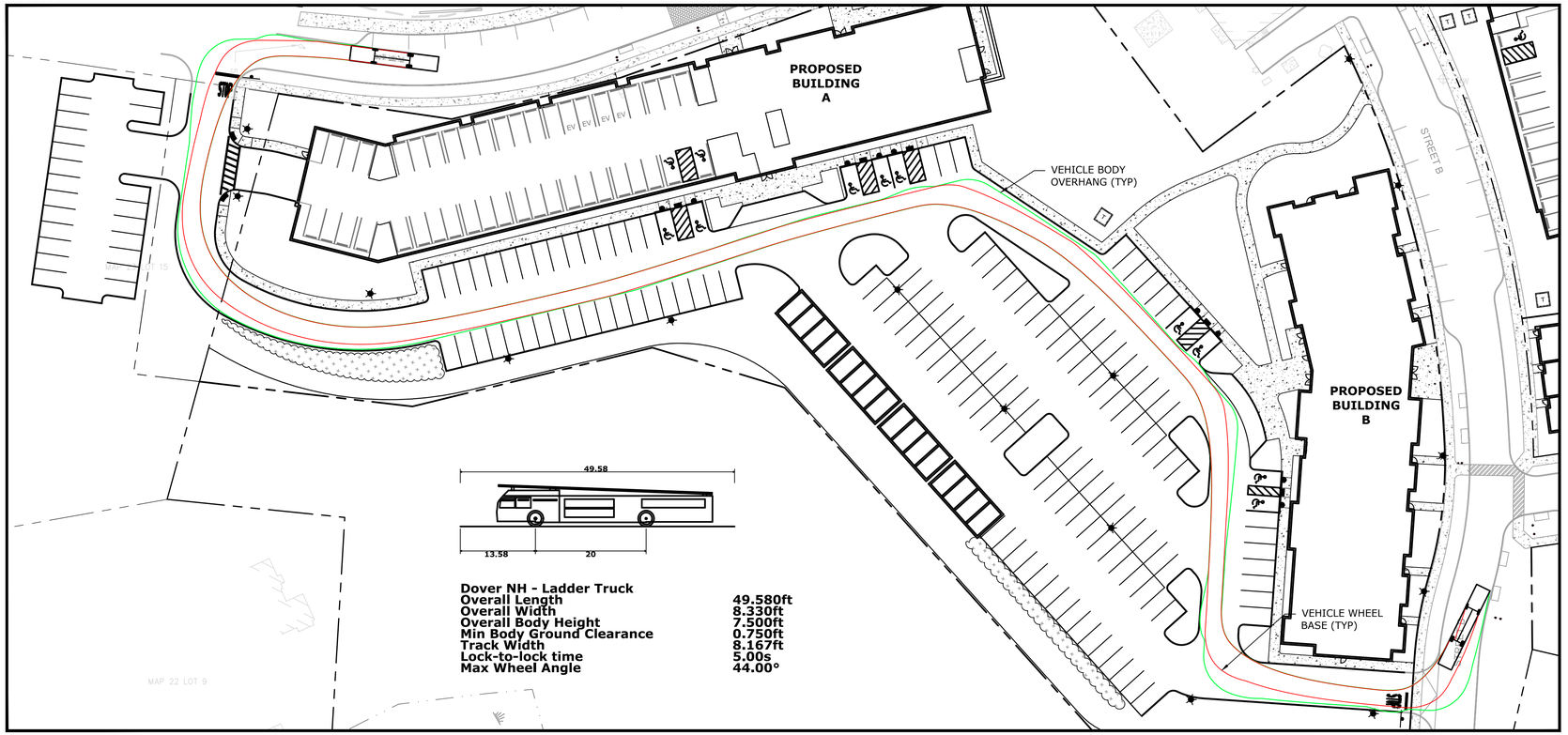
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

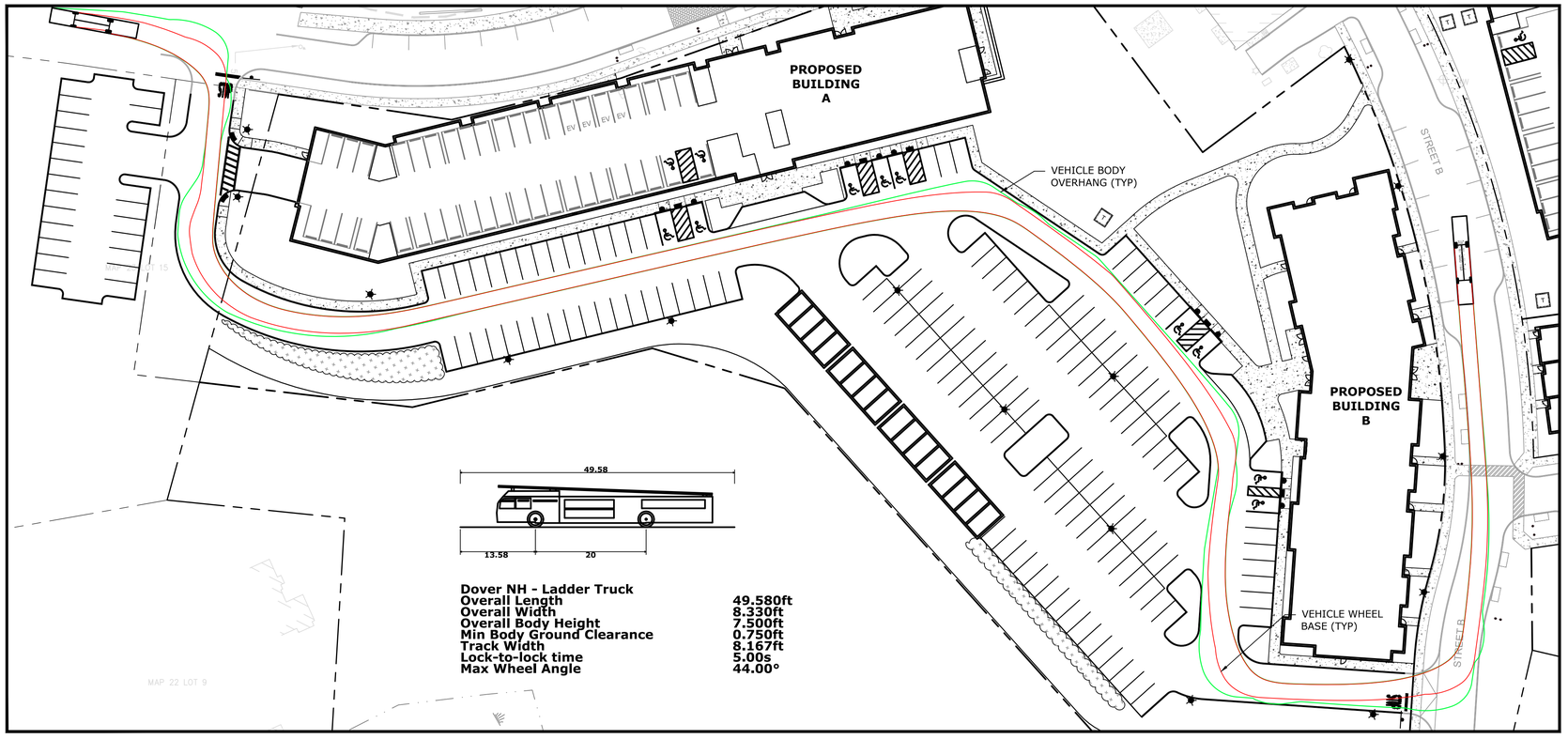
FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

2 OF 2

Last Save Date: September 16, 2021 11:53 AM By: CKitzCUK
Plot Date: Thursday, September 16, 2021 11:54 AM By: Chris Kitzcuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: Fire Truck 2





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VEHICLE OVERHANG

VEHICLE WHEEL BASE

SCALE IN FEET
0 40' 80'
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APPROVED:	BLM

FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

1 OF 2

Last Save Date: September 16, 2021 11:53 AM By: CKitzCUK
Plot Date: Thursday, September 16, 2021 Plotted By: Chris Kitzcuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: Fire Truck

EVERSOURCE ENERGY

August 24th, 2021

1700 Lafayette Road
Portsmouth, NH 03801

Trevor S Emmons
603-332-7515
Trevor.emmons@eversource.com

Rob Simmons
CPI Management, LLC
6 Liberty Sq PMB 90767
Boston, MA 02109

Dear Rob Simmons:

I am responding to your request to confirm the availability of electric service for the proposed Cocheco Waterfront Development project being constructed by Cathartes.

The proposed project consists of several 5-story buildings with approximately 416 residential units approximately 26,500 s/f of retail/office space at the ground level and parking below grade. The proposed development will be constructed along River Street.

The developer will be responsible for the installation of all underground facilities and infrastructure required to service the new buildings. The service will be as shown on attached marked up Utility Plan C-104. The proposed building services will be fed from several new transformers as depicted on utility plan C-104. The developer will work with Eversource to obtain all necessary easements and licenses for the proposed overhead/underground facilities listed above.

This letter serves as confirmation that Eversource has sufficient capacity in the area to provide service to this proposed development. The cost of extending service to the aforementioned location and any associated infrastructure improvements necessary to provide service will be borne by the City of Dover unless otherwise agreed upon.

The attached drawing titled "Overall Utility Plan" dated 7/26/2021, shows transformer locations to service your proposed project.

Eversource approves the locations shown; assuming the final installed locations meet all clearances, physical protection, and access requirements as outlined in Eversource's "Information & Requirements For Electric Supply" (https://www.eversource.com/content/docs/default-source/pdfs/requirements-for-electric-service-connections.pdf?sfvrsn=2).

If you require additional information or I can be of further assistance please do not hesitate to contact me at our Rochester Office, 603-332-7515

Respectfully.

Trevor Emmons
Eastern Regional Engineer, Eversource

cc: Michael J. Busby, PE, Eastern Regional Engineering and Design Manager, Eversource
Thomas Boulter, Eastern Region Operations Manager, Eversource
Nickolai Kosko, Field Supervisor, Electric Design, Eversource

Unitil
Northern Utilities, Inc.

August 5th 2021

Rob Simmons
CPI Management, LLC
6 Liberty Sq PMB 90767
Boston, MA 02109

Natural Gas to 'Cocheco Waterfront Project' in Dover, NH

Hi Rob,

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service:

Unitil hereby confirms that natural gas is available to supply the proposed development known as 'Cocheco Waterfront Project' located along River Street on Map 22 Lot 1 in Dover, NH

If you have any questions, please contact me at 603-534-2379.

Sincerely,

Dave MacLean
Senior Business Development Rep
Unitil
T 603.294.5261 **M** 603.534.2379 **F** 603.294.5264
Email macleand@unitil.com

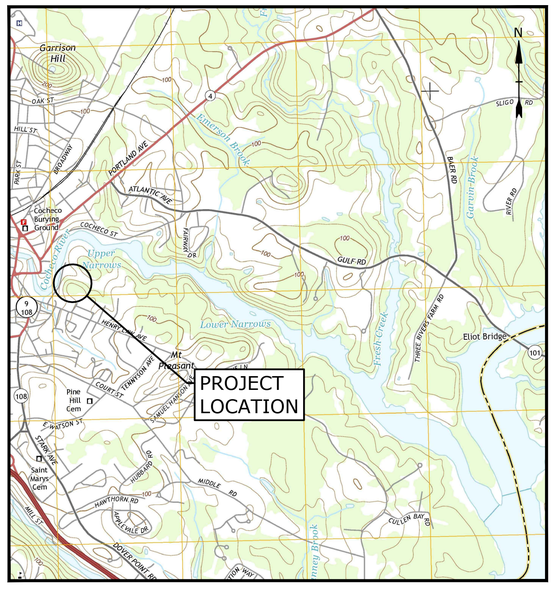
COCHECHO WATERFRONT DEVELOPMENT

RIVER STREET
DOVER, NH
JULY 26, 2021

LAST REVISED SEPTEMBER 16, 2021

PLAN SET INDEX		
SHEET TITLE	# OF SHEETS	LAST REVISED
COVER SHEET	1	9/16/2021
SITE PLAN SET COVER SHEET	1	9/16/2021
SITE PLAN SET	22	9/16/2021
PHASE 1 SITE PLAN SET COVER SHEET	1	9/16/2021
PHASE 1 SITE PLAN SET	7	9/16/2021
DETAILS PLAN SET COVER SHEET	1	9/16/2021
DETAILS PLAN SET	8	9/16/2021
LANDSCAPE PLAN SET COVER SHEET	1	9/16/2021
LANDSCAPE PLAN SET	8	9/16/2021
ARCHITECTURAL PLAN SET COVER SHEET	1	9/16/2021
ARCHITECTURAL PLAN SET	31	9/16/2021

LIST OF PERMITS & APPROVALS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT	PENDING	
SUBDIVISION PERMIT (BY CITY)	PENDING	
STATE		
NHDES - ALTERATION OF TERRAIN	PENDING	
NHDES - SEWER CONNECTION PERMIT	PENDING	
FEDERAL		
NPDES - CONSTRUCTION GENERAL PERMIT	PENDING	



LOCATION MAP
SCALE: 1" = 2,000'

CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
3. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

PREPARED BY:
Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NH 03801
603-433-8818

BRADLEE MEZQUITA No. 08838 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
9/16/21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
09/16/21

APPLICANT:
CPI MANAGEMENT, LLC
C/O CATHARTES
6 LIBERTY SQ PMB 90767
BOSTON, MA 02109

OWNER:
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820

SIGNATURE:_____

DATE: _____

ARCHITECT:
EMBARC STUDIO
ARCHITECTURE+DESIGN
60 K STREET, 3rd FLOOR
BOSTON MA, 02127

SURVEYOR:
DOUCET SURVEY INC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

811 DigSafe MA-ME-NH-RI-VT

TRC SUBMISSION
COMPLETE SET 82 SHEETS

Last Save Date: September 16, 2021 11:54 AM By: CKIZICUK
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SITE PLAN SET

JULY 26, 2021

LAST REVISED SEPTEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	09/16/2021
1 OF 4	EXISTING CONDITIONS PLAN	08/01/2017
2 OF 4	EXISTING CONDITIONS PLAN	08/01/2017
3 OF 4	EXISTING CONDITIONS PLAN	08/01/2017
4 OF 4	EXISTING CONDITIONS PLAN	08/01/2017
G-100	GENERAL NOTES, LEGEND, AND ABBREVIATIONS SHEET	09/16/2021
G-101	NEIGHBORHOOD PLAN	09/16/2021
C-101	OVERALL EXISTING CONDITIONS & DEMOLITION PLAN	09/16/2021
C-101.1	EXISTING CONDITIONS & DEMOLITION PLAN	09/16/2021
C-101.2	EXISTING CONDITIONS & DEMOLITION PLAN	09/16/2021
C-101.3	EXISTING CONDITIONS & DEMOLITION PLAN	09/16/2021
C-102	OVERALL SITE PLAN	09/16/2021
C-102.1	SITE PLAN	09/16/2021
C-102.2	SITE PLAN	09/16/2021
C-102.3	SITE PLAN	09/16/2021
C-103	OVERALL GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-103.1	GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-103.2	GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-103.3	GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-104	OVERALL UTILITIES PLAN	09/16/2021
C-104.1	UTILITIES PLAN	09/16/2021
C-104.2	UTILITIES PLAN	09/16/2021
C-104.3	UTILITIES PLAN	09/16/2021

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
09/16/21

COMPLETE SET 23 SHEETS

Last Save Date: September 16, 2021 - 11:54 AM By: CKIZCUK
Plot Date: Thursday, September 16, 2021 - 11:54 AM By: CKIZCUK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-CS.dwg Layout Tab: SITE PLAN CS

ABUTTERS:

MAP 22 LOT 2
ELEANOR MARY DENNIS
32 GEORGE ST
DOVER, NH 03820
S.C.R.D. BK. 1758 PG. 223

MAP 22 LOT 9

MAP 22 LOT 12
GINA M KNOX REVOCABLE TRUST
9 INDEPENDENCE DR
DOVER, NH 03820-4945
S.C.R.D. BK. 3743 PG. 882
S.C.R.D. BK. 3743 PG. 879

MAP 22 LOT 33
KEVIN & CATHERINE MCENEANEY
8 GOLD POST ROAD
DOVER, NH 03820
S.C.R.D.BK. 663 PG. 300

MAP 22 LOT 34
KEVIN MCENEANEY
8 GOLD POST ROAD
DOVER, NH 03820
S.C.R.D. BK. 2194 PG. 633

MAP 22 LOT 35
ERIK SWEETSER & DIANE DUFFY
2 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BK. 2147 PG. 155

MAP 22 LOT 36
TAYLOR FAMILY
REVOCABLE TRUST
10 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BK. 4217 PG.

MAP 22 LOT 37
TAYLOR FAMILY
REVOCABLE TRUST
10 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BK. 4217 PG. 775

MAP 22 LOT 38
TAYLOR FAMILY
REVOCABLE TRUST
10 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BK. 3758 PG. 62

MAP 22 LOT 39
KEVIN & CATHERINE MCENEANEY
8 GOLD POST ROAD
DOVER, NH 03820
S.C.R.D. BK. 665 PG. 190

MAP 22 LOT 41
LUKE MURPHY
3 NANTUCKET CT
DOVER, NH 03820-3872
S.C.R.D. BK. 3300 PG. 399

MAP 22 LOT 41-1
MANUEL DE AGUIRRE
& LINSLEY SIKORSKI
7 NANTUCKET CT
DOVER, NH 03820
S.C.R.D. BK. 4411 PG. 449

MAP 22 LOT 41-2
ERIC & JESSICA CHAMPAGNE
11 NANTUCKET CT
DOVER, NH 03820
S.C.R.D. BK. 3284 PG. 340

MAP 22 LOT 41-3
PETER & SHARI GRIEVE
15 NANTUCKET CT
DOVER, NH 03820
S.C.R.D. BK. 3522 PG. 492

MAP 22 LOT 41-4
ALEXANDER & TATIANA ROMANYUK
14 NANTUCKET CT
DOVER, NH 03820
S.C.R.D. BK. 3316 PG. 90

MAP 22 LOT 42
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BK. 613 PG. 241

MAP 23 LOT 1
ED OBRIEN & ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BK. 995 PG. 828

MAP 23 LOT 3-1
BN FARM DOVER LLC
25 A PORTLAND AVENUE
DOVER, NH 03820
S.C.R.D. BK. 4305 PG. 816

MAP 23 LOT 10
JOSEPH & GLORIA ALLIS
2 JAN LANE
NEWMARKET, NH 03857-2187
S.C.R.D. BK. 608 PG. 57

MAP 23 LOT 13
JOSEPH & GLORIA ALLIS
REVOCABLE TRUST
2 JAN LANE
NEWMARKET, NH 03857-2187
S.C.R.D. BK. 1764 PG. 637

MAP 23 LOT 14
WASHINGTON STREET MILL LLC
3 PENSTOCK WAY
NEWMARKET, NH 03857
S.C.R.D. BK. 2349 PG. 238

MAP 23 LOT 15
CITY OF DOVER
C/O C/S RECREATION/
GYM & POOL
61 LOCUST ST #124
DOVER, NH 03820-3753

MAP 24 LOT 133
PUBLIC SERVICE CO OF NH
PO BOX 330
MANCHESTER, NH 03105-0330

MAP 24 LOT 134
TURGEON FAMILY LIMITED
PARTNERS
90 FLOWER DRIVE
BARRINGTON, NH 03825-4327
S.C.R.D. BK. 1997 PG. 54

MAP 24 LOT 135
WAKABAYASHI FAMILY TRUST
383 CENTRAL AVENUE STE 150
DOVER, NH 03820
S.C.R.D. BK. 3919 PG. 741

MAP 24 LOT 135-A
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 2612 PG. 358

MAP 24 LOT 136
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 1102 PG. 80

MAP 24 LOT 137
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 1207 PG. 803

MAP 24 LOT 138
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 1208 PG. 46

MAP 24 LOT 139
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 1049 PG. 122

MAP 24 LOT 140
GEORGE MAGLARAS &
ROBERT MAIRS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BK. 4472 PG. 383

MAP 24 LOT 141
ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BK. 1861 PG. 500

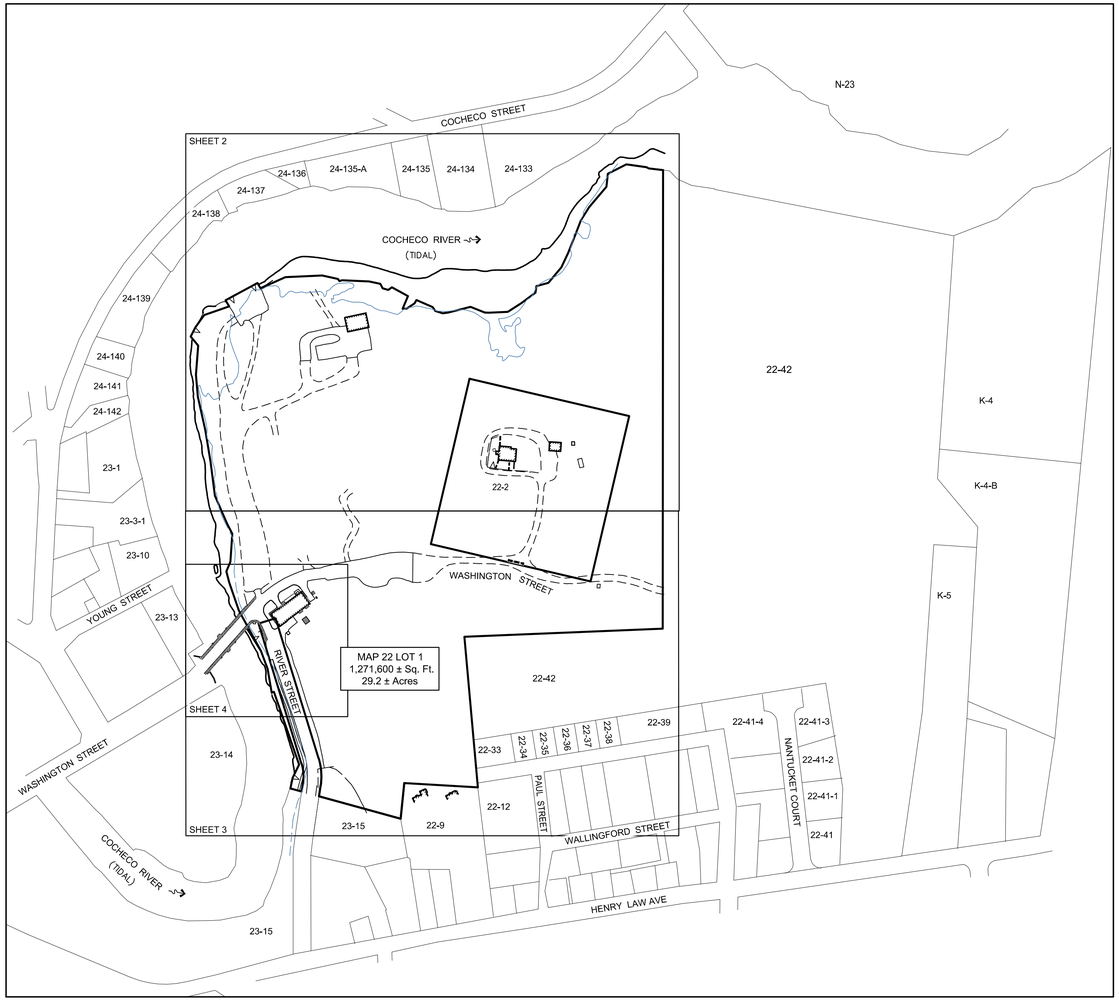
MAP 24 LOT 142
ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BK. 1861 PG. 500

MAP N LOT 23
PUBLIC SERVICE CO OF NH
PO BOX 330
MANCHESTER, NH 03105-0330

MAP K LOT 4
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820

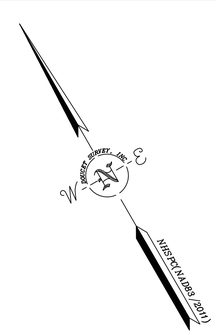
MAP K LOT 4-B
DOVER YOUTH SOFTBALL LEAGUE
PO BOX 1929
DOVER, NH 03821
S.C.R.D. BK. 4024 PG. 331

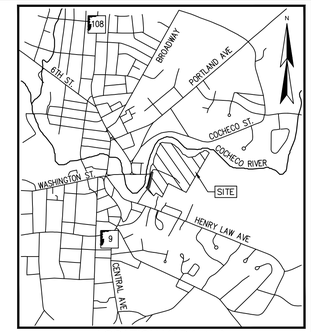
MAP K LOT 5
CHRISTOPHER PRIOR
150 HENRY LAW AVENUE
DOVER, NH 03820
S.C.R.D. BK. 3178 PG. 971



200 0 200 400

SCALE: 1 INCH = 200 FT.





LOCATION MAP (n.t.s.)

LEGEND

	EXISTING LOT LINE
	APPROXIMATE ABUTTERS LOT LINE
	STONE WALL
	CHAIN LINK FENCE
	STOCKADE FENCE
	RETAINING WALL
	EDGE OF RIVER
S	SEWER LINE
D	DRAIN LINE
E	UNDERGROUND ELECTRIC LINE
100	MAJOR CONTOUR LINE
98	MINOR CONTOUR LINE
	TREE LINE
	EDGE OF WETLAND
	FLOOD LINE (SEE NOTE 9)
	0.2% ANNUAL CHANCE FLOOD HAZARD
	CONCRETE
	RIP RAP
	UTILITY POLE
	LIGHT POLE
	BOUND FOUND
	IRON PIPE/ROD FOUND
	POST
	BOLLARD
	FIRE HYDRANT
	WATER GATE VALVE
	WATER SHUTOFF VALVE
	SIGN
T	PAD MOUNTED TRANSFORMER
	TELEPHONE BOX
	CATCH BASIN
	DRAIN MANHOLE
	SEWER MANHOLE
	MANHOLE
	HAND HOLE
	WETLAND AREA
	CONIFEROUS TREE
	DECIDUOUS TREE
	MONITORING WELL
	DRAINAGE FLOW DIRECTION ARROW
	ROCK/BOULDER
	LEDGE OUTCROP
22-2	MAP-LOT
TYP.	TYPICAL
BND. FND.	BOUND FOUND
I.P.F.	IRON PIPE FOUND
CONC.	CONCRETE
GRAN.	GRANITE
RET.	RETAINING
EP	EDGE OF PAVEMENT
EOG	EDGE OF GRAVEL
VGC	VERTICAL GRANITE CURB
SWL	SINGLE WHITE LINE
DYL	DOUBLE YELLOW LINE
HDWL	HEADWALL
(xL)	NUMBER OF TREE LEADERS
VP	VERNAL POOL

REFERENCE PLANS:

1. "SITE PLAN, DOVER BLUFF CONDOMINIUMS, HENRY LAW AVENUE, DOVER, NH, HAMPTON MANAGEMENT CORP." DATED MAY 20, 1985 BY NOLDESIGN, INC S.C.R.D. PLAN 27-47.
2. "PLAN OF LAND FOR ELEANOR M. McCOOLE NEAR RIVER STREET, DOVER, NEW HAMPSHIRE" DATED MAY 1991 BY K.E. MOORE, LAND SURVEYOR S.C.R.D. PLAN 32A-49.
3. PLAN OF LAND, LOT 22-1 & 22-42, HENRY LAW AVENUE, DOVER, NH PREPARED FOR CITY OF DOVER, COMMUNITY DEVELOPMENT – 288 CENTRAL AVE. – DOVER, NH" DATED MAY 15, 1991 BY CUOCO & CORMIER, INC. S.C.R.D. PLAN 40-53.
4. "PLAN OF GROUNDWATER MANAGEMENT ZONE, PREPARED FOR CITY OF DOVER, TAX MAP 22 LOT NO. 1, RIVER STREET, CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE" DATED DECEMBER 2001 BY MCENEANEY SURVEY ASSOCIATES, INC. S.C.R.D. PLAN 65-16.

NOTES:

1. REFERENCE: TAX MAP 22, LOT 1
2. TOTAL PARCEL AREA: 1,271,596 SQ. FT. OR 29.19 AC.
3. OWNER OF RECORD: CITY OF DOVER
   288 CENTRAL AVE.
   DOVER, NH 03820
   S.C.R.D. BOOK 225, PAGE 493
4. ZONE: COCHECO WATERFRONT DISTRICT (CWD)
   DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA	N/A
MAX. BUILDING COVERAGE[2]	75%
MIN. FRONTAGE	N/A
MIN. FRONT SETBACK	0 ft.
MIN. SIDE SETBACK	0 ft.
MIN. REAR SETBACK	0 ft.
ABUT. A STREET SETBACK	0 ft.
MAX. BUILDING HEIGHT	
PRINCIPAL BUILDING	55 ft.
OUTBUILDING	55 ft.

   [2] LOTS LOCATED IN THE COCHECO WATERFRONT DISTRICT (CWD) AND LOCATED SOUTH OF THE COCHECO RIVER MAY HAVE A MAXIMUM LOT COVERAGE OF 100% (ADDED 1-22-2003 BY ORD. NO. 35).

   ZONING INFORMATION LISTED HEREON IS BASED ON THE CITY OF DOVER ZONING ORDINANCE DATED DECEMBER 2009, REVISED MAY 2016 AS AVAILABLE ON THE TOWN/CITY WEBSITE. ADDITIONAL REGULATIONS APPLY, AND REFERENCE IS HEREBY MADE TO THE EFFECTIVE ZONING ORDINANCE. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.
5. THE PARCEL IS EXEMPT FROM THE STATE OF NH SHORELAND PROTECTION DISTRICT PER RSA 483-B:12, MARCH 4, 2009.
6. FIELD SURVEY PERFORMED BY DOUCET SURVEY, INC. DURING SEPT. 2016, APRIL, MAY & JUNE 2017 USING A TRIMBLE S6 TOTAL STATION AND A TRIMBLE R8 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
7. JURISDICTIONAL WETLANDS AND HIGHEST OBSERVABLE TIDE LINE DELINEATED BY GZA GEOENVIRONMENTAL INC. DURING AUGUST 2016 IN ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012, US ARMY CORPS OF ENGINEERS.
8. AERIAL TOPOGRAPHY WAS CONDUCTED BY EASTERN TOPOGRAPHICS FROM IMAGES TAKEN ON APRIL 17, 2017 WITH A PHOTO SCALE OF 1:3300. CONTOURS AND OBJECTS SHOWN WITHIN OBSCURED AREAS ARE APPROXIMATE AND SHOULD BE VERIFIED BEFORE USE FOR DESIGN OR CONSTRUCTION PURPOSES.
9. FLOOD HAZARD ZONE: "'X', 'AE', 0.2% ANNUAL CHANCE FLOOD HAZARD & REGULATORY FLOODWAY", PER FIRM MAP 33017C0330E, DATED 9/30/15.
10. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
11. VERTICAL DATUM IS BASED ON NAVD88 PER NHDOT DISK "D 50 RESET 1977" WITH A PUBLISHED ELEVATION OF 22.60'.
12. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 1' & 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY, INC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
13. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVABLE PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.
14. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
15. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.
16. DUE TO THE COMPLEXITY OF RESEARCHING ROAD RECORDS AS A RESULT OF INCOMPLETE, UNORGANIZED, INCONCLUSIVE, OBLITERATED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENTS OF THE ROADS AS DEPICTED HEREON ARE BASED ON RESEARCH CONDUCTED AT THE STRAFFORD COUNTY REGISTRY OF DEEDS AND DOVER CITY CLERK'S OFFICE.

    NO INFORMATION WAS FOUND RELATIVE TO THE CREATION OR WIDTH OF RIVER STREET OR WASHINGTON STREET IN THE VICINITY OF THE SUBJECT PARCEL. THE LOT LINE AS SHOWN HERON IN THE VICINITY OF RIVER STREET IS PER REFERENCE PLAN 4. MONUMENTS SHOWN ON SAID PLAN ALONG RIVER STREET WERE NOT FOUND AND PRESUMABLY DESTROYED DURING ROAD CONSTRUCTION.
17. ALL ELECTRIC, GAS, TEL. WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.
18. WATER BOUNDARIES ARE DYNAMIC IN NATURE AND ARE SUBJECT TO CHANGE DUE TO NATURAL CAUSES SUCH AS EROSION OR ACCRETION. PARCEL BOUNDARY ALONG THE EDGE OF RIVER EXTENDS TO THE MEAN HIGH TIDE LINE.
19. NO ACCESS EASEMENT WAS FOUND BENEFITING MAP 22, LOT 2.

EXISTING CONDITIONS PLAN

FOR

HORSLEY WITTEN GROUP

OF

TAX MAP 22 LOT 1

31 RIVER STREET

DOVER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	AUGUST 2017
CHECKED BY:	J.F.K.	DRAWING NO.:	4966A
JOB NO.:	4966	SHEET	1 OF 4

DOUCET SURVEY INC

Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

XR: NONE C:\Users\MTaylor\Documents\Projects\4966A_RIVER STREET, DOVER\4966A.dwg 11:07:03 Thursday, September 14, 2017 MTaylor

COCHECO STREET

MAP 24 LOT 136

MAP 24 LOT 135-A

MAP 24 LOT 135

MAP 24 LOT 134

MAP 24 LOT 133

MAP 24 LOT 137

MAP 24 LOT 138

COCHECO RIVER
(TIDAL)
'REGULATORY FLOODWAY'

6" X 6" GRAN. BND. FND.
W/ D.H. UP 7"

NH STATE PLANE (NAD 1983 / 2011)

MAP 22 LOT 42

ZONE 'AE'

ZONE 'X'

WOODEN STEPS

4" PVC INV.=4.5'

4" PVC INV.=6.0'

SNAG (DEAD TREE)

SHEET PILE WALL

1" PVC CONDUIT

SHEET PILE WALL

STONE RET. WALL

ROCK PILE

1-1/2" I.P.F. UP 8"

8" LOCUST

MW

3" CIP INV.=4.3'

4" PVC INV.=5.4'

6" CIP INV.=3.9'

12" PVC PIPE UP 3'

TBM 4966B
MAG. NAIL UP 6"
IN POLE PSNH133/12XA
ELEV.=11.82'

UNABLE TO OPEN

1502

SMH 1501
RIM ELEV.=12.8'
(1506) 24" RCP INV.=6.3'
(A) 24" RCP INV.=6.4'

SMH 1506
RIM ELEV.=13.8'
(A) 24" ASB INV.=7.2'
(1501) 24" ASB INV.=7.2'
NO FLOW, FILLED W/SILT

MAP 22 LOT 1
1,271,600 ± Sq. Ft.
29.2 ± Acres

MAP 22 LOT 2

MATCH LINE SHEET 1
MATCH LINE SHEET 2

50 0 50 100
SCALE: 1 INCH = 50 FT.

EXISTING CONDITIONS PLAN

FOR
HORSLEY WITTEN GROUP
OF
TAX MAP 22 LOT 1
31 RIVER STREET
DOVER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	AUGUST 2017
CHECKED BY:	J.F.K.	DRAWING NO.:	4966A
JOB NO.:	4966	SHEET	2 OF 4

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I:\4966_4\Civil\Mxd\Boundary\Exist Cond Plan\Exist Cond_4966A.mxd 4966A_EXIST COND_1 E (Tue, 12) 12/27/22 Thursday, September 14, 2017 - 4:41pm

MATCH LINE SHEET 1
MATCH LINE SHEET 2

YOUNG STREET

MAP 23 LOT 13

MAP 23 LOT 14

CONC. HDWL
36" RCP INV.=2.6'

24" CMP INV.=2.2'

15" HDPE INV.=5.0'

TBM 4966A
ARROW NUT ON
HYDRANT
ELEV.=16.74'

S 1242

COCHECO RIVER (TIDAL)
"REGULATORY FLOODWAY"

RIVER STREET
(PAVED PUBLIC SEE NOTE 16)

PAVED SIDEWALK

ZONE 'X'

CB 1512
RIM ELEV.=18.7'
(A) 24" HDPE INV.=13.5'
(1510) 24" HDPE INV.=13.3'

OUTLET NOT FOUND

PUMP STATION

CB 1510
RIM ELEV.=24.1'
(1512) 24" CMP INV.=20.1'
(1509) 18" HDPE INV.=20.1'

CB 1509
RIM ELEV.=25.2'
(1510) 18" HDPE INV.=21.4'
(A) 18" HDPE INV.=21.4'

18" HDPE INV.=22.5'

SNOW PILE

SNOW PILE

1" I.P.F. UP 17"

(SEE NOTE 19)

5/8" REBAR UP 6"

D 1013
M 1014

5/8" REBAR UP 3"

12" BLACK CHERRY
W/BARB WIRE

1-1/4" I.P.F. UP 12"

MAP 22 LOT 1
1,271,600 ± Sq. Ft.
29.2 ± Acres

MAP 22 LOT 42

5/8" REBAR UP 16"

MAP 22 LOT 33

1-1/4" I.P.F. UP 18"

WITNESS PIPE UP 48"
8" X 8" GRAN. BND. FND.
W/ D.H. & LEAD PLUG
UP 8"

8" X 8" GRAN. BND. FND.
W/ D.H. UP 11"

MAP 22 LOT 12

PAUL STREET

MAP 22 LOT 9

MAP 23 LOT 15

MAP 23
LOT 15

DOVER
SKATE PARK

Ⓟ 1530

S 1531

S 1529

5" PIPE FLUSH

ZONE 'X'

MISPLOTTAB3 (2011)

50 0 50 100
SCALE: 1 INCH = 50 FT.

EXISTING CONDITIONS PLAN
FOR
HORSLEY WITTEN GROUP
OF
TAX MAP 22 LOT 1
31 RIVER STREET
DOVER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	AUGUST 2017
CHECKED BY:	J.F.K.	DRAWING NO.:	4966A
JOB NO.:	4966	SHEET	3 OF 4

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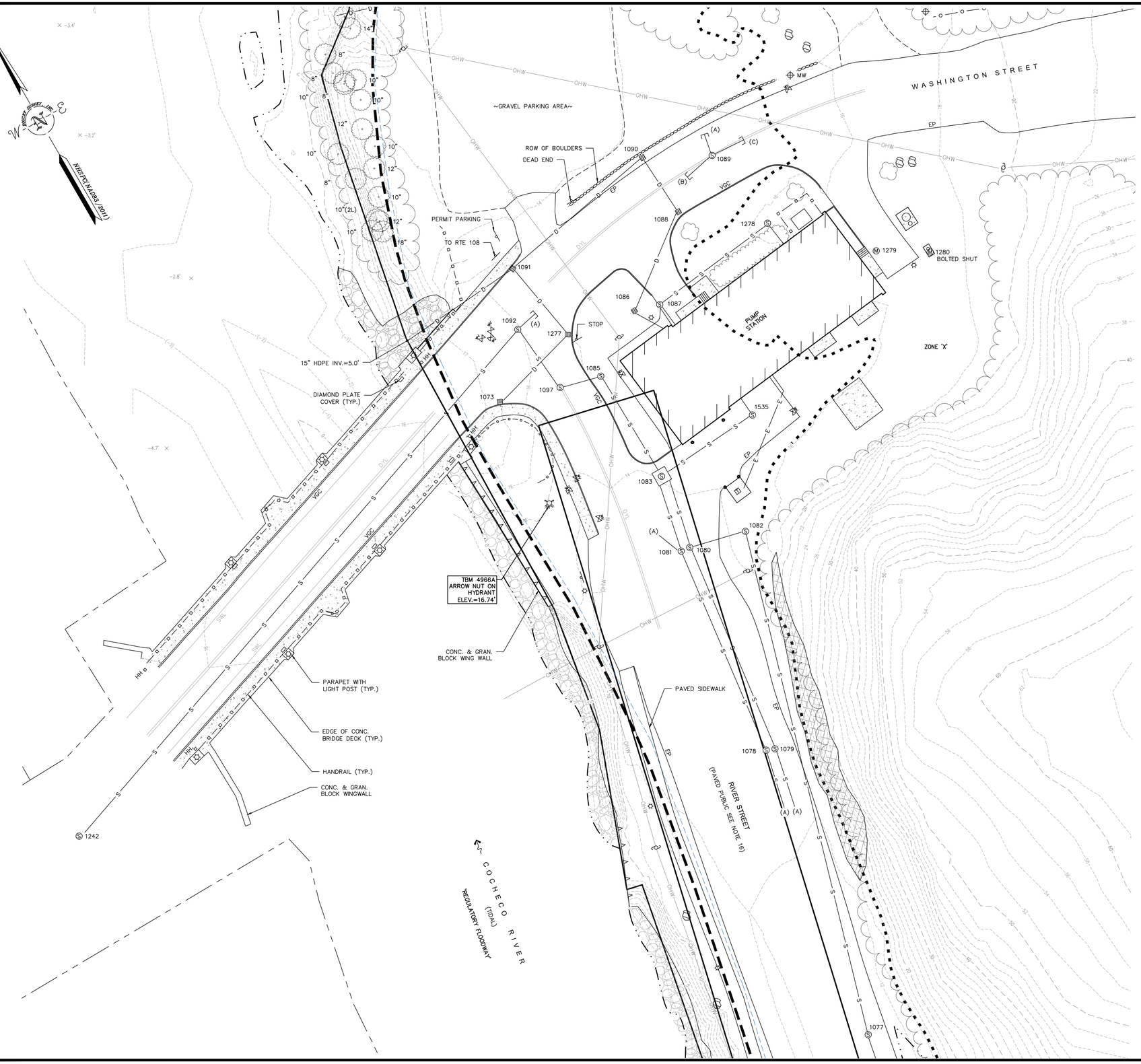

DRAINAGE STRUCTURES	SEWER STRUCTURES	
CB 1073	SMH 1077	SMH 1087
RIM ELEV.=16.7'	RIM ELEV.=11.5'	RIM ELEV.=15.2'
(1277) 12" RCP INV.=11.4'	(A) 24" ASB INV.=8.0'	
	(1082) 24" ASB INV.=8.0'	SMH 1089–APPEARS TO BE DRAIN
CB 1086		RIM ELEV.=14.5'
RIM ELEV.=13.9'	SMH 1078	(A) UNKN. INV.=9.5' (PLUGGED)
(BLDG) 12" PVC INV.=10.8'	RIM ELEV.=12.5'	(B) 12" PVC INV.=9.8'
(1088) 12" HDPE INV.=10.8'	(A) 36" RCP INV.=7.3'	(C) 12" PVC INV.=9.8'
	(1081) 36" RCP INV.=7.2'	
CB 1088		SMH 1092
RIM ELEV.=14.1'	SMH 1079	RIM ELEV.=16.1'
(1086) 12" HDPE INV.=8.8'	RIM ELEV.=12.4'	(1089) 12" PVC INV.=9.5'
(1090) 12" RCP INV.=7.6'	(A) 24" ASB INV.=7.3'	(1242) 18" PVC INV.=9.5'
	(1080) 24" RCP INV.=7.2'	(1092) 18" PVC INV.=9.2'
CB 1090		
RIM ELEV.=14.1'	SMH 1080	SMH 1097
(1088) 12" RCP INV.=7.4'	RIM ELEV.=12.9'	RIM ELEV.=15.5'
(1091) 12" RCP INV.=6.6'	(1079) 24" RCP INV.=7.0'	(1092) 18" PVC INV.=9.3'
	(1082) 24" DIP INV.=7.0'	(1085) 18" PVC INV.=9.4'
CB 1091	(1083) 24" RCP INV.=7.0'	
RIM ELEV.=15.2'		SMH 1242
(1277) 12" RCP INV.=10.8'	SMH 1081	RIM ELEV.=16.1'
(1090) 15" RCP INV.=5.7'	RIM ELEV.=13.0'	
(A) 15" HDPE (HOODED) WATER ELEV.=5.2'	(A) 15" PVC INV.=9.4'	SMH 1278
	(1078) 36" RCP INV.=7.1'	RIM ELEV.=16.3'
CB 1277	(1083) 36" RCP INV.=7.1'	RCP PIPES VISIBLE
RIM ELEV.=15.3'		UNMEASUREABLE
(1073) 12" RCP INV.=12.3'	SMH 1082	
(1091) 12" RCP INV.=12.0'	RIM ELEV.=14.4'	SMH 1529
	(1077) 24" ASB INV.=7.9'	RIM ELEV.=14.5'
DMH 1530	(1080) 24" DIP INV.=7.8'	
RIM ELEV.=13.1'		SMH 1531
	SMH 1083	RIM ELEV.=12.5'
	RIM ELEV.=13.9'	
	(1085) 18" RCP INV.=N/A RECESSED	SMH 1535
	(1080) 24" RCP INV.=7.0'	RIM ELEV.=14.7'
	(1081) 36" RCP INV.=6.8'	(1083) 42" RCP INV.=N/A RECESSED
	(1535) 42" RCP INV.=6.6'	(BLDG) UNKN. INV.=N/A RECESSED
	SMH 1085	
	RIM ELEV.=15.3'	
	(1097) 18" PVC INV.=9.5'	
	(1083) 18" RCP INV.=9.3'	

50 0 50 100

SCALE: 1 INCH = 50 FT.

EXISTING CONDITIONS PLAN

FOR

HORSLEY WITTEN GROUP

OF

TAX MAP 22 LOT 1

31 RIVER STREET

DOVER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	AUGUST 2017
CHECKED BY:	J.F.K.	DRAWING NO.:	4966A
JOB NO.:	4966	SHEET 4	OF 4

DOUCET SURVEY INC

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DWG NAME: C:\Users\Work\Horsley\Dwg\Topo\4966A_EXISTING_TOPO.dwg LAYOUT NAME: EX PLAN (3) XREFS: Thursday, September 14, 2017 - 4:41pm

GENERAL NOTES:

1. THE PROPOSED USE FOR THE SITE INCLUDES THREE (3) MIXED USE BUILDINGS, TWO (2) MULTI-FAMILY BUILDINGS AND THREE (3) SETS OF TOWNHOUSES.
2. THE PROPOSED PROJECT PARCELS ARE SHOWN AS PARCELS 1-2, 1-4, 1-5, 1-6, AND 1-7 ON MAP 22 OF THE CITY OF DOVER TAX ASSESSOR'S MAP.
3. THE PROPOSED TOTAL SUBJECT PARCELS CONTAINS 10.45 ACRES OR 455,383 SQ. FT. AREA OF LAND.
4. TITLE REFERENCE FOR THE PROJECT PARCELS IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, PLANS 12247 & 12248.
5. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM "LOT LINE REVISION PLAN", PREPARED BY DOUCET SURVEY, INC.
6. THE SUBJECT PARCEL IS LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA (FIRM PANEL NUMBER 33017C0310E, EFFECTIVE DATE: SEPTEMBER 30, 2015).
7. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITIES.
8. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
9. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
10. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
11. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY DOVER.
12. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
13. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
15. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
16. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
17. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION AND THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
18. CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE PAPER AND IN DIGITAL FORMAT (.DWG, AUTOCAD DXF, OR AN ESRI FILE) ON DISK TO THE OWNER, ENGINEER, AND/OR CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR. DIGITAL FILES SHALL ME GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
19. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
20. SEE EXISTING CONDITIONS PLANS (REFERENCE PLAN #1) FOR BENCH MARK INFORMATION.
21. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM AND SATURDAY 9 AM-4 PM. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
22. A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY AND BEFORE ISSUING A DEMOLITION PERMIT.
23. SITE SHALL BE ACCESSIBLE IN ALL WEATHER CONDITIONS AND AT ALL TIMES DURING CONSTRUCTION PER CITY OF DOVER COMMUNITY SERVICES DIRECTOR AND THE CITY OF DOVER FIRE DEPARTMENT REQUIREMENTS.
24. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. HTTPS://WWW.UNH.EDU/UNHSC/PTAPP
25. THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
26. PROPOSED PROPERTY LINES SHOWN ON PLANS ARE APPROXIMATE. FINAL SUBDIVISION PLANS TO BE PREPARED BY CITY OF DOVER.

EXISTING CONDITIONS NOTES:

1. TOPOGRAPHIC SURVEY PERFORMED BY DOUCET SURVEY, INC. DURING SEPTEMBER 2016, APRIL, MAY, & JUNE 2017. ELEVATIONS ARE BASED ON NAD88 PER NHDOT DISK "D 50 RESET 1977" WITH A PUBLISHED ELEVATION OF 22.60'.
2. WETLANDS WERE DELINEATED BY GZA GEOENVIRONMENTAL, INC. DURING AUGUST 2016 IN ACCORDANCE WITH THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL, AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012, US. ARMY CORPS OF ENGINEERS.THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. CONSERVATION AND WETLANDS DISTRICTS SHALL BE STAKED, FLAGGED, AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY.
3. TEST PITS TO REFUSAL PERFORMED BY SEVERINO TRUCKING IN JUNE OF 2019.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SAW CUT AND REMOVE PAVEMENT TWO (2) FEET OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
7. UTILITIES AND SERVICES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY DOVER STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
8. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
9. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED OR INTENDED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
10. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
11. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
12. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT MAY RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.50 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
13. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
14. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
15. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT FOR THE REMOVAL OR SALVAGE AND REUSE OF EXISTING GRANITE CURB WITHIN THE CITY RIGHT OF WAY.

SITE NOTES:

1. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
9. COORDINATE ALL OFF-SITE SITE WORK WITH OFF-SITE IMPROVEMENT PLANS PREPARED BY THE CITY OF DOVER.
10. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
11. ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
12. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
13. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
14. ALL WORK SHALL MEET THE ACCESSIBILITY STANDARDS PER RSA 155-A AND THE INTERNATIONAL BUILDING CODE (IBC), LATEST EDITION.
15. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
16. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
17. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
18. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 58, ATRICLE I, SECTION 58-2 OF THE CODE OF THE CITY OF DOVER.
19. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.
20. COCHECHO WATERFRONT DEVELOPMENT ROADWAY IMPROVEMENTS TO BE CONSTRUCTED BY CITY OF DOVER. SITE DEVELOPMENT SHALL BE COORDINATED WITH THE FINAL CITY ROADWAY IMPROVEMENT PLANS PRIOR TO CONSTRUCTION.
21. SITE TRASH WILL BE INTERNAL TO THE BUILDINGS AND BE PRIVATELY MANAGED.
22. PROPERTY MANAGEMENT WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PRIVATE SIDEWALKS, DRIVEWAYS, AND PARKING AREAS. SNOW REMOVAL WILL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF WHEN SNOW BANKS EXCEED 6 FEET IN HEIGHT.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.

2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL), UNLESS OTHERWISE SPECIFIED.
3. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
4. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
6. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
7. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
8. STORMWATER CONNECTIONS TO THE MUNICIPAL DRAINAGE SYSTEM SHALL BE VERIFIED PRIOR TO CONSTRUCTION AND COORDINATED WITH THE FINAL CITY OF DOVER ROADWAY IMPROVEMENT PLANS.

EROSION CONTROL NOTES:

1. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

1. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
   - SEWER - CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - FAIRPOINT & COMCAST
2. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
3. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.
4. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
5. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF DOVER STANDARDS.
6. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
7. THE INSTALLATION OF ANY ELECTRIC POWER, CABLE TELEVISION, AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
8. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
9. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
10. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
11. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
12. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
13. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
14. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
15. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY DOVER.
16. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY DOVER.
17. ALL SEWER PIPE WITH LESS THAN 6' OF COVER WITHIN ROADWAY LOCATIONS OR LESS THAN 4' OF COVER IN ALL CROSS-COUNTRY LOCATIONS SHALL BE INSULATED.
18. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
19. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 149-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
20. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
21. CITY OF DOVER COMMUNITY SERVICES APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
22. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED UNDER CHAPTER 109- 30 OF THE CODE OF THE CITY OF DOVER AND THE 2015 STATE BUILDING CODES.
23. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED.
24. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
25. UTILITY SERVICE CONNECTION LOCATIONS SHOWN HEREIN ARE BASED ON REFERENCE PLAN #3. UTILITY SERVICE CONNECTIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION AND COORDINATED WITH FINAL CITY OF DOVER ROADWAY IMPROVEMENTS PLANS.

REFERENCE PLANS:

1. "EXISTING CONDITIONS PLAN FOR HORSLEY WITTEN GROUP OF TAX MAP 22 LOT 1," PREPARED BY DOUCET SURVEY, INC., DATED AUGUST 2017.
2. "217425 - COCHECO WATERFRONT BLUFF," PREPARED BY SEVERINO TRUCKING CO., INC., DATED AUGUST 2019.
3. "DOVER WATERFRONT 75% PERMITTING PLANS", PREPARED BY HORSLEY WITTEN GROUP, INC., DATED MAY 2021.
4. "UTILITY IMPROVEMENTS PLAN AS-BUILTS," PREPARED BY CIVIL DESIGN ENGINEERING CONSULTANTS, LLC, DATED APRIL 2011.
5. "GENERAL PLAN AS-BUILTS," PREPARED BY THE LOUIS BERGER GROUP, INC., DATED APRIL 2011.
6. "RIVER STREET AND HENRY LAW AVE RECORD DRAWING" PREPARED BY CAMP, DRESSER, AND MCKEE INC., DATED SEPTEMBER 1987."
7. "RIVER STREET PUMP STATION UPGRADE" PREPARED BY WRIGHT-PIERCE, DATED MARCH 2009.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	OC	ON CENTER
AC	ACRES	PAD	PROPOSED AREA DRAIN
ADA	AMERICANS WITH DISABILITIES ACT	PCB	PROPOSED CATCH BASIN
AGGR	AGGREGATE	PDMH	PROPOSED DRAINAGE MANHOLE
BLDG	BUILDING	POS	PROPOSED OUTLET STRUCTURE
BC	BOTTOM OF CURB	PROP	PROPOSED
BW	BOTTOM OF WALL	PSMH	PROPOSED SEWER MANHOLE
CB	CATCH BASIN	PVC	POLYVINYL CHLORIDE
CONST	CONSTRUCT	PVMT	PAVEMENT
COORD	COORDINATE	PYD	PROPOSED YARD DRAIN
DIA	DIAMETER	R	RADIUS
DIP	DUCTILE IRON PIPE	RL	ROOF LEADER
DMH	DRAINAGE MANHOLE	ROW	RIGHT OF WAY
DWG	DRAWING	SGC	SLOPED GRANITE CURB
ELEV	ELEVATION	SF	SQUARE FEET
EP	EDGE OF PAVEMENT	STD	STANDARD
EV	ELECTRIC VEHICLE	TBR	TO BE REMOVED
FES	FLARED END SECTION	TC	TOP OF CURB
FF	FINISHED FLOOR	TW	TOP OF WALL
FGC	FLUSH GRANITE CURB	TYP	TYPICAL
HDPE	HIGH DENSITY POLYETHYLENE	UD	UNDERDRAIN
HMA	HOT MIX ASPHALT	VGC	VERTICAL GRANITE CURB
HYD	HYDRANT	W	WIDTH
ID	INSIDE DIAMETER	W/	WITH
INV	INVERT	YD	YARD DRAIN
L	LENGTH		
LF	LINEAR FEET		
MAX	MAXIMUM		
MIN	MINIMUM		
NRCS	NATURAL RESOURCES CONSERVATION SERVICE		

LEGEND

- EXISTING PROPERTY LINE
- EXISTING PROPERTY LINE TO BE REMOVED/ABANDONED
- PROPOSED PROPERTY LINE
- EXISTING CHAINLINK FENCE
- EXISTING STOCKADE FENCE
- PROPOSED FENCE
- OHW — EXISTING OVERHEAD WIRES
- POHW — PROPOSED OVERHEAD WIRES
- E — EXISTING UNDERGROUND ELECTRIC LINE
- PE — PROPOSED UNDERGROUND ELECTRIC LINE
- PE&C — PROPOSED UNDERGROUND ELECTRIC & COMMUNICATION LINE
- D — EXISTING DRAIN LINE
- XD — APPROXIMATE EXISTING DRAIN LINE
- PUD — PROPOSED UNDERDRAIN
- G — EXISTING GAS LINE
- G — PROPOSED GAS LINE
- W — EXISTING WATER LINE
- PW — PROPOSED WATER LINE
- S — EXISTING SEWER LINE
- PS — PROPOSED SEWER LINE
- XS — APPROXIMATE EXISTING SEWER LINE
- XW — APPROXIMATE EXISTING WATER LINE
- XG — APPROXIMATE EXISTING GAS LINE
- 190 — EXISTING MAJOR CONTOUR LINE
- 188 — EXISTING MINOR CONTOUR LINE
- 190 — PROPOSED CONTOUR LINE
- APPROXIMATE LIMIT OF WORK
- APPROXIMATE LIMIT OF SAWCUT
- PROPOSED PERIMETER EROSION CONTROL
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING LEDGE OUTCROP
- EXISTING PAVEMENT/CONCRETE TO BE REMOVED
- PROPOSED STANDARD DUTY PAVEMENT SECTION
- PROPOSED SNOW STORAGE AREAS
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- EXISTING UTILITY POLE & GUY WIRE
- EXISTING UTILITY POLE W/ LIGHT
- PROPOSED UTILITY POLE W/ LIGHT
- EXISTING LIGHT POLE
- PROPOSED LIGHT POLE
- EXISTING SIGN
- PROPOSED SIGN
- PROPOSED SIGN W/ BOLLARD
- EXISTING POST
- EXISTING GRANITE POST
- EXISTING PARKING PAY METER
- EXISTING BOLLARD
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING WATER GATE VALVE
- PROPOSED WATER GATE VALVE
- EXISTING WATER SHUTOFF VALVE
- PROPOSED WATER SHUTOFF VALVE
- PROPOSED THRUST BLOCK
- EXISTING GAS GATE VALVE
- PROPOSED GAS GATE VALVE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED DRAIN MANHOLE
- EXISTING MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING TELEPHONE BOX
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- EXISTING CLEANOUT
- PROPOSED CLEANOUT
- EXISTING HAND HOLE
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS SHRUB
- EXISTING DECIDUOUS BUSH
- EXISTING ROCK/BOULDER
- EXISTING BOUND FOUND
- EXISTING IRON PIPE FOUND
- PROPOSED FLOW DIRECTION/SLOPE
- 50.05 — EXISTING SPOT SHOT ELEVATION
- 50.05 — PROPOSED SPOT SHOT ELEVATION
- B-1 — APPROXIMATE BORING LOCATIONS
- PROPOSED BIKE RACKS
- PROPOSED BENCH

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 9/16/21

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

| M

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
09/16/21

0 120' 240'
SCALE: 1" = 120'

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-CS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

NEIGHBORHOOD PLAN

SCALE: AS SHOWN

G-101

Tighe&Bond

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
BRADLEE MEZQUITA
No. 08830
LICENSED
9-16-21

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
PATRICK CRIMMINS
No. 12378
LICENSED
09/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

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CHECKED:	PMC/NAH
APPROVED:	BLM

OVERALL EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101

NOTE: THIS PLAN IS PROVIDED TO REPRESENT APPROXIMATE EXISTING CONDITIONS AS PER REFERENCE PLANS #1, #2 AND #3. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUIK
Plot Date/Time: Thursday, September 16, 2021 - 11:54am By: CKRZCUIK
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APPROXIMATE 100-YR FLOOD ELEVATION

ROADWAY LAYOUT PER REFERENCE PLAN #3

"REGULATORY FLOODWAY"

RIVER STREET (PAVED PUBLIC SEE NOTE 16)

PAVED SIDEWALK

TEST PIT: TPF14
ELV.: 15.402

TEST PIT: TPF25
ELV.: 16.477

TEST PIT: TPF04
DESC.: TEST PIT REFUSAL AT -11.12 FROM GRND
ELV.: 22.932

LOCATION OF PROPOSED BUILDING (TYP)

DOVER SKATE PARK

TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF01
DESC.: TEST PIT REFUSAL AT -11.61 FROM GRND
ELV.: 20.104

TEST PIT: TPF02
DESC.: TEST PIT REFUSAL AT -7.34 FROM GRND
ELV.: 23.804

TEST PIT: TPF03
DESC.: TEST PIT REFUSAL AT -9.74 FROM GRND
ELV.: 21.759

TEST PIT: TPF05
DESC.: TEST PIT REFUSAL AT -10.10 FROM GRND
ELV.: 24.735

TEST PIT: TPF06
DESC.: TEST PIT REFUSAL AT -7.41 FROM GRND
ELV.: 24.799

EXISTING TREE LINE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF07
DESC.: TEST PIT REFUSAL AT -3.74 FROM GRND
ELV.: 26.174

EXISTING LEDGE PILE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF08M
DESC.: TEST PIT RELOCATED, REFUSAL AT -6.75 FROM GRND
ELV.: 25.251

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

CB 1510
RIM ELEV.=24.1'
(1512) 24" CMP INV.=20.1'
(1509) 18" HDPE INV.=20.1'
TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

EXISTING DRAIN LINE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

CB 1509
RIM ELEV.=25.2'
(1510) 18" HDPE INV.=21.4'
(A) 18" HDPE INV.=21.4'
TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF08
DESC.: TEST PIT, FOUND UNMARKED 8" FUSED DRAINAGE PIPE
ELV.: 24.752

TEST PIT: TPF09
DESC.: TEST PIT REFUSAL AT -7.77 FROM GRND
ELV.: 27.023

18" HDPE INV.=22.8

8" X 8" GRAN. BND. FND. W/ D.H. UP 11"

1/2" REBAR UP 18"

5/8" REBAR UP 16"

ZONE "X"

PUMP STATION

NOTE: THIS PLAN IS PROVIDED TO REPRESENT APPROXIMATE EXISTING CONDITIONS AS PER REFERENCE PLANS #1 #2 AND #3. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101.1

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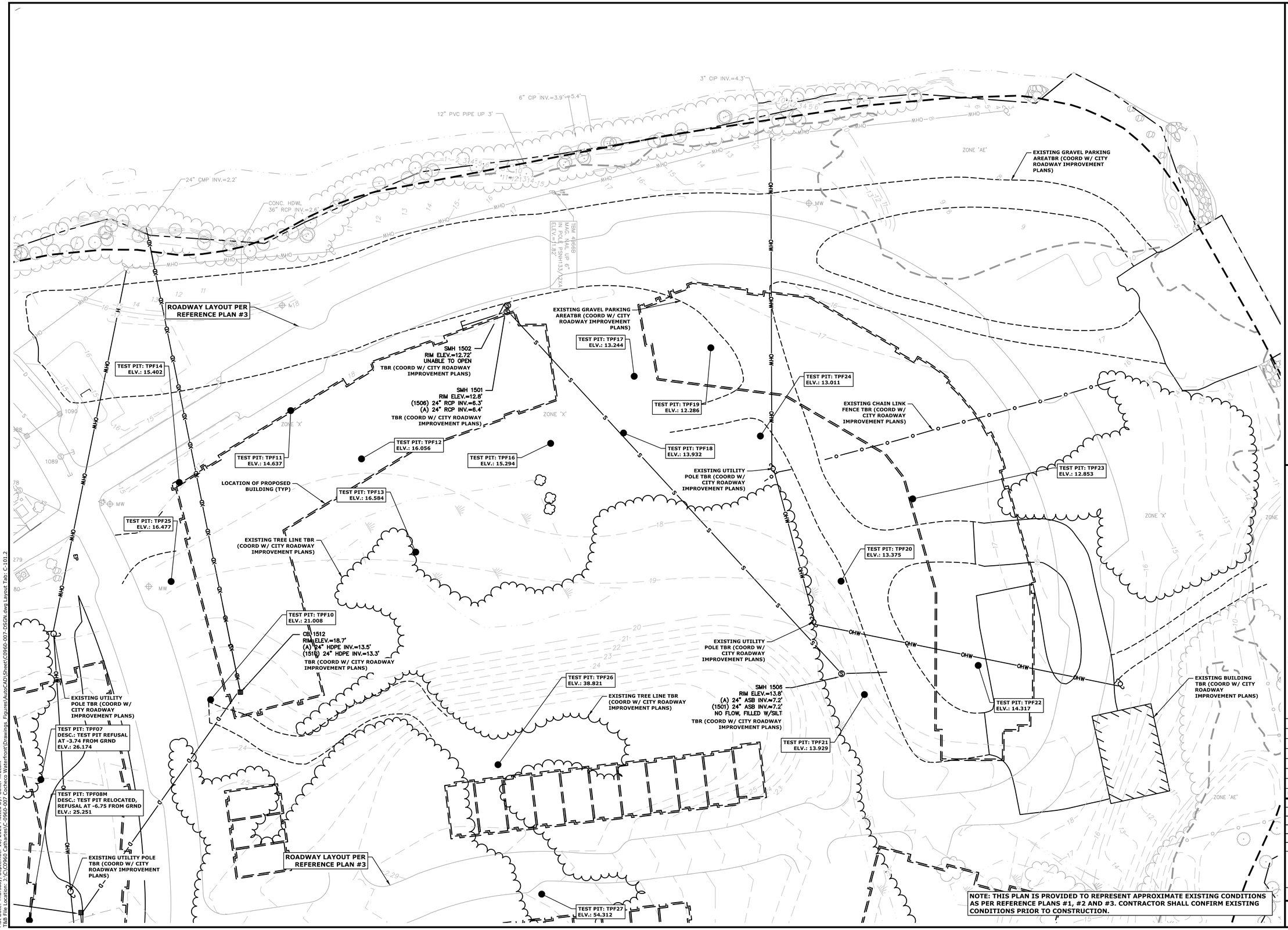
Tighe&Bond



STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
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Dover, New Hampshire

MARK	DATE	DESCRIPTION
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DATE:	July 26, 2021
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101.2

Last Save Date: September 16, 2021 11:53 AM By: CKRZCIAK
Plot Date: September 16, 2021 11:54 AM By: CKRZCIAK
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TEST PIT: TPF10
ELV.: 21.008

CB 1512
RIM ELEV.=18.7'
(A) 24" HDPE INV.=13.5'
(1501) 24" HDPE INV.=13.3'
TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF07
DESC.: TEST PIT REFUSAL AT -3.74 FROM GRND
ELV.: 26.174

TEST PIT: TPF08M
DESC.: TEST PIT RELOCATED, REFUSAL AT -6.75 FROM GRND
ELV.: 25.251

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

EXISTING DRAIN LINE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF09
DESC.: TEST PIT REFUSAL AT -7.77 FROM GRND
ELV.: 27.023

TEST PIT: TPF26
ELV.: 38.821

EXISTING TREE LINE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

ROADWAY LAYOUT PER REFERENCE PLAN #3

TEST PIT: TPF27
ELV.: 54.312

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

SMH 1506
RIM ELEV.=13.8'
(A) 24" ASB INV.=7.2'
(1501) 24" ASB INV.=7.2'
NO FLOW, FILLED W/SILT
TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF21
ELV.: 13.929

TEST PIT: TPF22
ELV.: 14.317

EXISTING BUILDING TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

LOCATION OF PROPOSED BUILDING (TYP)

ZONE 'AE'

ZONE 'X'

ZONE 'AE'

NOTE: THIS PLAN IS PROVIDED TO REPRESENT APPROXIMATE EXISTING CONDITIONS AS PER REFERENCE PLANS #1, #2 AND #3. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

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STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – BRADLEE MEZQUITA No. 08830 LICENSED
9-16-21

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – PATRICK CRIMMINS No. 12378 LICENSED
09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101.3

Last Save Date: September 16, 2021 11:57 AM By: CKOZLOWSKI
Plot Date: September 16, 2021 11:58 AM By: CKOZLOWSKI
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-101.3

SITE DATA:

LOCATION: TAX MAP 22 LOTS 1-2, 1-4, 1-5, 1-6, & 1-7 RIVER STREET DOVER, NH 03820

OWNER: CITY OF DOVER 288 CENTRAL AVE DOVER, NEW HAMPSHIRE

PROPOSED LOTS:

ZONING DISTRICT: COCHECHO WATERFRONT DISTRICT (CWD)

OVERLAY DISTRICT: N/A

ALLOWED USE: COMMERCIAL PARKING FACILITY, COMMERCIAL RECREATION, DWELLING (2 FAMILY, 3 TO 4 FAMILY, MULTI-FAMILY, AND SINGLE FAMILY), EATING AND DRINKING ESTABLISHMENTS, HOTEL/RETAIL, MARINA, OFFICE, THEATER, AND WATER-RELATED LAND USES (MARINAS, WATERBORNE PASSENGER TRANSPORTATION, WATER RELATED EDUCATION/RESOURCE CENTERS)

DIMENSIONAL REQUIREMENTS:	REQUIRED	PROVIDED
MINIMUM LOT AREA:	N/A	
(PARCEL 1-2)		±4.04 ACRES
(PARCEL 1-4)		±3.61 ACRES
(PARCEL 1-5)		±0.79 ACRES
(PARCEL 1-6)		±0.99 ACRES
(PARCEL 1-7)		±1.02 ACRES
MAXIMUM LOT COVERAGE:	100%[1]	
(PARCEL 1-2)		±24.6%
(PARCEL 1-4)		±34.6%
(PARCEL 1-5)		±29.9%
(PARCEL 1-6)		±15.3%
(PARCEL 1-7)		±33.1%
MINIMUM FRONTAGE:	N/A	
MAXIMUM BUILDING HEIGHT:	55 FT	
(PARCEL 1-2)		±56.16 FT [2] (BLDG A)
(PARCEL 1-4)		±65.42 FT [2] (BLDG C & D)
(PARCEL 1-5)		±33.00 FT
(PARCEL 1-6)		±33.00 FT
(PARCEL 1-7)		±56.58 FT [2] (BLDG F)
MAXIMUM UNIT DENSITY:	43 UNITS/ACRE	
(PARCEL 1-2)		±38.8 UNITS/ACRE 157 UNITS
(PARCEL 1-4)		±53.7 UNITS/ACRE[3] 194 UNITS
(PARCEL 1-5)		±17.7 UNITS/ACRE 14 UNITS
(PARCEL 1-6)		±9.0 UNITS/ACRE 9 UNITS
(PARCEL 1-7)		±41.3 UNITS/ACRE 42 UNITS

[1] LOTS LOCATED IN THE COCHECHO WATERFRONT DISTRICT (CWD) AND LOCATED SOUTH OF THE COCHECHO RIVER MAY HAVE A MAXIMUM LOT COVERAGE OF 100% [ADDED 1-22-2003 BY ORD. NO. 35].
[2]CONDITIONAL USE PERMIT FOR MAXIMUM BUILDING HEIGHT REQUIRED.
[3]CONDITIONAL USE PERMIT FOR MAXIMUM UNIT DENSITY REQUIRED.

RIVER STREET
PUMP STATION
PROPOSED BUILDING A
43 TOTAL GARAGE SPACES
22 SURFACE SPACES
172 TOTAL SURFACE SPACES (215 TOTAL OFF-STREET PARKING SPACES)
PROPOSED DEVELOPMENT LOT PARCEL 1-2 ± 4.04 ACRES
PROPOSED BUILDING B
STREET B
PROPOSED BUILDING C
STREET A
PROPOSED BUILDING D
PROPOSED DEVELOPMENT LOT PARCEL 1-4 ± 3.61 ACRES
178 TOTAL SURFACE SPACES (230 TOTAL OFF-STREET PARKING SPACES)
21 TOTAL GARAGE SPACES
31 TOTAL GARAGE SPACES
13 TOTAL SURFACE SPACES (27 TOTAL OFF-STREET PARKING SPACES)
PROP BLDG E
PROPOSED DEVELOPMENT LOT PARCEL 1-5 ± 0.79 ACRES
PROPOSED BUILDING E
CROSS STREET
PROPOSED BUILDING E
9 TOTAL SURFACE SPACES (18 TOTAL OFF-STREET PARKING SPACES)
PROPOSED DEVELOPMENT LOT PARCEL 1-6 ± 0.99 ACRES
PROPOSED BUILDING F
27 TOTAL GARAGE SPACES
35 TOTAL SURFACE SPACES (62 TOTAL OFF-STREET PARKING SPACES)
PROPOSED DEVELOPMENT LOT PARCEL 1-7 ± 1.02 ACRES

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
09/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
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CHECKED:	PMC/NAH
APPROVED:	BLM

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

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Plot Date: Thursday, September 16, 2021 Plotted by: CKRZCUK
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PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

PROPOSED DECORATIVE PAVERS (SEE LANDSCAPE PLANS)

END FGC BEGIN VGC W/ TIP DOWN

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP)

RIVER STREET

PAVED SIDEWALK

72.2'

PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

ROADWAY LAYOUT PER REFERENCE PLAN #3

BEGIN RETAINING WALL

MEET MATCH CONCRETE SIDEWALK (TYP, SEE SITE NOTE #20)

PROPOSED RETAINING WALL

ROADWAY LAYOUT PER REFERENCE PLAN #3

PROPOSED R1-1 "STOP" SIGN, BAR, & LEGEND

BEGIN SGC (SEE SITE NOTE #20)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

50'

EV PARKING SPACES (TYP OF 4)

END RETAINING WALL (COORD W BLDG DWGS)

PROPOSED BUILDING A
5-STORY MIXED USE BUILDING
FOOTPRINT: ±26,060 SF
97 DWELLING UNITS

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 2)

BEGIN VGC (SEE SITE NOTE #20)

EV-READY PARKING SPACES

END VGC MEET @ BLDG

PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

3 SPACES
4 SPACES
43 TOTAL GARAGE SPACES
18 SPACES
18 SPACES
EV EV EV EV
TRASH
ELEVATOR
BIKE
6 SPACES
22 SURFACE SPACES
13 SPACES
7 SPACES
2 SPACES
64'R
40'R
138'R
160'R
STREET
50'
STAIRS

PROPOSED 8' WIDE CROSSWALK (SEE DETAIL)

PROPOSED BUILDING B
4-STORY MULTI-FAMILY
FOOTPRINT: ±17,360 SF
60 DWELLING UNITS

END FGC BEGIN VGC W/ TIP DOWN

172 TOTAL SURFACE SPACES (215 TOTAL OFF-STREET PARKING SPACES)

PROPOSED DEVELOPMENT LOT PARCEL 1-2 ± 4.04 ACRES

17 SPACES
19 SPACES
16 SPACES
14 SPACES
13 SPACES
20 SPACES
11 SPACES
8 SPACES
9 SPACES
15 SPACES
ELEVATOR
TRASH
STAIRS
67'R
35'R

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" SIGNS (TYP OF 2)

BEGIN FGC END VGC W/ TIP DOWN

BEGIN VGC (SEE SITE NOTE #20)

PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND

BEGIN SGC (SEE SITE NOTE #20)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)

18 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)

APPROXIMATE ACCESS EASEMENT LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

PROPOSED LIGHT POLE BASE AND FIXTURE (TYP)

BEGIN FGC END VGC W/ TIP DOWN

END SGC W/ TIP DOWN

PROPOSED CARPORT (SEE BUILDING PLANS, TYP OF 4)

APPROXIMATE LIMIT OF LEDGE FACE

END SGC W/ TIP DOWN

APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

APPROXIMATE LIMIT OF LEDGE FACE

STREET B

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

OFF STREET PARKING REQUIREMENTS FOR PARCEL 1-2:

	REQUIRED	PROPOSED
PARKING STALL LAYOUT: STANDARD 90°	9' X 18'	9' X 18'
DRIVE AISLE WIDTH: 90° (2-WAY TRAFFIC)	22 FT	22 FT (MIN)
MAXIMUM PARKING SPACES: RESIDENTIAL (NON-GBD-G): 1.4 SPACES / UNIT +0.5 VISITOR SPACES / UNIT = 1.4 SPACES / UNIT * 157 UNITS +0.5 SPACES / UNIT * 157 UNITS =	≤299 SPACES	215 SPACES
ADA PARKING SPACES:	11 SPACES	11 SPACES
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(299 SPACES)	≤15 SPACES	18 SPACES
EV CHARGING STATION: =2%*PROVIDED PARKING SPACES =2%*(215 SPACES)	≤5 SPACES	6 SPACES

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

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SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
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Owner:
City of Dover

Dover, New Hampshire

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DATE:	July 26, 2021
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

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OFF STREET PARKING REQUIREMENTS FOR PARCEL 1-4:

	REQUIRED	PROPOSED
PARKING STALL LAYOUT: STANDARD 90°	9' X 18'	9' X 18'
DRIVE AISLE WIDTH: 90° (2-WAY TRAFFIC)	22 FT	22 FT (MIN)
MAXIMUM PARKING SPACES: RESIDENTIAL (NON-GBD-G): 1.4 SPACES / UNIT +0.5 VISITOR SPACES / UNIT = 1.4 SPACES / UNIT * 194 UNITS +0.5 SPACES / UNIT * 194 UNITS =	≤369 SPACES	230 SPACES
ADA PARKING SPACES:	12 SPACES	12 SPACES
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(369 SPACES)	≤19 SPACES	58 SPACES
EV CHARGING STATION: =2%*PROVIDED PARKING SPACES =2%*(230 SPACES)	≤5 SPACES	8 SPACES

OFF STREET PARKING REQUIREMENTS FOR PARCEL 1-5:

	REQUIRED	PROPOSED
PARKING STALL LAYOUT: STANDARD 90°	9' X 18'	9' X 18'
DRIVE AISLE WIDTH: 90° (2-WAY TRAFFIC)	22 FT	22 FT (MIN)
MAXIMUM PARKING SPACES: RESIDENTIAL (NON-GBD-G): 1.4 SPACES / UNIT +0.5 VISITOR SPACES / UNIT = 1.4 SPACES / UNIT * 14 UNITS +0.5 SPACES / UNIT * 14 UNITS =	≤27 SPACES	27 SPACES
ADA PARKING SPACES:	2 SPACES	0 SPACES[1]
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(27 SPACES)	≤2 SPACES	0 SPACES[2]

[1] THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE UTILIZED AS ADA SPACES.
[2] THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE UTILIZED AS BICYCLE STORAGE.

ROADWAY LAYOUT PER REFERENCE PLAN #3
STREET A
53'
PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)
PROPOSED LANDSCAPED PLAZA AREA (SEE LANDSCAPING PLANS)
28 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)
PROPOSED BUILDING D 5-STORY MULTI-FAMILY FOOTPRINT: ±29,050 SF 99 DWELLING UNITS
PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 4)
PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
PROPOSED BUILDING C 5-STORY MIXED USE BUILDING FOOTPRINT: ±25,480 SF 95 DWELLING UNITS
PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)
30 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)
EV PARKING SPACES (TYP OF 4)
APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)
PROPOSED DEVELOPMENT LOT PARCEL 1-4 ± 3.61 ACRES
178 TOTAL SURFACE SPACES (230 TOTAL OFF-STREET PARKING SPACES)
PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" SIGN
EV-READY PARKING SPACES
21 TOTAL GARAGE SPACES
PROPOSED RETAINING WALL
BEGIN RETAINING WALL
END RETAINING WALL
PROPOSED 8' WIDE CROSSWALK (SEE DETAIL)
TRANSITION FROM SGC TO VGC
TRANSITION FROM VGC TO SGC
END SGC MEET @ BLDG (TYP)
PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND
BEGIN SGC (SEE SITE NOTE #20)
END VGC MEET @ BLDG
KAYAK
MEET MATCH CONCRETE SIDEWALK (TYP, SEE SITE NOTE #20)
BEGIN VGC (SEE SITE NOTE #20)
EV PARKING SPACES (TYP OF 4)
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
EV-READY PARKING SPACES
31 TOTAL GARAGE SPACES
PROPOSED BUILDING B 4-STORY MULTI-FAMILY FOOTPRINT: ±17,360 SF 60 DWELLING UNITS
PROP BLDG E
PROPOSED BUILDING E
PROPOSED DEVELOPMENT LOT PARCEL 1-5 ± 0.79 ACRES
13 TOTAL SURFACE SPACES (27 TOTAL OFF-STREET PARKING SPACES)
APPROXIMATE ACCESS EASEMENT LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND
PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
TRANSITION FROM VGC TO SGC (SEE SITE NOTE #20)
BEGIN VGC (SEE SITE NOTE #20)
PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
16 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)
PROPOSED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 2)
ROADWAY LAYOUT PER REFERENCE PLAN #3
CROSS STREET
STREET
SEE SHEET G-100 FOR SITE NOTES AND LEGEND

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Tighe&Bond

BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
9-16-21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

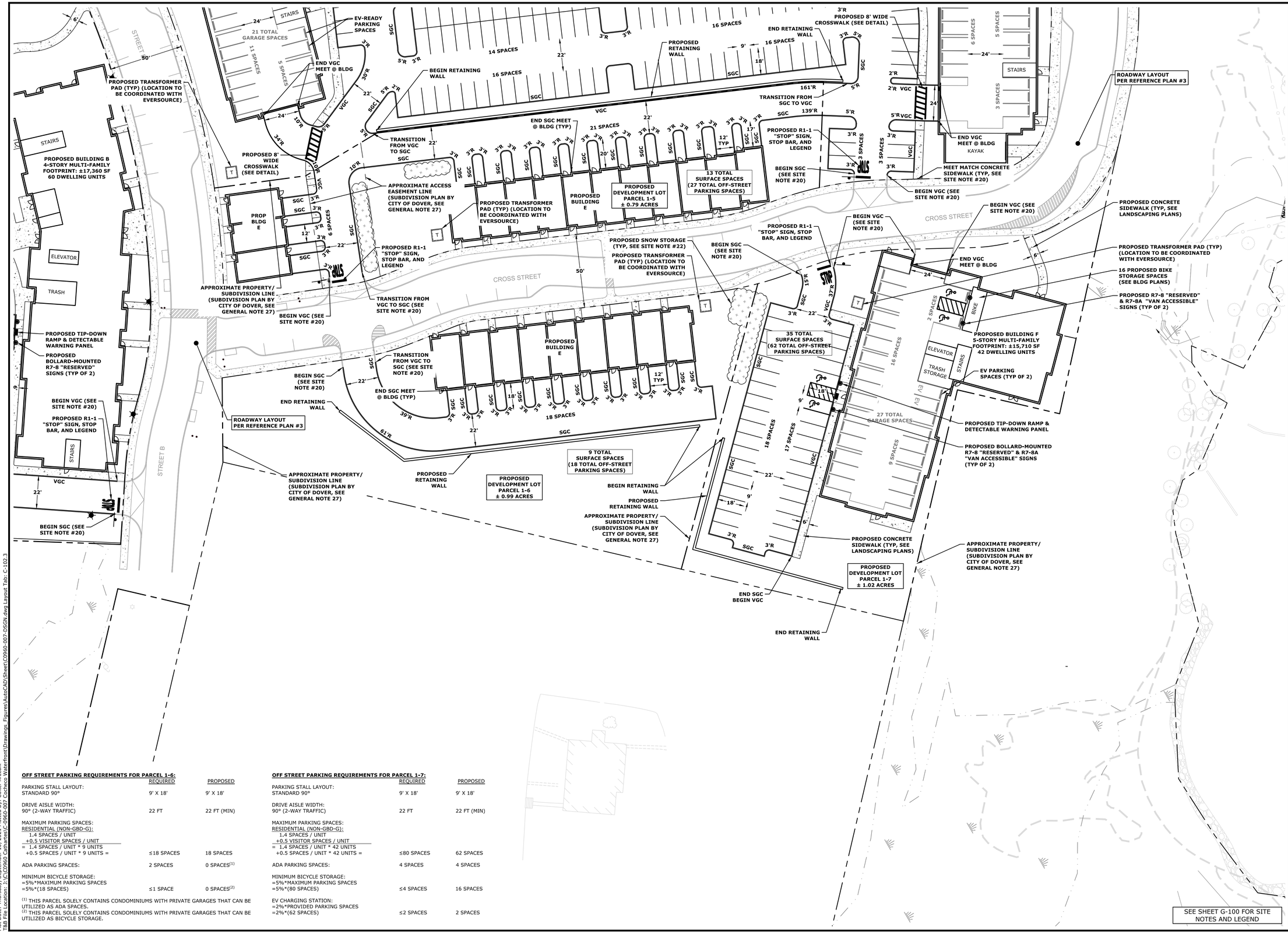
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.2

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUIK
Plot Date/Time: September 16, 2021 11:53 AM By: CKRZCUIK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-102.2



OFF STREET PARKING REQUIREMENTS FOR PARCEL 1-6:

	REQUIRED	PROPOSED
PARKING STALL LAYOUT: STANDARD 90°	9' X 18'	9' X 18'
DRIVE AISLE WIDTH: 90° (2-WAY TRAFFIC)	22 FT	22 FT (MIN)
MAXIMUM PARKING SPACES: RESIDENTIAL (NON-GBD-G): 1.4 SPACES / UNIT +0.5 VISITOR SPACES / UNIT = 1.4 SPACES / UNIT * 9 UNITS +0.5 SPACES / UNIT * 9 UNITS =	≤18 SPACES	18 SPACES
ADA PARKING SPACES:	2 SPACES	0 SPACES[1]
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(18 SPACES)	≤1 SPACE	0 SPACES[2]

[1] THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE UTILIZED AS ADA SPACES.
[2] THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE UTILIZED AS BICYCLE STORAGE.

OFF STREET PARKING REQUIREMENTS FOR PARCEL 1-7:

	REQUIRED	PROPOSED
PARKING STALL LAYOUT: STANDARD 90°	9' X 18'	9' X 18'
DRIVE AISLE WIDTH: 90° (2-WAY TRAFFIC)	22 FT	22 FT (MIN)
MAXIMUM PARKING SPACES: RESIDENTIAL (NON-GBD-G): 1.4 SPACES / UNIT +0.5 VISITOR SPACES / UNIT = 1.4 SPACES / UNIT * 42 UNITS +0.5 SPACES / UNIT * 42 UNITS =	≤80 SPACES	62 SPACES
ADA PARKING SPACES:	4 SPACES	4 SPACES
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(80 SPACES)	≤4 SPACES	16 SPACES
EV CHARGING STATION: =2%*PROVIDED PARKING SPACES =2%*(62 SPACES)	≤2 SPACES	2 SPACES

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9/16/21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.3

Last Save Date: September 16, 2021 11:53 AM By: CKOZCUIK
Plot Date: Thursday, September 16, 2021 Plotted By: CKOZCUIK
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Tighe&Bond

PROPOSED BUILDING A
GROUND F.F.:14.50
FIRST F.F.:26.50

PROPOSED BUILDING B
F.F.:25.10

PROPOSED BUILDING C
F.F.:19.75

PROPOSED BUILDING D
F.F.:19.40

PROPOSED BUILDING F
F.F.:17.00

RIVER STREET

STREET A

STREET B

CROSS STREET

PUMP STATION

SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
09/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

OVERALL GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUK
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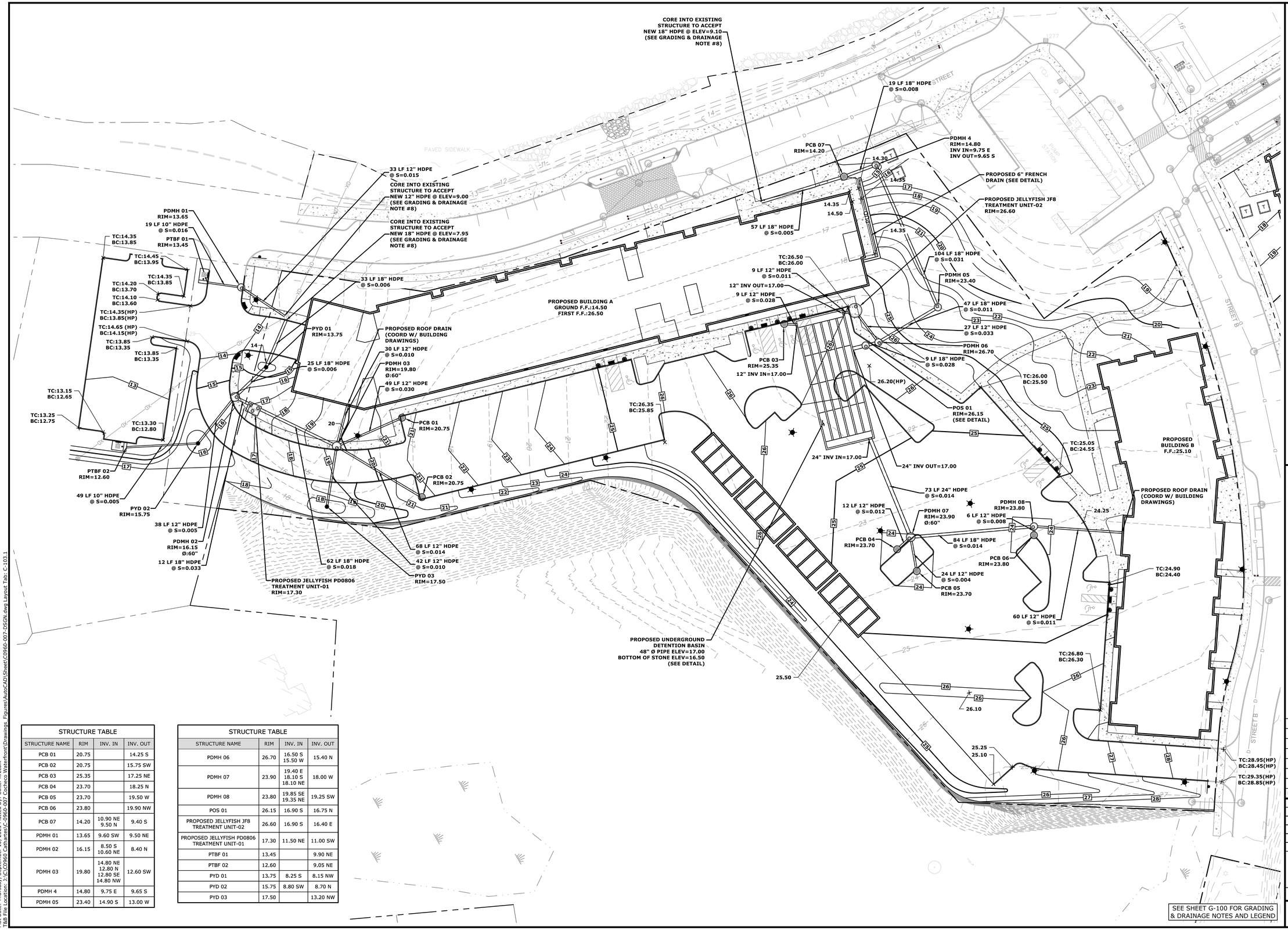

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 01	20.75		14.25 S
PCB 02	20.75		15.75 SW
PCB 03	25.35		17.25 NE
PCB 04	23.70		18.25 N
PCB 05	23.70		19.50 W
PCB 06	23.80		19.90 NW
PCB 07	14.20	10.90 NE 9.50 N	9.40 S
PDMH 01	13.65	9.60 SW	9.50 NE
PDMH 02	16.15	8.50 S 10.60 NE	8.40 N
PDMH 03	19.80	14.80 NE 12.80 N 12.80 SE 14.80 NW	12.60 SW
PDMH 4	14.80	9.75 E	9.65 S
PDMH 05	23.40	14.90 S	13.00 W

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PDMH 06	26.70	16.50 S 15.50 W	15.40 N
PDMH 07	23.90	19.40 E 18.10 S 18.10 NE	18.00 W
PDMH 08	23.80	19.85 SE 19.35 NE	19.25 SW
POS 01	26.15	16.90 S	16.75 N
PROPOSED JELLYFISH JF8 TREATMENT UNIT-02	26.60	16.90 S	16.40 E
PROPOSED JELLYFISH PD0806 TREATMENT UNIT-01	17.30	11.50 NE	11.00 SW
PTBF 01	13.45		9.90 NE
PTBF 02	12.60		9.05 NE
PYD 01	13.75	8.25 S	8.15 NW
PYD 02	15.75	8.80 SW	8.70 N
PYD 03	17.50		13.20 NW

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.1

Last Save Date: September 16, 2021 11:53 AM By: CKRZCWK
Plot Date: Thursday, September 16, 2021 By: CKRZCWK
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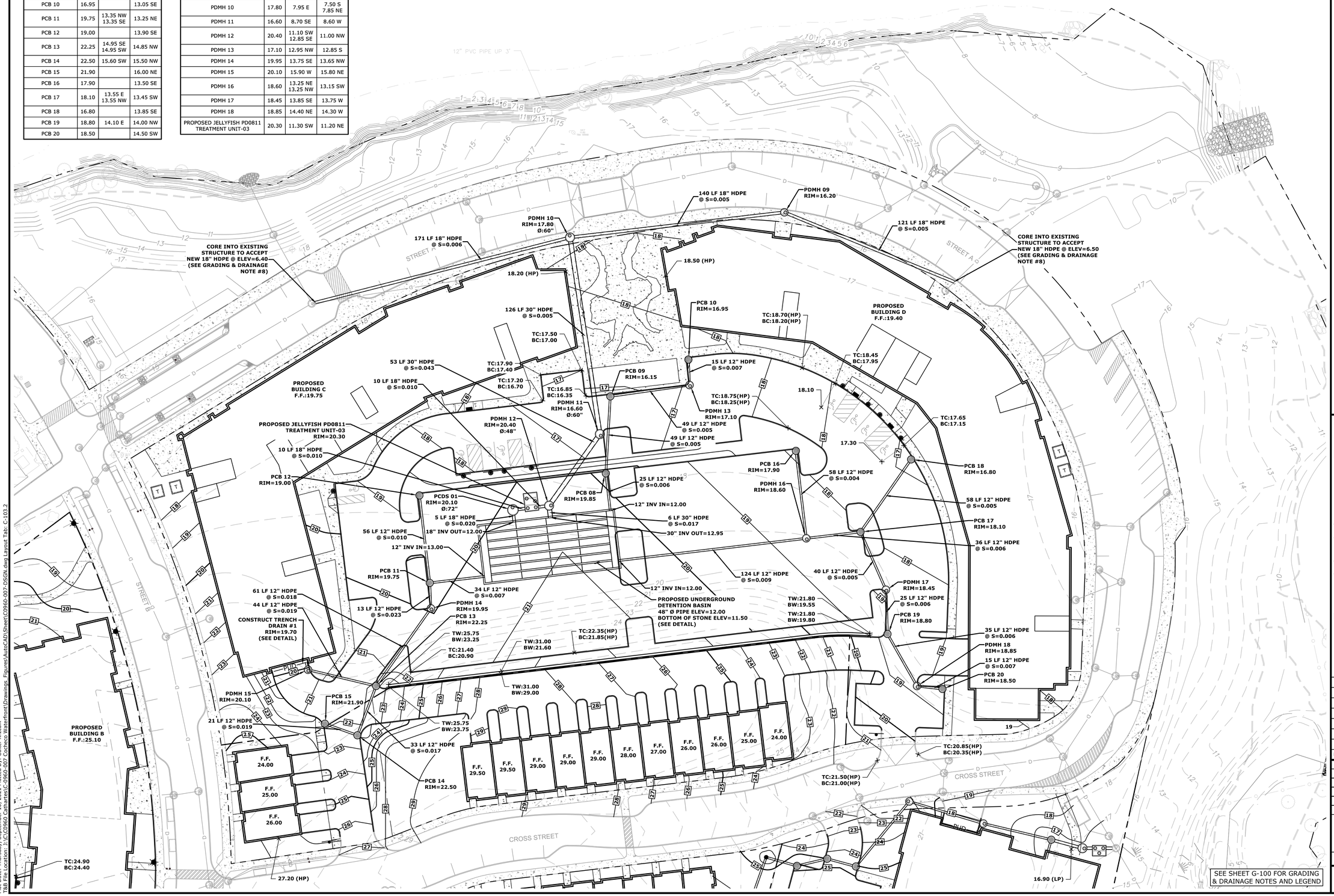
STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 08	19.85	12.25 NW	12.15 SE
PCB 09	16.15	12.60 N	12.50 SE
PCB 10	16.95		13.05 SE
PCB 11	19.75	13.35 NW 13.35 SE	13.25 NE
PCB 12	19.00		13.90 SE
PCB 13	22.25	14.95 SE 14.95 SW	14.85 NW
PCB 14	22.50	15.60 SW	15.50 NW
PCB 15	21.90		16.00 NE
PCB 16	17.90		13.50 SE
PCB 17	18.10	13.55 E 13.55 NW	13.45 SW
PCB 18	16.80		13.85 SE
PCB 19	18.80	14.10 E	14.00 NW
PCB 20	18.50		14.50 SW

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCDS 01	20.10	11.90 SE	11.40 NE
PDMH 09	16.20	7.15 SW	7.05 NE
PDMH 10	17.80	7.95 E	7.50 S 7.85 NE
PDMH 11	16.60	8.70 SE	8.60 W
PDMH 12	20.40	11.10 SW 12.85 SE	11.00 NW
PDMH 13	17.10	12.95 NW	12.85 S
PDMH 14	19.95	13.75 SE	13.65 NW
PDMH 15	20.10	15.90 W	15.80 NE
PDMH 16	18.60	13.25 NE 13.25 NW	13.15 SW
PDMH 17	18.45	13.85 SE	13.75 W
PDMH 18	18.85	14.40 NE	14.30 W
PROPOSED JELLYFISH PD0811 TREATMENT UNIT-03	20.30	11.30 SW	11.20 NE



Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9/16/21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET 0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.2

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUIK
Plot Date: September 16, 2021 11:52 AM By: CKRZCUIK
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STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 21	16.60	9.35 SW 10.00 SE	9.25 NE
PCB 22	24.60	18.55 SW	18.45 N
PCB 23	24.50	18.85 S	18.75 NE
PCB 24	24.90	19.15 SW	19.05 N
PCB 25	26.75	20.00 SE	19.90 NW
PCDS 02	12.79	8.85 SW	8.75 NE
PDMH 19	16.94	13.00 SE 9.80 SW	9.70 NE
PDMH 20	21.10	16.00 S	12.00 NE
PROPOSED JELLYFISH PD0806 TREATMENT UNIT-04	16.45	8.65 SW	8.15 NE
PTBF 03	26.95		23.40 W
PYD 04	23.70	19.45 SE	19.35 NE
PYD 05	27.60		20.25 NW

SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9/16/21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
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PROJECT NO:	C-0960-007
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APPROVED:	BLM

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.3

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUIK
Plot Date: Thursday, September 16, 2021 Plotted By: CKRZCUIK
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PROPOSED BUILDING A
GROUND F.F.:14.50
FIRST F.F.:26.50

PROPOSED BUILDING B
F.F.:25.10

PROPOSED BUILDING C
F.F.:19.75

PROPOSED BUILDING D
F.F.:19.40

PROPOSED BUILDING F
F.F.:17.00

RIVER STREET

STREET A

STREET B

CROSS STREET

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
09/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

OVERALL
UTILITY PLAN

SCALE: AS SHOWN

C-104

Last Save Date: September 16, 2021 11:53 AM By: CKIZCUK
Plot Date: Thursday, September 16, 2021 3:52 PM By: CKIZCUK
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CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ BLDG DWGS & EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=8.35

PROPOSED SANITARY SERVICE CONNECTION 15 LF 8" PVC @ S=0.010 INV @ BLDG = 8.50 (COORD W/ BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED ELECTRICAL CONDUIT (TYP, COORD W/ UTILITY COMPANIES)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED BUILDING A GROUND F.F.:14.50 FIRST F.F.:26.50

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED 6"X6"X6" TEE & THRUST BLOCK

PROPOSED 6" DI WATER LINE

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 4" DI WATER LINE

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=13.45

PROPOSED BUILDING B F.F.:25.10

PROPOSED SANITARY SERVICE CONNECTION 23 LF 8" PVC @ S = 0.006 INV @ BLDG = 13.60 (COORD W/ BLDG DWGS)

PROPOSED FIRE HYDRANT

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

RIVER STREET

STREET B

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

	EXISTING STRUCTURES	PROPOSED STRUCTURES
DRAINAGE STRUCTURES	CATCH BASIN	CATCH BASIN
	DRAIN MANHOLE	DRAIN MANHOLE
	FLARED END SECTION	FLARED END SECTION
	HEADWALL	HEADWALL
	CLEANOUT	CLEANOUT
SEWER STRUCTURES	SEWER MANHOLE	SEWER MANHOLE
	SEWER CLEANOUT	SEWER CLEANOUT
WATER STRUCTURES	HYDRANT	HYDRANT
	GATE VALVE	GATE VALVE
	WATER MANHOLE	WATER MANHOLE
	WATER BLOWOFF	WATER BLOWOFF
	WATER CURB STOP	WATER CURB STOP
	WATER METER	WATER METER
	WATER WELL	WATER WELL
	REDUCER	REDUCER
	TEE	TEE
	BEND	BEND
	CAP	CAP
	PLUG	PLUG
	THRUST BLOCK	THRUST BLOCK
	WATER SHUT OFF	WATER SHUT OFF
	WATER SERVICE	WATER SERVICE
	WATER MAIN	WATER MAIN
	SEWER MAIN	SEWER MAIN
	SEWER SERVICE	SEWER SERVICE
	SEWER FORCE MAIN	SEWER FORCE MAIN
	SEWER GRAVITY MAIN	SEWER GRAVITY MAIN
	SEWER MANHOLE	SEWER MANHOLE
	SEWER CLEANOUT	SEWER CLEANOUT
	DRAIN MANHOLE	DRAIN MANHOLE
	CATCH BASIN	CATCH BASIN
	FLARED END SECTION	FLARED END SECTION
	HEADWALL	HEADWALL
	CLEANOUT	CLEANOUT
	GAS MAIN	GAS MAIN
	GAS SERVICE	GAS SERVICE
	GAS VALVE	GAS VALVE
	ELECTRIC MANHOLE	ELECTRIC MANHOLE
	ELECTRIC VAULT	ELECTRIC VAULT
	ELECTRIC TRANSFORMER	ELECTRIC TRANSFORMER
	ELECTRIC SERVICE	ELECTRIC SERVICE
	ELECTRIC CONDUIT	ELECTRIC CONDUIT
	TELEPHONE MANHOLE	TELEPHONE MANHOLE
	TELEPHONE SERVICE	TELEPHONE SERVICE
	TELEPHONE CONDUIT	TELEPHONE CONDUIT
	COMMUNICATIONS MANHOLE	COMMUNICATIONS MANHOLE
	COMMUNICATIONS SERVICE	COMMUNICATIONS SERVICE
	COMMUNICATIONS CONDUIT	COMMUNICATIONS CONDUIT
	UTILITY POLE	UTILITY POLE
	LIGHT POLE	LIGHT POLE
	GUY WIRE	GUY WIRE
	TRAFFIC SIGNAL	TRAFFIC SIGNAL
	TRAFFIC SIGNAL BOX	TRAFFIC SIGNAL BOX
	TRAFFIC SIGNAL CONDUIT	TRAFFIC SIGNAL CONDUIT

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

UTILTY PLAN

SCALE: AS SHOWN

C-104.1

Last Save Date: September 16, 2021 11:53 AM By: CKRZCUIK
Plot Date/Time: Thursday, September 16, 2021 Plotted By: CKRZCUIK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-104.1

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=10.80

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

114 LF 8" PVC @ S=0.005

PSMH 01
RIM=18.40
INV IN=11.45 S
INV IN=11.45 E
INV OUT=11.35 W

PROPOSED SANITARY SERVICE CONNECTION
33 LF 6" PVC @ S = 0.004
INV @ BLDG = 12.45
(COORD W/ BLDG DWGS)

36 LF 8" PVC @ S=0.036

34 LF 8" PVC @ S=0.006

PSMH 03
RIM=16.50
INV IN=11.75 NE
INV OUT=11.65 W

PROPOSED SANITARY SERVICE CONNECTION
14 LF 6" PVC @ S = 0.010
INV @ BLDG = 13.05
(COORD W/ BLDG DWGS)

PROPOSED GREASE WASTE LINE
33 LF 6" PVC @ S = 0.004
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

PROPOSED GREASE TRAP 2
RIM=18.40
INV IN=12.85 NW
INV OUT=12.35 SW

PROPOSED BUILDING D
F.F.:19.40

PROPOSED GREASE WASTE LINE
16 LF 6" PVC @ S = 0.006
INV @ BLDG = 13.75
(COORD W/ BLDG DWGS)

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

15 LF 8" PVC @ S=0.015

PROPOSED BUILDING C
F.F.:19.75

PROPOSED GREASE TRAP 1
RIM=17.00
INV IN=13.65 W
INV OUT=13.15 N

PROPOSED 6"X6"X6" TEE & THRUST BLOCK

59 LF 8" PVC @ S=0.005

PSMH 02
RIM=17.00
INV IN=12.90 S
INV IN=12.90 W
INV OUT=12.80 N

PROPOSED FIRE HYDRANT

12 LF 6" PVC @ S=0.004

PSMH 05
RIM=18.40
INV IN=12.30 NE
INV IN=12.30 NW
INV OUT=12.20 SE

PSMH 04
RIM=18.40
INV IN=12.10 NE
INV IN=12.10 NW
INV OUT=12.05 SW

21 LF 8" PVC @ S=0.005

127 LF 8" PVC @ S=0.005

PSMH 06
RIM=21.50
INV IN=12.80 E
INV IN=12.80 N
INV OUT=12.70 SW

PROPOSED SANITARY SERVICE CONNECTION
10 LF 6" PVC @ S = 0.020
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED SANITARY SERVICE CONNECTION
55 LF 8" PVC @ S = 0.009
INV @ BLDG = 11.50
(COORD W/ BLDG DWGS)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CONNECT TO EXISTING ELECTRIC MANHOLE (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PSMH 10
RIM=28.80
INV OUT=22.80 NE

PSMH 09
RIM=25.80
INV IN=17.10 SW
INV OUT=14.65 SE

183 LF 8" PVC @ S=0.005

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=13.45

PROPOSED BUILDING B
F.F.:25.10

PROPOSED SANITARY SERVICE CONNECTION
23 LF 8" PVC @ S = 0.006
INV @ BLDG = 13.60
(COORD W/ BLDG DWGS)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 6" FIRE SERVICE (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

1-1" DOMESTIC SERVICE W/ CURB STOP PER UNIT

PROPOSED GAS SERVICE (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED GAS SERVICE (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6" FIRE SERVICE (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

1-1" DOMESTIC SERVICE W/ CURB STOP PER UNIT

218 LF 6" PVC @ S=0.026

PROPOSED SANITARY SERVICE (TYP, COORD W/ BLDG DWGS)

PSMH 08
RIM=23.00
INV IN=14.35 E
INV IN=14.35 NW
INV OUT=14.25 N

27 LF 8" PVC @ S=0.011

99 LF 8" PVC @ S=0.005

PSMH 07
RIM=19.40
INV IN=13.80 S
INV OUT=13.70 W

66 LF 8" PVC @ S=0.010

F.F. 24.00 | F.F. 29.50 | F.F. 29.50 | F.F. 29.00 | F.F. 29.00 | F.F. 29.00 | F.F. 28.00 | F.F. 27.00 | F.F. 26.00 | F.F. 26.00 | F.F. 25.00 | F.F. 24.00

F.F. 24.00 | F.F. 25.00 | F.F. 26.00

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 6" FIRE AND 4" DOMESTIC SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

8"SD

STREET A

STREET B

CROSS STREET

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

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STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
BRADLEE MEZQUITA
No. 08830
LICENSED
9/16/21

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
PATRICK CRIMMINS
No. 12378
LICENSED
09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

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c/o Cathartes

Owner:
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UTILTY PLAN

SCALE: AS SHOWN

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CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CONNECT TO EXISTING ELECTRIC MANHOLE (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PSMH 10
RIM=28.80
INV OUT=22.80 NE

PSMH 09
RIM=25.80
INV IN=17.10 SW
INV OUT=14.65 SE

183 LF 8" PVC
@ S=0.005

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=13.45

PROPOSED BUILDING B
F.F.:25.10

PROPOSED SANITARY SERVICE CONNECTION
23 LF 8" PVC @ S = 0.006
INV @ BLDG = 13.60
(COORD W/ BLDG DWGS)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 6" FIRE SERVICE (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

1-1" DOMESTIC SERVICE W/ CURB STOP PER UNIT

PROPOSED SANITARY SERVICE (TYP, COORD W/ BLDG DWGS)

PROPOSED GAS SERVICE (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6" FIRE SERVICE (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

218 LF 6" PVC
@ S=0.026

PROPOSED SANITARY SERVICE (TYP, COORD W/ BLDG DWGS)

1-1" DOMESTIC SERVICE W/ CURB STOP PER UNIT

PSMH 08
RIM=23.00
INV IN=14.35 E
INV IN=14.35 NW
INV OUT=14.25 N

27 LF 8" PVC
@ S=0.011

99 LF 8" PVC
@ S=0.005

PSMH 07
RIM=19.40
INV IN=13.80 S
INV OUT=13.70 W

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 6" FIRE AND 4" DOMESTIC SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

66 LF 8" PVC
@ S=0.010

PROPOSED SANITARY SERVICE CONNECTION
52 LF 8" PVC @ S = 0.008
INV @ BLDG = 15.50
(COORD W/ BLDG DWGS)

PROPOSED BUILDING F
F.F.:17.00

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

PSMH 11
RIM=18.60
INV IN=15.10 NE
INV OUT=15.00 W

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PSMH 04
RIM=24.40
INV IN=19.80 S
INV OUT=17.30 E

78 LF 4" PVC
@ S=0.014

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 4" PVC @ ELEV=16.20

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 6" PVC @ ELEV=16.95

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

173 LF 6" PVC
@ S=0.009

PROPOSED SANITARY SERVICE (TYP, COORD W/ BLDG DWGS)

73 LF 6" PVC
@ S=0.014

PSMH 12
RIM=28.15
INV IN=18.10 NE
INV OUT=18.00 NW

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PSMH 13
RIM=27.00
INV IN=19.85 NW
INV OUT=19.75 SW

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

Cochecho Waterfront Development

Applicant:
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c/o Cathartes

Owner:
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UTILTY PLAN

SCALE: AS SHOWN

C-104.3

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PHASE 1 SITE PLAN SET

JULY 26, 2021

LAST REVISED SEPTEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	09/16/2021
C-202	PHASE 1 OVERALL SITE PLAN	09/16/2021
C-202.1	PHASE 1 SITE PLAN	09/16/2021
C-202.2	PHASE 1 SITE PLAN	09/16/2021
C-203.1	PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-203.2	PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN	09/16/2021
C-204.1	PHASE 1 UTILITIES PLAN	09/16/2021
C-204.2	PHASE 1 UTILITIES PLAN	09/16/2021

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

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COMPLETE SET 8 SHEETS

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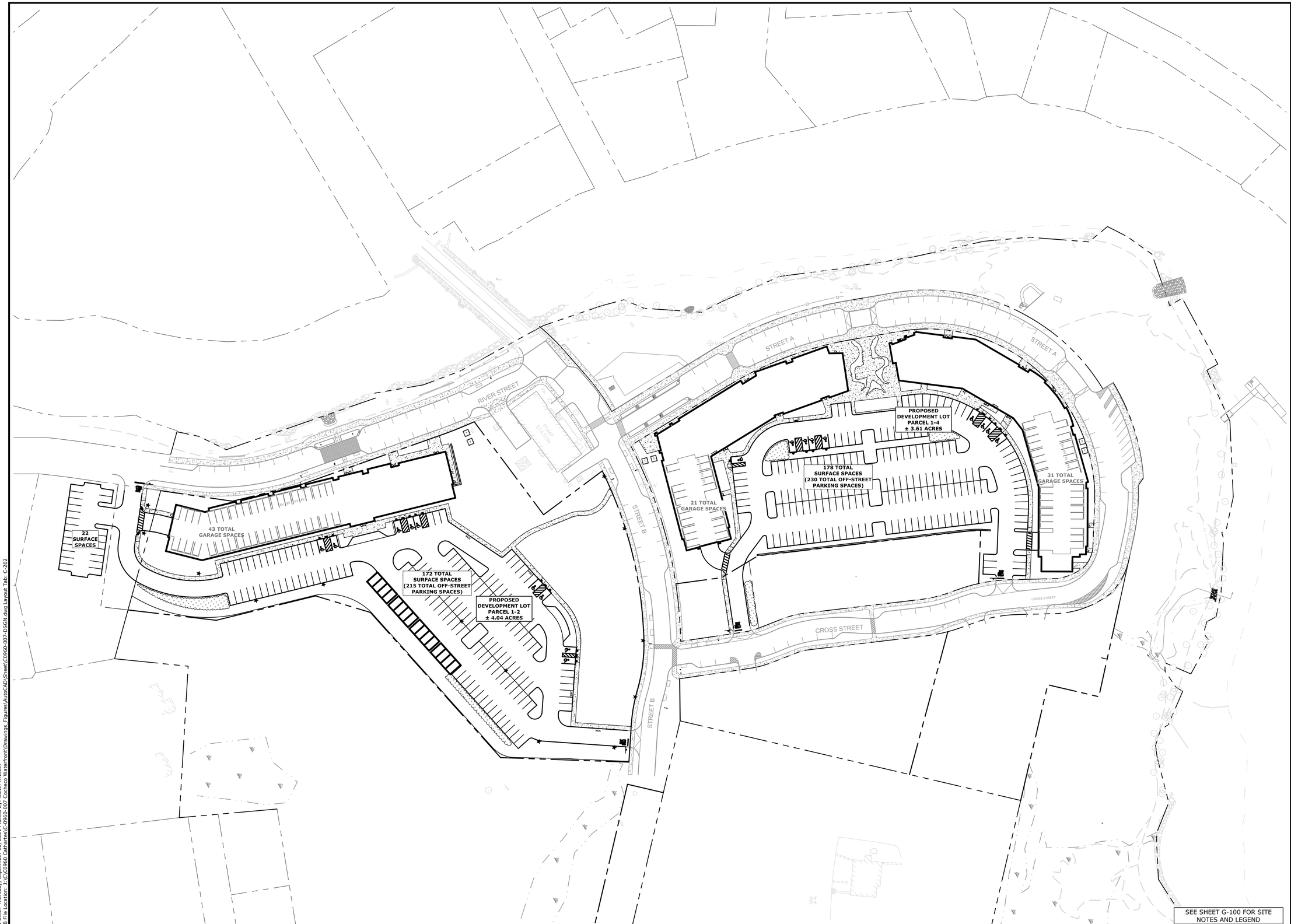

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STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – BRADLEE MEZQUITA No. 08830 LICENSED
9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
09/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

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c/o Cathartes

Owner:
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PHASE 1
OVERALL SITE PLAN

SCALE: AS SHOWN

C-202

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PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

PROPOSED DECORATIVE PAVERS (SEE LANDSCAPE PLANS)

END FGC BEGIN VGC W/ TIP DOWN

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP)

RIVER STREET

PAVED SIDEWALK

ROADWAY LAYOUT PER REFERENCE PLAN #3

PROPOSED R1-1 "STOP" SIGN, BAR, & LEGEND

BEGIN SGC (SEE SITE NOTE #20)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

50'

EV PARKING SPACES (TYP OF 4)

BEGIN VGC (SEE SITE NOTE #20)

EV-READY PARKING SPACES

END VGC MEET @ BLDG

PROPOSED BUILDING A 5-STORY MIXED USE BUILDING FOOTPRINT: ±26,060 SF 97 DWELLING UNITS

END RETAINING WALL (COORD W BLDG DWGS)

PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)

BEGIN RETAINING WALL

MEET MATCH CONCRETE SIDEWALK (TYP, SEE SITE NOTE #20)

PROPOSED RETAINING WALL

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 2)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

ROADWAY LAYOUT PER REFERENCE PLAN #3

STREET

22 SURFACE SPACES

43 TOTAL GARAGE SPACES

3 SPACES

18 SPACES

4 SPACES

BIKE

TRASH

ELEVATOR

6 SPACES

PROPOSED 8' WIDE CROSSWALK (SEE DETAIL)

17 SPACES

19 SPACES

172 TOTAL SURFACE SPACES (215 TOTAL OFF-STREET PARKING SPACES)

PROPOSED DEVELOPMENT LOT PARCEL 1-2 ± 4.04 ACRES

PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

END FGC BEGIN VGC W/ TIP DOWN

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" SIGNS (TYP OF 2)

BEGIN FGC END VGC W/ TIP DOWN

BEGIN VGC (SEE SITE NOTE #20)

PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND

STREET B

BEGIN SGC (SEE SITE NOTE #20)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

APPROXIMATE ACCESS EASEMENT LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

18 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)

PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)

PROPOSED LIGHT POLE BASE AND FIXTURE (TYP)

BEGIN FGC END VGC W/ TIP DOWN

END SGC W/ TIP DOWN

PROPOSED CARPORT (SEE BUILDING PLANS, TYP OF 4)

APPROXIMATE LIMIT OF LEDGE FACE

END SGC W/ TIP DOWN

APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

APPROXIMATE LIMIT OF LEDGE FACE

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

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PHASE 1
SITE PLAN

SCALE: AS SHOWN

C-202.1

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SCALE IN FEET 0 30' 60'
GRAPHIC SCALE

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PHASE 1
SITE PLAN

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SEE SHEET G-100 FOR SITE NOTES AND LEGEND

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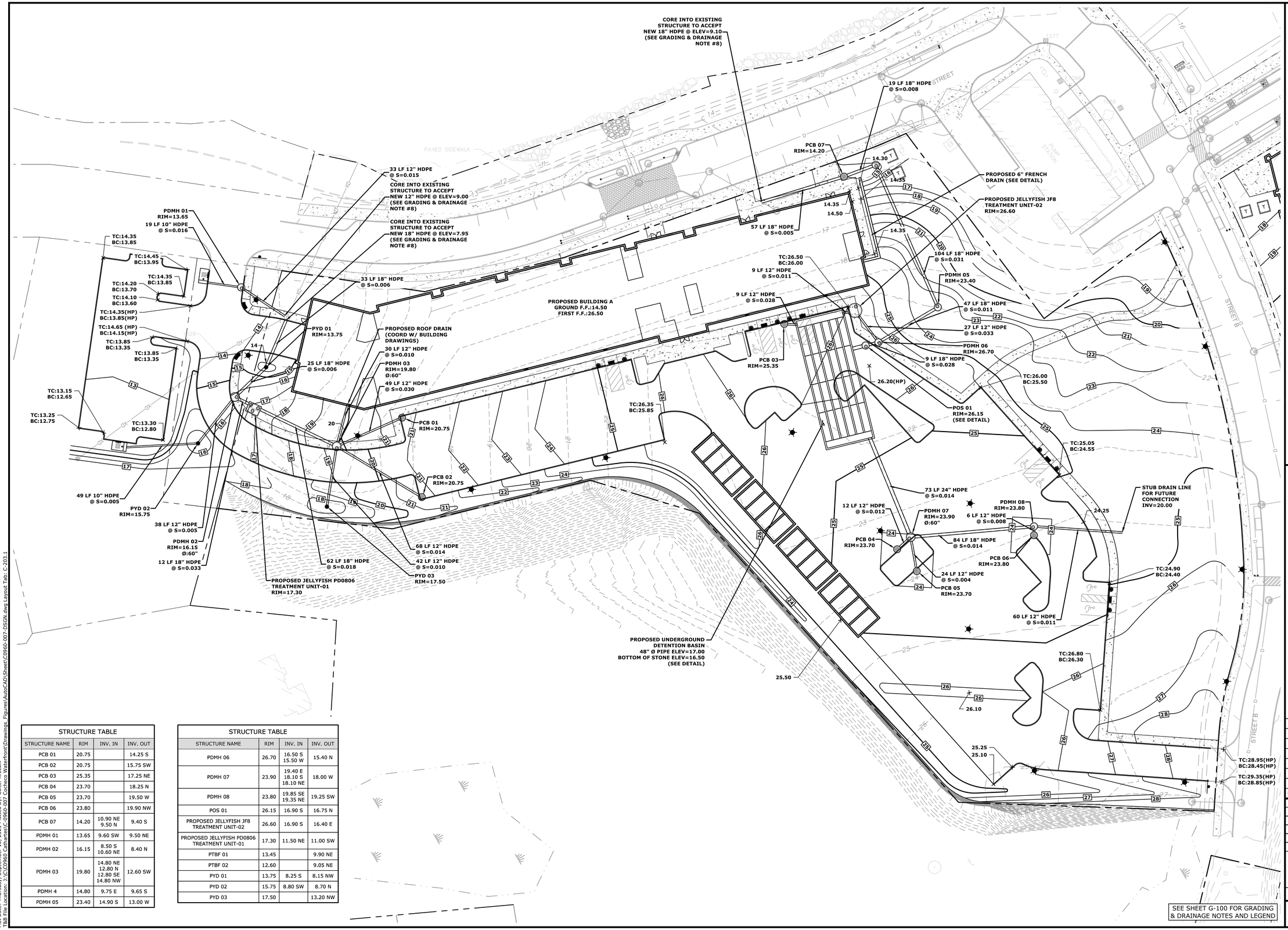

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 01	20.75		14.25 S
PCB 02	20.75		15.75 SW
PCB 03	25.35		17.25 NE
PCB 04	23.70		18.25 N
PCB 05	23.70		19.50 W
PCB 06	23.80		19.90 NW
PCB 07	14.20	10.90 NE 9.50 N	9.40 S
PDMH 01	13.65	9.60 SW	9.50 NE
PDMH 02	16.15	8.50 S 10.60 NE	8.40 N
PDMH 03	19.80	14.80 NE 12.80 N 12.80 SE 14.80 NW	12.60 SW
PDMH 4	14.80	9.75 E	9.65 S
PDMH 05	23.40	14.90 S	13.00 W

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PDMH 06	26.70	16.50 S 15.50 W	15.40 N
PDMH 07	23.90	19.40 E 18.10 S 18.10 NE	18.00 W
PDMH 08	23.80	19.85 SE 19.35 NE	19.25 SW
POS 01	26.15	16.90 S	16.75 N
PROPOSED JELLYFISH JF8 TREATMENT UNIT-02	26.60	16.90 S	16.40 E
PROPOSED JELLYFISH PD0806 TREATMENT UNIT-01	17.30	11.50 NE	11.00 SW
PTBF 01	13.45		9.90 NE
PTBF 02	12.60		9.05 NE
PYD 01	13.75	8.25 S	8.15 NW
PYD 02	15.75	8.80 SW	8.70 N
PYD 03	17.50		13.20 NW

SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

SCALE IN FEET 0 30' 60'

GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-203.1

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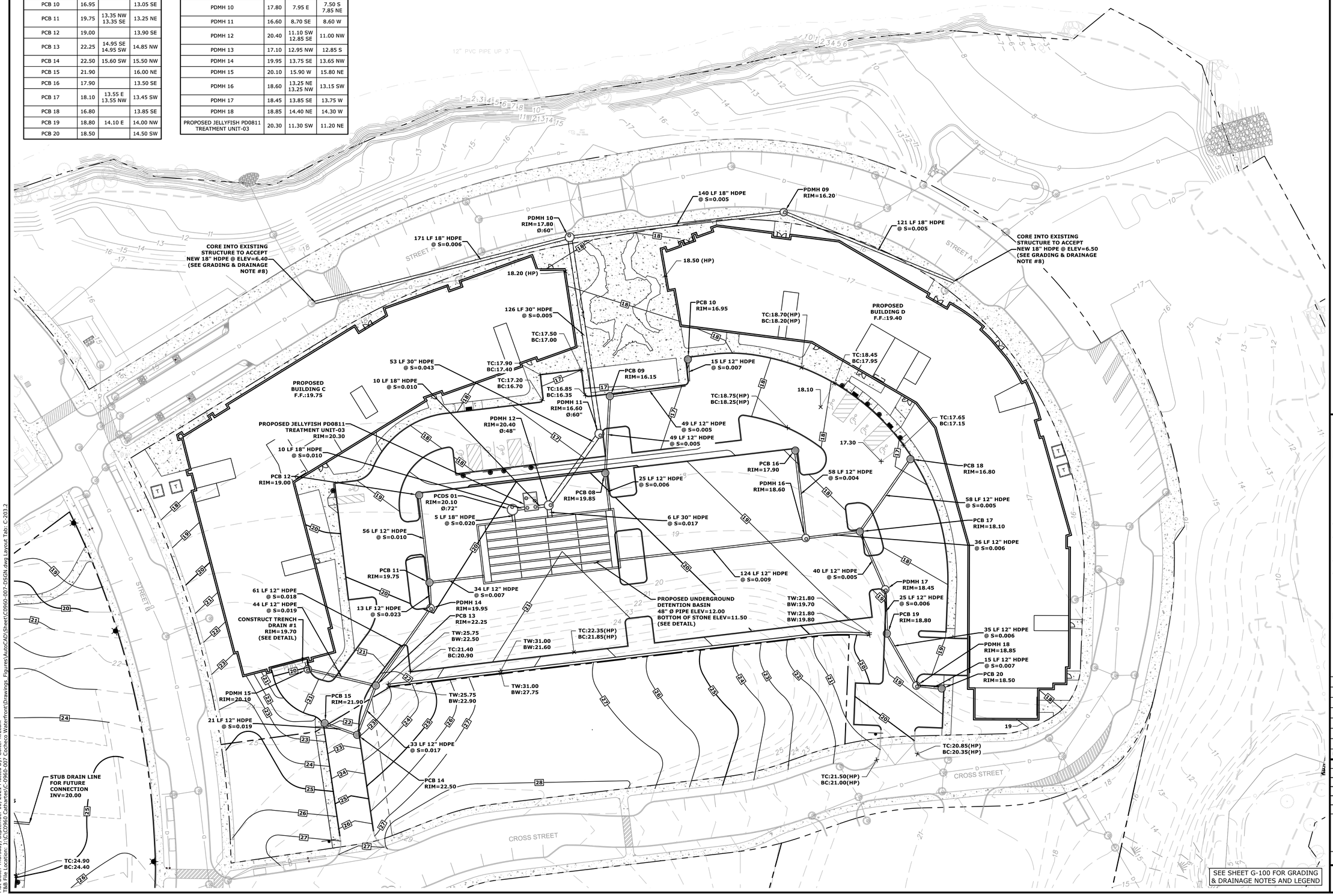
STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 08	19.85	12.25 NW	12.15 SE
PCB 09	16.15	12.60 N	12.50 SE
PCB 10	16.95		13.05 SE
PCB 11	19.75	13.35 NW 13.35 SE	13.25 NE
PCB 12	19.00		13.90 SE
PCB 13	22.25	14.95 SE 14.95 SW	14.85 NW
PCB 14	22.50	15.60 SW	15.50 NW
PCB 15	21.90		16.00 NE
PCB 16	17.90		13.50 SE
PCB 17	18.10	13.55 E 13.55 NW	13.45 SW
PCB 18	16.80		13.85 SE
PCB 19	18.80	14.10 E	14.00 NW
PCB 20	18.50		14.50 SW

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCDS 01	20.10	11.90 SE	11.40 NE
PDMH 09	16.20	7.15 SW	7.05 NE
PDMH 10	17.80	7.95 E	7.50 S 7.85 NE
PDMH 11	16.60	8.70 SE	8.60 W
PDMH 12	20.40	11.10 SW 12.85 SE	11.00 NW
PDMH 13	17.10	12.95 NW	12.85 S
PDMH 14	19.95	13.75 SE	13.65 NW
PDMH 15	20.10	15.90 W	15.80 NE
PDMH 16	18.60	13.25 NE 13.25 NW	13.15 SW
PDMH 17	18.45	13.85 SE	13.75 W
PDMH 18	18.85	14.40 NE	14.30 W
PROPOSED JELLYFISH PD0811 TREATMENT UNIT-03	20.30	11.30 SW	11.20 NE



SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
9-16-21

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09/16/21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

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APPROVED:	BLM

PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-203.2

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CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ BLDG DWGS & EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=8.35

PROPOSED SANITARY SERVICE CONNECTION 15 LF 8" PVC @ S=0.010 INV @ BLDG = 8.50 (COORD W/ BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED ELECTRICAL CONDUIT (TYP, COORD W/ UTILITY COMPANIES)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED BUILDING A
GROUND F.F.:14.50
FIRST F.F.:26.50

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED 6"X6"X6" TEE & THRUST BLOCK

PROPOSED 6" DI WATER LINE

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

STUB 6" DI WATER LINE FOR FUTURE CONNECTION

PROPOSED FIRE HYDRANT

RIVER STREET

D STREET B

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
9-16-21

STATE OF NEW HAMPSHIRE
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SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

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PHASE 1
UTILITIES PLAN

SCALE: AS SHOWN

C-204.1

DRAINAGE STRUCTURES	SEWER STRUCTURES
CB CATCH BASIN	MH SEWER MANHOLE
DMH DRAIN MANHOLE	CO SEWER CLEANOUT
FES FLARED END SECTION	
HW HEADWALL	
SD DRAIN MANHOLE	

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CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=10.80

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

114 LF 8" PVC @ S=0.005

PSMH 01
RIM=18.40
INV IN=11.45 S
INV IN=11.45 E
INV OUT=11.35 W

34 LF 8" PVC @ S=0.006

PSMH 03
RIM=16.50
INV IN=11.75 NE
INV OUT=11.65 W

36 LF 8" PVC @ S=0.036

PROPOSED SANITARY SERVICE CONNECTION
14 LF 6" PVC @ S = 0.010
INV @ BLDG = 13.05
(COORD W/ BLDG DWGS)

PROPOSED GREASE WASTE LINE
16 LF 6" PVC @ S = 0.006
INV @ BLDG = 13.75
(COORD W/ BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED BUILDING C
F.F.:19.75

15 LF 8" PVC @ S=0.015

PROPOSED GREASE TRAP 1
RIM=17.00
INV IN=13.65 W
INV OUT=13.15 N

PSMH 02
RIM=17.00
INV IN=12.90 S
INV IN=12.90 W
INV OUT=12.80 N

59 LF 8" PVC @ S=0.005

PROPOSED FIRE HYDRANT

12 LF 6" PVC @ S=0.004

PSMH 05
RIM=18.40
INV IN=12.30 NE
INV IN=12.30 NW
INV OUT=12.20 SE

21 LF 8" PVC @ S=0.005

PSMH 04
RIM=18.40
INV IN=12.10 NE
INV IN=12.10 NW
INV OUT=12.05 SW

PROPOSED SANITARY SERVICE CONNECTION
33 LF 6" PVC @ S = 0.004
INV @ BLDG = 12.45
(COORD W/ BLDG DWGS)

PROPOSED GREASE WASTE LINE
33 LF 6" PVC @ S = 0.004
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

PROPOSED GREASE TRAP 2
RIM=18.40
INV IN=12.85 NW
INV OUT=12.35 SW

PROPOSED BUILDING D
F.F.:19.40

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED 6"X6"X6" TEE & THRUST BLOCK

127 LF 8" PVC @ S=0.005

PSMH 06
RIM=21.50
INV IN=12.80 E
INV IN=12.80 N
INV OUT=12.70 SW

PROPOSED SANITARY SERVICE CONNECTION
10 LF 6" PVC @ S = 0.020
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

183 LF 8" PVC @ S=0.005

PSMH 07
RIM=19.40
INV IN=13.80 S
INV OUT=13.70 W

99 LF 8" PVC @ S=0.005

PSMH 08
RIM=23.00
INV OUT=14.25

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED 6" FIRE AND 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED SANITARY SERVICE CONNECTION
55 LF 8" PVC @ S = 0.009
INV @ BLDG = 11.50
(COORD W/ BLDG DWGS)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

STREET A

STREET B

CROSS STREET

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
BRADLEE MEZQUITA
No. 08830
LICENSED
9/16/21

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
PATRICK CRIMMINS
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SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

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PHASE 1
UTILITY PLAN

SCALE: AS SHOWN

C-204.2

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DETAILS PLAN SET

JULY 26, 2021

LAST REVISED SEPTEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	09/16/2021
C-501	EROSION CONTROL NOTES & DETAILS SHEET	09/16/2021
C-502	DETAILS SHEET	09/16/2021
C-503	DETAILS SHEET	09/16/2021
C-504	DETAILS SHEET	09/16/2021
C-505	DETAILS SHEET	09/16/2021
C-506	DETAILS SHEET	09/16/2021
C-507	DETAILS SHEET	09/16/2021
C-508	DETAILS SHEET	09/16/2021

STATE OF NEW HAMPSHIRE
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COMPLETE SET 9 SHEETS

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GENERAL PROJECT INFORMATION

PROJECT OWNER: CITY OF DOVER
288 CENTRAL AVE
DOVER, NEW HAMPSHIRE 03820
PROJECT NAME: COCHECHO WATERFRONT DEVELOPMENT
PROJECT ADDRESS: RIVER STREET
DOVER, NEW HAMPSHIRE 03820
PROJECT MAP / LOT: MAP 22 / LOT 1-2, 1-4, 1-5, 1-6, & 1-7
PROJECT LATITUDE: 43°11'41.4"N
PROJECT LONGITUDE: 70°52'09.5"W

PROJECT DESCRIPTION

THE PROPOSED PROJECT CONSISTS OF THREE (3) MIXED USE BUILDINGS, TWO (2) MULTI-FAMILY BUILDINGS AND THREE (3) SETS OF TOWN HOUSES ALONG RIVER STREET AND WASHINGTON STREET, INCLUDING ASSOCIATED SITE IMPROVEMENTS.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 10.43 ACRES.

SOIL CHARACTERISTICS

BASED ON THE NRCS WEB SOIL SURVEY FOR STRAFFORD COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF BUXTON AND SUFFIELD SILT LOAM SOILS WHICH HAVE A SLOW INFILTRATION RATE WHEN THOROUGHLY WET. THESE SOILS HAVE A HYDROLOGIC SOIL GROUP RATING OF C/D.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND FLOW TO A CLOSED DRAINAGE SYSTEM THAT ULTIMATELY FLOWS TO THE COCHECHO RIVER. THE COCHECHO RIVER HAS BEEN LISTED AS IMPAIRED ACCORDING TO NHDES 2012 303(D) LIST, WATERBODY ID: NHEST600030608-01.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. BUILDING DEMOLITION AND SITE FEATURE DEMOLITION.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - DISPOSAL OF SEDIMENT SPOIL, STUMP AND OTHER SOLID WASTE
   - CONTROL OF DUST
   - CONSTRUCTION OF ACCESS
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE. DISTURBED AREAS SHALL NOT EXCEED 5 ACRES AT ANY ONE TIME BEFORE BEING STABILIZED. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
2. THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS.
   A. THE COMMUNITY SERVICES DEPARTMENT SHALL BE NOTIFIED 24-HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION. THESE INSPECTIONS SHALL BE COMPLETED DURING NORMAL WORKING HOURS.
3. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALE, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
5. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
TALL FESCUE	15 LBS/ACRE
CREEPING RED FESCUE	10 LBS/ACRE
BIRDSFOOT TREFOIL	8 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.

3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      i. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPTMENT/VEHICAL FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

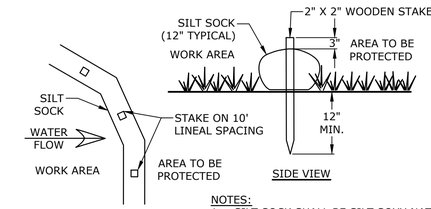
THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE [CONTRACTOR]. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:

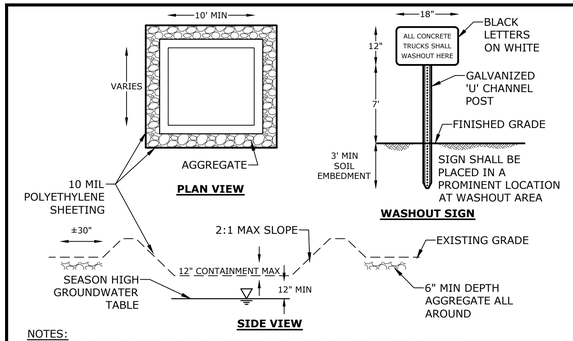
1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE [CONTRACTOR] AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, THE CONTRACTOR, AND THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT;
3. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
4. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

BLASTING NOTES:

1. CONTRACTOR SHALL CONTACT THE NHDES PRIOR TO COMMENCING ANY BLASTING ACTIVITIES
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT:
   A. A BLASTING PLAN THAT IDENTIFIES:
      a. WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
      b. THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
      c. SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.
3. IF MORE THAN 5000 CUBIC YARDS OF BLAST ROCK WILL BE GENERATED AND THERE ARE ONE OR MORE PUBLIC DRINKING WATER WELLS WITHIN 2000 FEET OF THE BLASTING ACTIVITIES, A PLAN TO MONITOR GROUNDWATER TO DETECT ANY CONTAMINATION IN SUFFICIENT TIME TO PROTECT THE WATER SUPPLY WELLS SHALL BE PROVIDED TO THE NHDES. THE GROUNDWATER MONITORING PLAN SHALL INCLUDE:
   A. MONITORING FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA:
      a. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY THE NHDES.
   B. THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
      a. LOADING PRACTICES - THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
         i. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS;
         ii. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
         iii. SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
         iv. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
         v. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT;
         vi. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
      b. EXPLOSIVE SELECTION - THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
         i. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION;
         ii. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER
      c. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
      d. MUCK PILES MANAGEMENT - MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
         i. REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE;
         ii. MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
   C. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT DURING BLASTING OPERATIONS. THE MEASURES TO PREVENT SUCH RELEASES SHALL BE DETAILED IN THE GROUNDWATER MONITORING REPORT AND COMPLY WITH THE MEASURES AND BEST MANAGEMENT PRACTICES LISTED ON THIS SHEET.

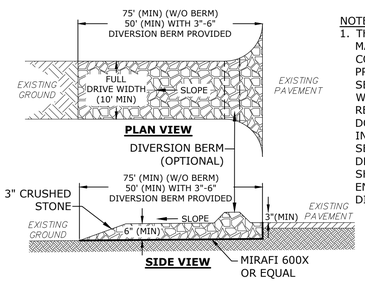


NOTES:
1. SILT SOCK SHALL BE SILT SOXX NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER



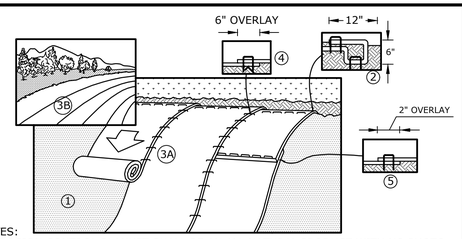
NOTES:
1. CONTAINMENT SHALL BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT SHALL BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREAS SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY, REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA
NO SCALE



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT
NO SCALE

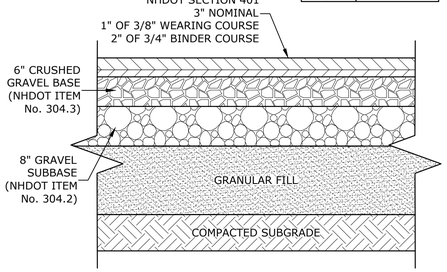


NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL. THE LENGTH OF STAKES SHALL BE BASED OFF OF THE MANUFACTURERS RECOMMENDATION.
3. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, COMPOST AND SEED.
4. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAKES IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAKING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAKES ACROSS THE WIDTH OF THE BLANKET.
5. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN ON THE MANUFACTURERS PATTERN GUIDE.

EROSION CONTROL BLANKET
NO SCALE

NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

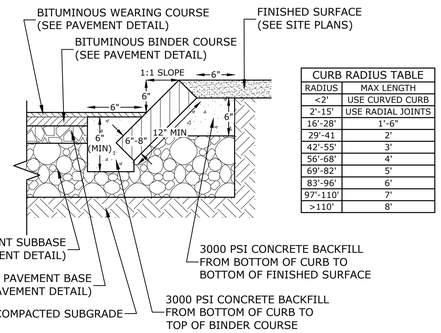
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

TYPICAL PAVEMENT SECTION
NO SCALE

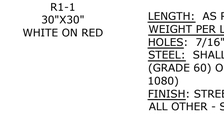
Tighe&Bond



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE

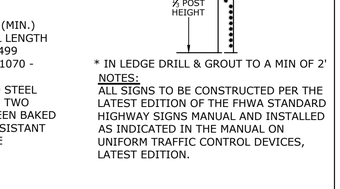


R5-1
30"X30"
WHITE ON RED

R7-8
12"X18"
BLUE AND GREEN ON WHITE

R1-1
30"X30"
WHITE ON RED

R7-8A
6"X12"
BLUE AND GREEN ON WHITE

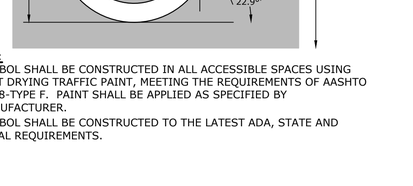


LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 7/16" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: STREET SIGNS - GALVANIZED STEEL ALL OTHER - SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

* IN LEDGE DRILL & GROUT TO A MIN OF 2'

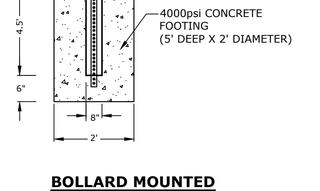
NOTES:
ALL SIGNS TO BE CONSTRUCTED PER THE LATEST EDITION OF THE FHWA STANDARD HIGHWAY SIGNS MANUAL AND INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN LEGEND & SIGN POST
NO SCALE

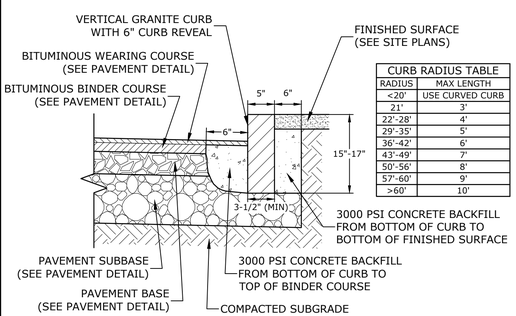


NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL
NO SCALE



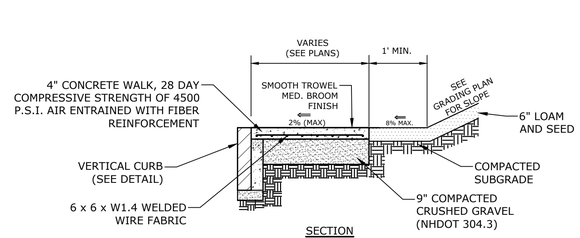
BOLLARD MOUNTED SIGN DETAIL
NO SCALE



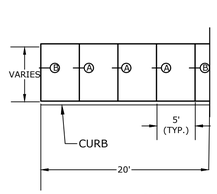
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

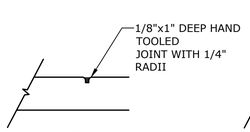
VERTICAL GRANITE CURB
NO SCALE



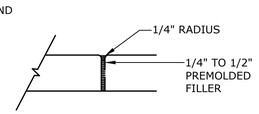
SECTION



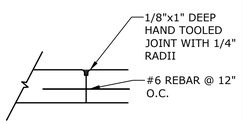
PLAN



CONTROL JOINT A



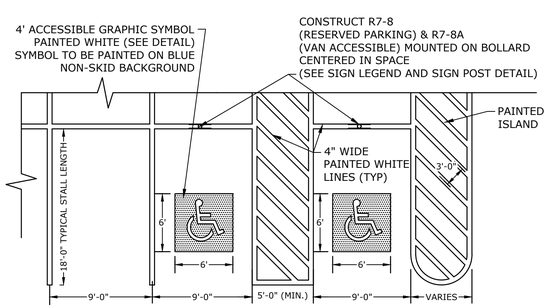
EXPANSION JOINT B



CONSTRUCTION JOINT

NOTES:
1. SIDEWALK SHALL BE CONSTRUCTED TO CITY OF DOVER STANDARDS

CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE



NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

PARKING STALL/PAINTED ISLAND STRIPING
NO SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

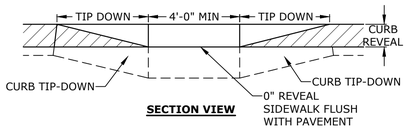
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

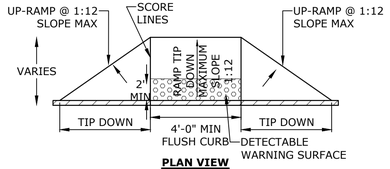
DETAILS SHEET

SCALE: AS SHOWN

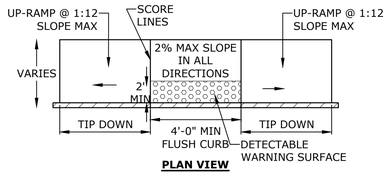
C-502



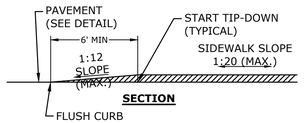
SECTION VIEW



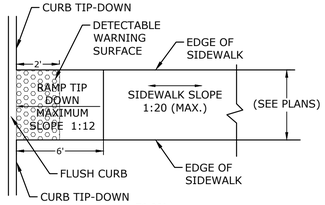
PLAN VIEW



PLAN VIEW



SECTION

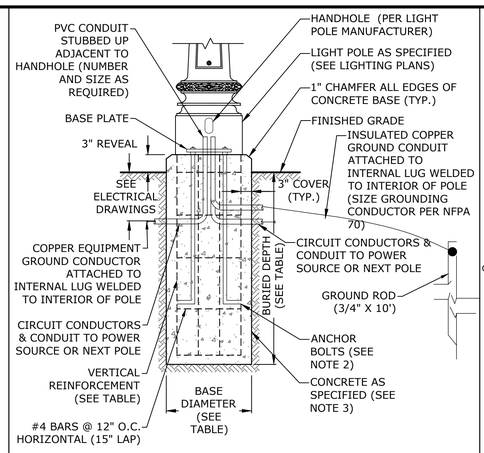


PLAN

NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 9" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON WITH BLACK COATING

CONCRETE TIP-DOWN RAMPS WITH DETECTABLE WARNING PANEL

NO SCALE

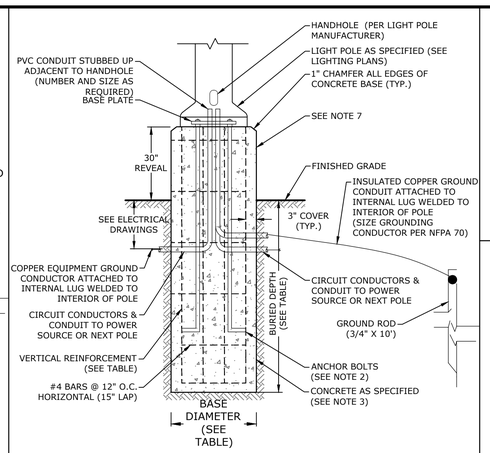


POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT	VERTICAL REINFORCEMENT LENGTH
16'>	72"	18"	6 - #6	5'-9"
16'<	72" (MIN.)	24"	6 - #8	5'-9"

NOTES:
1. ALL LIGHT POLES, LUMINARIES AND WIRE TO BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE DIRECTED.
2. CONTRACTOR SHALL VERIFY BOLT TEMPLATE AND ANCHOR BOLT SIZE WITH POLE MANUFACTURER PRIOR TO CONSTRUCTION.
3. CONCRETE SHALL BE 4,000 PSI CLASS A, PRE-CAST CONCRETE.
4. REINFORCEMENT SHALL BE ASTM A615, GRADE 60.
5. FOR LIGHT POLES GREATER THAN 20' IN HEIGHT, THE LIGHT POLE BASE SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
6. COORDINATE FINAL LIGHT POLE DESIGN WITH LIGHTING PLAN.

TYPICAL EXTERIOR PARKING LIGHT POLE BASE

NO SCALE



POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT	VERTICAL REINFORCEMENT LENGTH
16'>	72"	18"	6 - #6	5'-9"
16'<	72" (MIN.)	24"	6 - #8	5'-9"

NOTES:
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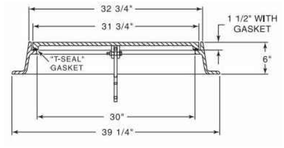
2. CONTRACTOR SHALL VERIFY BOLT TEMPLATE AND ANCHOR BOLT SIZE WITH POLE MANUFACTURER PRIOR TO CONSTRUCTION.
3. CONCRETE SHALL BE 4,000 PSI CLASS A, PRE-CAST CONCRETE.
4. REINFORCEMENT SHALL BE ASTM A615, GRADE 60.
5. FOR LIGHT POLES GREATER THAN 20' IN HEIGHT, THE LIGHT POLE BASE SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
6. EXTENDED LIGHT POLE BASE TO BE USED IN VEHICULAR AREAS. SEE LIGHTING PLAN.
7. PAINT LIGHT POLE BASE SAFETY YELLOW WHERE NOT PROTECTED BY CURB.
8. COORDINATE FINAL LIGHT POLE DESIGN WITH LIGHTING PLAN.

TYPICAL INTERIOR PARKING LIGHT POLE BASE

NO SCALE



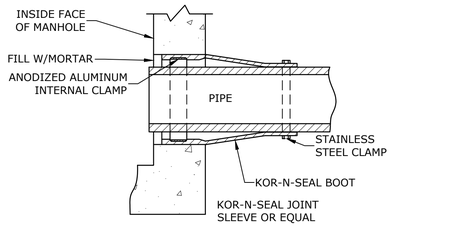
NOTES:
1. FRAME AND COVER SHALL BE NEENAH FOUNDRIES MODEL NUMBER R-1743-LM OR APROVED EQUAL.
2. MANHOLE COVER SHALL HAVE WORD "DRAIN" OR "SEWER" CAST INTO TOP OF SURFACE.

CITY OF DOVER MANHOLE FRAME & COVERS

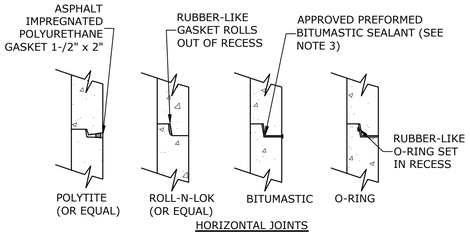
NO SCALE

DOVER TYPICAL CROSSWALK STRIPING

NO SCALE



PIPE TO MANHOLE JOINTS

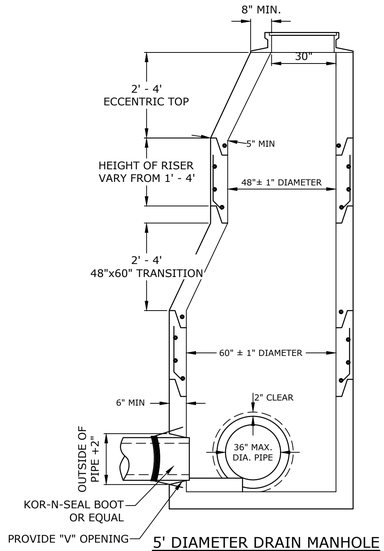


HORIZONTAL JOINTS

NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF DOVER COMMUNITY DEVELOPMENT DEPARTMENT STANDARDS AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF DOVER STANDARDS.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

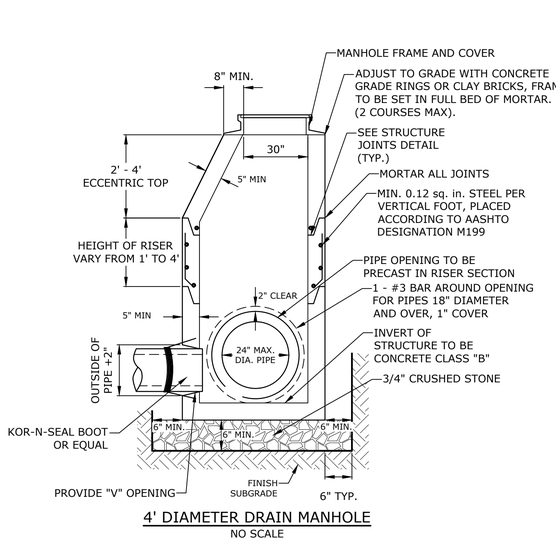
MANHOLE JOINTS

NO SCALE



5' DIAMETER DRAIN MANHOLE

NO SCALE



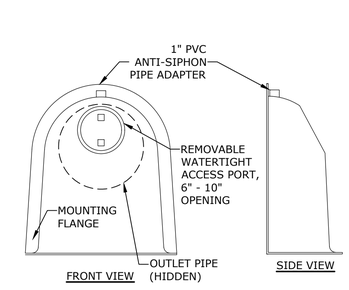
4' DIAMETER DRAIN MANHOLE

NO SCALE

NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

CORE HOLE SIZE				
PIPE SIZE	RCP CORE HOLE DIA.		PLASTIC CORE HOLE DIA.	
INCHES	INCHES	FEET	INCHES	FEET
6			7	0.6
12	18	1.5	18	1.5
15	22	1.8	20	1.7
18	26	2.2	24	2.0
24	34	2.8	32	2.7
30	42	3.5	42	3.5

DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"
5'	6"	8"

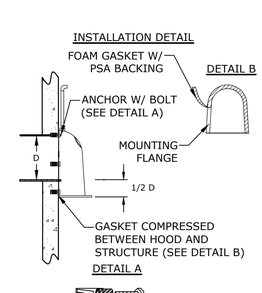


PIPE SIZE (I.D.)	SNOUT MODEL REQ'D
12"	18R

R=CIRCULAR STRUCTURE

PIPE SIZE (I.D.)	SNOUT MODEL REQ'D
12"	18R
15"	18R
18"	24R
24"	30R
30"	54R

R=CIRCULAR STRUCTURE



CONFIGURATION DETAIL

SNOUT OIL-WATER-DEBRIS SEPARATOR

NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

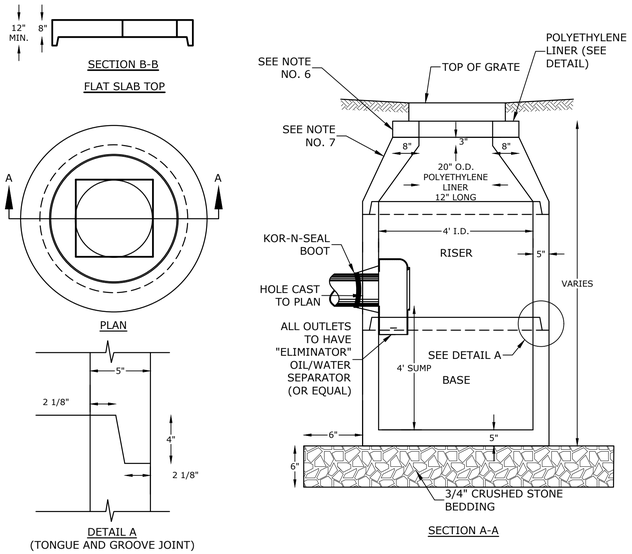
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

DETAILS SHEET

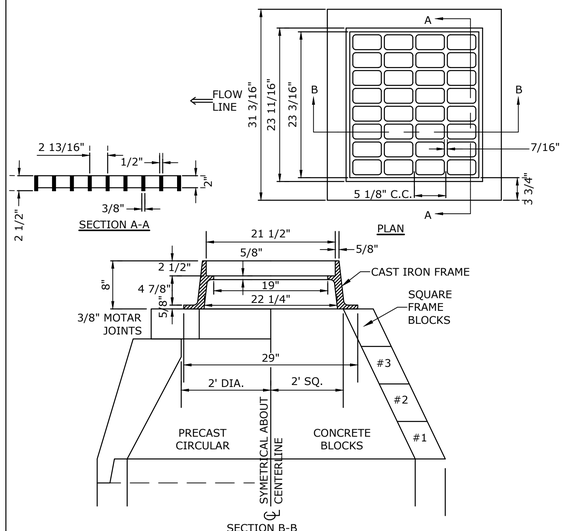
SCALE: AS SHOWN

C-503



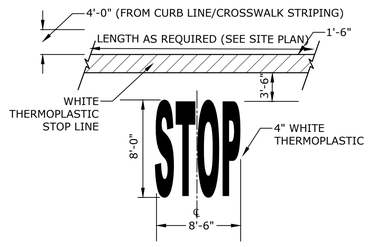
NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE



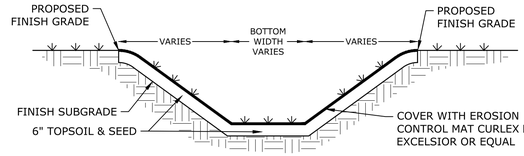
NOTES:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



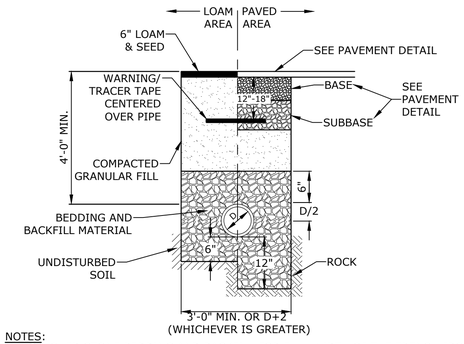
NOTES:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR AND LEGEND
NO SCALE



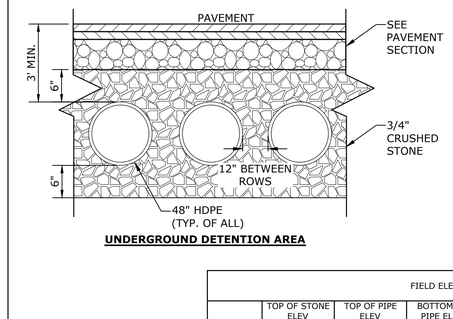
NOTES:
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS-SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.
5. VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.
6. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.
7. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.
8. PERIODIC APPLICATIONS OF LIME AND FERTILIZER MAY BE NEEDED TO MAINTAIN VIGOROUS GROWTH.

GRASS-LINED SWALE
NO SCALE

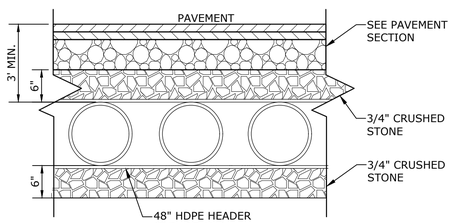


NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF DOVER.
3. DRAIN LINE SHALL BE INSULATED WHERE THERE IS LESS THAN 6' OF COVER IN PAVED AREAS AND LESS THAN 4' OF COVER IN NON-PAVED AREAS.

STORM DRAIN TRENCH
NO SCALE



UNDERGROUND DETENTION AREA

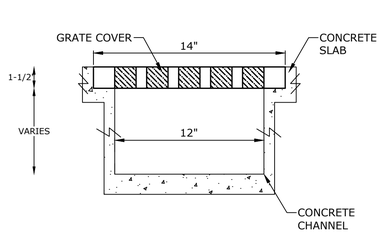


HEADER ROW

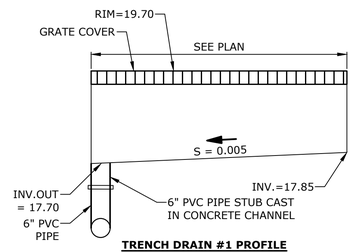
FIELD ELEVATIONS						
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV	NUMBER OF 45° DIAM PIPES	LINEAR FEET OF 48" DIAM PIPES
UDB 1	21.50'	21.00'	17.00'	16.50'	28	544'
UDB 2	16.50'	16.00'	12.00'	11.50'	56	1,108'

NOTES:
1. UNDERGROUND DETENTION SYSTEM TO BE 48" HDPE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURES DESIGN TO ENGINEER FOR APPROVAL.
2. MANUFACTURER TO SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
3. THE DESIGN ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE APPROVED DESIGN PLAN.
4. REFER TO STANDARD DUTY PAVEMENT SECTION DETAIL FOR PAVEMENT SECTION.

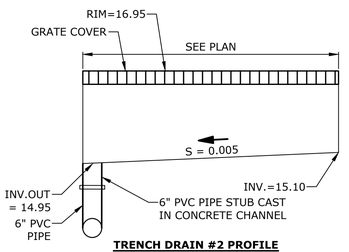
UNDERGROUND DETENTION SYSYTEM DETAIL
NO SCALE



TYPICAL SECTION



TRENCH DRAIN #1 PROFILE



TRENCH DRAIN #2 PROFILE

NOTES:
1. TRENCH DRAIN FRAME AND GRATE SHALL BE MULTIDRAIN ECONODRAIN SERIES #12 OR EQUAL.

TRENCH DRAIN DETAIL
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

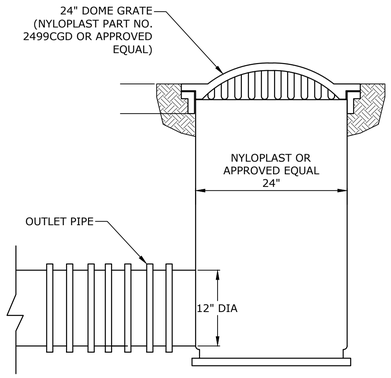
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

DETAILS SHEET

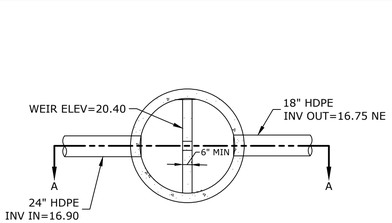
SCALE: AS SHOWN

C-504

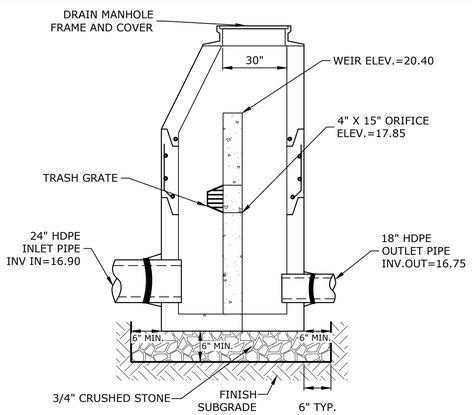


NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR LOCATION.

PROPOSED YARD DRAIN
NO SCALE

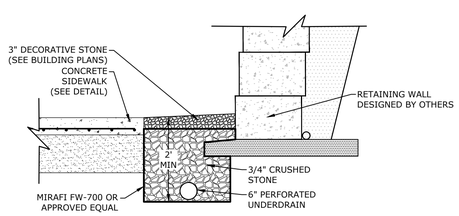


PLAN VIEW

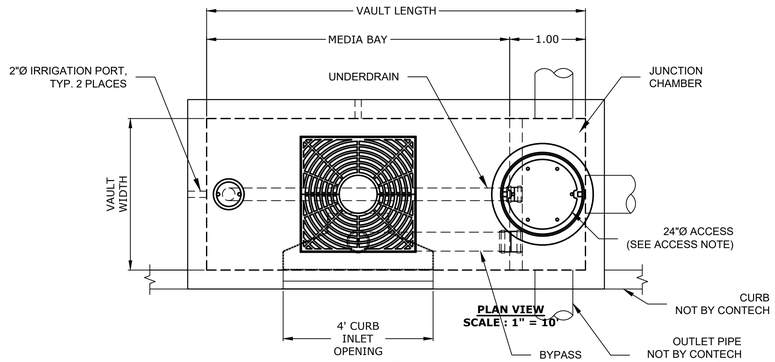


NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE THIRD WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

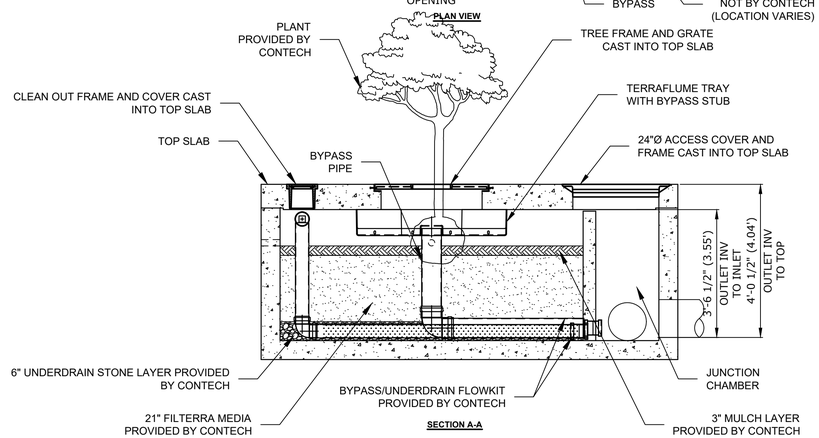
POS-01
NO SCALE



FRENCH DRAIN DETAIL
NO SCALE



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A

FTIBC LONG SIDE CURB INLET							
DESIGNATION	TREE BOX FILTER NUMBER	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0806-C	1-3	8' X 6'	10' X 6'	10" SDR 35	2.37	4" SDR 35	(1) 4' X 4'

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filterra®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 8,277,274; 6,569,321; 7,625,485; 7,425,261; 7,833,412. RELATED FOREIGN PATENTS.

FILTERRA INTERNAL BYPASS CURB WITH CHAMBER
NO SCALE

Tighe&Bond

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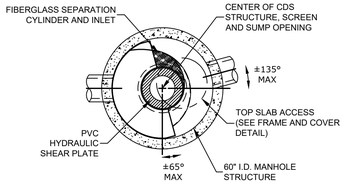
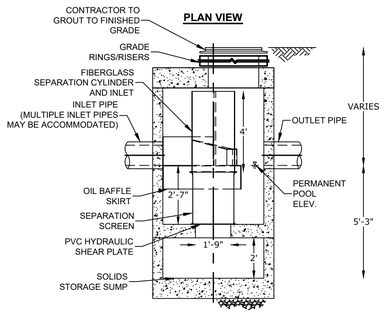
SCALE: AS SHOWN

C-505

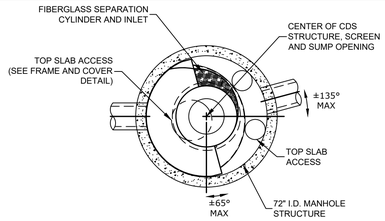


PLAN VIEW

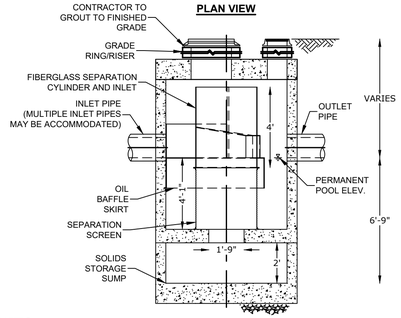


ELEVATION VIEW

INLINE CDS2020-5



PLAN VIEW



ELEVATION VIEW

INLINE CDS3030-6

CONTECH CDS PRETRATMENT UNITS

NO SCALE

SITE SPECIFIC DATA REQUIREMENTS		
STRUCTURE ID	CDS-1	CDS-4
MODEL SIZE	CDS3035-6	CDS2020-5
WATER QUALITY FLOW RATE (cfs)	3.07	0.82
PEAK FLOW RATE (cfs)	8.68	8.37
RETURN PERIOD OF PEAK FLOW (yrs)	25	25

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,783; RELATED FOREIGN PATENTS; OR OTHER PATENTS PENDING.

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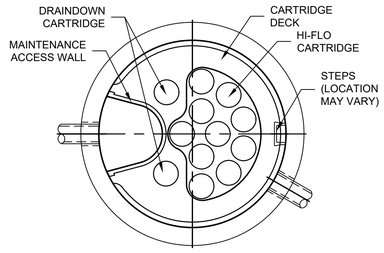
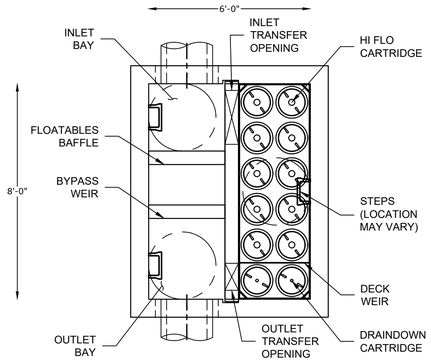


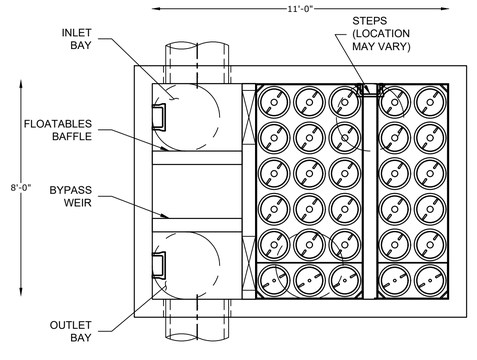
PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)



PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)



PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)

JELLYFISH JF8 - DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-5"	5'-3"	4'-2"	3'-2"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.18 / 0.09	0.13 / 0.065	0.09 / 0.045	0.05 / 0.025
MAX. CARTS HIGH-FLO / DRAINDOWN	10/2			

JELLYFISH JFPD0806 - DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

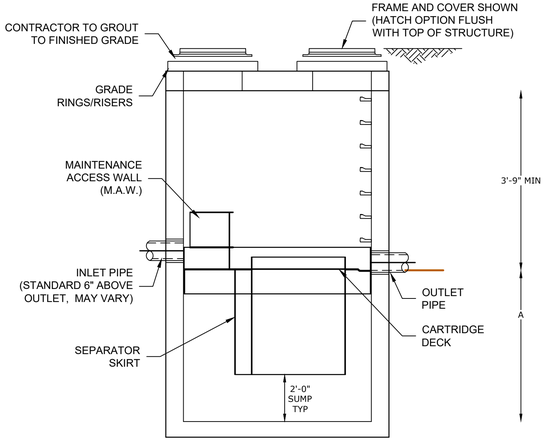
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

JELLYFISH JFPD0811 - DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

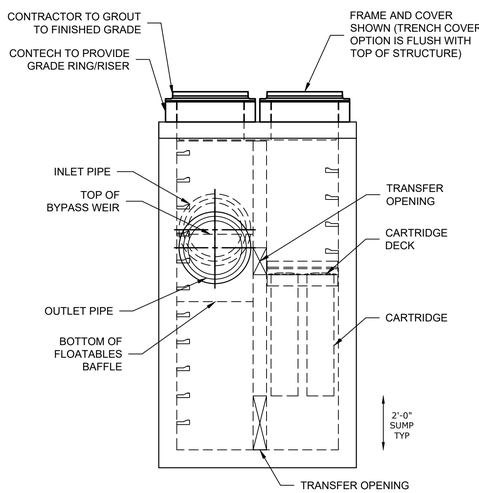
CARTRIDGE SELECTION

CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	4.90	3.67	2.45	1.36
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00



ELEVATION VIEW

JELLYFISH JF8

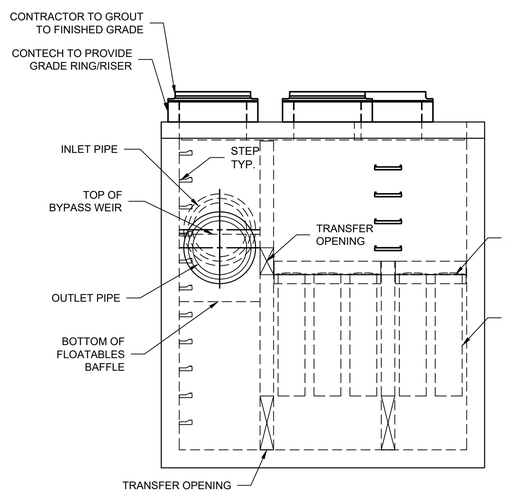


ELEVATION VIEW

JELLYFISH JFPD0806

CONTECH JELLYFISH STORMWATER FILTER

NO SCALE



ELEVATION VIEW

JELLYFISH JFPD0806

Jellyfish Filter

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENT NO. 8,287,726, 8,221,618 & US 8,123,935. OTHER INTERNATIONAL PATENTS PENDING

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3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

SITE SPECIFIC DATA REQUIREMENTS				
STRUCTURE ID	JF-1	JF-2	JF-3	JF-4
MODEL SIZE	JFPD0806	JF8	JFPD0811	JFPD0806
WATER QUALITY FLOW RATE (cfs)	1.43	1.60	3.21	1.43
PEAK FLOW RATE (cfs)	11.49	4.21	8.68	8.37
RETURN PERIOD OF PEAK FLOW (yrs)	25	25	25	25
# OF CARTRIDGES REQUIRED (HF / DD)	7/2	8/2	16/4	7/2
CARTRIDGE SIZE	54"	54"	54"	54"

Tighe&Bond

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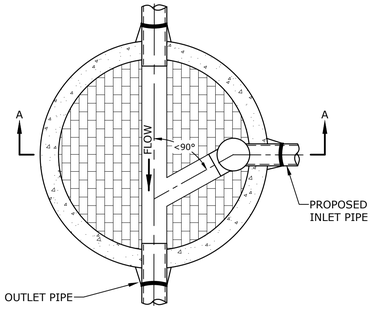
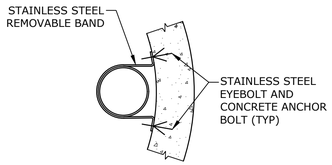
SCALE: AS SHOWN

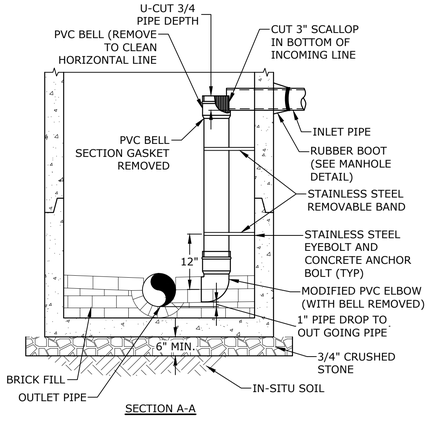
C-506



PLAN



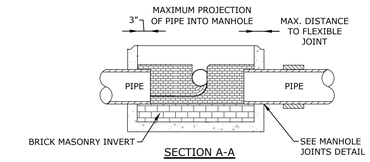
PIPE STRAP DETAIL



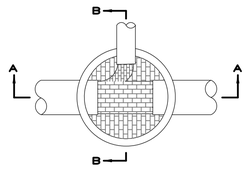
SECTION A-A

NOTES:
1. RISER PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF SDR35 PVC PIPE.
2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF DOVER DEPARTMENT OF PUBLIC WORKS STANDARDS.
3. COORDINATE ALL INSTALLATIONS WITH THE CITY OF DOVER.

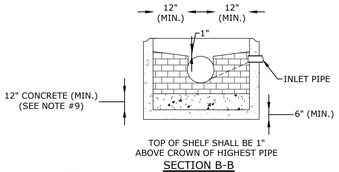
INSIDE DROP MANHOLE
NO SCALE



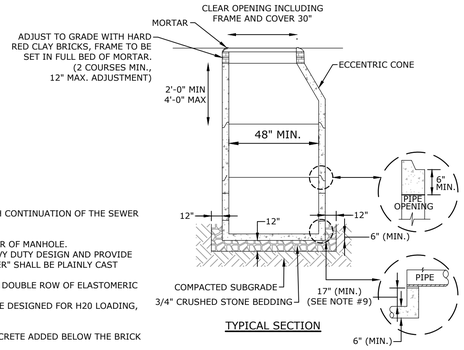
SECTION A-A



PLAN



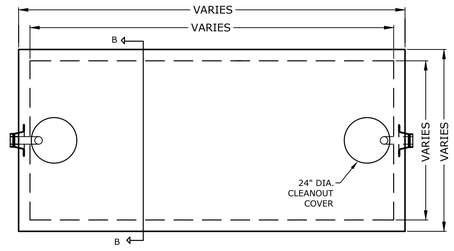
SECTION B-B



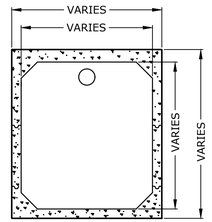
TYPICAL SECTION

NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. BITUMINOUS WATERPROOF COATING TO BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.
8. MANHOLES SHALL NOT HAVE STEPS.
9. SEWER MANHOLE BASE SHALL HAVE AN ADDITIONAL 12-INCHES OF CONCRETE ADDED BELOW THE BRICK INVERT WHERE NOTED ON PLANS.

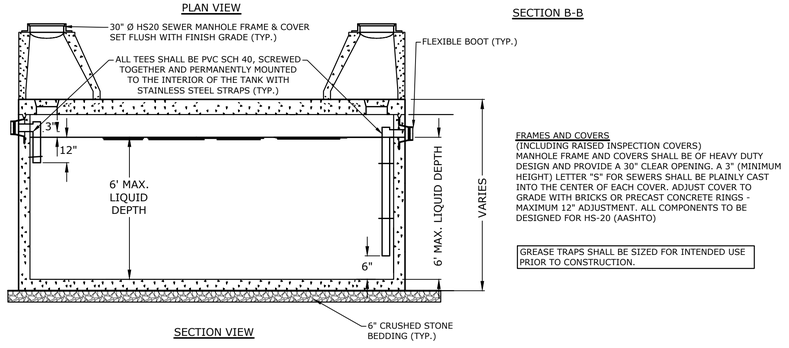
SEWER MANHOLE
NO SCALE



PLAN VIEW



SECTION B-B



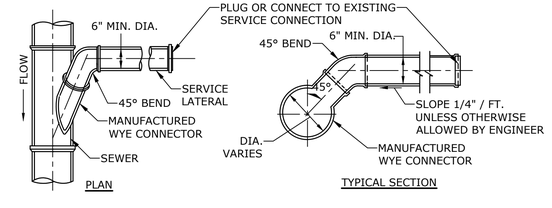
PLAN VIEW

SECTION VIEW

FRAMES AND COVERS
(INCLUDING RAISED INSPECTION COVERS)
MANHOLE FRAME AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30" CLEAR OPENING. A 3" (MINIMUM HEIGHT) LETTER "S" FOR SEWERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. ADJUST COVER TO GRADE WITH BRICKS OR PRECAST CONCRETE RINGS - MAXIMUM 12" ADJUSTMENT. ALL COMPONENTS TO BE DESIGNED FOR HS-20 (AASHTO)

GREASE TRAPS SHALL BE SIZED FOR INTENDED USE PRIOR TO CONSTRUCTION.

GREASE TRAP
NO SCALE

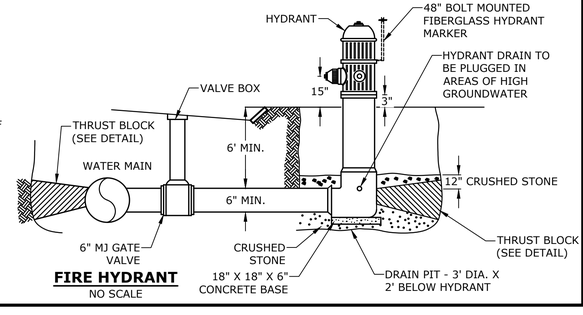


PLAN

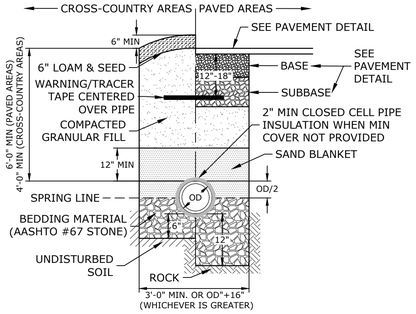
TYPICAL SECTION

STANDARD SEWER SERVICE LATERAL CONNECTION
NO SCALE

NOTES:
1. HYDRANT INSTALLATION AND OPERATION, MANUFACTURER AND MODEL, AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT AND THE CITY OF DOVER FIRE DEPARTMENT.

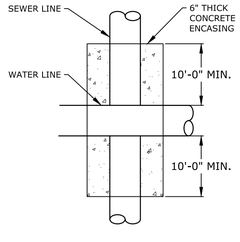


FIRE HYDRANT
NO SCALE

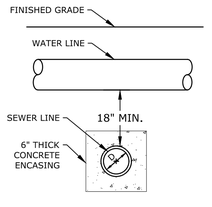


NOTES:
1. BEDDING MATERIAL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO SPRING LINE.
2. SAND BLANKET FOR FULL WIDTH OF THE TRENCH FROM SPRING LINE UP TO 12" ABOVE TOP OF PIPE.
3. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF DOVER.

SEWER TRENCH
NO SCALE



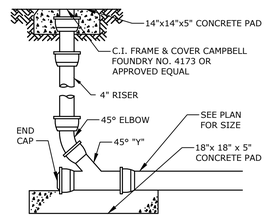
PLAN VIEW



PROFILE VIEW

NOTES:
1. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED FROM ANY EXISTING OR PROPOSED WATER LINE.
2. AN 18" MINIMUM EDGE TO EDGE VERTICAL SEPARATION SHALL BE PROVIDED, WITH WATER ABOVE SEWER, AT ALL CROSSINGS.
3. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
4. WHERE AN 18" VERTICAL SEPARATION CANNOT BE PROVIDED, SEWER PIPE SHALL BE CONSTRUCTED USING A SDR 26 PVC PIPE OR ENCASED CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET ON BOTH SIDES OF THE LINE BEING CROSSED, AS SHOWN ABOVE.
5. CROSSINGS SHALL CONFORM TO THE CITY OF DOVER STANDARDS AND SPECIFICATIONS.

WATER & SEWER CROSSING
NO SCALE



CLEAN-OUT
NO SCALE

Tighe&Bond

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

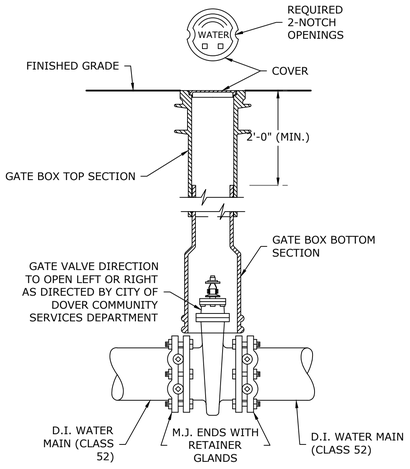
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

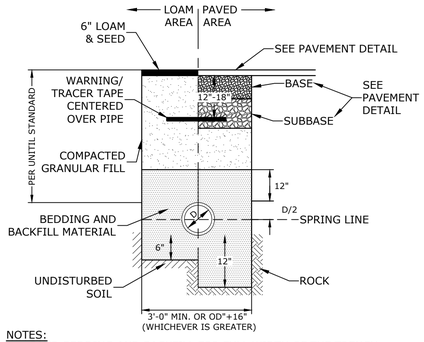
DETAILS SHEET

SCALE: AS SHOWN

C-507

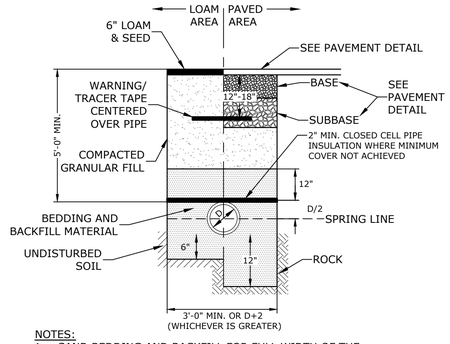


WATER GATE VALVE
NO SCALE



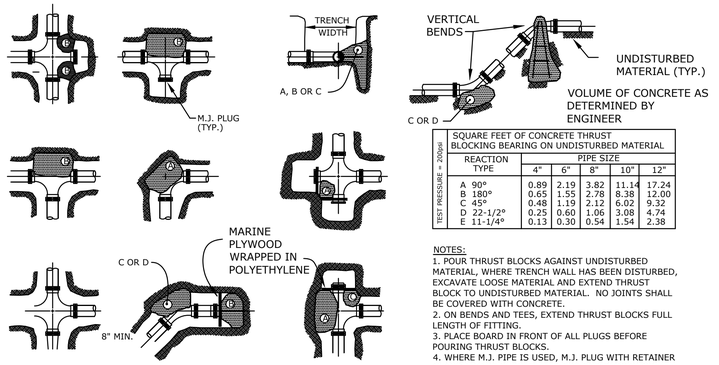
NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF DOVER.

GAS TRENCH
NO SCALE



NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF DOVER STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF DOVER.

WATER TRENCH
NO SCALE



TEST PRESSURE = 200psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE				
		4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	0.30	0.54	1.54	2.38

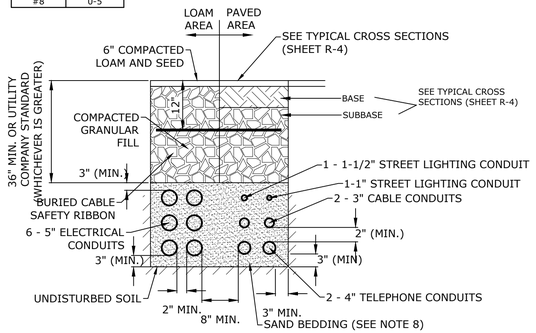
NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE PER COMMUNITY SERVICES DEPARTMENT.

THRUST BLOCK DETAIL
NO SCALE

AASHTO #67 STONE (#4 to 3/4")	
SIEVE SIZE	% PASSING
1"	100
3/4"	90-100
3/8"	20-55
#4	0-10
#8	0-5

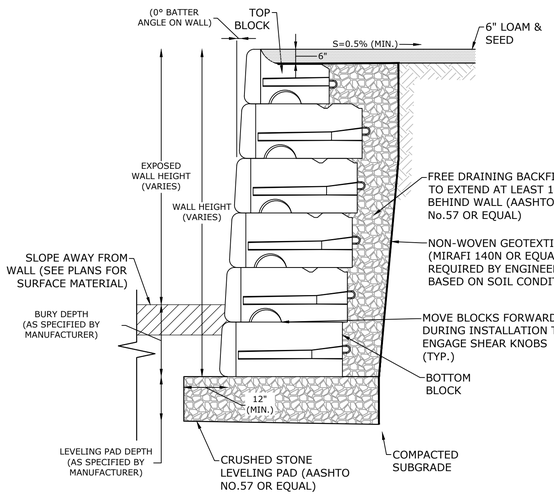
GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BLANKET	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX



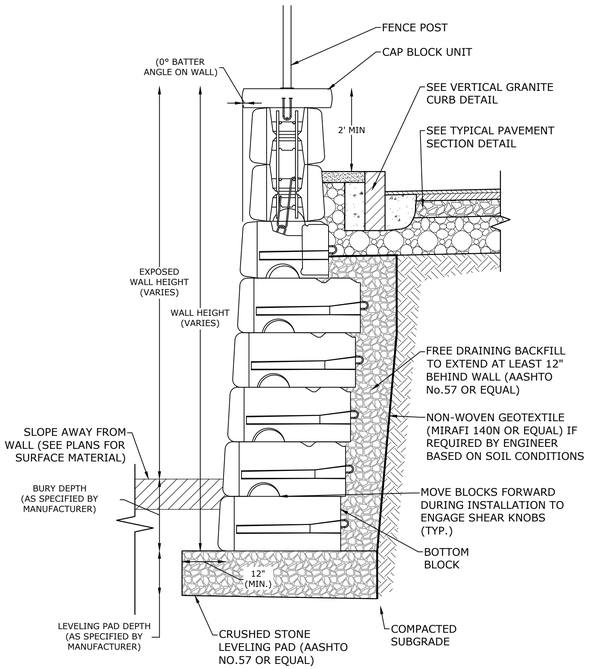
NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

TYPICAL ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE



NOTES:
1. RETAINING WALL SHALL BE BY REDI ROCK LEDGESTONE OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL SUBMIT DESIGN AND CALCULATIONS FOR THE RETAINING WALL THAT SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. CALCULATIONS SHALL INCLUDE A GLOBAL STABILITY ANALYSIS.
3. MINIMUM DESIGN PARARMETERS:
   - GLOBAL STABILITY FACTOR OF SAFETY = 1.3
   - OVERTURNING FACTOR OF SAFETY = 2.0
   - SLIDING FACTOR OF SAFETY = 1.5
   - GEOGRID PULLOUT FACTOR OF SAFETY = 1.5
   - SEISMIC FACTOR OF SAFETY = 1.1
4. WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, BUILDING LOADS, GUARDRAIL AND/OR FENCING AS REQUIRED.
5. WALL DESIGN ENGINEER SHALL CONSIDER HEIGHT AND SPECIFY GUARDRAIL WHERE REQUIRED
6. ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL AND THE WALL DESIGN ENGINEER'S DESIGN PLANS AND SPECIFICATIONS.
7. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETED IN ACCORDANCE WITH DESIGN.
8. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE OR OTHER MEASURES SHALL BE TAKEN TO PROTECT THE WALL FROM RUNOFF.
11. CONTRACTOR SHALL SUPPLY SAMPLE TO THE OWNER FOR APPROVAL PRIOR TO WALL CONSTRUCTION.

TYPICAL BLOCK RETAINING WALL SECTION
NO SCALE



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5. WALL DESIGN ENGINEER SHALL CONSIDER HEIGHT AND SPECIFY GUARDRAIL WHERE REQUIRED
6. ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL AND THE WALL DESIGN ENGINEER'S DESIGN PLANS AND SPECIFICATIONS.
7. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETED IN ACCORDANCE WITH DESIGN.
8. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE OR OTHER MEASURES SHALL BE TAKEN TO PROTECT THE WALL FROM RUNOFF.
11. CONTRACTOR SHALL SUPPLY SAMPLE TO THE OWNER FOR APPROVAL PRIOR TO WALL CONSTRUCTION.

TYPICAL BLOCK RETAINING WALL SECTION W/ COPING EXTENSION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 9-16-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 09/16/21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC Submission

PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-508

LANDSCAPE PLAN SET

JULY 26, 2021

LAST REVISED SEPTEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	09/16/2021
L-100	PLANT SCHEDULE AND NOTES	09/16/2021
L-101	LANDSCAPE PLAN - OVERALL SITE	09/16/2021
L-102	LANDSCAPE PLAN	09/16/2021
L-103	LANDSCAPE PLAN	09/16/2021
L-104	LANDSCAPE PLAN	09/16/2021
L-105	LANDSCAPE PLAN	09/16/2021
L-106	LANDSCAPE PLAN	09/16/2021
L-107	LANDSCAPE PLAN	09/16/2021

COMPLETE SET 9 SHEETS

Last Save Date: September 16, 2021 11:54 AM By: CKRZCUK
Plot Date: Thursday, September 16, 2021 Plotted By: Chris Krzcuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-CS.dwg Layout Tab: LANDSCAPE PLAN CS

GENERAL NOTES

1. THE PLANTING DESIGN IS BASED ON CIVIL ENGINEERING DRAWINGS PRODUCED BY TIGHE & BOND. EXISTING BUILDINGS, GRADING, EASEMENTS AND UTILITIES ARE BASED ON SURVEY INFORMATION PROVIDED BY THE OWNER.
2. VERIFY ALL CONDITIONS AT PROJECT SITE AND NOTIFY LANDSCAPE ARCHITECT OF DIMENSIONAL ERRORS, OMISSIONS OR DISCREPANCIES BEFORE BEGINNING WORK.
4. THE LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING OVER OR NEAR EXISTING GAS MAINS AND ELECTRICAL LINES. CONTRACTOR IS TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES, ABOVE AND BELOW GRADE, PRIOR TO EXCAVATION OR TRENCHING. CALL DIG SAFE AT 1-888-344-7233. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS. DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. ARCHITECTURAL ELEMENTS ARE SHOWN ON LANDSCAPE PLANS FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL ARCHITECTURAL INFORMATION. NOTIFY OWNER OR OWNER'S REPRESENTATIVE & LANDSCAPE ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
6. THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR FOR SAFETY PRECAUTIONS OR PROBLEMS UTILIZED IN CONNECTION WITH THE WORK, AND HE WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

LANDSCAPE OPERATION & MAINTENANCE PLAN

WEEKLY TASKS - MAY 15 TO SEPTEMBER 15TH

1. MOW & EDGE LAWN IF GROUND CONDITIONS ARE SUITABLE FOR ACCESS. START MOWING GRASS ONCE IT REACHES 3" HIGH. MOW USING APPROPRIATE MACHINERY INCLUDING PUSH MOWER IF AREA IS TOO STEEP OR TOO SMALL FOR LARGER MACHINERY. DO NOT REMOVE CUTTINGS UNLESS EXCESSIVE AMOUNTS HINDER GRASS GROWTH OR IF DISEASE IS PRESENT. CUTTINGS PROVIDE NITROGEN FERTILIZER.
2. MOW TO A HEIGHT IF ¦ OF GRASS BLADE USING SHARP BLADES. MAINTAIN A MINIMUM HEIGHT OF 2" TALL TO WARD OFF WEEDS AND WITHSTAND SUMMER DROUGHT.
3. MANUALLY REMOVE WEEDS LARGER THAN 2" HIGH OR WIDE FROM PLANT BEDS. USE OF CHEMICAL WEED KILLER IS NOT PERMITTED.
4. REPLACE BARK MULCH WHICH HAS BEEN DISPLACED OR WASHED OUT FROM PLANT BEDS.
5. CHECK PLANTS FOR SIGNS OF STRESS, PEST OR DISEASE. UPON APPROVAL & AUTHORIZATION FROM OWNER REPLACE DEAD, DYING OR DISEASED PLANTS THAT CANNOT BE TREATED. CONSULT A LICENSED ARBORIST FOR TREE DISEASES OR TO REVIEW TREE DAMAGE AND APPROPRIATE PRUNING OR REMOVAL AND REPLACEMENT. REPLACEMENTS ARE TO MATCH ORIGINAL PLANT.
5. SWEEP OR BLOW CLEAN HARD SURFACES INCLUDING WALKWAYS, CURBS AND GUTTERS. RAKE LEVEL STONE DUST PATH AND FILL DEPRESSIONS WITH NEW.
6. CHECK IRRIGATION SYSTEM COMPONENTS INCLUDING VALVES, VALVE BOXES ETC. AND MAKE REPAIRS AND REPLACEMENT AS NECESSARY. CHECK IRRIGATION SYSTEM DURING RAIN STORM EVENTS TO ENSURE AUTOMATIC SHUT OFF IS WORKING. ADJUST IRRIGATION TIMES AS NECESSARY BASED ON PLANT NEEDS AND WEATHER CONDITIONS.
7. COMPLETE ITEMS ON THE MONTHLY CHECK LIST.

MONTHLY TASKS

JANUARY
DURING WINTER DROUGHT PERIODS WATER NEWLY PLANTED TREES AND SHRUBS, ESPECIALLY EVERGREENS. TREE BAGS ARE SUGGESTED WHEN TEMPERATURES ARE ABOVE FREEZING.

FEBRUARY
FERTILIZE TREES & SHRUBS AS NEEDED USING DEEP ROOT APPLICATION WITH SLOW RELEASE FERTILIZER. FINISH PRUNING SHADE TREES, SUMMER FLOWERING SHRUBS, AND HEDGES. SPRING BLOOMING SHRUBS MAY BE PRUNED IMMEDIATELY AFTER FLOWERING. PRUNE SHRUBS IN FEBRUARY BASED ON SPECIES. DO NOT SHEAR OR FORM SHRUBS INTO BALLS OR UNNATURAL SHAPES UNLESS OTHERWISE NOTED.

MARCH
APPLY SHREDDED BARK MULCH AT SIZES NOTED TO TREE, SHRUB & PERENNIAL BEDS. OPTIONAL: DIVIDE AND REPLANT SUMMER & FALL BLOOMING PERENNIALS

APRIL
REPLACE MULCH WHICH HAS BEEN WASHED OUT BY RAINS OR SNOW MELTING RUN-OFF. REMOVE EXCESS DEICING SALTS FROM PLANT BEDS. CHECK IRRIGATION SYSTEM AND RETURN TO NORMAL SERVICE: DURING DAYLIGHT OPERATION ON A MONTHLY BASIS UNTIL OCTOBER 15TH CHECK EACH IRRIGATION ZONE OF THE SYSTEM TO ENSURE SYSTEM IS OPERATING CORRECTLY TO CONSERVE WATER AND TO KEEP PLANT HEALTHY.

MAY
INSPECT SHRUBS FOR DAMAGE FROM SNOW AND/OR PLOWING. PRUNE OUT WINTER DAMAGED BRANCHES OR PLANTS THAT HAVE NOT BEGUN TO GROW IN LATE MAY. WATER NEW TRANSPLANTS AND PLANT REPLACEMENTS UNLESS RAINFALL IS ABUNDANT.

JUNE
VIGOROUS, UNWANTED LIMBS SHOULD BE REMOVED OR SHORTENED ON NEW TREES. WATCH FOR FORKS IN THE MAIN TRUNK AND REMOVE THE LEAST DESIRABLE LEADER. WATER PLANTS AS NEEDED. MONITOR IRRIGATION SYSTEM TO MAKE SURE COVERAGE AND QUANTITIES ARE ADEQUATE.

JULY
PRUNE BACK GROUNDCOVER OVERHANGING CURBS OR SIDEWALKS. CONTINUE WATERING YOUNG PLANTS.

AUGUST
WATER PLANTING AREAS THOROUGHLY UNLESS RAINFALL HAS BEEN ADEQUATE. CHECK PLANTS FOR SIGN OF WATER STRESS, NUTRIENT DEFICIENCY OR DISEASE. IDENTIFY AND TREAT AS REQUIRED. PRUNE HEDGES AND SHRUBS IF NECESSARY IN LATE AUGUST. FERTILIZE YOUNG TREES & SHRUBS.

SEPTEMBER
CHECK TREES FOR SIGNS OF WATER STRESS, NUTRIENT DEFICIENCY OR DISEASE AND TREAT ACCORDINGLY. CORE AERATE, TOP DRESS AND OVER SEED LAWNS IF NEEDED.

OCTOBER
REMOVE LEAVES AND LITTER FROM PARKING LOTS, WALKWAYS AND TURF AREAS OR MOW WITH MULCHING MOWER. PRUNE GROUNDCOVER OVERHANGING CURBS OR SIDEWALKS. WINTERIZE IRRIGATION SYSTEM: DRAIN THE SYSTEM AND REPROGRAM AUTOMATIC CONTROLLER.

NOVEMBER
REMOVE LEAVES FROM COOL SEASON GRASSES OR MOW WITH MULCHING MOWER. REMOVE LEAVES FROM TREE, SHRUB AND PERENNIAL BEDS. CONDUCT SOIL TESTS TO CORRECT DEFICIENCIES BEFORE WINTER. PRUNE MOST TREES & SHRUBS BETWEEN NOVEMBER 15TH & MARCH 15TH. REMOVE CONFLICTING & CROWDED BRANCHES, DEAD LIMBS, DOUBLE LEADERS, & UNSIGHTLY BRANCHES. REMOVE DISEASED PLANT MATERIAL FROM THE LANDSCAPE TO REDUCE DISEASE PROBLEM NEXT YEAR.

DECEMBER
PRUNE TREES IN PARKING LOTS AND SIDEWALKS THAT INTERFERE WITH PUBLIC SAFETY. CONTINUE LEAF REMOVAL IF NEEDED. CONTINUE PRUNING TREES & SHRUBS ON OVERALL PROPERTY.

PLANTING NOTES

1. LANDSCAPE ARCHITECT TO APPROVE PLANT MATERIAL PRIOR TO DELIVERY TO SITE.
2. PLANT MATERIAL PROVIDED BY THE CONTRACTOR IS TO CONFORM TO THE HIGHEST STANDARD AS ADOPTED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (ANSI). PLANT MATERIAL IS TO BE HEALTHY SPECIMENS, FREE FROM DISEASE OR DAMAGE.
3. THE CONTRACTOR IS TO FURNISH PLANTS AND SOD SHOWN ON THE DRAWINGS. PLANTS ARE TO CONFORM WITH THE BOTANICAL IDENTIFICATIONS. PLANTS ARE TO BE SOURCED FROM A NURSERY WITHIN THE SAME CLIMATIC ZONE AS THE SITE LOCATION. NO SUBSTITUTIONS OF PLANT SPECIES ARE PERMITTED WITHOUT PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE & THE LANDSCAPE ARCHITECT.
4. SUBSTITUTIONS OF PLANT SPECIES SHALL BE A PLANT OF EQUIVALENT OVERALL FORM, HEIGHT AND BRANCHING HABIT, FLOWER, LEAF, FRUIT, COLOR, TIME OF BLOOM & CLIMATIC LOCATION AS APPROVED BY LANDSCAPE ARCHITECT.
5. LOCATE AND VERIFY EXISTING & PROPOSED UTILITY LINE LOCATIONS PRIOR TO STAKING AND REPORT CONFLICTS TO LANDSCAPE ARCHITECT.
6. PLANTING DEMOLITION DEBRIS, GARBAGE, LUMPS OF CONCRETE, STEEL AND OTHER MATERIALS DELETERIOUS TO PLANT'S HEALTH AS DETERMINED BY LANDSCAPE ARCHITECT SHALL BE REMOVED FROM PLANTING AREAS.
7. THE CONTRACTOR IS TO VERIFY SITE LAYOUT & GRADES & INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES OR CHANGES IN LAYOUT AND/OR GRADING PRIOR TO CONSTRUCTION. NO PLANTING IS TO BE INSTALLED BEFORE ACCEPTANCE OF ROUGH GRADING.
8. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. FINAL LOCATIONS OF PLANTS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.
9. INSTALL PLANTS WITH ROOT FLARES FLUSH WITH FINISHED GRADE. IMMEDIATELY REPLANT PLANTS THAT SETTLE OUT OF PLUMB OR BELOW FINISHED GRADE. PLANT AND STAKES ARE TO BE SET PLUMB UNLESS OTHERWISE NOTED.
10. PLANT UNDER FULL TIME SUPERVISION OF CERTIFIED ARBORIST, NURSERYMAN, OR LICENSED LANDSCAPE ARCHITECT. PROVIDE WRITTEN VERIFICATION OF CERTIFICATION AND/OR LICENSE FOR LANDSCAPE ARCHITECT'S APPROVAL.
11. WATER PLANTS THOROUGHLY AFTER INSTALLATION, A MINIMUM OF TWICE WITHIN THE FIRST 24 HOURS.
12. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN PLANT MATERIALS INCLUDING SOD/SEED AREAS IN A HEALTHY STATE DURING CONSTRUCTION AND DURING REQUIRED WARRANTY PERIODS. ANY DAMAGE TO PLANT MATERIAL DUE TO NEGLECT BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
13. REPAIR DAMAGE DUE TO LANDSCAPE INSTALLATION OPERATIONS INSIDE AND OUTSIDE OF LIMIT OF WORK.
14. SOAK ALL PERENNIALS FOR 24 HOURS PRIOR TO INSTALLATION.
15. A LIST OF PLANTS INCLUDING BOTANICAL NAMES, SIZES, AND SPACING ARE SHOWN ON THE DRAWINGS. QUANTITIES ARE PROVIDED FOR CONTRACTOR'S CONVENIENCE AND ARE TO BE VERIFIED. IN THE EVENT THAT QUANTITIES OR OMISSIONS OCCUR THE PLAN DRAWINGS ARE TO BE FOLLOWED.
16. IRRIGATION: A TEMPORARY UNDERGROUND DRIP AND SPRINKLER IRRIGATION SYSTEM IS TO BE PROVIDED FOR ALL PLANT MATERIAL AND SOD OR SEEDED AREAS.
17. DISTURBED SITE AREAS ARE TO BE DRESSED WITH 6" MIN. OF AMENDED TOPSOIL FOR LAWNS AND 12" MIN. FOR PLANT BEDS. TOPSOIL FOR SEEDED AND/OR SEEDED AREAS IS TO BE TWO PARTS SHARP SAND, ONE PART LOAM AND ONE PART ORGANIC COMPOST.
18. PLANT BEDS ARE TO BE MULCHED TO A DEPTH OF 2" MIN. WITH NATURAL BARK MULCH WITH BARK SIZES NO LARGER THAN 3". PERENNIAL PLANT BEDS ARE TO BE MULCHED WITH BARK SIZES NO MORE THAN 1". TREES IN LAWN AREAS ARE TO HAVE MULCH RINGS OF 5' DIA.
19. TREES ADJACENT TO PEDESTRIAN ROUTES AND WITHIN PARKING ISLANDS ARE TO BE LIMBED TO 6' ABOVE GRADE.

LANDSCAPE MATERIALS LEGEND

TAG	DESCRIPTION
PAVING	
A1	DECORATIVE CONCRETE PAVEMENT
A2	STONE DUST SURFACE
CURBS	
B1	4" WIDE GRANITE LANDSCAPE CURB, SAWN/THERMAL FINISH
B2	4" WIDE FLUSH GRANITE CURB
WALLS	
C1	18" WIDE x 20" HIGH PRECAST CONCRETE SEATWALL W/ WOOD SLAT SURFACE
C2	RETAINING WALL, RE. CIVIL ENGINEER'S DRAWINGS
C3	NATURAL GRANITE BOULDERS
FURNISHINGS / IMPROVEMENTS	
D1	WOOD & STEEL BENCHES
PLANTING	
E1	EXISTING VEGETATION TO REMAIN
E2	SOD LAWN
E3	NO MOW LAWN GRASS SEEDED AREA (HARD FESCUE MIX)
E4	PERENNIAL PLANTING @ 18"-24" O.C.
E5	SHRUB, PERENNIALS, GROUNDCOVER PLANTING IN 2" MULCHED BED
E6	DECIDUOUS SHADE TREE - 3.0" CALIPER
E7	ORNAMENTAL & UNDERSTORY TREE - 2.5" CALIPER
E8	EVERGREEN TREE - 10-12'

PLANT SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	2	*Acer saccharum 'Apollo'*	Apollo Sugar Maple	3" caliper, B&B	As Shown	Single stem, matched
AC FR	5	*Acer freemanii 'Autumn Blaze'*	Autumn Blaze Maple	3" caliper, B&B	As Shown	Single stem, matched
AC LE	16	*Acer saccharum 'Legacy'*	Legacy Sugar Maple	3" caliper	As Shown	Single stem, B&B
AM GR	6	*Amelanchier x grandiflora 'Autumn Brillance'*	Autumn Brillance Serviceberry	10-12' ht	As Shown	Multi-stem, B&B
BE NI	6	*Betula nigra 'Heritage'*	Heritage River Birch	10-12' ht	As Shown	Multi-stem, B&B
BE PO	4	*Betula populifolia 'Whitespire'*	Whitespire Grey Birch	10-12' ht	As Shown	Multi-stem, B&B
CA CA	21	Carpinus caroliana 'Palisades'	Palisade American Hornbeam	3" caliper	As Shown	Single Stem, B&B
CE CA	11	*Cercis canadensis alba*	White Redbud	3" caliper, B&B	As Shown	Single stem, matched
GL TR	7	*Gleditsia triacanthos var. inermis 'Shademaster'*	Shademaster Honeylocust	3" caliper, B&B	As Shown	Single stem, matched
LA LA	1	*Larix laricina*	Tamarack	10-12' ht, B&B	As Shown	Single stem
LI ST	18	*Liquidambar styraciflua 'Slender Silhouette'*	Slender Silhouette Sweetgum	3" Caliper	As Shown	Single stem, B&B
LI TU	2	*Liriodendron tulipifera 'Little Volunteer'*	Little Volunteer Tulip Tree	3" Caliper, B&B	As Shown	Single stem, matched
MA VI	2	*Magnolia virginiana 'Moonglow'*	Moonglow Magnolia	10-12', B&B	As Shown	Heavy
PL AC	10	Platanus x acerifolia 'Exclamation'	Exclamation Planetree	3" caliper	As Shown	Single stem, B&B
QU AL	9	Quercus alba	White Oak	3" Caliper, B&B	As Shown	Single stem, matched
QU BI	9	*Quercus bicolor*	Swamp White Oak	3" Caliper, B&B	As Shown	Single stem, matched
SY RE	11	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Japanese Lilac Tree	2.5" caliper	As shown	Single stem, matched
	140					
EVERGREEN TREES						
CH OB	11	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	30	*Juniperus virginiana 'Hillspire'*	Hillspire Eastern Red Cedar	10-12' ht	As Shown	B&B
PI GL	7	*Picea glauca*	White Spruce	8-10'	As Shown	Container
PI RI	13	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	29	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitate	10-12' ht, B&B	As Shown	Container, Matched
TH NI	9	*Thuja occidentalis 'Nigra'*	Dark American Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH SM	5	*Thuja occidentalis 'Smaragd'*	Emerald Green Arborvitae	10-12" ht, B&B	As Shown	Container, Matched

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS SHRUBS						
AZ Pe	22	*Azalea periclymenoides*	Pinxterbloom Azalea	#5	48" O.C.	24-30" ht
Az Pru	40	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	51	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	53	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	72	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	53	*Cornus alba "Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	7	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	187	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	111	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	155	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	37	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	121	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	77	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	48	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	181	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	32	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	215	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	18	*Rosa 'Blushing Knockout'*	Blushing Knockout Rose	#5	24" O.C.	#3 / 18-24" ht
Ro Ic	65	*Rosa 'Iceburg'*	Iceberg Rose	#5	36" O.C.	24" ht.
Ro Ru	125	*Rosa rugosa 'Alba'*	White Beach Rose	#5	48" O.C.	24" ht.
Vi De	30	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	35	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
EVERGREEN SHRUBS						
Ix Ge	180	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	138	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	64	*Ilex glabra 'Strongbox'*	Strongbox Inkberry	#5	30" O.C.	24" ht
Ju Co	96	*Juniperus conferta 'Emerald Sea*	Emerald Sea Shore Juniper	#2	36" O.C.	18-24" ht
Le Fo	130	*Leucothoe fontanesiana 'Compacta'*	Compact Drooping Leucothoe	#5	48" O.C.	18-24" ht
Le Ax	20	*Leucothoe axillaris*	Coast Leucothoe	#5	48" O.C.	18-24" ht
Rh Ca	68	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	44	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	170	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIALS						
alc mo	X	*Alchemilla mollis*	Common Lady's Mantle	#1	12" O.C.	
ams st	X	*Amsonia 'Stormcloud'*	Stormcloud Blue Star	#1	24" O.C.	
ams hu	X	*Amsonia hubrichtii*	Thread-leafed Bluestar	#1	24" O.C.	
asc he	X	*Asclepias 'Hello Yellow'*	Butterfly Weed	#1	18" O.C.	
ast br	X	*Astilbe 'Bressingham Beauty'*	Bressingham Beauty Astilbe	#1	18" O.C.	
ast mi	X	*Astilbe 'Milk and Honey'*	Milk & Honey Astilbe	#1	24" O.C.	
cor mo	X	*Coreopsis 'Moonbeam'*	Moonbeam Coreopsis	#1	18" O.C.	
den pu	X	*Dennstaedtia punctilobula*	Hay Scented Fern	#2	30" O.C.	
ech pu	X	*Echinacea purpurea*	Purple Coneflower	#2	24" O.C.	
ger ro	X	*Geranium x 'Rozanne'*	Rozanne Cranesbill	#2	24" O.C.	
hem ka	X	*Hemerocallis 'Kansas Kitten'*	Kansas Kitten Daylily	#2	18" O.C.	
hem ste	X	*Hemerocallis 'Stella d'Oro'*	Stella d'Oro Daylily	#2	18" O.C.	
hem he	X	*Hemeocallis 'Heavenly Angel Ice'*	Heavenly Angel Ice Daylilly	#2	24" O.C.	
heu ca	X	*Heuchera 'Caramel'*	Caramel Coral Bells	#2	18" O.C.	
heu li	X	*Heuchera 'Lime Marmalade'*	Lime Marmalade Coral Bells	#2	18" O.C.	
hos ad	X	*Hosta x 'Abiqua Drinking Gourd'*	Hosta	#2	30" O.C.	
hos au	X	*Hosta 'Aureomarginata'*	Gold Edged Plantain Lily	#2	24" O.C.	
rud fu	X	*Rudbeckia fulgida 'American Gold Rush'*	Am. Gold Rush Black-Eyed Susan	#2	24" O.C.	
sal mn	X	*Salvia 'May Night'*	May Night Salvia	#2	24" O.C.	
GRASSES, VINES & GROUND COVERS						
bou gr	X	*Bouteloua gracilis 'Blonde Ambition'*	Side Oats Grama	#2	24" O.C.	
cal ac	X	*Calamagrostis acutiflora 'Karl Foerster'*	Karl Foerster Feather Reed Grass	#2	24" O.C.	
car bo	X	*Carex 'Bowles Golden'*	Bowles Golden Sedge	#2	24" O.C.	
cha la	X	*Chasmanthium latifolium*	Northern Sea Oats	#2	30" O.C.	
des ce	X	*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	#2	24" O.C.	
epi ru	X	*Epimedium x rubrum*	Red Barrenwort	#1	12" O.C.	
hak ma	X	*Hakonechloa macra 'All Gold'*	All Gold Japanese Forest Grass	#2	24" O.C.	
hyd an	X	*Hydrangea anomala petiolaris*	Climbing Hydrangea Vine	#2	30" O.C.	
lir mu	X	*Liriope muscari 'Big Blue'*	Big Blue Lilyturf	Plug	10" O.C.	
mis mo	X	*Miscanthus sinensis 'Morning Light'*	Morning Light Silver Grass	#2	30" O.C.	
pan vir	X	*Panicum virgatum 'Shenandoah'*	Shenandoah Switchgrass	#2	36" O.C.	

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

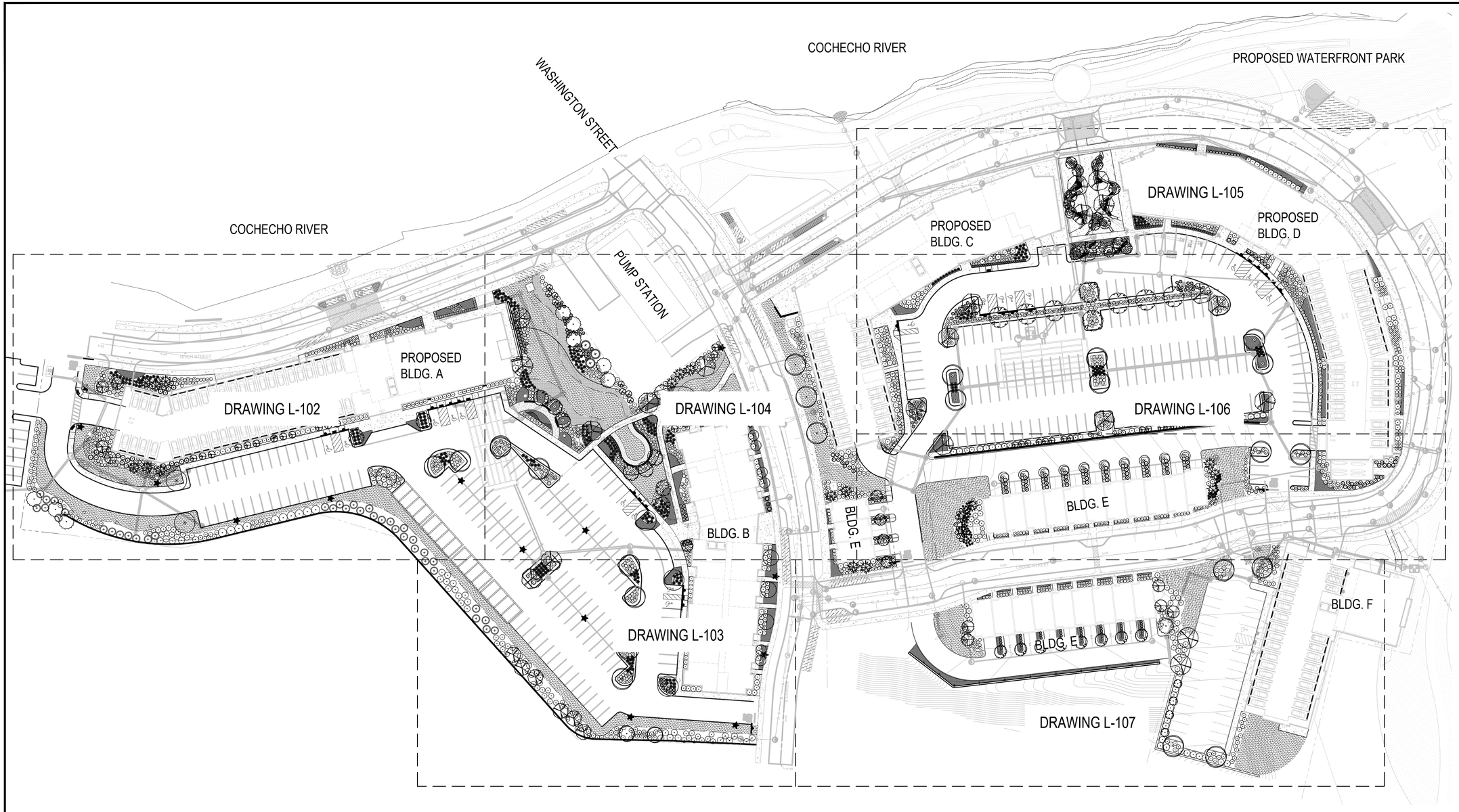
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO:	C-0960-007
DATE:	JULY 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE - PLANT SCHEDULE & NOTES

SCALE: AS SHOWN

L-100



OVERALL PLAN - DRAWING SHEET LAYOUT - SCALE 1:50

0' 25' 50' 100' 200'

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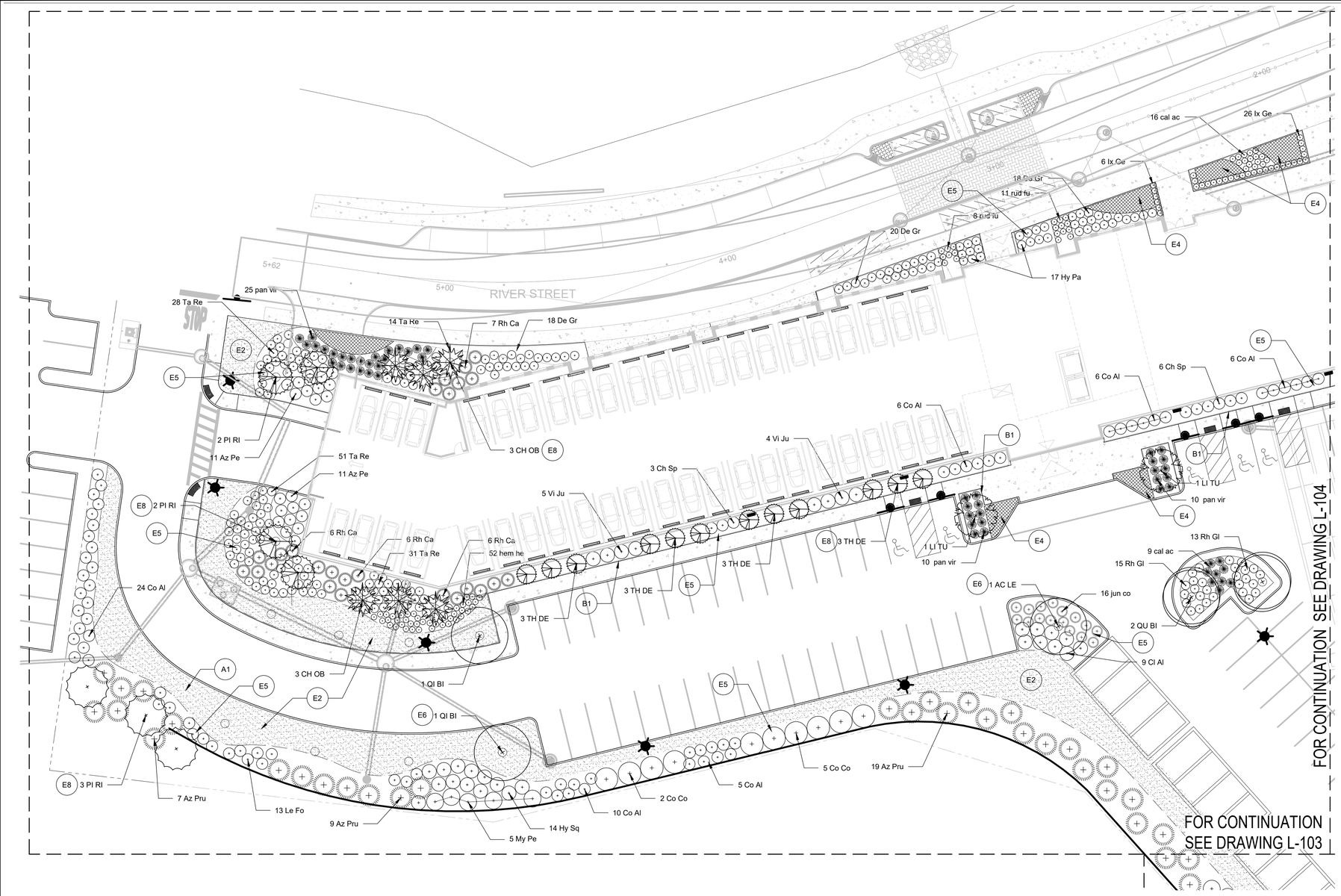
LANDSCAPE PLAN - OVERALL SITE

SCALE: AS SHOWN

L-101



0' 10' 20' 40' 80'

PLANTING PLAN - SCALE 1:20

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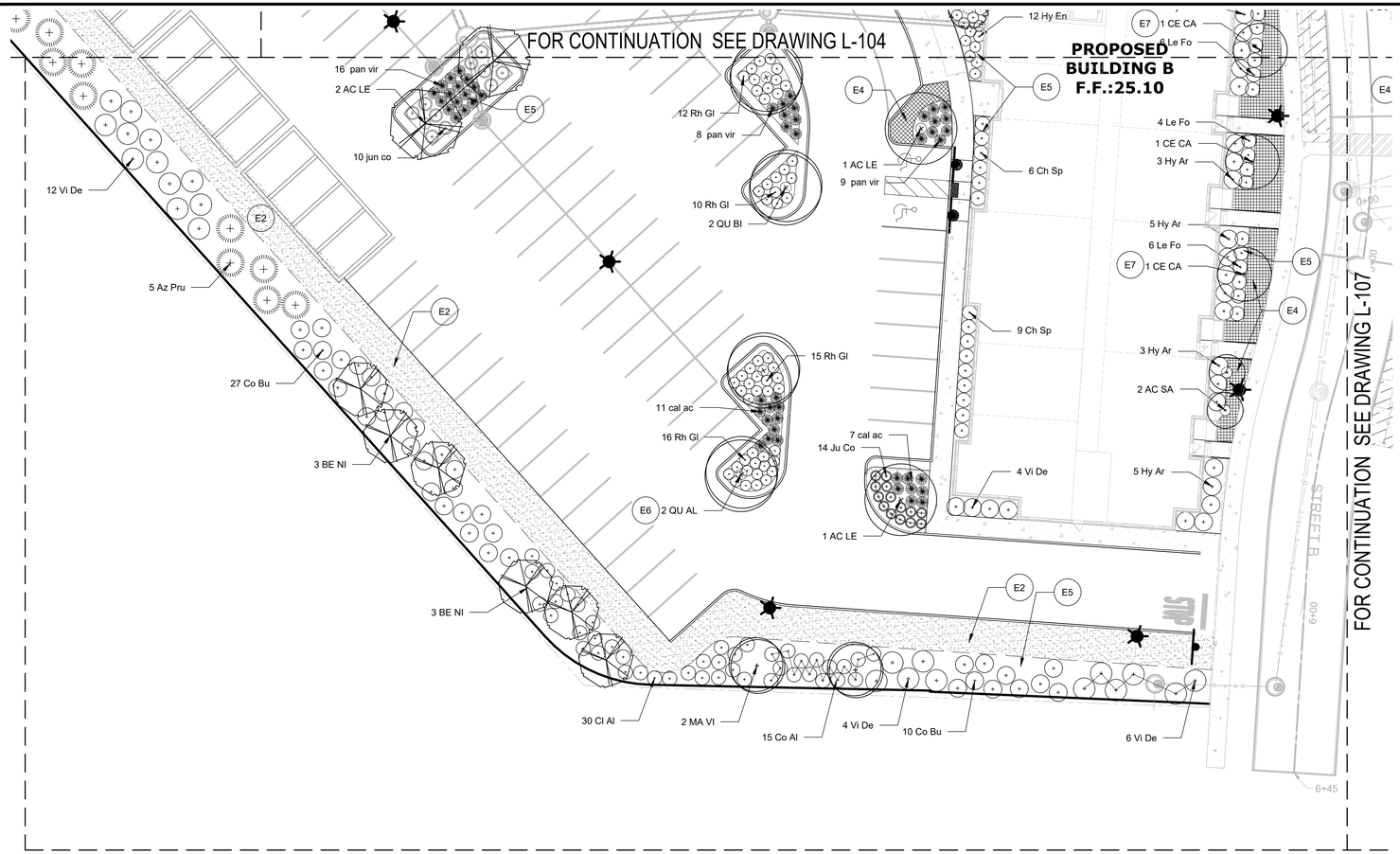
LANDSCAPE PLAN

SCALE: AS SHOWN

L-102



0' 10' 20' 40' 80'

PLANTING PLAN - SCALE 1:20

PLANTING SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	2	*Acer saccharum 'Apollo'*	Apollo Sugar Maple	3" caliper, B&B	As Shown	Single stem, matched
AC FR	5	*Acer freemanii 'Autumn Blaze'*	Autumn Blaze Maple	3" caliper, B&B	As Shown	Single stem, matched
AC LE	16	*Acer saccharum 'Legacy'*	Legacy Sugar Maple	3" caliper	As Shown	Single stem, B&B
AM GR	6	*Amelanchier x grandiflora 'Autumn Brillance'*	Autumn Brillance Serviceberry	10-12' ht	As Shown	Multi-stem, B&B
BE NI	6	*Betula nigra 'Heritage'*	Heritage River Birch	10-12' ht	As Shown	Multi-stem, B&B
BE PO	4	*Betula populifolia 'Whitespire'*	Whitespire Grey Birch	10-12' ht	As Shown	Multi-stem, B&B
CA CA	21	*Carpinus caroliana 'Palisades'*	Palisade American Hornbeam	3" caliper	As Shown	Single Stem, B&B
CE CA	11	*Cercis canadensis alba*	White Redbud	3" caliper, B&B	As Shown	Single stem, matched
GL TR	7	*Gleditsia triacanthos var. inermis 'Shademaster'*	Shademaster Honeylocust	3" caliper, B&B	As Shown	Single stem, matched
LA LA	1	*Larix laricina*	Tamarack	10-12' ht, B&B	As Shown	Single stem
LI ST	18	*Liquidambar styraciflua 'Slender Silhouette'*	Slender Silhouette Sweetgum	3" Caliper	As Shown	Single stem, B&B
LI TU	2	*Liriodendron tulipifera 'Little Volunteer'*	Little Volunteer Tulip Tree	3" Caliper, B&B	As Shown	Single stem, matched
MA VI	2	*Magnolia virginiana 'Moonglow'*	Moonglow Magnolia	10-12', B&B	As Shown	Heavy
PL AC	10	Platanus x acerifoila 'Exclamation'	Exclamation Planetree	3" caliper	As Shown	Single stem, B&B
QU AL	9	Quercus alba	White Oak	3" Caliper, B&B	As Shown	Single stem, matched
QU BI	9	*Quercus bicolor*	Swamp White Oak	3" Caliper, B&B	As Shown	Single stem, matched
SY RE	11	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Japanese Lilac Tree	2.5" caliper	As shown	Single stem, matched
	140					
EVERGREEN TREES						
CH OB	11	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	30	*Juniperus virginiana 'Hillspire'*	Hillspire Eastern Red Cedar	10-12' ht	As Shown	B&B
PI GL	7	*Picea glauca*	White Spruce	8-10'	As Shown	Container
PI RI	13	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	29	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH NI	9	*Thuja occidentalis 'Nigra'*	Dark American Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH SM	5	*Thuja occidentalis 'Smaragd'*	Emerald Green Arborvitae	10-12" ht, B&B	As Shown	Container, Matched

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS SHRUBS						
AZ Pe	22	*Azalea periclymenoides*	Pinxterbloom Azalea	#5	48" O.C.	24-30" ht
Az Pru	40	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	51	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	53	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	72	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	53	*Cornus alba "Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	7	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	187	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	111	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	155	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	37	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	121	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	77	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	48	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	181	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	32	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	215	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	18	*Rosa 'Blushing Knockout'*	Blushing Knockout Rose	#5	24" O.C.	#3 / 18-24" ht
Ro Ic	65	*Rosa 'Iceburg'*	Iceberg Rose	#5	36" O.C.	24" ht.
Ro Ru	125	*Rosa rugosa 'Alba'*	White Beach Rose	#5	48" O.C.	24" ht.
Vi De	30	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	35	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
EVERGREEN SHRUBS						
Ix Ge	180	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	138	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	64	*Ilex glabra 'Strongbox'*	Strongbox Inkberry	#5	30" O.C.	24" ht
Ju Co	96	*Juniperus conferta 'Emerald Sea*	Emerald Sea Shore Juniper	#2	36" O.C.	18-24" ht
Le Fo	130	*Leucothoe fontanesiana 'Compacta'*	Compact Drooping Leucothoe	#5	48" O.C.	18-24" ht
Le Ax	20	*Leucothoe axillaris*	Coast Leucothoe	#5	48" O.C.	18-24" ht
Rh Ca	68	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	44	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	170	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A

Symbol	Qty	Botanical Name	Common Name	Size	Spacing
PERENNIALS					
alc mo	X	*Alchemilla mollis*	Common Lady's Mantle	#1	12" O.C.
ams st	X	*Amsonia 'Stormcloud'*	Stormcloud Blue Star	#1	24" O.C.
ams hu	X	*Amsonia hubrichtii*	Thread-leafed Bluestar	#1	24" O.C.
asc he	X	*Asclepias 'Hello Yellow'*	Butterfly Weed	#1	18" O.C.
ast br	X	*Astilbe 'Bressingham Beauty'*	Bressingham Beauty Astilbe	#1	18" O.C.
ast mi	X	*Astilbe 'Milk and Honey'*	Milk & Honey Astilbe	#1	24" O.C.
cor mo	X	*Coreopsis 'Moonbeam'*	Moonbeam Coreopsis	#1	18" O.C.
den pu	X	*Dennstaedtia punctilobula*	Hay Scented Fern	#2	30" O.C.
ech pu	X	*Echinacea purpurea*	Purple Coneflower	#2	24" O.C.
ger ro	X	*Geranium x 'Rozanne'*	Rozanne Cranesbill	#2	24" O.C.
hem ka	X	*Hemerocallis 'Kansas Kitten'*	Kansas Kitten Daylily	#2	18" O.C.
hem ste	X	*Hemerocallis 'Stella d'Oro'*	Stella d'Oro Daylily	#2	18" O.C.
hem he	X	*Hemeocallis 'Heavenly Angel Ice'*	Heavenly Angel Ice Daylilly	#2	24" O.C.
heu ca	X	*Heuchera 'Caramel'*	Caramel Coral Bells	#2	18" O.C.
heu li	X	*Heuchera 'Lime Marmalade'*	Lime Marmalade Coral Bells	#2	18' O.C.
hos ad	X	*Hosta x 'Abiqua Drinking Gourd'*	Hosta	#2	30" O.C.
hos au	X	*Hosta 'Aureomarginata'*	Gold Edged Plantain Lily	#2	24" O.C.
rud fu	X	*Rudbeckia fulgida 'American Gold Rush'*	Am. Gold Rush Black-Eyed Susan	#2	24" O.C.
sal mn	X	*Salvia 'May Night'*	May Night Salvia	#2	24" O.C.
GRASSES, VINES & GROUND COVERS					
bou gr	X	*Bouteloua gracilis 'Blonde Ambition'*	Side Oats Grama	#2	24" O.C.
cal ac	X	*Calamagrostis acutiflora 'Karl Foerster'*	Karl Foerster Feather Reed Grass	#2	24" O.C.
car bo	X	*Carex 'Bowles Golden'*	Bowles Golden Sedge	#2	24" O.C.
cha la	X	*Chasmanthium latifolium*	Northern Sea Oats	#2	30" O.C.
des ce	X	*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	#2	24" O.C.
epi ru	X	*Epimedium x rubrum*	Red Barrenwort	#1	12" O.C.
hak ma	X	*Hakonechloa macra 'All Gold'*	All Gold Japanese Forest Grass	#2	24" O.C.
hyd an	X	*Hydrangea anomala petiolaris*	Climbing Hydrangea Vine	#2	30" O.C.
lir mu	X	*Liriope muscari 'Big Blue'*	Big Blue Lilyturf	Plug	10" O.C.
mis mo	X	*Miscanthus sinensis 'Morning Light'*	Morning Light Silver Grass	#2	30" O.C.
pan vir	X	*Panicum virgatum 'Shenandoah'*	Shenandoah Switchgrass	#2	36" O.C.

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

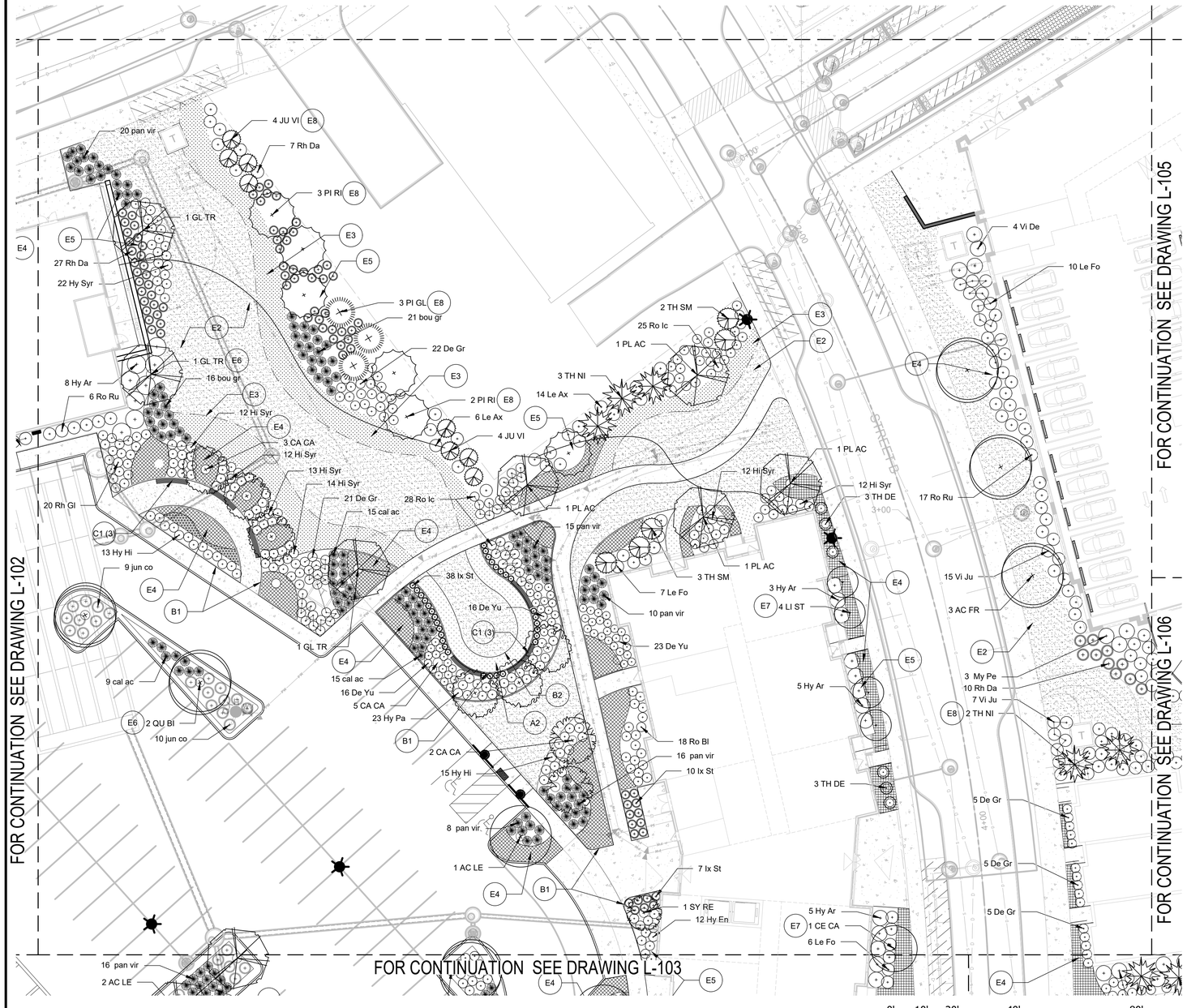
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO: C-0960-007
DATE: JULY 26, 2021
FILE: L300 LANDSCAPE PLAN.DWG
DRAWN BY: JO
CHECKED: RU
APPROVED: RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-103



PLANTING PLAN - SCALE 1:20

PLANT SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	2	*Acer saccharum 'Apollo'*	Apollo Sugar Maple	3" caliper, B&B	As Shown	Single stem, matched
AC FR	5	*Acer freemanii 'Autumn Blaze'*	Autumn Blaze Maple	3" caliper, B&B	As Shown	Single stem, matched
AC LE	16	*Acer saccharum 'Legacy'*	Legacy Sugar Maple	3" caliper	As Shown	Single stem, B&B
AM GR	6	*Amelanchier x grandiflora 'Autumn Brillance'*	Autumn Brillance Serviceberry	10-12' ht	As Shown	Multi-stem, B&B
BE NI	6	*Betula nigra 'Heritage'*	Heritage River Birch	10-12' ht	As Shown	Multi-stem, B&B
BE PO	4	*Betula populifolia 'Whitespire'*	Whitespire Grey Birch	10-12' ht	As Shown	Multi-stem, B&B
CA CA	21	Carpinus caroliana 'Palisades'	Palisade American Hornbeam	3" caliper	As Shown	Single Stem, B&B
CE CA	11	*Cercis canadensis alba*	White Redbud	3" caliper, B&B	As Shown	Single stem, matched
GL TR	7	*Gleditsia triacanthos var. inermis 'Shademaster'*	Shademaster Honeylocust	3" caliper, B&B	As Shown	Single stem, matched
LA LA	1	*Larix laricina*	Tamarack	10-12' ht, B&B	As Shown	Single stem
LI ST	18	*Liquidambar styraciflua 'Slender Silhouette'*	Slender Silhouette Sweetgum	3" Caliper	As Shown	Single stem, B&B
LI TU	2	*Liriodendron tulipifera 'Little Volunteer'*	Little Volunteer Tulip Tree	3" Caliper, B&B	As Shown	Single stem, matched
MA VI	2	*Magnolia virginiana 'Moonglow'*	Moonglow Magnolia	10-12', B&B	As Shown	Heavy
PL AC	10	Platanus x acerifoila 'Exclamation'	Exclamation Planetree	3" caliper	As Shown	Single stem, B&B
QU AL	9	Quercus alba	White Oak	3" Caliper, B&B	As Shown	Single stem, matched
QU BI	9	*Quercus bicolor*	Swamp White Oak	3" Caliper, B&B	As Shown	Single stem, matched
SY RE	11	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Japanese Lilac Tree	2.5" caliper	As shown	Single stem, matched
	140					
EVERGREEN TREES						
CH OB	11	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	30	*Juniperus virginiana 'Hillspire'*	Hillspire Eastern Red Cedar	10-12' ht	As Shown	B&B
PI GL	7	*Picea glauca*	White Spruce	8-10'	As Shown	Container
PI RI	13	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	29	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitate	10-12' ht, B&B	As Shown	Container, Matched
TH NI	9	*Thuja occidentalis 'Nigra'*	Dark American Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH SM	5	*Thuja occidentalis 'Smaragd'*	Emerald Green Arborvitae	10-12" ht, B&B	As Shown	Container, Matched

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS SHRUBS						
AZ Pe	22	*Azalea periclymenoides*	Pinxterbloom Azalea	#5	48" O.C.	24-30" ht
Az Pru	40	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	51	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	53	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	72	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	53	*Cornus alba "Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	7	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	187	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	111	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	155	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	37	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	121	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	77	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	48	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	181	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	32	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	215	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	18	*Rosa 'Blushing Knockout'*	Blushing Knockout Rose	#5	24" O.C.	#3 / 18-24" ht
Ro Ic	65	*Rosa 'Iceburg'*	Iceberg Rose	#5	36" O.C.	24" ht.
Ro Ru	125	*Rosa rugosa 'Alba'*	White Beach Rose	#5	48" O.C.	24" ht.
Vi De	30	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	35	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
EVERGREEN SHRUBS						
Ix Ge	180	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	138	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	64	*Ilex glabra 'Strongbox'*	Strongbox Inkberry	#5	30" O.C.	24" ht
Ju Co	96	*Juniperus conferta 'Emerald Sea*	Emerald Sea Shore Juniper	#2	36" O.C.	18-24" ht
Le Fo	130	*Leucothoe fontanesiana 'Compacta'*	Compact Drooping Leucothoe	#5	48" O.C.	18-24" ht
Le Ax	20	*Leucothoe axillaris*	Coast Leucothoe	#5	48" O.C.	18-24" ht
Rh Ca	68	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	44	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	170	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIALS						
alc mo	X	*Alchemilla mollis*	Common Lady's Mantle	#1	12" O.C.	
ams st	X	*Amsonia 'Stormcloud'*	Stormcloud Blue Star	#1	24" O.C.	
ams hu	X	*Amsonia hubrichtii*	Thread-leafed Bluestar	#1	24" O.C.	
asc he	X	*Asclepias 'Hello Yellow'*	Butterfly Weed	#1	18" O.C.	
ast br	X	*Astilbe 'Bressingham Beauty'*	Bressingham Beauty Astilbe	#1	18" O.C.	
ast mi	X	*Astilbe 'Milk and Honey'*	Milk & Honey Astilbe	#1	24" O.C.	
cor mo	X	*Coreopsis 'Moonbeam'*	Moonbeam Coreopsis	#1	18" O.C.	
den pu	X	*Dennstaedtia punctilobula*	Hay Scented Fern	#2	30" O.C.	
ech pu	X	*Echinacea purpurea*	Purple Coneflower	#2	24" O.C.	
ger ro	X	*Geranium x 'Rozanne'*	Rozanne Cranesbill	#2	24" O.C.	
hem ka	X	*Hemerocallis 'Kansas Kitten'*	Kansas Kitten Daylily	#2	18" O.C.	
hem ste	X	*Hemerocallis 'Stella d'Oro'*	Stella d'Oro Daylily	#2	18" O.C.	
hem he	X	*Hemeocallis 'Heavenly Angel Ice'*	Heavenly Angel Ice Daylilly	#2	24" O.C.	
heu ca	X	*Heuchera 'Caramel'*	Caramel Coral Bells	#2	18" O.C.	
heu li	X	*Heuchera 'Lime Marmalade'*	Lime Marmalade Coral Bells	#2	18' O.C.	
hos ad	X	*Hosta x 'Abiqua Drinking Gourd'*	Hosta	#2	30" O.C.	
hos au	X	*Hosta 'Aureomarginata'*	Gold Edged Plantain Lily	#2	24" O.C.	
rud fu	X	*Rudbeckia fulgida 'American Gold Rush'*	Am. Gold Rush Black-Eyed Susan	#2	24" O.C.	
sal mn	X	*Salvia 'May Night'*	May Night Salvia	#2	24" O.C.	
GRASSES, VINES & GROUND COVERS						
bou gr	X	*Bouteloua gracilis 'Blonde Ambition'*	Side Oats Grama	#2	24" O.C.	
cal ac	X	*Calamagrostis acutiflora 'Karl Foerster'*	Karl Foerster Feather Reed Grass	#2	24" O.C.	
car bo	X	*Carex 'Bowles Golden'*	Bowles Golden Sedge	#2	24" O.C.	
cha la	X	*Chasmanthium latifolium*	Northern Sea Oats	#2	30" O.C.	
des ce	X	*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	#2	24" O.C.	
epi ru	X	*Epimedium x rubrum*	Red Barrenwort	#1	12" O.C.	
hak ma	X	*Hakonechloa macra 'All Gold'*	All Gold Japanese Forest Grass	#2	24" O.C.	
hyd an	X	*Hydrangea anomala petiolaris*	Climbing Hydrangea Vine	#2	30" O.C.	
lir mu	X	*Liriope muscari 'Big Blue'*	Big Blue Lilyturf	Plug	10" O.C.	
mis mo	X	*Miscanthus sinensis 'Morning Light'*	Morning Light Silver Grass	#2	30" O.C.	
pan vir	X	*Panicum virgatum 'Shenandoah'*	Shenandoah Switchgrass	#2	36" O.C.	

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

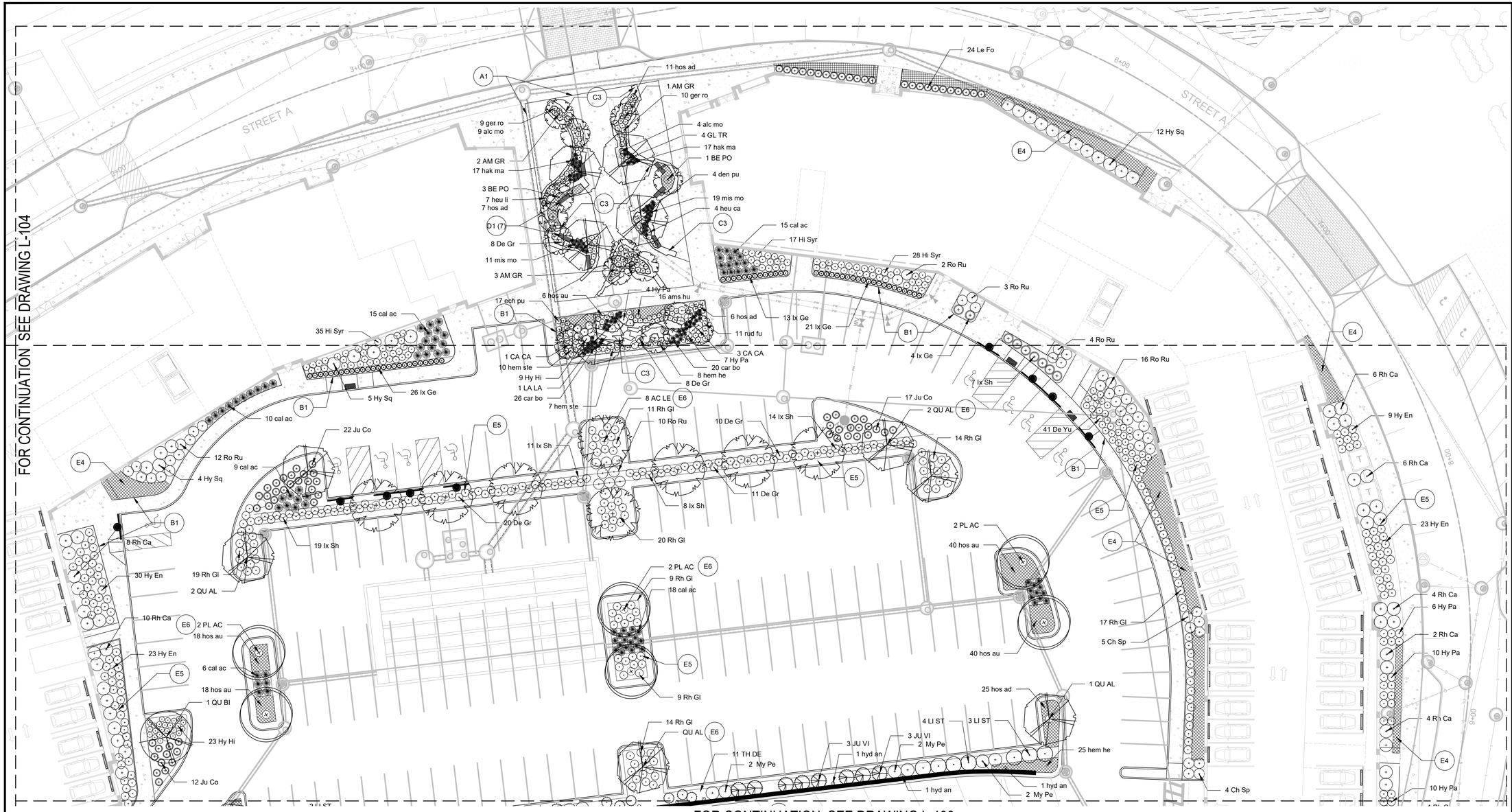
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO:	C-0960-007
DATE:	JULY 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-104



FOR CONTINUATION SEE DRAWING L-104

FOR CONTINUATION SEE DRAWING L-106

0' 10' 20' 40' 80'

PLANTING PLAN - SCALE 1:20

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
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PROJECT NO:	C-0960-007
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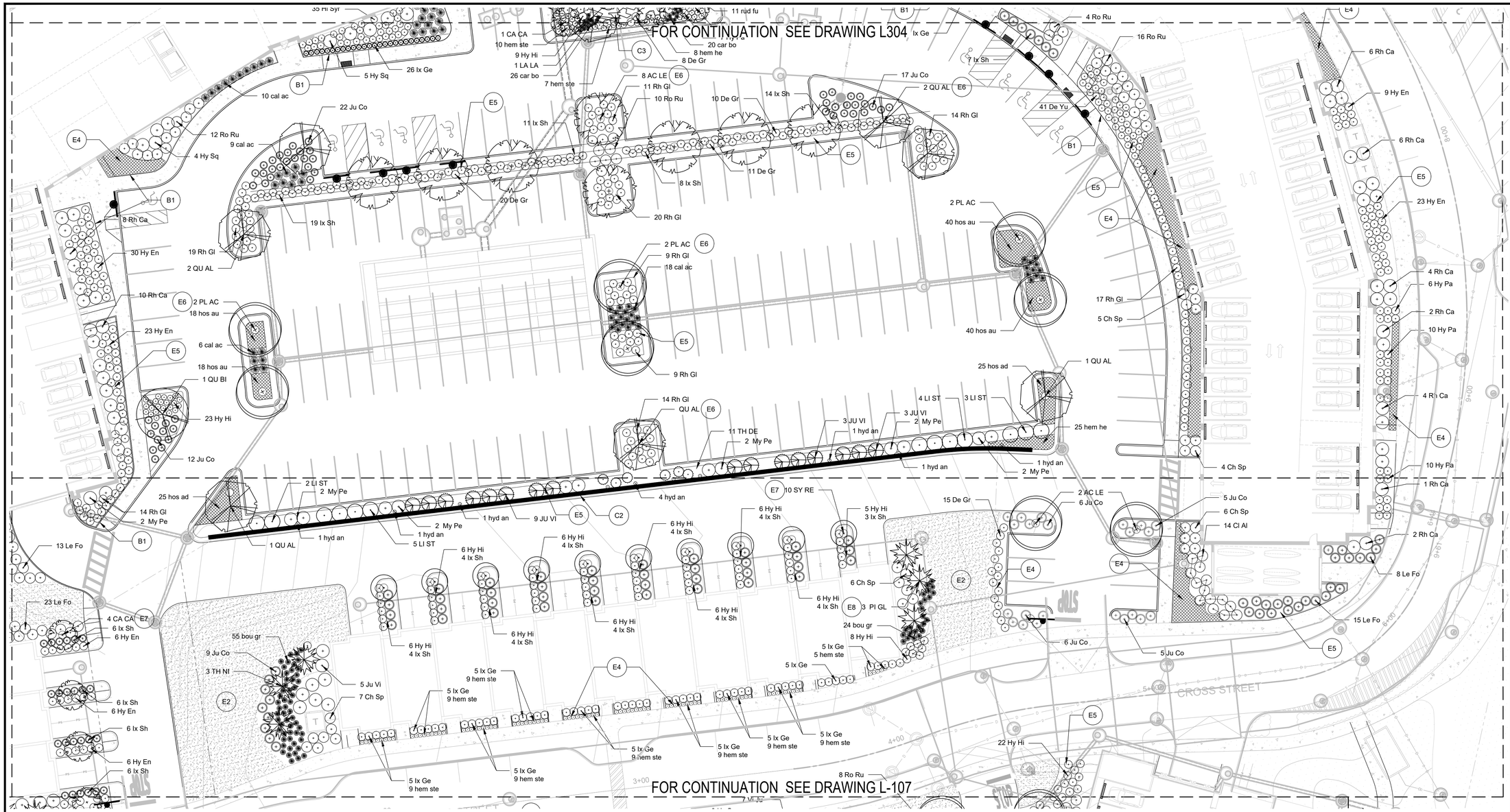
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-105



PLANTING PLAN - SCALE 1:20

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

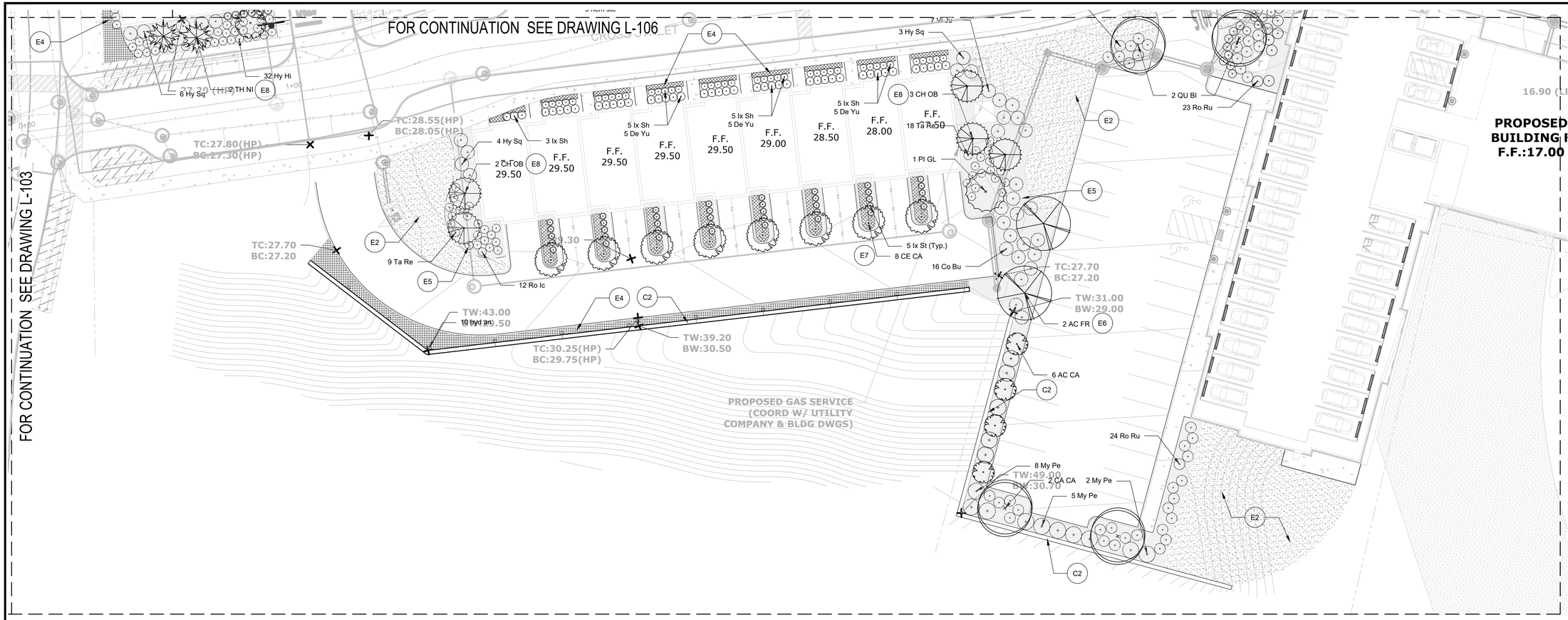
MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO:	C-0960-007
DATE:	JULY 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

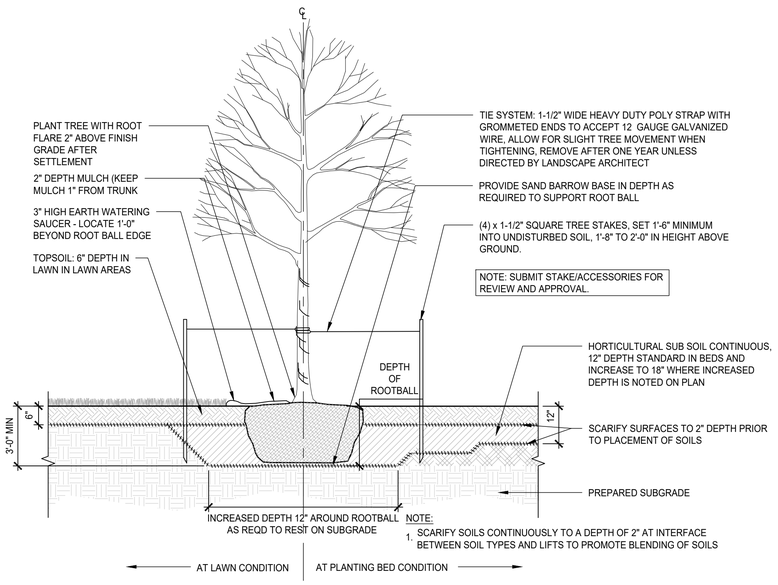
LANDSCAPE PLAN

SCALE: AS SHOWN

L-106



PLANTING PLAN - SCALE 1:20



1 TREE PLANTING - IN LAWN OR PLANT BED AT GRADE

Scale: 1/4"=1'-0"

Tighe&Bond
Engineers | Environmental Specialists

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	9/16/2021	TRC SUBMISSION

PROJECT NO:	C-0960-007
DATE:	JULY 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-107

COCHECHO WATERFRONT

TRC SUBMISSION

SEPTEMBER 16, 2021

DRAWING LIST	
#	NAME
A000	COVER
A100	SITE PLAN DIAGRAM
A111	BUILDING A - GARAGE FLOOR PLAN
A112	BUILDING A - 2ND FLOOR PLAN
A113	BUILDING A - TYPICAL UPPPER FLOOR PLAN
A114	BUILDING A - 5TH FLOOR PLAN
A115	BUILDING A - ROOF PLAN
A121	BUILDING B - 1ST + 2ND FLOOR PLAN
A122	BUILDING B - TYPICAL UPPER FLOOR + ROOF PLAN
A131	BUILDING C - GARAGE FLOOR PLAN
A132	BUILDING C - TYPICAL UPPER FLOOR PLAN
A133	BUILDING C - 5TH FLOOR PLAN
A134	BUILDING C - ROOF PLAN
A141	BUILDING D - GARAGE FLOOR PLAN
A142	BUILDING D - TYPICAL UPPER FLOOR PLAN
A143	BUILDING D - 5TH FLOOR PLAN
A144	BUILDING D - ROOF PLAN

DRAWING LIST	
#	NAME
A151	TOWNHOUSE - FLOOR PLANS
A161	BUILDING F - GARAGE & 1ST FLOOR PLAN
A162	BUILDING F - 5TH FLOOR & ROOF PLAN
A210	BUILDING A ELEVATIONS
A220	BUILDING B ELEVATIONS
A230	BUILDING C ELEVATIONS
A240	BUILDING D ELEVATIONS
A250	TOWNHOUSE ELEVATIONS
A260	BUILDING F ELEVATIONS
A311	BUILDING A SECTION
A321	BUILDING B SECTION
A331	BUILDING C SECTION
A341	BUILDING D SECTION
A361	BUILDING F SECTION
A900	PERSPECTIVE VIEWS
A901	PERSPECTIVE VIEWS

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177 CORPORATE DR.
PORTSMOUTH, NH

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HALVORSON DESIGN
25 KINGSTON ST.
BOSTON, MA

COCHECHO WATERFRONT
RIVER STREET, DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Designan J Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE: TRC SUBMISSION
DATE: SEPTEMBER 16, 2021
PROJECT #: 20049
SCALE:

DRAWING TITLE
COVER

DRAWING NUMBER
A000

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PROJECT METRICS

OVERALL SITE	RESIDENTIAL UNITS	RESIDENTIAL GSF	COVERED PARKING	COMMERCIAL GSF
BUILDING A	97	108,300	43	5,870
BUILDING B	60	70,700		
BUILDING C	95	99,600	21	11,615
BUILDING D	99	112,300	31	8,900
TOWNHOUSES E	23	5,850	23	
BUILDING F	42	60,925	27	
TOTAL	**416**	**457,675**	**145**	**26,385**

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COCHECHO WATERFRONT

RIVER STREET, DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Dan Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1" = 60'-0"

DRAWING TITLE
SITE PLAN DIAGRAM

DRAWING NUMBER
A100

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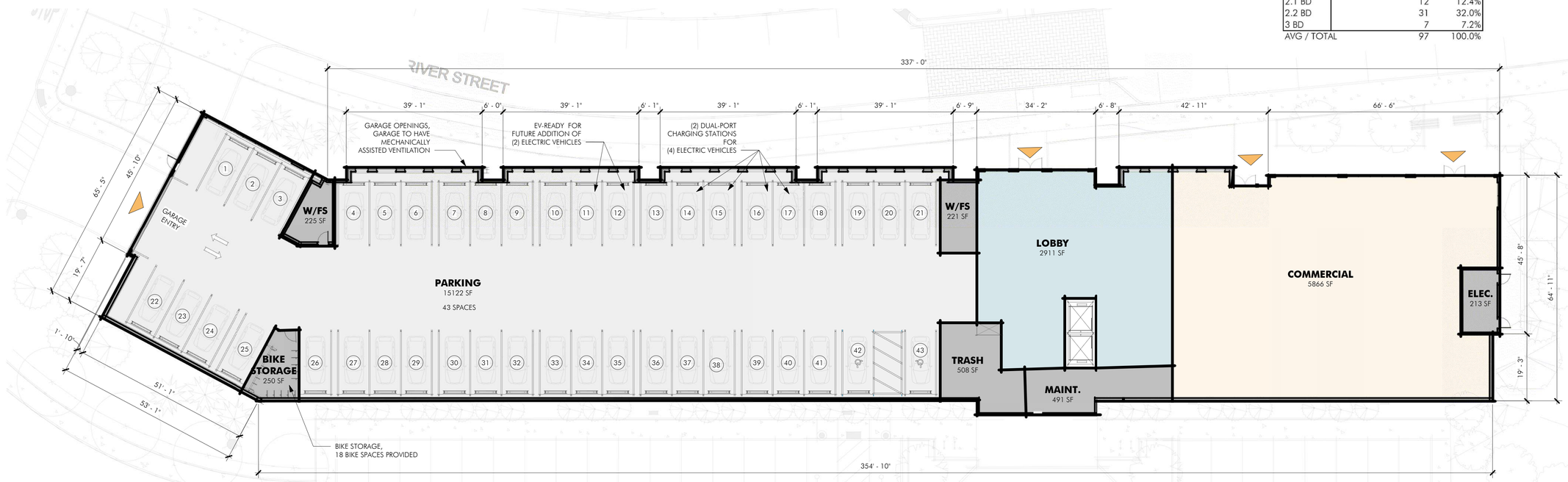
2 2ND FLOOR PLAN
1/16" = 1'-0"

UNIT MIX - BUILDING A

UNIT TYPE	SIZE (GSF)	COUNT	MIX
STUDIO		11	11.4%
1 BD		36	37.1%
2.1 BD		12	12.4%
2.2 BD		31	32.0%
3 BD		7	7.2%
AVG / TOTAL		97	100.0%



1 PARKING LEVEL - 1ST FLOOR PLAN
1/16" = 1'-0"

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COCHECHO WATERFRONT
BUILDING A
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Designan J Mahrouni
No. 04331
THE STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING A - 1ST & 2ND FLOOR PLAN

DRAWING NUMBER
A111

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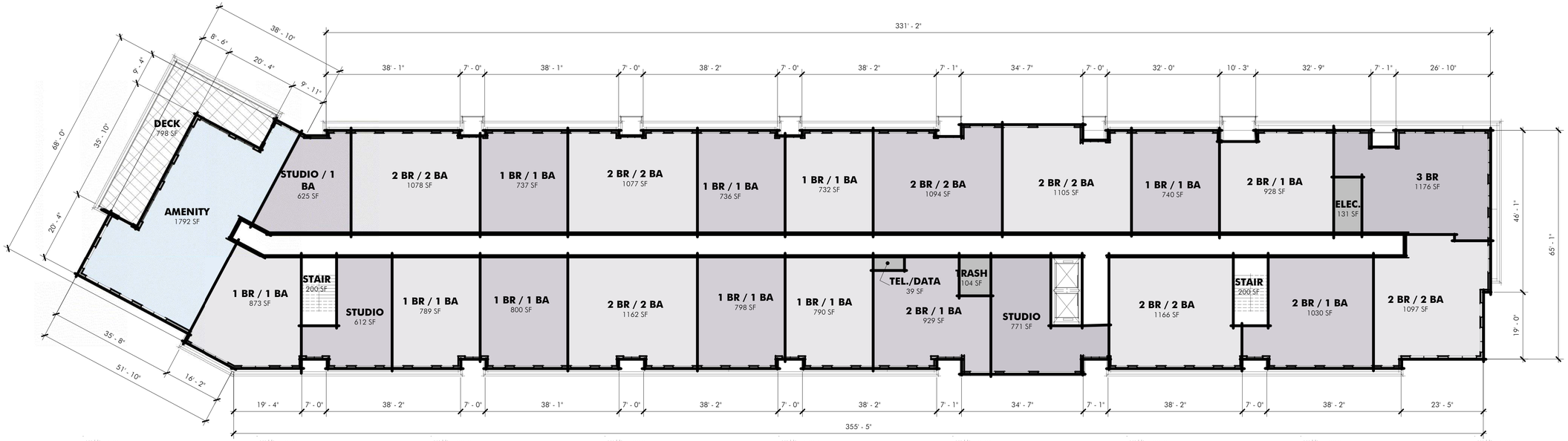
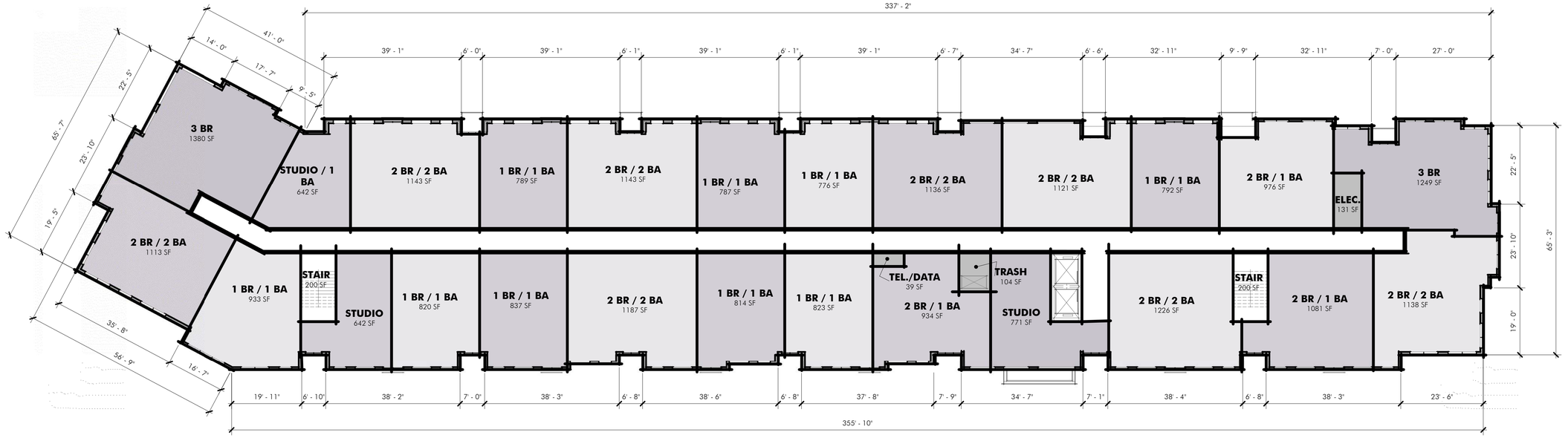


2 5TH FLOOR PLAN

1/16" = 1'-0"



1 TYPICAL UPPER FLOOR PLAN - 3RD FLOOR SHOWN

1/16" = 1'-0"

ARCHITECT

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PORTSMOUTH, NH

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HALVORSON DESIGN

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BOSTON, MA

COCHECHO WATERFRONT BUILDING A

RIVER STREET DOVER, NH

TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Dennigan J. Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE

BUILDING A - TYP. UPPER & 5TH FLOOR PLANS

DRAWING NUMBER

A112

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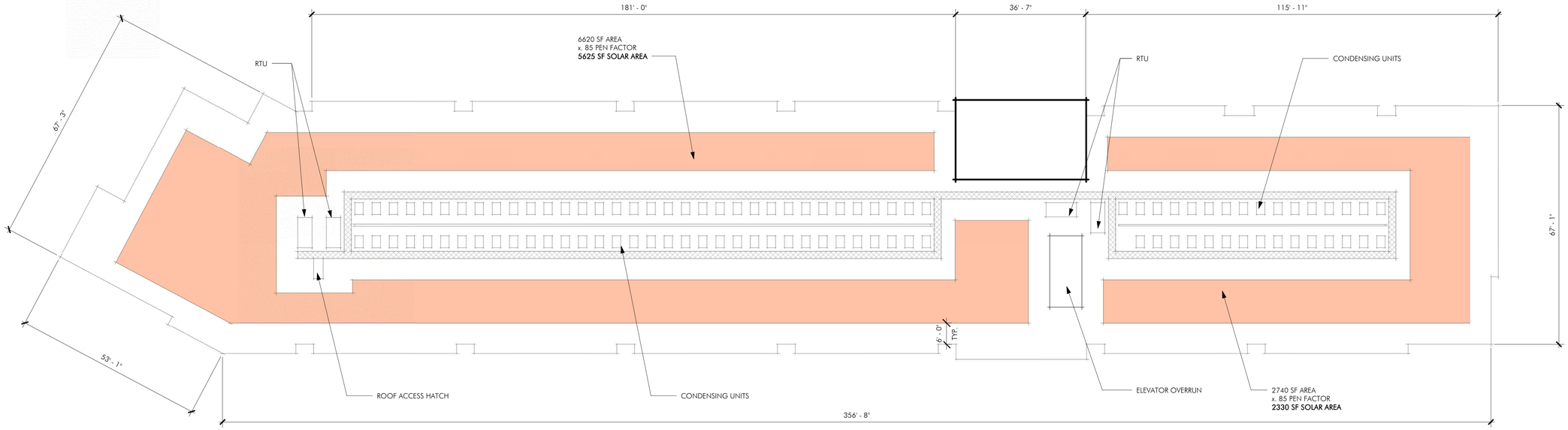

1 ROOF PLAN
1/16" = 1'-0"

LEGEND

SOLAR READY AREA

TOTAL POTENTIAL SOLAR AREA = 7955 SF

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177 CORPORATE DR.
PORTSMOUTH, NH

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BUILDING A
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REVISIONS

MARK	ISSUE	DATE

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Designan J Brown
No.04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING A - ROOF PLAN

DRAWING NUMBER
A113

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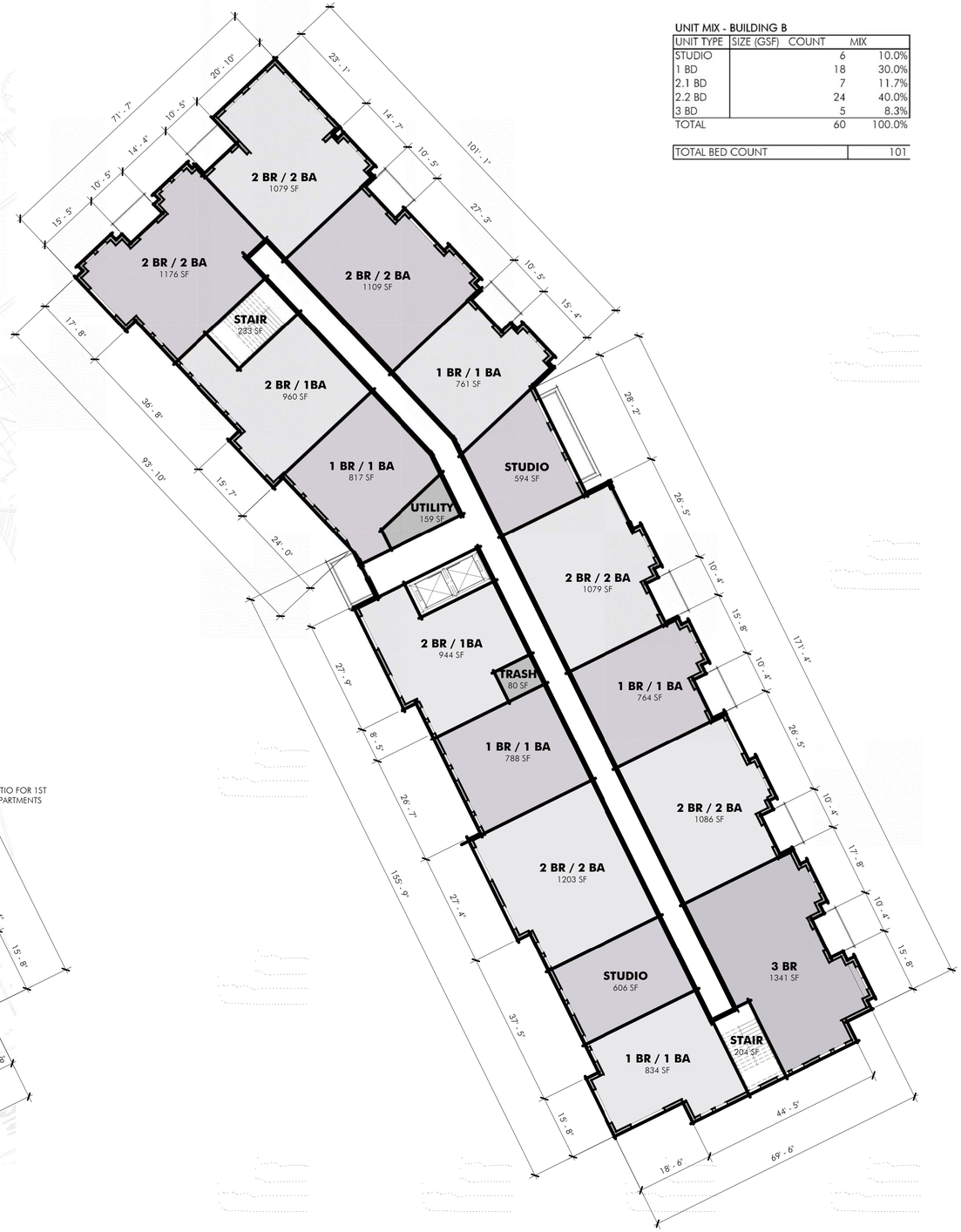
1 1ST FLOOR PLAN
1/16" = 1'-0"



2 2ND FLOOR PLAN
1/16" = 1'-0"

UNIT MIX - BUILDING B

UNIT TYPE	SIZE (GSF)	COUNT	MIX
STUDIO		6	10.0%
1 BD		18	30.0%
2.1 BD		7	11.7%
2.2 BD		24	40.0%
3 BD		5	8.3%
TOTAL		60	100.0%

TOTAL BED COUNT	101

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BOSTON, MA

COCHECHO WATERFRONT
BUILDING B
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

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Designan
Andrews
No. 04331
THE STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING B - 1ST & 2ND FLOOR PLAN

DRAWING NUMBER
A121

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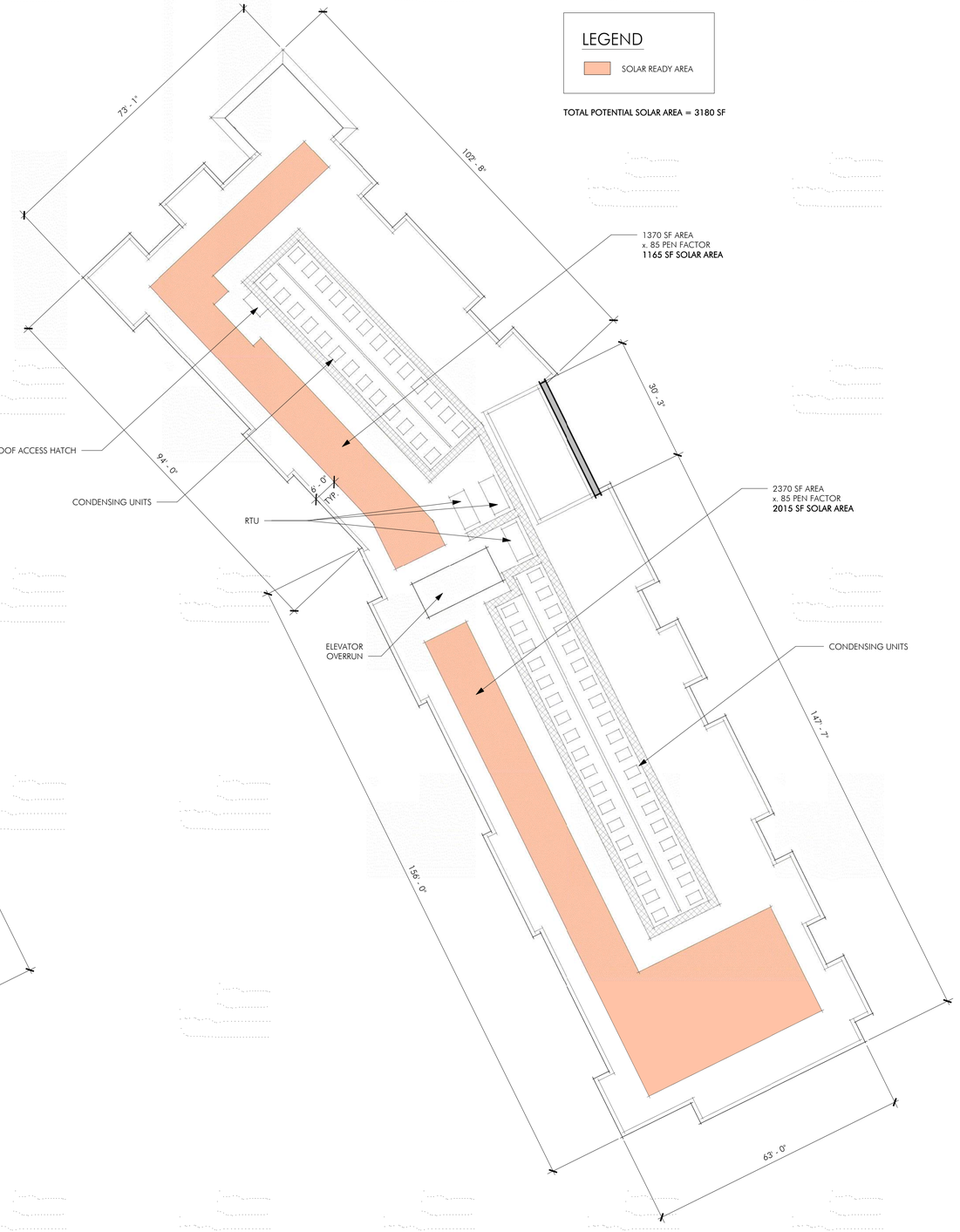
1 4TH FLOOR PLAN
1/16" = 1'-0"



2 ROOF PLAN
1/16" = 1'-0"

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BUILDING B
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REVISIONS

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Dertignan J Brown
No. 04331
THE STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING B - TYP. UPPER FLOOR & ROOF PLAN

DRAWING NUMBER
A122

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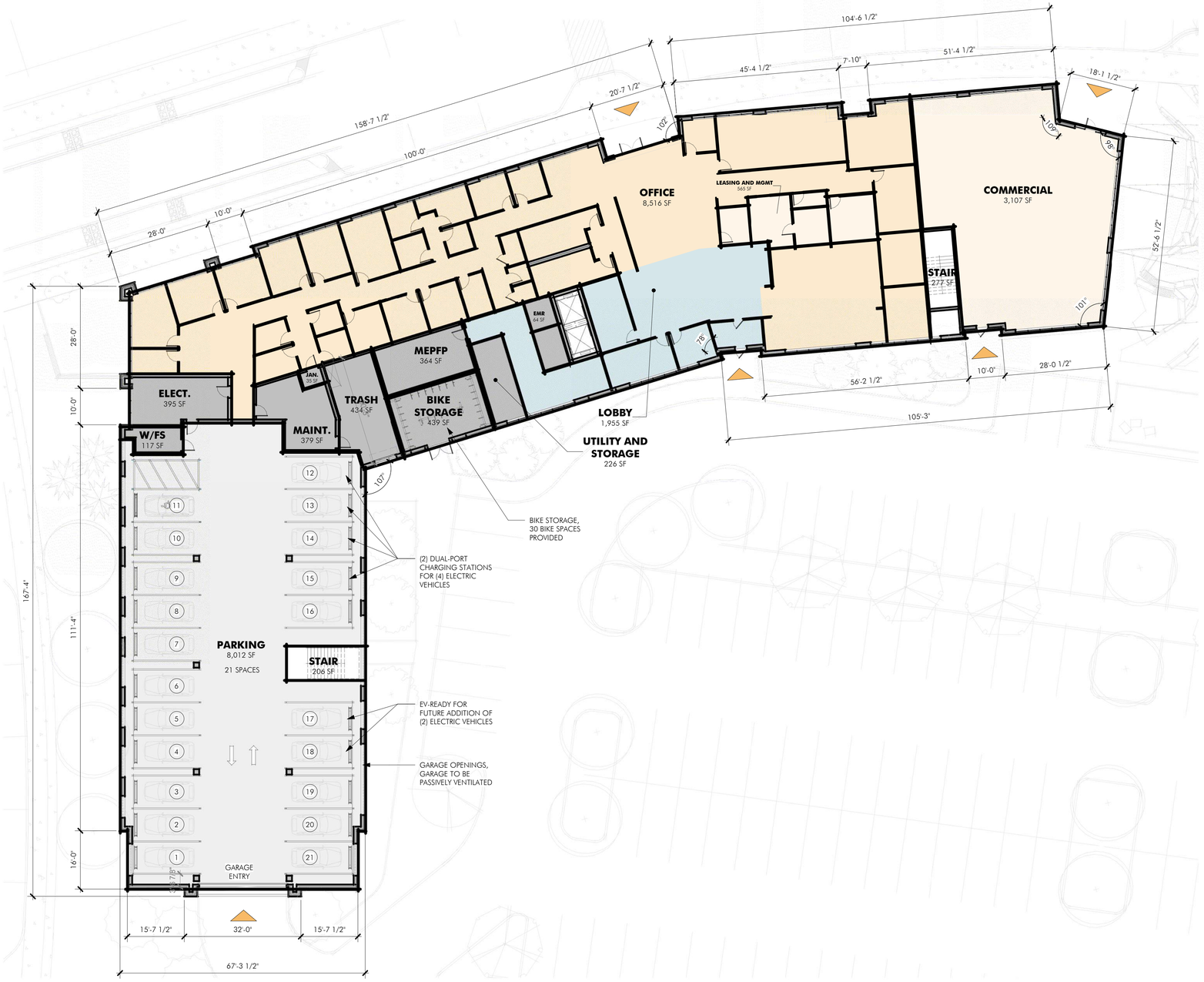

1 PARKING LEVEL - 1ST FLOOR PLAN
1/16" = 1'-0"

UNIT MIX - BUILDING C

UNIT TYPE	SIZE (GSF)	COUNT	MIX
STUDIO		7	7.4%
1 BD		39	41.1%
2.1 BD		15	15.8%
2.2 BD		26	27.4%
3 BD		8	8.4%
AVG / TOTAL		95	100.0%

TOTAL BED COUNT	152

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COCHECHO WATERFRONT
BUILDING C
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Designan J Mcgrath
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING C - GARAGE FLOOR PLAN

DRAWING NUMBER
A131

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1 TYPICAL UPPER FLOOR PLAN - 2ND FLOOR SHOWN
1/16" = 1'-0"

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BUILDING C
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Deborah J Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING C - TYPICAL UPPER FLOOR PLAN

DRAWING NUMBER
A132

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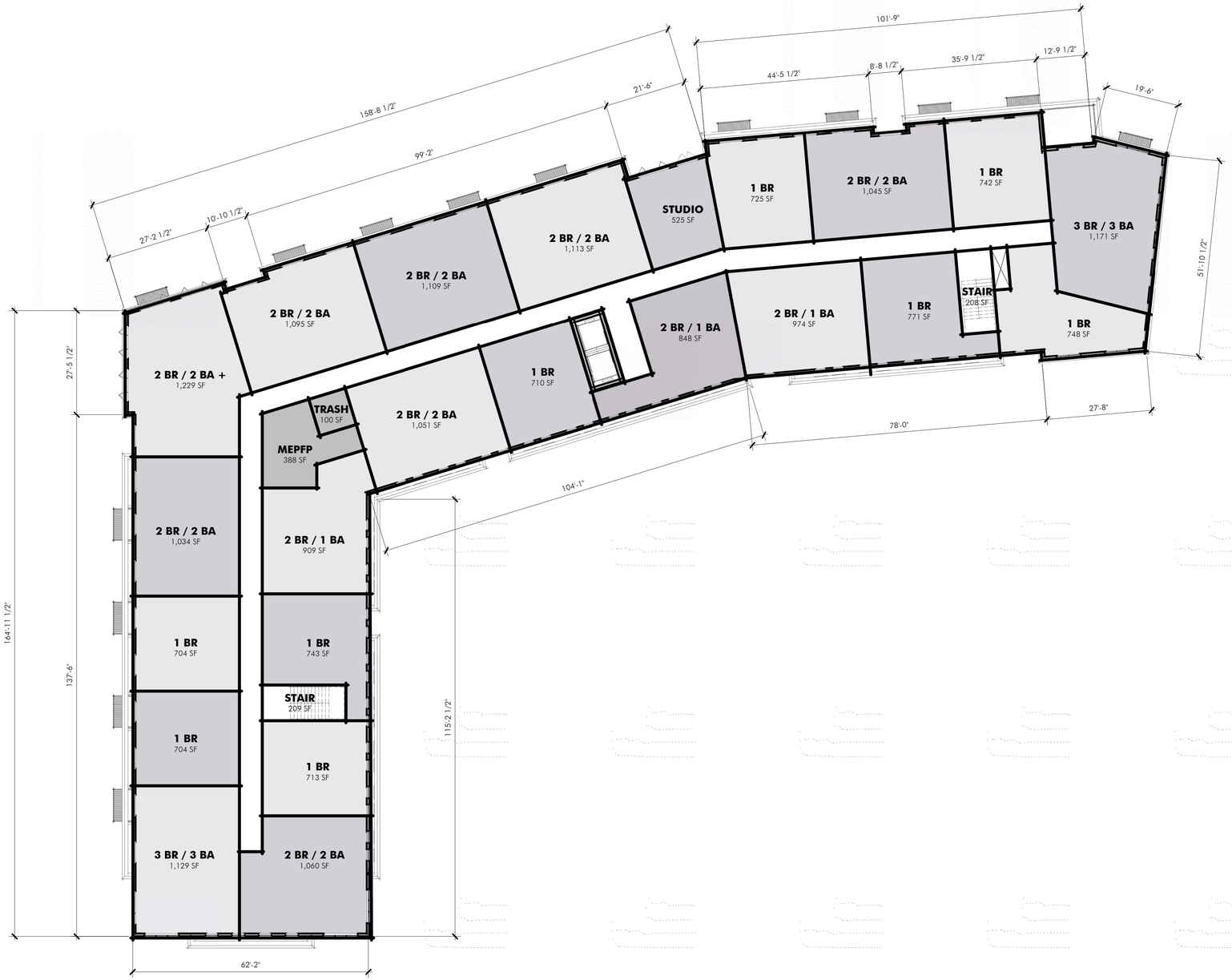

1 5TH FLOOR PLAN
1/16" = 1'-0"

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BUILDING C
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Designan
Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING C -
5TH FLOOR PLAN

DRAWING NUMBER
A133

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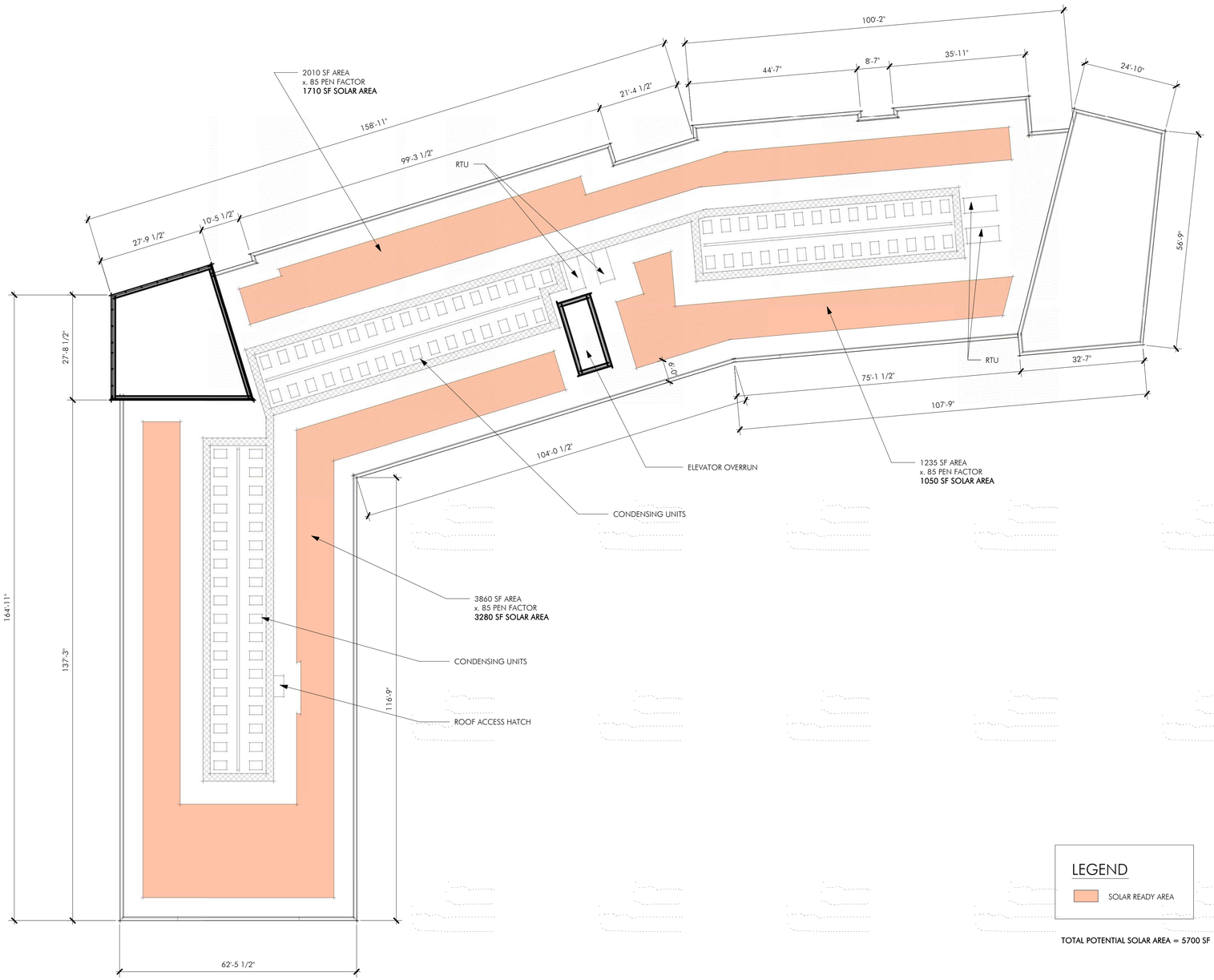

1 ROOF PLAN
1/16" = 1'-0"

LEGEND

SOLAR READY AREA

TOTAL POTENTIAL SOLAR AREA = 5700 SF

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BUILDING C
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TRC SUBMISSION

REVISIONS

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LICENSED ARCHITECT
Designan
Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING C -
ROOF PLAN

DRAWING NUMBER
A134

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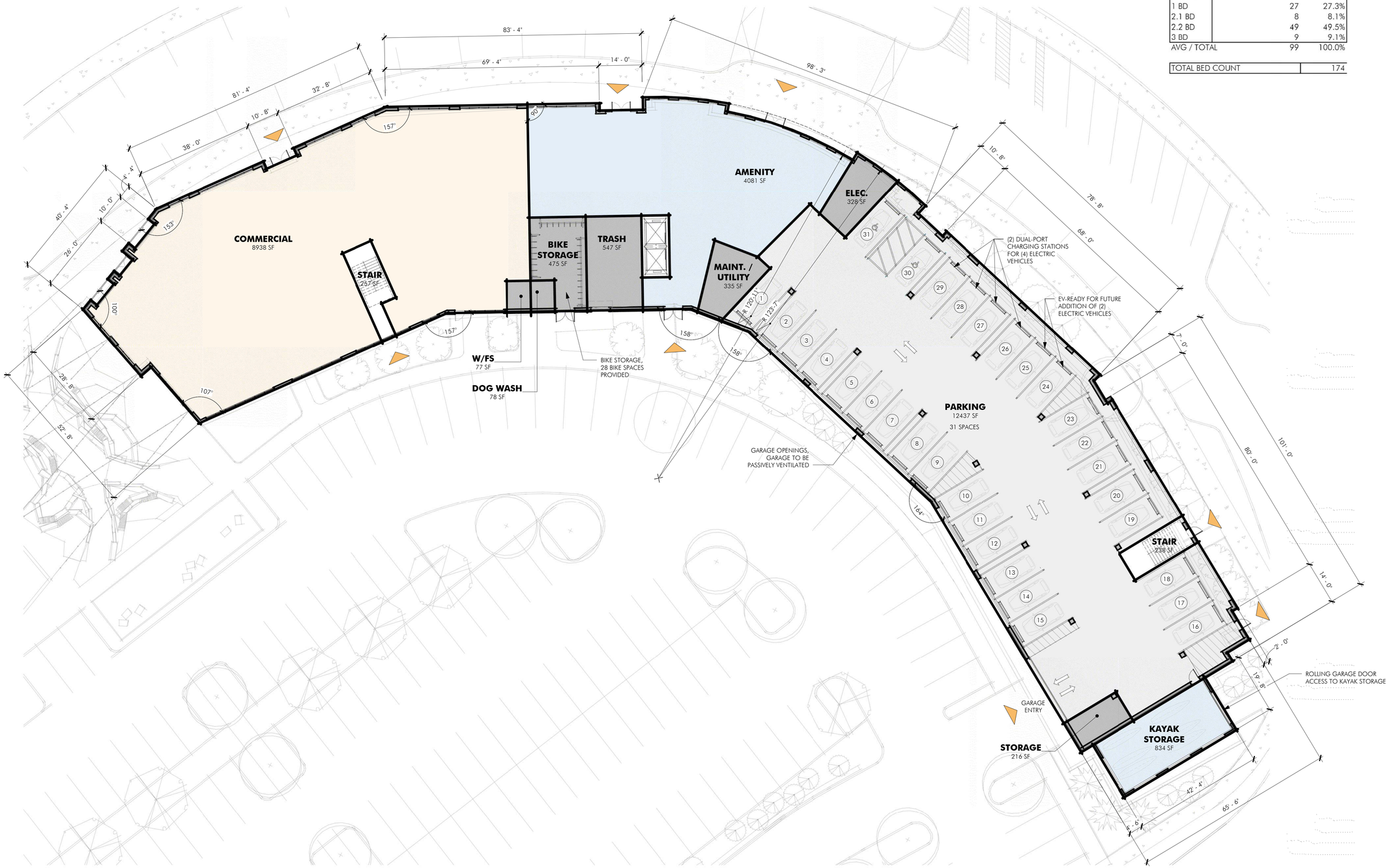

1 1ST FLOOR PLAN
1/16" = 1'-0"

UNIT MIX - BUILDING D

UNIT TYPE	SIZE (GSF)	COUNT	MIX
STUDIO		6	6.1%
1 BD		27	27.3%
2.1 BD		8	8.1%
2.2 BD		49	49.5%
3 BD		9	9.1%
AVG / TOTAL		99	100.0%

TOTAL BED COUNT	174

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LANDSCAPE ARCHIT
HALVORSON DESIGN
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BOSTON, MA

COCHECHO WATERFRONT
BUILDING D
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

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LICENSED ARCHITECT
Dustin J. Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	SEPTEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING D - GARAGE FLOOR PLAN

DRAWING NUMBER
A141

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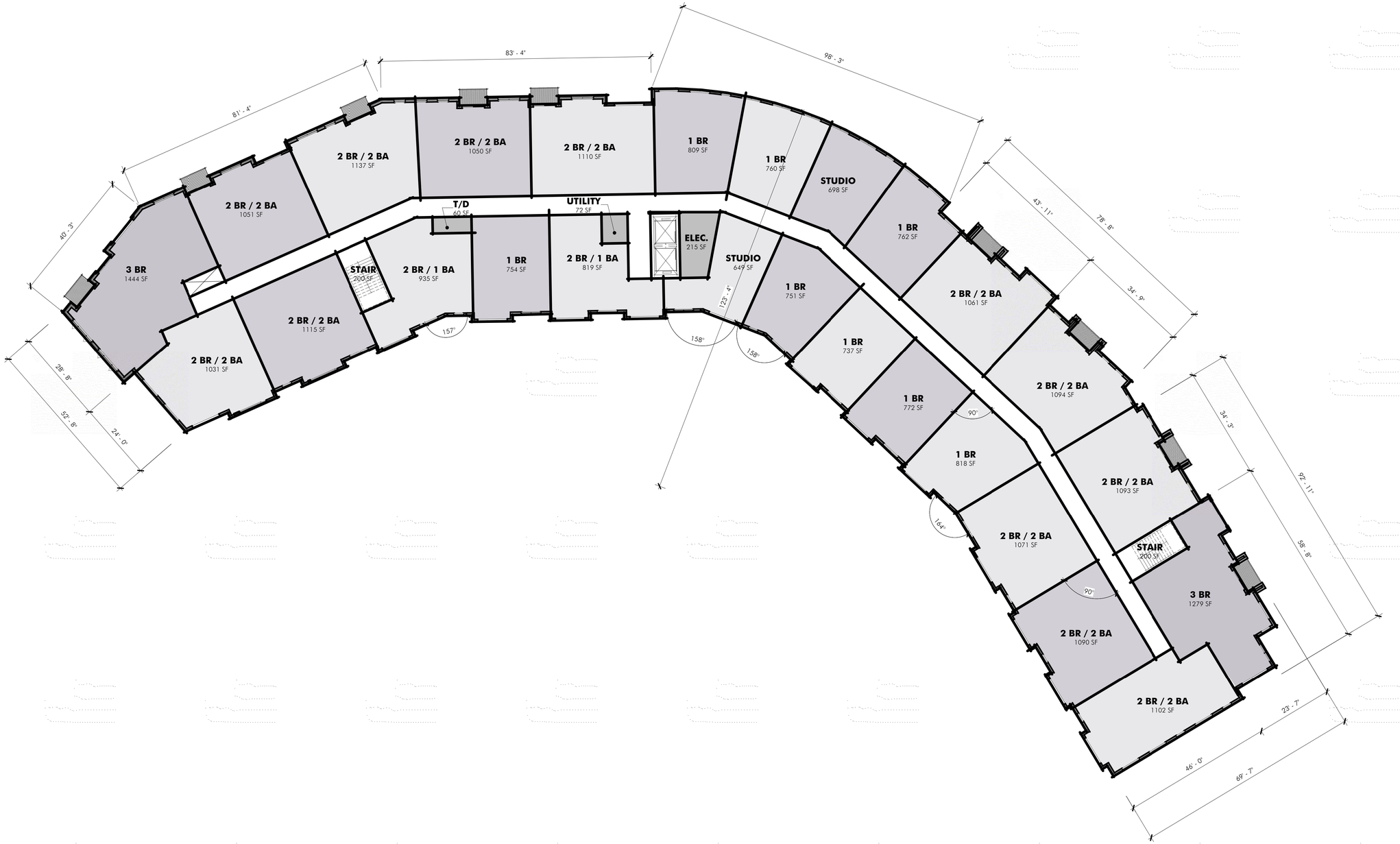

1 TYPICAL UPPER FLOOR PLAN - 3RD FLOOR SHOWN
1/16" = 1'-0"

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No. 04331
THE STATE OF NEW HAMPSHIRE

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BUILDING D - TYPICAL UPPER FLOOR PLAN

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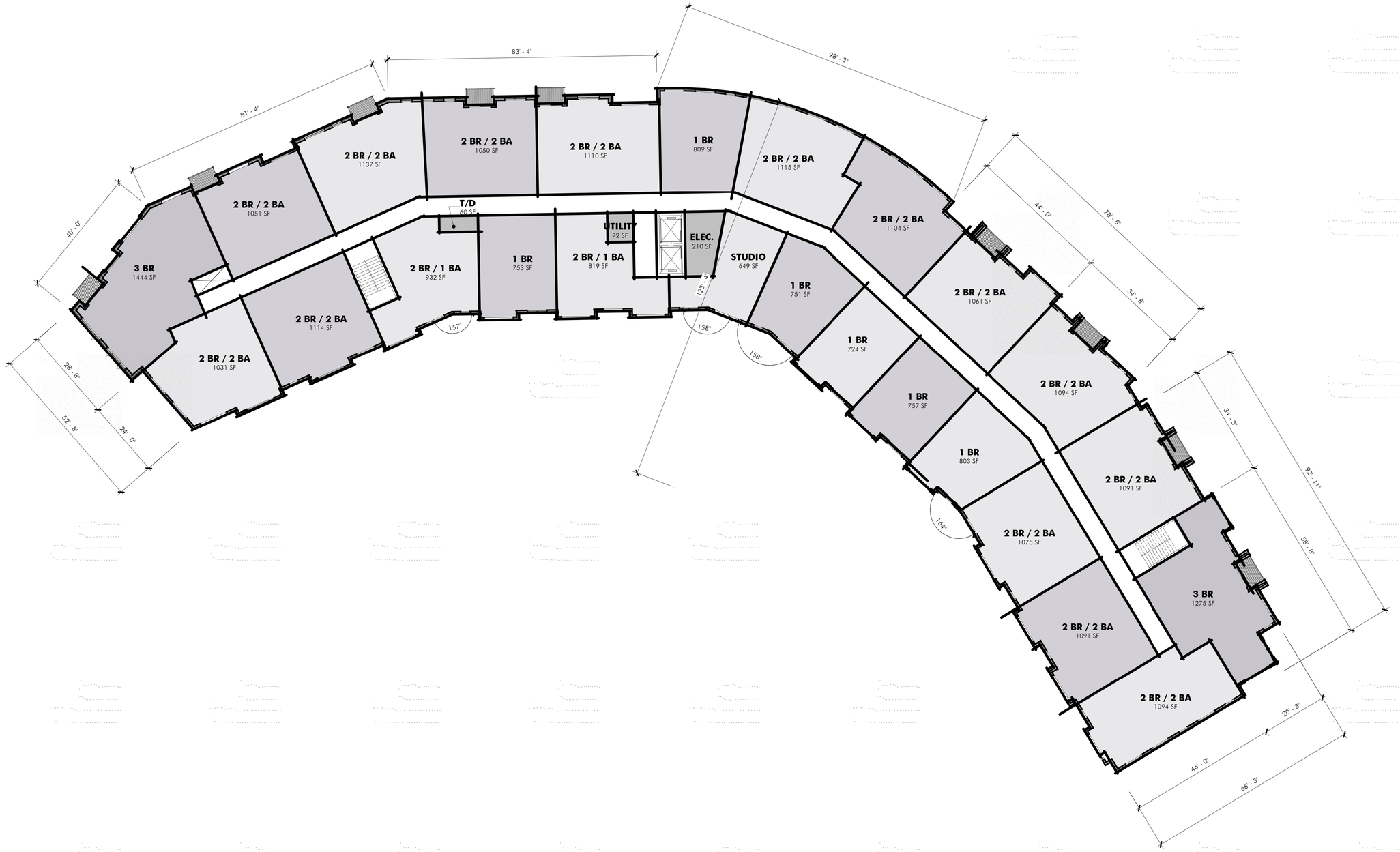

1 4TH FLOOR PLAN
1/16" = 1'-0"

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BUILDING D - FOURTH FLOOR PLAN

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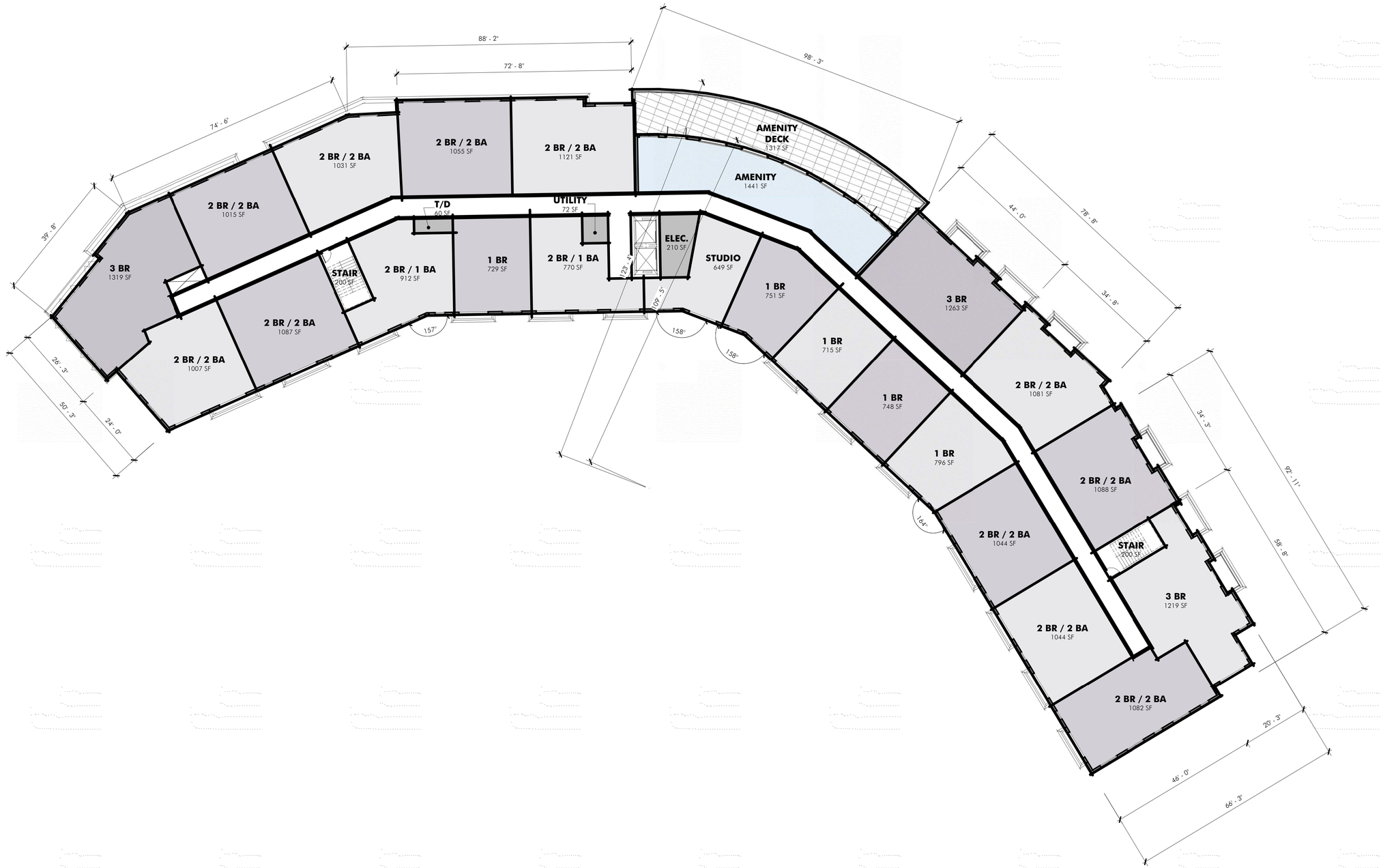

1 5TH FLOOR PLAN
1/16" = 1'-0"

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DRAWING TITLE
BUILDING D -
5TH FLOOR PLAN

DRAWING NUMBER
A144

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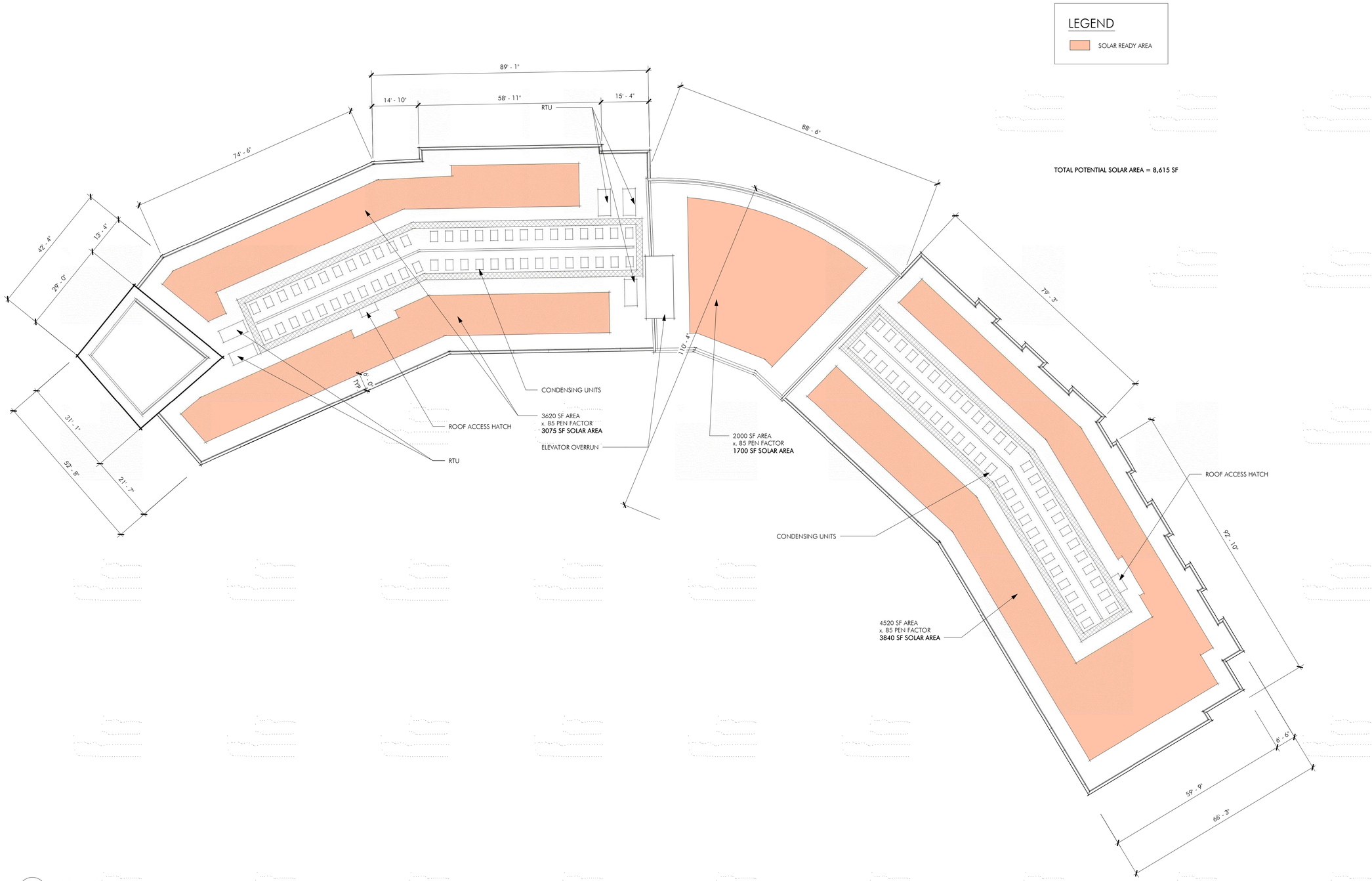

1 ROOF, T.O.SHTG
1/16" = 1'-0"

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DRAWING TITLE
BUILDING D - ROOF PLAN

DRAWING NUMBER
A145

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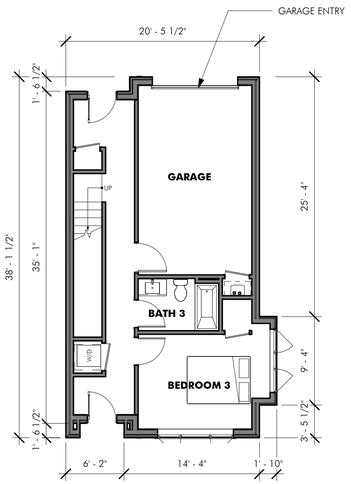
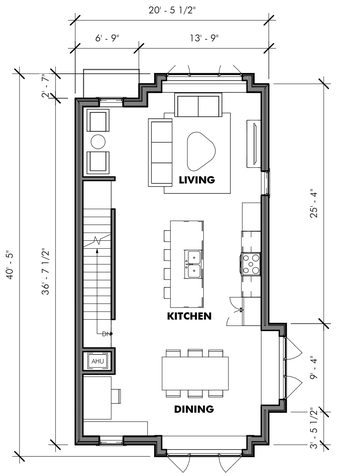
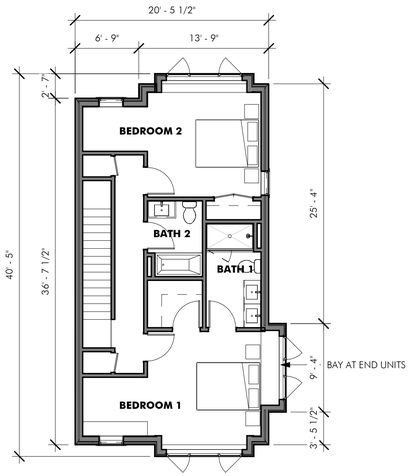


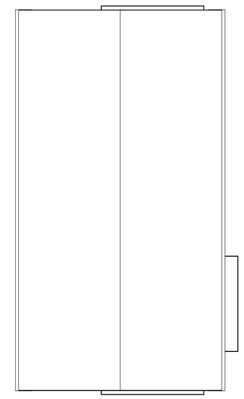
1 1ST FLOOR PLAN
1/8" = 1'-0"



2 2ND FLOOR PLAN
1/8" = 1'-0"



3 3RD FLOOR PLAN
1/8" = 1'-0"



4 ROOF PLAN
1/8" = 1'-0"

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No. 04331
STATE OF NEW HAMPSHIRE

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DRAWING TITLE
TYPICAL TOWNHOUSE FLOOR PLANS

DRAWING NUMBER
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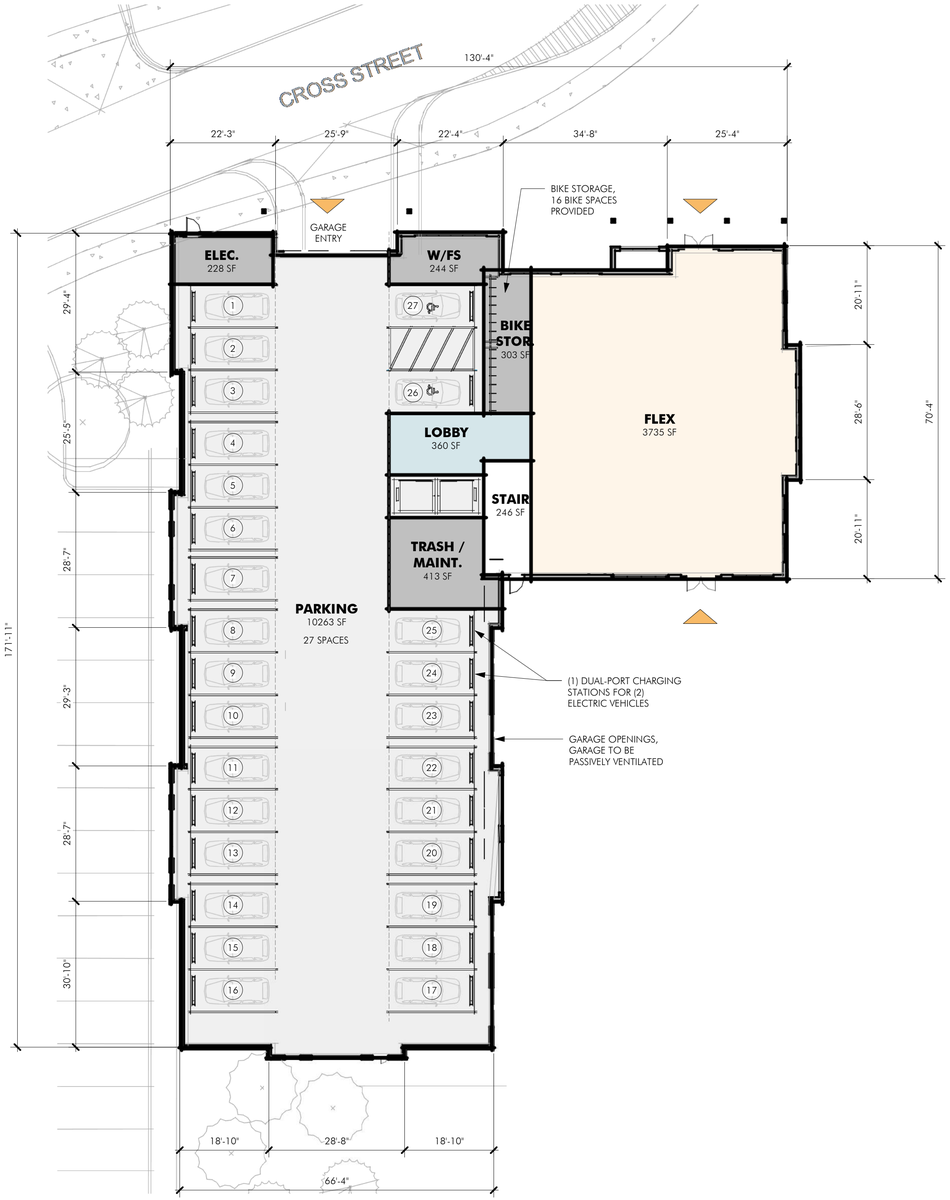

1 PARKING LEVEL - 1ST FLOOR PLAN
1/16" = 1'-0"

2 FIRST FLOOR PLAN
1/16" = 1'-0"

UNIT MIX - BUILDING F

UNIT TYPE	SIZE (GSF)	COUNT	MIX
STUDIO			0.0%
1 BD	875	15	35.7%
2.1 BD			0.0%
2.2 BD	1250	22	52.4%
3 BD	1950	5	11.9%
AVG / TOTAL		42	100.0%

TOTAL BED COUNT	74

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DRAWING TITLE
BUILDING F - GARAGE & 1ST FLOOR PLAN

DRAWING NUMBER
A161

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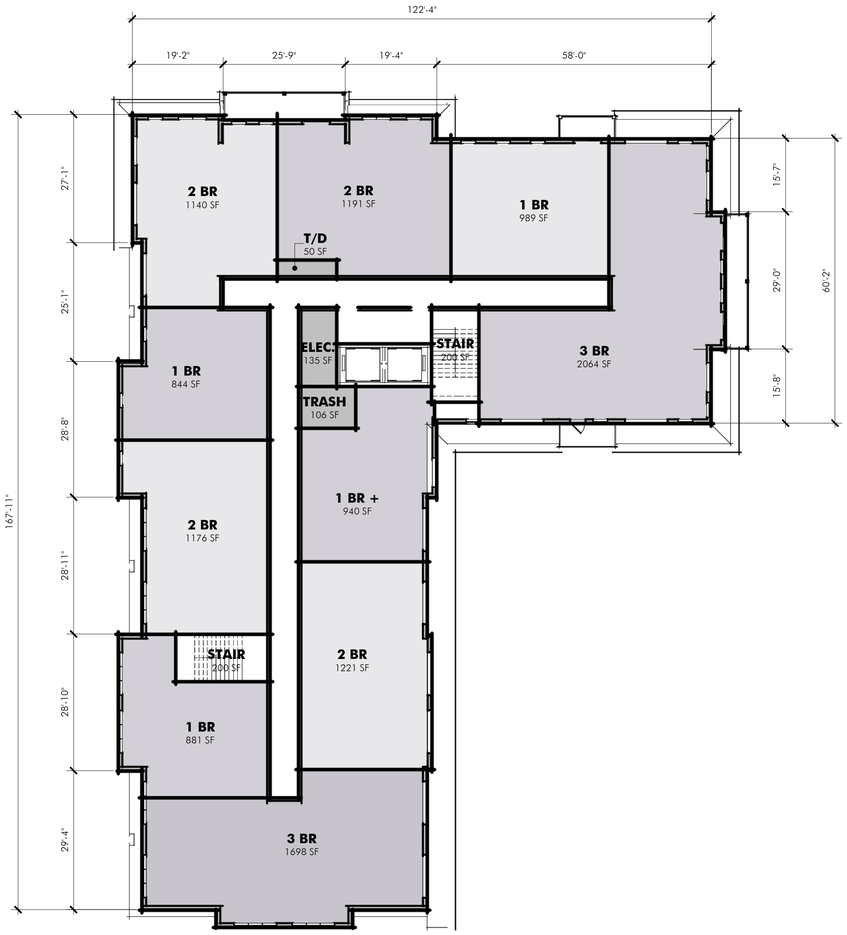
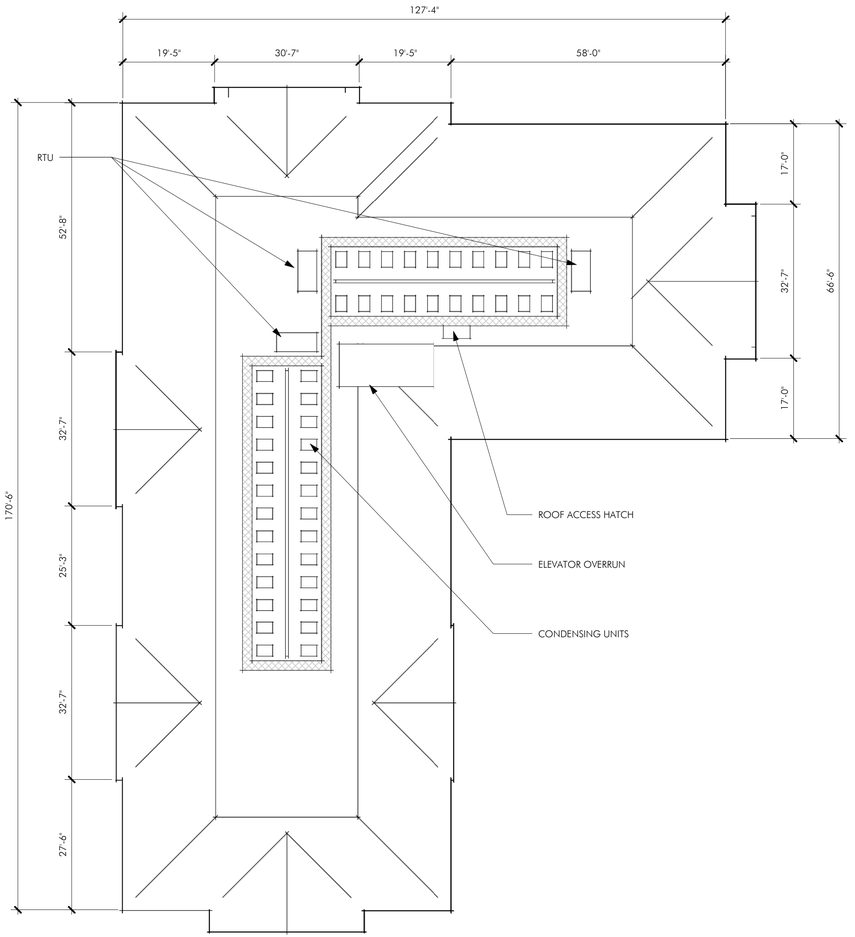


1 5TH FLOOR PLAN
1/16" = 1'-0"



2 ROOF PLAN
1/16" = 1'-0"

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DRAWING TITLE
BUILDING F - 5TH FLOOR & ROOF PLAN

DRAWING NUMBER
A162

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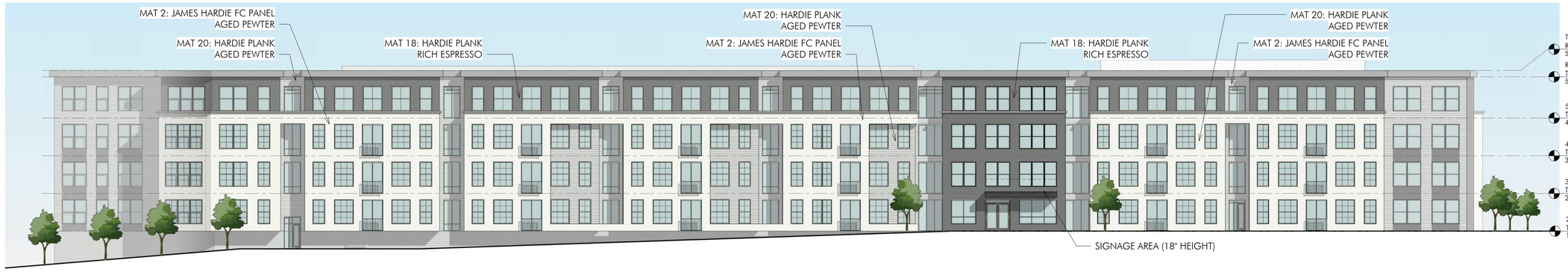
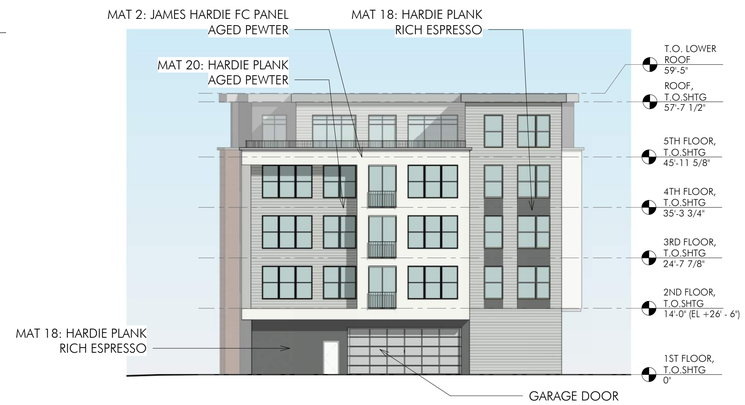
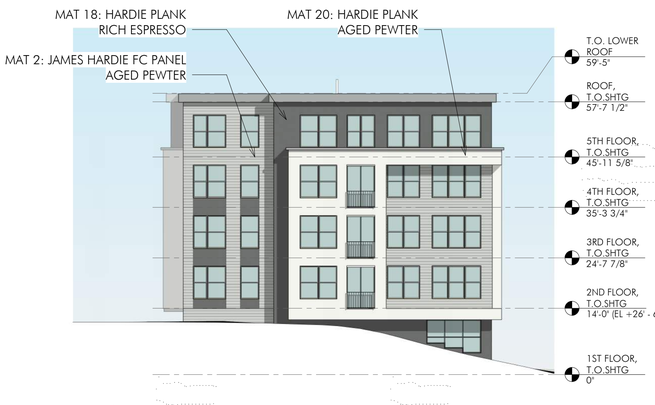
1 ELEVATION FROM RIVER STREET
1/16" = 1'-0"



2 ELEVATION FROM PARKING LOT
1/16" = 1'-0"



3 LEFT ELEVATION
1/16" = 1'-0"



4 RIGHT ELEVATION
1/16" = 1'-0"

ELEVATION LEGEND

- MAT 2: JAMES HARDIE FC PANEL - AGED PEWTER
- MAT 5: BRICK - RED
- MAT 18: HARDIE PLANK - RICH ESPRESSO
- MAT 20: HARDIE PLANK - AGED PEWTER

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DRAWING TITLE
BUILDING A ELEVATIONS

DRAWING NUMBER
A210

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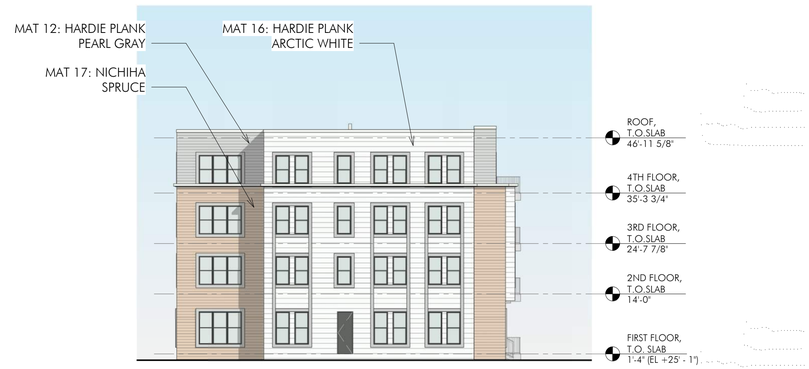
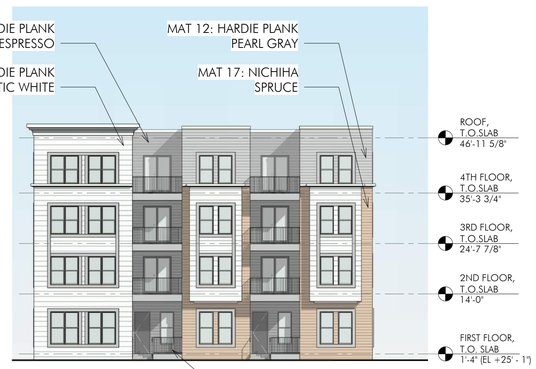
1 ELEVATION FROM WASHINGTON STREET
1/16" = 1'-0"

2 ELEVATION FROM PARKING LOT
1/16" = 1'-0"



4 LEFT ELEVATION
1/16" = 1'-0"



5 RIGHT ELEVATION
1/16" = 1'-0"

ELEVATION LEGEND

- MAT 12: HARDIE PLANK - PEARL GRAY
- MAT 16: HARDIE PLANK - ARCTIC WHITE
- MAT 17: NICHIHA - SPRUCE
- MAT 18: HARDIE PLANK - RICH ESPRESSO

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DRAWING TITLE
BUILDING B ELEVATIONS

DRAWING NUMBER
A220

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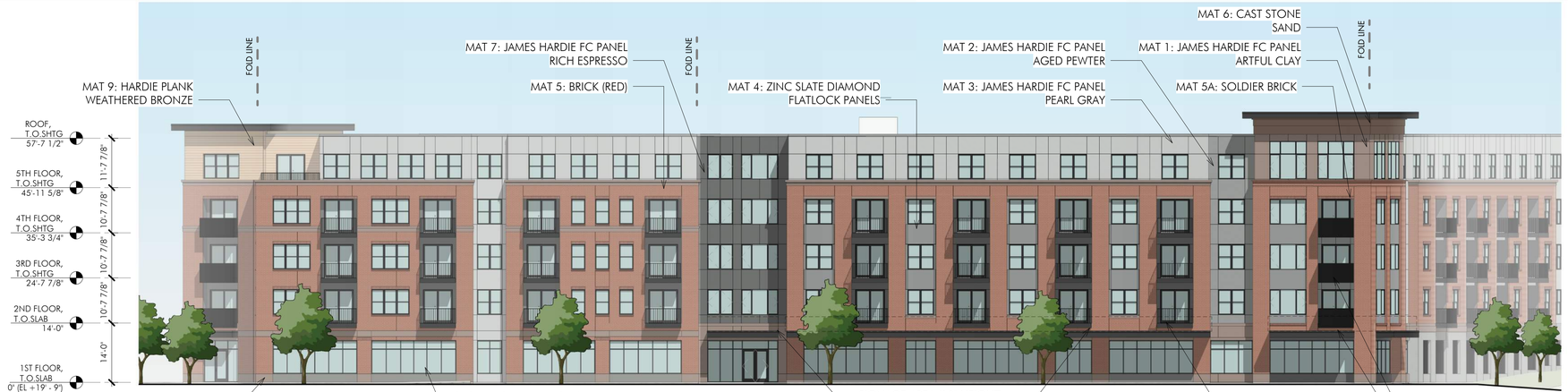
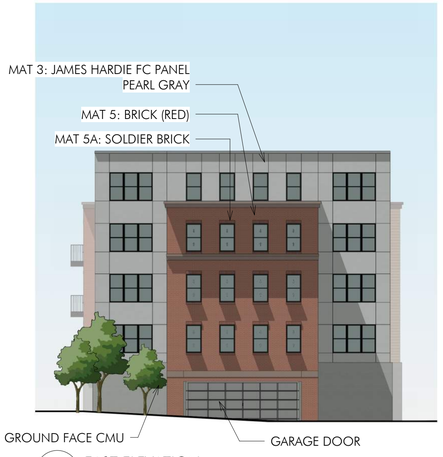
ELEVATION LEGEND

- MAT 1: JAMES HARDIE FC PANEL - ARTFUL CLAY
- MAT 2: JAMES HARDIE FC PANEL - AGED PEWTER
- MAT 3: JAMES HARDIE FC PANEL - PEARL GRAY
- MAT 4: ZINC SLATE DIAMOND FLATLOCK PANELS
- MAT 5: BRICK (RED)
- MAT 5A: SOLDIER BRICK
- MAT 6: CAST STONE - SAND
- MAT 7: JAMES HARDIE FC PANEL - RICH ESPRESSO
- MAT 8: GROUND FACE CMU
- MAT 9: HARDIE PLANK - WEATHERED BRONZE



1A COCHECO RING ROAD ELEVATION (WEST)
1/16" = 1'-0"

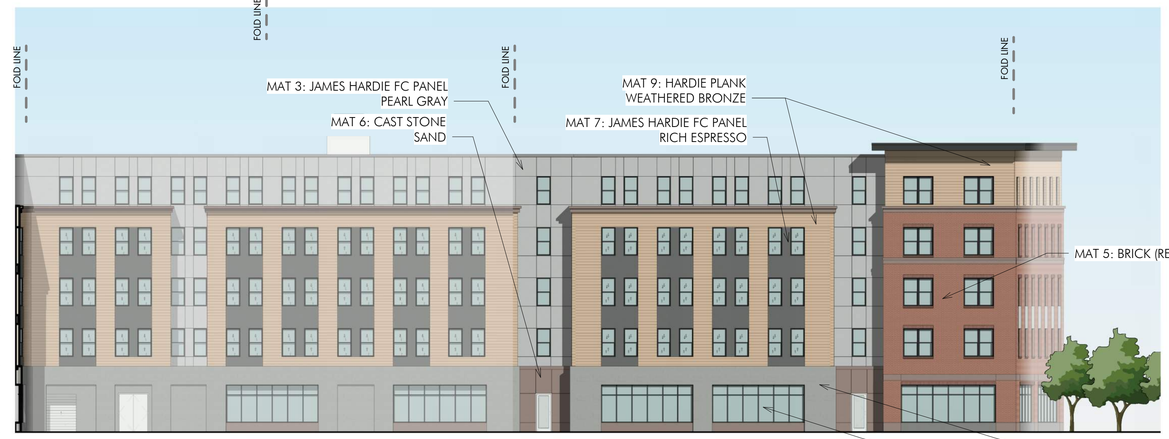
1B COCHECO RING ROAD ELEVATION (WEST)
1/16" = 1'-0"



3 EAST ELEVATION
1/16" = 1'-0"

2 WASHINGTON STREET ELEVATION (SOUTH)
1/16" = 1'-0"

4 NORTH ELEVATION FACING PARKING
1/16" = 1'-0"



5A EAST ELEVATION FACING PARKING (SOUTH HALF)
1/16" = 1'-0"

5B EAST ELEVATION FACING PARKING (NORTH HALF)
1/16" = 1'-0"

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STATE OF NEW HAMPSHIRE

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DRAWING TITLE
BUILDING C ELEVATIONS

DRAWING NUMBER
A230

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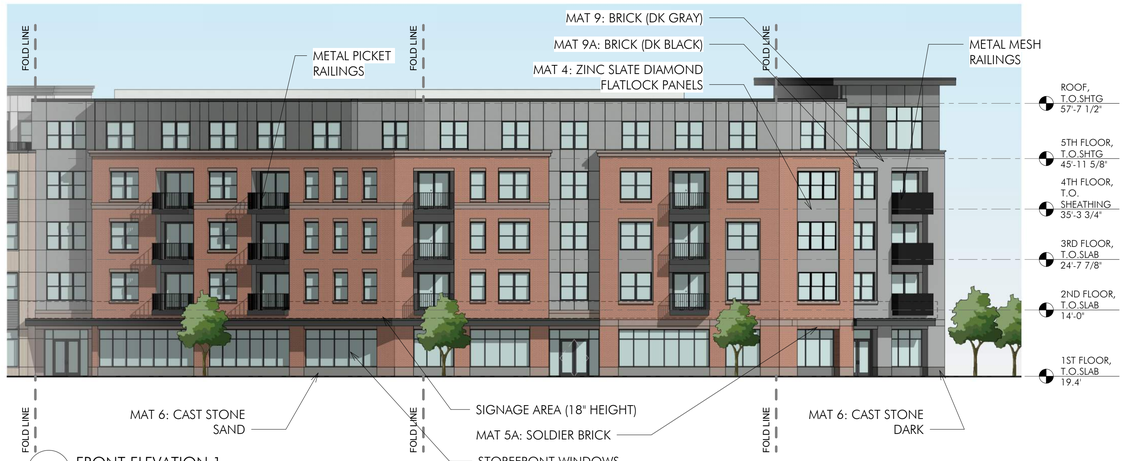
9/16/2021 9:18:55 AM

ELEVATION LEGEND

- MAT 2: JAMES HARDIE FC PANEL - AGED PEWTER
- MAT 3: JAMES HARDIE FC PANEL - PEARL GRAY
- MAT 4: ZINC SLATE DIAMOND FLATLOCK PANELS
- MAT 5: BRICK (RED)
- MAT 5A: SOLDIER BRICK
- MAT 6: CAST STONE - SAND / DARK
- MAT 7: JAMES HARDIE FC PANEL - RICH ESPRESSO
- MAT 8: GROUND FACE CMU
- MAT 9: BRICK (DK GRAY)
- MAT 9A: BRICK (DK BLACK)
- MAT 11: METAL PANEL - CHAMPAGNE
- MAT 12: HARDIE PLANK - PEARL GRAY
- MAT 13: JAMES HARDIE FC PANEL - DEEP OCEAN
- MAT 14: RECLAIMED WOOD SIDING
- MAT 27: CORRUGATED METAL PANEL
- MAT 28: JAMES HARDIE FC PANEL - BIRCH BARK

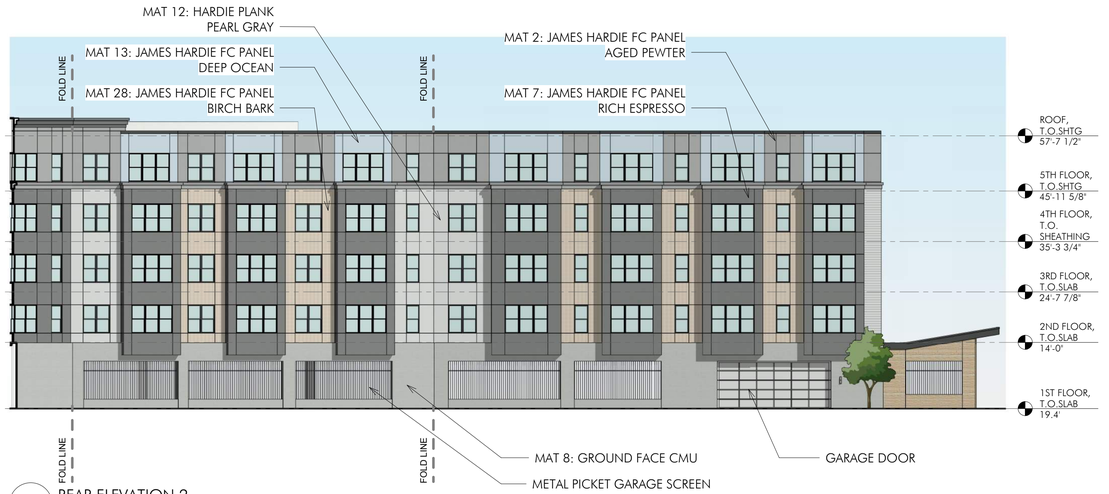
1 FRONT ELEVATION 2
1/16" = 1'-0"

3 FRONT ELEVATION 3
1/16" = 1'-0"



2 FRONT ELEVATION 1
1/16" = 1'-0"

5 REAR ELEVATION 1
1/16" = 1'-0"



4 REAR ELEVATION 2
1/16" = 1'-0"

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TIGHE & BOND
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PORTSMOUTH, NH

LANDSCAPE ARCHIT
HALVORSON DESIGN
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BOSTON, MA

COCHECHO WATERFRONT
BUILDING D
RIVER STREET DOVER, NH
TRC SUBMISSION

REVISIONS

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LICENSED ARCHITECT
Dustin J. Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING D ELEVATIONS

DRAWING NUMBER
A240

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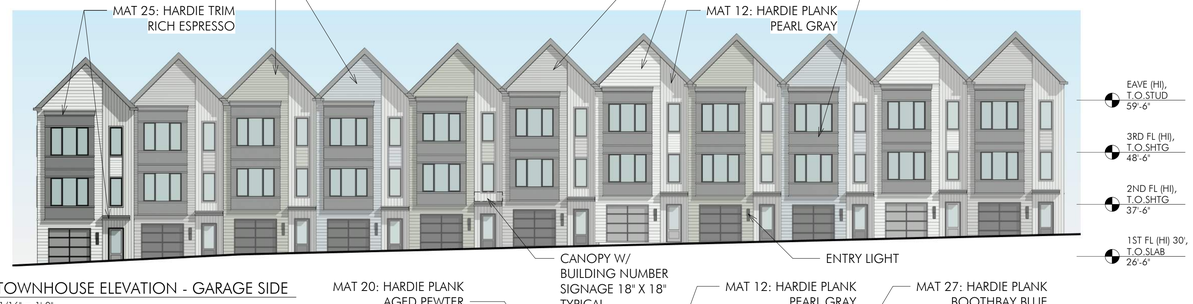
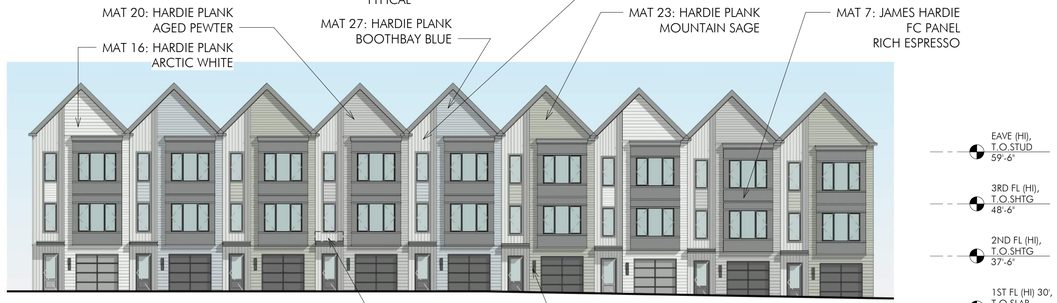
1 TOWNHOUSE ELEVATION - BEDROOM / DEN SIDE
1/16" = 1'-0"



2 TOWNHOUSE ELEVATION - GARAGE SIDE
1/16" = 1'-0"

3 TOWNHOUSE ELEVATION - BEDROOM / DEN SIDE
1/16" = 1'-0"



4 TOWNHOUSE ELEVATION - GARAGE SIDE
1/16" = 1'-0"

ELEVATION LEGEND

- MAT 12: HARDIE PLANK - PEARL GRAY
- MAT 7: JAMES HARDIE FC PANEL - RICH ESPRESSO, TYP.
- MAT 16: HARDIE PLANK - ARCTIC WHITE
- MAT 20: HARDIE PLANK - AGED PEWTER
- MAT 23: HARDIE PLANK - MOUNTAIN SAGE
- MAT 27: HARDIE PLANK - BOOTHBAY BLUE
- MAT 25: HARDIE TRIM - RICH ESPRESSO

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ISSUE:	TRC SUBMISSION
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TOWNHOUSE ELEVATIONS

DRAWING NUMBER
A250

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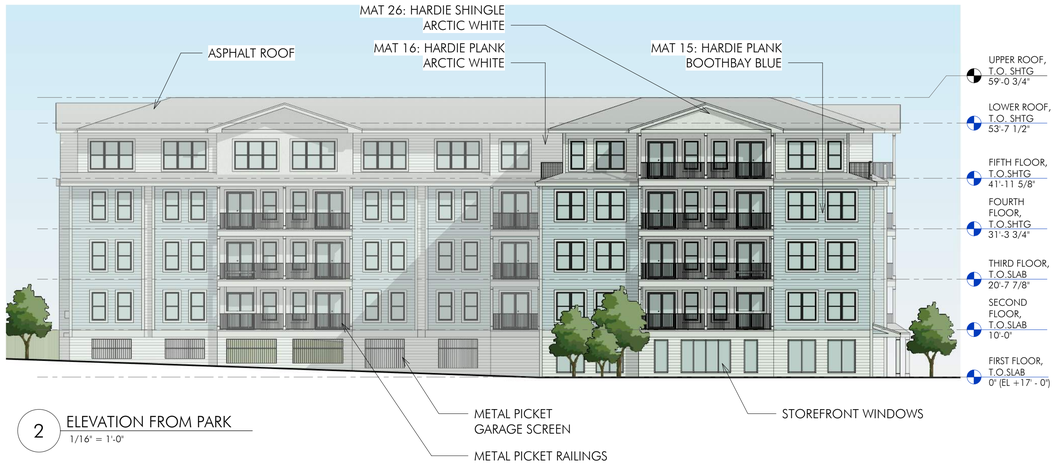

2 ELEVATION FROM PARK
1/16" = 1'-0"

1 ELEVATION FROM CROSS STREET
1/16" = 1'-0"

ELEVATION LEGEND

- MAT 15: HARDIE PLANK - BOOTHBAY BLUE
- MAT 16: HARDIE PLANK - ARCTIC WHITE
- MAT 26: HARDIE SHINGLE - ARCTIC WHITE

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THE STATE OF NEW HAMPSHIRE

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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING F
ELEVATIONS

DRAWING NUMBER
A260

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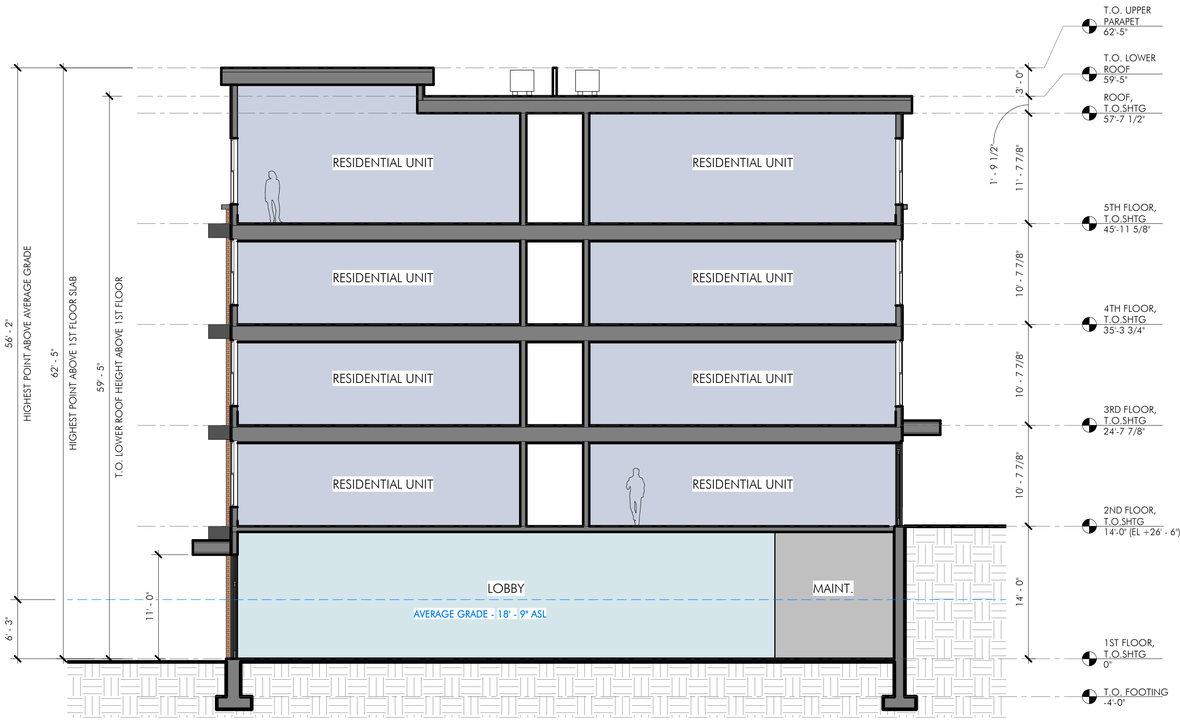

1 SCHEMATIC BUILDING SECTION AT BUILDING ENTRY
1/8" = 1'-0"

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No. 04331
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SCALE:	1/8" = 1'-0"

DRAWING TITLE
BUILDING A SECTION

DRAWING NUMBER
A311

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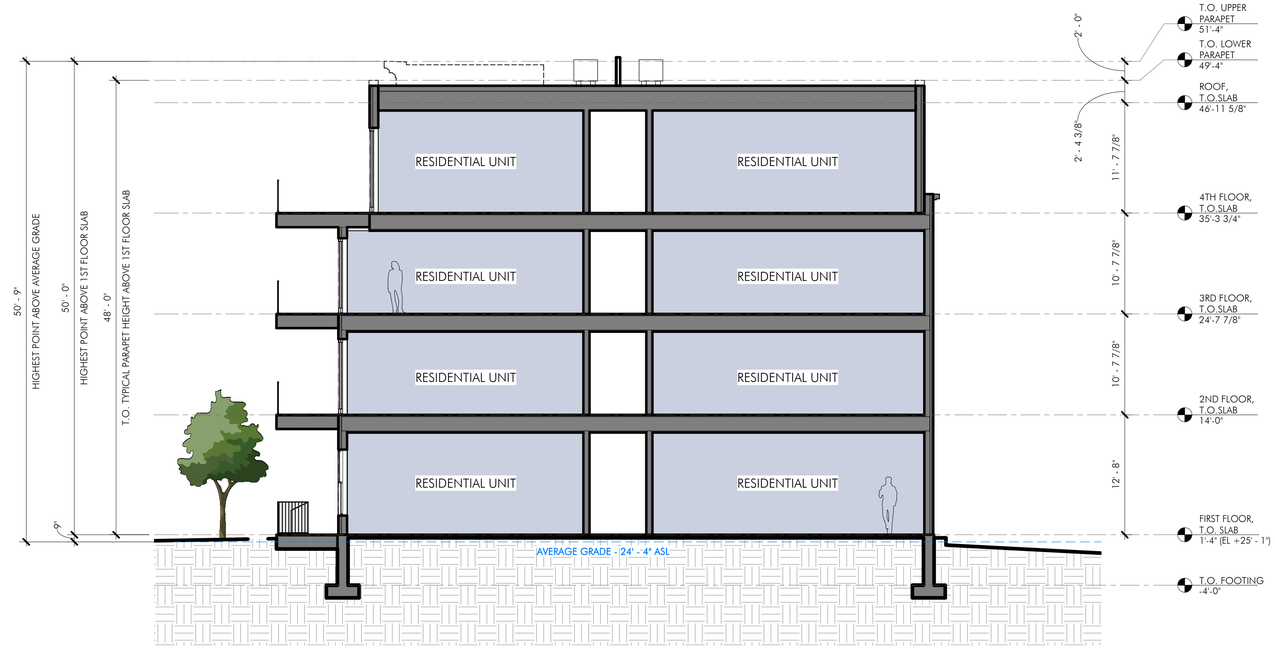

1 SCHEMATIC BUILDING SECTION
1/8" = 1'-0"

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SCALE:	1/8" = 1'-0"

DRAWING TITLE
BUILDING B
SECTION

DRAWING NUMBER
A321

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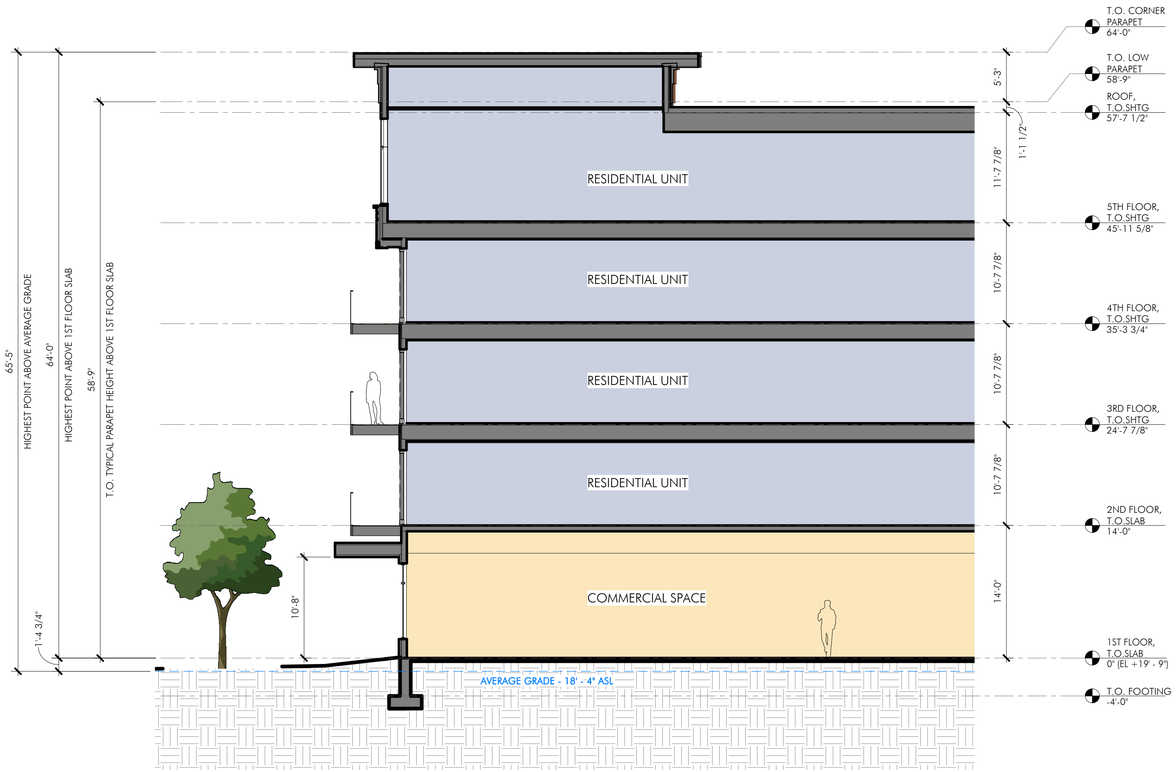

1 SCHEMATIC BUILDING SECTION AT PLAZA TOWER
1/8" = 1'-0"

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DRAWING TITLE
BUILDING C SECTION

DRAWING NUMBER
A331

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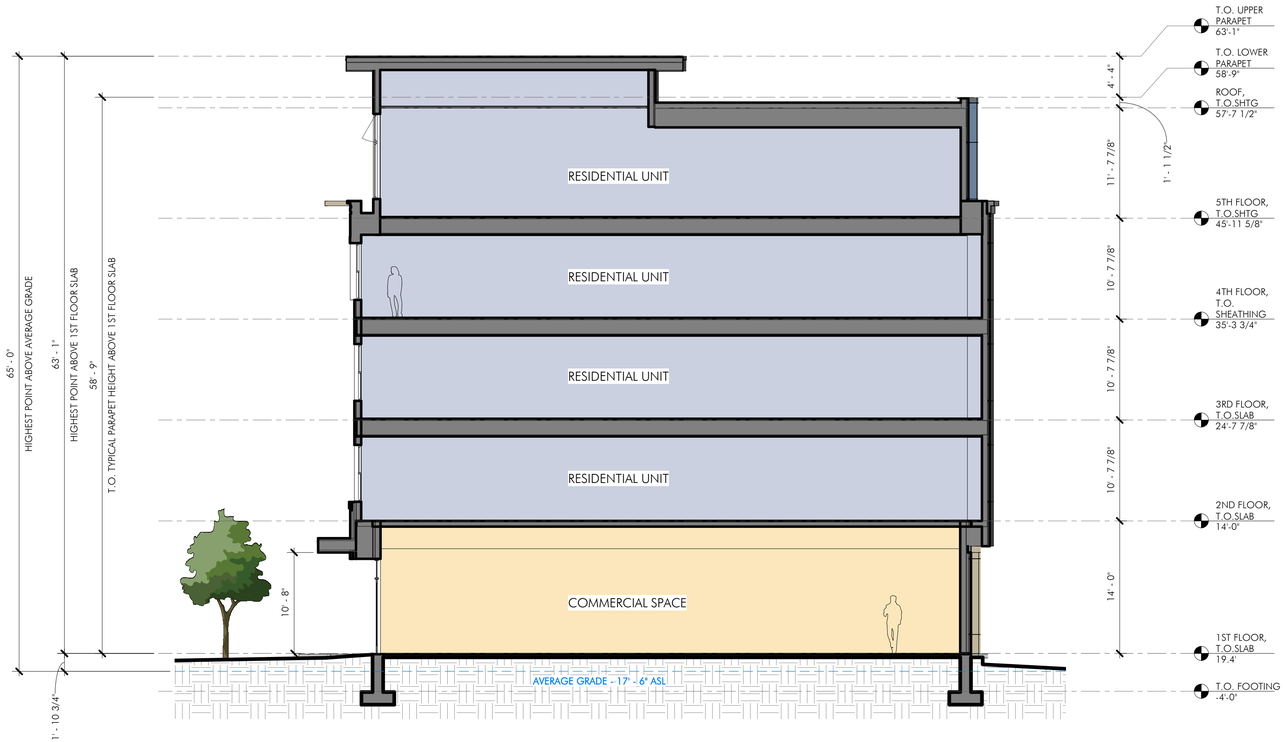

1 BUILDING D SECTION AT PLAZA TOWER
1/8" = 1'-0"

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SCALE:	1/8" = 1'-0"

DRAWING TITLE
BUILDING D SECTION

DRAWING NUMBER
A341

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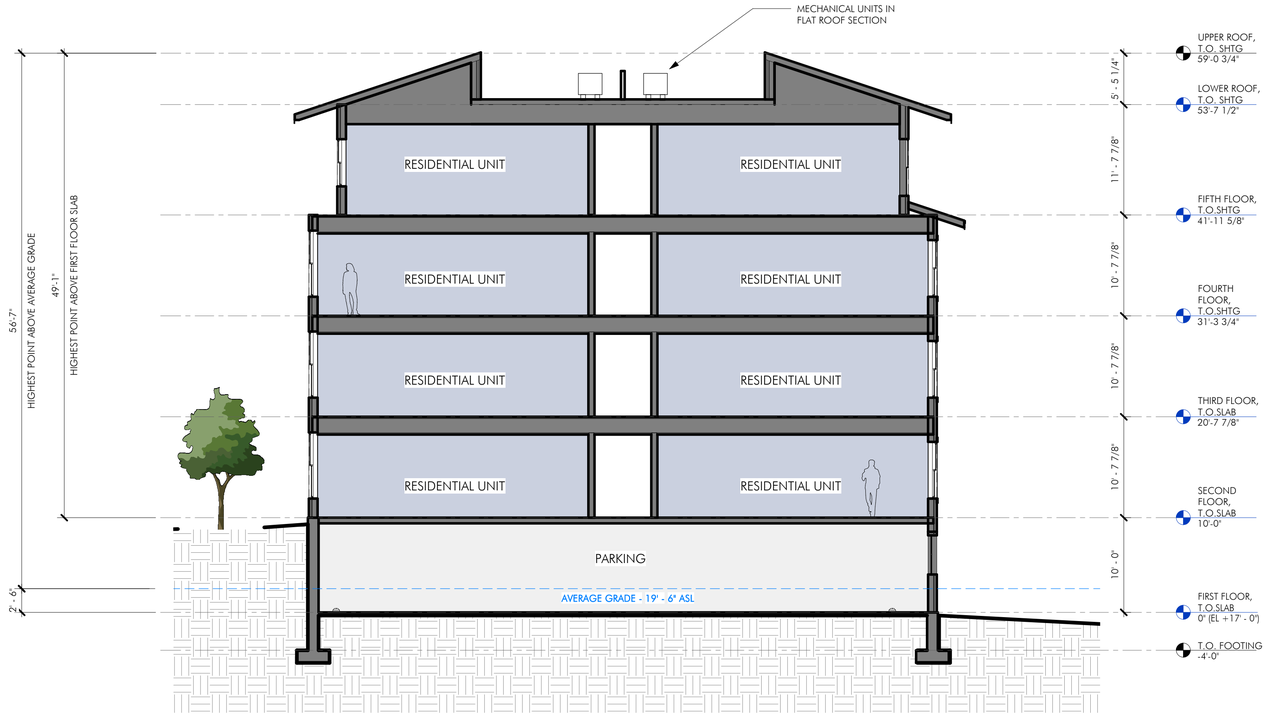

1 BUILDING F SECTION
1/8" = 1'-0"

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SCALE:	1/8" = 1'-0"

DRAWING TITLE
BUILDING F SECTION

DRAWING NUMBER
A361

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BUILDING A PERSPECTIVE

BUILDING B & C PERSPECTIVE

BUILDING C & D PERSPECTIVE

BUILDING D PERSPECTIVE

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HALVORSON DESIGN
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COCHECHO WATERFRONT

RIVER STREET, DOVER, NH

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PERSPECTIVE VIEWS

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A900

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BUILDING D & F PERSPECTIVE

TOWNHOUSE PERSPECTIVE

ARCHITECT

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PERSPECTIVE VIEWS

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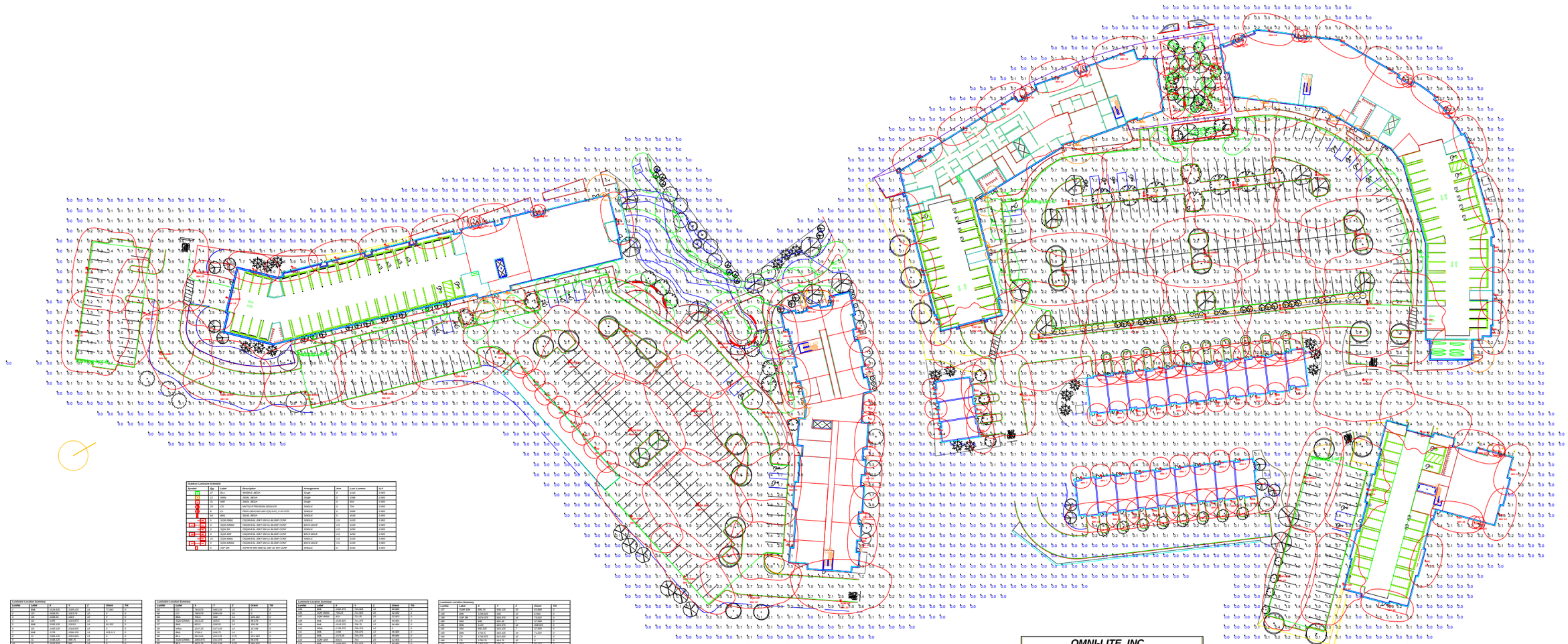

Outdoor Luminaire Schedule

Symbol	Qty	Label	Description	Arrangement	Aim	Lum. Lumens	LLF
	27	BLA	WS30812-WGH	Single	0	11614	0.900
	12	WWA	2RW30_WGH	Single	0	2388	0.900
	33	WW	2RW30_WGH	Single	0	6022	0.900
	23	LG	WST32-HT750-DDSL1000-R-LR	SINGLE	0	784	0.900
	18	CL	FMLV-LB240-HSYH-QQ-HCA-X_X-X-STD	SINGLE	0	24000	0.900
	10	WG	SS100_WGH	SINGLE	0	8100	0.900
	6	SQW-3MBG	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	SINGLE	0.0	6105	0.900
	4	SQW-LSMBG	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	BACK-BACK	0.0	6105	0.900
	2	SQW-3M	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	SINGLE	0.0	6250	0.900
	4	SQW-3AM	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	BACK-BACK	0.0	6250	0.900
	15	SQW-3MBG	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	SINGLE	0.0	6105	0.900
	3	SQW-3SBG	CSQW-R-NL-30K7-WH-U-BL-SMP CORP	BACK-BACK	0.0	6105	0.900
	9	XSP 3M	XSPW-W-30M-BB-NL-IDB-UE-WH CORP	SINGLE	0	8100	0.900

Luminaire Location Summary

LumNo	Label	X	Y	Z	Orient	Tilt
1	BBA	1329.125	2255.125	14	57.000	0
2	CG	1502.25	2182.75	22	0	0
3	BBA	1329.25	2109.25	14	57.000	0
4	CG	1496	2029.875	22	0	0
5	BBA	1329.125	2029.125	14	57.000	0
6	BLA	1165.125	2029.625	14	0	0
7	BBA	1329	1954.125	14	203.512	0
8	CG	1499.125	1937.625	14	0	0
9	CL	1496.125	996.75	14	0	0
10	CL	1496.125	1096.75	14	0	0
11	BBA	1342.375	591.75	14	91.405	0
12	CG	1342.25	666.25	22	0	0
13	CG	1198.75	666.5	22	0	0
14	WBA	1354.875	900.5	14	317.068	0
15	CG	1198.75	1048.875	22	0	0
16	CG	1198.5	1131.5	22	0	0
17	CG	1062.625	1130.875	22	0	0
18	CG	1198.875	1215.75	22	0	0
19	CG	1198.125	956.125	22	0	0
20	CG	1198.5	1048.5	22	0	0
21	BBA	1342.25	1131.25	14	91.405	0
22	CG	1179.625	666.875	22	0	0
23	WBA	1329.25	1048.375	14	262.719	0
24	CG	1062.875	958	22	0	0
25	BBA	1342.125	1215.125	14	271.068	0
26	CG	1198.125	1131.875	22	0	0
27	CG	1197.875	958.875	22	0	0
28	CG	1198.125	1048.375	22	0	0
29	WBA	1189.875	906.25	14	252.999	0
30	BBA	1329.125	1215.25	14	269.512	0
31	BBA	1329.125	1029.5	14	269.512	0
32	WBA	1329.125	906.25	14	252.999	0
33	BLA	1329	1029.125	14	269.563	0
34	BLA	1329.125	906.25	14	269.563	0
35	WBA	1329.25	827.25	14	264.323	0
36	BLA	1329.125	827.25	14	264.323	0
37	BLA	1329.25	747.75	14	271.068	0
38	SQW-4SBG	1319.875	697.875	20	91.000	0
39	BLA	1329.625	668	14	91.000	0
40	SQW-4SBG	1488.375	677.75	20	91.000	0
41	BLA	1488.625	668.125	14	91.000	0
42	SQW-4SBG	1319.25	597.375	20	91.000	0
43	WBA	668	896.875	14	90.467	0
44	WBA	1249.5	900.25	14	309.512	0
45	BBA	1136.875	902.375	14	57.464	0
46	SQW-4SBG	1488.125	597.375	20	91.000	0
47	BLA	1488.625	588.125	14	91.000	0
48	BLA	668	806.875	14	90.467	0
49	BBA	1249.5	900.25	14	309.512	0
50	BBA	1136.875	902.375	14	57.464	0
51	SQW-4SBG	1319.125	517.875	20	91.000	0
52	BLA	1329.125	508.125	14	91.000	0
53	SQW-4SBG	1488.125	517.875	20	91.000	0
54	BLA	1488.625	508.125	14	91.000	0
55	BLA	668	716.875	14	90.467	0
56	BBA	1249.5	900.25	14	309.512	0
57	BBA	1136.875	902.375	14	57.464	0
58	SQW-4SBG	1319.25	437.875	20	91.000	0
59	BLA	1329.125	428.125	14	91.000	0
60	SQW-4SBG	1488.125	437.875	20	91.000	0
61	BLA	1488.625	428.125	14	91.000	0
62	BLA	668	626.875	14	90.467	0
63	BBA	1249.5	900.25	14	309.512	0
64	BBA	1136.875	902.375	14	57.464	0
65	SQW-4SBG	1319.125	357.875	20	91.000	0
66	BLA	1329.125	348.125	14	91.000	0
67	SQW-4SBG	1488.125	357.875	20	91.000	0
68	BLA	1488.625	348.125	14	91.000	0
69	BLA	668	536.875	14	90.467	0
70	BBA	1249.5	900.25	14	309.512	0
71	BBA	1136.875	902.375	14	57.464	0
72	SQW-4SBG	1319.25	277.875	20	91.000	0
73	BLA	1329.125	268.125	14	91.000	0
74	SQW-4SBG	1488.125	277.875	20	91.000	0
75	BLA	1488.625	268.125	14	91.000	0
76	BLA	668	446.875	14	90.467	0
77	BBA	1249.5	900.25	14	309.512	0
78	BBA	1136.875	902.375	14	57.464	0
79	SQW-4SBG	1319.125	197.875	20	91.000	0
80	BLA	1329.125	188.125	14	91.000	0
81	SQW-4SBG	1488.125	197.875	20	91.000	0
82	BLA	1488.625	188.125	14	91.000	0
83	BLA	668	356.875	14	90.467	0
84	BBA	1249.5	900.25	14	309.512	0
85	BBA	1136.875	902.375	14	57.464	0
86	SQW-4SBG	1319.25	117.875	20	91.000	0
87	BLA	1329.125	108.125	14	91.000	0
88	SQW-4SBG	1488.125	117.875	20	91.000	0
89	BLA	1488.625	108.125	14	91.000	0
90	BLA	668	266.875	14	90.467	0
91	BBA	1249.5	900.25	14	309.512	0
92	BBA	1136.875	902.375	14	57.464	0
93	SQW-4SBG	1319.125	37.875	20	91.000	0
94	BLA	1329.125	28.125	14	91.000	0
95	SQW-4SBG	1488.125	37.875	20	91.000	0
96	BLA	1488.625	28.125	14	91.000	0
97	BLA	668	176.875	14	90.467	0
98	BBA	1249.5	900.25	14	309.512	0
99	BBA	1136.875	902.375	14	57.464	0
100	SQW-4SBG	1319.25	-42.125	20	91.000	0
101	BLA	1329.125	-51.875	14	91.000	0
102	SQW-4SBG	1488.125	-42.125	20	91.000	0
103	BLA	1488.625	-51.875	14	91.000	0
104	BLA	668	86.875	14	90.467	0
105	BBA	1249.5	900.25	14	309.512	0
106	BBA	1136.875	902.375	14	57.464	0
107	SQW-4SBG	1319.125	-122.125	20	91.000	0
108	BLA	1329.125	-131.875	14	91.000	0
109	SQW-4SBG	1488.125	-122.125	20	91.000	0
110	BLA	1488.625	-131.875	14	91.000	0
111	BLA	668	-3.125	14	90.467	0
112	BBA	1249.5	900.25	14	309.512	0
113	BBA	1136.875	902.375	14	57.464	0
114	SQW-4SBG	1319.25	-202.125	20	91.000	0
115	BLA	1329.125	-211.875	14	91.000	0
116	SQW-4SBG	1488.125	-202.125	20	91.000	0
117	BLA	1488.625	-211.875	14	91.000	0
118	BLA	668	-93.125	14	90.467	0
119	BBA	1249.5	900.25	14	309.512	0
120	BBA	1136.875	902.375	14	57.464	0
121	SQW-4SBG	1319.125	-282.125	20	91.000	0
122	BLA	1329.125	-291.875	14	91.000	0
123	SQW-4SBG	1488.125	-282.125	20	91.000	0
124	BLA	1488.625	-291.875	14	91.000	0
125	BLA	668	-173.125	14	90.467	0
126	BBA	1249.5	900.25	14	309.512	0
127	BBA	1136.875	902.375	14	57.464	0
128	SQW-4SBG	1319.25	-362.125	20	91.000	0
129	BLA	1329.125	-371.875	14	91.000	0
130	SQW-4SBG	1488.125	-362.125	20	91.000	0
131	BLA	1488.625	-371.875	14	91.000	0
132	BLA	668	-253.125	14	90.467	0
133	BBA	1249.5	900.25	14	309.512	0
134	BBA	1136.875	902.375	14	57.464	0
135	SQW-4SBG	1319.125	-442.125	20	91.000	0
136	BLA	1329.125	-451.875	14	91.000	0
137	SQW-4SBG	1488.125	-442.125	20	91.000	0
138	BLA	1488.625	-451.875	14	91.000	0
139	BLA	668	-333.125	14	90.467	0
140	BBA	1249.5	900.25	14	309.512	0
141	BBA	1136.875	902.375	14	57.464	0
142	SQW-4SBG	1319.25	-522.125	20	91.000	0
143	BLA	1329.125	-531.875	14	91.000	0
144	SQW-4SBG	1488.125	-522.125	20	91.000	0
145	BLA	1488.625	-531.875	14	91.000	0
146	BLA	668	-413.125	14	90.467	0
147	BBA	1249.5	900.25	14	309.512	0
148	BBA	1136.875	902.375	14	57.464	0
149	SQW-4SBG	1319.125	-602.125	20	91.000	0
150	BLA	1329.125	-611.875	14	91.000	0
151	SQW-4SBG	1488.125	-602.125	20	91.000	0
152	BLA	1488.625	-611.875	14	91.000	0
153	BLA	668	-493.125	14	90.467	0
154	BBA	1249.5	900.25	14	309.512	0
155	BBA	1136.875	902.375	14	57.464	0
156	SQW-4SBG	1319.25	-682.125	20	91.000	0
157	BLA	1329.125	-691.875	14	91.000	0
158	SQW-4SBG	1488.125	-682.125	20	91.000	0
159	BLA	1488.625	-691.875	14	91.000	0
160	BLA	668	-573.125	14	90.467	0
161	BBA	1249.5	900.25	14	309.512	0
162	BBA	1136.875	902.375	14	57.464	0
163	SQW-4SBG	1319.125	-762.125	20	91.000	0
164	BLA	1329.125	-771.875	14	91.000	0
165	SQW-4SBG	1488.125	-762.125	20	91.000	0
166	BLA	1488.625	-771.875	14	91.000	0
167	BLA	668	-653.125	14	90.467	0
168	BBA	1249.5	900.25	14	309.512	0
169	BBA	1136.875	902.375	14	57.464	0
170	SQW-4SBG	1319.25	-842.125	20	91.000	0
171	BLA	1329.125	-851.875	14	91.000	0
172	SQW-4SBG	1488.125	-842.125	20	91.000	0
173	BLA	1488.625	-851.875	14	91.000	0
174	BLA	668	-733.125	14	90.467	0
175	BBA	1249.5	900.25	14	309.512	0
176	BBA	1136.875	902.375	14	57.464	0
177	SQW-4SBG	1319.125	-922.125	20	91.000	0
178	BLA	1329.125	-931.875	14	91.000	0
179	SQW-4SBG	1488.125	-922.125	20	91.000	0
180	BLA	1488.625	-931.875	14	91.000	0
181	BLA	668	-813.125	14	90.467	0
182	BBA	1249.5	900.25	14	309.512	0
183	BBA	1136.875	902.375	14	57.464	0
184	SQW-4SBG	1319.25	-1002.125	20	91.000	0
185	BLA	1329.125	-1011.875	14	91.000	0
186	SQW-4SBG	1488.125	-1002.125	20	91.000	0
187	BLA	1488.625	-1011.875	14	91.000	0
188	BLA	668	-893.125	14	90.467	0
189	BBA	1249.5	900.25	14	309.512	0
190	BBA	1136.875	902.375	14	57.464	0
191	SQW-4SBG	1319.125	-1082.125	20	91.000	0
192	BLA	1329.125	-1091.875	14	91.000	0
193	SQW-4SBG	1488.125	-1082.125	20	91.000	0
194	BLA	1488.625	-1091.875	14	91.000	0
195	BLA	668	-973.125	14	90.467	0
196	BBA	1249.5	900.25	14	309.512	0
197	BBA	1136.875	902.375	14	57.464	0
198	SQW-4SBG	1319.25	-1162.125	20	91.000	0
199	BLA	1329.125	-1171.875	14	91.000	0
200	SQW-4SBG	1488.125	-1162.125	20	91.000	0
201	BLA	1488.625	-1171.875	14	91.000	0
202	BLA	668	-1053.125	14	90.467	0
203	BBA	1249.5	900.25	14	309.512	0
204	BBA	1136.875	902.375	14	57.464	0
205	SQW-4SBG	1319.125	-1242.125	20	91.000	0
206	BLA	1329.125	-1251.875	14	91.000	0
207	SQW-4SBG	1488.125	-1242.125	20	91.000	0
208	BLA	1488.625	-1251.875	14	91.000	0
209	BLA	668	-1133.125	14	90.467	0
210	BBA	1249.5	900.25	14	309.512	0
211	BBA	1136.875	902.375	14	57.464	0
212	SQW-4SBG	1319.25	-1322.125	20	91.000	0
213	BLA	1329.125	-1331.875	14	91.000	0
214	SQW-4SBG	1488.125	-1322.125	20	91.000	0
215	BLA	1488.625	-1331.875	14	91.000	0
216	BLA	668	-1213.125	14	90.467	0
217	BBA	1249.5	900.25	14	309.512	0
218	BBA	1136.875	902.375	14	57.464	0
219	SQW-4SBG	1319.125	-1402.125	20	91.000	0
220	BLA	1329.125	-1411.875	14	91.000	0
221	SQW-4SBG	1488.125	-1402.125	20	91.000	0
222	BLA	1488.625	-1411.875	14	91.000	0
223	BLA	668	-1293.125	14	90.467	0
224	BBA	1249.5	900.25	14	309.512	0
225	BBA	1136.875	902.375	14	57.464	0
226	SQW-4SBG	1319.25	-1482.125	20	91.000	0
227	BLA	1329.125	-1491.875	14	91.000	0
228	SQW-4SBG	1488.125	-1482.125	20	91.000	0
229	BLA	1488.625	-1491.875	14	91.000	0
230	BLA	668	-1373.125	14	90.467	0
231	BBA	1249.5	900.25	14	309.512	0
232	BBA	1136.875	902.375	14	57.464	0
233	SQW-4SBG	1319.125	-1562.125	20	91.000	0
234	BLA	1329.125	-1571.875	14	91.000	0
235	SQW-4SBG	1488.125	-1562.125	20	91.000	0
236	BLA	1488.625	-1571.875	14	91.000	0
237	BLA	668	-1453.125	14	90.467	0
238	BBA	1249.5	900.25	14	309.512	0
239	BBA	1136.875	902.375	14	57.464	0
240	SQW-4SBG	1319.25	-1642.125	20	91.000	0
241	BLA	1329.125	-1651.875	14	91.000	0
242	SQW-4SBG	1488.125	-1642.125	20	91.000	0
243	BLA	1488.625	-1651.875	14	91.000	0
244	BLA	668	-1533.125	14	90.467	0
245	BBA	1249.5	900.25	14	309.512	0
246	BBA	1136.875	902.375	14	57.464	0
247	SQW-4SBG	1319.125	-1722.125	20	91.000	0
248	BLA	1329.125	-1731.875	14	91.000	0
249	SQW-4SBG	1488.125	-1722.125	20	91.000	0
250	BLA	1488.625	-1731.875	14	91.000	0
251	BLA	668	-1613.125	14	90.467	0
252	BBA	1249.5	900.25	14	309.512	0
253	BBA	1136.875	902.375	14	57.464	0
254	SQW-4SBG	1319.25	-1802.125	20	91.000	0
255	BLA	1329.125	-1811.875	14	91.000	0
256	SQW-4SBG	1488.125	-1802.125	20	91.000	0
257	BLA	1488.625	-1811.875	14	91.000	0
258	BLA	668	-1693.125	14	90.467	0
259	BBA	1249.5	900.25	14	309.512	0
260	BBA	1136.875	902.375	14	57.464	0
261	SQW-4SBG	1319.125	-1882.125	20	91.000	0
262	BLA	1329.125	-1891.875	14	91.000	0
263	SQW-4SBG	1488.125	-1882.125	20	91.000	0
264	BLA	1488.625	-1891.875	14	91.000	0
265	BLA	668	-1773.125	14	90.467	0
266	BBA	1249.5	900.25	14	309.512	0
267	BBA	1136.875	902.375	14	57.464	0
268	SQW-4SBG	1319.25	-1962.125	20	91.000	0
269	BLA	1329.125	-1971.875	14	91.000	0
270	SQW-4SBG	1488.125	-1962.125	20	91.000	0
271	BLA	1488.625	-1971.875	14	91.000	0
272	BLA	668	-1853.125	14	90.467	0
273	BBA	1249.5	900.25	14	309.512	0
274	BBA	1136.875	902.375	14	57.464	0
275	SQW-4SBG	1319.125	-2042.125	20	91.000	0
276	BLA	1329.125	-2051.875	14	91.000	0
277	SQW-4SBG	1488.125	-2042.125	20	91.000	0
278	BLA	1488.625	-2051.875	14	91.000	0
279	BLA	668	-1933.125	14	90.467	0
280	BBA	1249.5	900.25	14	309.512	0
281	BBA	1136.875	902.375	14	57.464	0
282	SQW-4SBG	1319.25	-2122.125	20	91.000	0
283	BLA	1329.125	-2131.875	14	91.000	0
284	SQW-4SBG	1488.125	-2122.125	20	91.000	0
285	BLA	1488.625	-2131.875	14	91.000	0
286	BLA	668	-2013.125	14	90.467	0
287	BBA	1249.5	900.25	14	309.512	0
288	BBA	1136.875	902.375	14	57.464	0
289	SQW-4SBG	1319.125	-2202.125	20	91.000	0
290	BLA	1329.125	-2211.875	14	91.000	0
291	SQW-4SBG	1488.125	-2202.125	20	91.000	0
292	BLA	1488.625	-2211.875	14	91.000	0
293	BLA	668	-2093.125	14	90.467	0
294	BBA	1249.5	900.25	14	309.512	0
295	BBA	1136.875	902.375	14	57.464	0
296	SQW-4SBG	1319.25	-2282.125	20	91.000	0
297	BLA	1329.125	-2291.875	14	91.000	0
298	SQW-4SBG	1488.125	-2282.125	20	91.000	0
299	BLA	1488.625	-2291.875	14	91.000	0
300	BLA	668	-2173.125	14	90.467	0
301	BBA	1249.5	900.25	14	309.512	0
302	BBA	1136.875	902.375	14	57.464	0
303	SQW-4SBG	1319.125	-2362.125	20	91.000	0
304	BLA	1329.125	-2371.875	14	91.000	0
305	SQW-4SBG	1488.125	-2362.125	20	91.000	0
306	BLA	1488.625	-2371.875	14	91.000	0
307	BLA	668	-2253.125	14	90.467	0
308	BBA	1249.5	900.25	14	309.512	0
309	BBA	1136.875	902.375	14	57.464	0
310	SQW-4SBG	1319.25	-2442.125	20	91.000	0
311	BLA	1329.125	-2451.875	14	91.000	0
312	SQW-4SBG	1488.125	-2442.125	20	91.000	0
313	BLA	1488.625	-2451.875	14	91.000	0
314	BLA	668	-2333.125	14	90.467	0
315	BBA	1249.5	900.25	14	309.512	0
316	BBA	1136.875	902.375	14	57.464	0
317	SQW-4SBG	1319.125	-2522.125	20	91.000	0
318	BLA	1329.125	-2531.875	14	91.000	0
319	SQW-4SBG	1488.125	-2522.125	20	91.000	0
320	BLA	1488.625	-2531.875	14	91.000	0
321	BLA	668	-2413.125	14	90.467	0
322	BBA	1249.5	900.25	14	309.512	0
323	BBA	1136.875	902.375	14	57.464	0
324	SQW-4SBG	1319.25	-2602.125	20	91.000	0
325	BLA	1329.125	-2611.875	14	91.000	0
326	SQW-4SBG	1488.125	-2602.125	20	91.000	0
327	BLA	1488.625	-2611.875	14	91.000	0
328	BLA	668	-2493.125	14	90.467	0
329	BBA	1249.5	900.25	14	309.512	0
330	BBA	1136.875	902.375	14	57.464	0
331	SQW-4SBG	1319.125	-2682.125	20	91.000	0
332	BLA	1329.125	-2691.875	14	91.000	0
333	SQW-4SBG	1488.125	-2682.125	20	91.000	0
334	BLA	1488.625	-2691.875	14	91.000	0
335	BLA	668	-2573.125	14	90.467	0
336	BBA	1249.5	900.25	14	309.512	0
337	BBA	1136.875	902.375	14	57.464	0
338	SQW-4SBG	1319.25	-2762.125	20	91.000	0
339	BLA	1329.125	-2771.875	14	91.000	0
340	SQW-4SBG	1488.125	-2762.125	20	91.000	0
341	BLA	1488.625	-2771.875	14	91.000	0
342	BLA	668	-2653.125	14	90.467	0
343	BBA	1249.5	900.25	14	309.512	0
344	BBA	1136.875	902.375	14	57.464	0
345	SQW-4SBG	1319.125	-2842.125	20	91.000	0
346	BLA	1329.125	-2851.875	14	91.000	0
347	SQW-4SBG	1488.125	-2842.125	20	91.000	0
348	BLA	1488.625	-2851.875	14	91.000	0
349	BLA	668	-2733.125	14	90.467	0
350	BBA	1249.5	900.25	14	309.512	0
351	BBA	1136.875	902.375	14	57.464	0
352	SQW-4SBG	1319.25	-2922.125	20	91.000	0
353	BLA	1329.125	-2931.875	14	91.000	0
354	SQW-4SBG	1488.125	-2922.125	20	91.000	0
355	BLA	1488.625	-2931.875	14	91.000	0
356	BLA	668	-2813.125	14	90.467	0
357	BBA	1249.5	900.25	14	309.512	0
358	BBA	1136.875	902.375	14	57.464	0
359	SQW-4SBG	1319.125	-3002.125	20	91.000	0
360	BLA	1329.125	-3011.875	14	91.000	0
361	SQW-4SBG	1488.125	-3002.125	20	91.000	0
362	BLA	1488.625	-3011.875	14	91.000	0
363	BLA	668	-2893.125	14	90.467	0
364	BBA	1249.5	900.25	14	309.512	0
365	BBA	1136.875	902.375	14	57.464	0
366	SQW-4SBG	1319.25	-3082.125	20	91.000	0
367	BLA	1329.125	-3091.875	14	91.000	0
368	SQW-4SBG	1488.125	-3082.125	20	91.000	0
369	BLA	1488.625	-3091.875	14	91.000	0
370	BLA	668	-2973.125	14	90.467	0
371	BBA	1249.5	900.25	14	309.512	0
372	BBA	1136.875	902.375	14	57.464	0
373	SQW-4SBG	1319.125	-3162.125	20	91.000	0
374	BLA	1329.125	-3171.875	14	91.000	0
375	SQW-4SBG	1488.125	-3162.125	20	91.000	0
376	BLA	1488.625	-3171.875	14	91.000	0
377	BLA	668	-3053.125	14	90.467	0
378	BBA	1249.5	900.25	14	309.512	0
379	BBA	1136.875	902.375	14	57.464	0
380	SQW-4SBG	1319.25	-3242.125	20	91.000	0
381	BLA	1329.125	-3251.875	14	91.000	0
382	SQW-4SBG	1488.125	-3242.125	20	91.000	0
383	BLA	1488.625	-3251.875	14	91.000	0
384	BLA	668	-3133.125	14	90.467	0
385	BBA	1249.5	900.25	14	309.512	0
386	BBA	1136.875	902.375	14	57.464	0
387	SQW-4SBG	1319.125	-3322.125	20	91.000	0
388	BLA	1329.125	-3331.875	14	91.000	0
389	SQW-4SBG	1488.125	-3322.125	20	91.000	0
390	BLA	1488.625	-3331.875	14	91.000	0
391	BLA	668	-3213.125	14	90.467	0
392	BBA	1249.5	900.25	14	309.512	0
393	BBA	1136.875	902.375	14	57.464	0
394	SQW-4SBG	1319.25	-3402.125	20	91.000	0
395	BLA	1329.125	-3411.875	14	91.000

Impact Fees Analysis 9/30/2021

Programming						Breakdown							
Overall Masterplan	**Residential Units**	**Office**	**Retail**	**Restaurant**	**Total Commercial**	**Apartments 4+ Units**	**Fee Amount**	**Apartments Over Non-Residential**	**Fee Amount**	**Townhouse Fee Amount**	**Retail/Restaurant Fee Amount**	**Office Fee Amount**	**Total Assessment**
							$4,601		*$2,247*	*$4,120*	*$1.580*	*$0.920*	
Building A	97	4,000	1,809	0	5,809	73	$335,873	24	$53,928	$0	$2,858	$3,680	**$396,339**
Building B	60	0	0	0	0	60	$276,060	0	$0	$0	$0	$0	**$276,060**
Building C	95	10,471	1,000	2,107	13,578	35	$161,035	60	$134,820	$0	$4,909	$9,633	**$310,397**
Building D	99	3,000	3,400	2,500	8,900	51	$234,651	48	$107,856	$0	$9,322	$2,760	**$354,589**
Townhouses -E	23	0	0	0	0	23	$105,823	0	$0	$94,760	$0	$0	**$200,583**
Building F	42	3,735	0	0	0	31	$142,631	11	$24,717	$0	$0	$3,436	**$170,784**
Total	**416**	**21,206**	**6,209**	**4,607**	**28,287**	**273**	**$1,256,073**	**143**	**$321,321**	**$94,760**	**$17,089**	**$19,510**	**$1,708,753**

Programming						Breakdown							
PHASE I	**Residential Units**	**Office**	**Retail**	**Restaurant**	**Total Commercial**	**Apartments 4+ Units**	**Fee Amount**	**Apartments Over Non-Residential**	**Fee Amount**	**Townhouse Fee Amount**	**Retail/Restaurant Fee Amount**	**Office Fee Amount**	**Total Assessment**
							$4,601		*$2,247*	*$4,120*	*$1.580*	*$0.920*	
Building A	97	4,000	1,809	0	5,809	73	$335,873	24	$53,928	$0	$2,858	$3,680	**$396,339**
Building C	95	10,471	1,000	2,107	13,578	35	$161,035	60	$134,820	$0	$4,909	$9,633	**$310,397**
Building D	99	3,000	3,400	2,500	8,900	51	$234,651	48	$107,856	$0	$9,322	$2,760	**$354,589**
Total	**291**	**17,471**	**6,209**	**4,607**	**28,287**	**159**	**$731,559**	**132**	**$296,604**	**$0**	**$17,089**	**$16,073**	**$1,061,326**

Apartments Over Non-Residential 9/30/2021

Programming						
Master Plan	**Floor 1**	**Floor 2**	**Floor 3**	**Floor 4**	**Floor 5**	**Total**
Building A	0	6	6	6	6	**24**
Building B	0	0	0	0	0	**0**
Building C	0	15	15	15	15	**60**
Building D	0	13	13	12	10	**48**
Townhouses -E	0	0	0	0	0	**0**
Building F	0	3	3	3	2	**11**
Total	**0**	**37**	**37**	**36**	**33**	**143**

Programming						
Phase 1	**Floor 1**	**Floor 2**	**Floor 3**	**Floor 4**	**Floor 5**	**Total**
Building A	0	6	6	6	6	**24**
Building C	0	15	15	15	15	**60**
Building D	0	13	13	12	10	**48**
Total	**0**	**34**	**34**	**33**	**31**	**132**