CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, March 10, 2022**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for CPI 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. *[This item was previously heard on October 21, 2021]* (P21-69)

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – P21-69

Application Type:	Site Plan Review
Applicant(s):	CPI Management, LLC
Owner(s):	City of Dover
Location:	31 River St (Assessor's Map 22, Lot 1)
Date:	October 21, 2021

INTENT: Building A is a mixed-use building with 5 stories and 97 apartment units with a lower level parking garage. Building B will be a 4 story multi family building with 60 dwelling units. Building C will be a 5 story mixed use building with 95 dwelling units. Building D will be a five story multi-family building with 99 dwelling units, Building E will be 11 town house units, and Building F will be a 5 story multi-family building with 42 dwelling units. The application proposes 553 parking spaces. Related subdivision and CUP application will appear before the Planning Board.

LOTS/UNITS PROPOSED: 416 residential units and 26,000 s.f. of commercial space

AGENDA ITEM #: 2

ACREAGE: 10.45 acres

ZONING DISTRICT: CWD

EXISTING LAND USE: Vacant

SURROUNDING LAND USE: Cochecho River, City pump station, vacant, recreation

ZBA ACTION: None

PERMITS REQUIRED:-CUPs for Building Height and Density
-AOT
-NPDES Construction General Permit
-NHDES Wetlands & Shoreland Permits

WAIVERS REQUESTED: None

ATTENDANCE:
Members:
Donna Benton, Planning
Jim Maxfield, Inspection Services
Dave White, Engineering
Dan Barufaldi, Economic Development
Marn Speidel, Police
Frank Torr, Planning Board
Others: Amelia DeGrace
Steve Bird
Dana Lynch
Rob Simmons
Neil Hansen
Daniel Riggs
Otis Perry

PLAN REVIEW:
Planning Comments:

- Water and sewer Investment fees
- Impact fees
- Have you considered additional rooftop amenities?
- Revise traffic study per meeting with Staff
- Great maintenance plan but 6' snow banks? Please revise to remove snow before 6' or if blocking site distance.
- How did you determine amount of kayak storage?
- For the car port, have you considered solar with EVSE?
- Please revise plan set to:
  - Add all professional signatures and stamps for each submission
  - Owner's signature on final submission
  - Add common site notes or indicate location of 2, 3 (deed numbers), 10, 13, 14, 16, 18, and 19
  - Add note that it shows pre-blast conditions
  - Add permit numbers when received
  - Add planning file number P21-69
  - Add public art as agreed upon with Arts Commission and Planning Department
  - Try to move transformers away from public ROW and screen transformer
  - Provide calculation to indicate how you meet or exceed EVSE regulations
  - Add aisle widths to parking garages
  - What kind of screening on roof?
  - Angle building A to hide garage door better
  - Art Renderings to be corrected to "Cochecho"
  - Number sheets consecutively
  - Site note 18 on G-100 has typos
  - Add Book and Page to General note 4 on G-100
  - Revise Utility note 22 to Chapter 81-30
  - Lighting plan:
    - Bring uniformity ratio down or seek waiver. Understand not wanting to increase your minimum

but could you lower your average or spread light out more evenly?
  - Confirm security lighting on all 4 sides of the building. Remove the 0.0 near buildings.
  - Include lighting details or indicate where in submission?

Police Department Comments:

- Based on the expected site generated traffic/turning movements detailed in the Pernaw initial traffic evaluation, the River/Washington Street intersection should be evaluated for an all-way stop.
- Advanced Analysis (Pernaw report recommendation, p. 13) for the Central/Washington intersection should include a potential two-way circulation pattern for downtown (particularly Washington Street) as outlined in the Preferred Design section of the March 2015 Downtown Dover Pedestrian and Vehicular Access Study.
- Washington Street's assumed terminus should be at River Street, with the extension (Street B) to be identified with a different street name. Unless the Building Official has an idea of an alternate address for One Washington Street.
- Sheet C-102: Review the feasibility of making Street A and Cross Street a one-way loop road, with angle parking all on one side (ideally on the development side, opposite of the water). This would be intended to maximize public parking supply and optimize efficiency as this inventory will be absorbed into Dover's downtown parking management; providing fewer multi-space meters all on one side of the road would be optimal.
- Sheet A-100: the Waterfront Pavilion is likely a concept only, but its size and scope may be unintentionally limited as it may generate more public parking demand than this project supplies and would result in impacts to the proposed private parking lots. Review feasibility of a public/private partnership to accommodate events at this pavilion.
- Absence of ADA parking spaces on the public streets

Engineering Comments:

- Sidewalk outside ROW?
- Check landscape plan with drainage or electrical
- Discuss Trash/toters?
- C102.2
  - It seems the proposed sidewalk is outside of the row. Will there be an easement for this?
  - Don't run the curb thru the tipdowns in the crosswalk/sidewalks
  - Explain the access to the kayak area
- C1032
  - I have some concern in some areas about the lack of drainage capture.
  - Are there any concerns about grate inlet efficiency? Do you need any double grates at low points that collect a lot of water?
- C104
  - Keep underground elec/tel 7 ft away from the water/sewer/drainage.
  - Have one waterline to building and then branch off for fire and domestic
  - Keep hyd gate 6 ft away from hyd and restrain gate inline.
- C502
  - The uses basf f100 fiber reinforcement for our concrete sidewalks
- C507
  - Smh drops should be on the outside
  - Smh inverts shall be all brick with no filler
  - Sewer trench shall have stone one ft over the pipe
  - Hydrants shall be eddy f 4621 and be factory plugged.
- C508-water gates shall open left

Fire/Inspections Services Comments:

- Clarify the sequencing of the overall project as there did not appear to be a hotel or phase II plans.
- Phase I plan set has been provided- should there be a phase II and III set provided or are there future TRCs planned.
- Is the building construction type known at this time(i.e. combustible/noncombustible)
- Turning template appears to encroach on curbing – revise where necessary.
- Discuss the alteration of the fire hydrant configuration.

- Locate the FDC at the front of each structure in an unobstructed readily accessible location.
- Clarify if there are any roof amenities associated with the proposed structures.
- Indicate the proposed location of the inverters for the roof mounted solar system and if there is any storage being proposed.
- Indicate access into the parking garages for first responders.
- Provide accessible parking spaces in garage in accordance with accessibility standards (i.e. size and quantity).
- Indicate accessibility for EV charging stations.
- Clarify garage floor plan and the means of ingress/ egress.
- Plan set shall include a note referencing the design standards used to comply with all applicable accessibility regulations and NH RSA 155-A:5.
- Indicate how the building will be used in a normal power outage as a standby power source does not appear to be included within plan set.
- Indicate if the elevator is used as an accessible means of egress.
- Coordinate elevation plans to show utilities adjacent to one another and building openings while providing adequate separation between each utility (i.e. gas/electric)
- Site plans and elevation plans to show the location of the parking garage intake and exhaust louvers.
- Provide elevation plans and construction type for the carport at the rear of building A.
- Indicate if building style E will be constructed as townhouses or Apt. buildings. Elevation or floor plans do not depict a sprinkler riser room.
- Plan set shall include a note indicating the site shall remain accessible in all weather conditions year round.

Economic Development Comments:

- Appreciate colors, materials, landscaping, view sheds, etc. The level of professionalism is awesome.

Planning Board Comments:

- Parking: There is too much surface parking, collaborate or partner with the City or another developer
- Limited snow storage
- Work Zone Housing?
- Screen transformers

CWDAC: None

Next Steps:
TRC will hold separate TRC for public ROW and park.

When ready (including revised traffic study) come back with revised plans and narrative for second TRC before submitting for Planning Board meeting.

Adjournment:
A motion to adjourn TRC was made at 12:03pm by F.Torr and seconded by: J. Maxfield Vote: U/A

C0960-007
December 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 revised materials to support the previously submitted Site Review Permit Application for the above referenced project:

- Eight (8) copies of the Site Plan Set, last revised December 16, 2021
- Eight (8) copies of the TRC Comment Response Report, dated December 16, 2021;
- Eight (8) copies of the Drainage Report, last revised December 16, 2021
- Three (3) copies of the Traffic Impact and Site Access Study – Proposed Cochecho Waterfront Development, dated November 15, 2021
- Eight (8) copies of the Fire Truck Turning Exhibit, dated December 16, 2021
- Eight (8) copies of the Trash Loading Exhibit, dated December 16, 2021
- One (1) 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 January 6, 2022. 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)

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February 28, 2022

NEX-2021161.01

Mr. J. Michael Joyal, Jr.
City Manager
City of Dover
288 Central Avenue
Dover, NH 03820

SUBJECT: Traffic Peer Review – Proposed Cocheco Waterfront Development
River Street, Dover, New Hampshire

Dear Mr. Joyal:

Greenman-Pedersen Inc. (GPI) performed a review of the transportation impacts associated with the proposed Cocheco Waterfront Development, to be located on River Street in Dover, New Hampshire. The following documents were submitted for our review:

- *Traffic Impact and Site Access Study, Proposed Cocheco Waterfront Development, Dover, New Hampshire;* prepared by Stephen G. Pernaw & Company, Inc.; November 15, 2021.
- *Site Plan Set for Cocheco Waterfront Development;* prepared by Tighe & Bond; Last Revised December 16, 2021

The following describes GPI's traffic-related comments associated with the documents described above. GPI has reviewed the *Traffic Impact and Site Access Study* (TISAS) for consistency with the City of Dover's *Traffic Impact Assessment and Analysis Standards*, as well as general engineering practice, and overall concurs with the methodology and findings of the TISAS with the exception of the following items:

General Comments

1. GPI has reviewed the *Traffic Impact and Site Access Study* (TISAS) for consistency with the City of Dover's *Traffic Impact Assessment and Analysis Standards* (City's Standards). As the Project is anticipated to generate more than 1,000 daily vehicle trips and more than 100 peak hour trips during each of the weekday AM, weekday PM, and Saturday midday peak hours, the Project meets the requirements of an "Advanced Analysis". The TISAS does not currently include the following items required under the "Advanced Analysis":
    - Sight distance measurements at each site driveway – Although photographs are provided in the Appendix, no measurements have been provided;
    - Safety Analysis – no evaluation of collision patterns was provided;
    - Narrative description of roadway conditions – the TISAS does not provide an assessment of the safety of the study area roadways in terms of width limitations, horizontal and vertical alignment, surface conditions, pedestrian and bicycle accommodations, streetside safety;
    - Trucks – the location of proposed loading docks and delivery areas was not provided in the TISAS;
    - Parking Analysis – The TISAS does not include any evaluation of the potential parking demand that may be generated by the proposed development or assessment of the adequacy of the proposed parking supply;
    - Mitigation of traffic operations exceeding level-of-service (LOS) E – The Hanson Street approach to Central Avenue is anticipated to operate at LOS F and the Applicant has offered no mitigation;
    - Mitigation – No mitigation measures are proposed within the TISAS to off-set project-related impacts, including no description of Transportation Demand Management (TDM) measures.

To adequately comply with the City's Standards, GPI recommends that the Applicant update the TISAS to provide the missing elements.

Study Area & Scope

2. The TISAS provides a detailed capacity and queue analysis for the following intersections:
    a. Washington Street / River Street
    b. River Street / Proposed Site Driveway
    c. Henry Law Avenue / River Street
    d. Henry Law Avenue / Hanson Street
    e. Central Avenue / Hanson Street

    Based on the 2022 Impact Summary shown in Figure 7 of the TISAS, the proposed development is anticipated to send 172 to 216 vehicles per hour through the intersection of Central Avenue (Route 108) / Silver Street (Route 9) during the peak hours. **At a minimum, GPI recommends conducting an evaluation of the Project's traffic impacts at the Central Avenue (Route 108) / Silver Street (Route 9) intersection. Approximately 2/3 of these site-generated vehicle trips are anticipated to continue along Central Avenue (Route 108) through the intersection with Stark Avenue to access Route 16 (Spaulding Turnpike). Therefore, consideration should be given to adding the intersection of Central Avenue (Route 108) / Stark Avenue to the study area to assess the Project's impacts on this location.**

3. An evaluation of the traffic impacts at the Washington Street / Central Avenue / Henry Law Avenue intersection have been provided in the TISAS Appendix, but no detailed information has been provided regarding the methodology utilized to estimate traffic volumes at this intersection, including the collection of traffic counts**. At a minimum, the Applicant should provide this documentation. GPI also provides several comments related to the trip distribution calculations in the *Trip Distribution* section of this letter that may increase the project's impacts through this intersection. Based on these comments, GPI recommends that the Applicant include an evaluation of the project's impacts on the Washington Street / Central Avenue / Henry Law Avenue intersection, as well as the Central Avenue / Main Street intersection and Washington Street / Main Street intersection.**

Existing Conditions

4. The City's Standards require that a narrative description be provided of all significantly impacted roadways considering number of lanes, posted speed limits, width limitations, horizontal and vertical alignment deficiencies, surface conditions, streetside safety, and pedestrian and bicycle accommodations, including Americans with Disabilities Act (ADA) accommodations. Although the *Existing Conditions – Roadways* and *Intersections* sections of the TISAS describe the number of lanes and posted speed limits on the study area roadways and intersections, no descriptions are provided of the existing roadway widths, surface conditions, or pedestrian and bicycle accommodations.

5. The *Existing Conditions* – The *Roadways* section of the TISAS describes that River Street connects Washington Street to the north and Hanson Street to the south. This is believed to be a typographical error, and River Street actually meets Henry Law Avenue at its southerly end.

6. The *Existing Conditions* – The *Roadways* section of the TISAS describes Henry Law Avenue as a two-way roadway. However, the section of Henry Law Avenue between Washington Street and George Street is one-way in the eastbound direction.

7. The Hanson Street westbound (WB) approach to Central Avenue is described as having one exclusive right-turn lane and one exclusive left-turn lane; however, there is only 22 feet of storage provided in the

right-turn lane. Long queues within the left-turn lane block access to the right-turn lane, limiting the effectiveness of this lane.

8. The TISAS evaluates the existing conditions traffic volumes during the individual peak hour of each of the study area intersections, rather than evaluating a network-wide peak hour. This methodology is appropriate given the number of curb cuts and on-street parking between study area intersections that result in imbalances in traffic volumes between locations. This methodology also provides the most conservative (worst case) analysis of traffic operations at each intersection individually.

Vehicle Speed

9. No vehicle speed data was provided within the TISAS. **In order to adequately assess the sight distances required at the proposed site driveways, the Applicant should collect speed counts for a minimum of 24 hours to assess peak and off-peak travel speeds along River Street adjacent to the proposed site driveway.**

Sight Distance Analysis

10. The *Sight Distance* section of the TISAS claims that adequate sight lines will be provided at the new site driveway intersections and photographs of the sight lines are provided in Appendix J. However, no measurements of the available sight lines have been provided, and no calculations of the required sight lines to meet NHDOT and American Association of State Highway and Transportation Officials (AASHTO) guidelines have been provided. **GPI recommends that the Applicant provide a detailed assessment of sight lines at each of the proposed site driveway intersections, which should include an evaluation of the actual travel speeds along River Street adjacent to the site, calculation of required Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) to meet AASHTO guidelines, and preparation of sight line figures to depict the required clear zones to maintain adequate sight distances at each sight driveway. These clear zones should be kept free of any signage or vegetation that would obstruct sight lines and should be kept clear of snow in the winter months.**

11. The *Sight Distance* section of the TISAS indicates that poor sight lines exist looking left exiting River Street onto Henry Law Avenue due to overgrown vegetation within the City's right-of-way and on the adjacent private property. The TISAS recommends clearing of vegetation to improve sight lines. GPI recommends that City pursue a sight line easement over the property at #80 Henry Law Avenue to provide proper sight lines for vehicles exiting River Street onto Henry Law Avenue.

Collision History Evaluation

12. The *City's Standards for an Advanced Analysis require that a safety analysis be conducted, which should include a review of crash data for all roadways and intersections within the study area based on Dover Police Department crash records for the most recent three-year period available. The TISAS does not include any such safety analysis.* ***GPI recommends the Applicant obtain crash reports from the Dover Police Department for the most recent three-year period for all roadways and intersections within the study area and provide a summary of the collision patterns, as well as identify potential measures to reduce collisions and enhance safety where warranted.***

Traffic Volumes

13. The turning movement counts included in the TISAS were collected in September 2021. Based on NHDOT guidelines, existing conditions traffic volumes should be adjusted to peak-month conditions. However, the 2021 Existing Traffic Volumes shown in Figure 2 of the TISAS reflect raw traffic counts

and have not been seasonally adjusted to peak-month conditions. In addition, the counts were collected during the COVID-19 pandemic, which may have resulted in reduced traffic volumes compared to normalized conditions. In fact, the second paragraph of the *Traffic Volumes* section on Page 5 of the TISAS notes that traffic volumes on Washington Street over the Cocheco River dropped from 13,226 vehicles per day in 2019 (pre-pandemic) to 12,185 vehicles per day in 2020 (post-pandemic). Therefore, a COVID-19 adjustment should have been evaluated and applied to the 2021 Existing traffic volumes.

14. The turning movement count worksheets included in the TISAS Appendix do not include any data for pedestrian or bicycle movements through the study area intersections. It is unclear whether the counts included this information. **Given the substantial presence of pedestrians and bicyclists through the study area and the impacts that these crossings have to the operations of the study area intersections, it is critical that pedestrian and bicycle traffic be included in the analysis of traffic operations at all of the study area intersections. The Applicant should verify whether pedestrian and bicycle data was recorded. If no pedestrian or bicycle data was recorded, the Applicant should collect pedestrian and bicycle counts at all of the study area intersections for inclusion in the analysis.**

15. A seasonal adjustment factor of 1.05 was applied to the 2021 Existing traffic volumes to estimate the 2022 and 2032 No-Build traffic volumes based on NHDOT seasonal adjustment factors for Group 4 (Urban Highways) from 2017 – 2019. NHDOT recommends also reviewing local count station data when available to estimate seasonal variation. A count station is located in Dover on Dover Point Road, which indicated a similar seasonal variation with factors ranging from 1.01 to 1.05 from 2017 – 2019. Therefore, GPI concurs with the use of the 1.05 seasonal adjustment factor to adjust to peak-month conditions.

16. An annual growth rate of 2.0 percent per year was applied to the 2021 Existing traffic volumes to project volumes to 2022 and 2032 No-Build conditions. This growth rate was calculated based on a comparison of Annual Average Daily Traffic (AADT) volumes from 2017 and 2019 obtained from NHDOT count station data from NH Route 9 / NH Route 108 at the Cocheco River Bridge. It should be noted that this growth estimate is based on spot count data that may be collected at varying times of the year and is based on only two years of growth. In addition, the count station data provided in Appendix D of the TISAS notes that the 2019 traffic volumes do not represent an actual count but are instead estimated based on 2017 traffic volumes. Therefore, a reliable growth rate cannot be obtained from this data. GPI has reviewed historic traffic volumes from count stations available on NHDOT's Transportation Data Management System along the study area roadways and roadways in the surrounding area and found that none of the local count stations provide sufficient data for multiple years to assess a growth rate. However, NHDOT operates a permanent count station on Dover Point Road (Station 02125001). Based on historic traffic counts from 2014 – 2019 (most recent five-year period pre-COVID), traffic volumes have been decreasing in the area at a rate of 2.2 percent per year. Therefore, the application of a 2.0 percent annual growth rate appears appropriate and conservative (higher than anticipated) to project traffic volumes to future-year conditions.

17. Stephen G. Pernaw & Company, Inc (Pernaw) estimated a COVID-19 adjustment by obtaining traffic volumes collected at the permanent count station on Dover Point Road during the same week in September 2021 that the turning movement counts were collected, and then comparing these counts to counts collected at the same count stations in September 2019 during approximately the same week of the month. GPI concurs with this methodology and notes that Pernaw applied a 2.0 percent per year growth to the September 2019 traffic volumes when estimating this COVID-19 adjustment, arbitrarily increasing the volumes in the baseline condition. Therefore, the COVID-19 adjustments of 1.16 and 1.11 for the weekday and Saturday conditions, respectively, are conservative (higher than anticipated).

18. Traffic volumes have been projected to a ten-year design year (2032) condition in accordance with City Standards. It should be noted, however, that New Hampshire Department of Transportation (NHDOT) requires that traffic analysis be performed for both Opening Year condition and an Opening Year Plus Ten Years condition. Given the size of the proposed development, it is unlikely that the project would be open in 2022. Therefore, projecting traffic volumes to an opening year condition further in the future may be appropriate.

Trip Generation

19. The Applicant estimated the trips generated by the proposed development utilizing trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*[1]. The City's Standards require use of the most recent version of ITE when estimating site-generated trips. The traffic study was completed in November 2021, following the release of the 11th edition of the *Trip Generation Manual* in September 2021. **Therefore, the trip generation estimate should have been prepared utilizing the 11th edition of the *Trip Generation Manual.***

20. The trip generation estimate utilizes trip rates for LUC 221 – Multifamily Housing (Mid-Rise) for all of the residential units proposed within the development. This land use code is intended to be utilized for attached residential units in buildings with four to ten floors. The units proposed within Building E as shown in the site plans will be townhouse-style units. **Therefore, trip rates for LUC 215 – Single-Family Attached Housing should be used to estimate the trips generated by Building E.** The description provided of LUC 215 notes that this land use specifically includes townhouses and rowhouses, similar to those proposed as part of Building E. The trip rates for LUC 215 are generally higher than for LUC 221; therefore, the use of LUC 221 may under-estimate the trips generated by the townhouse use.

21. Although there is no description provided in the TISAS of the development contained under Phase 1 and Phase 2, the trip generation estimates assume that approximately 125 dwelling units will be constructed in Phase 2 and the remaining development will be constructed in Phase 1. Based on the site plans, Phase I will include the construction of Buildings A, C, and D; while Phase 2 will include the construction of Buildings B, E, and F. Therefore, the trip generation estimates for Phase 1 and 2 appear to include an appropriate number of residential units within each phase based on the site plans. However, based on the floor plans contained in the site plans, Building F is proposed to contain 3,794 SF of flex commercial space that has not been included in the trip estimate for Phase 2. **The trip generation estimate for Phase 2 should be updated to include this commercial space in Building F.**

22. Neither the site plans nor the TISAS provide a description of the size and use of the commercial space within the proposed development. The floor plans contained in the architectural plan set depict that approximately 5,866 SF of commercial space is proposed within Building A; 8,913 SF of commercial space is proposed within Building D; 3,794 SF of flex space is proposed within Building F; and 3,672 SF of commercial space, and 8,522 SF of office space is proposed withing Building C. **The site plans and TISAS should be updated to describe the intended use of these spaces to greatest extent possible for estimating site-generated vehicle trips and parking demand generated by the proposed development.**

23. The TISAS assumes the construction of 14,000 SF of office space, 8,290 SF of retail space, and 5,500 SF of restaurant space, which totals 27,790 SF of commercial space. Based on the floor plans a total of 30,767 SF of commercial space (including spaces labeled as office, commercial, and flex) is proposed

[1] *Trip Generation Manual, 10th Edition*; Institute of Transportation Engineers; Washington, DC; 2017.

within the development. **The Applicant should address this discrepancy and update the TISAS accordingly.**

24. Appendix F of the TISAS does not include any of the detailed trip generation calculations to verify that the correct trip rates or equations were utilized to estimate the site-generated vehicle trips. **The Applicant should provide the detailed trip generation calculations.**

25. Although not described in the text of the TISAS, the trip generation calculations in the Appendix apply an internal capture credit to the trip generation estimate to account for trips that may be shared between the commercial and residential uses on-site. While application of an internal trip credit is appropriate for this type of mixed-use development, the TISAS does not contain any calculations or other data to support the internal capture percentage that was applied. The internal capture used in the TISAS ranges from 16 to 28 percent during the weekday AM and PM peak hours, which appears high given the high number of residential units compared to the small size of the commercial spaces. **The Applicant should provide documentation to support the use of the internal capture credit if utilized.**

    It is noted; however, that no internal capture was applied for the Saturday midday analysis condition. In addition, the trip generation estimate summarized in Table 1 and utilized for the distribution of site-generated vehicle trips through the study area intersections does not include any internal capture credit.

26. The TISAS notes that no pass-by trip credit was applied as part of the trip generation estimate to provide a conservative (worst-case) analysis. However, the trip generation calculations contained in Appendix F depict a pass-by credit applied to at least some portion of the commercial trips during the weekday PM peak hour. No detailed calculations are provided to indicate the percentage pass-by credit applied or support the use of this credit. The Applicant should remove the pass-by credit or provide documentation to support use of this pass-by credit, along with detailed calculations of how the pass-by trips were estimated. It is noted that the trip generation estimate summarized in Table 1 and utilized for the distribution of site-generated vehicle trips through the study area intersections does not include any application of a pass-by credit.

Trip Distribution

27. The Applicant has based the distribution of site-generated trips on a journey-to-work model using U.S. Census data of place of employment for residents of Dover. While this methodology is appropriate for evaluating the distribution of residential traffic, it is not appropriate for the distribution of commercial and retail traffic. This is evidenced as the journey-to-work model indicates nearly 30 percent of Dover residents work in Portsmouth. Given the availability of numerous commercial and retail establishments within the City of Portsmouth, it is unlikely that the proposed commercial space will draw 30 percent of its traffic from Portsmouth. The estimate also assumes over 10 percent of commercial / retail trips will come from Manchester, Nashua, and Concord that are approximately one hour away from the site, while this size commercial development is more likely to have a more local draw. **GPI recommends that the Applicant estimate the distribution of commercial / retail trips using a gravity model based on the intended draw area of patrons for the proposed commercial / retail development, adjusted to account for competing opportunities.**

28. The TISAS assumes that all traffic exiting the site to the communities to the south will utilize River Street to Henry Law Avenue to Hanson Street to access Central Avenue. Given the difficulty making a left-turn exiting Hanson Street onto Central Avenue, many drivers may choose to make use Washington Street and Main Street to access Central Avenue where movements can be made easily through right-turns or signalized movements. Based on Google Maps directions, these routes provide similar travel times and distances. **The Applicant should revise the trip distribution calculations to assume that traffic traveling to/from the south on Central Avenue will be split more evenly between River**

Street / Henry Law Avenue / Hanson Street and Washington Street / Main Street. The current distribution likely under-states the project's impacts on intersections along Washington Street, Main Street, and Central Avenue.

29. Similarly, the TISAS assumes that all 80 percent of traffic traveling between the site and Rochester will utilize River Street to Henry Law Avenue to Hanson Street to access Central Avenue / Silver Street in order to travel north on the Spaulding Turnpike (Route 16) to Rochester. Only 20 percent of traffic to/from Rochester is assumed to use Washington Street and Main Street to access the Spaulding Turnpike (Route 16). Given the difficulty exiting Hanson Street onto Central Avenue and the congestion that occurs at the Central Avenue / Silver Street intersection, it is unlikely such a high percentage of drivers will travel south to access Rochester. Based on Google Maps directions, using Main Street to Washington is generally a shorter route during the weekday morning peak hour when the majority of residents would be leaving the development to get to work. The return route in the evening provides similar travel times and distances on each route. **The Applicant should revise the trip distribution calculations to assume a more appropriate distribution of residential vehicle trips between these two routes to/from Rochester.** The current distribution likely under-states the project's impacts on intersections along Washington Street and Main Street.

Capacity Analysis

30. Page 19 of the TISAS describes that the Highway Capacity Manual 2010 analysis methodology was utilized to conduct the capacity and queue analyses at the study area intersections; however, the Synchro analysis worksheets provided in the Appendix indicate that the Highway Capacity Manual, 6th Edition (HCM6) analysis methodology was utilized. The City's Standards require the use of HCM6 as the most recent analysis methodology. Therefore, the analysis accurately utilized the most recent analysis methodology.

31. GPI concurs with the use of Highway Capacity Manual, 6th Edition (HCM6) analysis methodology to evaluate the operations at the study area intersections. However, GPI notes the following:

    a. The HCM6 methodology for preparation of a traffic study recommends utilizing an overall intersection Peak Hour Factor (PHF) for all movements through an intersection. However, the Applicant has applied the PHF for each individual movement. While the Applicant's use of individual PHFs is inconsistent with current guidelines, it provides a more conservative (worse case) representation of the traffic operations through the study area intersections as many of the low volume movements experience low PHFs in comparison to the intersection as a whole.

    b. The Applicant has applied the existing PHFs under both 2022 and 2032 Build conditions. The proposed development will add a significant volume of traffic through all of the study area intersections that could alter traffic patterns and the peaking patterns of traffic through the intersections. NHDOT guidelines recommend the application of a default PHF of 0.90 for future year conditions for all new roadways/driveways and intersection approaches that will see substantial traffic increases as a result of site-generated vehicle trips. **Therefore, the Applicant should utilize the recommended 0.90 PHF for such approaches under all Build conditions.**

    c. The Synchro analysis worksheets in the TIS Appendix do not provide the input information for lane widths, and travel speeds, therefore, GPI is unable to verify these inputs within the analysis. Similarly, the analysis worksheets do not provide any information on pedestrian and bicycle conflicts or on-street parking maneuvers to verify these inputs. **The Applicant should provide updated Synchro analysis worksheets with this input data included.**

    d. The storage length in the Hanson Street westbound right-turn lane at the intersection with Central Street is listed as 50 feet on the analysis worksheets. However, this lane provides only

22 feet of storage. **The analysis should be updated at the Central Avenue / Hanson Street intersection to accurately reflect the available storage in the right-turn lane.**

e. **GPI recommends that the HV% for the turns in and out of the proposed site driveways be updated to two (2) percent to be consistent with NHDOT guidelines.** The TISAS assumes 0 percent heavy vehicles on all site driveways.

f. A two-way left-turn lane (TWLTL) is present on Central Avenue at the intersection with Hanson Street, which allows vehicles exiting Hanson Street to make a two-stage left-turn by first yielding to northbound traffic to enter the TWLTL and wait there for a gap in southbound traffic. It is unclear whether the capacity and queue analysis considers the presence of this lane as the detailed input worksheets have not been provided in the Appendix. However, the analysis worksheets do state that the "Veh in Median Storage" is zero for the Hanson Street westbound left-turn movement. Therefore, it appears that the TWLTL has not be considered.

32. Synchro analysis worksheets are provided in Appendix H of the TISAS evaluating traffic operations under Build with Mitigation conditions at the Central Avenue / Henry Law Avenue / Washington Street intersection. However, this intersection was not included in the study area for the TISAS and it is unclear how the traffic volumes used in this analysis were estimated based on the limited data provided in the TISAS. Page 26 of the TISAS describes that the Technical Review Committee requested the operations of the Central Avenue / Henry Law Avenue / Washington Street intersection be evaluated, and that the analysis was taken from the "*Traffic Evaluation-Fosters Building Redevelopment"* previously completed by Pernaw. No documentation of traffic volume projections or methodology was provided as part of the TISAS. **The Applicant should provide documentation of the data and methodology utilized to complete the analysis of operations at this intersection. In addition, this analysis should be updated to reflect the additional comments provided in this letter regarding trip generation and distribution.**

33. The results of the capacity and queue analysis summarized in Table 9 indicate that the Central Avenue southbound through movement at the Washington Street / Central Avenue / Henry Law Avenue intersection currently operates over capacity and at LOS F during the weekday AM peak hour, which will be exacerbated by the additional traffic generated by the proposed development. **GPI recommends that the Applicant evaluate measures to mitigate this condition, including implementing signal timing improvements to optimize the operations of the intersection.**

34. The results of the capacity and queue analysis indicate that traffic exiting Hanson Street onto Central Avenue currently operates over capacity at LOS F under 2022 No-Build conditions. With the additional traffic generated by the proposed development, delay on this approach is expected to exceed five minutes per vehicle, queues of up to 27 vehicles are predicted, and the volume will exceed the capacity by three to six times. The TISAS notes that the City should evaluate whether signalization of the intersection is warranted and consider installing a traffic control signal coordinated with the existing signal at Silver Street. An analysis of the traffic operations with installation of a traffic signal is provided in Appendix H, which indicates that a traffic signal would benefit the operations on Hanson Street but may result in long delays and queues along Central Avenue that would exceed 1,000 feet. This analysis was based on only the weekday PM peak hour, and no analysis was provided for the weekday AM or Saturday midday peak hours that would experience higher volumes of site-generated trips on Hanson Street. Although the TISAS recommends that a signal at the Central Avenue / Hanson Street intersection be coordinated with the signal at Central Avenue / Silver Street, the analysis worksheets evaluated the operations under uncoordinated conditions. **The Applicant should perform a signal warrant analysis at this location to assess whether a signal will be warranted under 2022 Build and/or 2032 Build conditions. In addition, the Applicant should update the capacity analysis to include coordination of the signals along Central Avenue, which will require evaluation of the operations at the Central Avenue / Silver Street intersection. The capacity and queue analysis**

should be conducted for all three analysis time periods (weekday AM, weekday PM, and Saturday midday peak hours).

It should be noted that the proposed development is anticipated to increase vehicle trips exiting Hanson Street by 95 to 107 vehicles per hour during each of the three analysis time periods, and will increase total traffic through the intersection by 173 to 217 vehicles per hour. This is a substantial increase in traffic that will result in significant impacts to the operations of the intersection. **Therefore, the Applicant should identify appropriate measures to mitigate the impacts, and at a minimum, provide a monetary, fair share contribution toward the cost of implementation (design and construction) of improvements at this intersection, proportional to the percentage increase in vehicle trips through the intersection generated by the project.**

Auxiliary Turn Lane Warrants Analysis

35. The turn lane warrant analysis conducted as part of the TISAS indicates that dedicated turning lanes are not required on Washington Street westbound or River Street northbound at the Washington Street / River Street intersection to accommodate 2022 Build conditions. However, a separate right-turning lane will be required on River Street to accommodate 2032 Build conditions. It should be noted that the actual opening year of the proposed development is likely to be later than 2022; therefore, a right-turn lane may be warranted under opening conditions. **As a right-turn lane would provide a safety enhancement, as well as an operational enhancement, the Applicant should consider installation of a right-turn lane on River Street at the Washington Street intersection under opening conditions to accommodate the additional traffic generated by the proposed development. At a minimum, the Applicant should conduct a post-occupancy monitoring study to assess whether the right-turn lane is warranted and construct the lane if warranted. Funds should be placed in escrow prior to issuance of a building permit for the proposed development to cover the cost of construction of this additional lane.**

36. The turn lane warrant analysis indicates that a left-turn lane is not warranted on River Street at the proposed site driveway. GPI has made several comments within this letter that will impact the volume and distribution of trips generated by the proposed development. **The Applicant should address those comments and perform an additional left-turn lane warrant analysis to verify that a turn lane will not be warranted with the revised trip generation and distribution calculations.**

Mitigation

37. River Street is a narrow roadway with no pavement markings except near the intersection with Washington Street and with deteriorating pavement. Although there is a sidewalk provided along the westerly side of River Street, there is no curbing provided for the sidewalk and there are tire tracks indicating that vehicles regularly leave the roadway surface and travel on the sidewalk. **As River Street will serve as the primary access to the site and the proposed development is anticipated to increase traffic along River Street by 185 to 233 vehicles per hour during the peak hours and by over 2,600 vehicles per day on a weekday, the Applicant should consider repaving River Street and providing Manual with Uniform Traffic Control Devices (MUTCD) compliant pavement markings, including centerline and edgeline markings, along the roadway, as well as a STOP line and crosswalk at the intersection with Henry Law Avenue, as mitigation for the proposed development.**

Parking

38. Neither the TISAS nor the site plans provide an evaluation of the parking required to serve the proposed development. **GPI recommends that the Applicant provide as assessment of the parking required**

to meet City of Dover zoning regulations and a summary of the development's compliance with the City's ordinance. In addition, GPI recommends that the Applicant provide an estimate of the potential parking demand to be generated by the proposed development based on parking demand data provided in the ITE publication *Parking Generation, 5th Edition*. This should include an assessment of the demand during each hour of the day and a comparison of the anticipated parking demand to the proposed parking supply within each distinct area of the site.

Traffic and Parking Demand Management Plan

39. The Applicant is currently not proposing any Transportation Demand Management (TDM) measures to reduce the volume of traffic generated by the Project. **The Applicant should evaluate the feasibility of implementing a comprehensive TDM program to reduce single-occupant vehicle trips generated by the proposed development, particularly for the residential units.**

40. Use of rideshare programs like Uber and Lyft are becoming increasingly popular. **The Applicant should consider providing dedicated parking spaces for Uber and Lyft vehicles transporting commercial patrons and employees, as well as residents, to the facility, and working with Uber and Lyft to geocode these parking spaces, to minimize parking and stopping along River Street, Washington Street, and the proposed loop road.**

41. The site will be located approximately 0.2 miles from the closest bus stop, which is located on Washington Street just east of Henry Law Avenue and provides access to COAST Bus Route #33. **Due to the residential nature of the proposed development, the proximity of the bus route, and the limited detour that would be required to serve the site, the Applicant should contact COAST to discuss extending Bus Route #33 into the site. Documentation of this communication should be provided. Should bus service be extended into the site, the Applicant should provide a bus stop with a bus shelter for use by residents and patrons of the development. In addition, the loop road through the northerly portion of the development should be adequately designed to allow for a bus to utilize this roadway to reverse direction on Washington Street to continue along its route to Main Street.**

42. Although not described in the TISAS, the site is also located in close proximity to additional bus stops for COAST Bus Routes #3, 13, and 34 on Central Avenue near Dover City Hall.

Proposed Safety Enhancements

43. Although a STOP sign is provided on the River Street approach to Washington Street, the sign is faded and damaged. In addition, the STOP line is almost entirely faded. Based on the site plans, the Applicant is proposing a new sidewalk on the east side of River Street connecting to this intersection. **GPI recommends the Applicant install a crosswalk with ADA-compliant curb ramps across River Street at this intersection. In addition, the Applicant should remove the existing STOP sign and install a new MUTCD-compliant STOP sign and restripe a STOP line on River Street.**

44. The existing STOP sign on Hanson Street at the intersection with Henry Law Avenue has been covered with stickers and no STOP line is present on this approach. **The Applicant should consider replacing this STOP sign and striping a STOP line on Hanson Street as a safety enhancement given the volume of site-generated traffic that will be traveling to the site along Hanson Street.**

Site Circulation

45. A grass buffer is proposed between the sidewalk and the edge of the roadway along the Eastern Loop Road in front of Building E. However, on-street parking is also provided in this area. Where on-street

parking is provided, it is typical for sidewalks to be located immediately adjacent to the roadway to provide direct access to a sidewalk from the parked vehicles. This is particularly important in winter months when the presence of snow and ice would block access to the sidewalk and force people to walk within the roadway to get between the sidewalks and parked vehicles. **GPI recommends locating the sidewalk immediately adjacent to the roadway in all areas where on-street parking is proposed.**

46. On-street parking spaces are proposed along the loop road for the north portion of the site. An S-curve has been introduced to the alignment of the loop road near Building E, presumably as a traffic calming measure and to be able to alternate the side of the roadway where on-street parking is provided. The curvature of the roadway in this area will result in sight line restrictions for vehicles maneuvering in and out of the parking spaces. In addition, the on-street parking spaces on the east side of the roadway combined with the curvature of the road will block visibility of pedestrians crossing in the crosswalk connecting the two sides of Building E. **GPI recommends the Applicant consider straightening the roadway in this area to improve pedestrian visibility and sight lines for on-street parking. Consideration should be given to locating the on-street parking spaces on one side of the roadway for improved alignment and installation of a curb bump-out in the area of the crosswalk for improved pedestrian visibility.**

47. Two on-street parking spaces are proposed on the east side of the eastern loop road connection just north of Washington Street. The location of these on-street spaces requires a driver to walk across at least one internal roadway to access any of the buildings. These spaces are also located in close proximity of the intersection with Washington Street where drivers may not be expecting to encounter vehicles attempting to park so close to the intersection. Vehicles parked in these spaces would block visibility of the Washington Street / Eastern Loop Road intersection for vehicles exiting the east portion of Building E, which is particularly concerning given the proximity of the Building E driveway to the Washington Street intersection. **GPI recommends removing these two on-street parking spaces.**

48. The pedestrian crosswalk on the driveway to the east portion of Building E has been set back from the edge of the roadway where it will not be visible to vehicles as they turn from the Eastern Loop Road onto the driveway. **GPI recommends either shifting the crosswalk closer to the intersection to provide visibility of pedestrians prior to vehicles turning onto the driveway or shifting the crosswalk further east to give adequate time for a vehicle to turn onto the driveway, see the pedestrian, and react appropriately. If on-street parking is maintained on this side of the street, the crosswalk should be shifted closer to the intersection with the Eastern Loop Road.**

49. The location of the crosswalk at the easterly end of Building D results in the STOP line and STOP sign exiting the parking field onto the Eastern Loop Road being set back significantly from the roadway. At this location, drivers would not be able to see oncoming traffic. **GPI recommends shifting the sidewalk and crosswalk further east to the intersection in this area to allow for the STOP line to be shifted closer to the intersection.**

50. The Applicant is proposing to introduce parallel parking along the west side of River Street just north of the proposed site driveway. This parking will be located on the inside of a curve which will make visibility of oncoming traffic difficult for vehicles parked in the two southerly-most spaces. Parking maneuvers in and out of these spaces may also conflict with turning movements at the site driveway intersection. **Therefore, GPI recommends elimination of the two southerly-most on-street parking spaces in this area.**

51. **GPI recommends installing STOP signs and striping STOP lines on all site driveway and loop road approaches to River Street and Washington Street.**

52. No indication is provided within the TISAS or on the site plan as to whether any restrictions on the use of certain parking spaces will be provided, other than for the use of handicap accessible and electric-vehicle (EV) charging stations. **The Applicant should indicate which parking spaces will be available for use by residents and employees and patrons of the proposed commercial uses.**

53. Although bicycle storage areas are proposed within the parking garage of each building for use by residents, it does not appear that any bicycle racks are proposed on site for use by commercial patrons and employees. **The Applicant should provide bicycle storage for commercial establishments on site.**

54. Given the number of dwelling units proposed within the development, there are likely to be a significant number of school-aged children living within the development, particularly in the townhomes. The site plan currently does not provide any dedicated space for a school bus stop on site. **GPI recommends the Applicant consider appropriate location(s) on site for provision of school bus stop(s).**

55. The parking aisles throughout the surface parking lot in the southerly portion of the site are proposed to be 22 feet wide. **To provide efficient maneuvering space in and out of perpendicular space on two-way access aisles, a 24-foot width is recommended.**

56. Based on the layout of the site and the provision of apparent loading areas near Buildings A and B, it appears that moving trucks will utilize the 10-foot wide loading areas near the building elevators. **The Applicant should verify that these loading areas are of sufficient length to accommodate a moving truck and provide vehicle turning path diagrams to verify the ability of a moving vehicle to efficiently access and egress these loading areas from Washington Street and River Street.**

57. **The Applicant should explain where loading/unloading of moving trucks for Buildings C, D, and E is proposed to occur as there are no loading areas proposed near the buildings that will not conflict with site circulation or parking.**

58. **The Applicant should provide vehicle turning movement diagrams to verify that delivery, trash, and emergency vehicles can safely and efficiently navigate the site to access any and all applicable areas.**

59. Trash storage for Buildings A and D is proposed to be located within the parking garages. **The Applicant should describe how removal of trash from these areas will be handled and provide vehicle turning figures to verify that trash removal vehicles can adequately access these trash storage areas.**

60. Trash storage for Buildings B and C is proposed to be located near the center of the buildings adjacent to Washington Street. **The Applicant should describe how removal of trash from these areas will be handled.**

61. The Applicant is proposing several crosswalks along River Street, Washington Street, and the loop road. **GPI recommends the installation of MUTCD-compliant pedestrian crossing warning signage at each of these crosswalks.**

62. The Applicant is proposing angled parking along the north side of the loop road near Building D, which includes some handicap accessible parking spaces. However, no accessible connection is provided between these spaces and the sidewalk along the southerly side of the roadway. **GPI recommends that the Applicant continue the sidewalk near these spaces further west and provide a crosswalk with ADA-accessible ramps or a raised crosswalk across the loop road to allow access between these angled spaces and Building D.**

63. The Applicant is proposing a sidewalk along both sides of the majority of the loop road. However, a gap in the sidewalk is proposed on the north side between the angled spaces and the parallel spaces. This gap in the sidewalk will leave approximately five parallel parking spaces unserved by a sidewalk, forcing people to walk in the roadway. **GPI recommends that the Applicant provide a continue sidewalk along both sides of the roadway throughout the entire length of the loop road and/or remove parking spaces where they cannot be served by a sidewalk or where the provision or parking prevents the construction of sidewalk.**

64. There are no crosswalks proposed on the loop road to connect Building F to the sidewalk on the west side of the roadway or to the other buildings on-site. The Applicant should consider a pedestrian connection for these residents.

65. **The landscape plans should include the proposed edges of sidewalks and roadways to verify the proximity of proposed landscaping to the street and ensure that proposed landscaping will not obstruct sight lines for pedestrians or vehicles traveling throughout the site.**

Should you have any questions or require additional information, please feel free to contact me at (603) 766-5223.

Sincerely,

GREENMAN-PEDERSEN, INC.



Rebecca L. Brown, P.E.
Senior Project Engineer

Cochecho Waterfront TRC Submission COMMENT RESPONSE Date: December 16, 2021

City of Dover TRC, October 21, 2021:			
	TRC Comment	**Applicant Response**	**Sheet**
TRC Comments from 10/20/21 Correspondence			
Planning Comments:			
1	Water and sewer Investment fees	Water and sewer Investment fees calculations were submitted as part of the original application. The applicant acknowledges these will need to be paid for each building	
2	Impact fees	Acknowledged	
3	Have you considered additional rooftop amenities?	Upper floor amenities are being provided in Buildings A & D. The amenities will be utilized by all the tenants	
4	Revise traffic study per meeting with Staff	Full Traffic Impact Analysis submitted 11/17	
5	Great maintenance plan but 6' snow banks? Please revise to remove snow before 6' or if blocking site distance.	Site note #22 has been modified to remove snow banks once they exceed 3' in height.	G-100
6	How did you determine amount of kayak storage?	The applicant owns a property on the water in Plymouth, MA where many of the tenants enjoy paddle sports. The applicant created a space to store kayaks and SUP's, and even provided several kayaks to be used by the tenants. The space in Building D was sized based on those demands. Approximately 20-24 kayaks will be able to fit in the space.	
7	For the car port, have you considered solar with EVSE?	Yes we have considered this. Due to location behind wall it would block about 80% of the sunlight. Not an efficient location for the panels. Rooftop is better	
8	Add all professional signatures and stamps for each submission	Acknowledged	
9	Owner's signature on final submission	Acknowledged	
10	Add common site notes or indicate location of 2, 3 (deed numbers), 10, 13, 14, 16, 18, and 19	Common site note 2 has been provided on the cover page. The following notes have been modified or added to address the remainder of this comment. General note #6 (Common site note 10), General note #19 (Common site note 13), Utility note #7 (Common site note 14), General note #18 (Common site note 16), General note #28 (Common site note 18), & General note #29 (Common site note 19).	Cover Sheet & G-100
11	Add note that it shows pre-blast conditions	Notes on C-101 and C-101.1 have been modified to annotate existing contours.	C-101 & C-101.1
12	Add permit numbers when receive	Permit Numbers will be added to the Cover Sheet once received.	
13	Add planning file number P21-69	Planning File number has been added to the plan set.	Cover Sheet
14	Connect sidewalk around Building A	A sidewalk has not been added around Building A due to the restrictions in grades, additionally a sidewalk has already been provided to the new loop road.	
15	Add public art as agreed upon with Arts Commission and Planning Department	The applicant is working with the Arts Commission on different art opportunities around the buildings and in the public park.	
16	Try to move transformers away from public ROW and screen transformer	The applicant had a strategy meeting with Eversource and have revised the transformer locations. In areas where the transformers remain close to the road, additional landscaping was added to help with screening.	
17	Provide calculation to indicate how you meet or exceed EVSE regulations	EVSE calculations have been provided for each of the development lots. The townhomes have garages which will have dedicated outlets available in the garage.	C-102, C-102.1, C-102.2, & C-102.3
18	Add aisle widths to parking garages	Aisle Widths and Standard handicap and standard sparking spaces dimensions have been provided for the parking garages.	C-102.1, C-102.2, & C-102.3
19	What kind of screening on roof?	Screening is accomplished with roof parapets and orientation of equipment to center of building.	

20	Angle building A to hide garage door better	The building follows the street edge as per design guidelines. The garage door will be a nicer solid door and not grate you can see through. The garage entrance has also been relocated so it is no longer on the end of the building.	
21	Art Renderings to be corrected to “Cochecho”	The plans were looked through and we weren't able to find the misspelling.	
22	Number sheets consecutively	Sheets have been numbered consecutively.	
23	Site note 18 on G-100 has typos	Site note #18 has been updated for the correct Chapter of the Code of the City of Dover.	G-100
24	Add Book and Page to General note 4 on G-100	Registry of deed Book and Page has been added to the general note #5 (old general note #4).	G-100
25	Revise Utility note 22 to Chapter 81-30	Utility Note #22 has been updated as noted.	G-100
26	Bring uniformity ratio down or seek waiver. Understand not wanting to increase your minimum but could you lower your average or spread light out more evenly?	The uniformity ratio has been revised to be >5	
27	Confirm security lighting on all 4 sides of the building. Remove the 0.0 near buildings.	Security lighting is on all sides of the building. Note the photometric does not include city lights	
28	Include lighting details or indicate where in submission?	Lighting specifications have been add the site lighting diagram sheet	A101

Police Department Comments:			
29	Based on the expected site generated traffic/turning movements detailed in the Pernaw initial traffic evaluation, the River/Washington Street intersection should be evaluated for an all-way stop.	See Traffic Study	
30	Advanced Analysis (Pernaw report recommendation, p. 13) for the Central/Washington intersection should include a potential two-way circulation pattern for downtown (particularly Washington Street) as outlined in the Preferred Design section of the March 2015 Downtown Dover Pedestrian and Vehicular Access Study.	See Traffic Study	
31	Washington Street’s assumed terminus should be at River Street, with the extension (Street B) to be identified with a different street name. Unless the Building Official has an idea of an alternate address for One Washington Street.	This will be part of the City's portion of the project, by others.	
32	Sheet C-102: Review the feasibility of making Street A and Cross Street a one-way loop road, with angle parking all on one side (ideally on the development side, opposite of the water). This would be intended to maximize public parking supply and optimize efficiency as this inventory will be absorbed into Dover’s downtown parking management; providing fewer multi-space meters all on one side of the road would be optimal.	This will be part of the City's portion of the project, by others.	
33	Sheet A-100: the Waterfront Pavilion is likely a concept only, but its size and scope may be unintentionally limited as it may generate more public parking demand than this project supplies and would result in impacts to the proposed private parking lots. Review feasibility of a public/private partnership to accommodate events at this pavilion.	This will be part of the City's portion of the project, by others.	
34	Absence of ADA parking spaces on the public streets	This will be part of the City's portion of the project, by others.	

Engineering Comments:			
35	Check landscape plan with drainage or electrical	Plans have been checked for Landscape/Utility conflicts.	
36	Discuss Trash/toters?	The trash rooms have been relocated to allow for pick up on the City ROW. A figure has been included identifying loading zones for these pick-ups and will need to coordinate with the City's engineer.	
37	It seems the proposed sidewalk is outside of the row. Will there be an easement for this?	This will be addressed with blanket Sidewalk Easements for entire development	

38	Don’t run the curb thru the tip downs in the crosswalk/sidewalks	Curbing has been stopped at tipdowns.	
39	Explain the access to the kayak area	Kayak storage area will be accessed from a separate garage door on the city road side of the building. The Kayak storage in Building D is for the tenants.	C-102, C-102.2
40	I have some concern in some areas about the lack of drainage capture. Are there any concerns about grate inlet efficiency? Do you need any double grates at low points that collect a lot of water?	Additional catch basins and double catch basins have been utilized.	C-103, C-103.1, C-103.2, & C-103.3
41	Keep underground elec/tel 7 ft away from the water/sewer/drainage.	Underground electrical and telecommunications conduit has been modified to provide 7 ft of separation to all other utilities and drainage.	C-104, C-104.1, C-104.2, & C-104.3
42	Have one waterline to building and then branch off for fire and domestic	One 6" fire water line and one 4" domestic branch has been added to each building.	C-104, C-104.1, C-104.2, & C-104.3
43	Keep hyd gate 6 ft away from hyd and restrain gate inline.	Hydrant Gates have been modified to be 6' away from the hydrant. The hydrant detail has been revise	C-104, C-104.1, C-104.2, & C-507
44	The uses basf f100 fiber reinforcement for our concrete sidewalks	The concrete sidewalk detail has been modified to call out basf f100 fiber reinforcement and the welded wire fabric has been removed.	C-502
45	Smh drops should be on the outside	All SMHs have been modified to not need a manhole drop therefore the detail has been removed.	N/A
46	Smh inverts shall be all brick with no filler	SMH detail has been modified to removed the concrete filler.	C-507
47	Sewer trench shall have stone one ft over the pipe	The Sewer trench detail has been modified to provide 12" of stone above the pipe.	C-507
48	Hydrants shall be eddy f 2641 and be factory plugged.	Hydrant has been modified to be a Eddy Model F-2641.	C-507
49	C508-water gates shall open left	Gate valve detail has been modified to open to the left.	C-508

Fire/Inspections Comments:			
50	Clarify the sequencing of the overall project as there did not appear to be a hotel or phase II plans.	Phase I will be Buildings A, C & D. There is not a hotel proposed.	
51	Phase I plan set has been provided- should there be a phase II and III set provided or are there future TRCs planned.	Phase II and Phase III plans are encompassed in the master set of plans. Unless significant changes are proposed to the future phases it is not our intention to have future TRC's.	N/A
52	Is the building construction type known at this time(i.e. combustible/noncombustible)	Building A, C, D & F will be 5A over 1A. Building B will be 5A. The Townhomes will be 13R?	
53	Turning template appears to encroach on curbing – revise where necessary.	The truck turning plans have been modified to avoid the curbing for the development lot.	Truck Turning Exhibit 1 of 2 & 2 of 2
54	Discuss the alteration of the fire hydrant configuration.	The fire hydrant configuration has been adjusted per pervious comments.	C-104, C-104.1, C-104.2, & C-507
55	Locate the FDC at the front of each structure in an unobstructed readily accessible location.	Preliminary locations noted on Embarc garage/1st floor building plans	
56	Clarify if there are any roof amenities associated with the proposed structures.	We have upper floor amenities in Buildings A & D. The amenities will be utilized by all the tenants	
57	Indicate the proposed location of the inverters for the roof mounted solar system and if there is any storage being proposed.	Preliminary locations shown on building roof plans. We are not providing electrical battery storage for solar power.	
58	Indicate access into the parking garages for first responders.	Egress Doors shown on building plans	
59	Provide accessible parking spaces in garage in accordance with accessibility standards (i.e. size and quantity).	Size and quantity of accessible spaces comply with ADA/ NH RSA 155-A	
60	Indicate accessibility for EV charging stations.	Shown on building garage plans	
61	Clarify garage floor plan and the means of ingress/ egress.	Shown on building garage plans. Full code compliance and egress drawings/ calculations will be provided for each building during permit application.	
62	Plan set shall include a note referencing the design standards used to comply with all applicable accessibility regulations and NH RSA 155-A:5.	Site note #19 references the accessibility regulations.	G-100

63	Indicate how the building will be used in a normal power outage as a standby power source does not appear to be included within plan set.	During an emergency or loss of power, the building will be evacuated. An evacuation plan will be posted on each floor and will be posted by retail/ restaurant tenants and will be provided to Inspectional Services as it is created. All life safety devices are to include battery backup. Lights will back up for 90 minutes and area of rescue devices to back-up for 3-4 hrs. depending on the model selected. Further clarification will be provided on building-by-building basis with construction drawings and specifications.	
64	Indicate if the elevator is used as an accessible means of egress.	The elevator cannot and will not be used as an accessible means of egress. The elevator will have battery-powered lowering as well as Earthquake Emergency Operation and automatic dispatching of loaded cars. Two way communication systems and areas of refuge will be provided in all elevator buildings, and buildings A, C, and D will likely feature area separation walls with horizontal exits for further separation. Further clarification will be provided on building-by-building basis with construction drawings and specifications.	
65	Coordinate elevation plans to show utilities adjacent to one another and building openings while providing adequate separation between each utility (i.e. gas/electric)	Gas locations shown on elevations. Site drawings show electrical connection, which occurs underground.	Elevation drawings
66	Site plans and elevation plans to show the location of the parking garage intake and exhaust louvers.	Potential Garage vent and louver locations are marked on elevations. Final engineered sizes and locations will be shown on Construction Permit drawings for individual buildings.	Elevation drawings
67	Provide elevation plans and construction type for the carport at the rear of building A.	Plan and elevations shown on sheet A123. The structure will be non-combustible, construction type will be 2B, and, at 3260 GSF, is not required to be sprinklered.	A123
68	Indicate if building style E will be constructed as townhouses or Apt. buildings. Elevation or floor plans do not depict a sprinkler riser room.	These are individually accessed townhouse units with party wall conditions. They will be constructed as construction type 5B, and will be sprinklered in accordance with NFPA 13D.	
69	Plan set shall include a note indicating the site shall remain accessible in all weather conditions year round.	General note #30 has been added.	

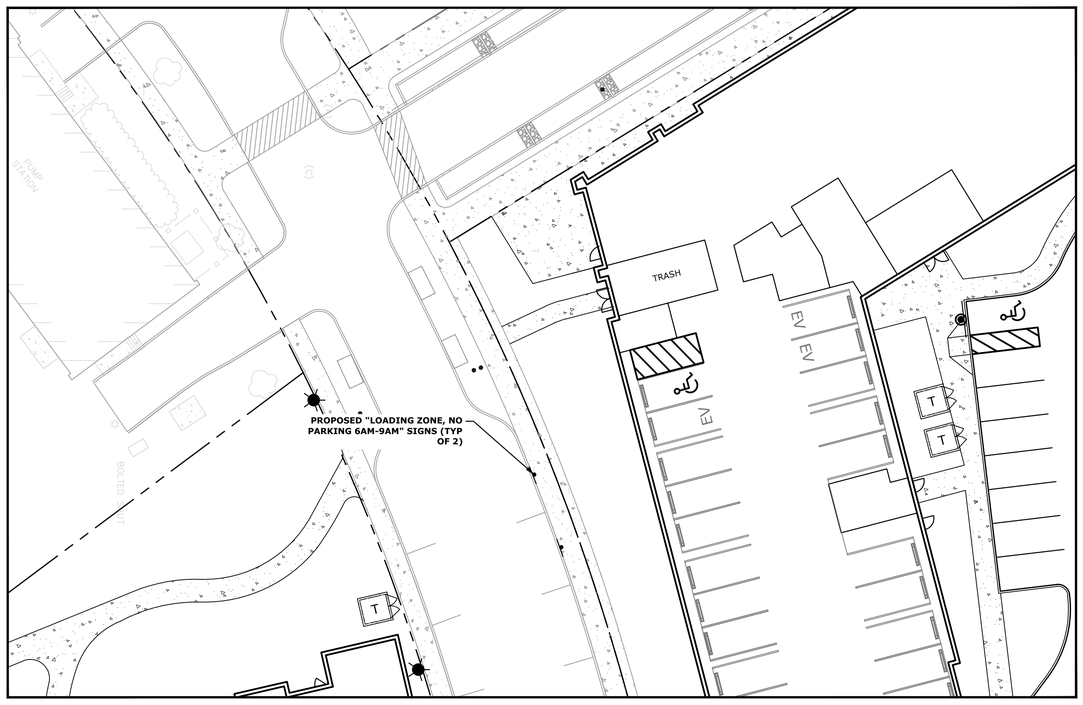
Planning Board Comments:			
70	Parking: There is too much surface parking, collaborate or partner with the City or another developer	The proposed surface parking spaces do not exceed the maximum parking requirements per the City of Dover Site Review Regulations chapter 153.D.1. We have used CWDAC guidelines with our parking layout - using buildings to shield parking as well as locating parking behind or under buildings. Our Landscape team has also done good job of breaking up pavement in the rear with canopy trees and low vegetation. RE The requirements A & B max is 299 and we have 215. C & D max is 399 and we have 230.	
71	Site distance: Henry Law Ave and River St. 80 Henry Law.		
72	Lot 22-2 County records of access		
73	Limited snow storage	Property management will be responsible for timely snow management per site not #22.	G-100
74	Work Zone Housing?	Work force housing was not contemplated within the development but the applicant has had some preliminary meetings with the Housing Authority about opportunities.	
75	Screen transformers	See above comment	



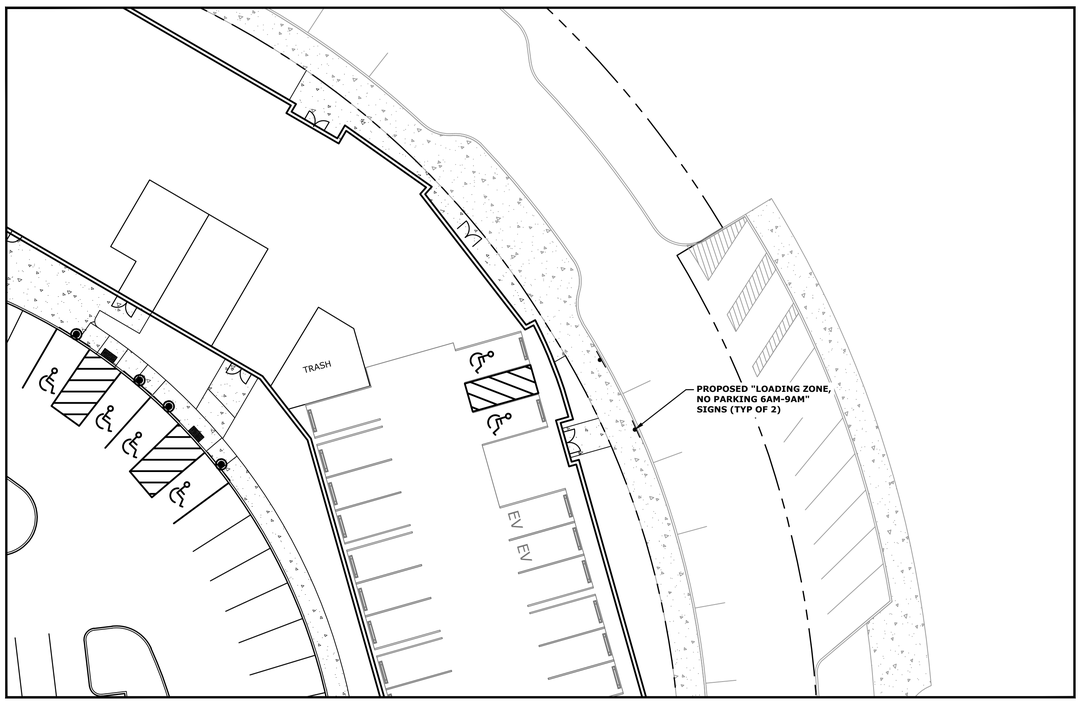
BUILDING A TRASH LOADING AREA
SCALE: 1" = 30'



BUILDING B TRASH LOADING AREA
SCALE: 1" = 20'



BUILDING C TRASH LOADING AREA
SCALE: 1" = 20'



BUILDING D TRASH LOADING AREA
SCALE: 1" = 20'

Tighe&Bond

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

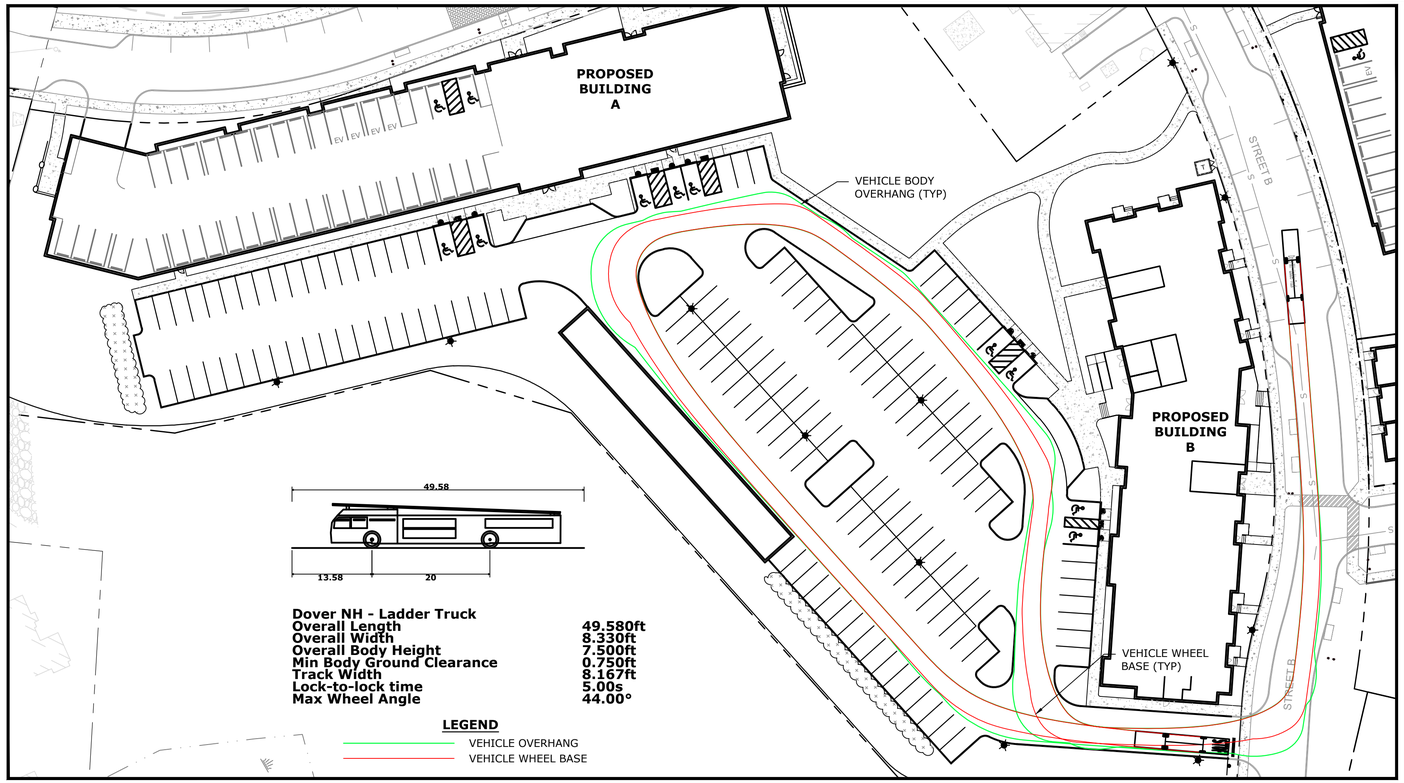
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

TRASH LOADING EXHIBIT

SCALE: AS SHOWN

1 OF 1

Last Save Date: December 15, 2021 2:12 PM By: CKRZCUIK
Plot Date: December 15, 2021 2:12 PM By: CKRZCUIK
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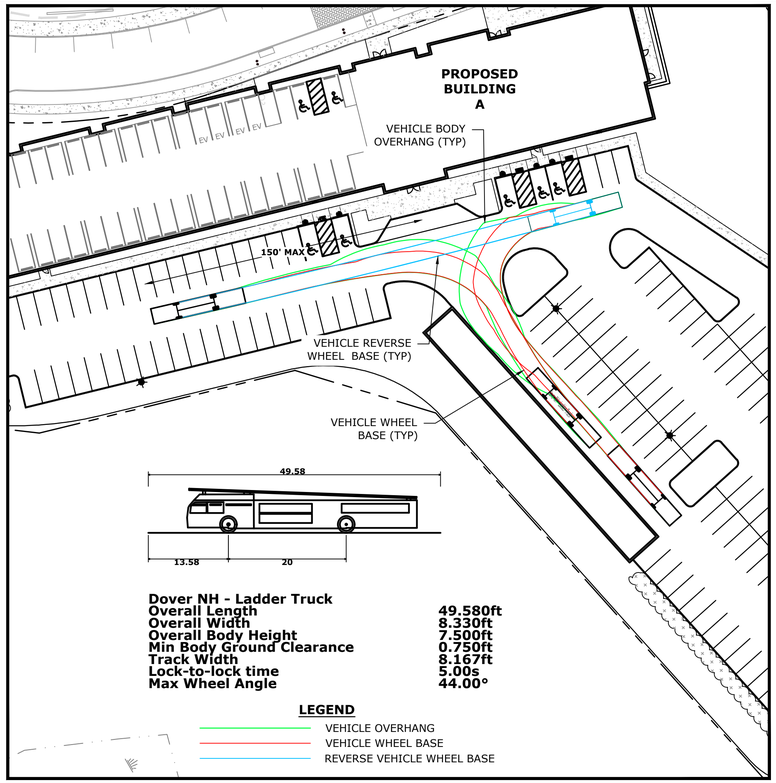


Dover NH - Ladder Truck

Overall Length	**49.580ft**
Overall Width	**8.330ft**
Overall Body Height	**7.500ft**
Min Body Ground Clearance	**0.750ft**
Track Width	**8.167ft**
Lock-to-lock time	**5.00s**
Max Wheel Angle	**44.00°**

LEGEND

- VEHICLE OVERHANG
- VEHICLE WHEEL BASE

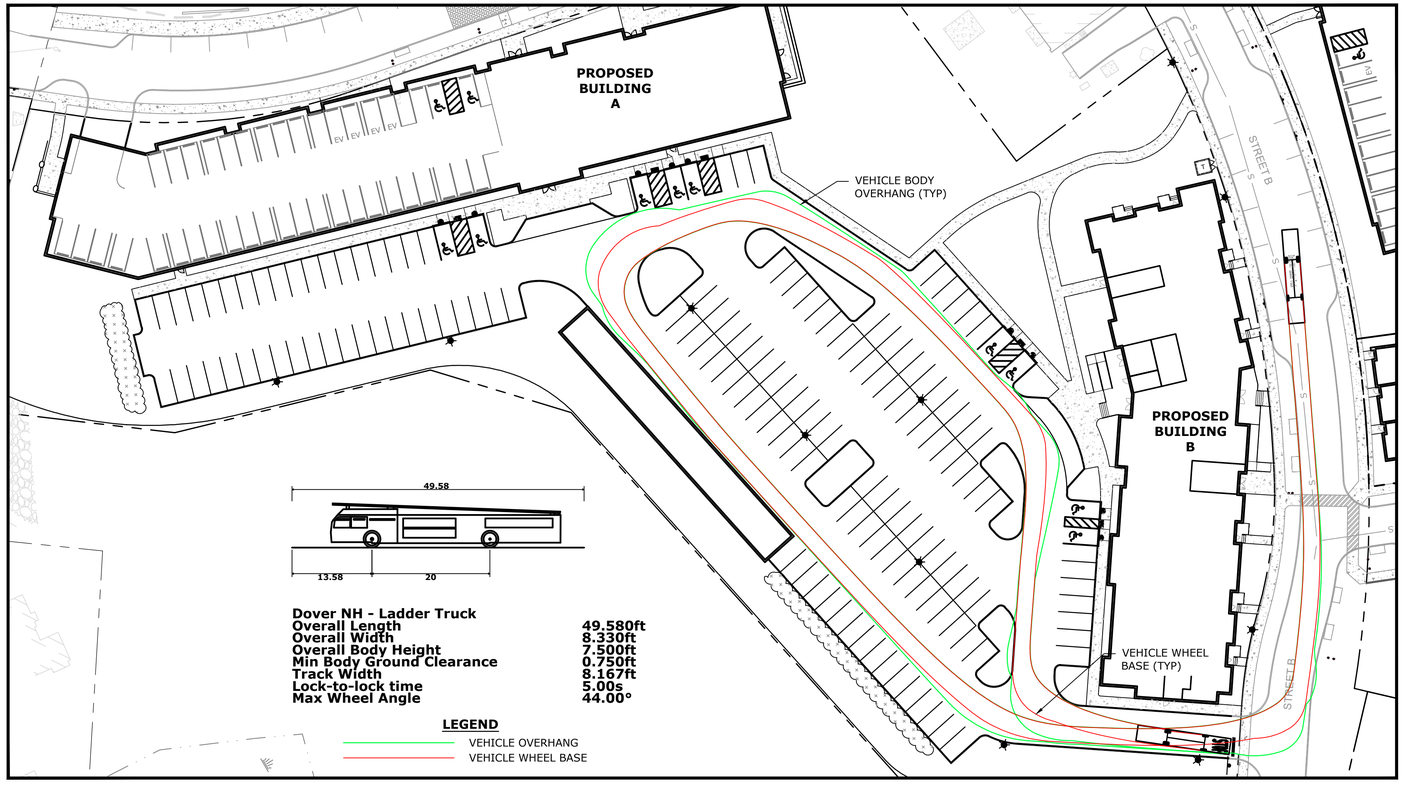


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LEGEND

- VEHICLE OVERHANG
- VEHICLE WHEEL BASE
- REVERSE VEHICLE WHEEL BASE

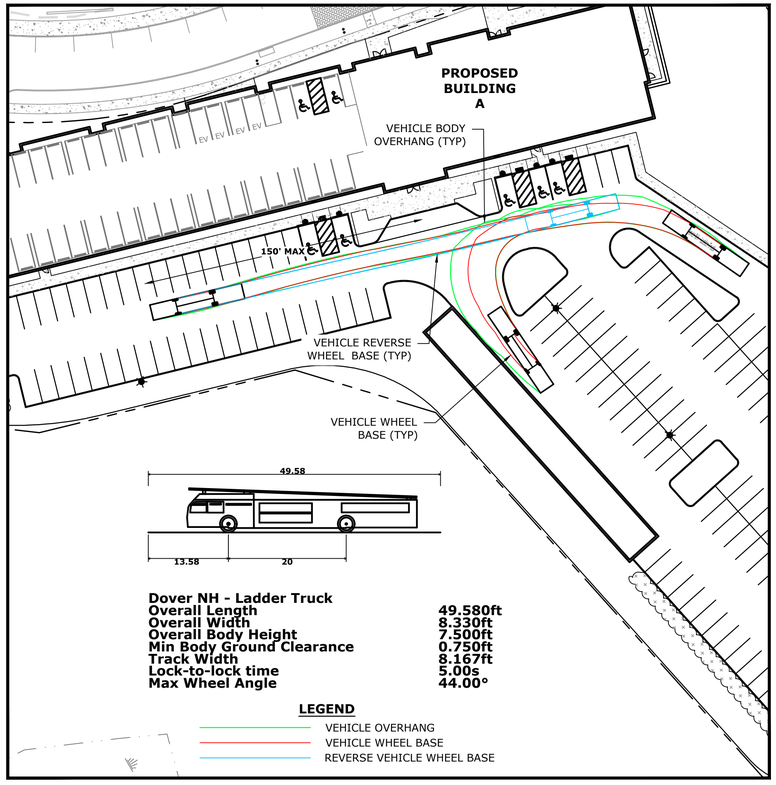


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LEGEND

- VEHICLE OVERHANG
- VEHICLE WHEEL BASE
- REVERSE VEHICLE WHEEL BASE

Tighe&Bond

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

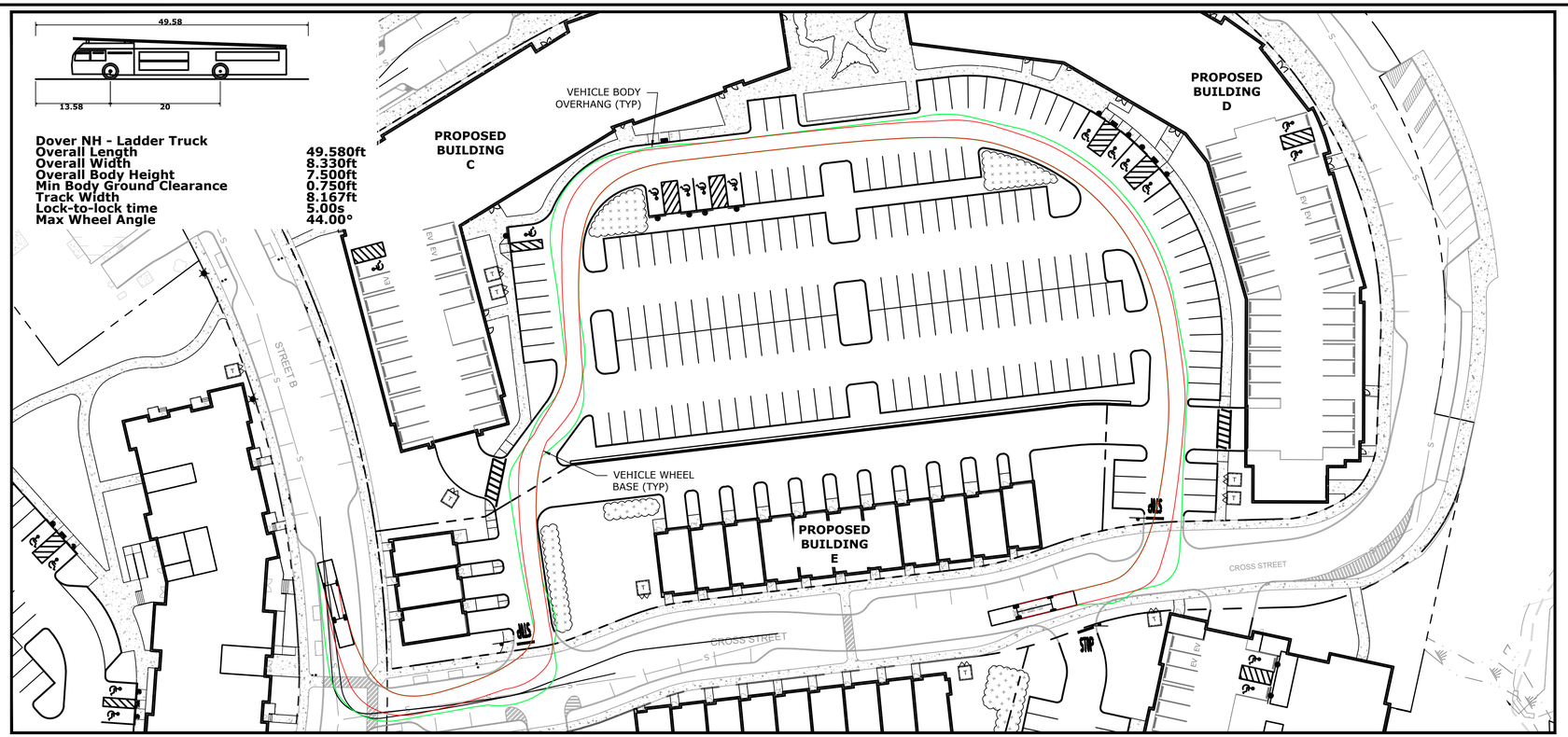
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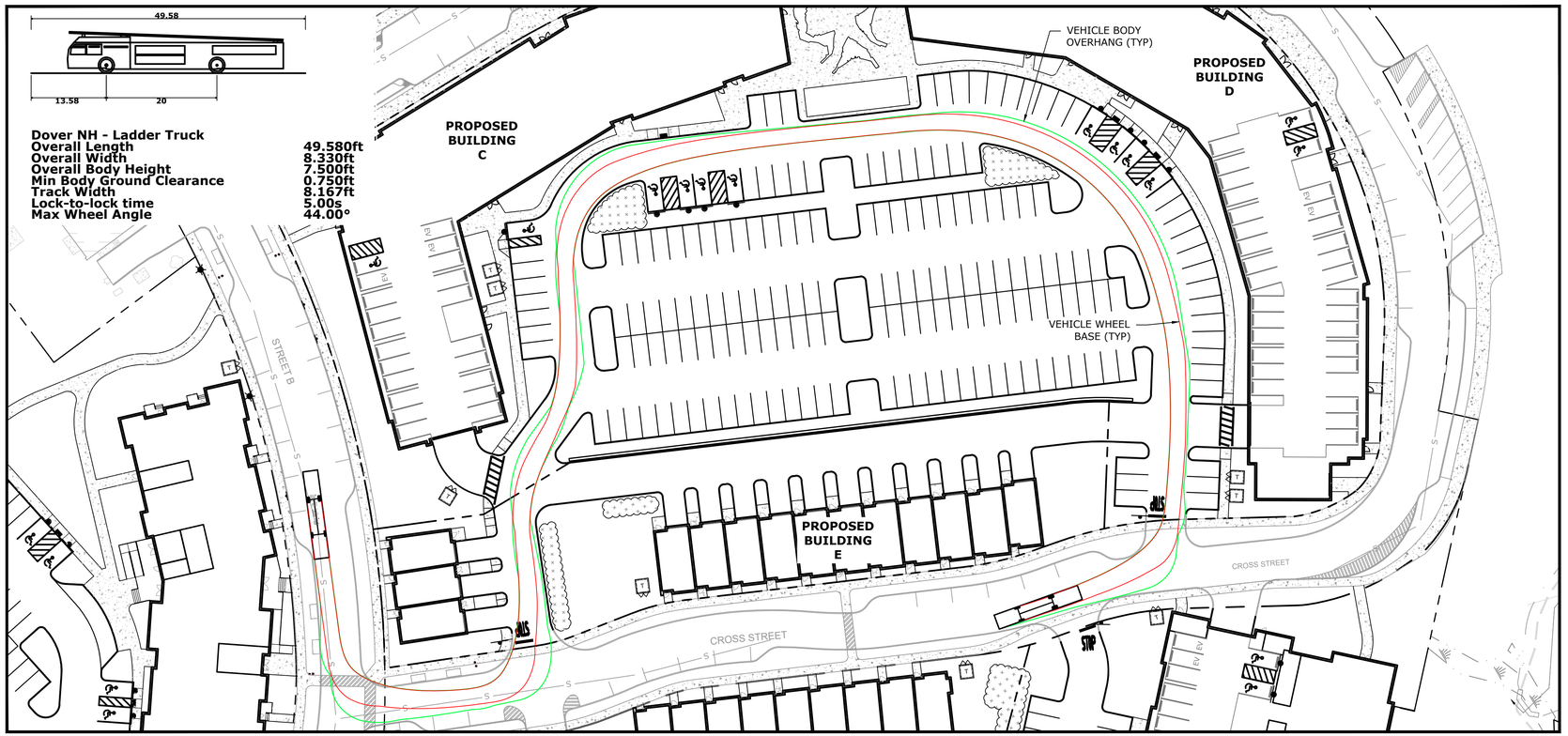
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Date: December 15, 2021 2:12 PM By: CKRZCIUK
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: Fire Truck





LEGEND

VEHICLE OVERHANG

VEHICLE WHEEL BASE

Tighe&Bond

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Cochecho Waterfront Development

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CPI Management, LLC
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APPROVED:	BLM

FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

2 OF 2

Last Save Date: December 15, 2021 2:12 PM By: CKRZCUIK
Plot Date: Wednesday, December 15, 2021 Plotted By: CKRZCUIK
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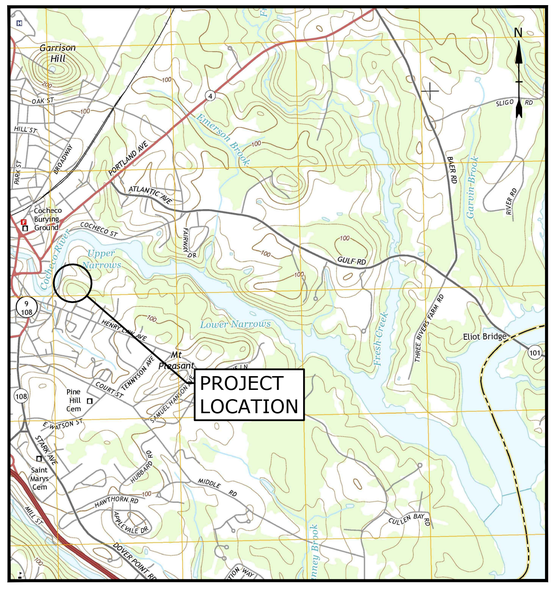
COCHECHO WATERFRONT DEVELOPMENT

RIVER STREET
DOVER, NH
DOVER FILE#: P21-69
JULY 26, 2021

LAST REVISED DECEMBER 16, 2021

PLAN SET INDEX		
SHEET TITLE	# OF SHEETS	LAST REVISED
COVER SHEET	1	12/16/2021
SITE PLAN SET COVER SHEET	1	12/16/2021
SITE PLAN SET	24	12/16/2021
PHASE 1 SITE PLAN SET COVER SHEET	1	12/16/2021
PHASE 1 SITE PLAN SET	7	12/16/2021
DETAILS PLAN SET COVER SHEET	1	12/16/2021
DETAILS PLAN SET	8	12/16/2021
LANDSCAPE PLAN SET COVER SHEET	1	12/16/2021
LANDSCAPE PLAN SET	8	12/16/2021
ARCHITECTURAL PLAN SET COVER SHEET	1	12/16/2021
ARCHITECTURAL PLAN SET	33	12/16/2021

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	


Garrison Hill
OAK ST
HILL ST
PARK ST
PROSPECT
PORTLAND AVE
ATLANTIC AVE
Cocheco Burying Ground
COCHECO ST
Cocheco River
Upper Narrows
HENRY LAW AVE
Mt. Pleasant
PROJECT LOCATION
Lower Narrows
Pine Hill Cem
COURT ST
HAWTHORN AVE
CHARLES DAVIS DR
WATSON ST
STORER AVE
Saint Mary's Cem
HUBBARD DR
MIDDLE RD
HAWTHORN RD
HALL ST
DOVER POINT RD
Tributary to Bellamy River
Bellamy River
Tributary to Bellamy River
Tributary to Bellamy River
Tributary to

SITE PLAN SET

JULY 26, 2021

LAST REVISED DECEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	12/16/2021
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
1 OF 2	SUBDIVISION PLAN	09/09/2020
2 OF 2	SUBDIVISION PLAN	09/09/2020
G-100	GENERAL NOTES, LEGEND, AND ABBREVIATIONS SHEET	12/16/2021
G-101	NEIGHBORHOOD PLAN	12/16/2021
C-101	OVERALL EXISTING CONDITIONS & DEMOLITION PLAN	12/16/2021
C-101.1	EXISTING CONDITIONS & DEMOLITION PLAN	12/16/2021
C-101.2	EXISTING CONDITIONS & DEMOLITION PLAN	12/16/2021
C-101.3	EXISTING CONDITIONS & DEMOLITION PLAN	12/16/2021
C-102	OVERALL SITE PLAN	12/16/2021
C-102.1	SITE PLAN	12/16/2021
C-102.2	SITE PLAN	12/16/2021
C-102.3	SITE PLAN	12/16/2021
C-103	OVERALL GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-103.1	GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-103.2	GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-103.3	GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-104	OVERALL UTILITIES PLAN	12/16/2021
C-104.1	UTILITIES PLAN	12/16/2021
C-104.2	UTILITIES PLAN	12/16/2021
C-104.3	UTILITIES PLAN	12/16/2021





COMPLETE SET 25 SHEETS

Last Save Date: December 14, 2021 5:56 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Chris Krzciuk
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

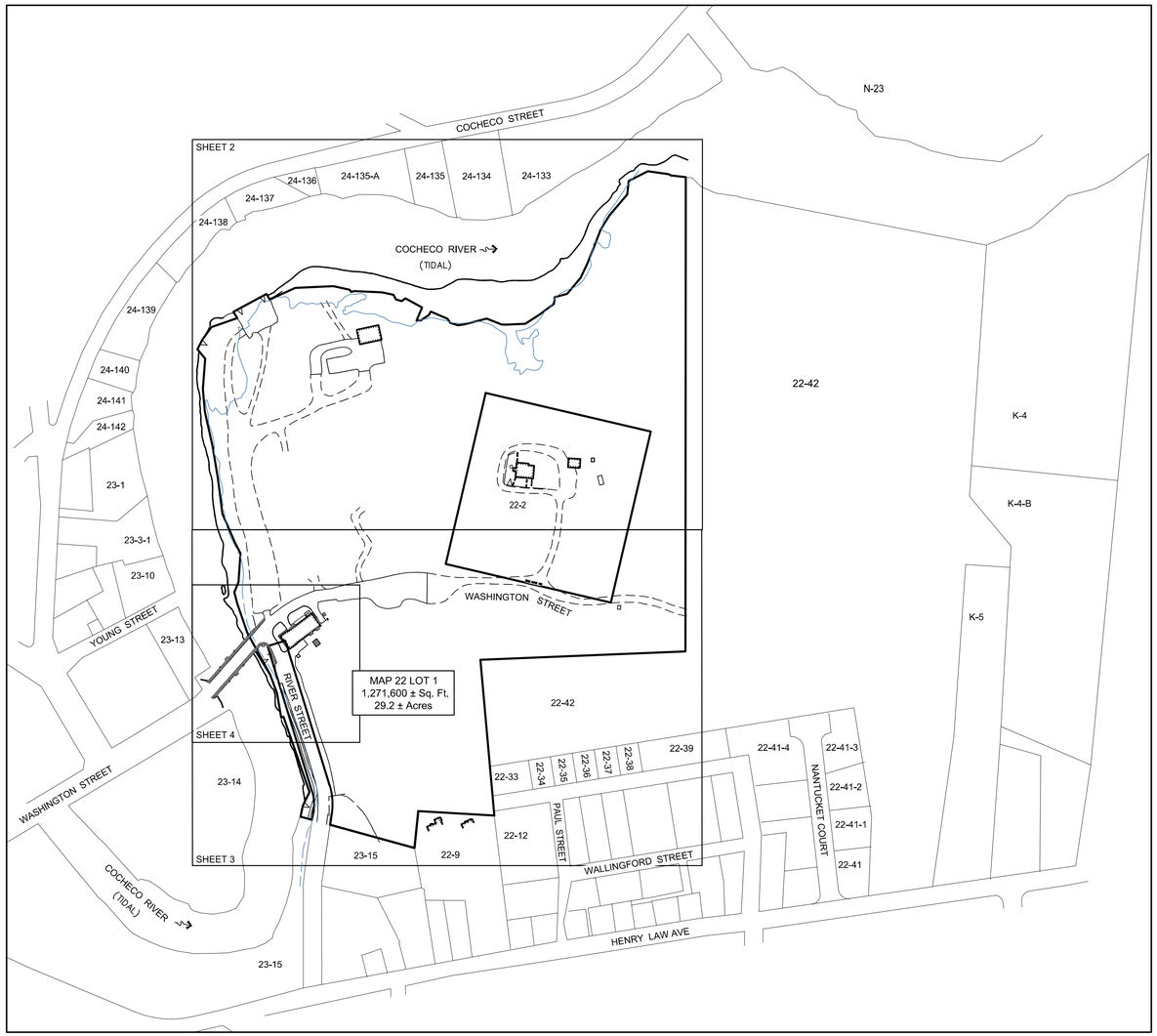
MAP 24 LOT 142
ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BK. 1861 PG. 500

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

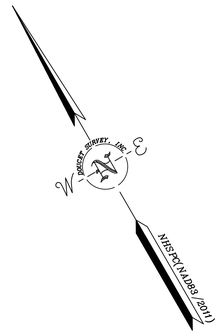
MAP K LOT 4-B
DOVER YOUTH SOFTBALL LEAGUE
PO BOX 1929
DOVER, NH 03821
S.C.R.D. BK. 4024 PG. 331

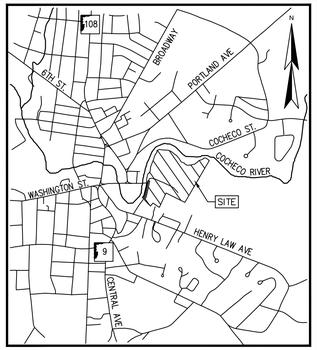
MAP K LOT 5
CHRISTOPHER PRIOR
150 HENRY LAW AVENUE
DOVER, NH 03820
S.C.R.D. BK. 3178 PG. 971



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
- SEWER LINE
- DRAIN LINE
- UNDERGROUND ELECTRIC LINE
- MAJOR CONTOUR LINE
- 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
- 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 OJOCO & 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	

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10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

DWG: C:\Users\Mark\Appdata\Local\Temp\AcPublish_6380\4964A.dwg LAYOUT NAME: OVERVIEW (1) PLOTTED: Thursday, September 14, 2017 - 4:47pm

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'

WOODEN STEPS

4" PVC INV.=4.5'

4" PVC INV.=6.0'

SNAG (DEAD TREE)

SNAG (DEAD TREE)

SHEET PILE WALL

1" PVC CONDUIT

SHEET PILE WALL

STONE RET. WALL

ZONE 'AE'

ZONE 'X'

ZONE 'AE'

ZONE 'X'

ZONE 'AE'

ZONE 'X'

ZONE 'AE'

ROCK PILE

ROCK PILE

6" X 6" GRAN. BND. FND. W/ D.H. UP 7"

MAP 22 LOT 42

1-1/2" I.P.F. UP 8"

MAP 22 LOT 2

8" LOCUST

MW

SMH 1506
RIM ELEV.=13.8'
(A) 24" ASB INV.=7.2'
(1501) 24" ASB INV.=7.2'
NO FLOW, FILLED W/SILT

3" CIP INV.=4.3'

MAP 22 LOT 1
1,271,600 ± Sq. Ft.
29.2 ± Acres

4" PVC INV.=5.4'

6" CIP INV.=3.9'

TBM 4966B
MAG. NAIL UP 6"
IN POLE PSNH133/12XA
ELEV.=11.82'

12" PVC PIPE UP 3'

UNABLE TO OPEN

SMH 1501
RIM ELEV.=12.8'
(1506) 24" RCP INV.=6.3'
(A) 24" RCP INV.=6.4'

MATCH LINE SHEET 1
MATCH LINE SHEET 2

NHSPC(NAD83/2011)

50 0 50 100
SCALE: 1 INCH = 50 FT.

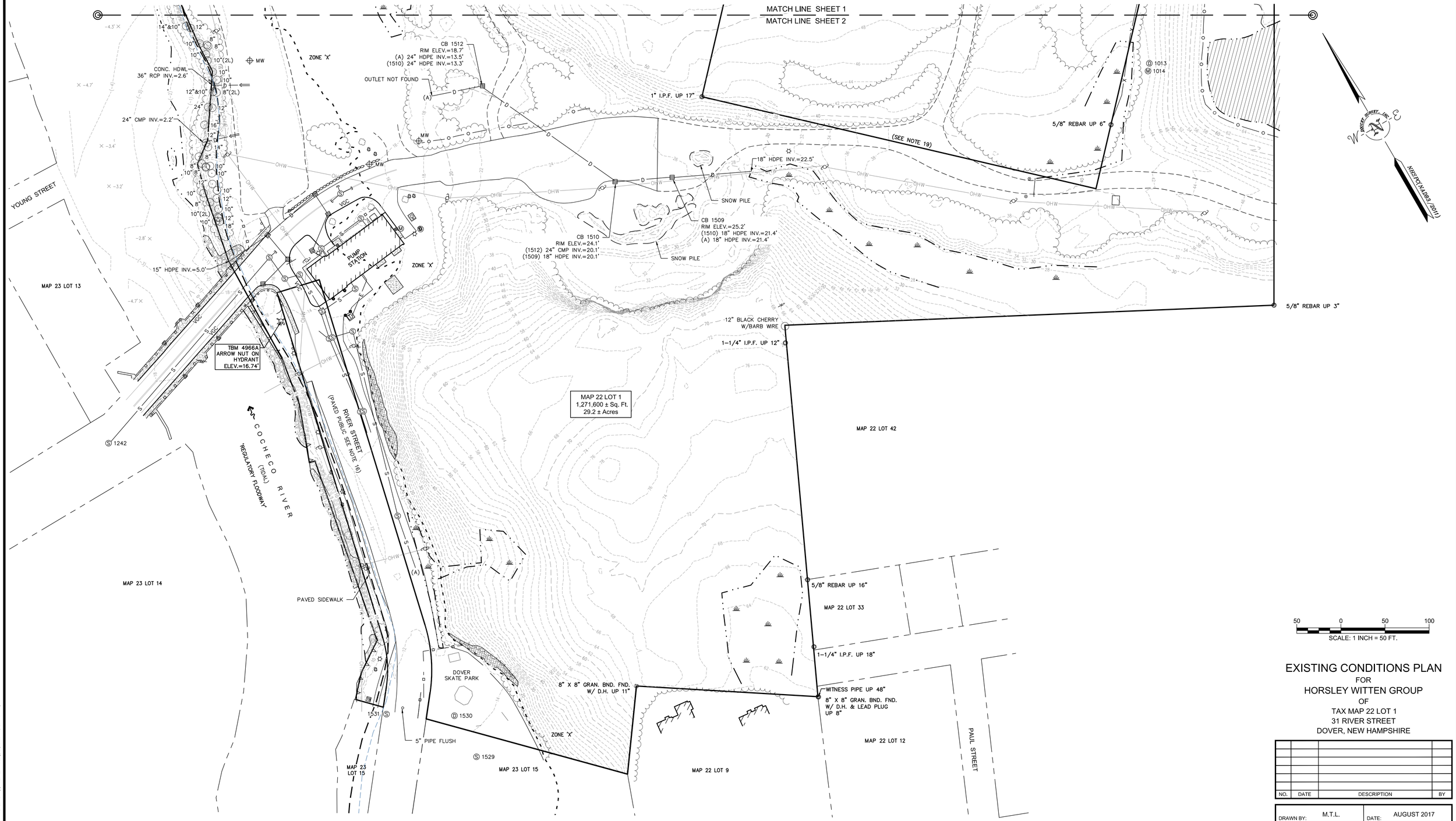
EXISTING CONDITIONS PLAN
FOR
HORSLEY WITTEN GROUP
OF
TAX MAP 22 LOT 1
31 RIVER STREET
DOVER, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	AUGUST 2017
CHECKED BY:	J.F.K.	DRAWING NO.:	4966A
JOB NO.:	4966	SHEET	2 OF 4

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C:\Users\Mike\Appdata\Local\Temp\AcPublish_4508\4966A.dwg LAYOUT: BASE 22" PLAN (1) PLOTTED: Thursday, September 14, 2017 - 4:41pm



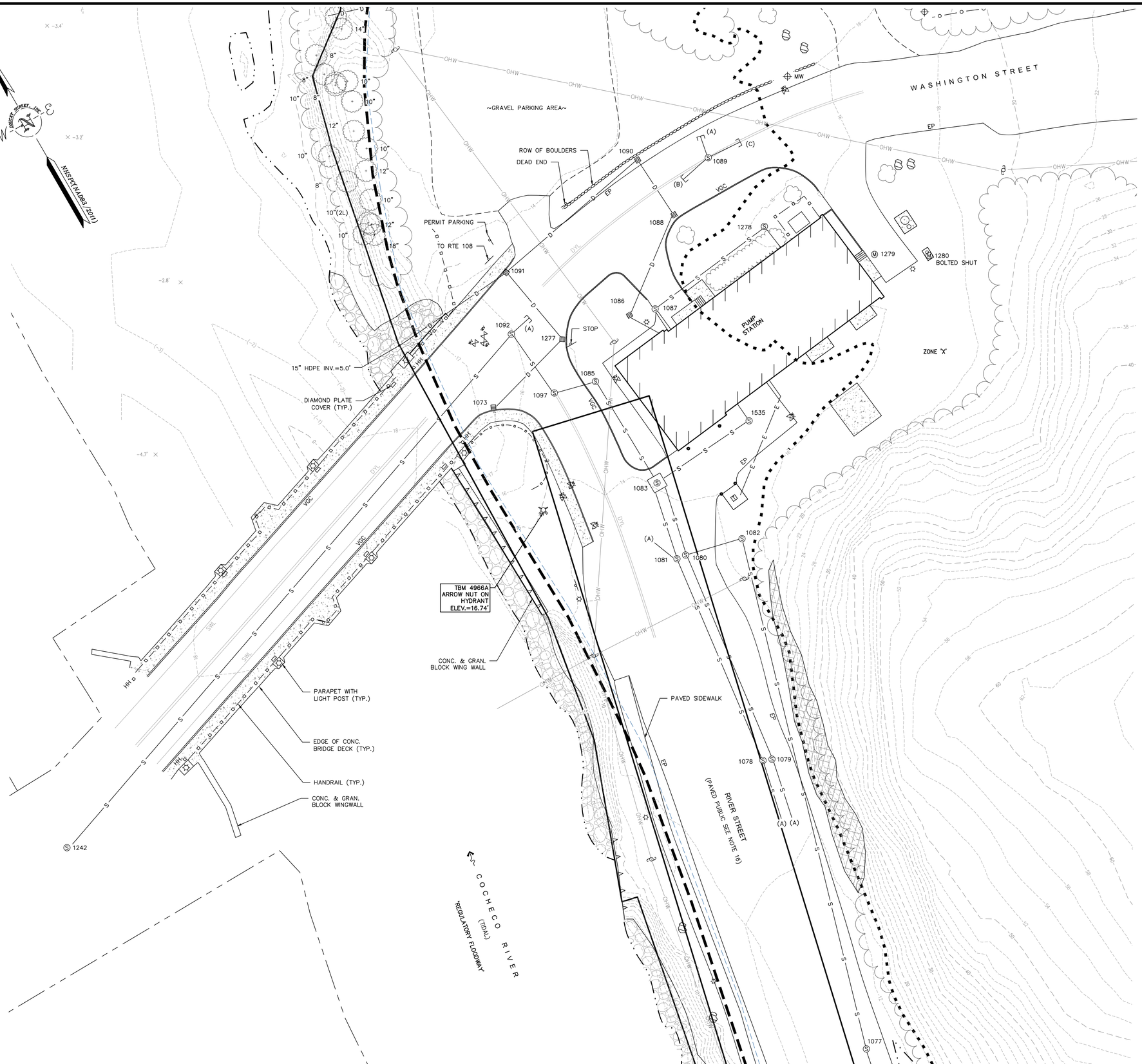
EXISTING CONDITIONS PLAN
FOR
HORSLEY WITTEN GROUP
OF
TAX MAP 22 LOT 1
31 RIVER STREET
DOVER, NEW HAMPSHIRE

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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PLOT DATE: C:\Users\Mark\Dropbox\Work\Survey\Acf-Active_JOBS\4966A.dwg LAYOUT NAME: EC EXAN (2) PLOTTED: Thursday, September 14, 2017 - 4:41pm



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

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FILE: C:\Users\Mike\Appdata\Local\Temp\AcPublish_4568\4966A.dwg LAYOUT: BASE EP PARK (5) PLOTTED: Thursday, September 14, 2017 - 4:41pm

NOTES:

REFERENCE: TAX MAP 22, LOT 1

1. TOTAL PARCEL AREA:

EXISTING LOT 1:	1,018,700±	SQ. FT. OR	23.39 AC.
PROPOSED LOT 1:	16,280	SQ. FT. OR	0.37 AC.
PROPOSED LOT 1-1:	189,130±	SQ. FT. OR	4.3± AC.
PROPOSED LOT 1-2:	177,105	SQ. FT. OR	4.07 AC.
PROPOSED LOT 1-3:	231,541	SQ. FT. OR	5.32 AC.
PROPOSED LOT 1-4:	355,658	SQ. FT. OR	8.16 AC.
PROPOSED REVISED R.O.W.	74,100±	SQ. FT. OR	1.7± AC.

2. OWNER OF RECORD: CITY OF DOVER
288 CENTRAL AVE.
DOVER, NH 03820
S.C.R.D. BOOK 225, PAGE 493 (LOT 1)

3. ZONE: COCHECHO 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 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).

ZONING INFORMATION LISTED HEREON IS BASED ON THE CITY OF DOVER ZONING ORDINANCE DATED DECEMBER 2009, CWD AMENDED 9/11/2019 AS AVAILABLE ON THE 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.

THIS PARCEL IS EXEMPT FROM THE STATE OF NH SHORELAND PROTECTION DISTRICT PER RSA 483-B:12, MARCH 4, 2006.

4. THE INTENT OF THIS PLAN IS TO SUBDIVIDE THE EXISTING TAX MAP 22 LOT 1 INTO FIVE SEPARATE PARCELS AND DEFINE A CITY RIGHT OF WAY ADJACENT TO THE PARCELS.

5. THE SUBJECT PARCELS ARE SERVED BY MUNICIPAL WATER AND SEWER.

6. THE PROPOSED USE FOR THE SITE IS MIXED-USE DEVELOPMENT.

7. A CONDITIONAL USE PERMIT (P17-43) WAS APPROVED BY THE PLANNING BOARD ON 6/12/17. A CONDITIONAL USE PERMIT (P20-01) FOR THIS PARCEL IS PENDING APPROVAL.

8. THE FOLLOWING STATE AND FEDERAL PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
NHDES WETLANDS PERMIT 2019-03464 (PENDING APPROVAL)
NHDES WETLANDS PERMIT 2016-03464 - APPROVED 6/9/17
NHDES WETLANDS PERMIT 2016-03428 - APPROVED 6/14/18
NHDES ALTERATION OF TERRAIN PERMIT AOT-1284 - APPROVED 9/1/17
NHDES ALTERATION OF TERRAIN PERMIT AOT-190301-033 (PENDING APPROVAL)
US ARMY CORPS OF ENGINEERS PERMIT NAE-2017-01586 - APPROVED 8/18/17
US ARMY CORPS OF ENGINEERS PERMIT NAE-2017-00131 - APPROVED 11/6/17
US ARMY CORPS OF ENGINEERS PERMIT NAE-2018-01586 - APPROVED 9/11/18

9. FIELD SURVEY PERFORMED BY DOUCET SURVEY, INC. DURING SEPTEMBER 2016, SPRING OF 2017 AND ADDITIONALLY DURING JANUARY OF 2019. EQUIPMENT USED INCLUDES A TRIMBLE S6 TOTAL STATION, TRIMBLE R8 SURVEY GRADE GPS AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

10. FLOOD HAZARD ZONE: "X', 'AE', 0.2% ANNUAL CHANCE FLOOD HAZARD & REGULATORY FLOODWAY", PER FIRM MAP 33017C0330E, DATED 9/30/15.

11. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

12. 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.

13. 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 EXISTING 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.

14. JURISDICTIONAL WETLANDS, ORDINARY HIGH WATER 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. SAID FEATURES ARE SHOWN ON REFERENCE PLAN 8.

15. 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.

16. NO ACCESS EASEMENT WAS FOUND BENEFITING MAP 22, LOT 2.

17. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED. SUBDIVISION PLANS SHALL SHOW ANY EASEMENTS FOR THESE SERVICES.

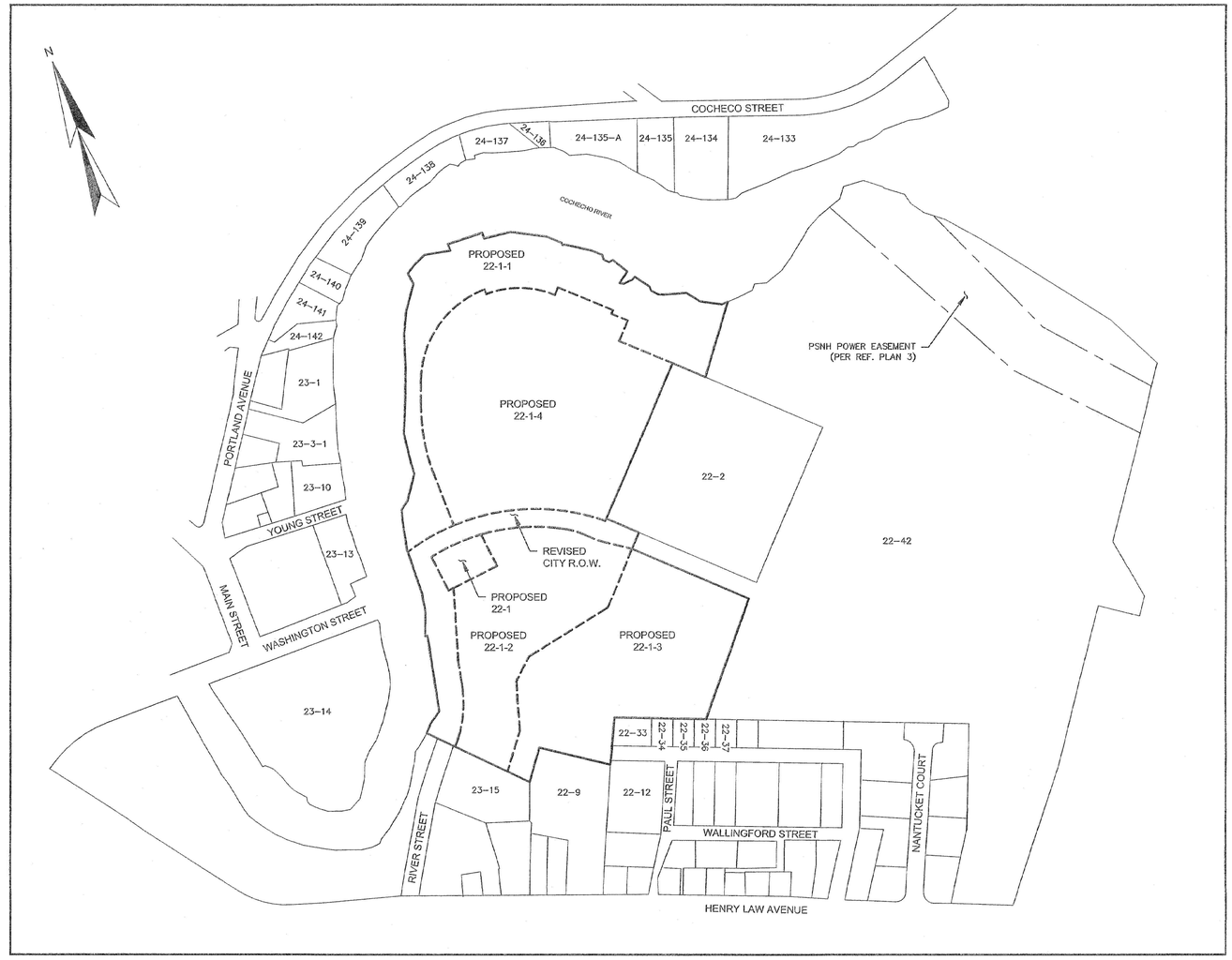
18. BUILDING ADDRESSES (INCLUDING APT./UNIT NUMBERS, IF APPLICABLE) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

19. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

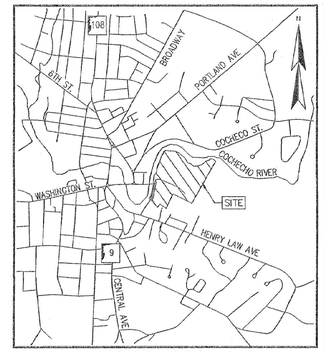
20. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

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.
5. "WALLINGFORD HEIGHTS SURVEYED FOR ARTHUR J. GRIMES" DATED MARCH 1929 BY W.S. WHEELER, C.E. DOVER, N.H. S.C.R.D. PK. 7 F. 4 PL. 16.
6. "FINAL SUBDIVISION PLAN MAP 22/LOT 41, LAND IN DOVER, NEW HAMPSHIRE, NANTUCKET COURT SUBDIV. 138 HENRY LAW AVENUE" DATED JANUARY 19, 2004 WITH A FINAL REVISION DATE OF 6/11/04 BY CUOCO & CORMIER. S.C.R.D. PLAN 76-41.
7. "LOT LINE REVISION PLAN FOR THE CITY OF DOVER OF TAX MAP 22, LOTS 1 & 42, RIVER STREET & WASHINGTON STREET, DOVER, NEW HAMPSHIRE" DATED FEBRUARY 15, 2019 WITH A REVISION DATE OF 3/18/19 BY DOUCET SURVEY, LLC. S.C.R.D. PLAN 118-49 THROUGH 118-51.
8. "EXISTING CONDITIONS PLAN FOR HORSLEY WITTEN GROUP OF TAX MAP 22, LOT 1, 31 RIVER STREET, DOVER, NEW HAMPSHIRE" DATED AUGUST 2017 WITH A REVISION DATE OF 12/14/17, BY DOUCET SURVEY, INC. PLAN IS NOT RECORDED AT THE S.C.R.D.



KEY MAP



LOCATION MAP (n.t.s.)

LEGEND
EXISTING LOT LINE
PROPOSED LOT LINE
APPROXIMATE ABUTTERS LOT LINE
EXISTING EASEMENT LINE

ABUTTERS LIST:

22-02
ELEANOR MARY DENNIS
32 GEORGE ST
DOVER, NH 03820
S.C.R.D. BOOK 1758 PAGE 223

22-09
DOVER BLUFF CONDOMINIUM ASSOC.
98 HENRY LAW AVE
DOVER, NH 03820

22-12
PATRICIA FREW
6 PAUL ST
DOVER, NH 03820
S.C.R.D. BOOK 4494 PAGE 002

22-33
KEVIN & CATHERINE MCENEANEY
8 GOLD POST ROAD
DOVER, NH 03820
S.C.R.D. BOOK 663 PAGE 300

22-34
KEVIN MCENEANEY
8 GOLD POST ROAD
DOVER, NH 03820
S.C.R.D. BOOK 2194 PAGE 633

22-35
ERIK SWEETSER & DIANE DUFFY
2 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BOOK 2147 PAGE 155

22-36
TAYLOR FAMILY REVOCABLE TRUST
10 WALLINGFORD ST
DOVER, NH 03820
S.C.R.D. BOOK 4217 PAGE 777

23-1
ROBERT MAIRS
14 ROBERTS ROAD
DOVER, NH 03820
S.C.R.D. BOOK 4486 PAGE 649

23-3-1
BH FARM DOVER LLC
175 BRIDGE ST
SALISBURY, MA 01952
S.C.R.D. BOOK 4305 PAGE 816

23-10
COCHECO MILLS HOLDINGS, LLC
3 PENSTOCK WAY
NEWMARKET, NH 03857
S.C.R.D. BOOK 4699 PAGE 744

23-13
COCHECO MILLS HOLDINGS, LLC
3 PENSTOCK WAY
NEWMARKET, NH 03857
S.C.R.D. BOOK 4699 PAGE 744

23-14
WASHINGTON STREET MILL LLC
3 PENSTOCK WAY
NEWMARKET, NH 03857
S.C.R.D. BOOK 2349 PAGE 238

23-15
CITY OF DOVER
C/O C/S RECREATION/GYM AND POOL
61 LOCUST ST #124
DOVER, NH 03820-3753

24142
ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BOOK 1861 PAGE 500

24141
ROBERT MAIRS
PO BOX 28
DOVER, NH 03821-0028
S.C.R.D. BOOK 1861 PAGE 500

24-133
PUBLIC SERVICE CO OF NH
PO BOX 330
MANCHESTER, NH 03105-0330

24-134
TURGEON FAMILY LIMITED PARTNERS
90 FLOWER DRIVE
BARRINGTON, NH 03825-4327
S.C.R.D. BOOK 1997 PAGE 54

24-135
WAKABAYASHI FAMILY TRUST
38 SIXTH ST
DOVER, NH 03820
S.C.R.D. BOOK 3919 PAGE 741

24-135-A
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 2612 PAGE 358

24-136
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 1102 PAGE 80

24-137
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 1207 PAGE 803

24-138
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 1208 PAGE 46

24-139
GEORGE MAGLARAS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 1049 PAGE 122

24-140
GEORGE MAGLARAS & ROBERT MAIRS
33 COCHECO ST
DOVER, NH 03820
S.C.R.D. BOOK 4472 PAGE 383

N0023
PUBLIC SERVICE CO OF NH
PO BOX 330
MANCHESTER, NH 03105-0330

STATE OF NEW HAMPSHIRE — No. 937 — JOHN F. KAISER — LICENSED LAND SURVEYOR — SIGNATURE

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

John F. Kaiser L.L.S. #937

9/14/20 DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

200 0 200 400
SCALE: 1 INCH = 200 FT.

COCHECHO DEVELOPMENT SUBDIVISION PLAN

FOR
THE CITY OF DOVER
OF
TAX MAP 22 LOT 1
RIVER STREET & WASHINGTON STREET
DOVER, NEW HAMPSHIRE

DOVER CITY PLANNING FILE NUMBER P20-14

NO.	DATE	DESCRIPTION	BY
1	09/09/20	REVISED LOTS	WDC

DRAWN BY:	M.T.L.	DATE:	JANUARY 28, 2020
CHECKED BY:	J.F.K.	DRAWING NO.	4966D
JOB NO.	4966	SHEET	1 OF 2

DOUCET SURVEY LLC
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

FILE NAME: T:\PROJECTS\4966 COCHECHO\4966D DEVELOPMENT\4966D DEVELOPMENT.dwg LAYOUT NAME: 09 22X34 SUB PLAN (1) PLOTTED: Sunday, September 13, 2020 - 8:37am

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S43°08'38"W	7.17'
L2	N38°20'56"E	28.54'
L3	N10°30'42"E	16.90'
L4	N10°30'42"E	56.71'
L5	S83°16'48"W	15.90'
L6	S63°08'47"E	10.33'
L7	S44°18'59"E	3.61'
L8	S01°05'34"E	14.11'
L9	N42°22'59"E	22.98'
L10	S43°31'47"W	11.47'
L11	S48°01'37"E	49.34'
L12	N44°40'22"W	50.37'

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	145.75'	300.00'	27°50'13"	N24°25'49"E	144.33'
C2	153.99'	545.00'	16°11'19"	S85°34'28"W	153.47'
C3	73.94'	225.00'	18°49'48"	N53°43'53"W	73.61'
C4	47.42'	225.00'	12°04'35"	S50°21'16"E	47.34'

WASHINGTON STREET
YOUNG STREET
COCHECO STREET
RIVER STREET
PAUL ST.
WALLINGFORD STREET
COCHECHO RIVER
DOVER SKATE PARK
PUMP STATION
(FUTURE PUBLIC PARK)
23-10
23-3-1
23-1
23-13
23-14
23-15
22-9
22-12
22-33
22-34
22-35
22-36
22-37
22-2
22-42
24-142
24-141
24-140
24-139
24-138
24-137
24-136
24-135-A
24-135
24-134
24-133
5/8" REBAR SET FLUSH W/CAP LLS 937
3/4" I.P.F. UP 6"
8" X 8" GRAN. BND. FND. W/ D.H. UP 11"
1-1/4" I.P.F. UP 18" (NOT HELD)
5/8" REBAR FND. UP 16"
8" X 8" GRAN. BND. FND. W/ D.H. & LEAD PLUG UP 8"
1" I.P.F. UP 17"
1-1/2" I.P.F. UP 8"
5/8" REBAR UP 6"
5/8" REBAR SET FLUSH W/CAP LLS 937 14'±
N11°06'19"E 650.37' (TIE LINE)
N21°23'34"E 664.13' (TIE LINE)
N20°17'27"E 68.24'
N01°37'23"W 152.09'
N06°43'10"W 105.48'
N16°19'39"E 203.34'
S80°27'25"E 443.39' (TIE LINE)
N44°39'05"W 182.80'
N44°39'05"W 88.64'
S36°39'53"W 120.59'
S16°13'40"W 138.92'
S46°48'15"W 77.66'
S35°49'22"W 100.38'
S24°54'24"W 133.08'
N56°37'51"W 208.96'
S79°08'49"W 261.09'
S42°33'04"W 178.94'
S36°23'34"E 80.30'
S46°51'22"E (SEE NOTE 16) 356.65'
S39°19'22"W 359.01'
S43°08'38"W 474.76'
S43°08'38"W 50.00'
S46°51'22"E 100.00'
N46°51'22"W 100.00'
S39°19'22"W 206.59'
S42°16'57"W 52.67'
S47°44'33"E 163.28'
S47°37'22"E 167.74'
S46°25'50"E 492.37' (TIE LINE)
S83°16'48"W 137.46'
S06°43'11"E 99.33'
N83°00'59"W 256.79'
Δ=094°27'56" CB=S80°01'04"W CL=140.43' R=595.00'
Δ=021°54'50" CB=S09°25'02"W CL=199.58' L=200.80' R=525.00'
Δ=068°44'14" CB=S54°39'34"W CL=312.74' L=332.32' R=277.00'
Δ=042°01'35" CB=N71°44'10"W CL=426.71' R=595.00' L=436.43'
Δ=023°11'09" CB=N74°44'20"W CL=219.04' R=545.00' L=220.54'
Δ=043°27'28" CB=S69°18'12"E CL=193.25' R=261.00' L=197.96'
22-1-2 177,105 Sq. Ft. 4.07 Acres
22-1 16,260 Sq. Ft. 0.37 Acres
22-1-3 231,541 Sq. Ft. 5.32 Acres
22-1-4 355,658 Sq. Ft. 8.16 Acres
22-1-1 189,130 ± Sq. Ft. 4.3 ± Acres
REVISED CITY R.O.W. 74,100 ± Sq. Ft. 1.7 ± Acres
EXISTING RIGHT OF WAY LINE TO BE ABANDONED (TYP.)
POTENTIAL LIMITS OF FUTURE CITY ROADWAY/RIGHT OF WAY
MEAN HIGH WATER LINE ALONG EDGE RIVER (TYP.)
SEE DATUM NOTE
DOUCET SURVEY

LEGEND
- EXISTING LOT LINE
- PROPOSED LOT LINE
- APPROXIMATE LOT LINE (SEE NOTE 10)
- RIGHT OF WAY LINE TO BE ABANDONED
- APPROXIMATE ABUTTERS LOT LINE
- TIE LINE
- BOUND FOUND
- IRON PIPE/ROD FOUND
- SUITABLE MONUMENT TO BE SET
- BND. FND. BOUND FOUND
- I.P.F. IRON PIPE FOUND
- GRAN. GRANITE
- 22-1 TAX MAP-LOT NUMBER

80 0 80 160
SCALE: 1 INCH = 80 FT.

COCHECHO DEVELOPMENT SUBDIVISION PLAN

FOR
THE CITY OF DOVER
OF
TAX MAP 22 LOT 1
RIVER STREET & WASHINGTON STREET
DOVER, NEW HAMPSHIRE

DOVER CITY PLANNING FILE NUMBER P20-14

NO.	DATE	DESCRIPTION	BY
1	09/09/20	REVISED LOTS	WDC

DRAWN BY:	M.T.L.	DATE:	JANUARY 28, 2020
CHECKED BY:	J.F.K.	DRAWING NO.	4966D
JOB NO.	4966	SHEET	2 OF 2

STATE OF NEW HAMPSHIRE — No. 937 JOHN F. KAISER — LAND SURVEYOR — SIGNATURE

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

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FILE NAME: T:\PROJECTS\4966 COCHECHO\4966 SUBDIVISION.dwg LAYOUT NAME: ISO 22X34 SUB PLAN (2) PLOTTED: Sunday, September 13, 2020 - 9:43am

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. OWNER OF RECORD IS: CITY OF DOVER
   288 CENTRAL AVE.
   DOVER, NH 03820
3. THE PROPOSED PROJECT PARCELS ARE SHOWN AS PARCELS 1-2, 1-4, 1-5, 1-6, AND 1-7 ON MAP 22 & PARCEL 15 ON MAP 23 OF THE CITY OF DOVER TAX ASSESSOR'S MAP.
4. THE PROPOSED TOTAL SUBJECT PARCELS CONTAINS 11.33 ACRES OR 486,555 SQ. FT. AREA OF LAND.
5. TITLE REFERENCE FOR THE PROJECT PARCELS IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, BOOK NO.225, PAGE NO. 493.
6. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM "COCHECHO DEVELOPMENT SUBDIVISON PLAN", PREPARED BY DOUCET SURVEY, INC.
7. THE SUBJECT PARCEL IS LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA (FIRM PANEL NUMBER 33017C0310E, EFFECTIVE DATE: SEPTEMBER 30, 2015).
8. 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.
9. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
10. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
11. 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.
12. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY DOVER.
13. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
14. 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.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
16. 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.
17. 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.
18. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATION AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
19. AS-BUILT PLANS OF THE SUBDIVISION SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'A OFFICE UPON COMPLETION OF PROJECT ID A STREET IS PROPOSED FOR CITY ACCEPTANCE. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
20. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
21. SEE EXISTING CONDITIONS PLANS (REFERENCE PLAN #1) FOR BENCH MARK INFORMATION.
22. 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.
23. 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.
24. 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.
25. 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
26. 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.
27. PROPOSED PROPERTY LINES SHOWN ON PLANS ARE APPROXIMATE. FINAL SUBDIVISION PLANS TO BE PREPARED BY CITY OF DOVER.
28. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50FT OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
29. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
30. THE PROPOSED SITE SHALL REMAIN ACCESSIBLE IN ALL WEATHER CONDITIONS YEAR ROUND.

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 45, ATRICLE I, SECTION 45-2 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 3 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
3. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
4. 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.
5. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
6. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF DOVER STANDARDS.
7. 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.
8. THE INSTALLATION OF ANY ELECTRIC POWER, CABLE TELEVISION, AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
9. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
10. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
11. 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 81- 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.
8. "COCHECHO DEVELOPMENT SUBDIVISION PLAN" PREPARED BY DOUCET SURVEY, INC, DATED SEPTEMBER 2020.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AC	ACRES
ADA	AMERICANS WITH DISABILITIES ACT
AGGR	AGGREGATE
BLDG	BUILDING
BC	BOTTOM OF CURB
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONST	CONSTRUCT
COORD	COORDINATE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
DWG	DRAWING
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EV	ELECTRIC VEHICLE
FES	FLARED END SECTION
FF	FINISHED FLOOR
FGC	FLUSH GRANITE CURB
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
NRCS	NATURAL RESOURCES CONSERVATION SERVICE
OC	ON CENTER
PAD	PROPOSED AREA DRAIN
PCB	PROPOSED CATCH BASIN
PDMH	PROPOSED DRAINAGE MANHOLE
POS	PROPOSED OUTLET STRUCTURE
PROP	PROPOSED
PSMH	PROPOSED SEWER MANHOLE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PYD	PROPOSED YARD DRAIN
R	RADIUS
RL	ROOF LEADER
ROW	RIGHT OF WAY
SGC	SLOPED GRANITE CURB
SF	SQUARE FEET
STD	STANDARD
TBR	TO BE REMOVED
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
UD	UNDERDRAIN
VGC	VERTICAL GRANITE CURB
W	WIDTH
W/	WITH
YD	YARD DRAIN

LEGEND

EXISTING PROPERTY LINE
EXISTING PROPERTY LINE TO BE REMOVED/ABANDONED
PROPOSED PROPERTY LINE
EXISTING CHAINLINK FENCE
EXISTING STOCKADE FENCE
PROPOSED FENCE
EXISTING OVERHEAD WIRES
PROPOSED OVERHEAD WIRES
EXISTING UNDERGROUND ELECTRIC LINE
PROPOSED UNDERGROUND ELECTRIC LINE
PROPOSED UNDERGROUND ELECTRIC & COMMUNICATION LINE
EXISTING DRAIN LINE
APPROXIMATE EXISTING DRAIN LINE
PROPOSED UNDERDRAIN
EXISTING GAS LINE
PROPOSED GAS LINE
EXISTING WATER LINE
PROPOSED WATER LINE
EXISTING SEWER LINE
PROPOSED SEWER LINE
APPROXIMATE EXISTING SEWER LINE
APPROXIMATE EXISTING WATER LINE
APPROXIMATE EXISTING GAS LINE
EXISTING MAJOR CONTOUR LINE
EXISTING MINOR CONTOUR LINE
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
EXISTING SPOT SHOT ELEVATION
PROPOSED SPOT S



Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

0 120' 240'

SCALE: 1" = 120'

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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

Last Save Date: December 15, 2021 3:09 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Colter Krzciuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-CS.dwg Layout Tab: Neighborhood Plan

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

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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. EXISTING CONTOURS ON THE PROPOSED DEVELOPMENT LOT 1-2, DEPICT APPROVED CONTOURS FROM THE ALTERATION OF TERRAIN PERMIT PER REFERENCE PLAN #2.

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Stamp Date: December 15, 2021 Plotted By: Chris Krzciuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-101

APPROXIMATE 100-YR FLOOD ELEVATION

ROADWAY LAYOUT PER REFERENCE PLAN #3

"REGULATORY FLOODWAY"

PAVED SIDEWALK

RIVER STREET
(PAVED PUBLIC SEE NOTE 16)

UTILITY POLE AND OVERHEAD WIRE TBR (TYP, COORDINATE WITH UTILITY COMPANY)

TEST PIT: TPF04
DESC.: TEST PIT REFUSAL AT -11.12 FROM GRND
ELV.: 22.932

LOCATION OF PROPOSED BUILDING (TYP)

DOVER SKATE PARK

EXISTING SKATE PARK FEATURES TBR (TYP)

APPROXIMATE LIMIT OF PAVEMENT TBR

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 JERSEY BARRIERS TBR

EXISTING LEDGE PILE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

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)

TEST PIT: TPF08M
DESC.: TEST PIT RELOCATED, REFUSAL AT -6.75 FROM GRND
ELV.: 25.251

TEST PIT: TPF08
DESC.: TEST PIT, FOUND UNMARKED 8" FUSED DRAINAGE PIPE
ELV.: 24.752

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)

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: TPF14
ELV.: 15.402

TEST PIT: TPF25
ELV.: 16.477

MATCH LINE SHEET 1

MATCH LINE SHEET 2

PUMP STATION

ZONE "X"

8" X 8" GRAN. BND. FND. W/ D.H. UP 11"

1/4" I.P. UP 18"

5/8" REBAR UP 16"

18" HDPE INV.=22.8'

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. EXISTING CONTOURS ON THE PROPOSED DEVELOPMENT LOT 1-2, DEPICT APPROVED CONTOURS FROM THE ALTERATION OF TERRAIN PERMIT PER REFERENCE PLAN #2.

Tighe&Bond

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12-16-21

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LICENSED
PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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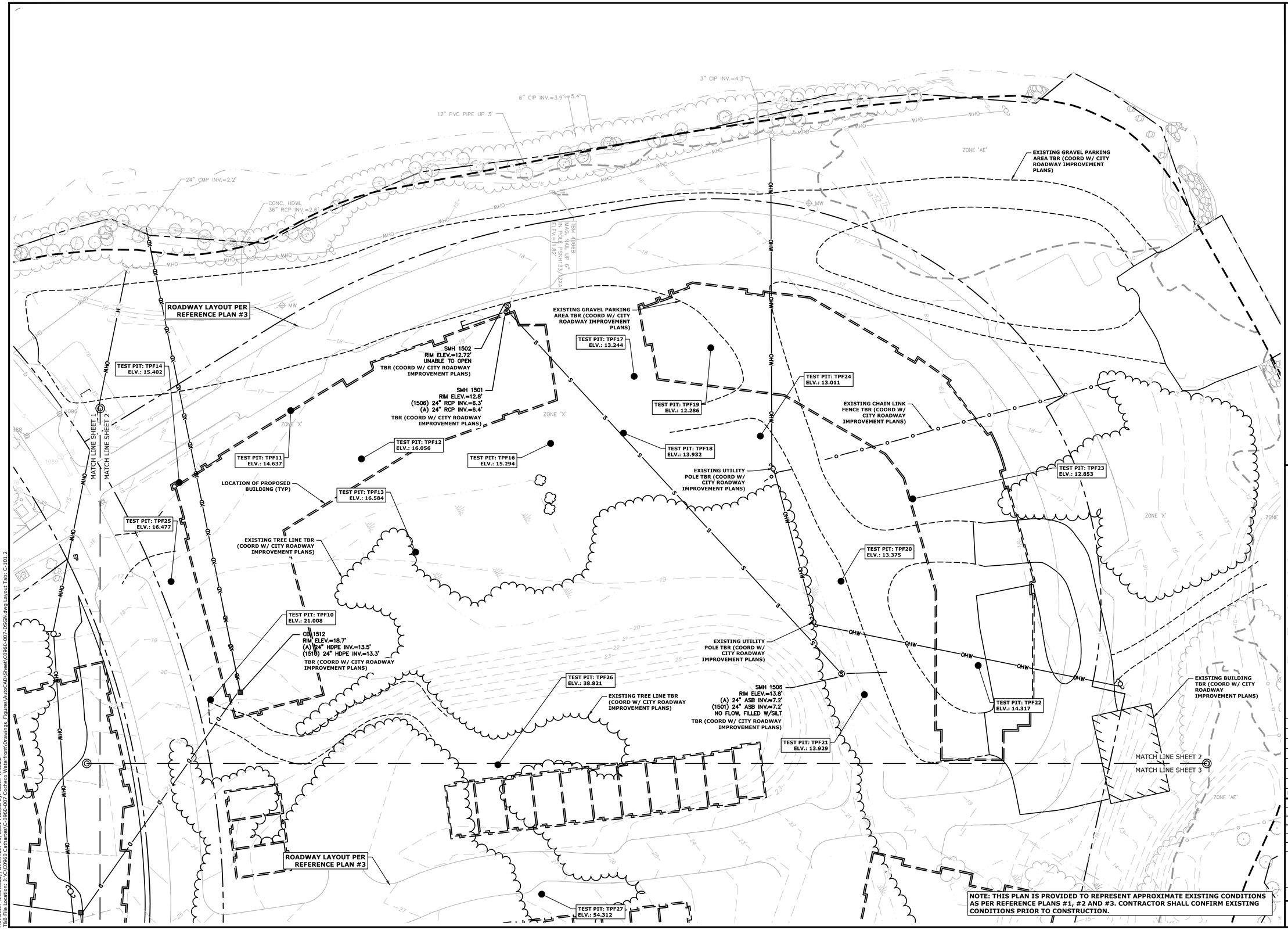
PROJECT NO:	C-0960-007
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101.1

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Date: December 15, 2021 2:12 PM By: Chris Krzciuk
T&B File Location: J:\CC\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-101.1



Tighe&Bond

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SCALE IN FEET
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GRAPHIC SCALE

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APPROVED:	BLM

EXISTING CONDITIONS & DEMO PLAN

SCALE: AS SHOWN

C-101.2

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Date: December 15, 2021 2:12 PM By: Chris Krzciuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-101.2

TEST PIT: TPF10
ELV.: 21.008

CB 1512
RIM ELEV.=18.7'
(A) 24" HDPE INV.=13.5'
(1510) 24" HDPE INV.=13.3'
TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

TEST PIT: TPF26
ELV.: 38.821

EXISTING TREE LINE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

EXISTING UTILITY POLE TBR (COORD W/ CITY ROADWAY IMPROVEMENT PLANS)

SMH 1508
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)

MATCH LINE SHEET 2
MATCH LINE SHEET 3

ROADWAY LAYOUT PER REFERENCE PLAN #3

TEST PIT: TPF27
ELV.: 54.312

LOCATION OF PROPOSED BUILDING (TYP)

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

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.

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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-101.3

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Plot Scale: 1 inch = 30 feet Plot Date: December 15, 2021 Plotted By: Chris Krzciuk
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SITE DATA:

LOCATION: TAX MAP 22 LOTS 1-2, 1-4, 1-5, 1-6, & 1-7 RIVER STREET DOVER, NH 03820

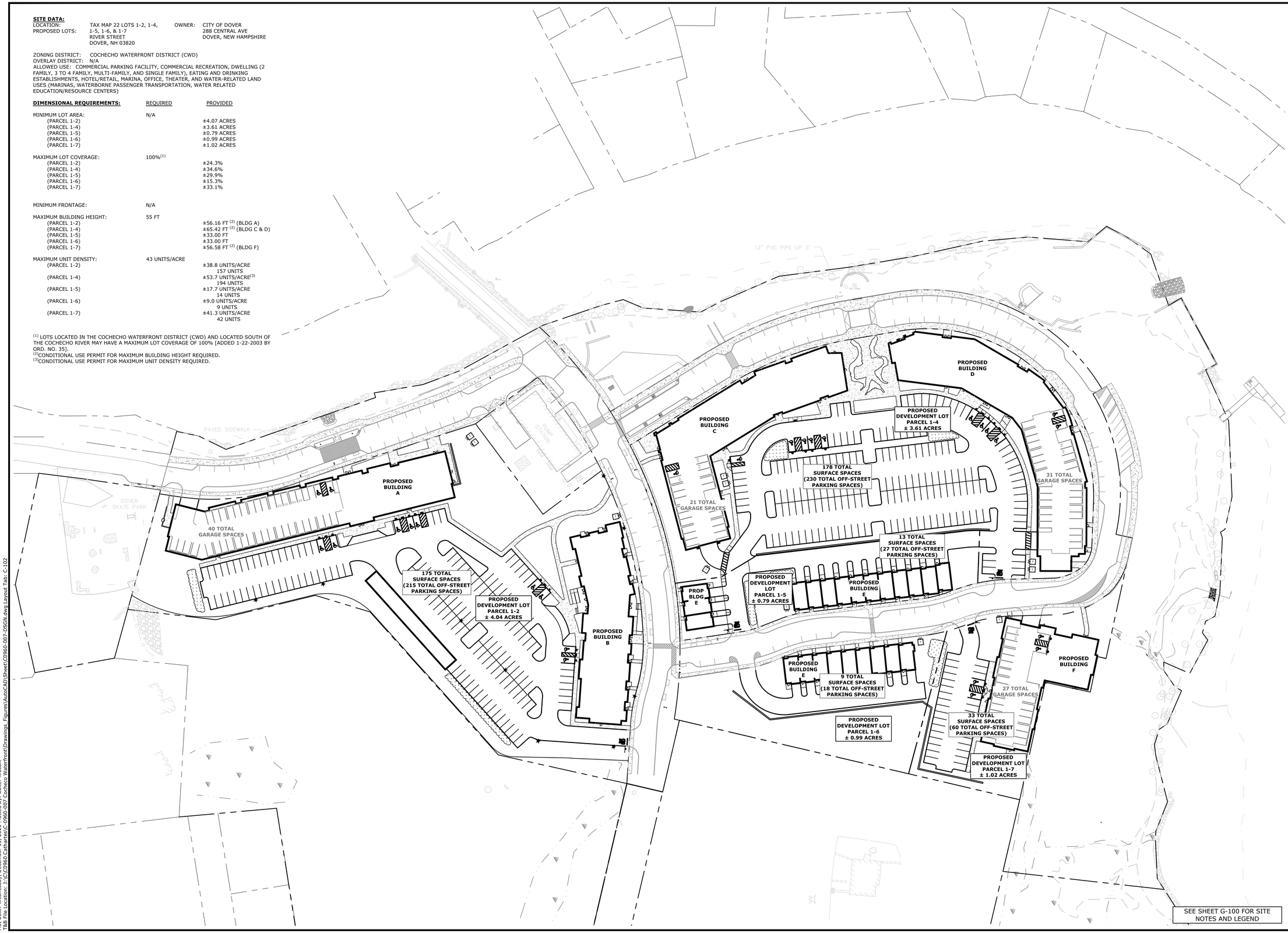
OWNER: CITY OF DOVER 288 CENTRAL AVE DOVER, NEW HAMPSHIRE

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)		±4.07 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)		±24.3%
(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.



SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

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STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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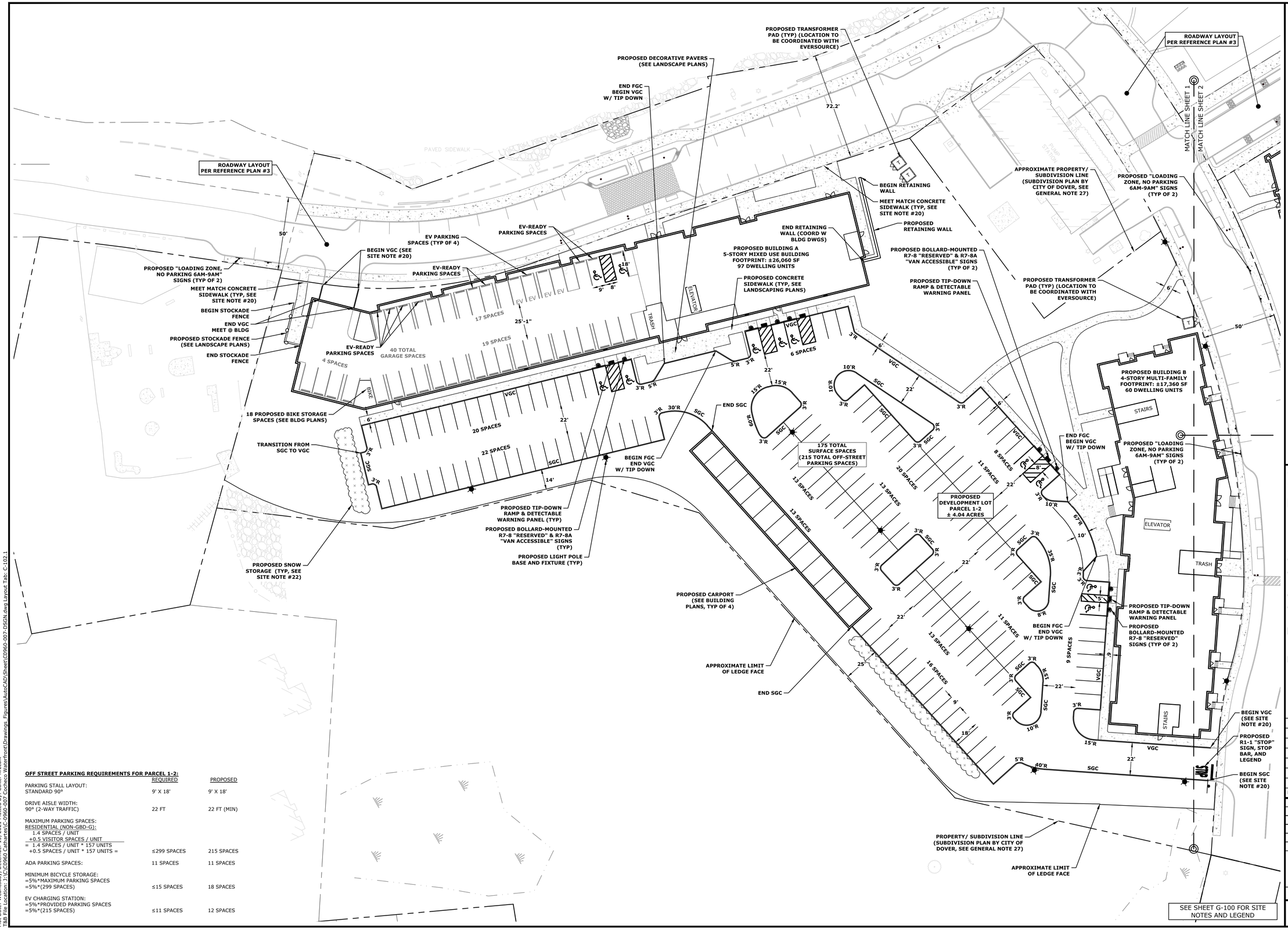
PROJECT NO:	C-0960-007
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Last Save Date: December 15, 2021 2:12 PM By: CKRZCUIK
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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: =5%*PROVIDED PARKING SPACES =5%*(215 SPACES)	≤11 SPACES	12 SPACES

Tighe&Bond

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STATE OF NEW HAMPSHIRE — PATRICK H. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

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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: =5%*PROVIDED PARKING SPACES =5%*(230 SPACES)	≤12 SPACES	12 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	N/A[1]
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(27 SPACES)	≤2 SPACES	N/A[2]
EV CHARGING STATION: =5%*PROVIDED PARKING SPACES =5%*(27 SPACES)	≤2 SPACES	N/A[3]

[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.
[3] THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE USED AS EV PARKING SPACES.

ROADWAY LAYOUT PER REFERENCE PLAN #3
PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)
PROPOSED LANDSCAPED PLAZA AREA (SEE LANDSCAPING PLANS)
PROPOSED BUILDING D 5-STORY MULTI-FAMILY FOOTPRINT: ±29,050 SF 99 DWELLING UNITS
28 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)
PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 4)
PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL
EV ACCESSIBLE PARKING SPACES (TYP OF 2)
PROPOSED "LOADING ZONE, NO PARKING 6AM-9AM" SIGNS (TYP OF 2)
EV PARKING SPACES (TYP OF 2)
EV-READY PARKING SPACES
31 TOTAL GARAGE SPACES
PROPOSED BUILDING C 5-STORY MIXED USE BUI FOOTPRINT: ±25,480 SF 95 DWELLING UNITS
PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL
PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 4)
30 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)
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 PARKING SPACES (TYP 0F2)
EV-READY PARKING SPACES
21 TOTAL GARAGE SPACES
PROPOSED 8' WIDE CROSSWALK (SEE DETAIL)
END RETAINING WALL
PROPOSED RETAINING WALL
BEGIN RETAINING WALL
END VGC MEET @ BLDG
TRANSITION FROM SGC TO VGC
TRANSITION FROM VGC TO SGC
PROPOSED BUILDING B 4-STORY MULTI-FAMILY FOOTPRINT: ±17,360 SF 60 DWELLING UNITS
PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND
BEGIN SGC (SEE SITE NOTE #20)
13 TOTAL SURFACE SPACES (27 TOTAL OFF-STREET PARKING SPACES)
PROPOSED DEVELOPMENT LOT PARCEL 1-5 ± 0.79 ACRES
PROPOSED BUILDING E
END SGC MEET @ BLDG (TYP) & PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)
APPROXIMATE ACCESS EASEMENT LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)
APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)
BEGIN VGC (SEE SITE NOTE #20)
MEET MATCH CONCRETE SIDEWALK (TYP, 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)
KAYAK
MATCH LINE SHEET 1
MATCH LINE SHEET 2
MATCH LINE SHEET 3
SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 — LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK H. CRIMMINS No. 12376 — LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
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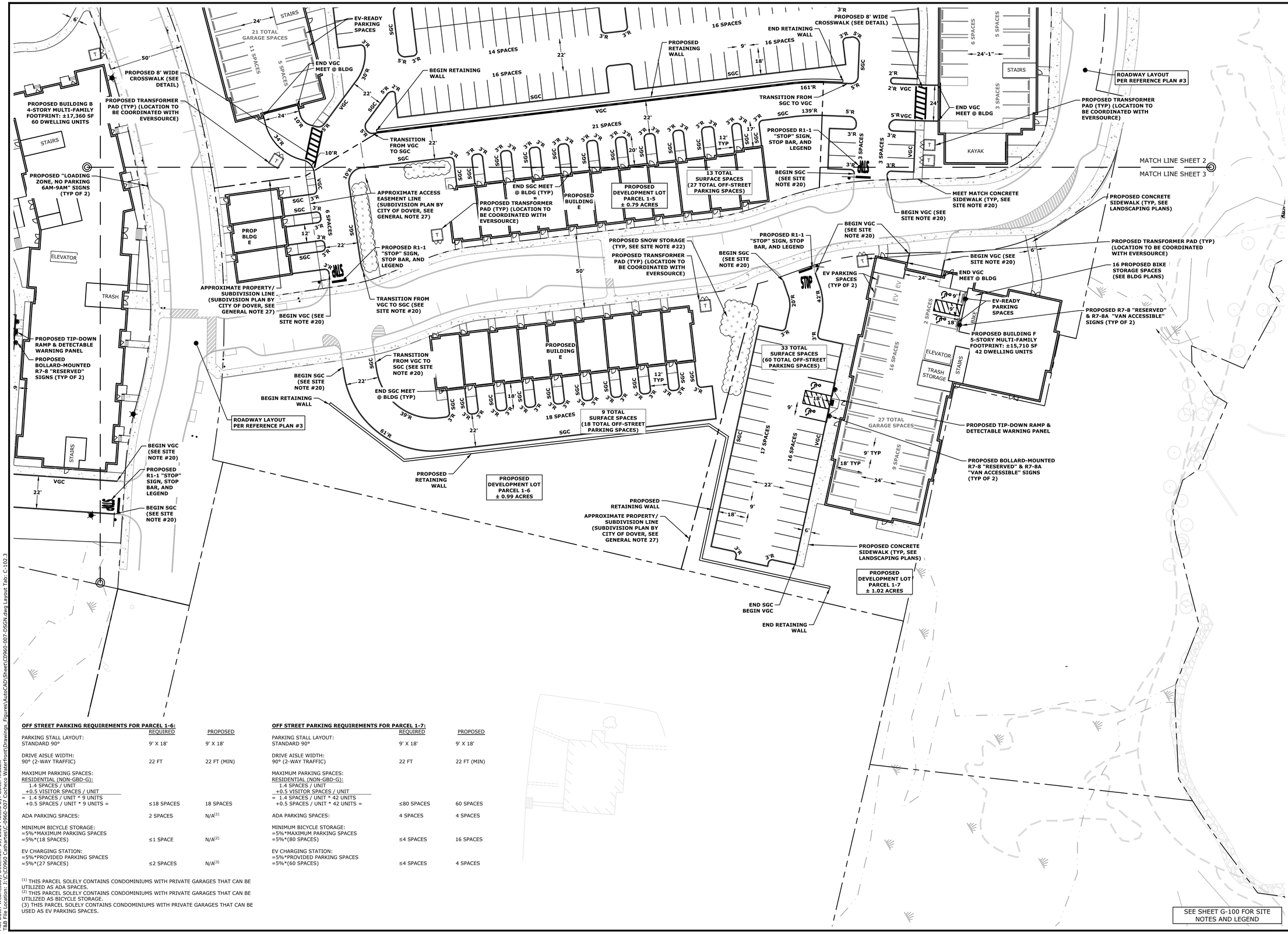
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.2

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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	N/A[1]
MINIMUM BICYCLE STORAGE: =5%*MAXIMUM PARKING SPACES =5%*(18 SPACES)	≤1 SPACE	N/A[2]
EV CHARGING STATION: =5%*PROVIDED PARKING SPACES =5%*(27 SPACES)	≤2 SPACES	N/A[3]

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	60 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: =5%*PROVIDED PARKING SPACES =5%*(60 SPACES)	≤4 SPACES	4 SPACES

(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.
(3) THIS PARCEL SOLELY CONTAINS CONDOMINIUMS WITH PRIVATE GARAGES THAT CAN BE USED AS EV PARKING SPACES.

Tighe&Bond

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0 30' 60'
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SITE PLAN

SCALE: AS SHOWN

C-102.3

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SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

Tighe&Bond

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BRADLEE MEZQUITA
No. 08830
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PROFESSIONAL ENGINEER
12-16-21

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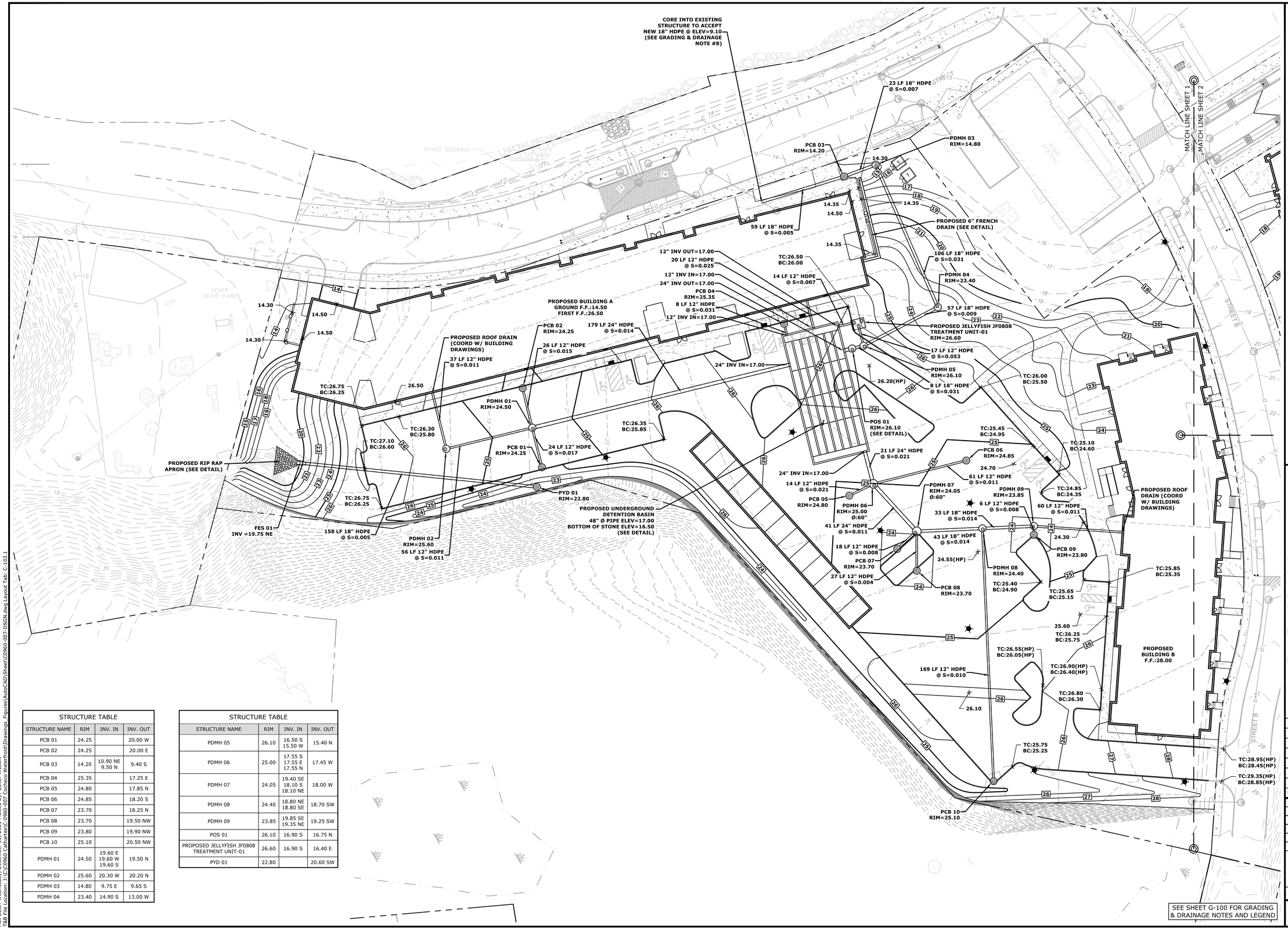
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OVERALL GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

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STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 01	24.25		20.00 W
PCB 02	24.25		20.00 E
PCB 03	14.20	10.90 NE 9.50 N	9.40 S
PCB 04	25.35		17.25 E
PCB 05	24.80		17.85 N
PCB 06	24.85		18.20 S
PCB 07	23.70		18.25 N
PCB 08	23.70		19.50 NW
PCB 09	23.80		19.90 NW
PCB 10	25.10		20.50 NW
PDMH 01	24.50	19.60 E 19.60 W 19.60 S	19.50 N
PDMH 02	25.60	20.30 W	20.20 N
PDMH 03	14.80	9.75 E	9.65 S
PDMH 04	23.40	14.90 S	13.00 W

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PDMH 05	26.10	16.50 S 15.50 W	15.40 N
PDMH 06	25.00	17.55 S 17.55 E 17.55 N	17.45 W
PDMH 07	24.05	19.40 SE 18.10 S 18.10 NE	18.00 W
PDMH 08	24.40	18.80 NE 18.80 SE	18.70 SW
PDMH 09	23.85	19.85 SE 19.35 NE	19.25 SW
POS 01	26.10	16.90 S	16.75 N
PROPOSED JELLYFISH JF0808 TREATMENT UNIT-01	26.60	16.90 S	16.40 E
PYD 01	22.80		20.60 SW

SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

Tighe&Bond

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0 30' 60'
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GRADING, DRAINAGE, & EROSION CONTROL PLAN

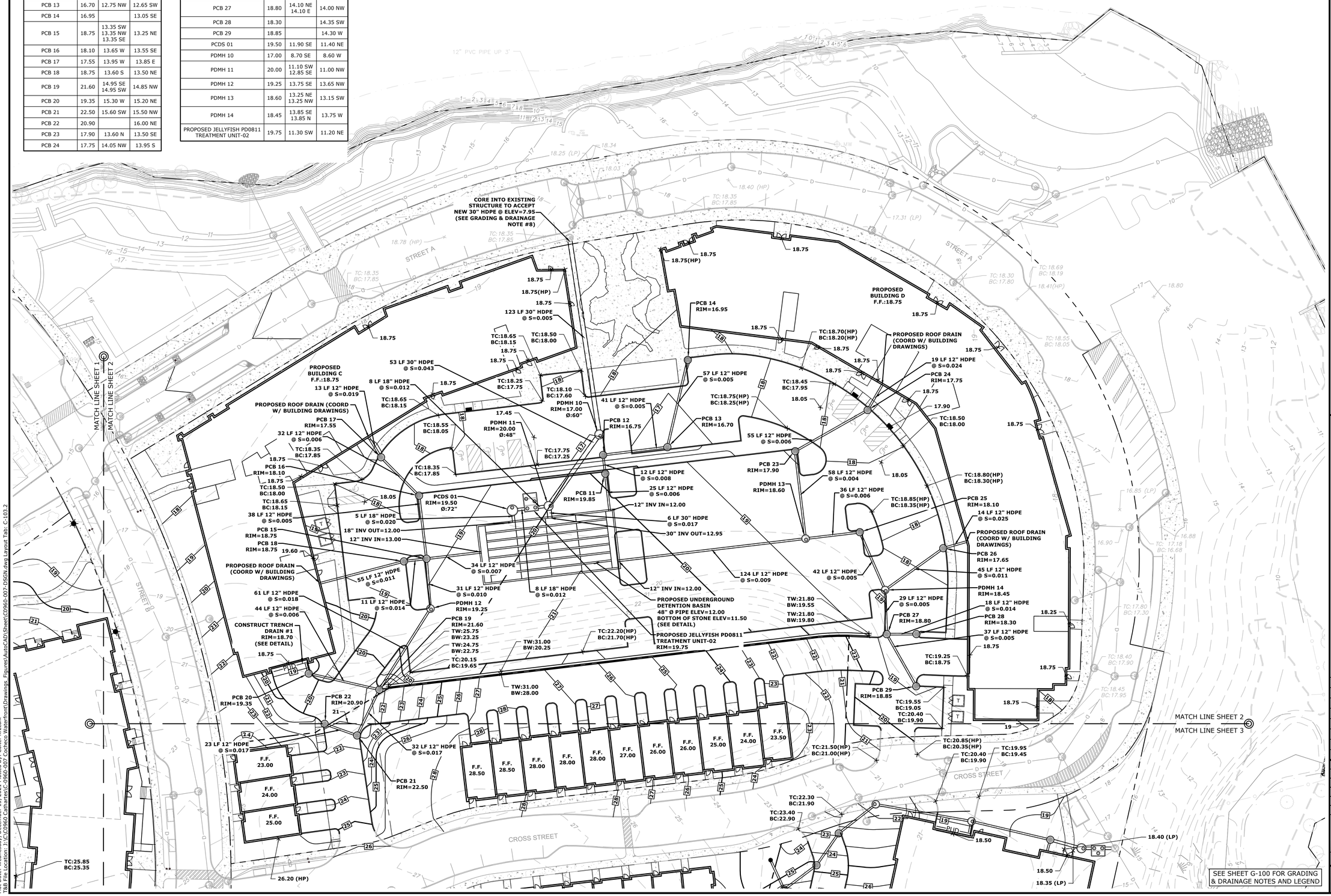
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Last Save Date: December 15, 2021 4:20 PM By: CKRZCIUK
Plot Date/Time: December 15, 2021 4:20 PM By: Chris Krzciuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-103.1

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 11	19.85	12.25 NW	12.15 SE
PCB 12	16.75	12.45 NE	12.35 SE
PCB 13	16.70	12.75 NW	12.65 SW
PCB 14	16.95		13.05 SE
PCB 15	18.75	13.35 SW 13.35 NW 13.35 SE	13.25 NE
PCB 16	18.10	13.65 W	13.55 SE
PCB 17	17.55	13.95 W	13.85 E
PCB 18	18.75	13.60 S	13.50 NE
PCB 19	21.60	14.95 SE 14.95 SW	14.85 NW
PCB 20	19.35	15.30 W	15.20 NE
PCB 21	22.50	15.60 SW	15.50 NW
PCB 22	20.90		16.00 NE
PCB 23	17.90	13.60 N	13.50 SE
PCB 24	17.75	14.05 NW	13.95 S

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 25	18.10	13.55 E	13.45 SW
PCB 26	17.65	14.45 N	14.35 S
PCB 27	18.80	14.10 NE 14.10 E	14.00 NW
PCB 28	18.30		14.35 SW
PCB 29	18.85		14.30 W
PCDS 01	19.50	11.90 SE	11.40 NE
PDMH 10	17.00	8.70 SE	8.60 W
PDMH 11	20.00	11.10 SW 12.85 SE	11.00 NW
PDMH 12	19.25	13.75 SE	13.65 NW
PDMH 13	18.60	13.25 NE 13.25 NW	13.15 SW
PDMH 14	18.45	13.85 SE 13.85 N	13.75 W
PROPOSED JELLYFISH PD0811 TREATMENT UNIT-02	19.75	11.30 SW	11.20 NE



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Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 — LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12376 — LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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



SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 30	18.25	9.35 SW 11.85 SE	9.25 NE
PCB 31	22.90	17.50 SE	17.40 N
PCB 32	24.70	18.10 S	18.00 NW
PCB 33	25.90	18.85 S 19.00 W	18.75 N
PCB 34	25.75	20.00 SE	19.90 N
PCDS 02	18.00	8.85 SW	8.75 NE
PDMH 15	19.15	13.00 SE 10.55 SW	10.45 NE
PDMH 16	21.50	16.00 S	12.00 NE
PROPOSED JELLYFISH PD0806 TREATMENT UNIT-03	17.70	8.65 SW	8.15 NE
PTBF 01	25.70		22.15 W
PYD 04	24.10		19.35 E
PYD 05	28.00		20.30 NW

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 12-16-21

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SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

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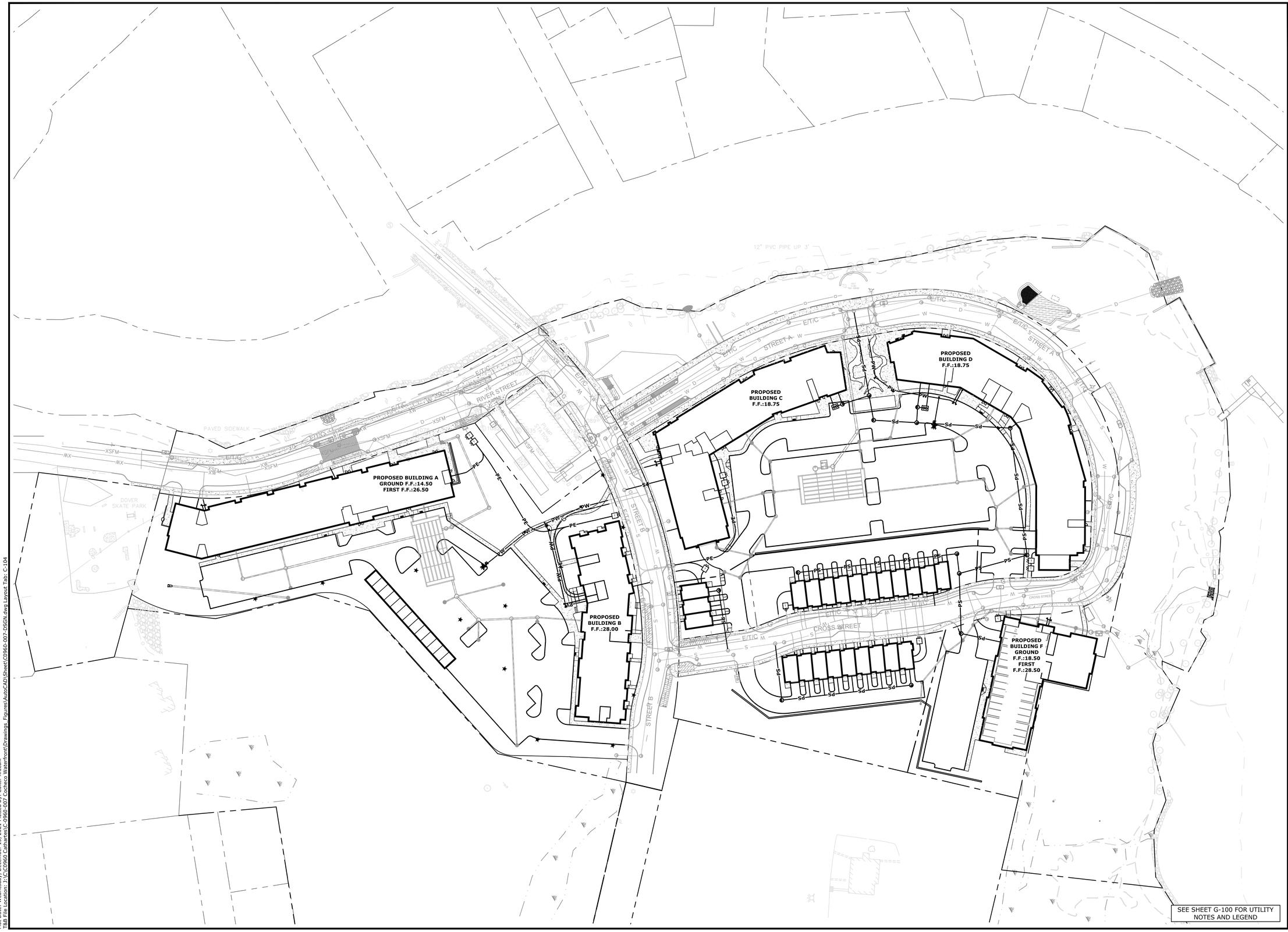
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.3

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Date: December 15, 2021 2:12 PM By: Chris Krzciuk
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Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

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CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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APPROVED:	BLM

OVERALL
UTILITY PLAN

SCALE: AS SHOWN

C-104

Last Save Date: December 15, 2021 2:12 PM By: CKRZCUIK
Plot Date: Wednesday, December 15, 2021 2:12 PM By: CKRZCUIK
File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings, Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-104

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 FDC LOCATION (COORDINATE WITH BLDG DWGS)

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 6" FIRE SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED ELECTRICAL CONDUIT (TYP, COORD W/ UTILITY COMPANIES)

DOVER SKATE PARK

RIVER STREET

STREET B

MATCH LINE SHEET 1

MATCH LINE SHEET 2

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

CONNECT TO EXISTING GAS STUB (SEE UTILITY NOTE #25 & COORD W/ UTILITY COMPANY)

CONNECT TO EXISTING ELECTRIC STUB (SEE UTILITY NOTE #25 & COORD W/ EVERSOURCE)

PROPOSED 8" DI WATER LINE

PROPOSED 8"X6"X6" TEE & THRUST BLOCK

PROPOSED 6" DI WATER LINE

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=13.45

PROPOSED SANITARY SERVICE CONNECTION 23 LF 8" PVC @ S = 0.006 INV @ BLDG = 13.60 (COORD W/ BLDG DWGS)

PROPOSED FIRE HYDRANT

PROPOSED 6"X6"X4" TEE & THRUST BLOCK

PROPOSED FDC LOCATION (COORDINATE WITH BLDG DWGS)

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6" FIRE SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED BUILDING B F.F.:28.00

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK H. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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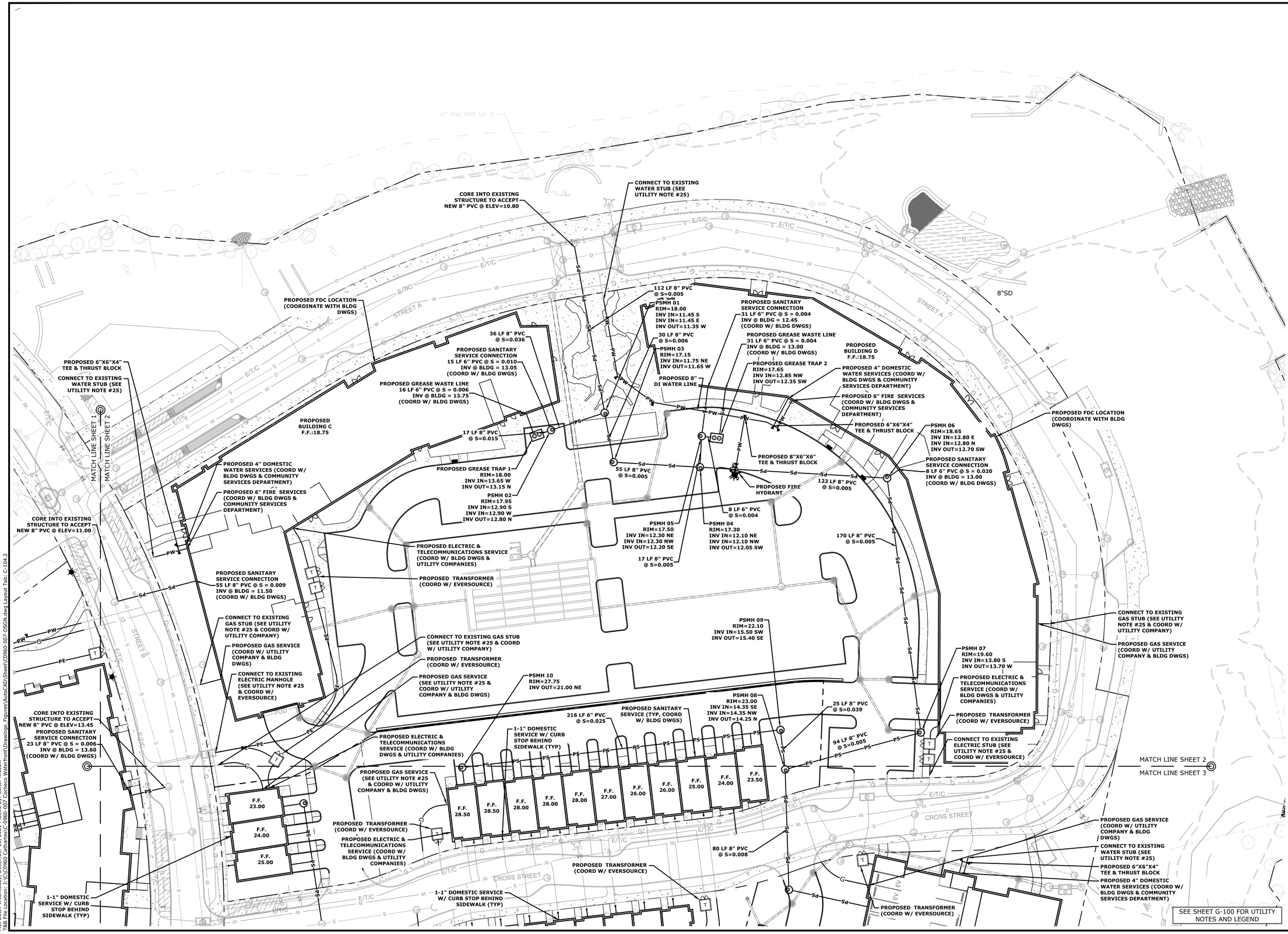
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

UTILTY PLAN

SCALE: AS SHOWN

C-104.1

Last Save Date: December 15, 2021 2:12 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Chloe Krzcuik
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-104.1



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T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-104.2

Tighe&Bond

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

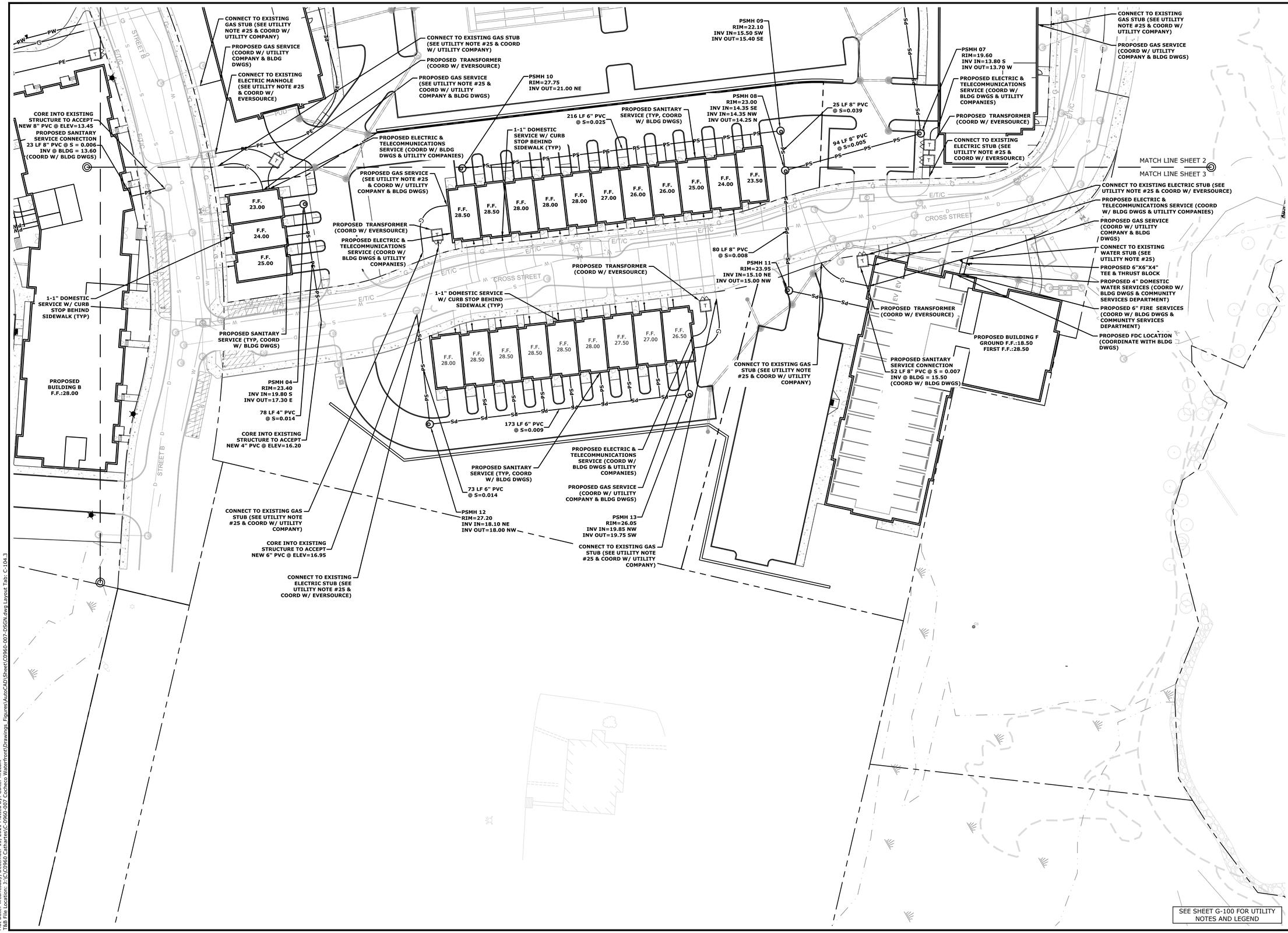
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APPROVED:	BLM

UTILTY PLAN

SCALE: AS SHOWN

C-104.2



Tighe&Bond

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
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Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

UTILTY PLAN

SCALE: AS SHOWN

C-104.3

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
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PROFESSIONAL ENGINEER
12-16-21

Last Save Date: December 15, 2021 2:12 PM By: CKRZCUIK
Plot Date: Thursday, December 16, 2021 Plotted By: Chris Krzcuik
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-104.3

PHASE 1 SITE PLAN SET

JULY 26, 2021

LAST REVISED DECEMBER 16, 2021

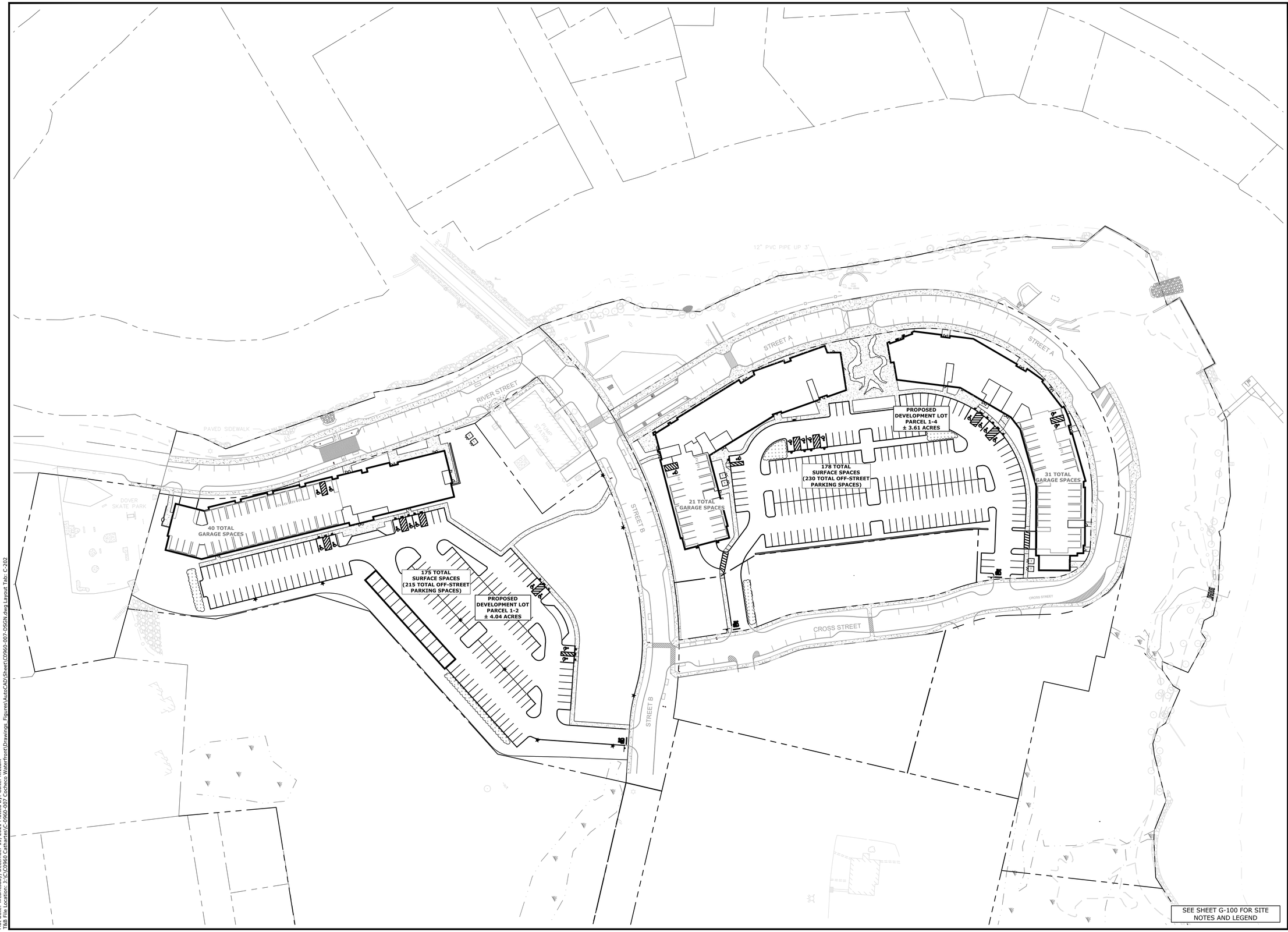
LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	12/16/2021
C-202	PHASE 1 OVERALL SITE PLAN	12/16/2021
C-202.1	PHASE 1 SITE PLAN	12/16/2021
C-202.2	PHASE 1 SITE PLAN	12/16/2021
C-203.1	PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-203.2	PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN	12/16/2021
C-204.1	PHASE 1 UTILITIES PLAN	12/16/2021
C-204.2	PHASE 1 UTILITIES PLAN	12/16/2021





COMPLETE SET 8 SHEETS

Last Save Date: December 14, 2021 5:55 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Chris Krzciuk
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Tighe&Bond

N

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12/16/21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED PROFESSIONAL ENGINEER
12/16/21

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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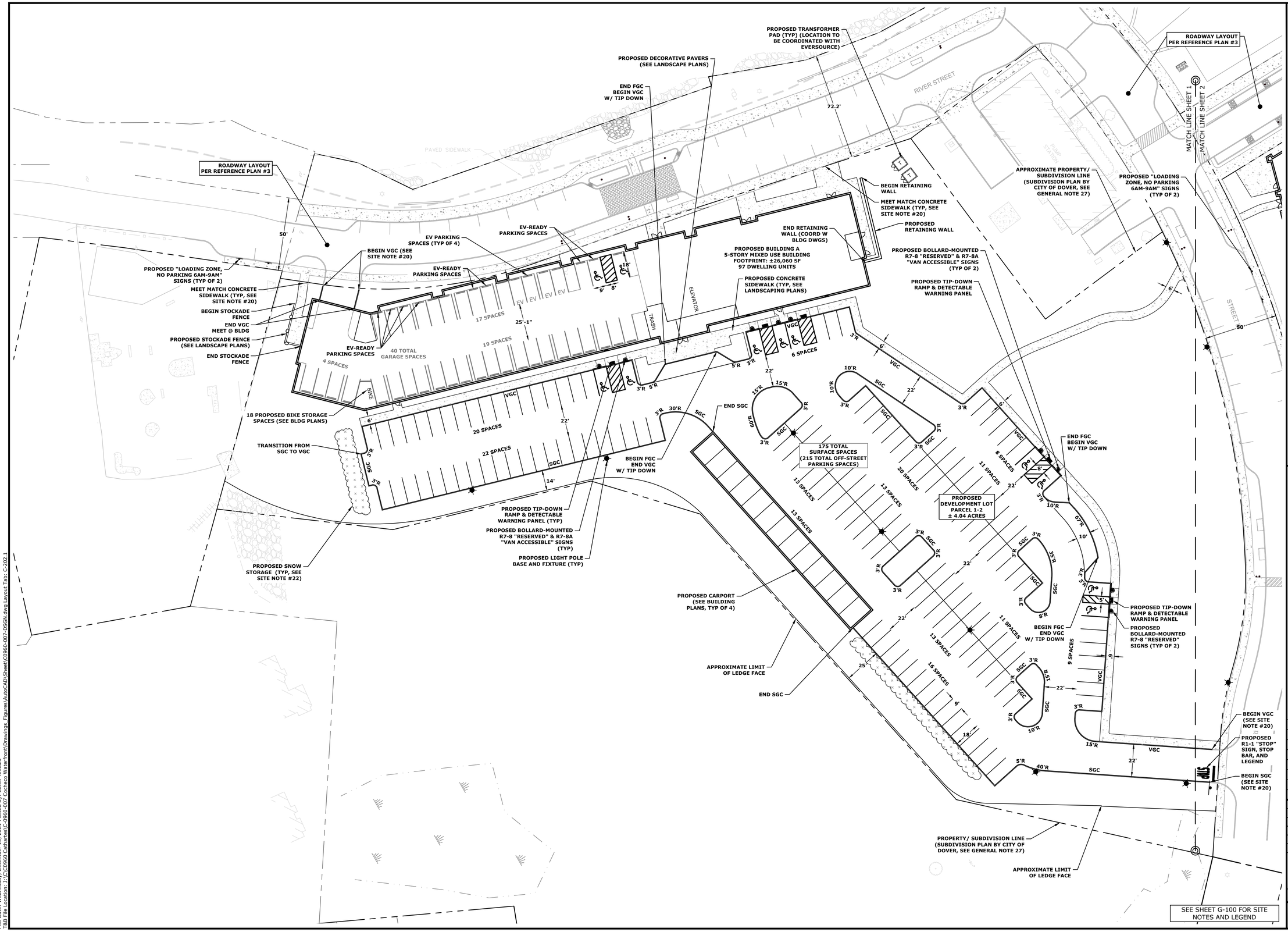
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PHASE 1
OVERALL SITE PLAN

SCALE: AS SHOWN

C-202

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Plot Date: December 15, 2021 2:12 PM By: Chris Krzcuik
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SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

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City of Dover

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Dover, New Hampshire

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PHASE 1
SITE PLAN

SCALE: AS SHOWN

C-202.1

Last Save Date: December 15, 2021, 2:12 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Christian Krzcuik
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Tighe&Bond

ROADWAY LAYOUT PER REFERENCE PLAN #3

MATCH LINE SHEET 1

MATCH LINE SHEET 2

12" PVC PIPE UP 3'

STREET A

53'

PROPOSED BUILDING C
5-STORY MIXED USE BUI
FOOTPRINT: ±25,480 SF
95 DWELLING UNITS

PROPOSED LANDSCAPED PLAZA AREA (SEE LANDSCAPING PLANS)

PROPOSED CONCRETE SIDEWALK (TYP, SEE LANDSCAPING PLANS)

PROPOSED BUILDING D
5-STORY MULTI-FAMILY
FOOTPRINT: ±29,050 SF
99 DWELLING UNITS

28 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)

PROPOSED TIP-DOWN RAMP & DETECTABLE WARNING PANEL

PROPOSED BOLLARD-MOUNTED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS (TYP OF 4)

EV ACCESSIBLE PARKING SPACES (TYP OF 2)

PROPOSED "LOADING ZONE, NO PARKING 6AM-9AM" SIGNS (TYP OF 2)

EV PARKING SPACES (TYP OF 2)

EV-READY PARKING SPACES

30 PROPOSED BIKE STORAGE SPACES (SEE BLDG PLANS)

PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

PROPOSED SNOW STORAGE (TYP, SEE SITE NOTE #22)

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

21 TOTAL GARAGE SPACES

31 TOTAL GARAGE SPACES

PROPOSED 8' WIDE CROSSWALK (SEE DETAIL)

PROPOSED RETAINING WALL

BEGIN RETAINING WALL

END RETAINING WALL

END VGC MEET @ BLDG

BEGIN SGC (SEE SITE NOTE #20)

PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND

MEET MATCH CONCRETE SIDEWALK (TYP, SEE SITE NOTE #20)

PROPOSED TRANSFORMER PAD (TYP) (LOCATION TO BE COORDINATED WITH EVERSOURCE)

APPROXIMATE ACCESS EASEMENT LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

APPROXIMATE PROPERTY/ SUBDIVISION LINE (SUBDIVISION PLAN BY CITY OF DOVER, SEE GENERAL NOTE 27)

TRANSITION FROM VGC TO SGC (SEE SITE NOTE #20)

BEGIN VGC (SEE SITE NOTE #20)

STREET

CROSS STREET

KAYAK

TRASH

ELEVATOR

STAIR

STAIRS

BIKE

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

STATE OF NEW HAMPSHIRE
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SCALE IN FEET
0 30' 60'
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Cochecho Waterfront Development

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PHASE 1
SITE PLAN

SCALE: AS SHOWN

C-202.2

Last Save Date: December 15, 2021 1:13 PM By: CKRZESIK
Plot Date: December 15, 2021 1:22 PM By: Christopher Krcsulik
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-DSGN.dwg Layout Tab: C-202.2

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 18" HDPE @ ELEV=9.10 (SEE GRADING & DRAINAGE NOTE #8)

23 LF 18" HDPE @ S=0.007

PCB 03 RIM=14.20

PDMH 03 RIM=14.80

MATCH LINE SHEET 1

MATCH LINE SHEET 2

PAVED SIDEWALK

DOVER SKATE PARK

59 LF 18" HDPE @ S=0.005

PROPOSED 6" FRENCH DRAIN (SEE DETAIL)

106 LF 18" HDPE @ S=0.031

12" INV OUT=17.00

20 LF 12" HDPE @ S=0.025

12" INV IN=17.00

24" INV OUT=17.00

PCB 04 RIM=25.35

8 LF 12" HDPE @ S=0.031

12" INV IN=17.00

TC:26.50 BC:26.00

14 LF 12" HDPE @ S=0.007

PDMH 04 RIM=23.40

57 LF 18" HDPE @ S=0.009

PROPOSED JELLYFISH JF0808 TREATMENT UNIT-01 RIM=26.60

PROPOSED BUILDING A GROUND F.F.:14.50 FIRST F.F.:26.50

PCB 02 RIM=24.25

179 LF 24" HDPE @ S=0.014

PROPOSED ROOF DRAIN (COORD W/ BUILDING DRAWINGS)

26 LF 12" HDPE @ S=0.015

37 LF 12" HDPE @ S=0.011

17 LF 12" HDPE @ S=0.053

PDMH 05 RIM=26.10

8 LF 18" HDPE @ S=0.031

24" INV IN=17.00

TC:26.75 BC:26.25

26.50

TC:26.30 BC:25.80

PDMH 01 RIM=24.50

TC:26.35 BC:25.85

26.20(HP)

TC:26.00 BC:25.50

POS 01 RIM=26.10 (SEE DETAIL)

TC:27.10 BC:26.60

PCB 01 RIM=24.25

24 LF 12" HDPE @ S=0.017

TC:25.45 BC:24.95

PCB 06 RIM=24.85

TC:25.10 BC:24.60

21 LF 24" HDPE @ S=0.021

24.70

61 LF 12" HDPE @ S=0.011

PROPOSED RIP RAP APRON (SEE DETAIL)

24" INV IN=17.00

14 LF 12" HDPE @ S=0.021

PDMH 07 RIM=24.05 Ø:60"

PDMH 09 RIM=23.85

TC:24.85 BC:24.35

STUB DRAIN LINE FOR FUTURE CONNECTION INV=20.00

TC:26.75 BC:26.25

PCB 05 RIM=24.80

PDMH 06 RIM=25.00 Ø:60"

6 LF 12" HDPE @ S=0.008

60 LF 12" HDPE @ S=0.011

PYD 01 RIM=22.80

33 LF 18" HDPE @ S=0.014

41 LF 24" HDPE @ S=0.011

24.30

43 LF 18" HDPE @ S=0.014

PCB 09 RIM=23.80

PROPOSED UNDERGROUND DETENTION BASIN 48" Ø PIPE ELEV=17.00 BOTTOM OF STONE ELEV=16.50 (SEE DETAIL)

158 LF 18" HDPE @ S=0.005

PDMH 02 RIM=25.60

56 LF 12" HDPE @ S=0.011

18 LF 12" HDPE @ S=0.008

PCB 07 RIM=23.70

24.55(HP)

PDMH 08 RIM=24.40

27 LF 12" HDPE @ S=0.004

TC:25.40 BC:24.90

PCB 08 RIM=23.70

TC:25.85 BC:25.35

TC:25.65 BC:25.15

25.60

TC:26.25 BC:25.75

TC:26.55(HP) BC:26.05(HP)

169 LF 12" HDPE @ S=0.010

TC:26.90(HP) BC:26.40(HP)

TC:26.80 BC:26.30

26.10

TC:25.75 BC:25.25

TC:28.95(HP) BC:28.45(HP)

TC:29.35(HP) BC:28.85(HP)

PCB 10 RIM=25.10

STREET A

STREET B

SEE SHEET G-100 FOR GRADING & DRAINAGE NOTES AND LEGEND

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 01	24.25		20.00 W
PCB 02	24.25		20.00 E
PCB 03	14.20	10.90 NE 9.50 N	9.40 S
PCB 04	25.35		17.25 E
PCB 05	24.80		17.85 N
PCB 06	24.85		18.20 S
PCB 07	23.70		18.25 N
PCB 08	23.70		19.50 NW
PCB 09	23.80		19.90 NW
PCB 10	25.10		20.50 NW
PDMH 01	24.50	19.60 E 19.60 W 19.60 S	19.50 N
PDMH 02	25.60	20.30 W	20.20 N
PDMH 03	14.80	9.75 E	9.65 S
PDMH 04	23.40	14.90 S	13.00 W

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PDMH 05	26.10	16.50 S 15.50 W	15.40 N
PDMH 06	25.00	17.55 S 17.55 E 17.55 N	17.45 W
PDMH 07	24.05	19.40 SE 18.10 S 18.10 NE	18.00 W
PDMH 08	24.40	18.80 NE 18.80 SE	18.70 SW
PDMH 09	23.85	19.85 SE 19.35 NE	19.25 SW
POS 01	26.10	16.90 S	16.75 N
PROPOSED JELLYFISH JF0808 TREATMENT UNIT-01	26.60	16.90 S	16.40 E
PYD 01	22.80		20.60 SW

Last Save Date: December 15, 2021 4:23 PM By: CKZCOJIK
Plot Date: December 15, 2021 4:23 PM By: Chris Krzcuik
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Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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

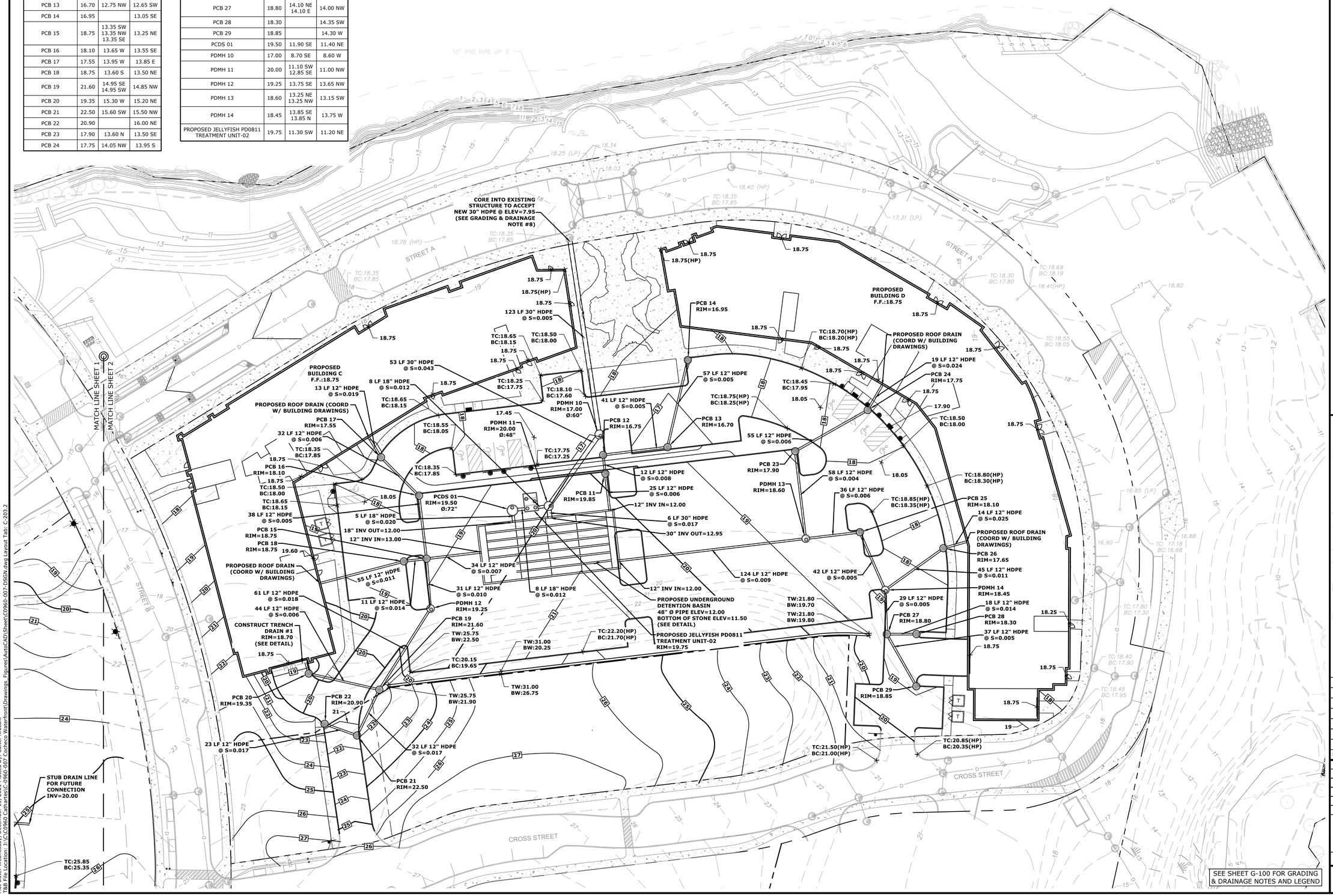
PHASE 1 GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-203.1

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 11	19.85	12.25 NW	12.15 SE
PCB 12	16.75	12.45 NE	12.35 SE
PCB 13	16.70	12.75 NW	12.65 SW
PCB 14	16.95		13.05 SE
PCB 15	18.75	13.35 SW 13.35 NW 13.35 SE	13.25 NE
PCB 16	18.10	13.65 W	13.55 SE
PCB 17	17.55	13.95 W	13.85 E
PCB 18	18.75	13.60 S	13.50 NE
PCB 19	21.60	14.95 SE 14.95 SW	14.85 NW
PCB 20	19.35	15.30 W	15.20 NE
PCB 21	22.50	15.60 SW	15.50 NW
PCB 22	20.90		16.00 NE
PCB 23	17.90	13.60 N	13.50 SE
PCB 24	17.75	14.05 NW	13.95 S

STRUCTURE TABLE			
STRUCTURE NAME	RIM	INV. IN	INV. OUT
PCB 25	18.10	13.55 E	13.45 SW
PCB 26	17.65	14.45 N	14.35 S
PCB 27	18.80	14.10 NE 14.10 E	14.00 NW
PCB 28	18.30		14.35 SW
PCB 29	18.85		14.30 W
PCDS 01	19.50	11.90 SE	11.40 NE
PDMH 10	17.00	8.70 SE	8.60 W
PDMH 11	20.00	11.10 SW 12.85 SE	11.00 NW
PDMH 12	19.25	13.75 SE	13.65 NW
PDMH 13	18.60	13.25 NE 13.25 NW	13.15 SW
PDMH 14	18.45	13.85 SE 13.85 N	13.75 W
PROPOSED JELLYFISH PD0811 TREATMENT UNIT-02	19.75	11.30 SW	11.20 NE



Tighe&Bond

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12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED
PROFESSIONAL ENGINEER
12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

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DRAWN BY:	CJK
CHECKED:	PMC/NAH
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 FDC LOCATION (COORDINATE WITH BLDG DWGS)

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

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED ELECTRICAL CONDUIT (TYP, COORD W/ UTILITY COMPANIES)

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED 6" FIRE SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED GAS SERVICE (COORD W/ UTILITY COMPANY & BLDG DWGS)

PROPOSED 6"X6"X4" TEE & THRUST BLOCK

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

MATCH LINE SHEET 1

MATCH LINE SHEET 2

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED 8" DI WATER LINE

PROPOSED 8"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

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

DOVER SKATE PARK

RIVER STREET

STREET B

PUMP STATION

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

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DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PHASE 1
UTILITIES PLAN

SCALE: AS SHOWN

C-204.1

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Tighe&Bond

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=10.80

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

PROPOSED FDC LOCATION (COORDINATE WITH BLDG DWGS)

112 LF 8" PVC @ S=0.005

PSMH 01
RIM=18.00
INV IN=11.45 S
INV IN=11.45 E
INV OUT=11.35 W

PROPOSED SANITARY SERVICE CONNECTION
31 LF 6" PVC @ S = 0.004
INV @ BLDG = 12.45
(COORD W/ BLDG DWGS)

PROPOSED 6"X6"X4" TEE & THRUST BLOCK

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

36 LF 8" PVC @ S=0.036

PROPOSED SANITARY SERVICE CONNECTION
15 LF 6" PVC @ S = 0.010
INV @ BLDG = 13.05
(COORD W/ BLDG DWGS)

30 LF 8" PVC @ S=0.006

PSMH 03
RIM=17.15
INV IN=11.75 NE
INV OUT=11.65 W

PROPOSED GREASE WASTE LINE
16 LF 6" PVC @ S = 0.006
INV @ BLDG = 13.75
(COORD W/ BLDG DWGS)

PROPOSED GREASE WASTE LINE
31 LF 6" PVC @ S = 0.004
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

PROPOSED GREASE TRAP 2
RIM=17.65
INV IN=12.85 NW
INV OUT=12.35 SW

PROPOSED BUILDING C F.F.:18.75

PROPOSED 8" DI WATER LINE

PROPOSED BUILDING D F.F.:18.75

PROPOSED 4" DOMESTIC WATER SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

PROPOSED 6" FIRE SERVICES (COORD W/ BLDG DWGS & COMMUNITY SERVICES DEPARTMENT)

17 LF 8" PVC @ S=0.015

PROPOSED GREASE TRAP 1
RIM=18.00
INV IN=13.65 W
INV OUT=13.15 N

PROPOSED 6"X6"X4" TEE & THRUST BLOCK

PSMH 06
RIM=18.65
INV IN=12.80 E
INV IN=12.80 N
INV OUT=12.70 SW

PROPOSED FDC LOCATION (COORDINATE WITH BLDG DWGS)

55 LF 8" PVC @ S=0.005

PROPOSED 8"X6"X6" TEE & THRUST BLOCK

PROPOSED SANITARY SERVICE CONNECTION
8 LF 6" PVC @ S = 0.020
INV @ BLDG = 13.00
(COORD W/ BLDG DWGS)

123 LF 8" PVC @ S=0.005

PSMH 02
RIM=17.95
INV IN=12.90 S
INV IN=12.90 W
INV OUT=12.80 N

PROPOSED FIRE HYDRANT

8 LF 6" PVC @ S=0.004

PSMH 05
RIM=17.50
INV IN=12.30 NE
INV IN=12.30 NW
INV OUT=12.20 SE

PSMH 04
RIM=17.30
INV IN=12.10 NE
INV IN=12.10 NW
INV OUT=12.05 SW

170 LF 8" PVC @ S=0.005

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 8" PVC @ ELEV=11.00

PROPOSED ELECTRIC & TELECOMMUNICATIONS SERVICE (COORD W/ BLDG DWGS & UTILITY COMPANIES)

PROPOSED TRANSFORMER (COORD W/ EVERSOURCE)

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 ELECTRIC MANHOLE (SEE UTILITY NOTE #25 & 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)

PSMH 07
RIM=19.60
INV IN=13.80 S
INV OUT=13.70 W

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)

PSMH 08
RIM=23.00
INV OUT=14.25

94 LF 8" PVC @ S=0.005

CONNECT TO EXISTING WATER STUB (SEE UTILITY NOTE #25)

MATCH LINE SHEET 1

MATCH LINE SHEET 2

STREET A

STREET B

CROSS STREET

SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
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12-16-21

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DSGN.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PHASE 1
UTILITY PLAN

SCALE: AS SHOWN

C-204.2

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DETAILS PLAN SET

JULY 26, 2021

LAST REVISED DECEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	12/16/2021
C-501	EROSION CONTROL NOTES & DETAILS SHEET	12/16/2021
C-502	DETAILS SHEET	12/16/2021
C-503	DETAILS SHEET	12/16/2021
C-504	DETAILS SHEET	12/16/2021
C-505	DETAILS SHEET	12/16/2021
C-506	DETAILS SHEET	12/16/2021
C-507	DETAILS SHEET	12/16/2021
C-508	DETAILS SHEET	12/16/2021





COMPLETE SET 9 SHEETS

Last Save Date: December 14, 2021 5:55 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: Chris Krzciuk
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-CS.dwg Layout Tab: DETAILS PLANS CS

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

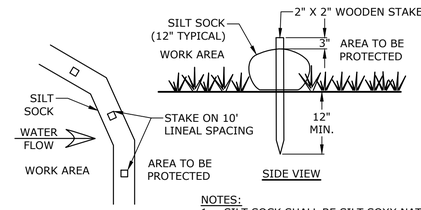
THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE [CONTRACTOR]. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:

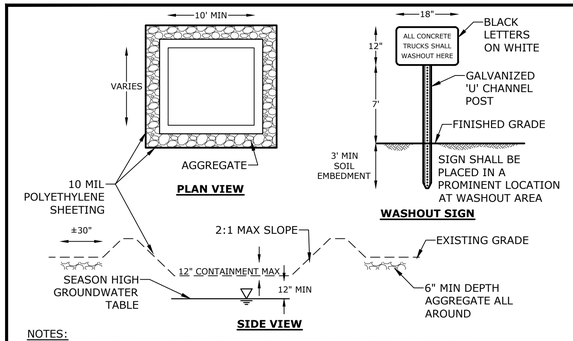
1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE [CONTRACTOR] AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, THE CONTRACTOR, AND THE CITY 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.

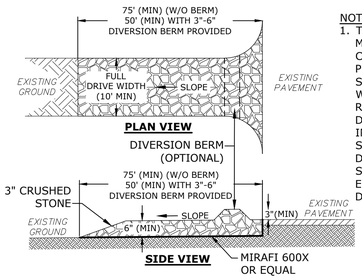


NOTES:
1. SILT SOCK SHALL BE SILT SOXX NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER



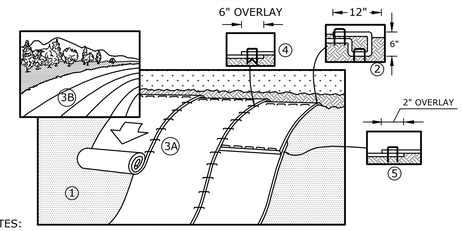
NOTES:
1. CONTAINMENT SHALL BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT SHALL BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 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

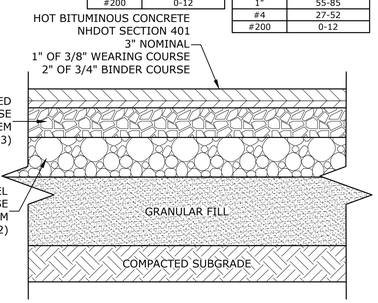


NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL. THE LENGTH OF STAKES SHALL BE BASED OFF OF THE MANUFACTURERS 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



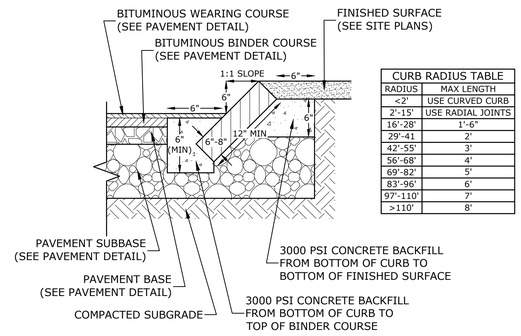
NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

TYPICAL PAVEMENT SECTION
NO SCALE

Tighe&Bond



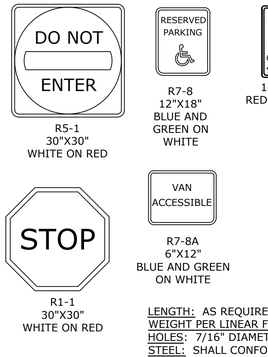




CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

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

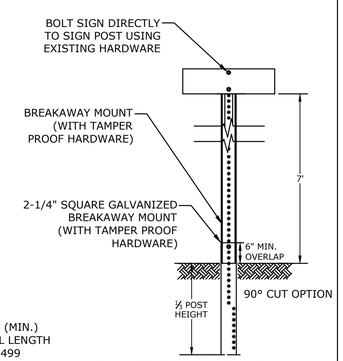
R7-8
12"X18"
BLUE AND GREEN ON WHITE



12" X 18"
RED ON WHITE

R1-1
30"X30"
WHITE ON RED

R7-8A
6"X12"
BLUE AND GREEN ON WHITE

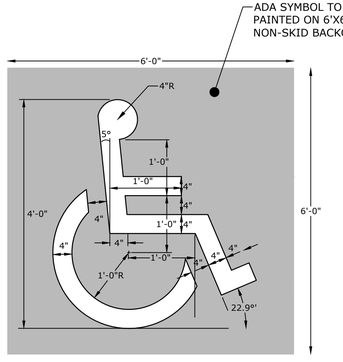


LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 7/16" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: STREET SIGNS - GALVANIZED STEEL ALL OTHER - SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

* IN LEDGE DRILL & GROUT TO A MIN OF 2'

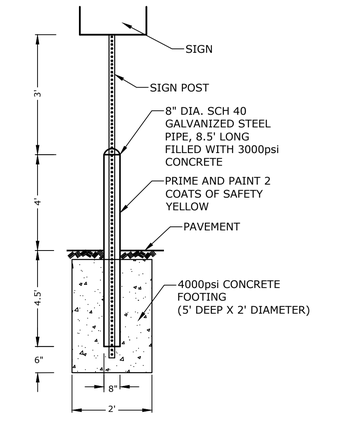
NOTES:
ALL SIGNS TO BE CONSTRUCTED PER THE LATEST EDITION OF THE FHWA STANDARD HIGHWAY SIGNS MANUAL AND INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

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

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

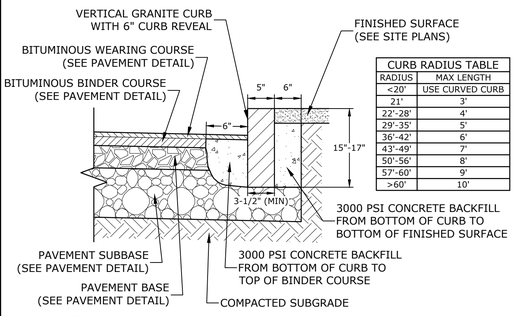
MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

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

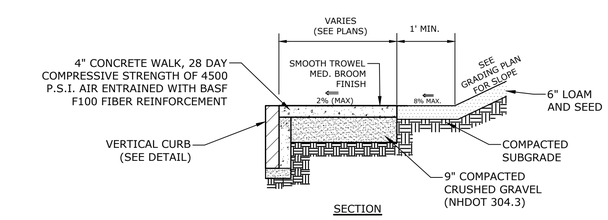
C-502

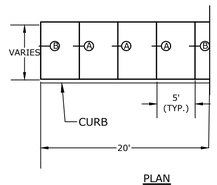


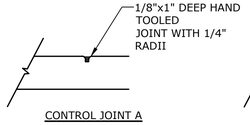
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

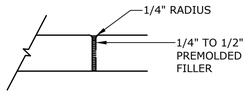
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE 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.

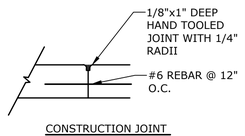
VERTICAL GRANITE CURB
NO SCALE





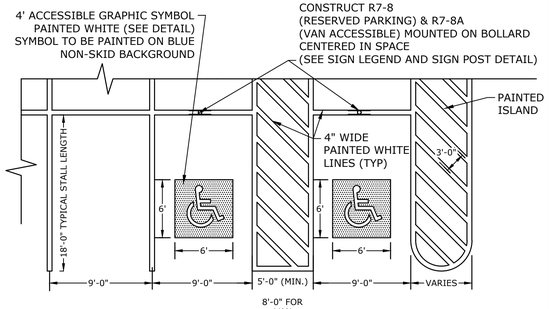






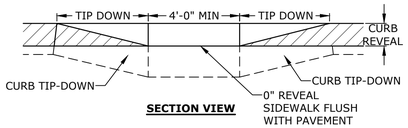
NOTES:
1. SIDEWALK SHALL BE CONSTRUCTED TO CITY OF DOVER STANDARDS

CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE

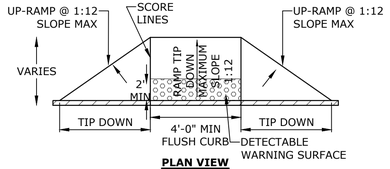


NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

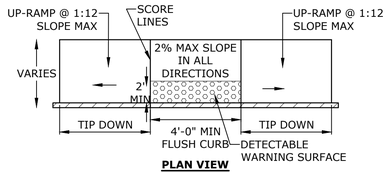
PARKING STALL/PAINTED ISLAND STRIPING
NO SCALE



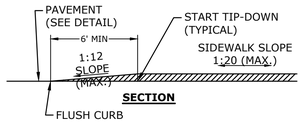
SECTION VIEW



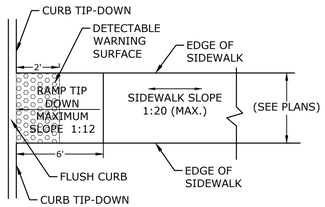
PLAN VIEW



PLAN VIEW



SECTION

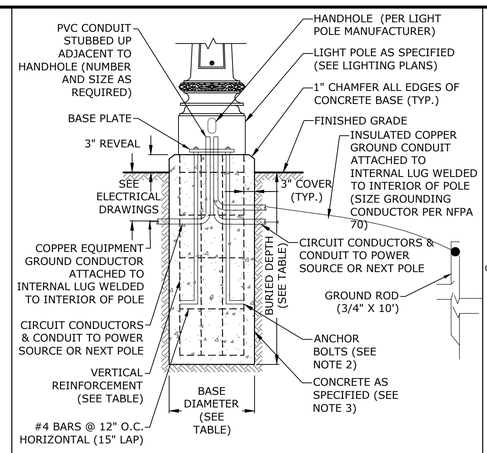


PLAN

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

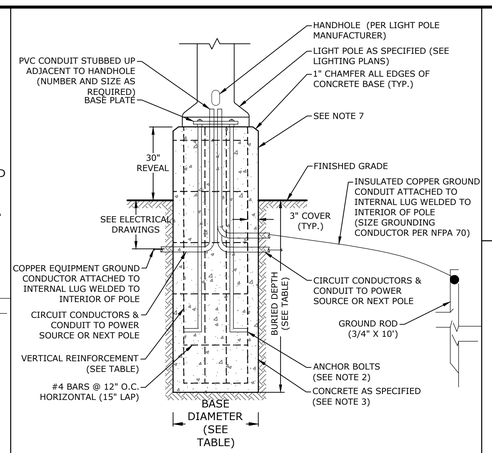


POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT	VERTICAL REINFORCEMENT LENGTH
16'>	72"	18"	6 - #6	5'-9"
16'<	72" (MIN.)	24"	6 - #8	5'-9"

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

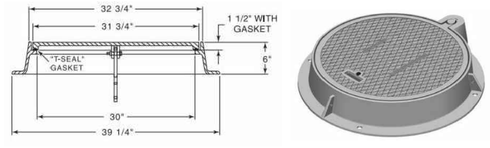


POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT	VERTICAL REINFORCEMENT LENGTH
16'>	72"	18"	6 - #6	5'-9"
16'<	72" (MIN.)	24"	6 - #8	5'-9"

NOTES:
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. 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

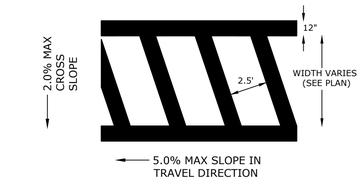
NO SCALE



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.

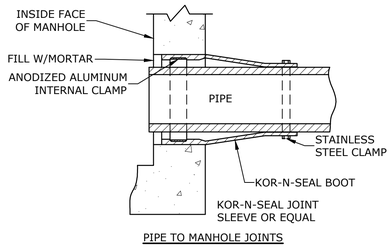
CITY OF DOVER MANHOLE FRAME & COVERS

NO SCALE

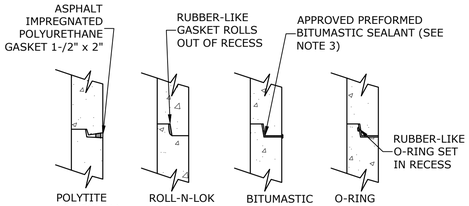


DOVER TYPICAL CROSSWALK STRIPING

NO SCALE



PIPE TO MANHOLE JOINTS

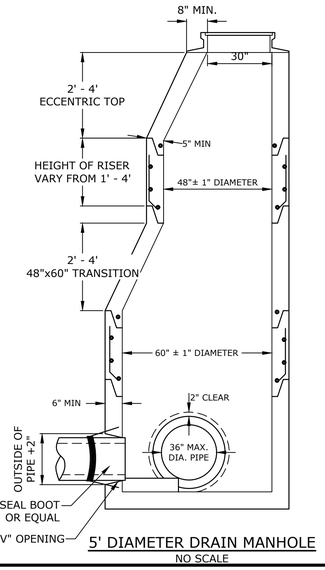


HORIZONTAL JOINTS

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.

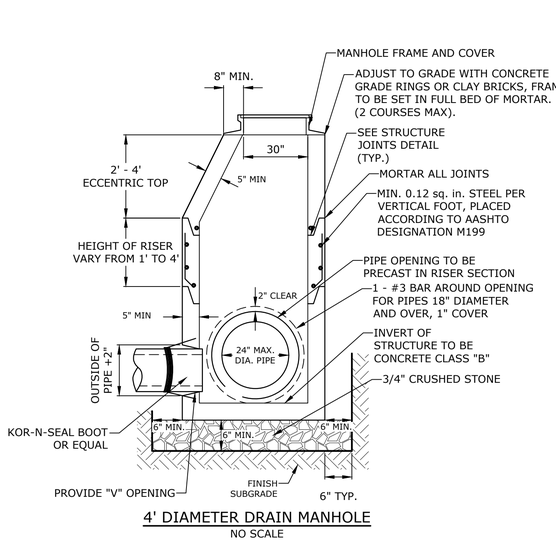
MANHOLE JOINTS

NO SCALE



5' DIAMETER DRAIN MANHOLE

NO SCALE



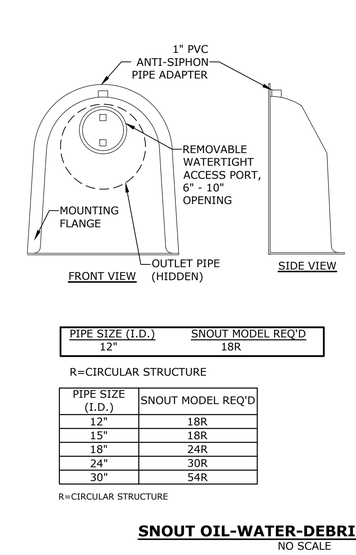
4' DIAMETER DRAIN MANHOLE

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"

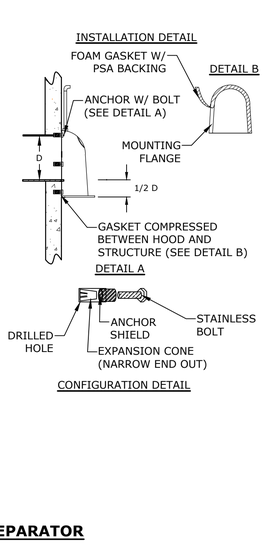


PIPE SIZE (I.D.)	SNOUT MODEL REQ'D
12"	18R

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 — 12-16-21

STATE OF NEW HAMPSHIRE — PATRICK H. CRIMMINS No. 12376 LICENSED PROFESSIONAL ENGINEER — 12-16-21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

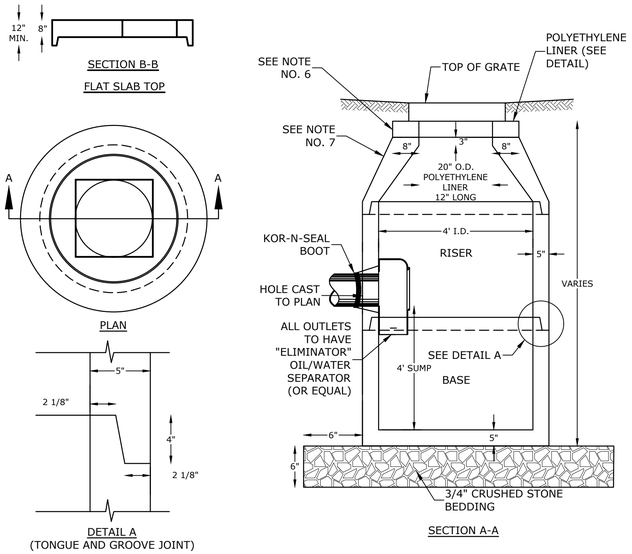
MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

DETAILS SHEET

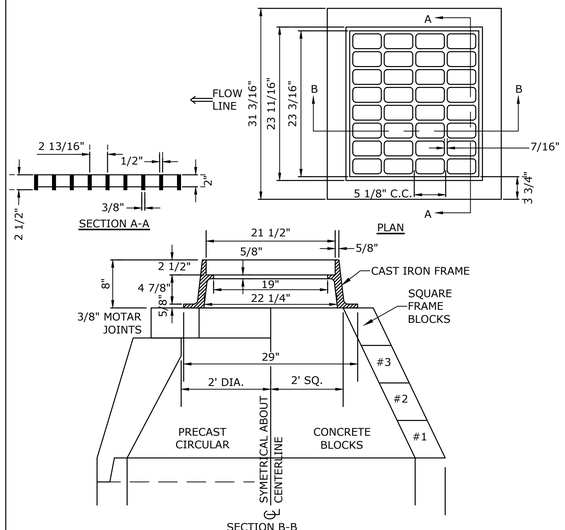
SCALE: AS SHOWN

C-503



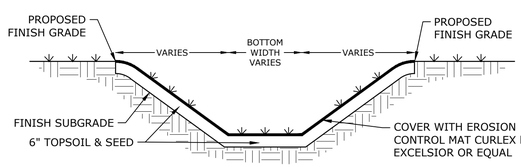
NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 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



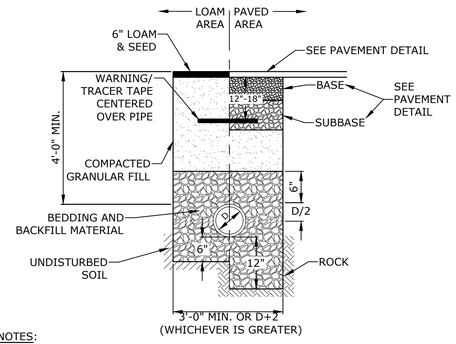
NOTES:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



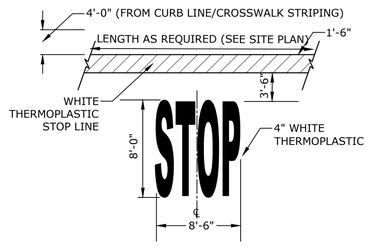
NOTES:
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR 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



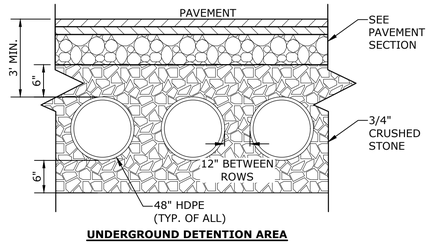
NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES 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

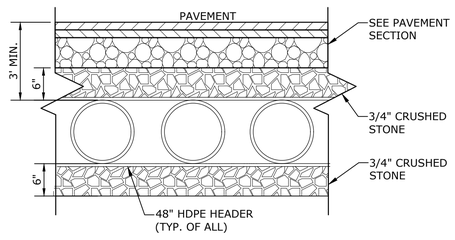


NOTES:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR AND LEGEND
NO SCALE



UNDERGROUND DETENTION AREA

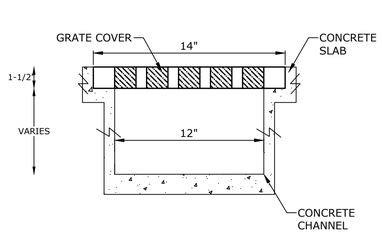


HEADER ROW

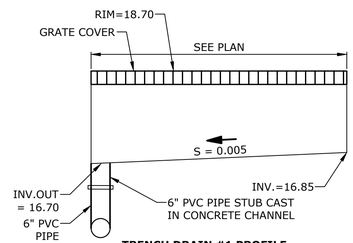
FIELD ELEVATIONS						
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV	NUMBER OF 48" DIAM PIPES	LINEAR FEET OF 48" DIAM PIPES
UDB 1	21.50'	21.00'	17.00'	16.50'	32	635'
UDB 2	16.50'	16.00'	12.00'	11.50'	56	1,108'

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.

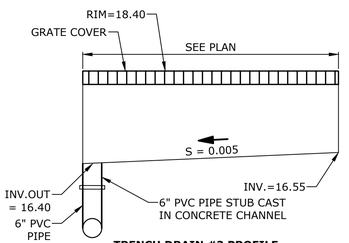
UNDERGROUND DETENTION SYSYTEM DETAIL
NO SCALE



TYPICAL SECTION



TRENCH DRAIN #1 PROFILE



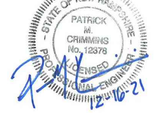
TRENCH DRAIN #2 PROFILE

NOTES:
1. TRENCH DRAIN FRAME AND GRATE SHALL BE MULTIDRAIN ECONODRAIN SERIES #12 OR EQUAL.

TRENCH DRAIN DETAIL
NO SCALE

Tighe&Bond





Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

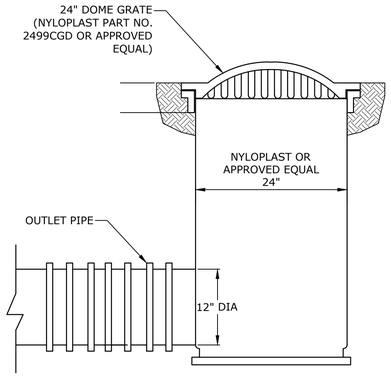
MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

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

DETAILS SHEET

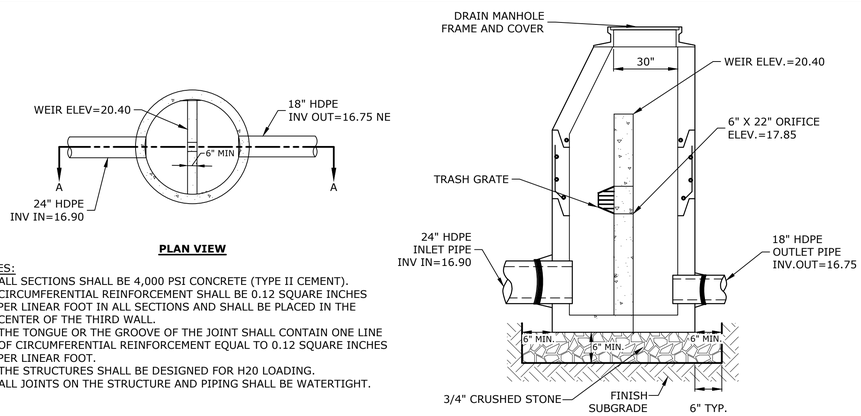
SCALE: AS SHOWN

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.

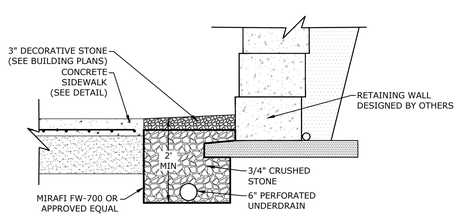
PROPOSED YARD DRAIN
NO SCALE



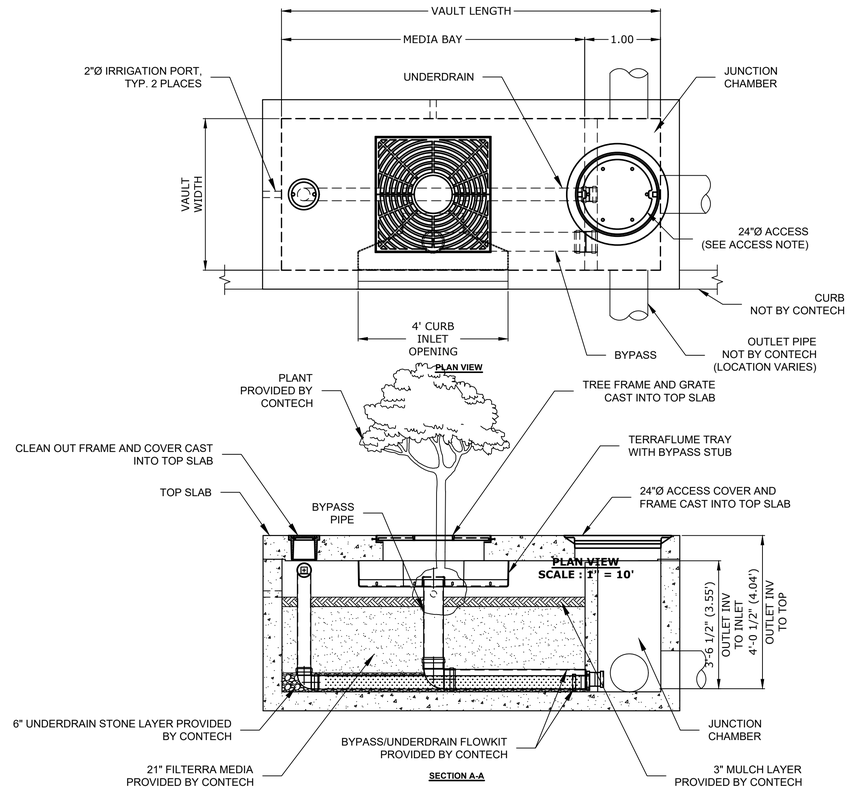
PLAN VIEW

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



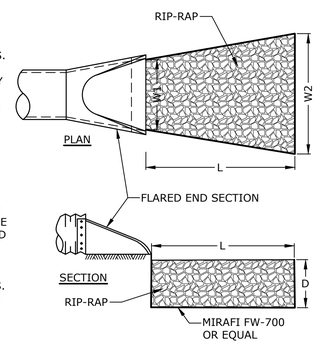
FTIBC LONG SIDE CURB INLET							
DESIGNATION	TREE BOX FILTER NUMBER	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0806-C	1	8' X 6'	10' X 6'	10" SDR 35	2.37	4" SDR 35	(1) 4' X 4'

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

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FILTERRA INTERNAL BYPASS CURB WITH CHAMBER
NO SCALE

NOTES:
1. STONE SIZE AND MAT DIMENSIONS DETAILED ON PLANS.
2. STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.
3. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D50 SIZE.



RIP RAP APRON DIMENSIONS					
DESIGNATION	W_1	W_2	L	D	D_{50}
RIP RAP APRON 1	5'	20'	15'	18"	6"

RIP-RAP APRON DETAIL
NO SCALE

Tighe&Bond





Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

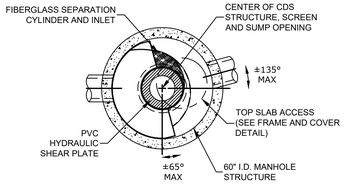
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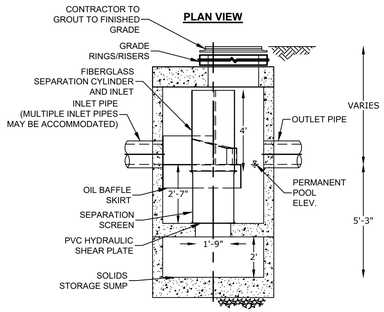
DETAILS SHEET

SCALE: AS SHOWN

C-505

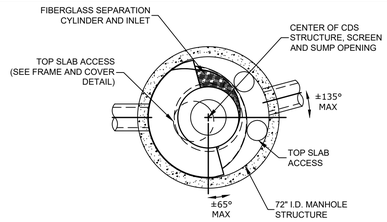


PLAN VIEW

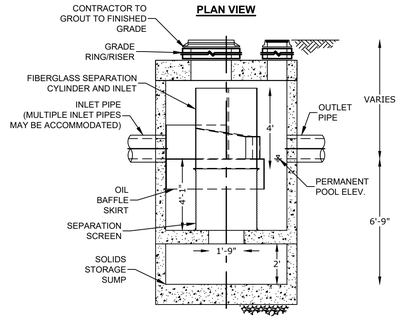


ELEVATION VIEW

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)	8.67	8.45
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.

CDS

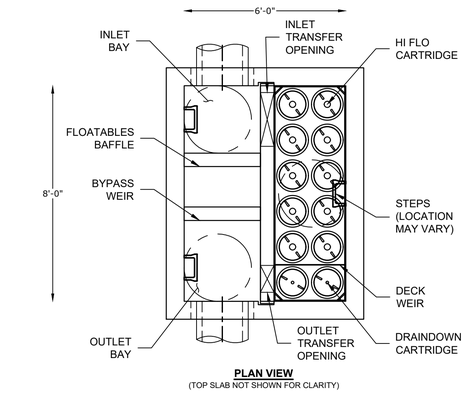
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,849; 6,641,720; 6,511,595; 6,581,783; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

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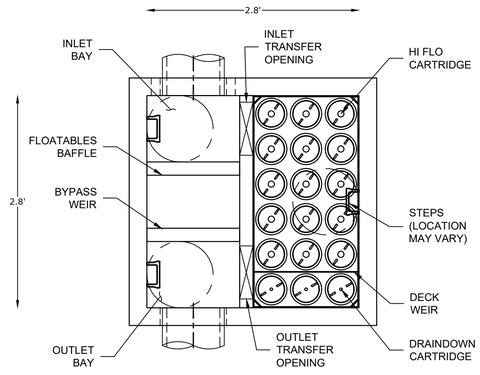
Tighe&Bond



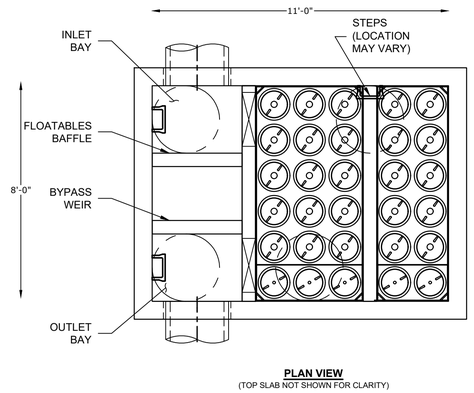




PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

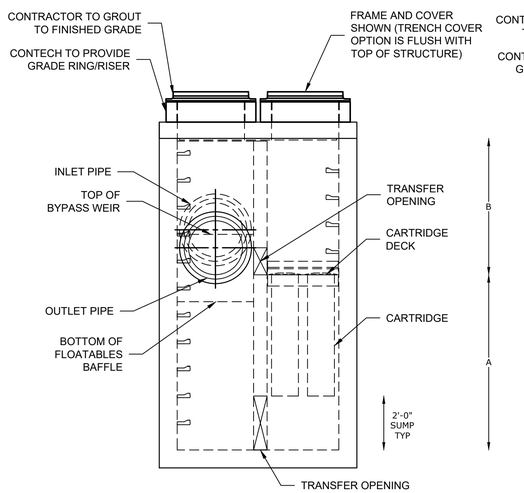


PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

JELLYFISH 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

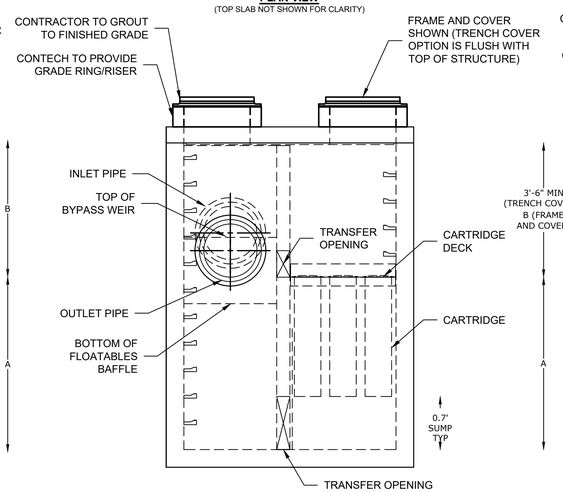
JELLYFISH JFPD0808 - DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED 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)	2.94	2.21	1.47	0.81
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 JFPD0806

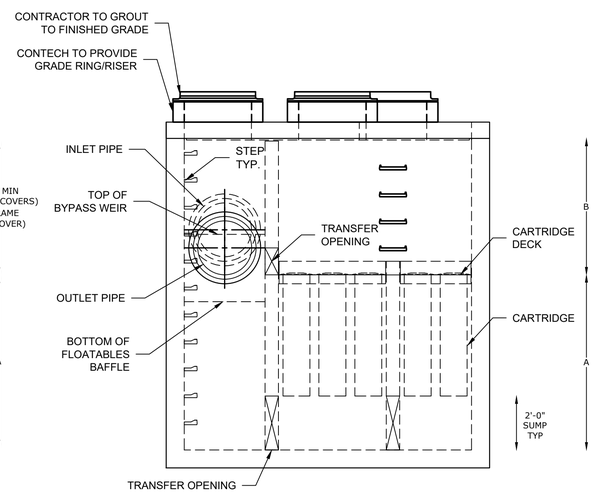


ELEVATION VIEW

JELLYFISH JFPD0808

CONTECH JELLYFISH STORMWATER FILTER

NO SCALE



ELEVATION VIEW

JELLYFISH JFPD0806



SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID	JF-1	JF-2	JF-3
MODEL SIZE	JFPD0806	JFPD0811	JFPD0806
WATER QUALITY FLOW RATE (cfs)	2.76	3.21	1.43
PEAK FLOW RATE (cfs)	5.06	8.67	8.45
RETURN PERIOD OF PEAK FLOW (yrs)	25	25	25
# OF CARTRIDGES REQUIRED (HF / DD)	14/3	16/4	7/2
CARTRIDGE SIZE	54"	54"	54"

GENERAL NOTES:

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE www.ContechES.com.
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.

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

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

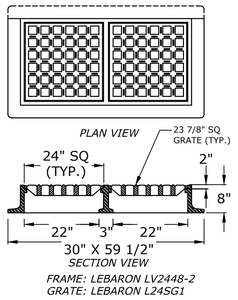
MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

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-506

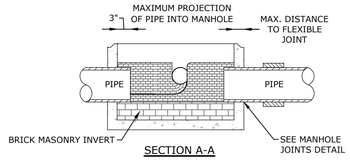


FRAME: LEBARON LV2448-2
GRATE: LEBARON L24SG1

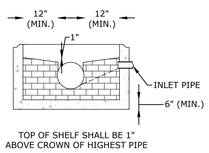
AT DOUBLE CATCH BASINS

NOTES:
1. FRAME AND GRATES SHALL BE LEBARON OR APPROVED EQUAL.
2. MATERIAL SHALL BE CLASS 30B GRAY IRON AND SHALL COMPLY WITH ALTEST ASTM A48.
3. FRAME AND GRATES SHALL BE HEAVY DUTY AND RATED FOR H-20 LOADING.
4. 3 FLANGE FRAMES TO BE USED WITH CURB INLET.

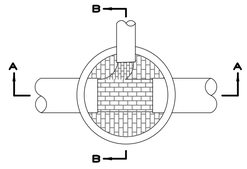
DOUBLE CATCHBASIN FRAME & GRATE
NO SCALE



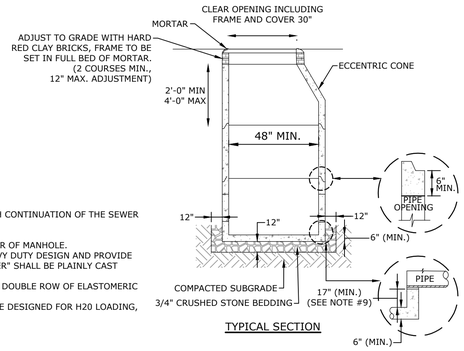
SECTION A-A



SECTION B-B



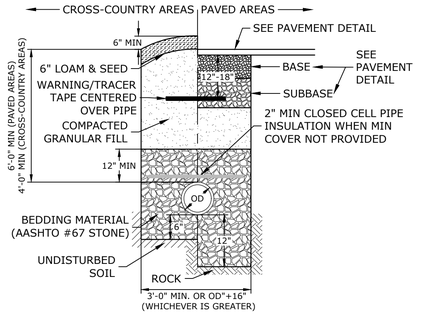
PLAN



TYPICAL SECTION

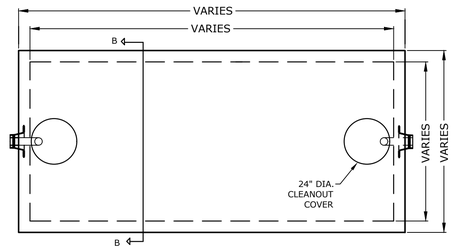
NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. BITUMINOUS WATERPROOF COATING TO BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS 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 PROVIDE STEPS.

SEWER MANHOLE
NO SCALE

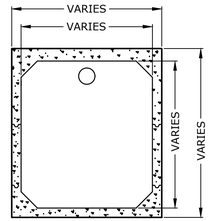


NOTES:
1. BEDDING MATERIAL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP 12" ABOVE THE PIPE.
2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF DOVER.

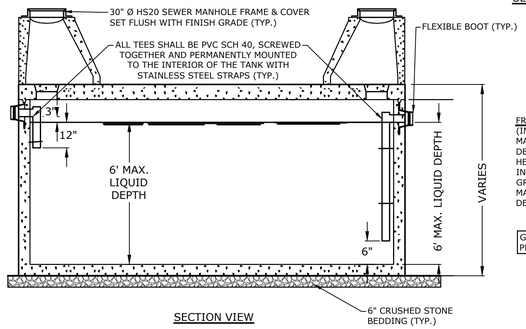
SEWER TRENCH
NO SCALE



PLAN VIEW



SECTION B-B

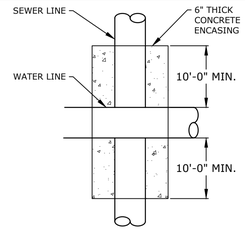


SECTION VIEW

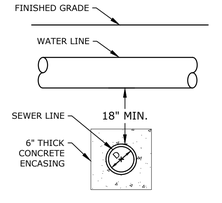
FRAMES AND COVERS
(INCLUDING RAISED INSPECTION COVERS)
MANHOLE FRAME AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30" CLEAR OPENING. A 3" (MINIMUM HEIGHT) LETTER "S" FOR SEWERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. ADJUST COVER TO GRADE WITH BRICKS OR PRECAST CONCRETE RINGS - 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



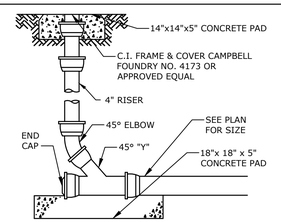
PLAN VIEW



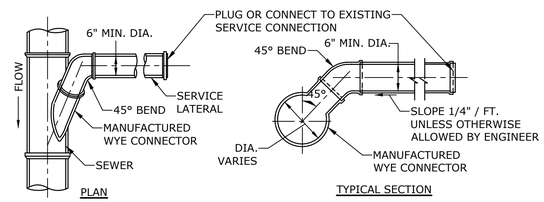
PROFILE VIEW

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

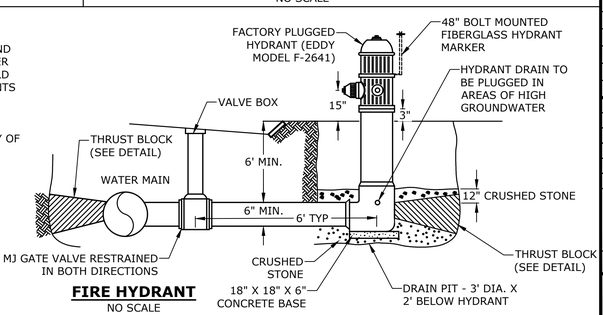


PLAN

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

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
12-16-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12376
LICENSED
PROFESSIONAL ENGINEER
12-16-21

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

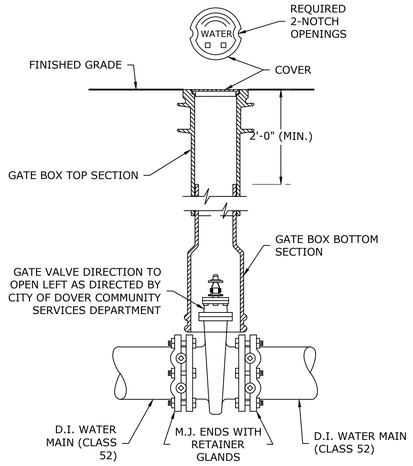
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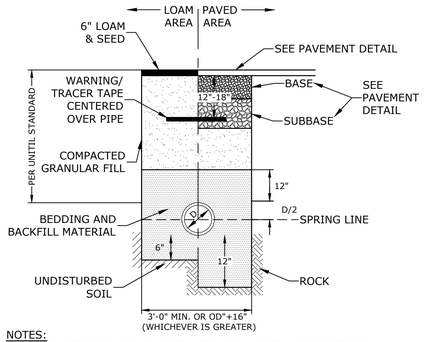
DETAILS SHEET

SCALE: AS SHOWN

C-507

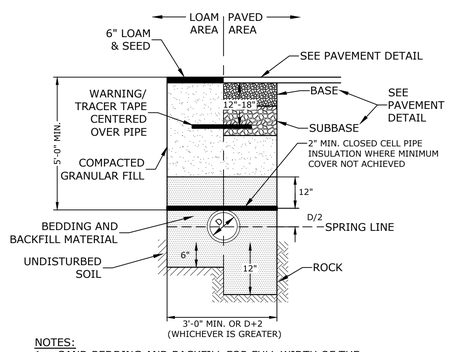


WATER GATE VALVE
NO SCALE



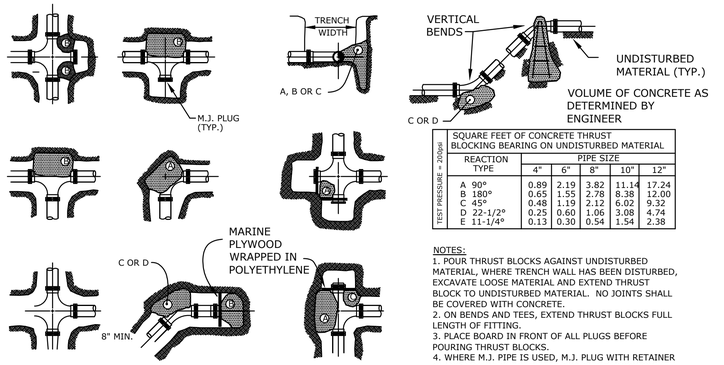
NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF DOVER.

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

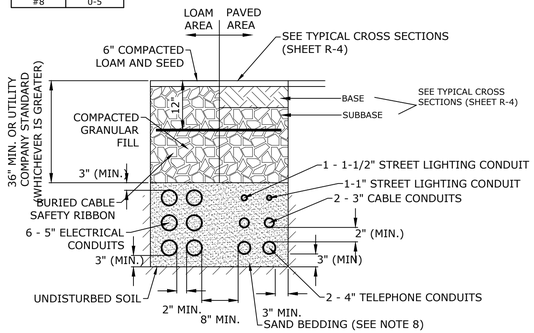
NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT 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

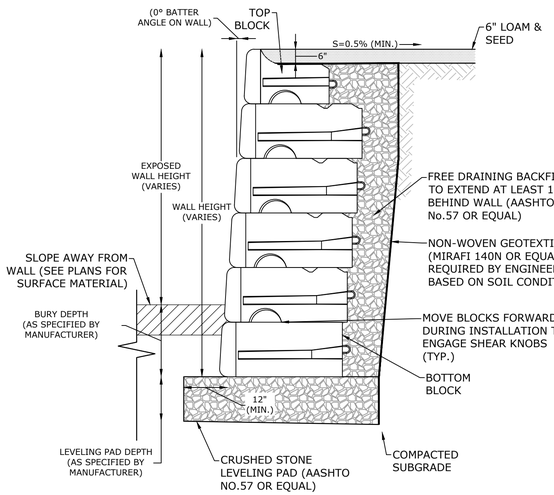
GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BLANKET	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX



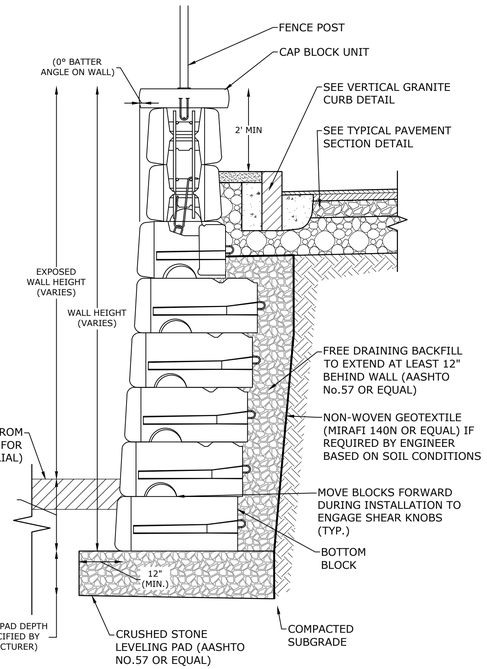
NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY 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.

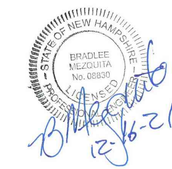
TYPICAL BLOCK RETAINING WALL SECTION
NO SCALE



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 W/ COPING EXTENSION
NO SCALE

Tighe&Bond





Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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 DECEMBER 16, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	12/16/2021
L-100	PLANT SCHEDULE AND NOTES	12/16/2021
L-101	LANDSCAPE PLAN - OVERALL SITE	12/16/2021
L-102	LANDSCAPE PLAN	12/16/2021
L-103	LANDSCAPE PLAN	12/16/2021
L-104	LANDSCAPE PLAN	12/16/2021
L-105	LANDSCAPE PLAN	12/16/2021
L-106	LANDSCAPE PLAN	12/16/2021
L-107	LANDSCAPE PLAN	12/16/2021

COMPLETE SET 9 SHEETS

Last Save Date: December 14, 2021 5:55 PM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 Plotted By: CKRZCIUK Krzcuik
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	8	*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	18	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	17	*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	8	*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
	141					
EVERGREEN TREES						
CH OB	12	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	29	*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	9	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	27	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitate	10-12' ht, B&B	As Shown	Container, Matched
TH NI	10	*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
	99					

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	24	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	61	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	55	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	50	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	62	*Cornus alba "Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	11	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	150	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	169	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	167	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	39	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	128	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	75	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	36	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	155	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	31	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	239	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	30	*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	32	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	43	*Viburnum judtii*	Judd Viburnum	#5	48" O.C.	30-36" ht
	565					
EVERGREEN SHRUBS						
Ix Ge	167	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	135	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	35	*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	105	*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	63	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	52	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	56	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A
	427					

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIAL PALETTE						
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 COVER PALETTE						
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



Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Print Date: Thursday, December 16, 2021 Plotted By: JOUELLETTE
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-100

COCHECHO RIVER

WASHINGTON STREET

COCHECHO RIVER

PROPOSED WATERFRONT PARK

PUMP STATION

PROPOSED BLDG. A

PROPOSED BLDG. C

PROPOSED BLDG. D

DRAWING L-102

DRAWING L-104

DRAWING L-105

DRAWING L-106

BLDG. B

BLDG. E

BLDG. E

BLDG. F

BLDG. E

DRAWING L-103

DRAWING L-107

OVERALL PLAN - DRAWING SHEET LAYOUT - SCALE 1:50

0' 25' 50' 100' 200'

Tighe&Bond

ROBERT UHLIG — LICENSED LANDSCAPE ARCHITECT — 142 — STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

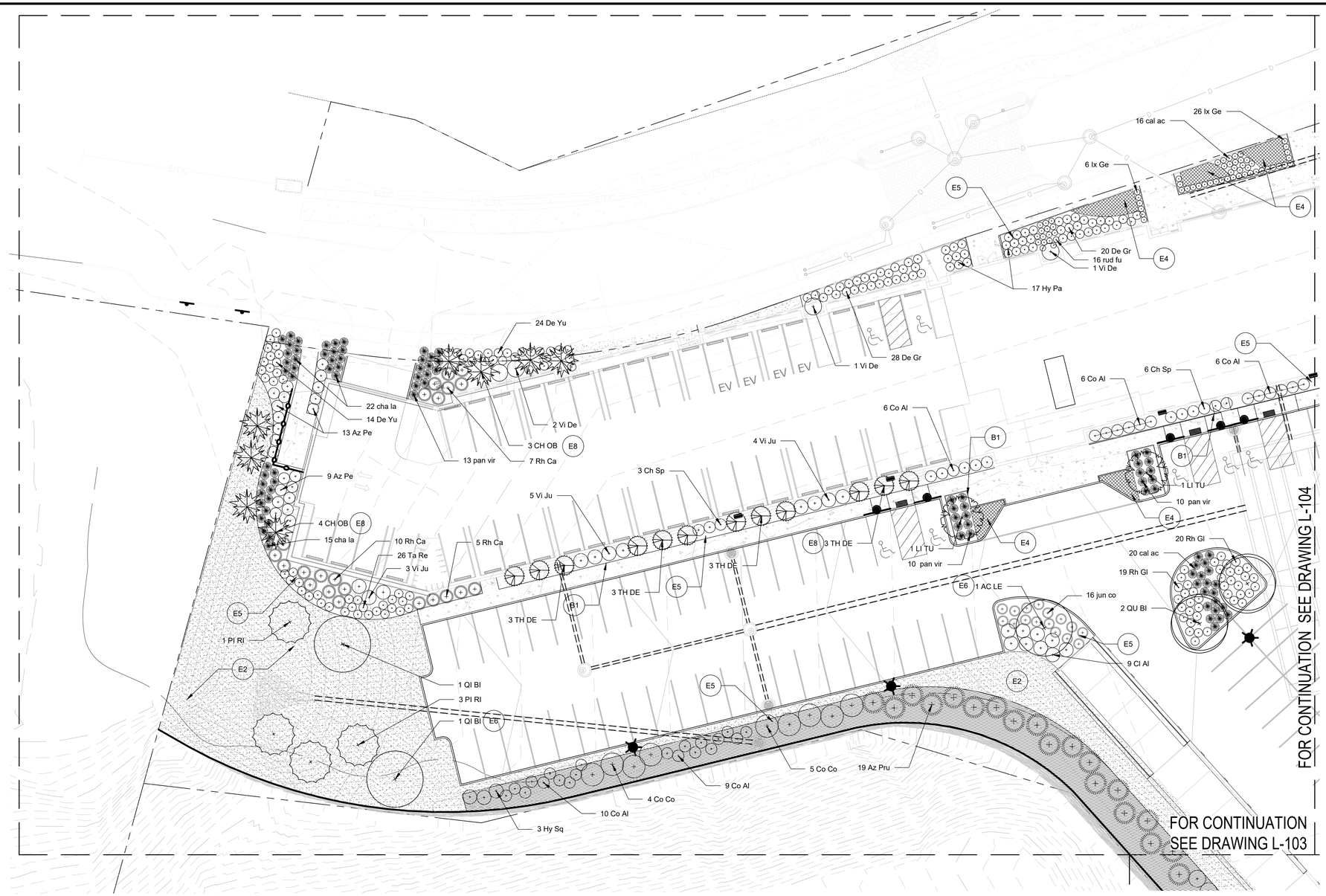
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN - OVERALL SITE

SCALE: AS SHOWN

L-101

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 Plotted By: Jon Ouellette
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-101



PLANTING PLAN - SCALE 1:20

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 Plotted By: Joe Ouellette
T&B File Location: I:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-102

Tighe&Bond

LICENSED LANDSCAPE ARCHITECT
ROBERT UHLIG
142
STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

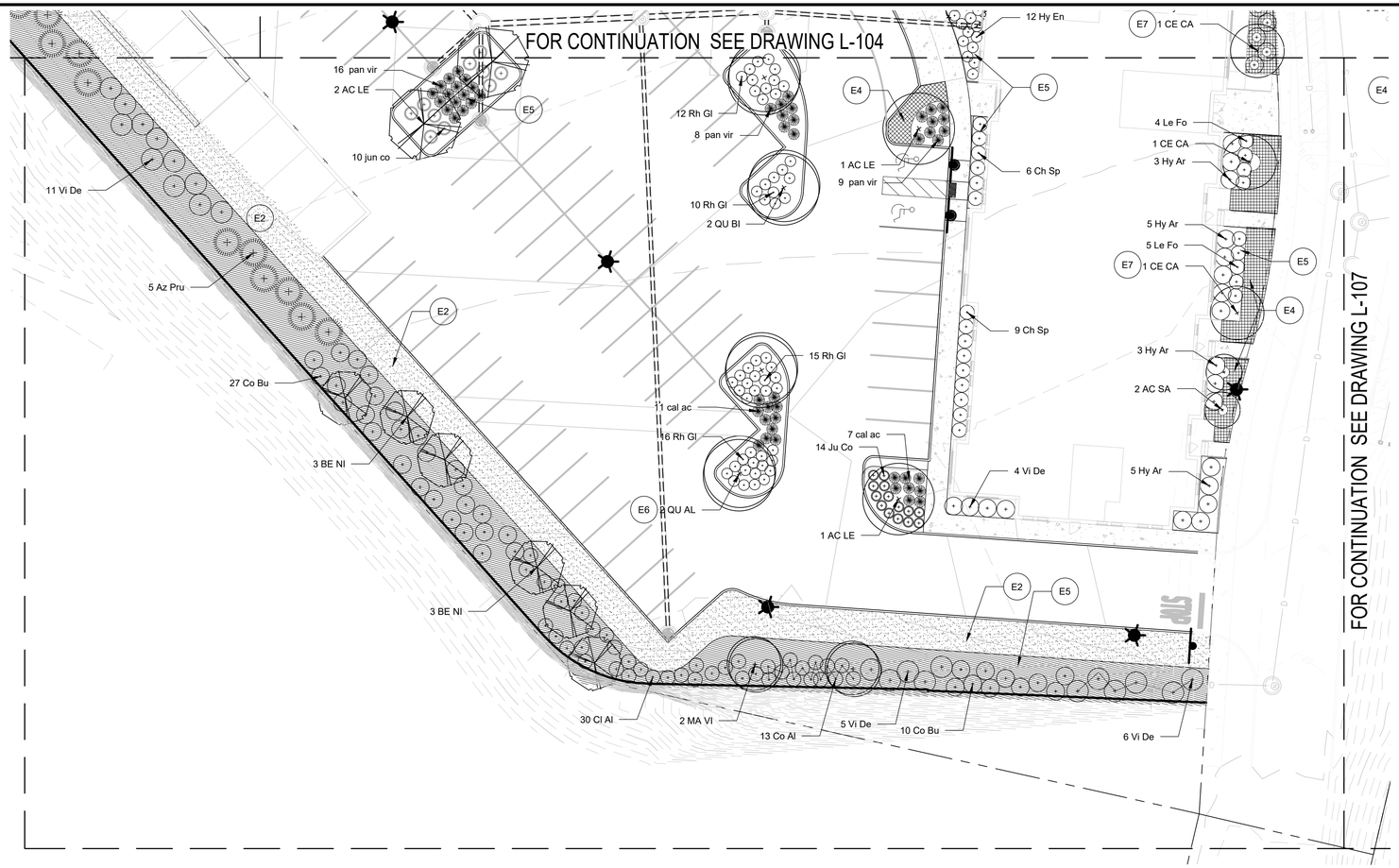
MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

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-102



PLANTING PLAN - SCALE 1:20

PLANTING SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	8	*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	18	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	17	*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	8	*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
	141					
EVERGREEN TREES						
CH OB	12	*Chamaecyparis obtusa 'Crippsii'*	Crippsii Hinoki Falsecypress	10-12' ht	As Shown	Single stem, B&B
JU VI	29	*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	9	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	27	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH NI	10	*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
	99					

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	24	*Azalea prunifolium*	Plum Leaf Azalea	#5	8' O.C.	30-36" ht
Ch Sp	61	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	55	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	50	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	62	*Cornus alba 'Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	11	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	150	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	169	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	167	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	39	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	128	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	75	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	36	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	155	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	31	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	239	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	30	*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	32	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	43	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
	565					
EVERGREEN SHRUBS						
Ix Ge	167	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	135	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	35	*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	105	*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	63	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	52	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	56	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A
	427					

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIAL PALETTE						
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 COVER PALETTE						
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 ca	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

LICENSED LANDSCAPE ARCHITECT
ROBERT UHLIG
142
STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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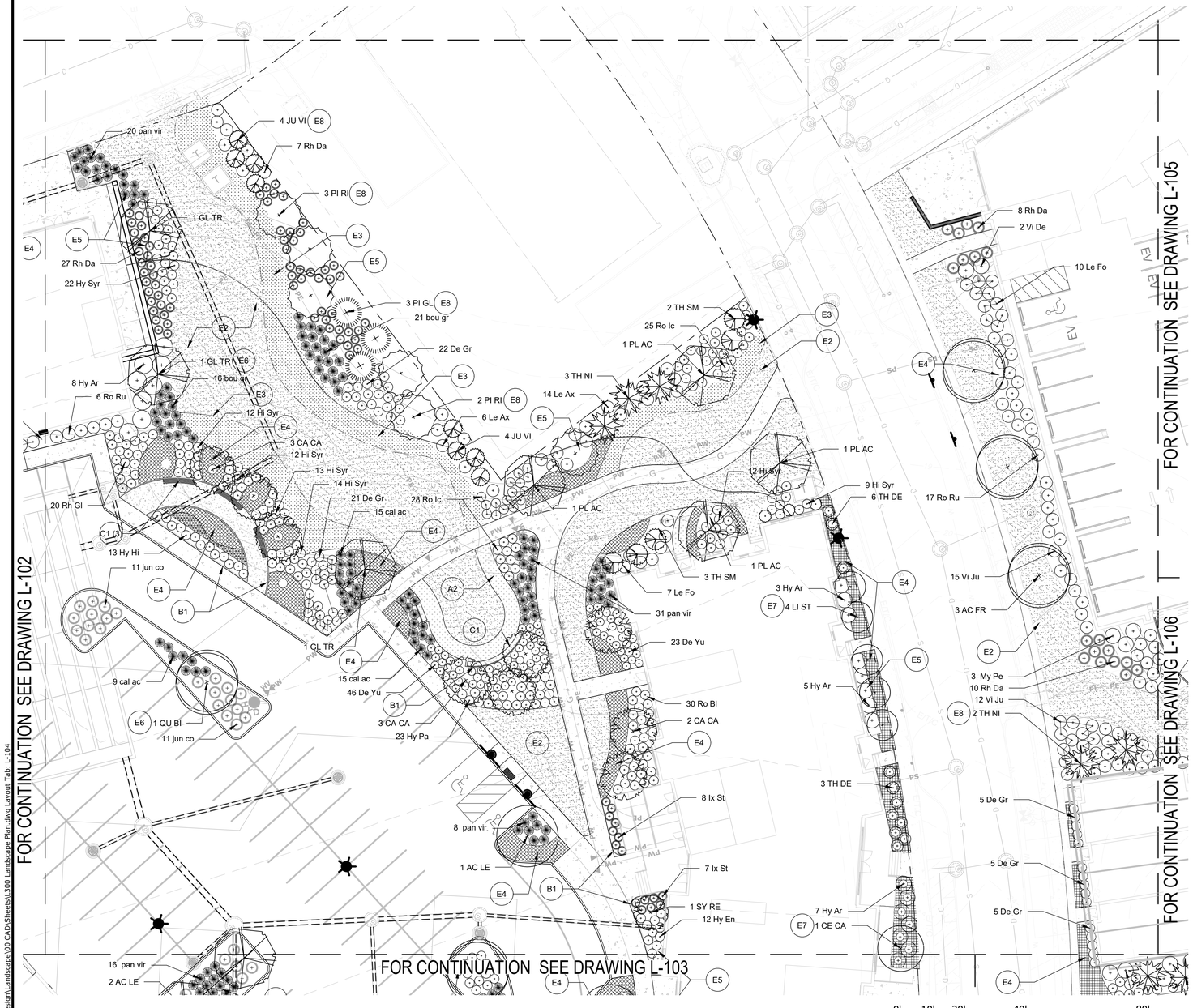
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-103

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 12:11 PM By: JOUELLETTE
T&B File Location: J:\CC\0960 Cathartes\C-0960-007 Cochecho Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-103



PLANTING PLAN - SCALE 1:20

PLANT SCHEDULE

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
DECIDUOUS TREES						
AC SA	8	*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
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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	18	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	17	*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	8	*Quercus bicolor*	Swamp White Oak	3" Caliper, B&B	As Shown	Single stem, matched
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	141					
EVERGREEN TREES						
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JU VI	29	*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	9	*Pinus rigida*	Pitch Pine	8-10'	As Shown	B&B
TH DE	27	*Thuja occidentalis 'Degroot's Spire'*	DeGroot's Spire Arborvitae	10-12' ht, B&B	As Shown	Container, Matched
TH NI	10	*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
	99					

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
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Ch Sp	61	*Chaenomeles speciosa 'Texas Scarlet'*	Texas Scarlet Quince	#5	48" O.C.	24" ht.
Cl Al	55	*Clethra alnifolia 'Sixteen Candles'*	Sixteen Candles Summersweet	#5	30" O.C.	18-24" ht
Co Al	50	*Cornus alba 'Neon Burst'*	Neon Burst Dogwood	#5	48" O.C.	30-36" ht
Co Bu	62	*Cornus alba "Bud's Yellow'*	Bud's Yellow Dogwood	#5	60" O.C.	24-36" ht
Co Co	11	*Cotinus coggygria 'Royal Purple'*	Royal Purple Smokebush	#5	10' O.C.	3-4' ht
De Gr	150	*Deutzia gracilis*	Slender Deutzia	#5	36" O.C.	3-4' ht
De Yu	169	*Deutzia x 'Yuki Cherry Blossom'*	Yuki Cherry Blossom Deutzia	#5	30" O.C.	24" ht.
Hi Syr	167	*Hibiscus syriacus 'Lil' Kim Red'*	Lil Kim Dwarf Hibiscus	#5	36" O.C.	3-4' ht
Hy Ar	39	*Hydrangea arborescens 'Annabelle'*	Annabelle Smooth Hydrangea	#5	60" O.C.	3-4' ht
Hy En	128	*Hydrangea Endless Summer 'Blushing Bride'*	Blushing Bride Hydrangea	#5	36" O.C.	30-36" ht
Hy Pa	75	*Hydrangea paniculata 'Little Quick Fire'*	Little Quick Fire Panicle Hydrangea	#5	36" O.C.	30-36" ht
Hy Sq	36	*Hydrangea quercifolia 'Snow Queen'*	Snow Queen Oakleaf Hydrangea	#5	60" O.C.	30-36" ht
Hy Hi	155	*Hypericum 'Hidcote'*	St. John's Wort	#5	36" O.C.	18-24" ht
My Pe	31	*Myrica pensylvanica*	Northern Bayberry	#5	6' O.C.	24-36" ht Container
Rh Gl	239	*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	#5	36" O.C.	24-30" ht
Ro Bl	30	*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	32	*Viburnum dentatum 'Blue Muffin'*	Blue Muffin Arrowwood Viburnum	#5	60" O.C.	24-36" ht Container
Vi Ju	43	*Viburnum juddii*	Judd Viburnum	#5	48" O.C.	30-36" ht
	565					
EVERGREEN SHRUBS						
Ix Ge	167	*Ilex glabra 'Gem Box'*	Gem Box Inkberry	#5	24" O.C.	24-30" ht
Ix Sh	135	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#5	36" O.C.	30-36" ht
Ix St	35	*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	105	*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	63	*Rhododendron 'Capistrano'*	Capistrano Rhododendron	#5	5' O.C.	24-30" ht
Rh Da	52	*Rhododendron 'Dora Amateis'*	Dora Amateis Rhododendron	B&B	36" O.C.	30-36" ht, B&B
Ta Re	56	*Taxus bacata 'Repandens'*	Spreading English Yew	#3	36" O.C.	N/A
	427					

Symbol	Qty	Botanical Name	Common Name	Size	Spacing	Notes
PERENNIAL PALETTE						
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 COVER PALETTE						
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

LICENSED LANDSCAPE ARCHITECT ROBERT UHLIG 142 STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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

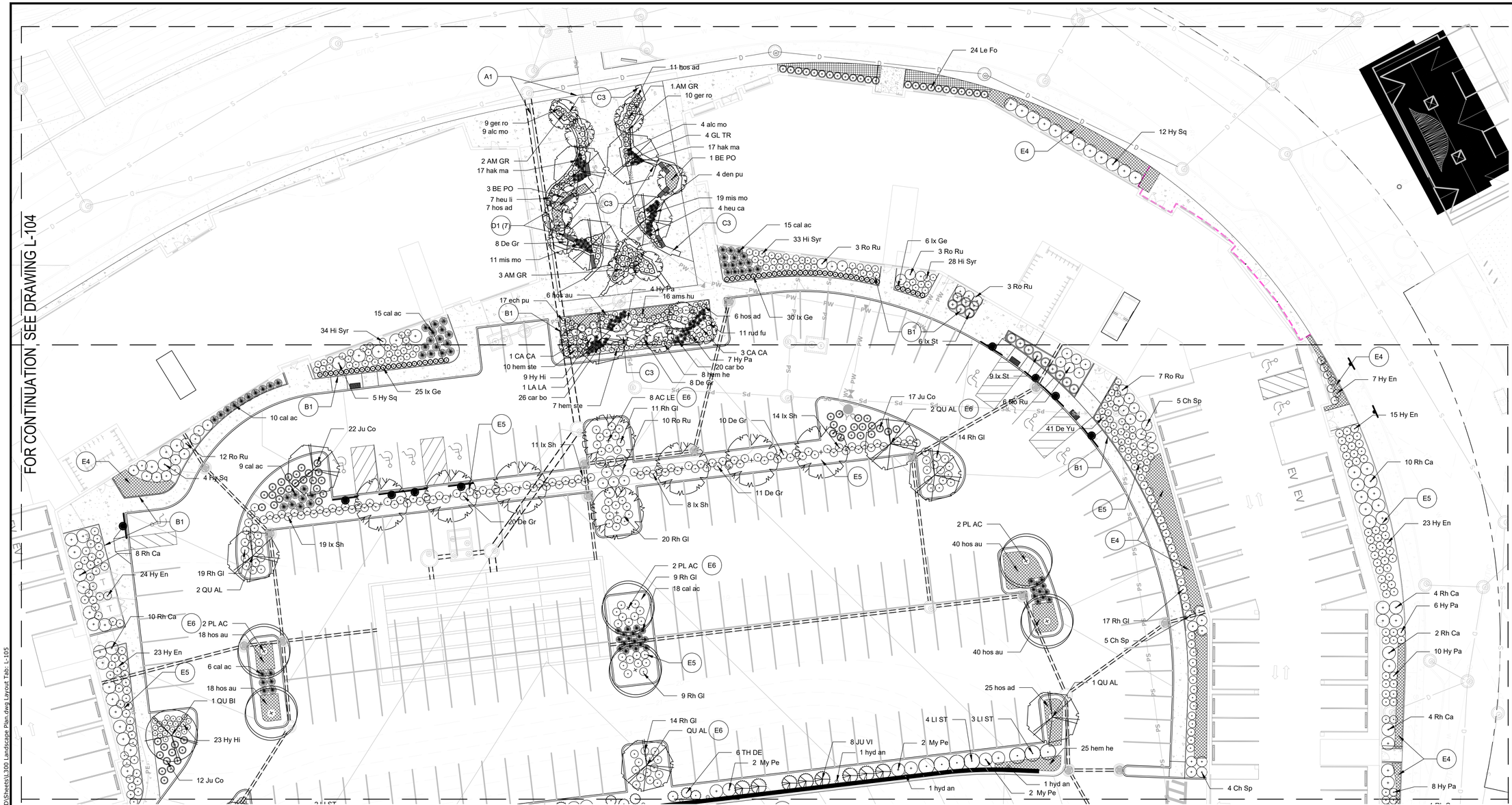
LANDSCAPE PLAN

SCALE: AS SHOWN

L-104

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 8:19 AM By: JOUELLETTE
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-104

FOR CONTINUATION SEE DRAWING L-104



FOR CONTINUATION SEE DRAWING L-106

PLANTING PLAN - SCALE 1:20

0' 10' 20' 40' 80'

Tighe&Bond

LICENSED LANDSCAPE ARCHITECT
ROBERT UHLIG
142
STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

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FILE:	L300 LANDSCAPE PLAN.DWG
DRAWN BY:	JO
CHECKED:	RU
APPROVED:	RU

LANDSCAPE PLAN

SCALE: AS SHOWN

L-105

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date/Time: Thursday, December 16, 2021 Plotted By: JOUELLETTE
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cochecho Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-105

FOR CONTINUATION SEE DRAWING L304

FOR CONTINUATION SEE DRAWING L-107

PLANTING PLAN - SCALE 1:20

0' 10' 20' 40' 80'

Tighe&Bond

ROBERT UHLIG
LICENSED LANDSCAPE ARCHITECT
STATE OF NEW HAMPSHIRE
142

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

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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

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 8:07 AM By: Jon Ouellette
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-106

FOR CONTINUATION SEE DRAWING L-106

FOR CONTINUATION SEE DRAWING L-103

E4 6 Hy Sq 2 TH NI E8 32 Hy Hi

E4 5 Ix Sh 5 De Yu 5 Ix Sh 5 De Yu 5 Ix Sh 5 De Yu 3 Hy Sq 6 De Yu 5 Ix Sh 7 Vi Ju

E8 3 CH OB 2 Co Co

4 Hy Sq 3 Ix Sh

E8 2 CH OB

E2 12 Ta Re

E5 12 Ro Ic

E4 C2

10 hyd an

E7 8 CE CA

E4

18 Ta Re

1 Pl GL

5 Ix St (Typ.)

18 Co Bu

E5

2 AC FR E6

6 AC SA

C2

19 Ro Ru

9 My Pe

2 CA CA

5 Ro Ru

4 My Pe

C2

3 My Pe

E2 1 QU Bl 15 Ro Ru 22 Hy Hi 7 Co Bu

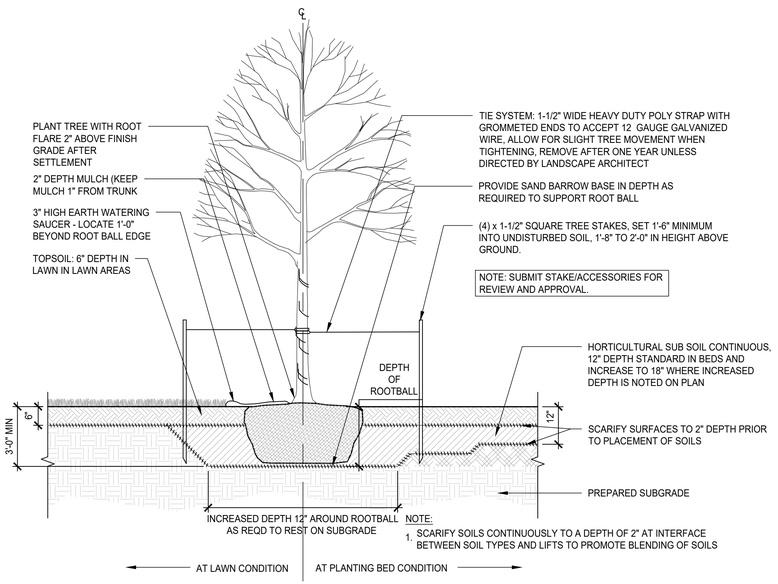
E2 8 Ro Ru 1 QU Bl

E5

E2

0' 10' 20' 40' 80'

PLANTING PLAN - SCALE 1:20



1 TREE PLANTING - IN LAWN OR PLANT BED AT GRADE

Scale: 1/4"=1'-0"

Tighe&Bond

LICENSED LANDSCAPE ARCHITECT ROBERT UHLIG 142 STATE OF NEW HAMPSHIRE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

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Dover, New Hampshire

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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

Last Save Date: December 15, 2021 4:14 PM By: JOUELLETTE
Plot Date: Thursday, December 16, 2021 Plotted By: Jason Ouellette
T&B File Location: J:\C\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Design\Landscape\00 CAD\Sheets\L300 Landscape Plan.dwg Layout Tab: L-107

COCHECHO WATERFRONT

TRC SUBMISSION

DECEMBER 16, 2021



DRAWING LIST	
#	NAME
A000	COVER
A100	SITE PLAN DIAGRAM
A101	SITE LIGHTING DIAGRAM
A111	BUILDING A - GARAGE & 2ND FLOOR PLAN
A112	BUILDING A - TYPICAL UPPPER & 5TH FLOOR PLAN
A113	BUILDING A - ROOF PLAN
A121	BUILDING B - 1ST + 2ND FLOOR PLAN
A122	BUILDING B - TYPICAL UPPER FLOOR + ROOF PLAN
A123	BUILDING B - CARPORT FLOOR PLANS & ELEVATIONS
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 - 4TH FLOOR PLAN
A144	BUILDING D - 5TH FLOOR PLAN

DRAWING LIST	
#	NAME
A145	BUILDING D - ROOF PLAN
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

GENERAL NOTES:

1. BUILDINGS TO COMPLY WITH ALL APPLICABLE ACCESSIBILITY REGULATIONS AND NH RSA 155-A:5
2. SITE PLANS SHOWN FOR REFERENCE AND COORDINATION, REFER TO CIVIL AND LA FOR SITE DETAILS

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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
Dan Tagnan
J
Brown
No. 04331
STATE OF NEW HAMPSHIRE

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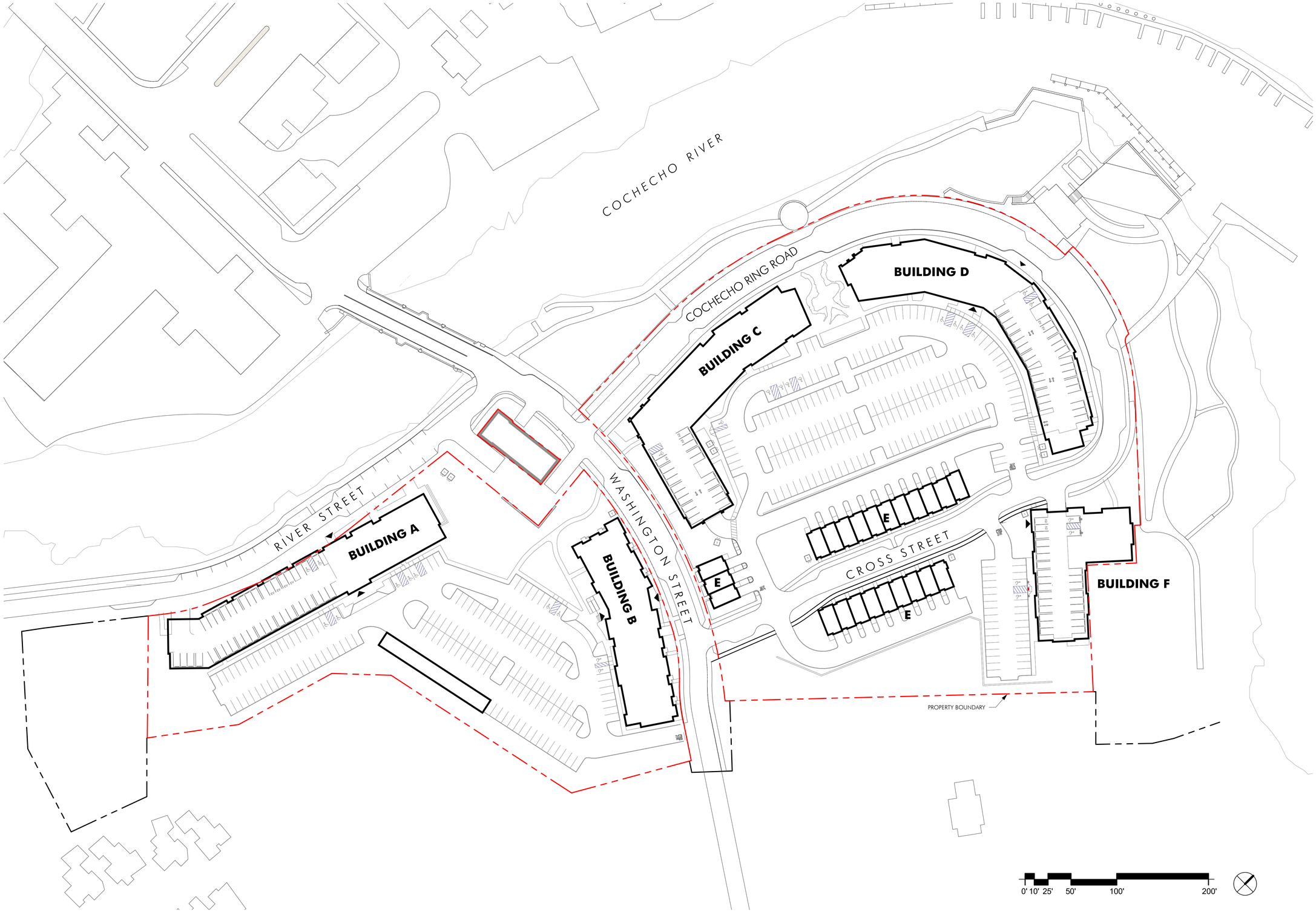
ISSUE: TRC SUBMISSION
DATE: DECEMBER 16, 2021
PROJECT #: 20049
SCALE:

DRAWING TITLE
COVER

DRAWING NUMBER
A000

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RIVER STREET, DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Dennis J. Brown
No. 04331
THE STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1" = 60'-0"

DRAWING TITLE
SITE PLAN

DRAWING NUMBER
A100

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FIXTURE: BLa

BOLLARD LIGHT FIXTURE
BEGA - PRODUCT NUMBER 99058



FIXTURE: BLM

BUILDING MOUNTED LIGHT
BEGA - PRODUCT NUMBER 24218



FIXTURE: CL

OVERHEAD CATENARY LIGHT
STRUCTURA - PIKE CYLINDRICAL LED LUMINAIRE
PRODUCT NUMBER L30HO



FIXTURE: SQM

POLE MOUNTED LIGHT
CREE LIGHTING - OSQ SERIES



FIXTURE: WM

WALL MOUNTED FIXTURE
BEGA - PRODUCT NUMBER 24601



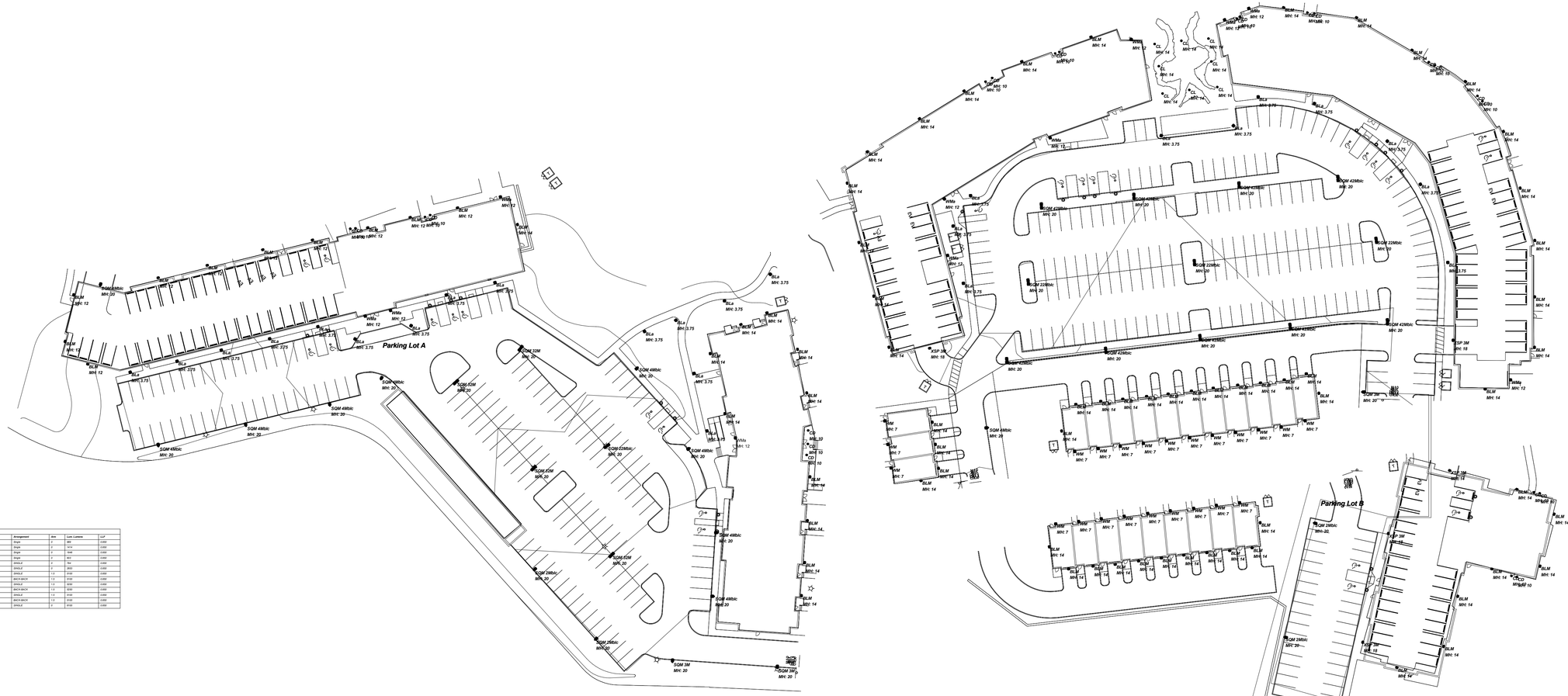
FIXTURE: WMa

WALL MOUNTED FIXTURE
BEGA - PRODUCT NUMBER 24591



FIXTURE: XSP 3M

POLE MOUNTED LIGHT
CREE LIGHTING - XSPW-B-WM-3ME-6L-30K-UL-WH CONF



Outdoor Luminaire Schedule							
Symbol	Qty	Label	Description	Arrangement	Area	Lum. Lumens	LLF
	75	BLM	24218_BEGA	Single	0	MH	0.650
	20	BLa	99058RO_BEGA	Single	0	1114	0.650
	11	Wda	24591_BEGA	Single	0	1648	0.650
	22	WM	24601_BEGA	Single	0	802	0.650
	24	CD	6INTCD-RTRDSDWU30SCH DR	SINGLE	0	764	0.650
	4	CL	PIKE-L-SEWD-40-UNV-CLD-ASC_6 mh ST3	SINGLE	0	4552	0.650
	1	SQM 3Mdc	OSQM-B-SL-SWT-SW-UL-BLSMF CONF	SINGLE	1.5	5132	0.650
	1	SQM 22Mdc	OSQM-B-SL-SWT-SW-UL-BLSMF CONF	BACK-BACK	1.5	5132	0.650
	1	SQM 4Mdc	OSQM-B-SL-SWT-SW-UL-BLSMF CONF	SINGLE	1.5	5132	0.650
	1	SQM 20M	OSQM-B-SL-SWT-SW-UL-BLSMF CONF	BACK-BACK	1.5	5132	0.650
	1	SQM 43Mdc	OSQM-B-SL-SWT-MW-UL-BLSMF CONF	SINGLE	1.5	5132	0.650
	1	SQM 43Mdc	OSQM-B-SL-SWT-MW-UL-BLSMF CONF	BACK-BACK	1.5	5132	0.650
	4	XSP 3M	XSPW-B-WM-3ME-6L-30K-UL-WH CONF	SINGLE	0	6133	0.650

Calculation Summary							
Label	Calc Type	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	Illuminance	Fc	1.13	20.0	0.0	N.A.	N.A.
Parking Lot A	Illuminance	Fc	1.09	2.5	0.3	4.27	11.67
Parking Lot B	Illuminance	Fc	1.21	2.5	0.3	4.03	11.00

1 SITE LIGHTING DIAGRAM
1" = 50'-0"

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12/16/2021 10:18:26 AM

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BOSTON, MA

COCHECHO WATERFRONT

RIVER STREET, DOVER, NH
TRC SUBMISSION

REVISIONS

MARK	ISSUE	DATE

LICENSED ARCHITECT
Dan Bagnan
No. 04331
STATE OF NEW HAMPSHIRE

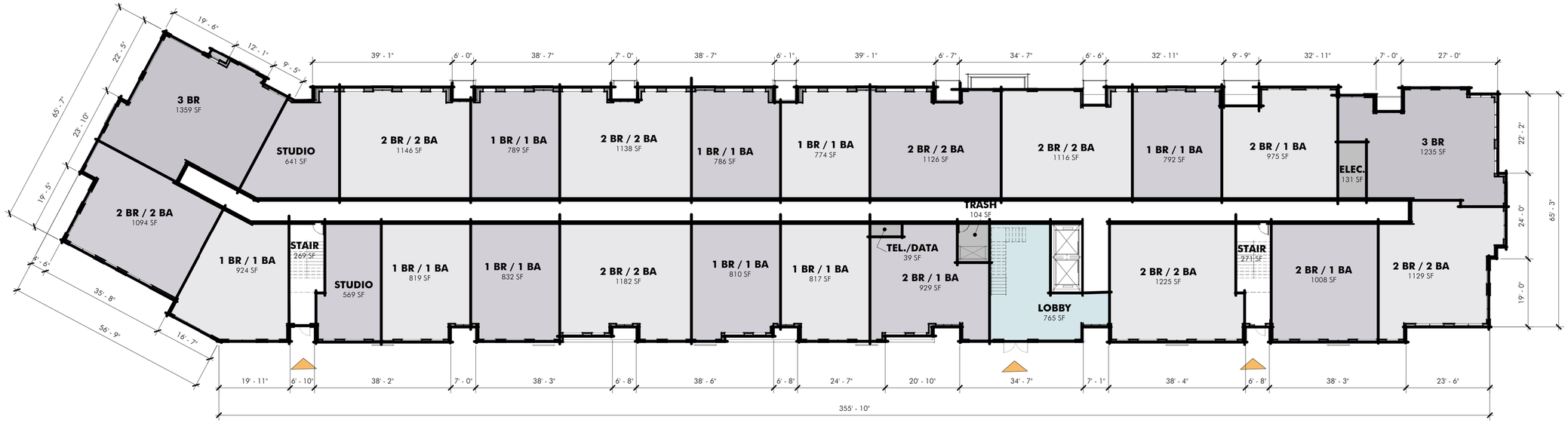
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ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1" = 50'-0"

DRAWING TITLE
SITE LIGHTING DIAGRAM

DRAWING NUMBER
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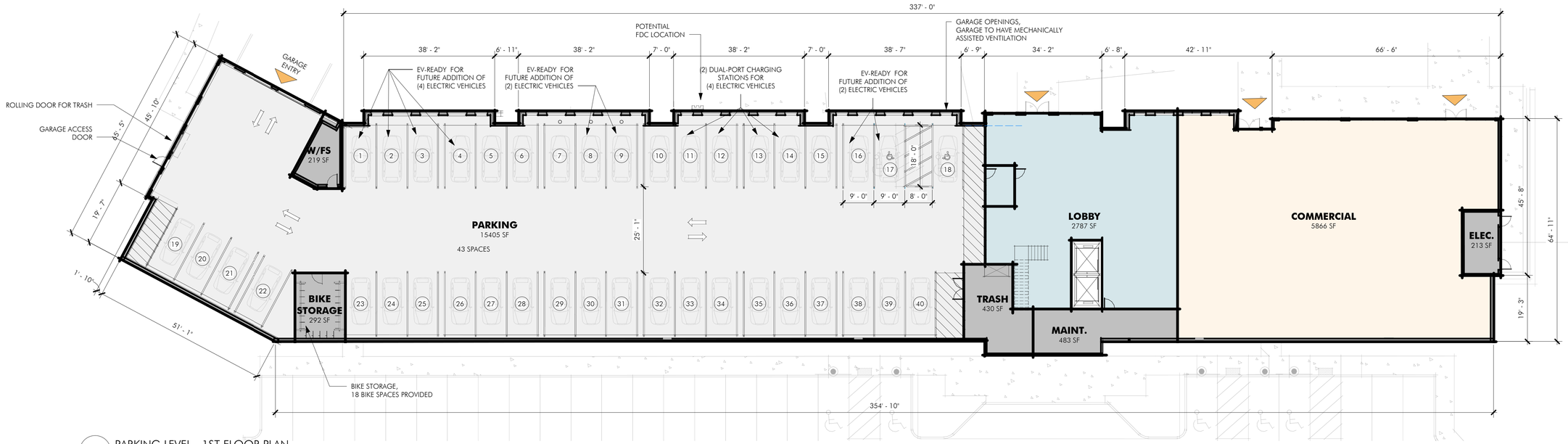
2 2ND FLOOR PLAN
1/16" = 1'-0"

EVSE SPACES

PARKING AREA FOR A+B
TOTAL OF 215 SPACES @ 5% EV
= MIN. 11 EVSE SPACES
- 1 SPACE HC ACCESSIBLE

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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BUILDING A
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No. 04331
STATE OF NEW HAMPSHIRE

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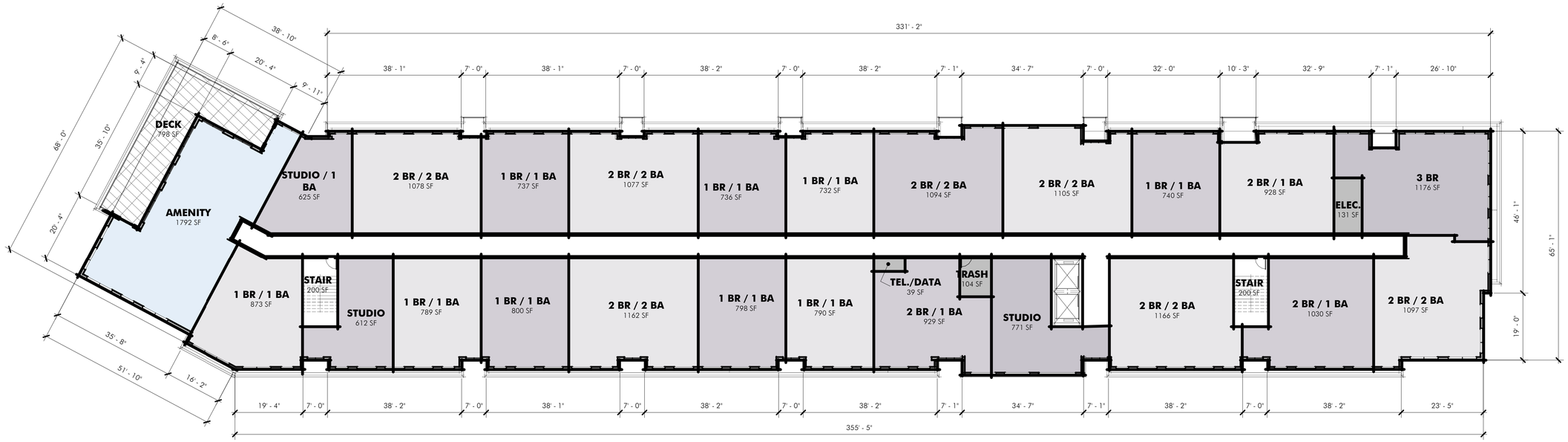
ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING A - 1ST & 2ND FLOOR PLAN

DRAWING NUMBER
A111

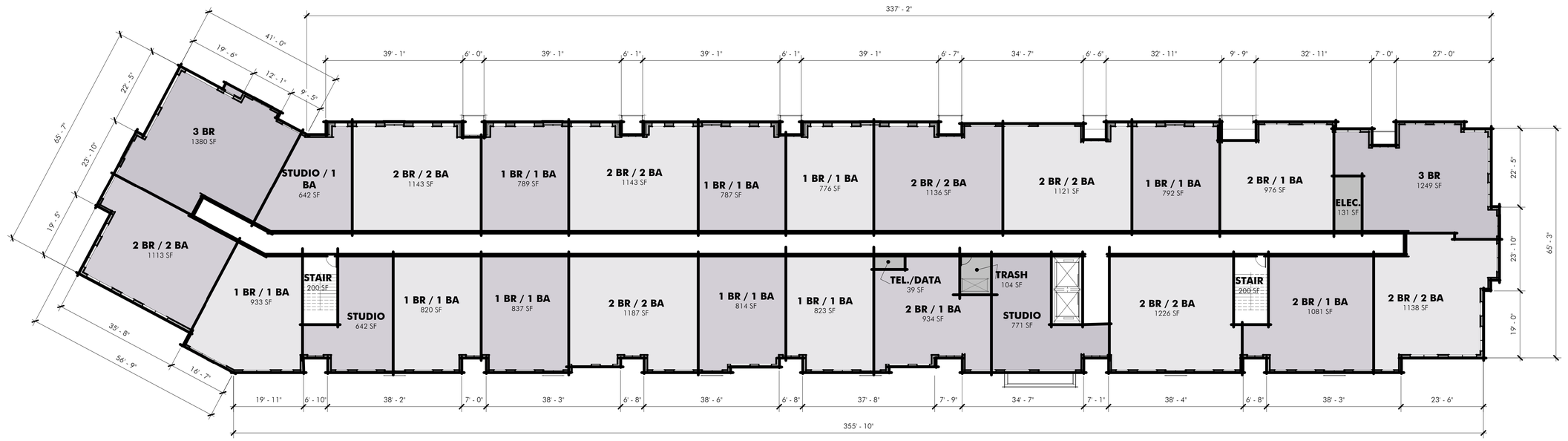
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2 5TH FLOOR PLAN

1/16" = 1'-0"



1 TYPICAL UPPER FLOOR PLAN - 3RD FLOOR SHOWN

1/16" = 1'-0"

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LANDSCAPE ARCHIT
HALVORSON DESIGN

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COCHECHO WATERFRONT BUILDING A

RIVER STREET DOVER, NH

TRC SUBMISSION

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LICENSED ARCHITECT
Benjamin J Brown
No. 04331
STATE OF NEW HAMPSHIRE

DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE

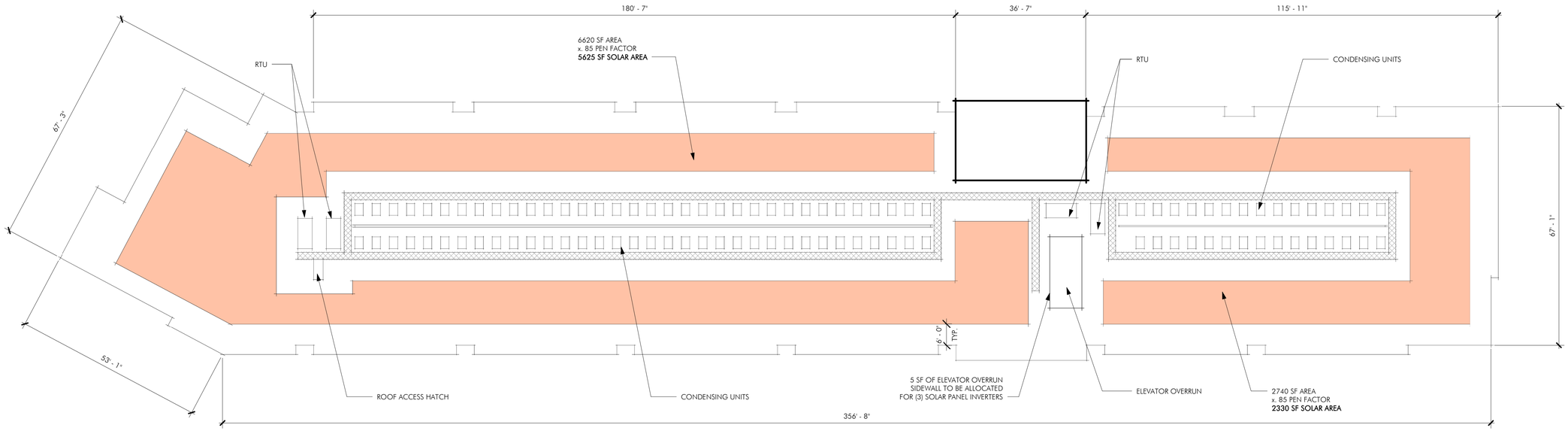
BUILDING A - TYP. UPPER & 5TH FLOOR PLANS

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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COCHECHO WATERFRONT
BUILDING A
RIVER STREET DOVER, NH
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Dustin J. Brown
No. 04331
STATE OF NEW HAMPSHIRE

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ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

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BUILDING A -
ROOF PLAN

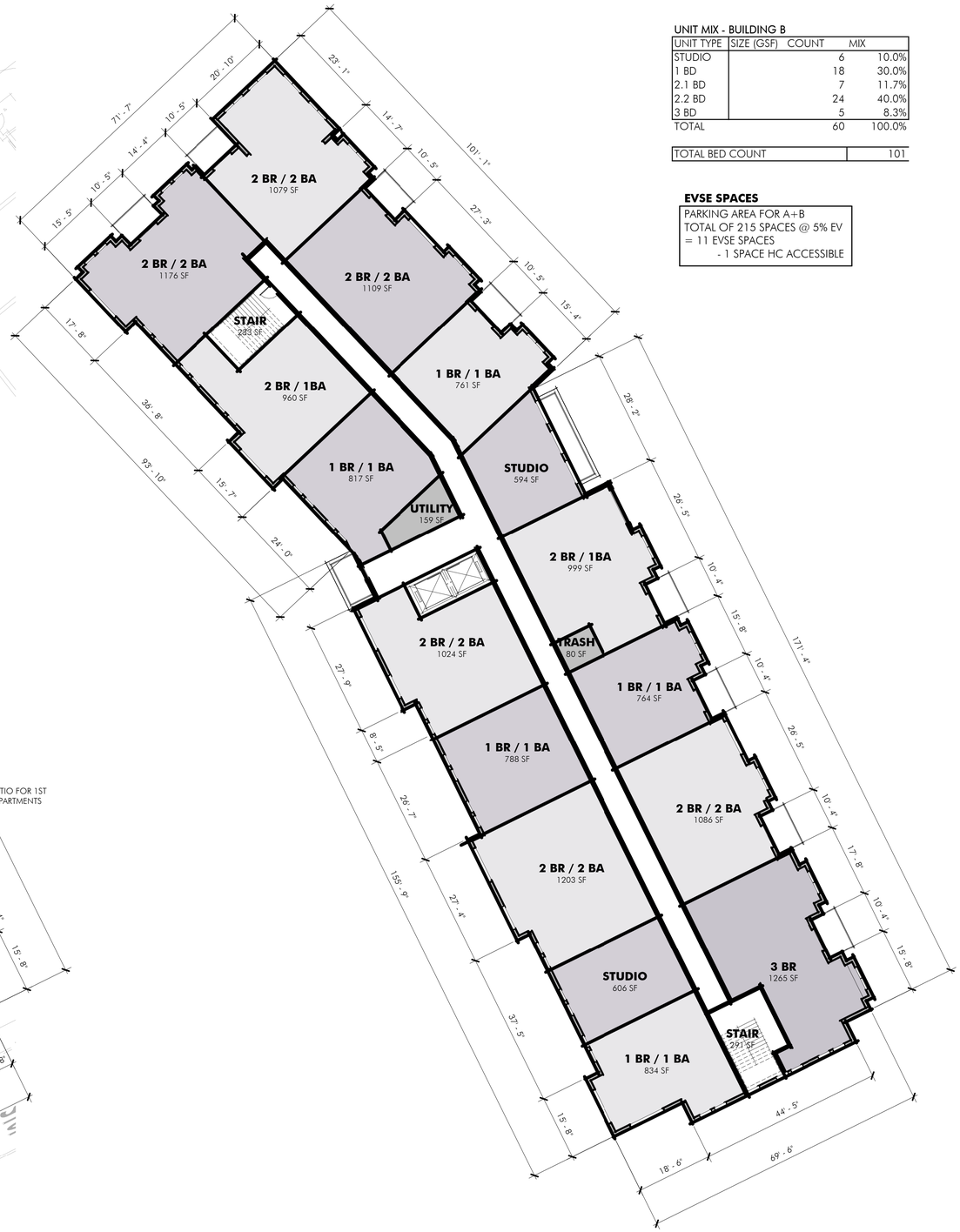
DRAWING NUMBER
A113

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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

EVSE SPACES

PARKING AREA FOR A+B
TOTAL OF 215 SPACES @ 5% EV
= 11 EVSE SPACES
- 1 SPACE HC ACCESSIBLE

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No. 04331
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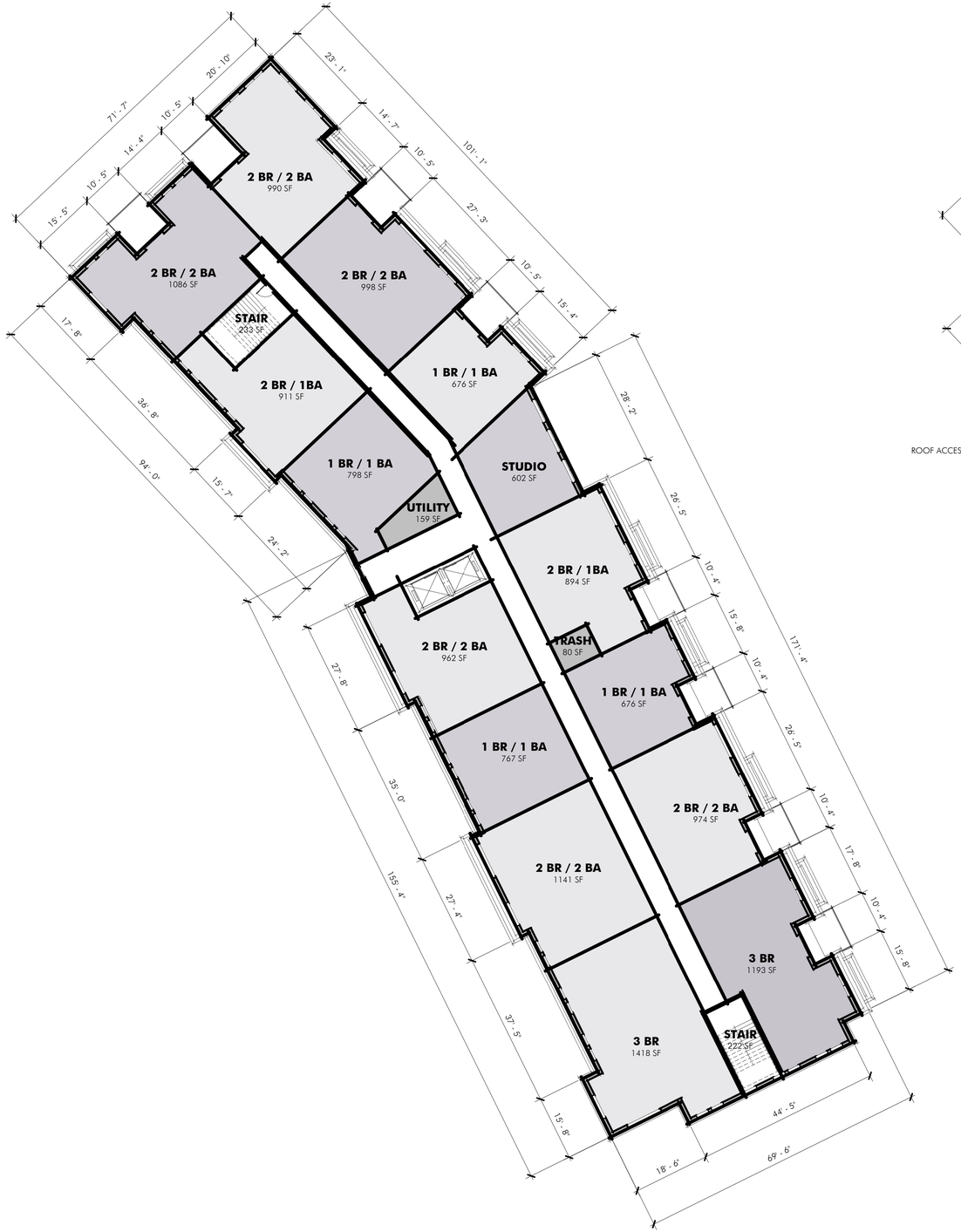
ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

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BUILDING B - 1ST & 2ND FLOOR PLAN

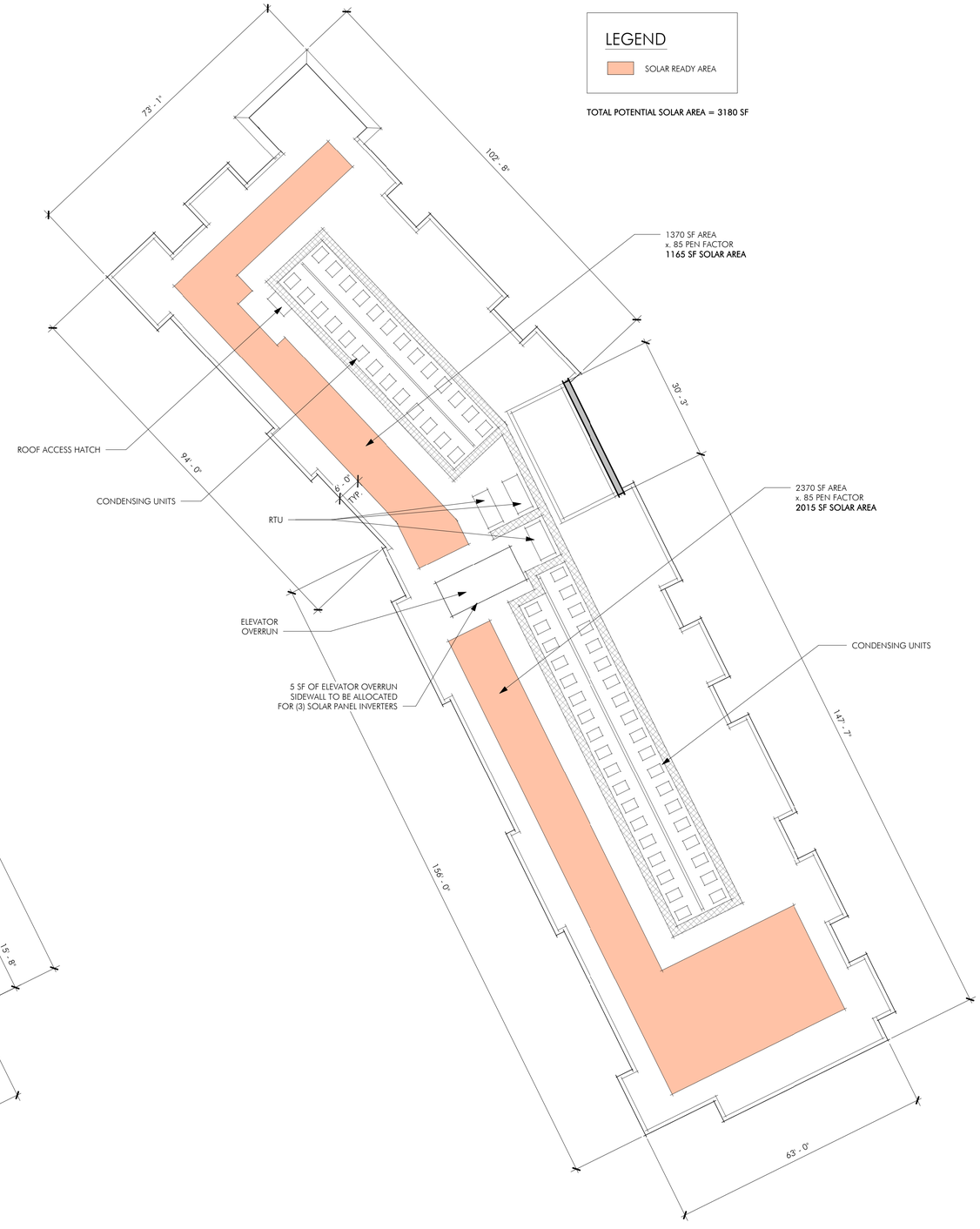
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A121

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1 4TH FLOOR PLAN
1/16" = 1'-0"



2 ROOF PLAN
1/16" = 1'-0"

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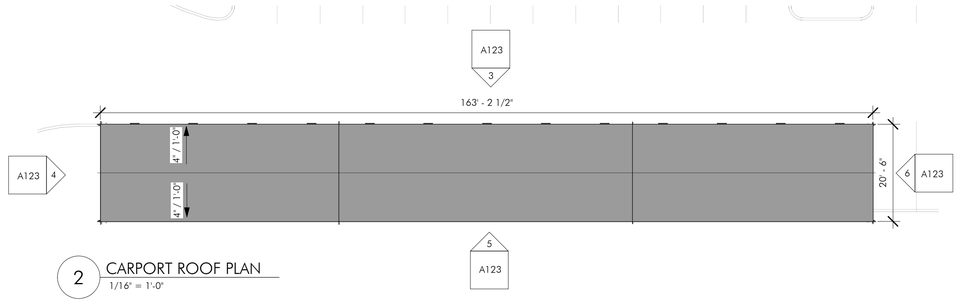
ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
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DRAWING TITLE
BUILDING B - TYP. UPPER FLOOR & ROOF PLAN

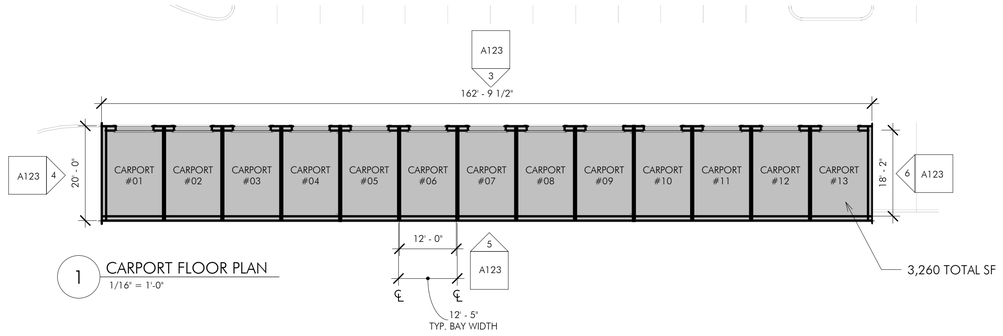
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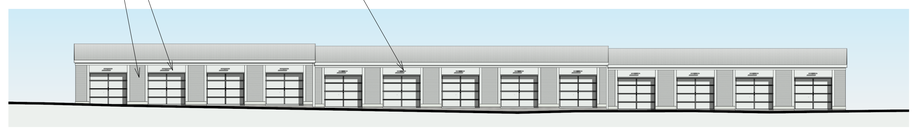


2 CARPORT ROOF PLAN
1/16" = 1'-0"

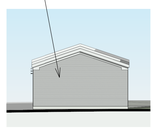


1 CARPORT FLOOR PLAN
1/16" = 1'-0"

NOTE:
CARPORT TO BE CONSTRUCTED OF
NON-COMBUSTITBLE MATERIALS



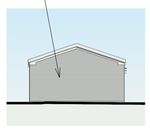
3 Carport Elevation - Front
1/16" = 1'-0"



4 Carport Elevation - Left
1/16" = 1'-0"



5 Carport Elevation - Back
1/16" = 1'-0"



6 Carport Elevation - Right
1/16" = 1'-0"

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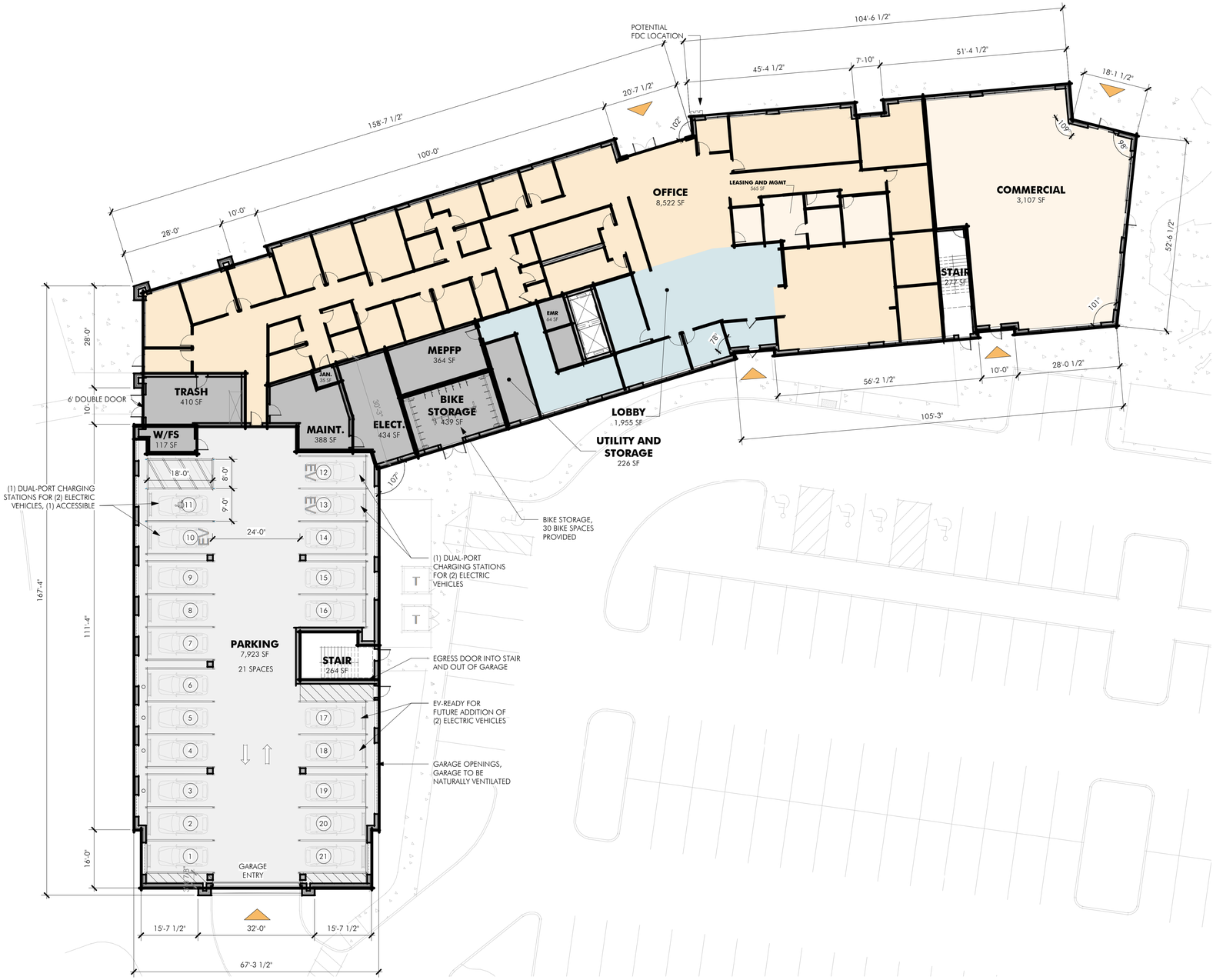
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DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
CARPORT - FLOOR PLAN & ELEVATIONS

DRAWING NUMBER
A123

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1 PARKING LEVEL - 1ST FLOOR PLAN
1/16" = 1'-0"

EVSE SPACES

PARKING AREA FOR C+D
TOTAL OF 230 SPACES @ 5% EV
= (12) EVSE SPACES
- (6) AT BUILDING C
- (6) AT BUILDING C
- MIN. (1) SPACE HC ACCESSIBLE SPACE PER BUILDING

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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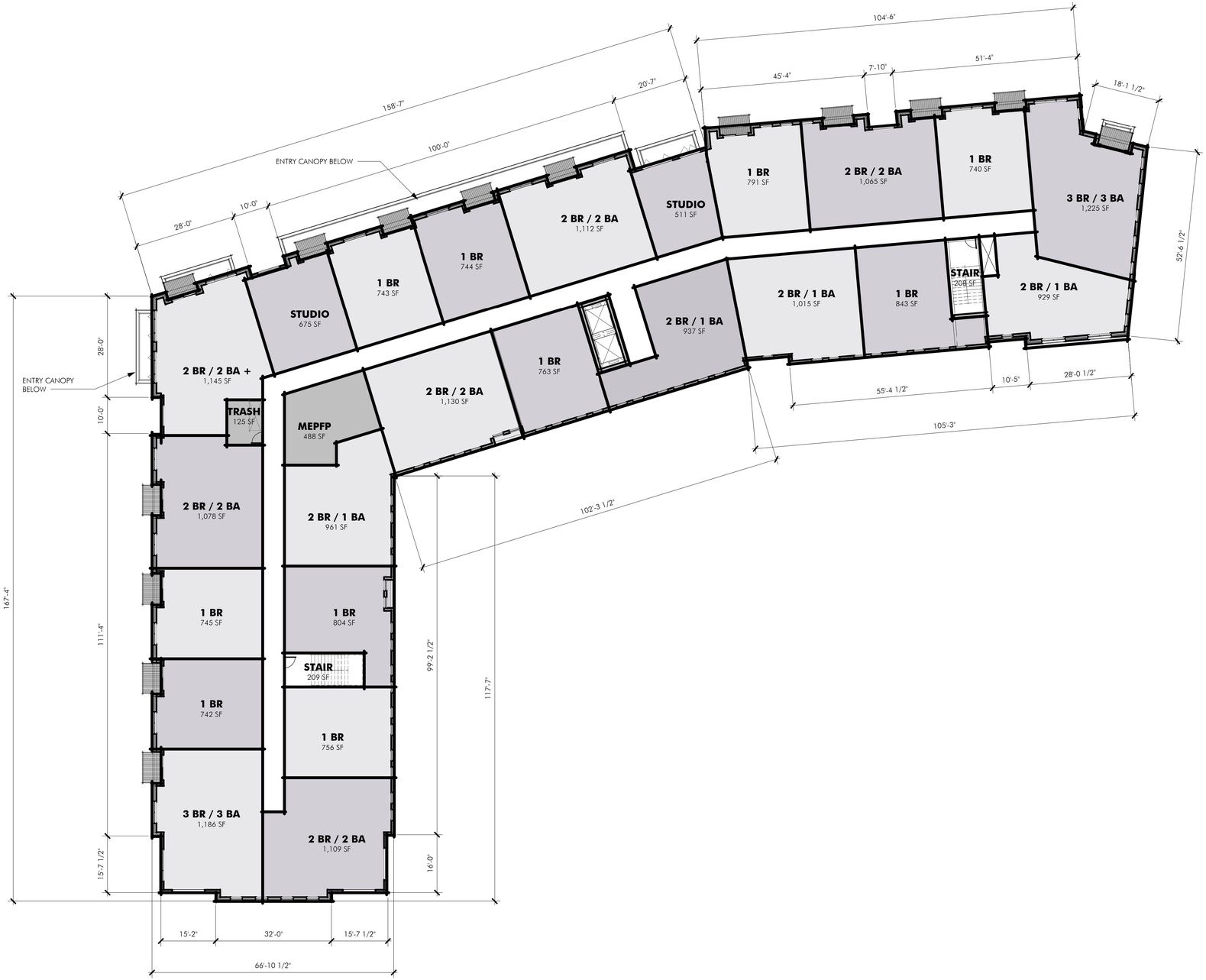
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DATE:	DECEMBER 16, 2021
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SCALE:	1/16" = 1'-0"

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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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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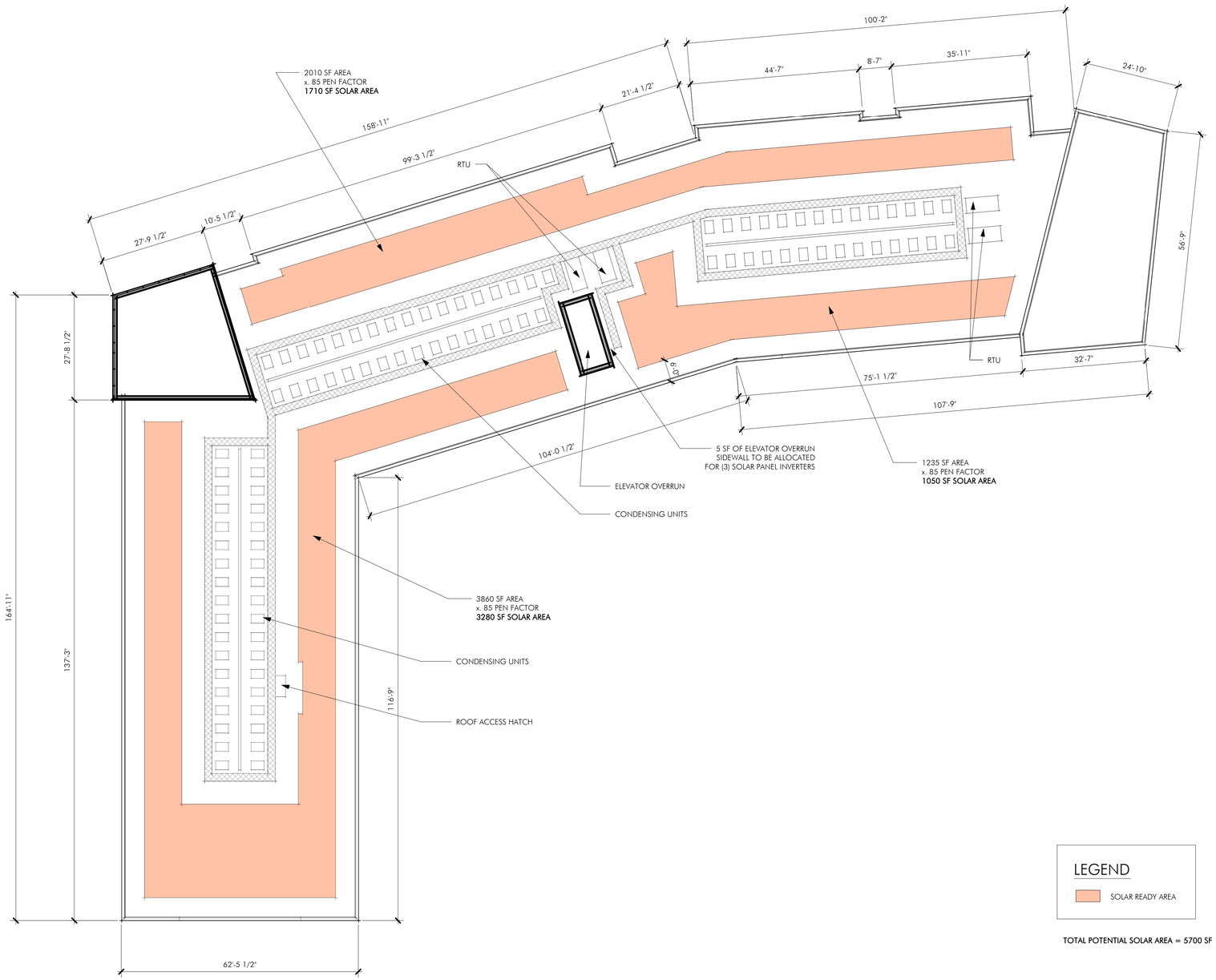
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SCALE:	1/16" = 1'-0"

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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Jack Brown
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DRAWING TITLE
BUILDING C -
ROOF PLAN

DRAWING NUMBER
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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

EVSE SPACES

PARKING AREA FOR C+D
TOTAL OF 230 SPACES @ 5% EV
= (12) EVSE SPACES
- (6) AT BUILDING C
- (6) AT BUILDING C
- MIN. (1) SPACE HC ACCESSIBLE SPACE PER BUILDING

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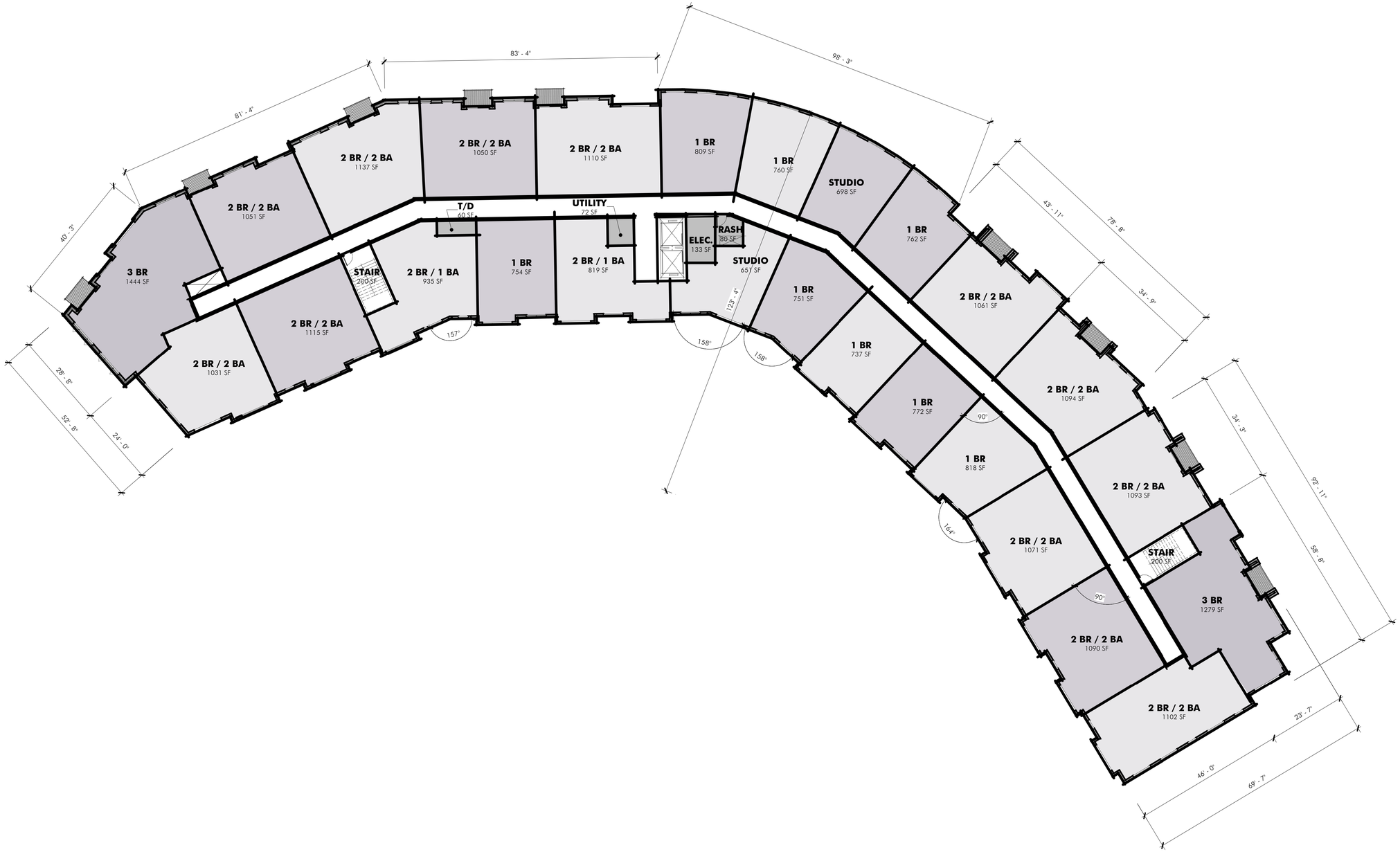
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DATE:	DECEMBER 16, 2021
PROJECT #:	20049
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DRAWING TITLE
BUILDING D - GARAGE FLOOR PLAN

DRAWING NUMBER
A141

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1 TYPICAL UPPER FLOOR PLAN - 3RD FLOOR SHOWN
1/16" = 1'-0"

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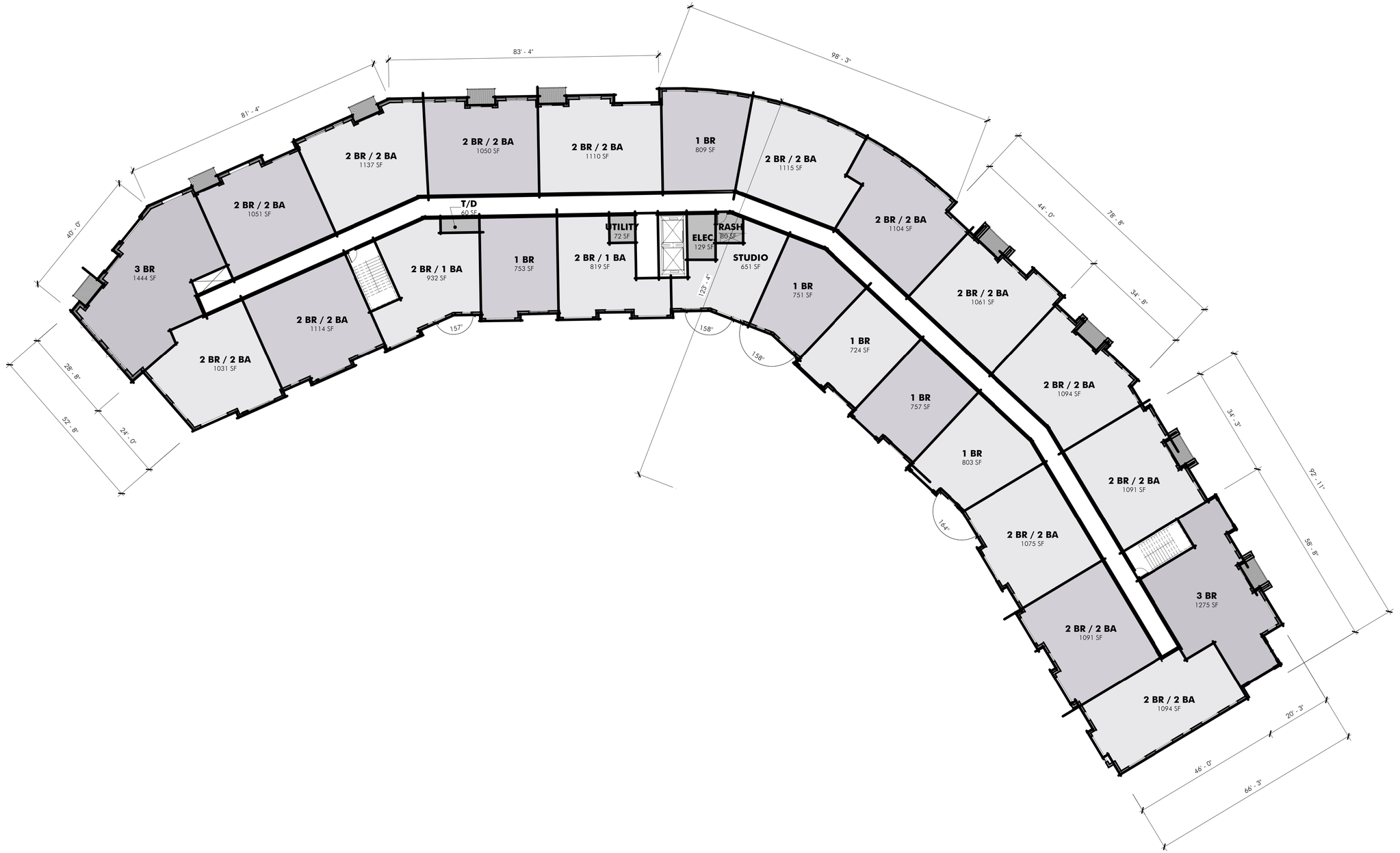
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BUILDING D - TYPICAL UPPER FLOOR PLAN

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1 4TH FLOOR PLAN
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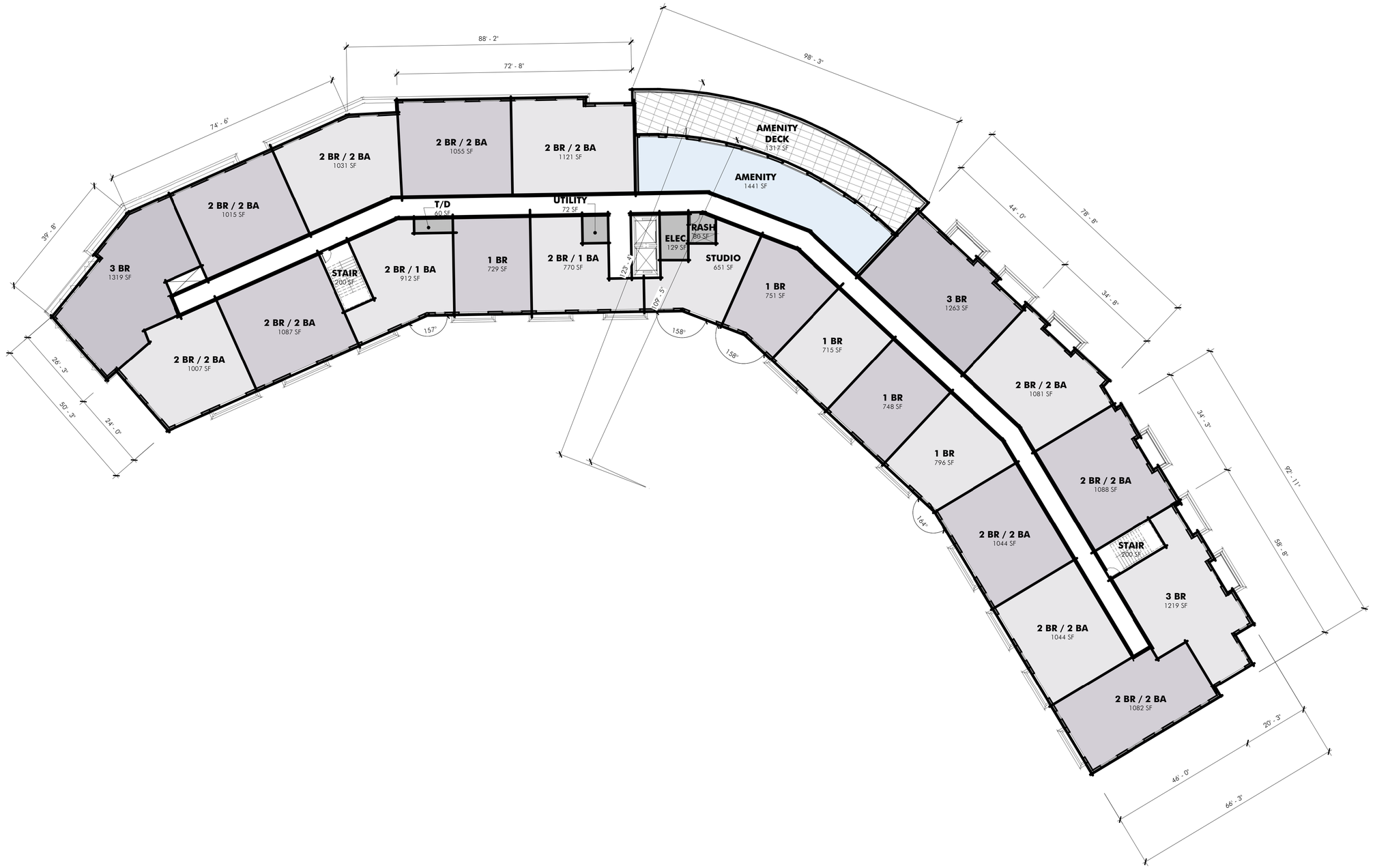
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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING D - FOURTH FLOOR PLAN

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A143

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1 5TH FLOOR PLAN
1/16" = 1'-0"

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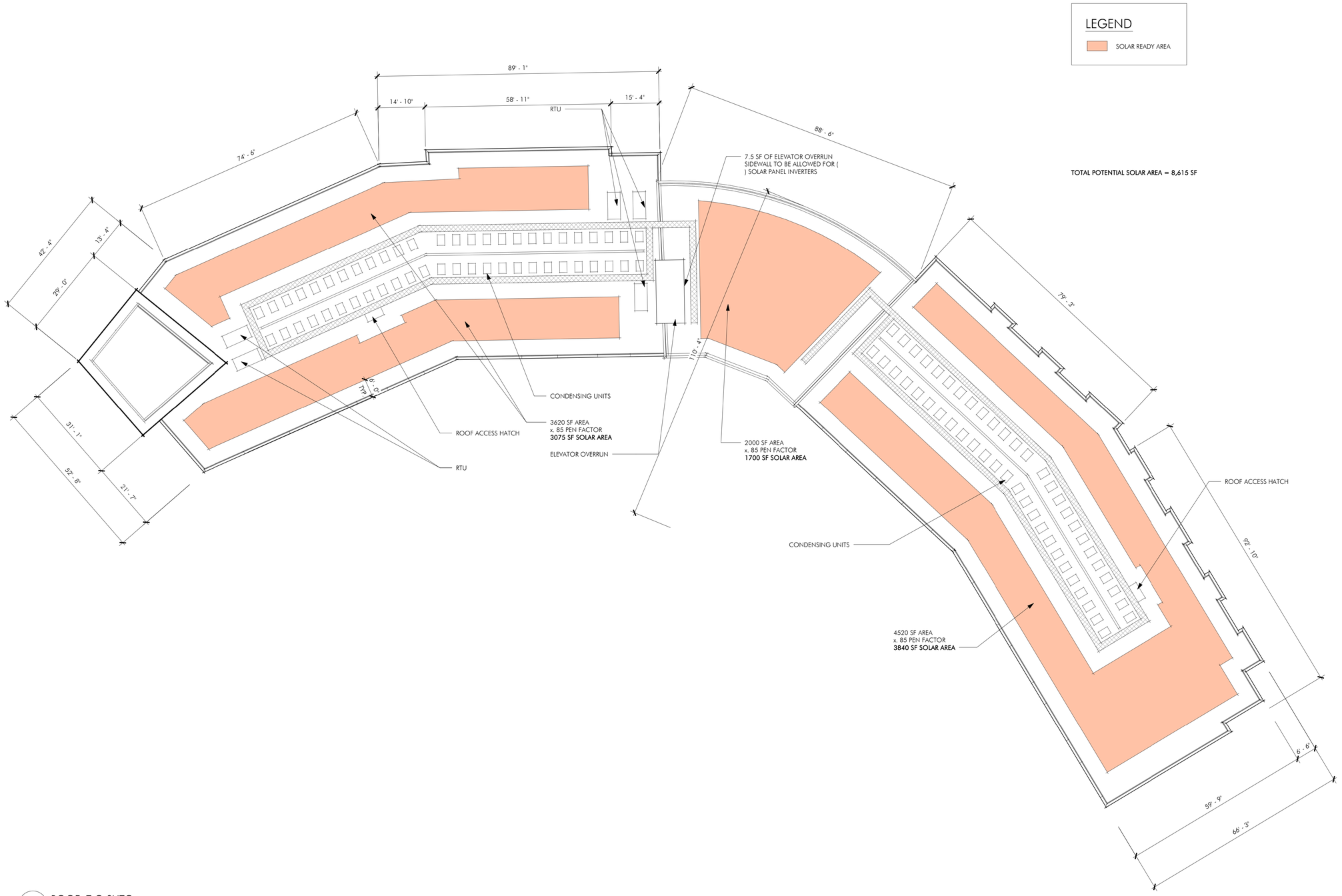
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DRAWING TITLE
BUILDING D -
5TH FLOOR PLAN

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1 ROOF, T.O.SHTG
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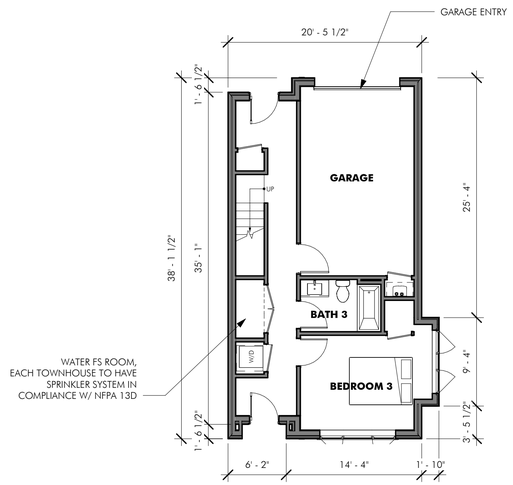
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PROJECT #:	20049
SCALE:	1/16" = 1'-0"

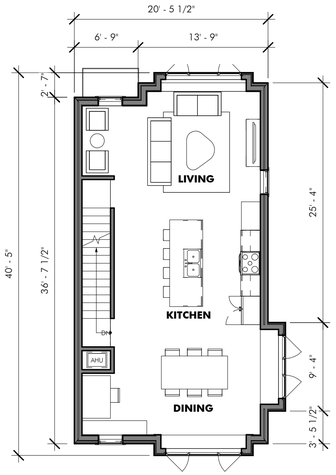
DRAWING TITLE
BUILDING D - ROOF PLAN

DRAWING NUMBER
A145

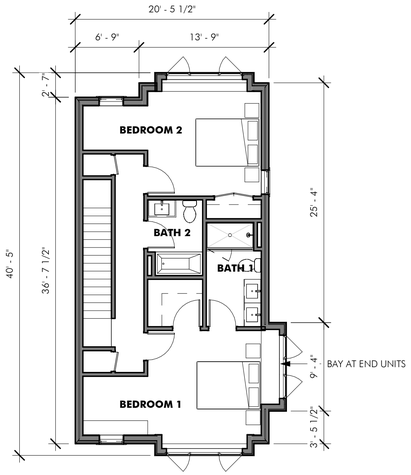
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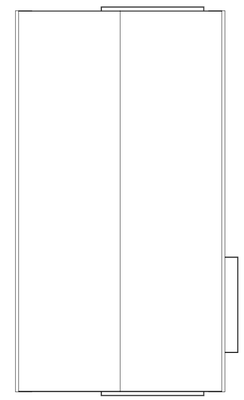
1 1ST FLOOR PLAN
1/8" = 1'-0"



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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BOSTON, MA

COCHECHO WATERFRONT TOWNHOUSES
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No. 04331
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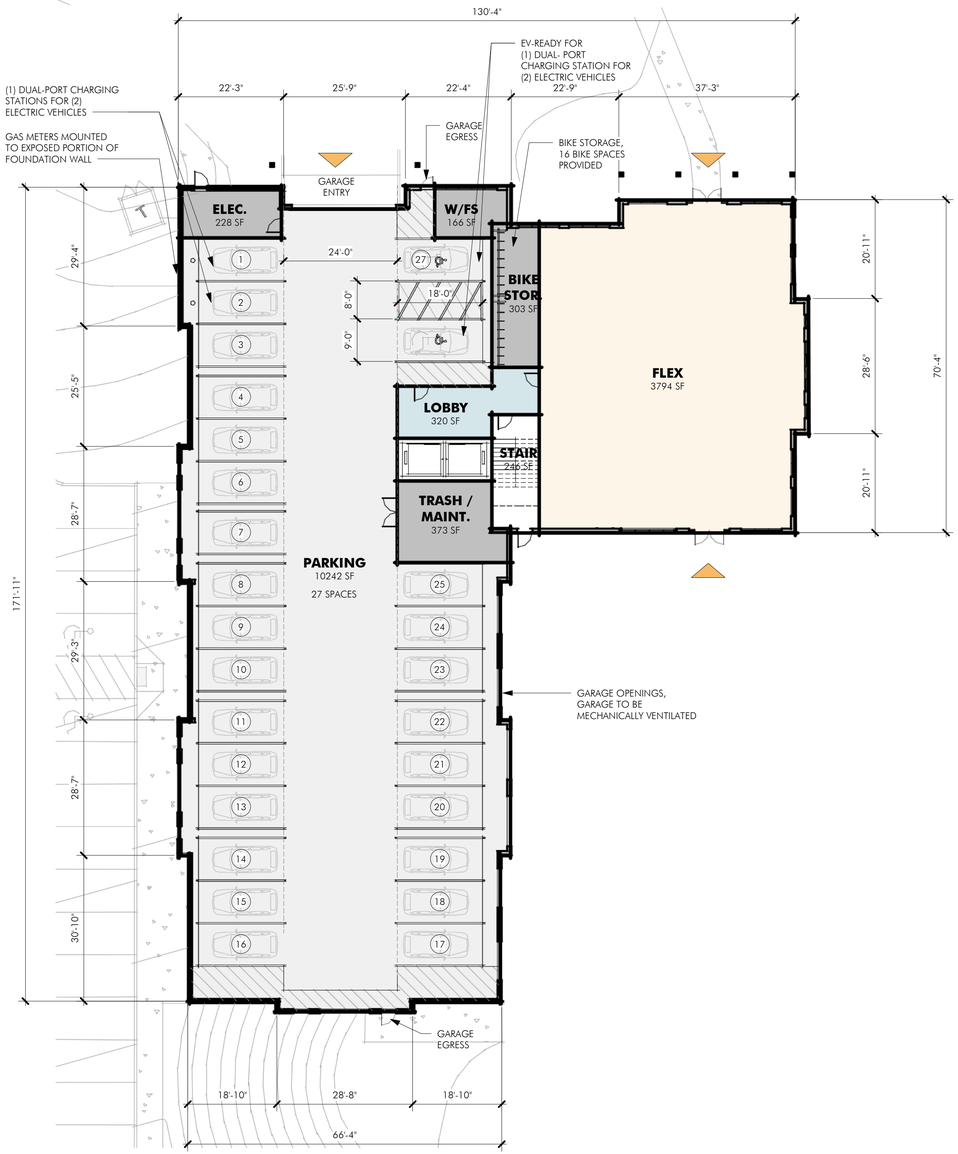
DRAWING INFORMATION

ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/8" = 1'-0"

DRAWING TITLE
TYPICAL TOWNHOUSE FLOOR PLANS

DRAWING NUMBER
A151

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1 PARKING LEVEL - 1ST FLOOR PLAN
1/16" = 1'-0"



2 FIRST FLOOR PLAN
1/16" = 1'-0"

EVSE SPACES

PARKING AREA FOR C+D
TOTAL OF 62 SPACES @ 5% EV
= (4) EVSE SPACES
- (2) SPACES HC ACCESSIBLE

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

ARCHITECT
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www.embarcstudio.com

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PORTSMOUTH, NH

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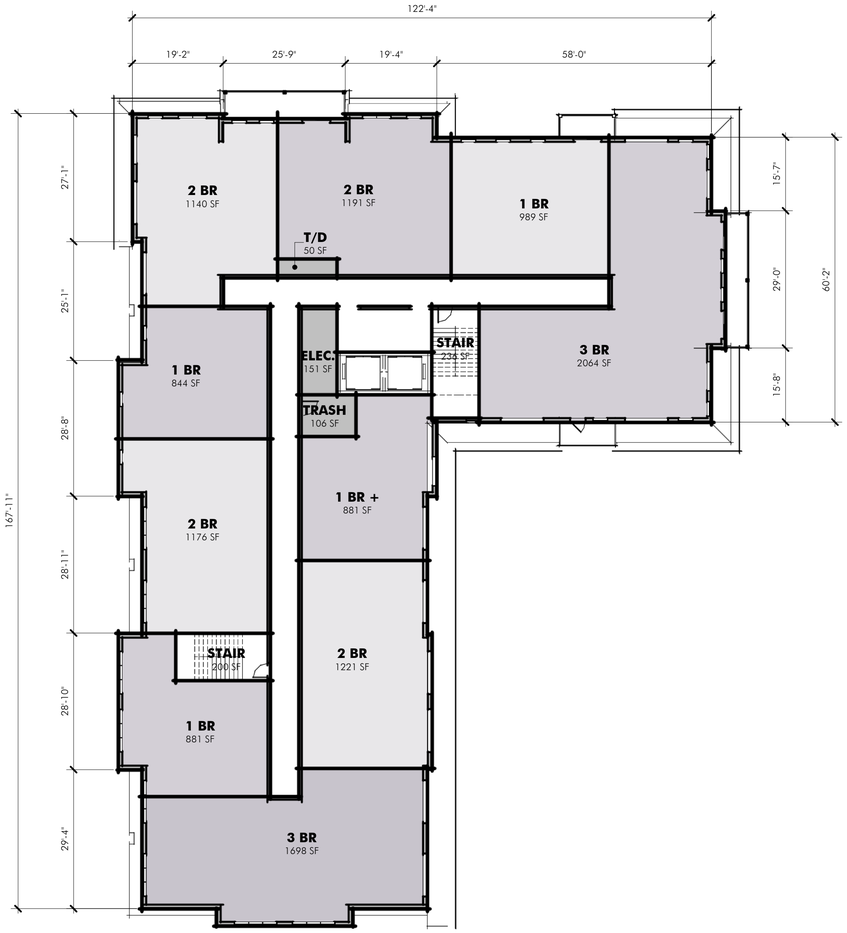
ISSUE: TRC SUBMISSION
DATE: DECEMBER 16, 2021
PROJECT #: 20049
SCALE: 1/16" = 1'-0"

DRAWING TITLE
BUILDING F - GARAGE & 1ST FLOOR PLAN

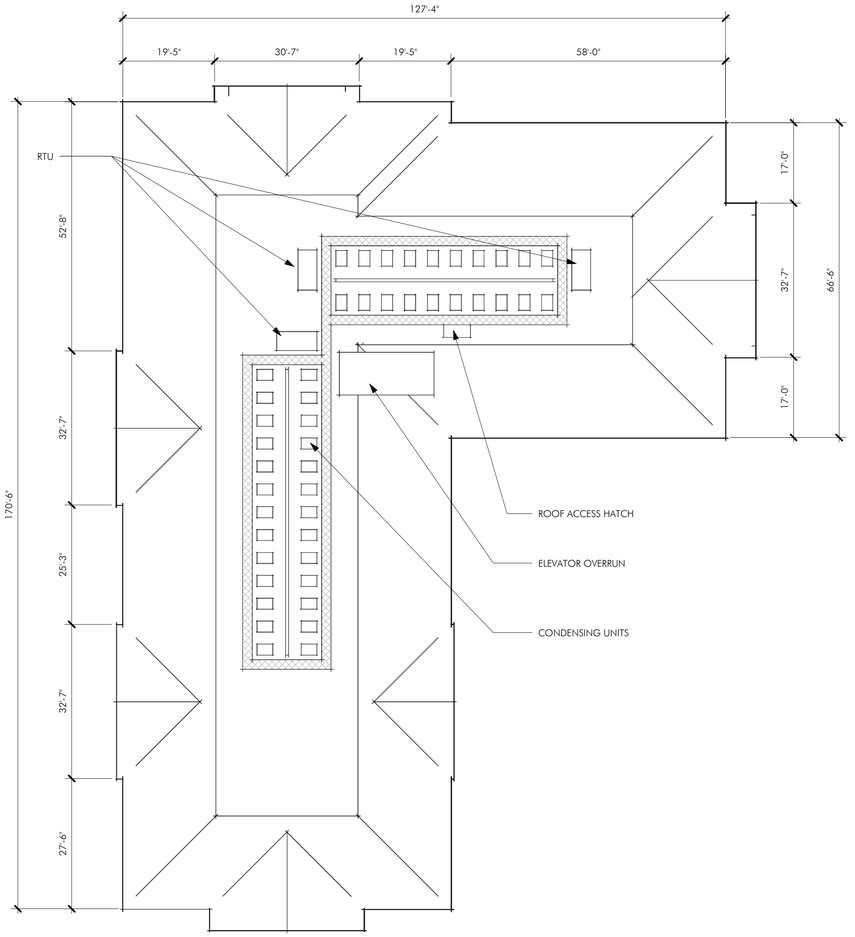
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A161

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1 5TH FLOOR PLAN
1/16" = 1'-0"



2 ROOF PLAN
1/16" = 1'-0"

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DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING F - 5TH FLOOR & ROOF PLAN

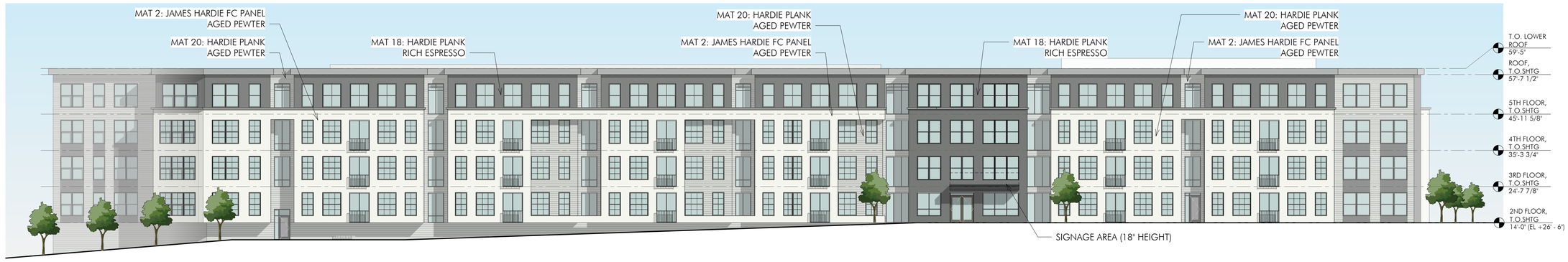
DRAWING NUMBER
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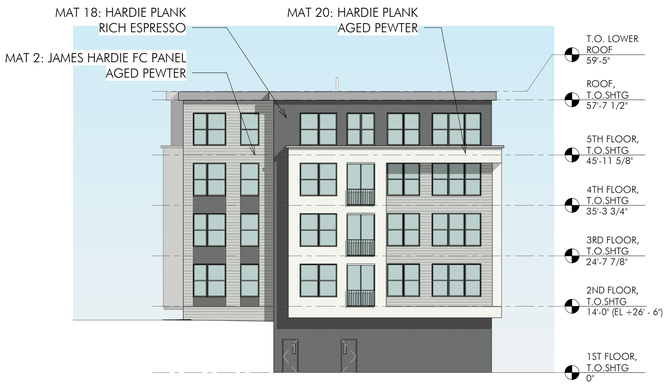
1 ELEVATION FROM RIVER STREET
1/16" = 1'-0"



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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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING A ELEVATIONS

DRAWING NUMBER
A210

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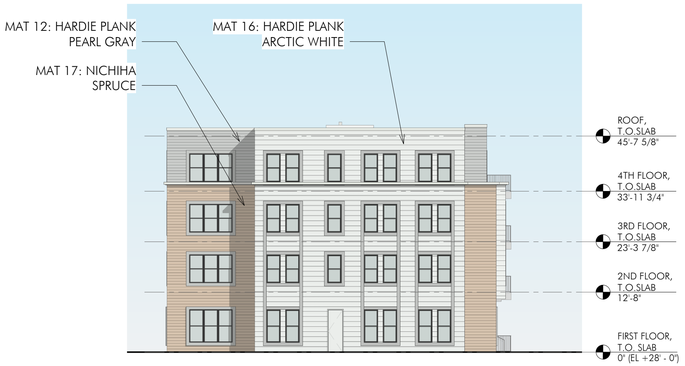
1 ELEVATION FROM WASHINGTON STREET
1/16" = 1'-0"



2 ELEVATION FROM PARKING LOT
1/16" = 1'-0"



4 RIGHT ELEVATION
1/16" = 1'-0"



3 LEFT ELEVATION
1/16" = 1'-0"

ELEVATION LEGEND

- MAT 8: GROUND FACE CMU
- 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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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING B
ELEVATIONS

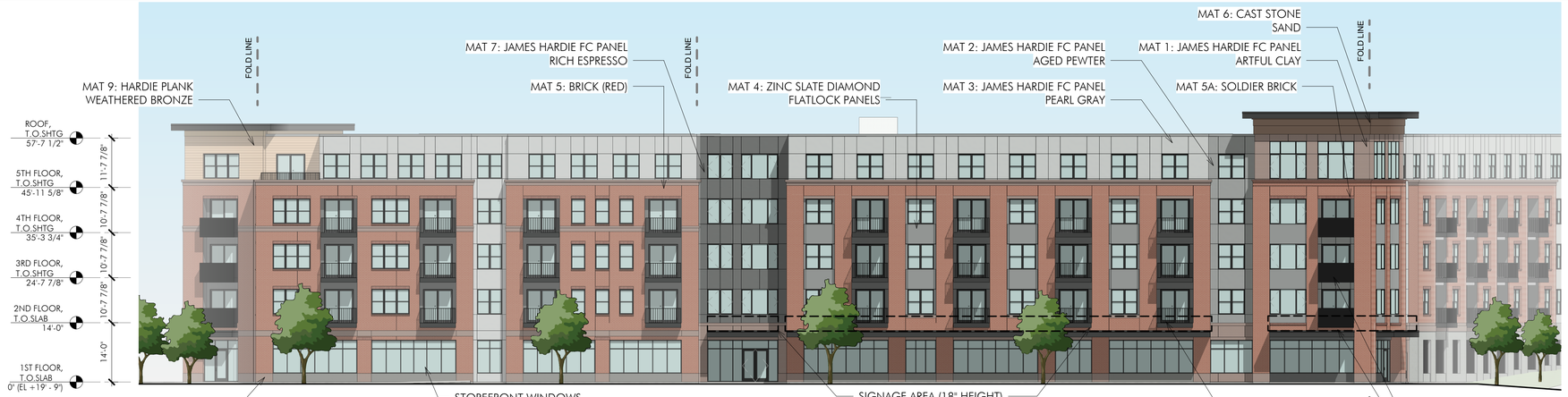
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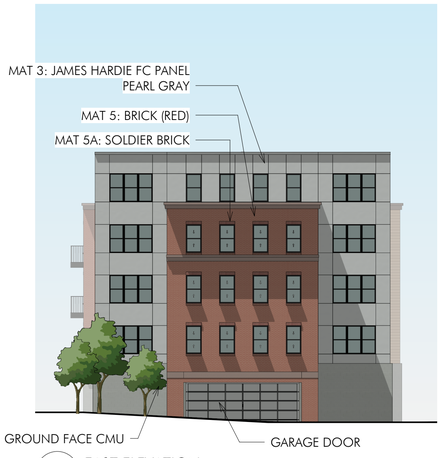
ELEVATION LEGEND

- 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"



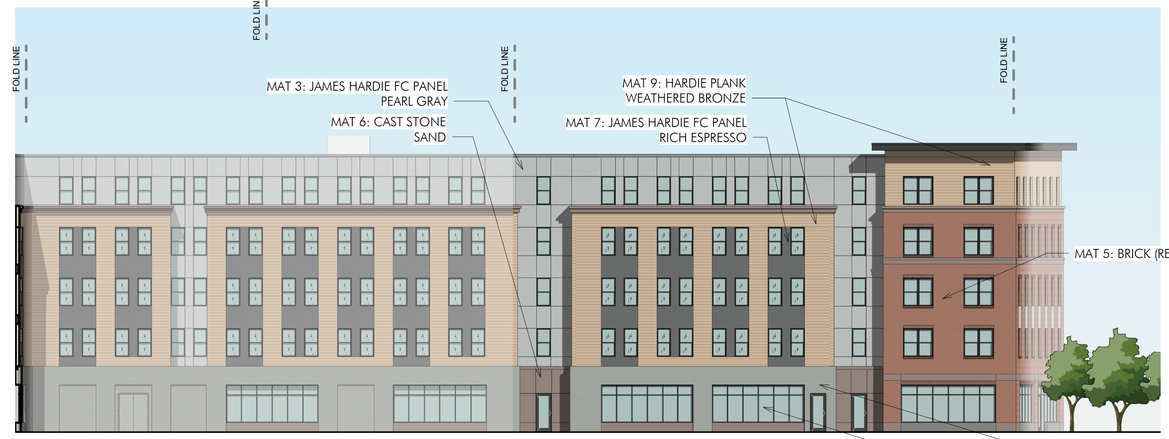
3 EAST ELEVATION
1/16" = 1'-0"



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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Daniel Ian Brown
No. 04331
STATE OF NEW HAMPSHIRE

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SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING C
ELEVATIONS

DRAWING NUMBER
A230

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ELEVATION LEGEND

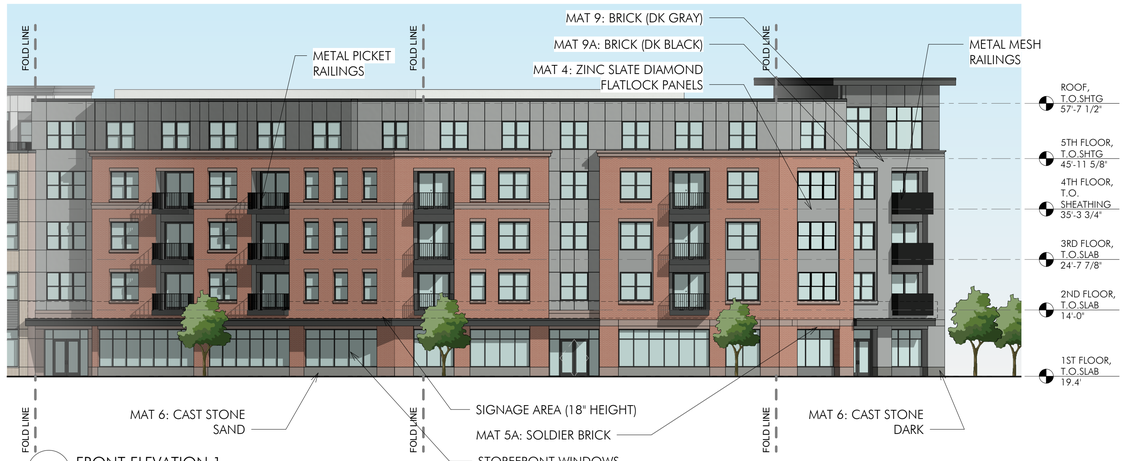
- MAT 2: JAMES HARDIE FC PANEL - AGED PEWTER
- MAT 3: JAMES HARDIE FC PANEL - PEARL GRAY
- MAT 4: ZINC SLATE DIAMOND FLATLOCK PANELS
- MAT 5: BRICK (RED)
- MAT 5A: SOLDIER BRICK
- MAT 6: CAST STONE - SAND / DARK
- MAT 7: JAMES HARDIE FC PANEL - RICH ESPRESSO
- MAT 8: GROUND FACE CMU
- MAT 9: BRICK (DK 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



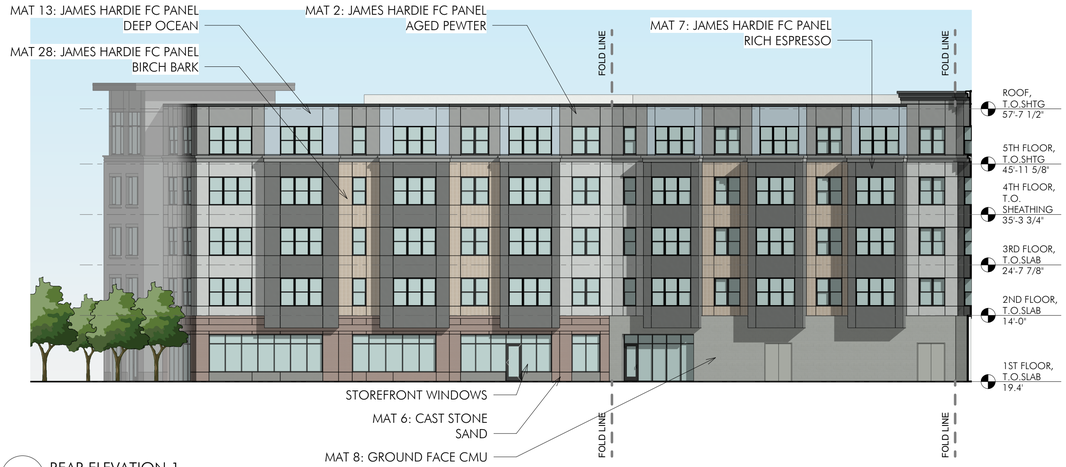
1 FRONT ELEVATION 2
1/16" = 1'-0"



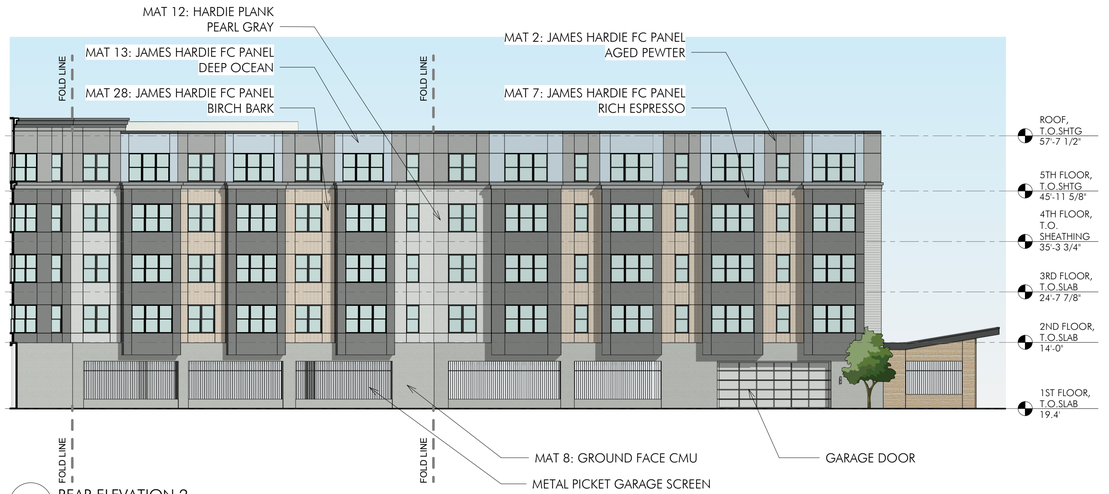
3 FRONT ELEVATION 3
1/16" = 1'-0"



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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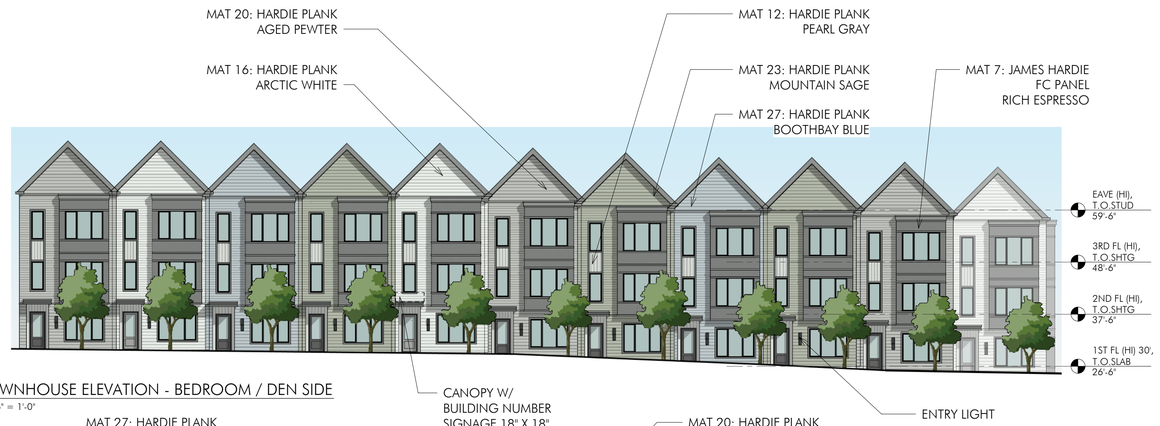
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DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

DRAWING TITLE
BUILDING D ELEVATIONS

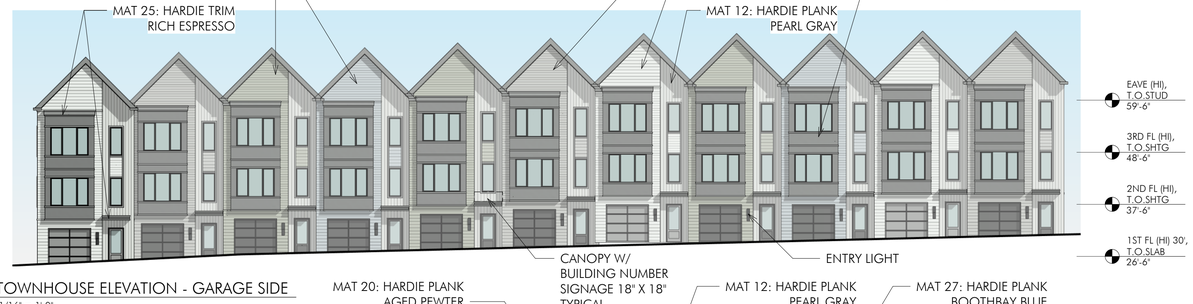
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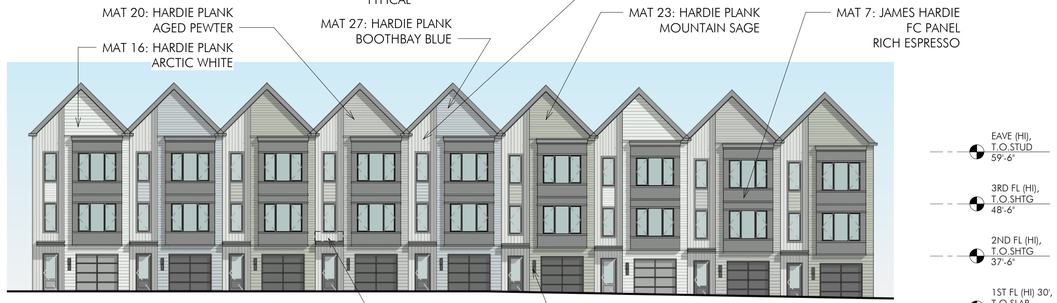
1 TOWNHOUSE ELEVATION - BEDROOM / DEN SIDE
1/16" = 1'-0"



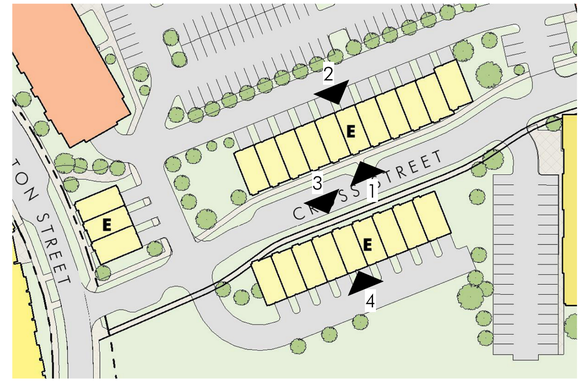
2 TOWNHOUSE ELEVATION - GARAGE SIDE
1/16" = 1'-0"



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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DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	As indicated

DRAWING TITLE
TOWNHOUSE ELEVATIONS

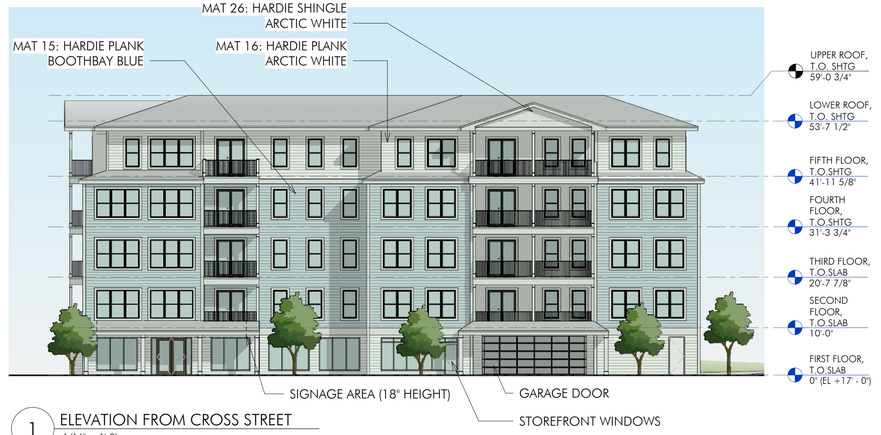
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A250

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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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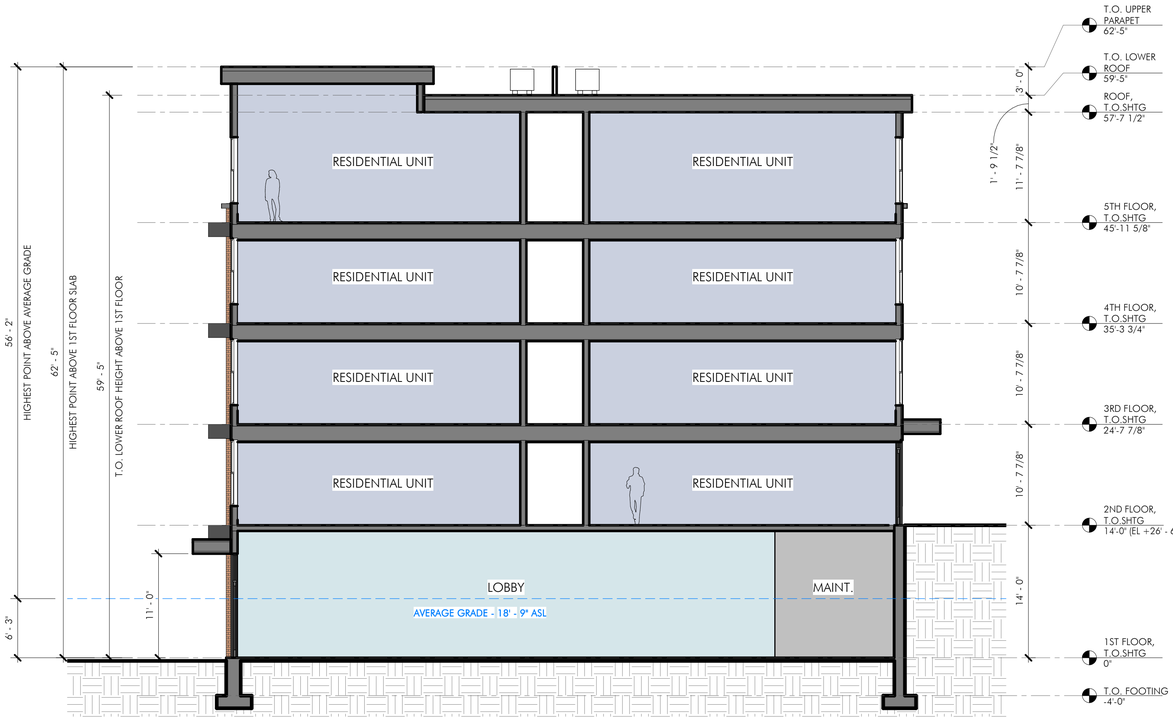
ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/16" = 1'-0"

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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J
Mc Grown
No. 04331
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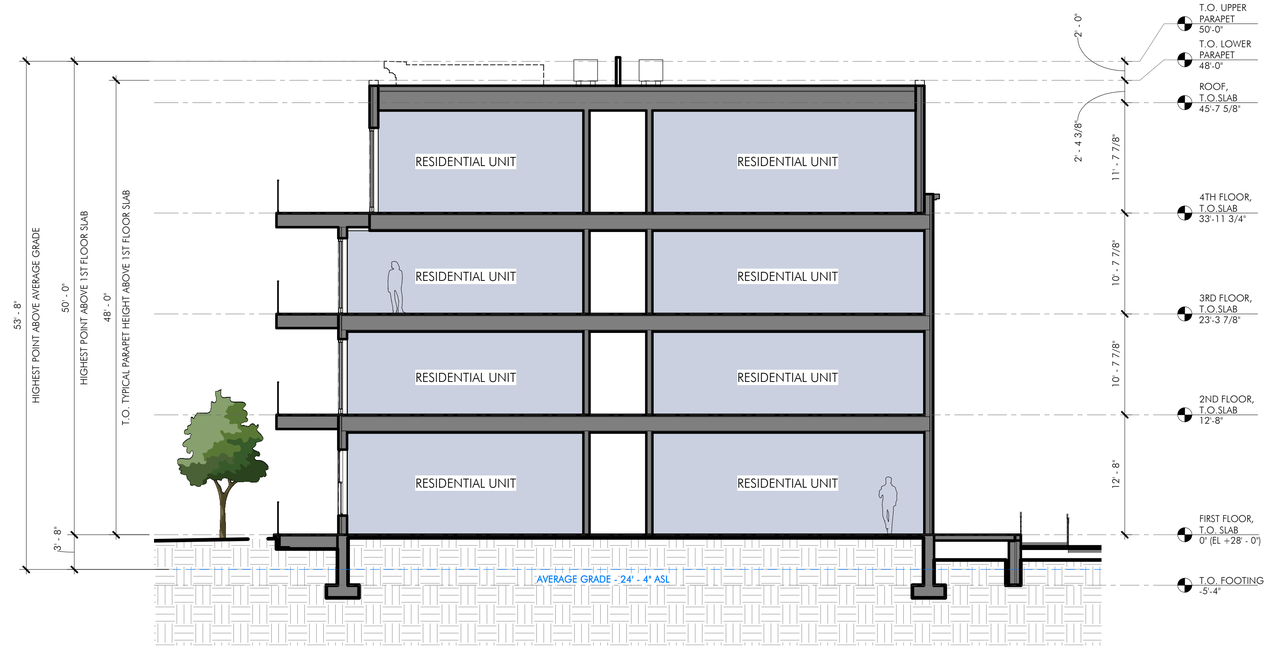
ISSUE:	TRC SUBMISSION
DATE:	DECEMBER 16, 2021
PROJECT #:	20049
SCALE:	1/8" = 1'-0"

DRAWING TITLE
BUILDING A SECTION

DRAWING NUMBER
A311

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1 SCHEMATIC BUILDING SECTION
1/8" = 1'-0"

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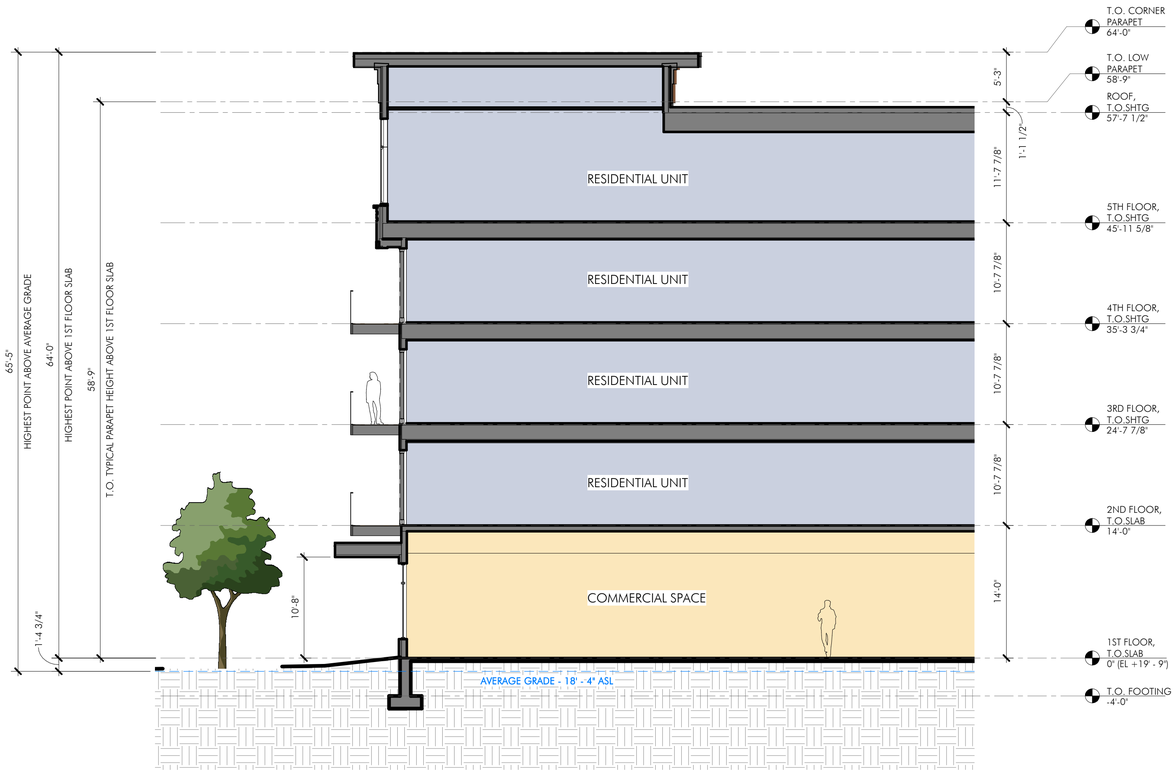
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BUILDING B
SECTION

DRAWING NUMBER
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1 SCHEMATIC BUILDING SECTION AT PLAZA TOWER
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COCHECO WATERFRONT
BUILDING C
RIVER STREET DOVER, NH
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Designan J Brown
No. 04331
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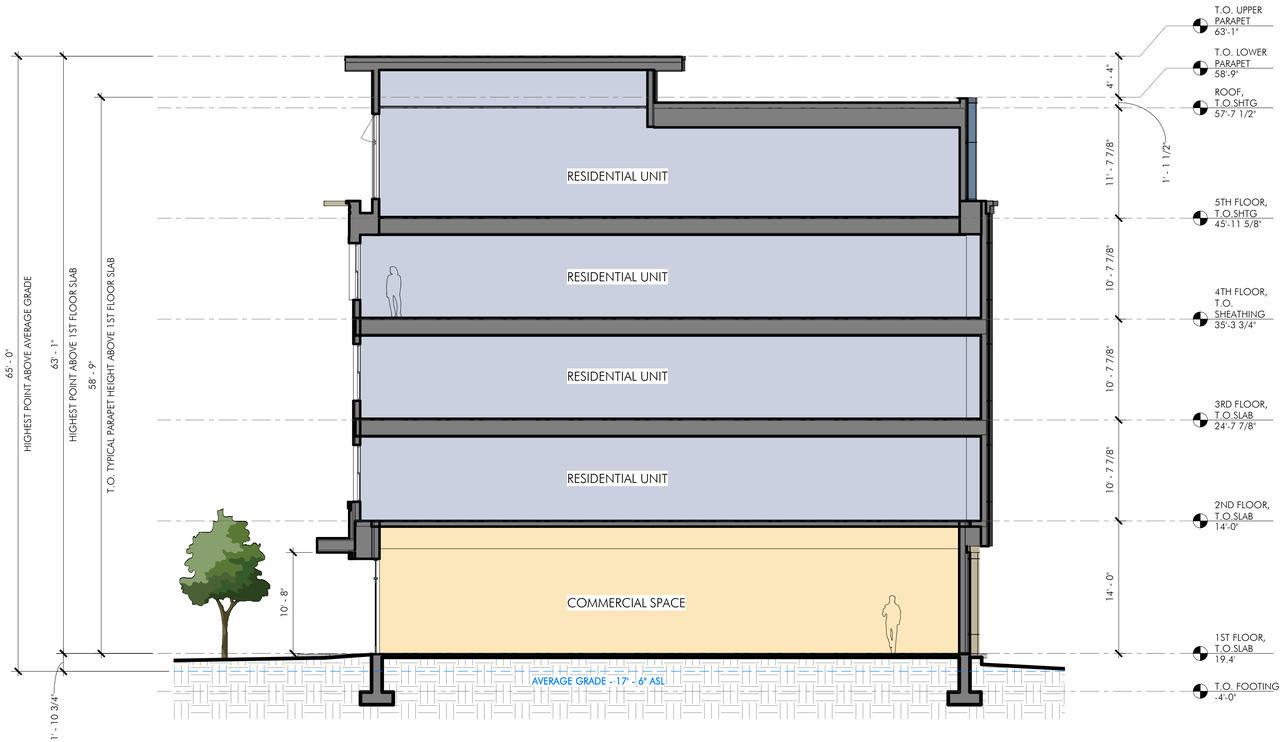
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1 BUILDING D SECTION AT PLAZA TOWER
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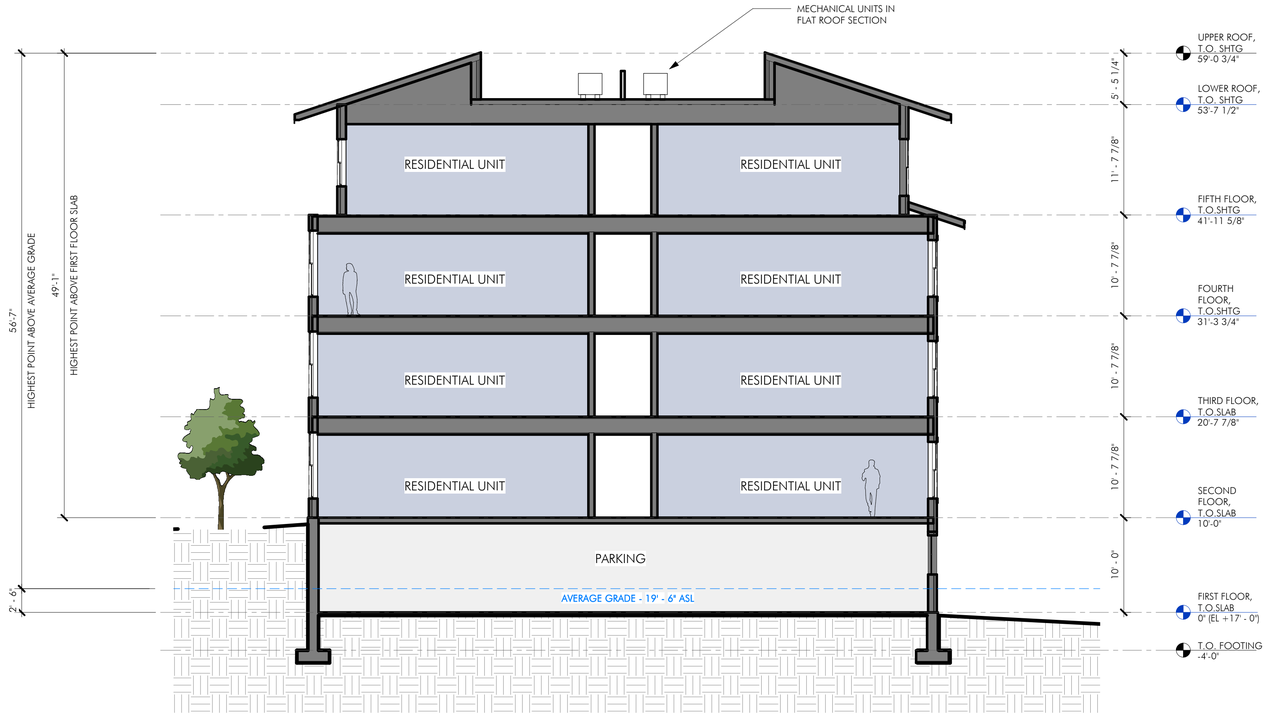
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BUILDING D SECTION

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1 BUILDING F SECTION
1/8" = 1'-0"

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BUILDING F SECTION

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BUILDING A PERSPECTIVE



BUILDING B & C PERSPECTIVE



BUILDING C & D PERSPECTIVE



BUILDING D PERSPECTIVE

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RIVER STREET, DOVER, NH

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BUILDING D & F PERSPECTIVE



TOWNHOUSE PERSPECTIVE

ARCHITECT

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COCHECHO WATERFRONT

RIVER STREET, DOVER, NH

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No 04331
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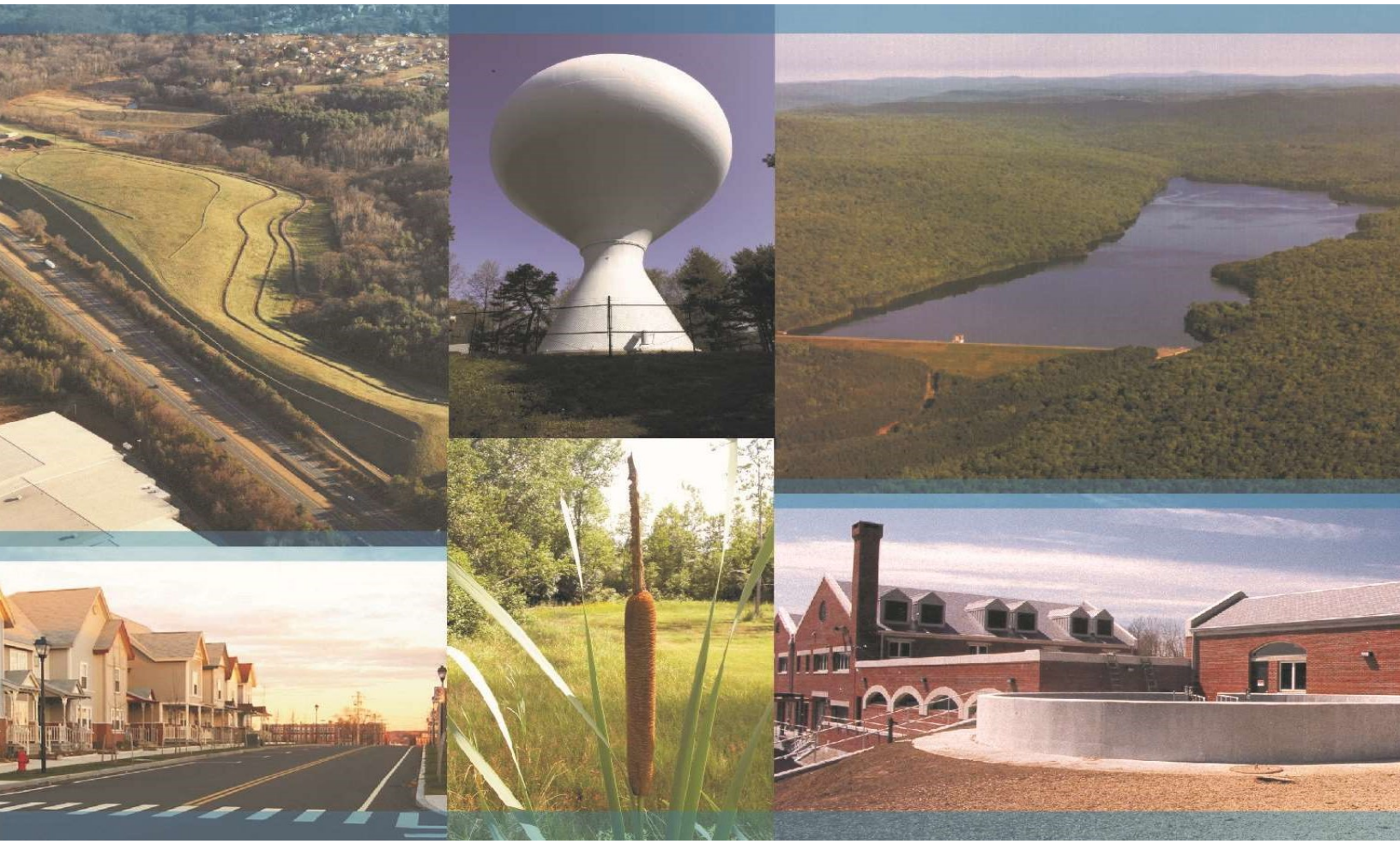
PERSPECTIVE VIEWS

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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

Last Revised December 16, 2021

Tighe&Bond

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Appendices

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

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SECTION 1

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	49.61	86.45	116.19	144.09
Post-Development Watershed				
PA-1	45.56	76.56	103.02	132.76

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)

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SECTION 2

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.

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SECTION 3

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)

2.77	ac	A = Area draining to the practice
2.60	ac	A_I = Impervious area draining to the practice
0.94	decimal	I = percent impervious area draining to the practice, in decimal form
0.89	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
2.48	ac-in	WQV= 1" x Rv x A
8,997	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".
0.89	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
0.019	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
2.479	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 JF0808-14-3- design cpacity of 2.76 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 - 02

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 - 03

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)

0.17	ac	A = Area draining to the practice
0.08	ac	A_I = Impervious area draining to the practice
0.48	decimal	I = percent impervious area draining to the practice, in decimal form
0.48	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.08	ac-in	WQV= 1" x Rv x A
292	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".
0.48	inches	Q = water quality depth. Q = WQV/A
94	unitless	CN = unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.7	inches	S = potential maximum retention. S = (1000/CN) - 10
0.138	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
0.082	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

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SECTION 4

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

PRE POND DMH100A

PA-1

PRE POND DMH 400

PRE POND DMH 401

PRE POND DMH 100

PRE POND DMH 101

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

PAVED SIDEWALK

DOVER SKATE PARK

12" PVC PIPE UP 3'

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

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Tighe&Bond

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

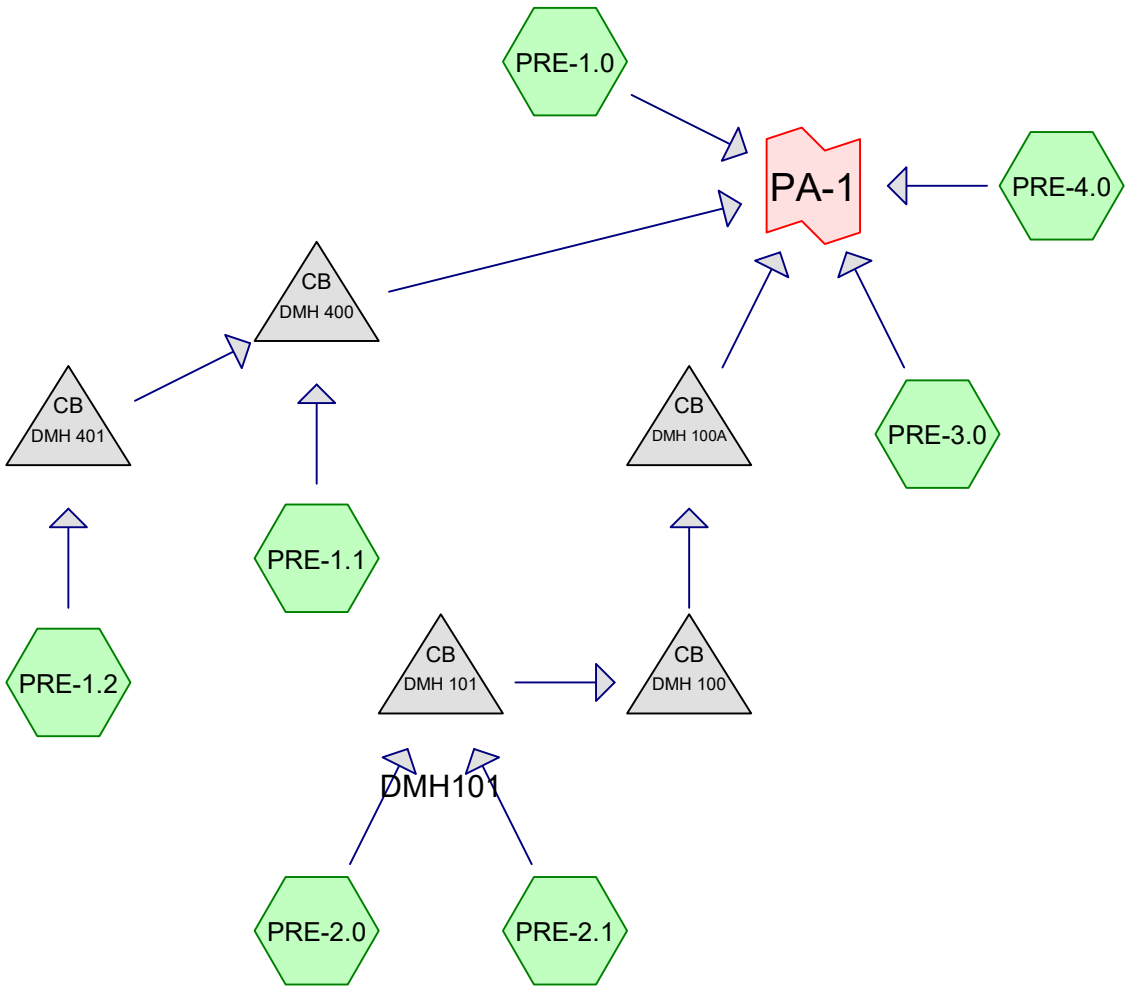
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DATE:	July 26, 2021
FILE:	C0960-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Save Date: December 15, 2021 10:22 AM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 10:22 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-801



Subcat Reach Pond Link

Routing Diagram for C0960-007_Pre
Prepared by Tighe & Bond, Printed 12/15/2021
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)
166,171	98	Ledge, HSG C (PRE-1.0, PRE-1.1, PRE-1.2)
7,224	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)
251,242	70	Woods, Good, HSG C (PRE-1.0, PRE-2.1, PRE-4.0)
1,032,224	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,001,850	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	
1,032,224		**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=52,818 sf 95.78% Impervious Runoff Depth=3.27"
Flow Length=377' Tc=5.0 min CN=97 Runoff=4.25 cfs 14,409 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=49.61 cfs 179,011 cf
Primary=49.61 cfs 179,011 cf

Total Runoff Area = 1,032,224 sf Runoff Volume = 179,011 cf Average Runoff Depth = 2.08"
68.05% Pervious = 702,427 sf 31.95% Impervious = 329,797 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=52,818 sf 95.78% Impervious Runoff Depth=5.11"
Flow Length=377' Tc=5.0 min CN=97 Runoff=6.49 cfs 22,472 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=86.45 cfs 317,504 cf
Primary=86.45 cfs 317,504 cf

Total Runoff Area = 1,032,224 sf Runoff Volume = 317,504 cf Average Runoff Depth = 3.69"
68.05% Pervious = 702,427 sf 31.95% Impervious = 329,797 sf

Summary for Subcatchment PRE-1.0:

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

Runoff = 6.49 cfs @ 12.07 hrs, Volume= 22,472 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
	7,224	98	Paved parking, HSG C
	2,230	70	Woods, Good, HSG C
*	43,364	98	Ledge, HSG C
	52,818	97	Weighted Average
	2,230		4.22% Pervious Area
	50,588		95.78% 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 = 1,032,224 sf, 31.95% Impervious, Inflow Depth = 3.69" for 10-Year event
Inflow = 86.45 cfs @ 12.08 hrs, Volume= 317,504 cf
Primary = 86.45 cfs @ 12.08 hrs, Volume= 317,504 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=52,818 sf 95.78% Impervious Runoff Depth=6.55"
Flow Length=377' Tc=5.0 min CN=97 Runoff=8.24 cfs 28,840 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=116.19 cfs 432,139 cf
Primary=116.19 cfs 432,139 cf

Total Runoff Area = 1,032,224 sf Runoff Volume = 432,139 cf Average Runoff Depth = 5.02"
68.05% Pervious = 702,427 sf 31.95% Impervious = 329,797 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=52,818 sf 95.78% Impervious Runoff Depth=7.90"
Flow Length=377' Tc=5.0 min CN=97 Runoff=9.87 cfs 34,772 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=144.09 cfs 541,319 cf
Primary=144.09 cfs 541,319 cf

Total Runoff Area = 1,032,224 sf Runoff Volume = 541,319 cf Average Runoff Depth = 6.29"
68.05% Pervious = 702,427 sf 31.95% Impervious = 329,797 sf

4.3 Post-Development Conditions

The post-development drainage condition is characterized by thirteen (13) 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 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 basin 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-1) before connecting to the existing closed drainage system.

POST-1.1 is compromised of off-site sheet flow flowing over the existing ledge wall and capture by a grass lined swale at the base of the wall. Runoff from this Subcatchment travels via the swale to a yard drain and ultimately to a flared end section to the southern portion of the project site.

POST-1.2 is comprised mainly of ledge and grass with a small amount of impervious surfaces. Runoff from this subcatchment travels via overland flow to the existing closed drainage system on River Street before ultimately flowing to the Cochecho River.

POST-1.3, and POST-1.4 are located to the West and Northwest 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-2.0 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-2.1 is similar in nature to POST-1.0 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 discharge to the existing closed drainage system discharging to the Cochecho River.

POST-2.2 is comprised mainly of paved parking areas as well as roof runoff from portions of the proposed townhouses (Building E). Runoff from this watershed travels vial overland flow to a tree box filter (PTBF 1) discharging to an existing closed drainage system that leads to the Cochecho River.

POST-2.3 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 portions of 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-3) 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

POST POND DMH 101
PA-1
POST POND DMH100A
POST POND DMH 100
POST 3.0
POST POND DMH 400
POST POND DMH 401
POST POND PJFF 1
POST 1.3
POST 1.4
POST POND PDMH 10
POST POND PJFF 2
POST POND UDB 2
POST POND PDMH 11
POST 4.1
POST POND UDB 1
POST 2.1
POST 1.2
POST POND PDMH 5
POST POND PJFF 3
POST 1.0
POST POND DMH 308
POST POND PFES 1
POST 1.1
POST 2.0
POST 4.0
POST POND PTBF 1
POST 2.2
POST 4.2
POST 2.3

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

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC
c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
A	9/16/2021	TRC Submission

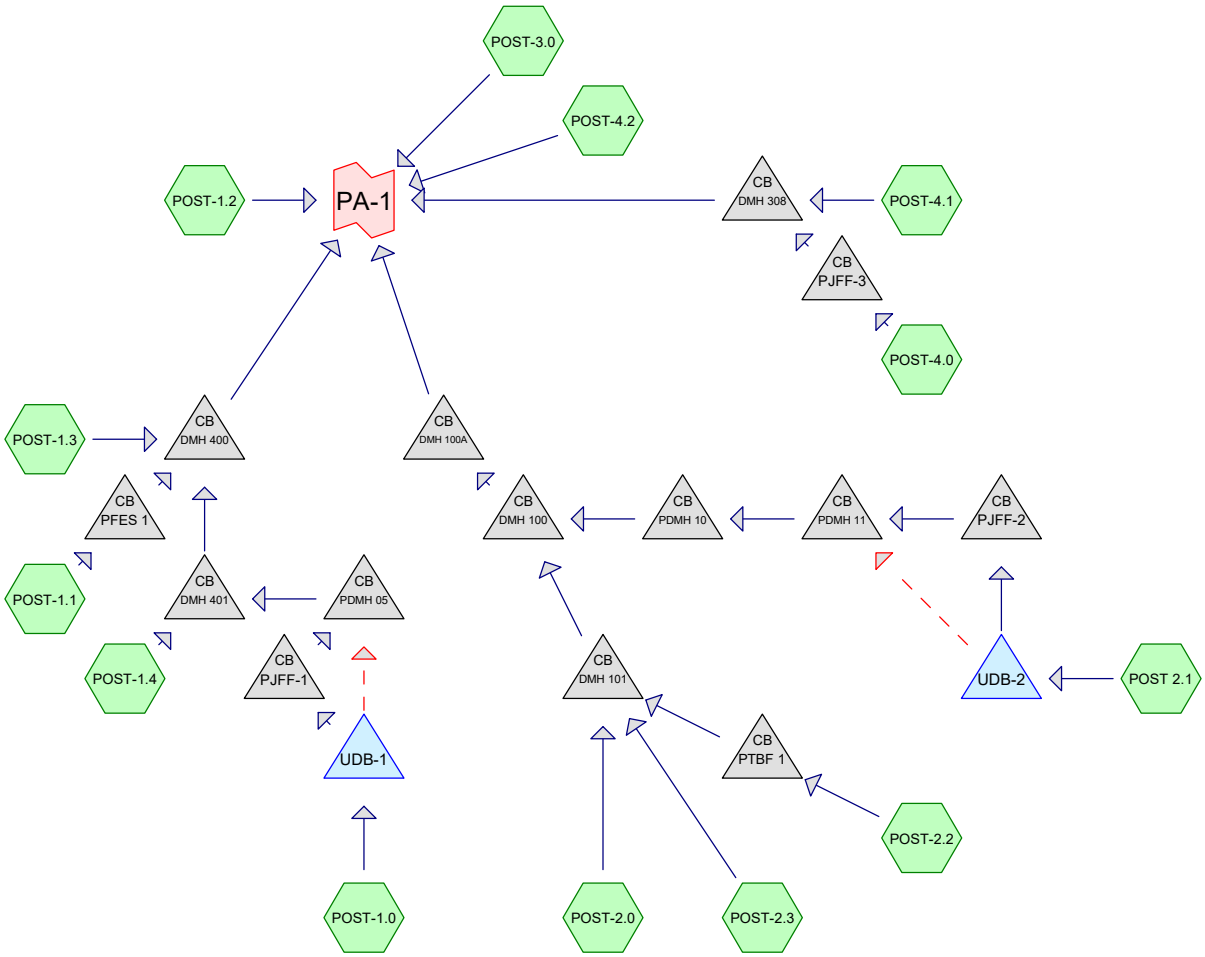
PROJECT NO:	C-0960-007
DATE:	July 26, 2021
FILE:	C0960-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED:	PMC/NAH
APPROVED:	BLM

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Save Date: December 15, 2021 6:58 PM By: CKRZCUIK
Plot Date: Thursday, December 16, 2021 Plotted By: CKRZCUIK
T&B File Location: J:\CC\C0960 Cathartes\C-0960-007 Cocheco Waterfront\Drawings_Figures\AutoCAD\Sheet\C0960-007-HYDRO.dwg Layout Tab: C-802



Subcat Reach Pond Link

Routing Diagram for C0960-007_Post
Prepared by Tighe & Bond, Printed 12/15/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
276,309	74	>75% Grass cover, Good, HSG C (POST 2.1, POST-1.0, POST-1.1, POST-1.2, POST-1.3, POST-1.4, POST-2.0, POST-2.2, POST-2.3, POST-3.0, POST-4.0, POST-4.1, POST-4.2)
4,233	80	>75% Grass cover, Good, HSG D (POST 2.1, POST-4.0, POST-4.1, POST-4.2)
36,512	98	Ledge, HSG C (POST-1.1, POST-1.2)
263,937	98	Paved parking, HSG C (POST 2.1, POST-1.0, POST-1.2, POST-2.0, POST-2.2, POST-3.0, POST-4.0, POST-4.1, POST-4.2)
11,636	98	Paved parking, HSG D (POST 2.1, POST-4.1, POST-4.2)
3,275	98	Roofs, HSG C (POST-1.4, POST-2.0)
46,120	98	Unconnected pavement, HSG C (POST-1.3, POST-1.4, POST-2.3)
129,774	98	Unconnected roofs, HSG C (POST 2.1, POST-1.0, POST-2.2, POST-2.3, POST-4.0, POST-4.1)
3,580	98	Unconnected roofs, HSG D (POST-4.0)
10,925	98	Water Surface, HSG D (POST-2.3)
245,926	70	Woods, Good, HSG C (POST-2.3, POST-4.2)
1,032,227	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,001,853	HSG C	POST 2.1, POST-1.0, POST-1.1, POST-1.2, POST-1.3, POST-1.4, POST-2.0, POST-2.2, POST-2.3, POST-3.0, POST-4.0, POST-4.1, POST-4.2
30,374	HSG D	POST 2.1, POST-2.3, POST-4.0, POST-4.1, POST-4.2
0	Other	
1,032,227		**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 2.1: 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=120,607 sf 93.64% Impervious Runoff Depth=3.16"
Flow Length=355' Tc=3.4 min CN=96 Runoff=10.16 cfs 31,799 cf

Subcatchment POST-1.1: Runoff Area=42,424 sf 66.59% Impervious Runoff Depth=2.56"
Flow Length=497' Tc=11.1 min CN=90 Runoff=2.41 cfs 9,052 cf

Subcatchment POST-1.2: Runoff Area=17,704 sf 49.64% Impervious Runoff Depth=2.20"
Flow Length=159' Tc=3.0 min CN=86 Runoff=1.14 cfs 3,253 cf

Subcatchment POST-1.3: Runoff Area=7,351 sf 88.64% Impervious Runoff Depth=3.06"
Flow Length=162' Tc=3.0 min CN=95 Runoff=0.61 cfs 1,873 cf

Subcatchment POST-1.4: Runoff Area=38,934 sf 47.26% Impervious Runoff Depth=2.12"
Flow Length=436' Tc=5.0 min CN=85 Runoff=2.22 cfs 6,882 cf

Subcatchment POST-2.0: 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-2.2: 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-2.3: 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=8.89' Inflow=23.51 cfs 97,886 cf
42.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=23.51 cfs 97,886 cf

Pond DMH 100A: Peak Elev=8.43' Inflow=23.51 cfs 97,886 cf
42.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=23.51 cfs 97,886 cf

Pond DMH 101: Peak Elev=9.64' 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=7.63' Inflow=11.89 cfs 49,606 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=11.89 cfs 49,606 cf

Pond DMH 401: Peak Elev=8.74' Inflow=9.25 cfs 38,682 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=9.25 cfs 38,682 cf

Pond PDMH 05: Peak Elev=16.69' Inflow=7.29 cfs 31,799 cf
24.0" Round Culvert n=0.013 L=57.0' S=0.0088 '/' Outflow=7.29 cfs 31,799 cf

Pond PDMH 10: Peak Elev=10.18' Inflow=11.45 cfs 43,235 cf
30.0" Round Culvert n=0.013 L=123.0' S=0.0053 '/' Outflow=11.45 cfs 43,235 cf

Pond PDMH 11: Peak Elev=12.40' Inflow=11.45 cfs 43,235 cf
30.0" Round Culvert n=0.013 L=53.0' S=0.0434 '/' Outflow=11.45 cfs 43,235 cf

Pond PFES 1: Peak Elev=21.40' Inflow=2.41 cfs 9,052 cf
18.0" Round Culvert n=0.013 L=158.0' S=0.0054 '/' Outflow=2.41 cfs 9,052 cf

Pond PJFF-1: Peak Elev=17.91' Inflow=3.77 cfs 27,281 cf
12.0" Round Culvert n=0.013 L=17.0' S=0.0529 '/' Outflow=3.77 cfs 27,281 cf

Pond PJFF-2: Peak Elev=13.15' Inflow=8.01 cfs 40,181 cf
18.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=8.01 cfs 40,181 cf

Pond PJFF-3: 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=22.52' Inflow=0.47 cfs 1,349 cf
10.0" Round Culvert n=0.013 L=4.0' S=0.0375 '/' Outflow=0.47 cfs 1,349 cf

Pond UDB-1: Peak Elev=18.77' Storage=2,744 cf Inflow=10.16 cfs 31,799 cf
Primary=3.77 cfs 27,281 cf Secondary=3.60 cfs 4,518 cf Outflow=7.29 cfs 31,799 cf

Pond UDB-2: Peak Elev=13.83' Storage=0.066 af Inflow=13.29 cfs 43,235 cf
Primary=8.01 cfs 40,181 cf Secondary=3.50 cfs 3,054 cf Outflow=11.45 cfs 43,235 cf

Link PA-1: Inflow=45.56 cfs 186,160 cf
Primary=45.56 cfs 186,160 cf

Total Runoff Area = 1,032,227 sf Runoff Volume = 186,160 cf Average Runoff Depth = 2.16"
51.00% Pervious = 526,468 sf 49.00% Impervious = 505,759 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 2.1: 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=120,607 sf 93.64% Impervious Runoff Depth=4.99"
Flow Length=355' Tc=3.4 min CN=96 Runoff=15.64 cfs 50,152 cf

Subcatchment POST-1.1: Runoff Area=42,424 sf 66.59% Impervious Runoff Depth=4.32"
Flow Length=497' Tc=11.1 min CN=90 Runoff=3.98 cfs 15,277 cf

Subcatchment POST-1.2: Runoff Area=17,704 sf 49.64% Impervious Runoff Depth=3.90"
Flow Length=159' Tc=3.0 min CN=86 Runoff=1.98 cfs 5,751 cf

Subcatchment POST-1.3: Runoff Area=7,351 sf 88.64% Impervious Runoff Depth=4.88"
Flow Length=162' Tc=3.0 min CN=95 Runoff=0.95 cfs 2,987 cf

Subcatchment POST-1.4: Runoff Area=38,934 sf 47.26% Impervious Runoff Depth=3.80"
Flow Length=436' Tc=5.0 min CN=85 Runoff=3.94 cfs 12,315 cf

Subcatchment POST-2.0: 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-2.2: 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-2.3: 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=10.28' Inflow=42.62 cfs 179,168 cf
42.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=42.62 cfs 179,168 cf

Pond DMH 100A: Peak Elev=9.49' Inflow=42.62 cfs 179,168 cf
42.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=42.62 cfs 179,168 cf

Pond DMH 101: Peak Elev=10.95' 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=8.33' Inflow=17.79 cfs 80,730 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=17.79 cfs 80,730 cf

Pond DMH 401: Peak Elev=10.65' Inflow=13.44 cfs 62,467 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=13.44 cfs 62,467 cf

Pond PDMH 05: Peak Elev=16.94' Inflow=9.73 cfs 50,152 cf
24.0" Round Culvert n=0.013 L=57.0' S=0.0088 '/' Outflow=9.73 cfs 50,152 cf

Pond PDMH 10: Peak Elev=10.84' Inflow=17.12 cfs 69,733 cf
30.0" Round Culvert n=0.013 L=123.0' S=0.0053 '/' Outflow=17.12 cfs 69,733 cf

Pond PDMH 11: Peak Elev=12.79' Inflow=17.12 cfs 69,733 cf
30.0" Round Culvert n=0.013 L=53.0' S=0.0434 '/' Outflow=17.12 cfs 69,733 cf

Pond PFES 1: Peak Elev=21.67' Inflow=3.98 cfs 15,277 cf
18.0" Round Culvert n=0.013 L=158.0' S=0.0054 '/' Outflow=3.98 cfs 15,277 cf

Pond PJFF-1: Peak Elev=18.27' Inflow=4.42 cfs 40,505 cf
12.0" Round Culvert n=0.013 L=17.0' S=0.0529 '/' Outflow=4.42 cfs 40,505 cf

Pond PJFF-2: Peak Elev=13.65' Inflow=8.95 cfs 60,327 cf
18.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=8.95 cfs 60,327 cf

Pond PJFF-3: 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=22.67' Inflow=0.82 cfs 2,386 cf
10.0" Round Culvert n=0.013 L=4.0' S=0.0375 '/' Outflow=0.82 cfs 2,386 cf

Pond UDB-1: Peak Elev=19.58' Storage=4,758 cf Inflow=15.64 cfs 50,152 cf
Primary=4.42 cfs 40,505 cf Secondary=5.36 cfs 9,647 cf Outflow=9.73 cfs 50,152 cf

Pond UDB-2: Peak Elev=14.45' Storage=0.102 af Inflow=20.86 cfs 69,733 cf
Primary=8.95 cfs 60,327 cf Secondary=8.98 cfs 9,406 cf Outflow=17.12 cfs 69,733 cf

Link PA-1: Inflow=76.56 cfs 325,661 cf
Primary=76.56 cfs 325,661 cf

Total Runoff Area = 1,032,227 sf Runoff Volume = 325,661 cf Average Runoff Depth = 3.79"
51.00% Pervious = 526,468 sf 49.00% Impervious = 505,759 sf

Summary for Subcatchment POST 2.1:

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

Runoff = 13.29 cfs @ 12.07 hrs, Volume= 43,235 cf, Depth= 2.95"

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 2-Year Rainfall=3.62"

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 = 10.16 cfs @ 12.05 hrs, Volume= 31,799 cf, Depth= 3.16"

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 2-Year Rainfall=3.62"

Area (sf)	CN	Description
46,778	98	Unconnected roofs, HSG C
7,667	74	>75% Grass cover, Good, HSG C
66,162	98	Paved parking, HSG C
120,607	96	Weighted Average
7,667		6.36% Pervious Area
112,940		93.64% Impervious Area
46,778		41.42% 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
0.9	213	0.0080	4.06	3.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.4	355	Total			

Summary for Subcatchment POST-1.1:

Runoff = 2.41 cfs @ 12.15 hrs, Volume= 9,052 cf, Depth= 2.56"

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 2-Year Rainfall=3.62"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG C
	14,174	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	28,250	98	Ledge, HSG C
	42,424	90	Weighted Average
	14,174		33.41% Pervious Area
	28,250		66.59% Impervious Area

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"
5.7	447	0.0075	1.30		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.1	497	Total			

Summary for Subcatchment POST-1.2:

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

Runoff = 1.14 cfs @ 12.05 hrs, Volume= 3,253 cf, Depth= 2.20"

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 2-Year Rainfall=3.62"

	Area (sf)	CN	Description
	8,915	74	>75% Grass cover, Good, HSG C
	527	98	Paved parking, HSG C
*	8,262	98	Ledge, HSG C
	17,704	86	Weighted Average
	8,915		50.36% Pervious Area
	8,789		49.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.3330	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.4	109	0.1055	4.87		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.1	159	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.3:

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

Runoff = 0.61 cfs @ 12.05 hrs, Volume= 1,873 cf, Depth= 3.06"

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 2-Year Rainfall=3.62"

	Area (sf)	CN	Description
*	6,516	98	Unconnected pavement, HSG C
	835	74	>75% Grass cover, Good, HSG C
*	0	98	Ledge, HSG C
	7,351	95	Weighted Average
	835		11.36% Pervious Area
	6,516		88.64% Impervious Area
	6,516		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-1.4:

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

Runoff = 2.22 cfs @ 12.08 hrs, Volume= 6,882 cf, Depth= 2.12"

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 2-Year Rainfall=3.62"

	Area (sf)	CN	Description
*	16,237	98	Unconnected pavement, HSG C
	20,533	74	>75% Grass cover, Good, HSG C
	2,164	98	Roofs, HSG C
	38,934	85	Weighted Average
	20,533		52.74% Pervious Area
	18,401		47.26% 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 = 4.65 cfs @ 12.06 hrs, Volume= 13,709 cf, Depth= 2.29"

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 2-Year Rainfall=3.62"

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-2.2:

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

Runoff = 0.47 cfs @ 12.05 hrs, Volume= 1,349 cf, Depth= 2.20"

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 2-Year Rainfall=3.62"

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-2.3:

Runoff = 9.68 cfs @ 12.19 hrs, Volume= 39,593 cf, Depth= 1.26"

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 2-Year Rainfall=3.62"

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 = 2.62 cfs @ 12.05 hrs, Volume= 8,114 cf, Depth= 3.16"

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 2-Year Rainfall=3.62"

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 = 3.93 cfs @ 12.06 hrs, Volume= 11,610 cf, Depth= 2.56"

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 2-Year Rainfall=3.62"

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 = 4.01 cfs @ 12.05 hrs, Volume= 11,822 cf, Depth= 2.75"

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 2-Year Rainfall=3.62"

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 = 1.17 cfs @ 12.10 hrs, Volume= 3,869 cf, Depth= 1.26"

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 2-Year Rainfall=3.62"

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 = 1.86" for 2-Year event
Inflow = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf
Outflow = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf, Atten= 0%, Lag= 0.0 min
Primary = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.89' @ 12.16 hrs
Flood Elev= 17.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.30'	**42.0" 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= 9.62 sf

Primary OutFlow Max=20.06 cfs @ 12.12 hrs HW=8.80' TW=8.40' (Dynamic Tailwater)
1=Culvert (Outlet Controls 20.06 cfs @ 3.83 fps)

Summary for Pond DMH 100A:

Inflow Area = 631,651 sf, 36.06% Impervious, Inflow Depth = 1.86" for 2-Year event
Inflow = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf
Outflow = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf, Atten= 0%, Lag= 0.0 min
Primary = 23.51 cfs @ 12.12 hrs, Volume= 97,886 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.43' @ 12.12 hrs
Flood Elev= 12.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.05'	**42.0" 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= 9.62 sf

Primary OutFlow Max=23.00 cfs @ 12.12 hrs HW=8.40' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 23.00 cfs @ 4.75 fps)

Summary for Pond DMH 101:

Inflow Area = 455,938 sf, 17.24% Impervious, Inflow Depth = 1.44" for 2-Year event
Inflow = 12.29 cfs @ 12.16 hrs, Volume= 54,651 cf
Outflow = 12.29 cfs @ 12.16 hrs, Volume= 54,651 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.29 cfs @ 12.16 hrs, Volume= 54,651 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.64' @ 12.19 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=11.48 cfs @ 12.16 hrs HW=9.60' TW=8.87' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.48 cfs @ 4.17 fps)

Summary for Pond DMH 308:

Inflow Area = 105,966 sf, 70.18% Impervious, Inflow Depth = 2.65" for 2-Year event
Inflow = 7.93 cfs @ 12.05 hrs, Volume= 23,432 cf
Outflow = 7.93 cfs @ 12.05 hrs, Volume= 23,432 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.93 cfs @ 12.05 hrs, Volume= 23,432 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.32' @ 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=7.89 cfs @ 12.05 hrs HW=9.31' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.89 cfs @ 4.47 fps)

Summary for Pond DMH 400:

Inflow Area = 209,316 sf, 79.36% Impervious, Inflow Depth = 2.84" for 2-Year event
Inflow = 11.89 cfs @ 12.11 hrs, Volume= 49,606 cf
Outflow = 11.89 cfs @ 12.11 hrs, Volume= 49,606 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.89 cfs @ 12.11 hrs, Volume= 49,606 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 7.63' @ 12.11 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=11.82 cfs @ 12.11 hrs HW=7.62' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.82 cfs @ 5.72 fps)

Summary for Pond DMH 401:

Inflow Area = 159,541 sf, 82.32% Impervious, Inflow Depth = 2.91" for 2-Year event
Inflow = 9.25 cfs @ 12.09 hrs, Volume= 38,682 cf
Outflow = 9.25 cfs @ 12.09 hrs, Volume= 38,682 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.25 cfs @ 12.09 hrs, Volume= 38,682 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.74' @ 12.11 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=8.96 cfs @ 12.09 hrs HW=8.73' TW=7.62' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.96 cfs @ 5.07 fps)

Summary for Pond PDMH 05:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 3.16" for 2-Year event
Inflow = 7.29 cfs @ 12.13 hrs, Volume= 31,799 cf
Outflow = 7.29 cfs @ 12.13 hrs, Volume= 31,799 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.29 cfs @ 12.13 hrs, Volume= 31,799 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 16.69' @ 12.13 hrs
Flood Elev= 26.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**24.0" Round Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.40' / 14.90' S= 0.0088 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.17 cfs @ 12.13 hrs HW=16.67' TW=8.72' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.17 cfs @ 4.85 fps)

Summary for Pond PDMH 10:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 2.95" for 2-Year event
Inflow = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf
Outflow = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.18' @ 12.11 hrs
Flood Elev= 17.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.60'	**30.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.60' / 7.95' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=11.18 cfs @ 12.11 hrs HW=10.16' TW=8.77' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.18 cfs @ 4.97 fps)

Summary for Pond PDMH 11:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 2.95" for 2-Year event
Inflow = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf
Outflow = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 12.40' @ 12.11 hrs
Flood Elev= 20.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**30.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.00' / 8.70' S= 0.0434 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=11.18 cfs @ 12.11 hrs HW=12.38' TW=10.16' (Dynamic Tailwater)
1=Culvert (Inlet Controls 11.18 cfs @ 4.01 fps)

Summary for Pond PFES 1:

Inflow Area = 42,424 sf, 66.59% Impervious, Inflow Depth = 2.56" for 2-Year event
Inflow = 2.41 cfs @ 12.15 hrs, Volume= 9,052 cf
Outflow = 2.41 cfs @ 12.15 hrs, Volume= 9,052 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.41 cfs @ 12.15 hrs, Volume= 9,052 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 21.40' @ 12.15 hrs
Flood Elev= 22.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.60'	**18.0" Round Culvert** L= 158.0' Ke= 0.500 Inlet / Outlet Invert= 20.60' / 19.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.40 cfs @ 12.15 hrs HW=21.40' TW=7.58' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.40 cfs @ 3.65 fps)

Summary for Pond PJFF-1:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 2.71" for 2-Year event
Inflow = 3.77 cfs @ 12.05 hrs, Volume= 27,281 cf
Outflow = 3.77 cfs @ 12.05 hrs, Volume= 27,281 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.77 cfs @ 12.05 hrs, Volume= 27,281 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 17.91' @ 12.06 hrs
Flood Elev= 26.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 17.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 15.50' S= 0.0529 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.77 cfs @ 12.05 hrs HW=17.89' TW=16.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.77 cfs @ 4.80 fps)

Summary for Pond PJFF-2:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 2.74" for 2-Year event
Inflow = 8.01 cfs @ 12.10 hrs, Volume= 40,181 cf
Outflow = 8.01 cfs @ 12.10 hrs, Volume= 40,181 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.01 cfs @ 12.10 hrs, Volume= 40,181 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 13.15' @ 12.12 hrs
Flood Elev= 19.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.20'	**18.0" Round Culvert** L= 8.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.20' / 11.10' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=7.24 cfs @ 12.10 hrs HW=13.12' TW=12.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.24 cfs @ 4.10 fps)

Summary for Pond PJFF-3:

Inflow Area = 54,412 sf, 65.23% Impervious, Inflow Depth = 2.56" for 2-Year event
Inflow = 3.93 cfs @ 12.06 hrs, Volume= 11,610 cf
Outflow = 3.93 cfs @ 12.06 hrs, Volume= 11,610 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.93 cfs @ 12.06 hrs, Volume= 11,610 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.50' @ 12.09 hrs
Flood Elev= 17.70'

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=2.42 cfs @ 12.06 hrs HW=9.41' TW=9.30' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.42 cfs @ 2.07 fps)

Summary for Pond PTBF 1:

Inflow Area = 7,344 sf, 50.26% Impervious, Inflow Depth = 2.20" for 2-Year event
Inflow = 0.47 cfs @ 12.05 hrs, Volume= 1,349 cf
Outflow = 0.47 cfs @ 12.05 hrs, Volume= 1,349 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.05 hrs, Volume= 1,349 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 22.52' @ 12.05 hrs
Flood Elev= 25.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.15'	**10.0" Round Culvert** L= 4.0' Ke= 0.500 Inlet / Outlet Invert= 22.15' / 22.00' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.47 cfs @ 12.05 hrs HW=22.52' TW=9.34' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.47 cfs @ 2.99 fps)

Summary for Pond UDB-1:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 3.16" for 2-Year event
Inflow = 10.16 cfs @ 12.05 hrs, Volume= 31,799 cf
Outflow = 7.29 cfs @ 12.13 hrs, Volume= 31,799 cf, Atten= 28%, Lag= 4.8 min
Primary = 3.77 cfs @ 12.05 hrs, Volume= 27,281 cf
Secondary = 3.60 cfs @ 12.12 hrs, Volume= 4,518 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Starting Elev= 17.00' Surf.Area= 3,595 sf Storage= 0 cf
Peak Elev= 18.77' @ 12.12 hrs Surf.Area= 3,595 sf Storage= 2,744 cf
Flood Elev= 21.00' Surf.Area= 3,595 sf Storage= 7,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.0 min (772.2 - 768.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	0 cf	**39.50'W x 91.00'L x 5.50'H Field A** 19,771 cf Overall - 9,433 cf Embedded = 10,337 cf x 0.0% Voids
#2A	17.00'	7,874 cf	**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

7,874 cf Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	16.75'	**24.0" Round Culvert** L= 8.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.75' / 16.50' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	17.85'	**22.0" W x 6.0" 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= 14.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.16 cfs @ 12.05 hrs HW=18.59' TW=17.89' (Dynamic Tailwater)
└─**4=Culvert** (Inlet Controls 3.16 cfs @ 4.03 fps)

Secondary OutFlow Max=3.54 cfs @ 12.12 hrs HW=18.75' TW=16.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.54 cfs of 13.99 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 3.54 cfs @ 3.86 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UDB-2:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 2.95" for 2-Year event
Inflow = 13.29 cfs @ 12.07 hrs, Volume= 43,235 cf
Outflow = 11.45 cfs @ 12.11 hrs, Volume= 43,235 cf, Atten= 14%, Lag= 2.3 min
Primary = 8.01 cfs @ 12.10 hrs, Volume= 40,181 cf
Secondary = 3.50 cfs @ 12.13 hrs, Volume= 3,054 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 13.83' @ 12.13 hrs Surf.Area= 0.083 ac Storage= 0.066 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= 2.9 min (785.2 - 782.3)

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=7.04 cfs @ 12.10 hrs HW=13.81' TW=13.12' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 7.04 cfs @ 3.98 fps)

Secondary OutFlow Max=3.40 cfs @ 12.13 hrs HW=13.81' TW=12.36' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 3.40 cfs @ 3.38 fps)

Summary for Link PA-1:

Inflow Area = 1,032,227 sf, 49.00% Impervious, Inflow Depth = 2.16" for 2-Year event
Inflow = 45.56 cfs @ 12.09 hrs, Volume= 186,160 cf
Primary = 45.56 cfs @ 12.09 hrs, Volume= 186,160 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment POST 2.1:

[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 = 15.64 cfs @ 12.05 hrs, Volume= 50,152 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
46,778	98	Unconnected roofs, HSG C
7,667	74	>75% Grass cover, Good, HSG C
66,162	98	Paved parking, HSG C
120,607	96	Weighted Average
7,667		6.36% Pervious Area
112,940		93.64% Impervious Area
46,778		41.42% 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
0.9	213	0.0080	4.06	3.19	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.4	355	Total			

Summary for Subcatchment POST-1.1:

Runoff = 3.98 cfs @ 12.15 hrs, Volume= 15,277 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
	0	98	Unconnected roofs, HSG C
	14,174	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	28,250	98	Ledge, HSG C
	42,424	90	Weighted Average
	14,174		33.41% Pervious Area
	28,250		66.59% Impervious Area

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"
5.7	447	0.0075	1.30		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.1	497	Total			

Summary for Subcatchment POST-1.2:

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

Runoff = 1.98 cfs @ 12.05 hrs, Volume= 5,751 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
	8,915	74	>75% Grass cover, Good, HSG C
	527	98	Paved parking, HSG C
*	8,262	98	Ledge, HSG C
	17,704	86	Weighted Average
	8,915		50.36% Pervious Area
	8,789		49.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.3330	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.62"
0.4	109	0.1055	4.87		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.1	159	Total, Increased to minimum Tc = 3.0 min			

Summary for Subcatchment POST-1.3:

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

Runoff = 0.95 cfs @ 12.05 hrs, Volume= 2,987 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
*	6,516	98	Unconnected pavement, HSG C
	835	74	>75% Grass cover, Good, HSG C
*	0	98	Ledge, HSG C
	7,351	95	Weighted Average
	835		11.36% Pervious Area
	6,516		88.64% Impervious Area
	6,516		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-1.4:

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

Runoff = 3.94 cfs @ 12.07 hrs, Volume= 12,315 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
	20,533	74	>75% Grass cover, Good, HSG C
	2,164	98	Roofs, HSG C
	38,934	85	Weighted Average
	20,533		52.74% Pervious Area
	18,401		47.26% 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 = 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-2.2:

[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-2.3:

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 = 3.40" for 10-Year event
Inflow = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf
Outflow = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf, Atten= 0%, Lag= 0.0 min
Primary = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.28' @ 12.17 hrs
Flood Elev= 17.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.30'	**42.0" 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= 9.62 sf

Primary OutFlow Max=38.76 cfs @ 12.14 hrs HW=10.16' TW=9.46' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 38.76 cfs @ 4.03 fps)

Summary for Pond DMH 100A:

Inflow Area = 631,651 sf, 36.06% Impervious, Inflow Depth = 3.40" for 10-Year event
Inflow = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf
Outflow = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf, Atten= 0%, Lag= 0.0 min
Primary = 42.62 cfs @ 12.14 hrs, Volume= 179,168 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 9.49' @ 12.14 hrs
Flood Elev= 12.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.05'	**42.0" 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= 9.62 sf

Primary OutFlow Max=42.16 cfs @ 12.14 hrs HW=9.46' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 42.16 cfs @ 5.60 fps)

Summary for Pond DMH 101:

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= 10.95' @ 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=20.61 cfs @ 12.16 hrs HW=10.78' TW=10.24' (Dynamic Tailwater)
1=Culvert (Outlet Controls 20.61 cfs @ 3.86 fps)

Summary for Pond DMH 308:

[80] Warning: Exceeded Pond PJFF-3 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 = 209,316 sf, 79.36% Impervious, Inflow Depth = 4.63" for 10-Year event
Inflow = 17.79 cfs @ 12.11 hrs, Volume= 80,730 cf
Outflow = 17.79 cfs @ 12.11 hrs, Volume= 80,730 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.79 cfs @ 12.11 hrs, Volume= 80,730 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 8.33' @ 12.11 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=17.65 cfs @ 12.11 hrs HW=8.31' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 17.65 cfs @ 5.62 fps)

Summary for Pond DMH 401:

Inflow Area = 159,541 sf, 82.32% Impervious, Inflow Depth = 4.70" for 10-Year event
Inflow = 13.44 cfs @ 12.10 hrs, Volume= 62,467 cf
Outflow = 13.44 cfs @ 12.10 hrs, Volume= 62,467 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.44 cfs @ 12.10 hrs, Volume= 62,467 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 10.65' @ 12.12 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=12.78 cfs @ 12.10 hrs HW=10.58' TW=8.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.78 cfs @ 7.23 fps)

Summary for Pond PDMH 05:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 9.73 cfs @ 12.13 hrs, Volume= 50,152 cf
Outflow = 9.73 cfs @ 12.13 hrs, Volume= 50,152 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.73 cfs @ 12.13 hrs, Volume= 50,152 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 16.94' @ 12.13 hrs
Flood Elev= 26.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**24.0" Round Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.40' / 14.90' S= 0.0088 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.67 cfs @ 12.13 hrs HW=16.94' TW=10.54' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.67 cfs @ 5.16 fps)

Summary for Pond PDMH 10:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 17.12 cfs @ 12.12 hrs, Volume= 69,733 cf
Outflow = 17.12 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.12 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= 10.84' @ 12.19 hrs
Flood Elev= 17.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.60'	**30.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.60' / 7.95' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=13.24 cfs @ 12.12 hrs HW=10.70' TW=10.06' (Dynamic Tailwater)
1=Culvert (Outlet Controls 13.24 cfs @ 4.07 fps)

Summary for Pond PDMH 11:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 17.12 cfs @ 12.12 hrs, Volume= 69,733 cf
Outflow = 17.12 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.12 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= 12.79' @ 12.12 hrs
Flood Elev= 20.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**30.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.00' / 8.70' S= 0.0434 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=16.82 cfs @ 12.12 hrs HW=12.77' TW=10.70' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.82 cfs @ 4.53 fps)

Summary for Pond PFES 1:

Inflow Area = 42,424 sf, 66.59% Impervious, Inflow Depth = 4.32" for 10-Year event
Inflow = 3.98 cfs @ 12.15 hrs, Volume= 15,277 cf
Outflow = 3.98 cfs @ 12.15 hrs, Volume= 15,277 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.98 cfs @ 12.15 hrs, Volume= 15,277 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 21.67' @ 12.15 hrs
Flood Elev= 22.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.60'	**18.0" Round Culvert** L= 158.0' Ke= 0.500 Inlet / Outlet Invert= 20.60' / 19.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.97 cfs @ 12.15 hrs HW=21.67' TW=8.19' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.97 cfs @ 4.12 fps)

Summary for Pond PJFF-1:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 4.03" for 10-Year event
Inflow = 4.42 cfs @ 12.11 hrs, Volume= 40,505 cf
Outflow = 4.42 cfs @ 12.11 hrs, Volume= 40,505 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.42 cfs @ 12.11 hrs, Volume= 40,505 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 18.27' @ 12.12 hrs
Flood Elev= 26.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 17.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 15.50' S= 0.0529 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=4.35 cfs @ 12.11 hrs HW=18.26' TW=16.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.35 cfs @ 5.54 fps)

Summary for Pond PJFF-2:

Inflow Area = 175,713 sf, 84.90% Impervious, Inflow Depth = 4.12" for 10-Year event
Inflow = 8.95 cfs @ 12.06 hrs, Volume= 60,327 cf
Outflow = 8.95 cfs @ 12.06 hrs, Volume= 60,327 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.95 cfs @ 12.06 hrs, Volume= 60,327 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 13.65' @ 12.14 hrs
Flood Elev= 19.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.20'	**18.0" Round Culvert** L= 8.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.20' / 11.10' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=7.73 cfs @ 12.06 hrs HW=13.47' TW=12.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.73 cfs @ 4.38 fps)

Summary for Pond PJFF-3:

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= 17.70'

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 = 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= 22.67' @ 12.05 hrs
Flood Elev= 25.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.15'	**10.0" Round Culvert** L= 4.0' Ke= 0.500 Inlet / Outlet Invert= 22.15' / 22.00' S= 0.0375 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.81 cfs @ 12.05 hrs HW=22.67' TW=10.05' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.81 cfs @ 3.28 fps)

Summary for Pond UDB-1:

Inflow Area = 120,607 sf, 93.64% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 15.64 cfs @ 12.05 hrs, Volume= 50,152 cf
Outflow = 9.73 cfs @ 12.13 hrs, Volume= 50,152 cf, Atten= 38%, Lag= 4.6 min
Primary = 4.42 cfs @ 12.11 hrs, Volume= 40,505 cf
Secondary = 5.36 cfs @ 12.14 hrs, Volume= 9,647 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Starting Elev= 17.00' Surf.Area= 3,595 sf Storage= 0 cf
Peak Elev= 19.58' @ 12.14 hrs Surf.Area= 3,595 sf Storage= 4,758 cf
Flood Elev= 21.00' Surf.Area= 3,595 sf Storage= 7,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.9 min (762.8 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	0 cf	**39.50'W x 91.00'L x 5.50'H Field A** 19,771 cf Overall - 9,433 cf Embedded = 10,337 cf x 0.0% Voids
#2A	17.00'	7,874 cf	**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

7,874 cf Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	16.75'	**24.0" Round Culvert** L= 8.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.75' / 16.50' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	17.85'	**22.0" W x 6.0" 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= 14.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.26 cfs @ 12.11 hrs HW=19.53' TW=18.26' (Dynamic Tailwater)
└**4=Culvert** (Inlet Controls 4.26 cfs @ 5.42 fps)

Secondary OutFlow Max=5.33 cfs @ 12.14 hrs HW=19.56' TW=16.94' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.33 cfs of 20.35 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 5.33 cfs @ 5.81 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UDB-2:

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 = 17.12 cfs @ 12.12 hrs, Volume= 69,733 cf, Atten= 18%, Lag= 3.1 min
Primary = 8.95 cfs @ 12.06 hrs, Volume= 60,327 cf
Secondary = 8.98 cfs @ 12.13 hrs, Volume= 9,406 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 14.45' @ 12.13 hrs Surf.Area= 0.083 ac Storage= 0.102 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= 3.3 min (773.5 - 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=7.00 cfs @ 12.06 hrs HW=14.14' TW=13.47' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 7.00 cfs @ 3.96 fps)

Secondary OutFlow Max=8.74 cfs @ 12.13 hrs HW=14.43' TW=12.77' (Dynamic Tailwater)
↑—**2=Culvert** (Barrel Controls 8.74 cfs @ 4.17 fps)

Summary for Link PA-1:

Inflow Area = 1,032,227 sf, 49.00% Impervious, Inflow Depth = 3.79" for 10-Year event
Inflow = 76.56 cfs @ 12.10 hrs, Volume= 325,661 cf
Primary = 76.56 cfs @ 12.10 hrs, Volume= 325,661 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 2.1: 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=120,607 sf 93.64% Impervious Runoff Depth=6.43"
Flow Length=355' Tc=3.4 min CN=96 Runoff=19.92 cfs 64,665 cf

Subcatchment POST-1.1: Runoff Area=42,424 sf 66.59% Impervious Runoff Depth=5.73"
Flow Length=497' Tc=11.1 min CN=90 Runoff=5.20 cfs 20,275 cf

Subcatchment POST-1.2: Runoff Area=17,704 sf 49.64% Impervious Runoff Depth=5.28"
Flow Length=159' Tc=3.0 min CN=86 Runoff=2.64 cfs 7,789 cf

Subcatchment POST-1.3: Runoff Area=7,351 sf 88.64% Impervious Runoff Depth=6.32"
Flow Length=162' Tc=3.0 min CN=95 Runoff=1.22 cfs 3,869 cf

Subcatchment POST-1.4: Runoff Area=38,934 sf 47.26% Impervious Runoff Depth=5.17"
Flow Length=436' Tc=5.0 min CN=85 Runoff=5.30 cfs 16,763 cf

Subcatchment POST-2.0: 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-2.2: 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-2.3: 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=12.00' Inflow=58.85 cfs 247,400 cf
42.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=58.85 cfs 247,400 cf

Pond DMH 100A: Peak Elev=10.46' Inflow=58.85 cfs 247,400 cf
42.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=58.85 cfs 247,400 cf

Pond DMH 101: Peak Elev=13.09' 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=9.11' Inflow=22.24 cfs 105,572 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=22.24 cfs 105,572 cf

Pond DMH 401: Peak Elev=12.61' Inflow=16.57 cfs 81,428 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=16.57 cfs 81,428 cf

Pond PDMH 05: Peak Elev=17.14' Inflow=11.65 cfs 64,665 cf
24.0" Round Culvert n=0.013 L=57.0' S=0.0088 '/' Outflow=11.65 cfs 64,665 cf

Pond PDMH 10: Peak Elev=12.53' Inflow=22.77 cfs 90,770 cf
30.0" Round Culvert n=0.013 L=123.0' S=0.0053 '/' Outflow=22.77 cfs 90,770 cf

Pond PDMH 11: Peak Elev=13.17' Inflow=22.77 cfs 90,770 cf
30.0" Round Culvert n=0.013 L=53.0' S=0.0434 '/' Outflow=22.77 cfs 90,770 cf

Pond PFES 1: Peak Elev=21.87' Inflow=5.20 cfs 20,275 cf
18.0" Round Culvert n=0.013 L=158.0' S=0.0054 '/' Outflow=5.20 cfs 20,275 cf

Pond PJFF-1: Peak Elev=18.81' Inflow=5.05 cfs 50,573 cf
12.0" Round Culvert n=0.013 L=17.0' S=0.0529 '/' Outflow=5.05 cfs 50,573 cf

Pond PJFF-2: Peak Elev=14.06' Inflow=9.35 cfs 74,607 cf
18.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=9.35 cfs 74,607 cf

Pond PJFF-3: 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=22.78' Inflow=1.09 cfs 3,231 cf
10.0" Round Culvert n=0.013 L=4.0' S=0.0375 '/' Outflow=1.09 cfs 3,231 cf

Pond UDB-1: Peak Elev=20.39' Storage=6,650 cf Inflow=19.92 cfs 64,665 cf
Primary=5.05 cfs 50,573 cf Secondary=6.68 cfs 14,092 cf Outflow=11.65 cfs 64,665 cf

Pond UDB-2: Peak Elev=14.90' Storage=0.127 af Inflow=26.77 cfs 90,770 cf
Primary=9.35 cfs 74,607 cf Secondary=13.89 cfs 16,162 cf Outflow=22.77 cfs 90,770 cf

Link PA-1: Inflow=103.02 cfs 440,731 cf
Primary=103.02 cfs 440,731 cf

Total Runoff Area = 1,032,227 sf Runoff Volume = 440,731 cf Average Runoff Depth = 5.12"
51.00% Pervious = 526,468 sf 49.00% Impervious = 505,759 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 2.1: 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=120,607 sf 93.64% Impervious Runoff Depth=7.78"
Flow Length=355' Tc=3.4 min CN=96 Runoff=23.89 cfs 78,196 cf

Subcatchment POST-1.1: Runoff Area=42,424 sf 66.59% Impervious Runoff Depth=7.06"
Flow Length=497' Tc=11.1 min CN=90 Runoff=6.33 cfs 24,965 cf

Subcatchment POST-1.2: Runoff Area=17,704 sf 49.64% Impervious Runoff Depth=6.58"
Flow Length=159' Tc=3.0 min CN=86 Runoff=3.25 cfs 9,713 cf

Subcatchment POST-1.3: Runoff Area=7,351 sf 88.64% Impervious Runoff Depth=7.66"
Flow Length=162' Tc=3.0 min CN=95 Runoff=1.46 cfs 4,693 cf

Subcatchment POST-1.4: Runoff Area=38,934 sf 47.26% Impervious Runoff Depth=6.46"
Flow Length=436' Tc=5.0 min CN=85 Runoff=6.56 cfs 20,974 cf

Subcatchment POST-2.0: 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-2.2: 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-2.3: 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=14.41' Inflow=74.50 cfs 312,837 cf
42.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=74.50 cfs 312,837 cf

Pond DMH 100A: Peak Elev=11.94' Inflow=74.50 cfs 312,837 cf
42.0" Round Culvert n=0.013 L=35.0' S=0.0043 '/' Outflow=74.50 cfs 312,837 cf

Pond DMH 101: Peak Elev=16.23' 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=11.21' Inflow=31.24 cfs 128,828 cf
24.0" Round Culvert n=0.013 L=31.0' S=0.0165 '/' Outflow=31.24 cfs 128,828 cf

Pond DMH 401: Peak Elev=17.92' Inflow=24.29 cfs 99,170 cf
18.0" Round Culvert n=0.013 L=43.0' S=0.0093 '/' Outflow=24.29 cfs 99,170 cf

Pond PDMH 05: Peak Elev=18.66' Inflow=18.21 cfs 78,197 cf
24.0" Round Culvert n=0.013 L=57.0' S=0.0088 '/' Outflow=18.21 cfs 78,197 cf

Pond PDMH 10: Peak Elev=15.14' Inflow=28.14 cfs 110,414 cf
30.0" Round Culvert n=0.013 L=123.0' S=0.0053 '/' Outflow=28.14 cfs 110,414 cf

Pond PDMH 11: Peak Elev=15.36' Inflow=28.14 cfs 110,414 cf
30.0" Round Culvert n=0.013 L=53.0' S=0.0434 '/' Outflow=28.14 cfs 110,414 cf

Pond PFES 1: Peak Elev=22.07' Inflow=6.33 cfs 24,965 cf
18.0" Round Culvert n=0.013 L=158.0' S=0.0054 '/' Outflow=6.33 cfs 24,965 cf

Pond PJFF-1: Peak Elev=19.88' Inflow=5.48 cfs 58,875 cf
12.0" Round Culvert n=0.013 L=17.0' S=0.0529 '/' Outflow=5.48 cfs 58,875 cf

Pond PJFF-2: Peak Elev=15.81' Inflow=9.66 cfs 85,339 cf
18.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=9.66 cfs 85,339 cf

Pond PJFF-3: 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=22.87' Inflow=1.35 cfs 4,029 cf
10.0" Round Culvert n=0.013 L=4.0' S=0.0375 '/' Outflow=1.35 cfs 4,029 cf

Pond UDB-1: Peak Elev=20.99' Storage=7,673 cf Inflow=23.89 cfs 78,196 cf
Primary=5.48 cfs 58,875 cf Secondary=12.85 cfs 19,322 cf Outflow=18.21 cfs 78,197 cf

Pond UDB-2: Peak Elev=15.47' Storage=0.156 af Inflow=32.23 cfs 110,414 cf
Primary=9.66 cfs 85,339 cf Secondary=18.97 cfs 25,075 cf Outflow=28.14 cfs 110,414 cf

Link PA-1: Inflow=132.76 cfs 550,182 cf
Primary=132.76 cfs 550,182 cf

Total Runoff Area = 1,032,227 sf Runoff Volume = 550,180 cf Average Runoff Depth = 6.40"
51.00% Pervious = 526,468 sf 49.00% Impervious = 505,759 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	49.61	86.45	116.19	144.09
Post-Development Watershed				
PA-1	45.56	76.56	103.02	132.76

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 and offline deep sump catch basins..

4.5.3 Treatment Methods for Protecting Water Quality

Treatment for the site is included by means of Contech proprietary Jellyfish Filters 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.

APPENDIX A

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

APPENDIX B

PRE POND DMH100A

PA-1

PRE POND DMH 400

PRE POND DMH 401

PRE POND DMH 100

PRE POND DMH 101

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

PAVED SIDEWALK

DOVER SKATE PARK

12" PVC PIPE UP 3'

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

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Cochecho Waterfront Development

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	12/16/2021	TRC Resubmission
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: December 15, 2021 10:22 AM By: CKRZCIUK
Plot Date: Wednesday, December 15, 2021 10:22 AM By: CKRZCIUK
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POST POND DMH 101
PA-1
POST POND DMH100A
POST POND DMH 100
POST 3.0
POST POND DMH 400
POST POND DMH 401
POST POND PJFF 1
POST 1.3
POST 1.4
POST POND PDMH 10
POST POND PJFF 2
POST POND UDB 2
POST POND PDMH 11
POST 4.1
POST POND UDB 1
POST 2.1
POST 1.2
POST POND PDMH 5
POST POND PJFF 3
POST 1.0
POST 2.0
POST 4.0
POST POND DMH 308
POST POND PFES 1
POST 1.1
POST POND PTBF 1
POST 2.2
POST 4.2
POST 2.3

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 File #: P21-69

Dover, New Hampshire

MARK	DATE	DESCRIPTION
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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

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TRAFFIC IMPACT AND SITE ACCESS STUDY

PROPOSED COCHECHO WATERFRONT DEVELOPMENT

Dover, New Hampshire

November 2021

Prepared for

Cathartes

Stephen G. Pernaw
& Company, Inc.

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Transportation: Engineering • Planning • Design

TRAFFIC IMPACT AND SITE ACCESS STUDY
PROPOSED COCHECHO WATERFRONT DEVELOPMENT
DOVER, NEW HAMPSHIRE
November 15, 2021

INTRODUCTION

This study has been prepared for Cathartes to assess the traffic impacts associated with the Cochecho Waterfront Development project that will be located at the northeast and southeast quadrants of the Washington Street / River Street intersection in Dover, New Hampshire. The purpose of this report is to summarize the traffic count data collected, the trip generation characteristics of the mixed-use development, the future traffic projections, the technical analyses, and our findings relative to traffic operations, capacity, and safety.

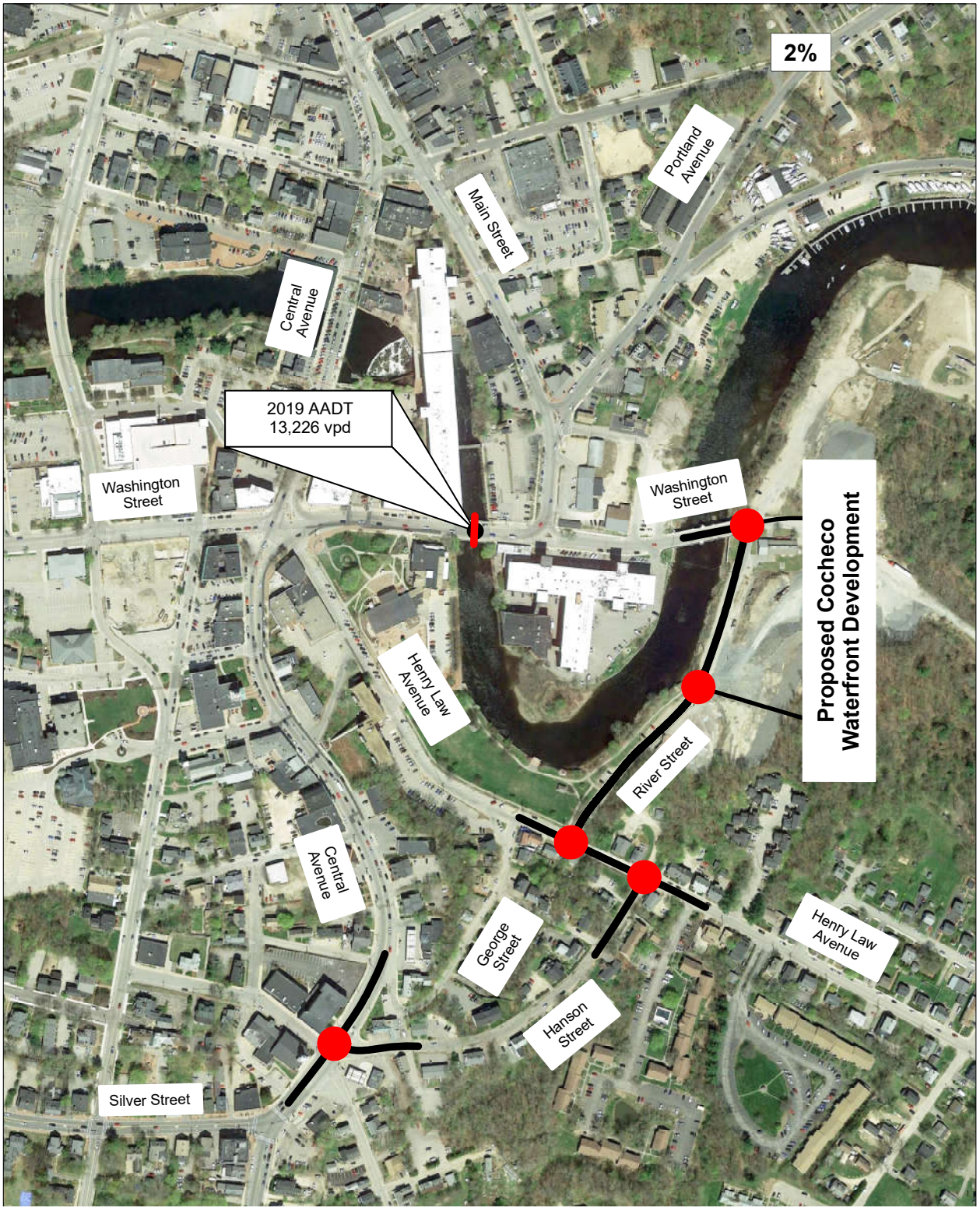
Based on input received at a meeting with the city Planning Department on September 21, 2021, the study area was determined to include five intersections: 1) Washington Street / River Street, 2) River Street / Proposed Site Driveway intersection, 3) Henry Law Avenue / River Street, 4) Henry Law Avenue / Hanson Street and 5) Central Avenue / Hanson Street intersection. Three analysis periods were identified: weekday AM, weekday PM, and the Saturday midday peak hour; and the analysis years were set at 2022 (opening year) and 2032 (horizon year). The city requested that the 2032 traffic projections for the study area intersections reflect completion of the downtown two-way street system plan that emerged from the *"Dover Downtown Pedestrian and Vehicular Access and Streetscape Study."* This report meets the requirements of an "Advanced Analysis" as specified in the City's *"Traffic Impact Assessment and Analysis Standards."*

The location of the subject site with respect to the area roadway system, along with the study area intersections and the NHDOT count station are shown on Figure 1. The plan entitled: *"Overall Site Plan,"* Sheet C-102, prepared by Tighe & Bond, shows the layout of the proposed apartment buildings and is found in Appendix A.

PROPOSAL

The development proposal involves the construction of five separate multi-story apartment buildings with a portion of the buildings containing office space, retail space and a restaurant. Single-story attached apartments are also proposed on the north side of Washington Street. There will be a total of 416 new dwelling units.

Access to the two proposed buildings south of Washington Street will be provided by two full-access site driveways: one on the east side of River Street (approximately 570-feet south of Washington Street) and the other on the south side of Washington Street (approximately 540-feet east of River Street). The three buildings north of Washington Street, and the single-story attached apartments, will have access via a loop road that will intersect the north side of Washington Street (approximately 120-feet and 430-feet east of River Street).



= AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)

= INTERSECTION TURNING MOVEMENT COUNT LOCATION (SGP & CO., INC)

NORTH

1981B

Figure 1

Site Location

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, NH

EXISTING CONDITIONS

ROADWAYS

River Street functions as a two-lane collector roadway that extends in a general north-south direction between Washington Street on the north, and Hanson Street to the south. Portions of the development will utilize River Street for access to/from the site via Washington Street and Henry Law Avenue. The Dover Skate Park, a portion of Henry Law Park, and vacant areas are present along this roadway. Except at its intersection with Washington Street, there are no centerline or edge line pavement markings on River Street, and there is no posted speed limit.

Washington Street functions as a two-lane minor arterial roadway that extends in a general west-east direction between downtown Dover and points to the west, and the subject site to the east. Site traffic will use Washington Street to travel to/from points west, and to/from points north via Portland Avenue, Main Street, and Central Avenue. There are many commercial establishments along both sides of Washington Street, west of the Cocheco River. The section of Washington Street between Central Avenue and Main Street is one-way in the eastbound direction. Washington Street east of Main Street is a two-way roadway, and it is delineated with a four-inch double yellow centerline and four-inch white edge lines. There is no posted speed limit on this section of Washington Street. The city's long-range plan is for Washington Street to carry two-way traffic, and for it to be eventually extended in an easterly direction to intersect with Henry Law Avenue.

Henry Law Avenue functions as a two-lane local roadway that extends in a general west-east direction between downtown Dover to the west, past River Street, to the Mulligan Drive / Back Road intersection to the east. Site traffic will utilize Henry Law Avenue for access to/from points east, as well as to reach Central Avenue via Hanson Street and George Street. The area west of River Street abuts Henry Law Park and the remainder is commercially developed. The section east of River Street is primarily residential. The roadway section between Washington Street and George Street is one-way in the eastbound direction. To the east of River Street, the roadway is delineated with a four-inch double yellow centerline, four-inch white edge lines, and parallel parking stalls in certain areas. The posted speed limit is 30 mph in both directions.

Hanson Street functions as a two-lane local roadway that extends in a general north-south direction between Henry Law Avenue and Central Avenue. Site traffic will utilize Hanson Street to reach NH9 (Silver Street) via Central Avenue. Residential and commercial uses abut this roadway. Except at its intersection with Central Avenue, there are no center line or edge line pavement markings on Hanson Street. There is no posted speed limit on Hanson Street.

Central Avenue functions as a minor arterial roadway that extends in a general north-south direction between Indian Brook Road to Exit 7 on the Spaulding Turnpike. In the vicinity of the Hanson Street intersection, Central Avenue is delineated with a two-way center turn lane and one travel lane in each direction. The speed limit is posted at 30 mph. There are sidewalks on both sides of Central Avenue and on-street parking is provided on the west side of Central Avenue, north of Hanson Street.

INTERSECTIONS

The **Washington Street / River Street** intersection functions as standard three-leg "T" intersection with stop line control on the minor approach (River Street). The existing travel lane configuration at this intersection is as follows:

Washington Street (EB) Approach: One shared through-right lane
Washington Street (WB) Approach: One shared left-through lane
River Street (NB) Approach: One shared left-right lane

Washington Street is delineated with a four-inch double-yellow centerline and four-inch white edge lines and River Street approach is delineated with a four-inch double yellow centerline (no white edge lines).

The **Henry Law Avenue / River Street** intersection also functions as a standard three-leg "T" intersection that operates under stop sign control on the minor approach (River Street). The existing travel lane configuration at this intersection is as follows:

Henry Law Avenue (EB) Approach: One shared left-through lane
Henry Law Avenue (WB) Approach: One shared through-right lane
River Street (SB) Approach: One shared left-right lane

Henry Law Avenue (east of River Street) is delineated with a four-inch double-yellow centerline and four-inch white edge lines; there are no pavement markings west of River Street. Henry Law Avenue is a one-way street (eastbound) between Washington Street and George Street. Sidewalks are present on both sides of Henry Law Avenue east of River Street.

The **Henry Law Avenue / Hanson Street** intersection also functions as a standard three-leg "T" intersection that operates under stop sign control on the minor approach (Hanson Street). The existing travel lane configuration at this intersection is as follows:

Henry Law Avenue (EB) Approach: One shared through-right lane
Henry Law Avenue (WB) Approach: One shared left-through lane
Hanson Street (NB) Approach: One shared left-right lane

Henry Law Avenue is delineated with a four-inch double-yellow centerline and four-inch white lane lines and edge lines. Sidewalks are present along both sides of Henry Law Avenue and on the west side of Hanson Street.

The **Central Avenue / Hanson Street** intersection functions as standard three-leg "T" intersection with stop line control on the minor approach. The existing travel lane configuration at this intersection is as follows:

Central Avenue (NB) Approach: One shared through-right lane
Central Avenue (SB) Approach: One through lane and one continuous two-way left-turn lane
Hanson Street (WB) Approach: One exclusive right-turn lane, one exclusive left-turn lane

Central Avenue is delineated with a center turn lane and four-inch white edge lines. Sidewalks are present on both sides of Central Avenue. Hanson Street is delineated with an exclusive left and exclusive right lane. Parking is permitted on the west side of Central Avenue.

TRAFFIC VOLUMES

Research at the New Hampshire Department of Transportation (NHDOT) revealed that a short-term automatic traffic recorder (ATR) count was conducted on the eastbound section of Washington Street (between Central Avenue and Main Street) in July 2020 and September 2017. This count station is located approximately 800-feet west of the Washington Street / River Street intersection on the bridge over the Cocheco River. According to the NHDOT, this section of Washington Street carried an estimated Annual Average Daily Traffic (AADT) volume of approximately 13,226 vehicles per day (vpd) in 2019, up slightly from 13,069 vpd in 2018.

The hourly data indicates that weekday volumes typically reached peak levels from 7:00 to 8:00 AM or 8:00 to 9:00 AM and from 4:00 to 5:00 PM or 5:00 to 6:00 PM. The daily and hourly variations in traffic demand at this location are summarized graphically on Page 7. Appendix B contains the summary and detail sheets pertaining to this count station. As an aside, the estimated 2020 AADT (12,185 vpd) volume is lower due to the ongoing pandemic.

To supplement this data, Pernaw & Company, Inc. conducted intersection turning movement and vehicle classification counts simultaneously at the four existing study area intersections. These counts were conducted on Thursday, September 23, 2021 from 7:00 to 9:00 AM and from 3:00 to 6:00 PM and on Saturday, September 25, 2021 from 10:00 AM to 2:00 PM. The new 2021 count data for the study area is summarized on Figure 2. Several facts and conclusions are evident from this data.

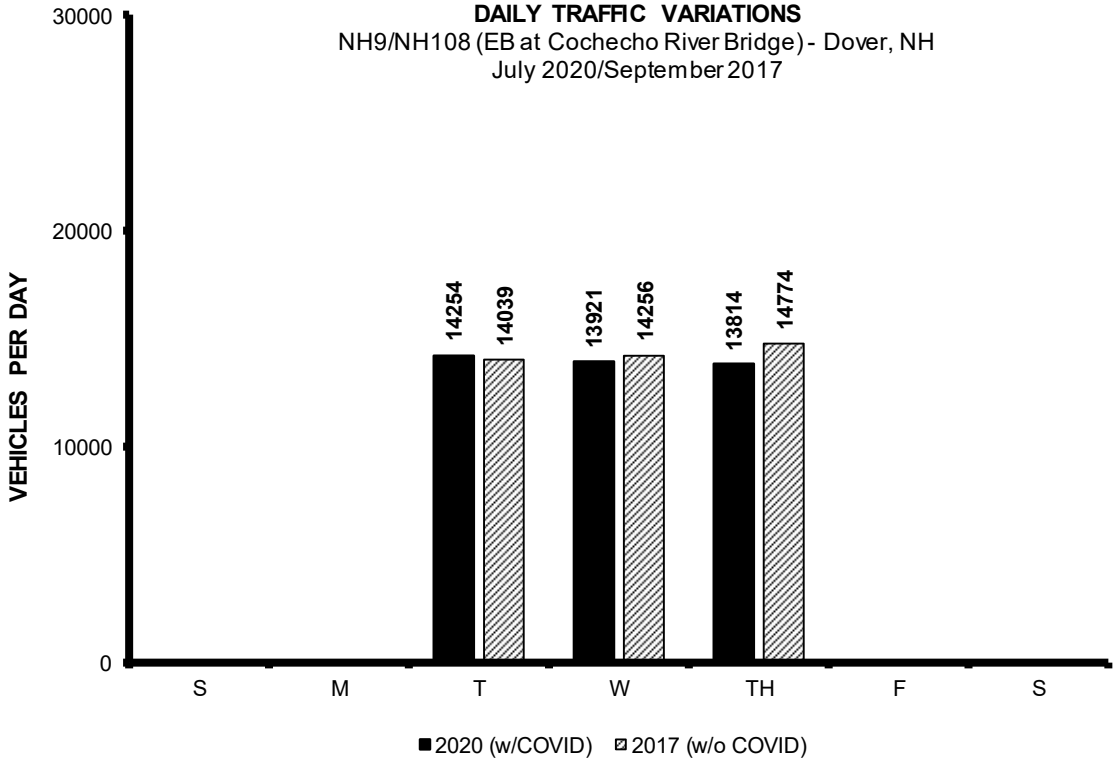
- At the Washington Street / River Street intersection, the highest hourly traffic volumes occurred from 7:30 to 8:30 AM and from 4:45 to 5:45 PM on Thursday, and from 10:00 to 11:00 AM on Saturday. The volume of through traffic on River Street passing the subject site totaled 164 (AM), 307 (PM) and 189 (SAT) vehicles during the peak hour periods, and the predominant travel direction was northbound in all cases. Washington Street (east of River Street) accommodated only 4 (AM), 13 (PM) and 11 (SAT) vehicles during these peak periods.

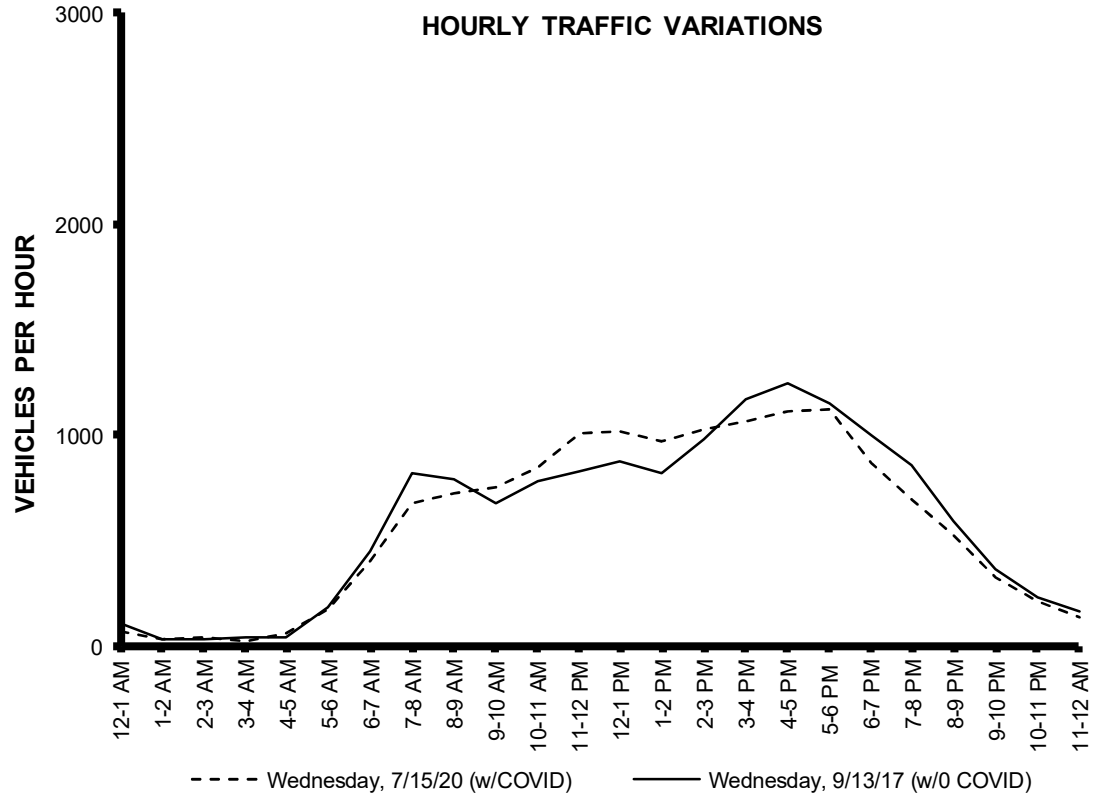
- At the Henry Law Avenue / River Street intersection, the highest hourly traffic volumes occurred from 7:45 to 8:45 AM and 4:45 to 5:45 PM during the weekday and from 10:45 to 11:45 AM on Saturday. The heaviest traffic volumes occurred on Henry Law Avenue (east of River Street) and totaled 158 (AM), 358 (PM) and 210 (SAT) vehicles (total both directions). The predominant travel direction was eastbound in all cases. The two-way traffic volume west of River Street totaled 33 (AM), 144 (PM) and 137 (SAT) vehicles during these peak hour periods.

- At the Henry Law Avenue / Hanson Street intersection, the highest hourly traffic volumes occurred from 7:45 to 8:45 AM and 4:45 to 5:45 PM during the weekday and from 10:45 to 11:45 AM on Saturday. The heaviest traffic volumes occurred on Henry Law Avenue east of Hanson Street with 185 (AM), 333 (PM) and 241 (SAT) vehicles observed during the peak hour periods (total both directions). The predominant travel direction was eastbound during the AM peak hour, westbound during the PM peak hour and evenly split during the Saturday peak hour. Hanson Street accommodated 109 (AM), 177 (PM) and 111 (SAT) vehicles during these peak hour periods.

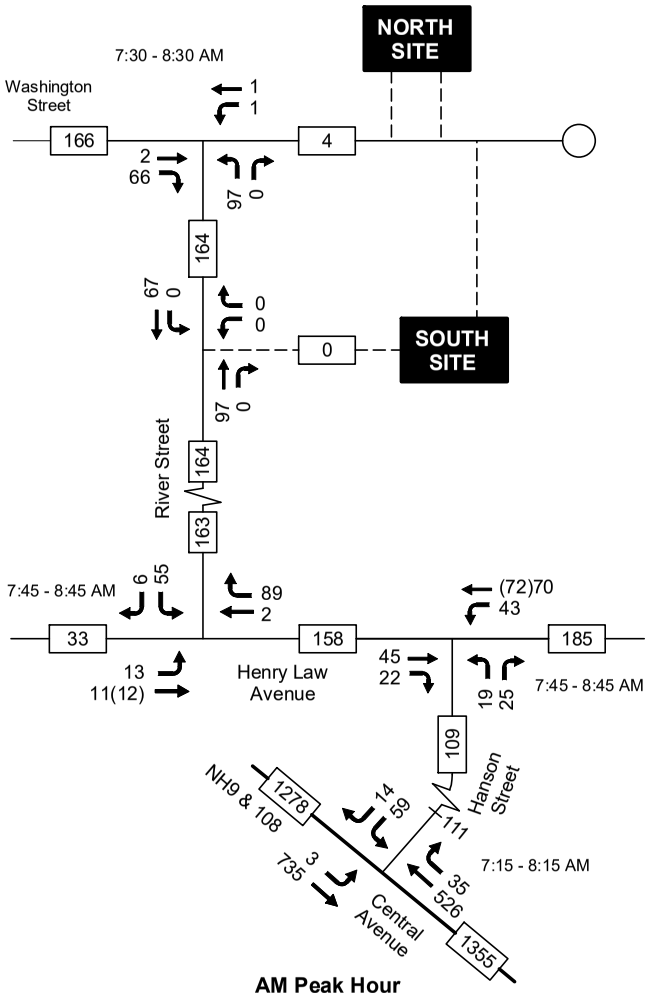
- At the Central Avenue / Hanson Street intersection, the highest hourly traffic volumes occurred from 7:15 to 8:15 AM and 4:45 to 5:45 PM during the weekday and from 11:00 AM to 12:00 PM on Saturday. The heaviest traffic volumes occurred on Central Avenue (south of Hanson Street) with 1,355 (AM), 1,613 (PM) and 1,442 (SAT) vehicles observed (total both directions). The predominant travel direction was southbound during the AM peak hour period, and northbound during the PM and Saturday peak hour periods.

Appendix C contains detail sheets pertaining to all of the raw turning movement count data.

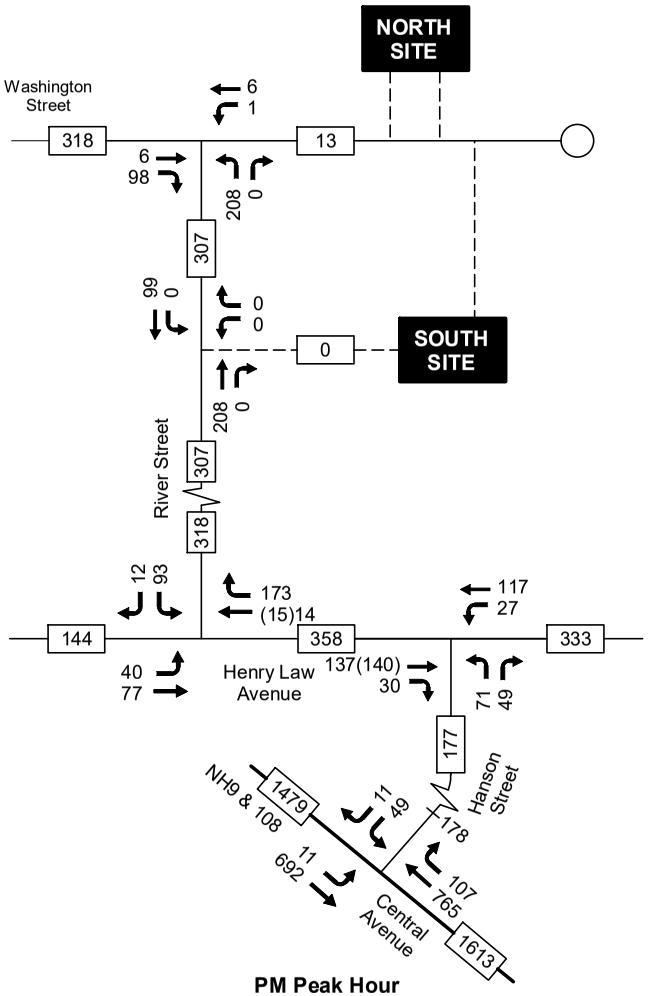

DAILY TRAFFIC VARIATIONS
NH9/NH108 (EB at Cochecho River Bridge) - Dover, NH
July 2020/September 2017
VEHICLES PER DAY
30000
20000
10000
0
14254
14039
13921
14256
13814
14774
S
M
T
W
TH
F
S
2020 (w/COVID)
2017 (w/o COVID)


HOURLY TRAFFIC VARIATIONS
VEHICLES PER HOUR
3000
2000
1000
0
12-1 AM
1-2 AM
2-3 AM
3-4 AM
4-5 AM
5-6 AM
6-7 AM
7-8 AM
8-9 AM
9-10 AM
10-11 AM
11-12 PM
12-1 PM
1-2 PM
2-3 PM
3-4 PM
4-5 PM
5-6 PM
6-7 PM
7-8 PM
8-9 PM
9-10 PM
10-11 PM
11-12 AM
Wednesday, 7/15/20 (w/COVID)
Wednesday, 9/13/17 (w/0 COVID)

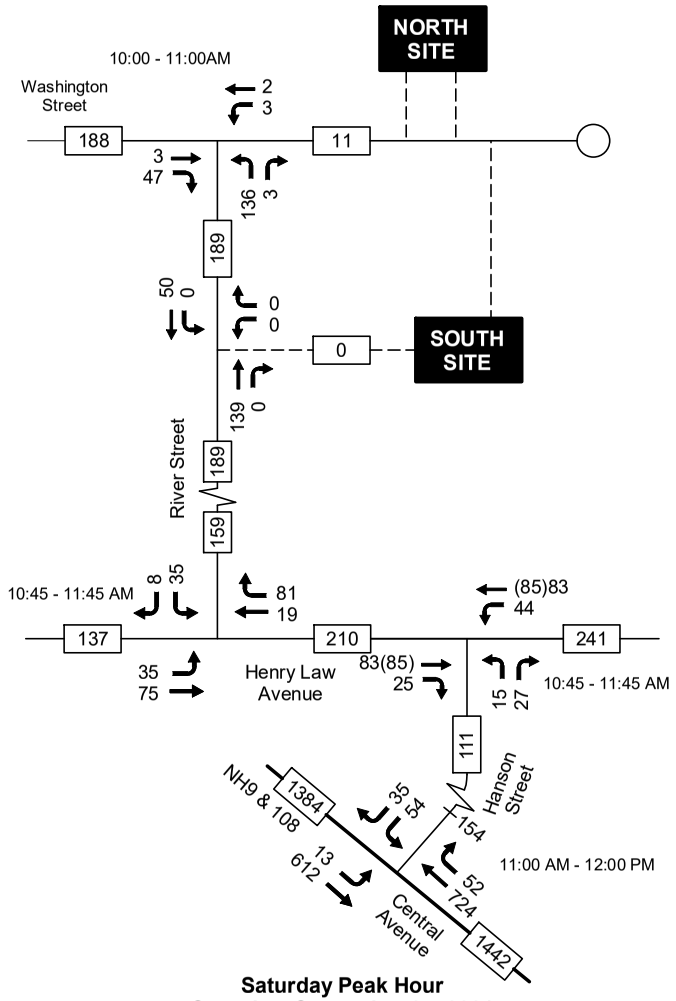
Pernaw & Company, Inc.



AM Peak Hour
Thursday, September 23, 2021
7:15 - 8:15 AM
7:30 - 8:30 AM
7:45 - 8:45 AM



PM Peak Hour
Thursday, September 23, 2021
4:45 - 5:45 PM



Saturday Peak Hour
Saturday, September 25, 2021
10:00 - 11:00AM
10:45 - 11:45 AM
11:00 AM - 12:00 PM

1981B

(xx) = Balanced Volume

Figure 2

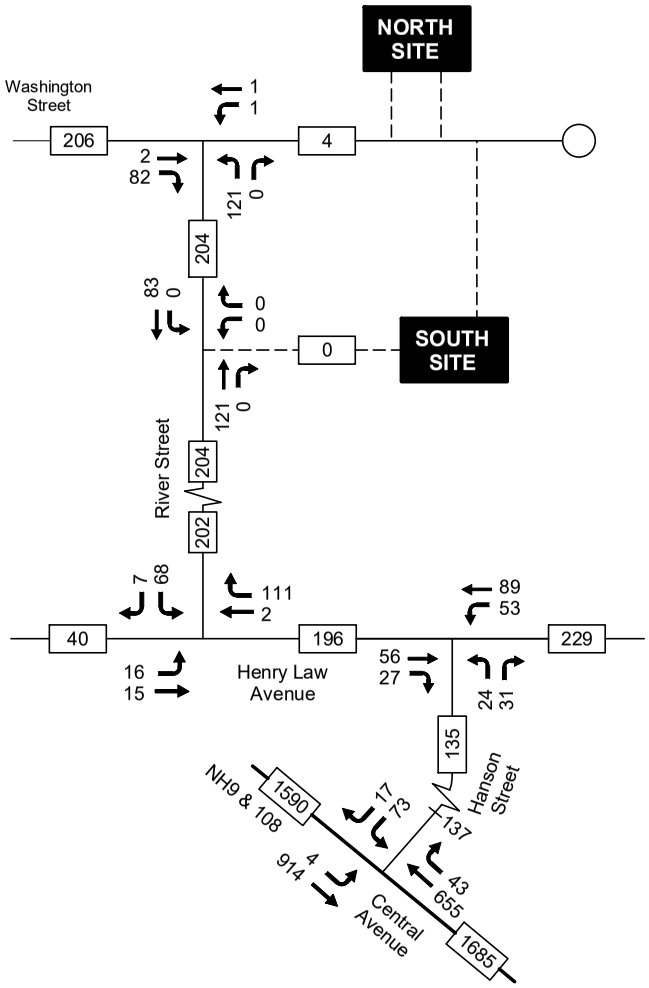
2021 Existing Traffic Volumes - Raw & Balanced

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

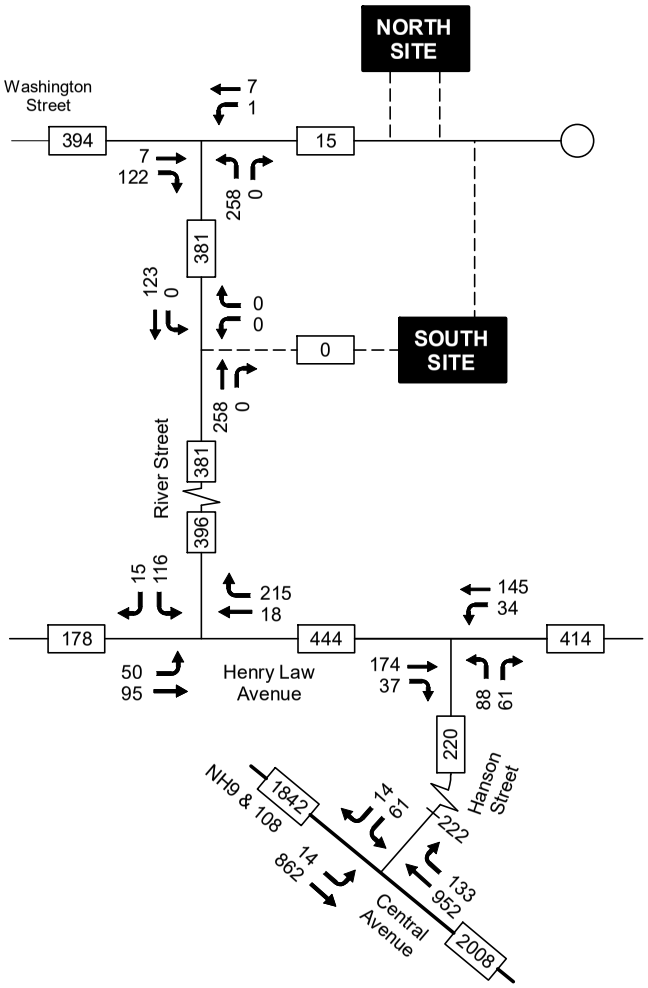
NO-BUILD TRAFFIC VOLUMES

The No-Build traffic projections (without the proposed apartments) for 2022 and 2032 are summarized on Figures 3 (2022), and 4 (2032). These projections are based on the September 2021 traffic count data, a two-percent annual background traffic growth rate (compounded annually) to account for normal background traffic growth, a seasonal adjustment factor of 1.05 to reflect peak-month conditions, and a COVID-19 adjustment factor of 1.16 (Weekday) and 1.11 (Saturday) due to the ongoing pandemic. The No-Build projections also account for a pending residential development project located on Cataract Avenue (see Appendix E). The recently approved residential project on Leathers Lane will not significantly impact the study area for the Cochecho Waterfront Development given its distance from River Street, its trip generating characteristics (relatively low), and its accessibility to the Spaulding Turnpike via Exit 7.

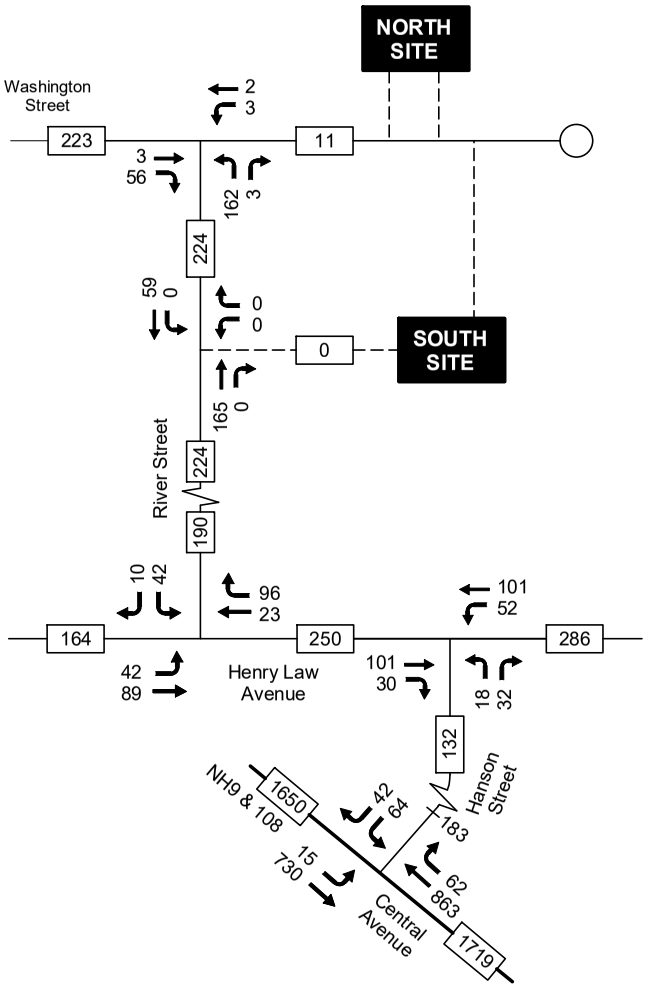
The future No-Build traffic projections contained herein are intended to reflect worst-case, peak-month, peak-hour conditions. The calculations pertaining to the derivation of the annual background traffic growth rate, the seasonal adjustment factor, and the Covid-19 factor are contained in Appendix D.



AM Peak Hour



PM Peak Hour



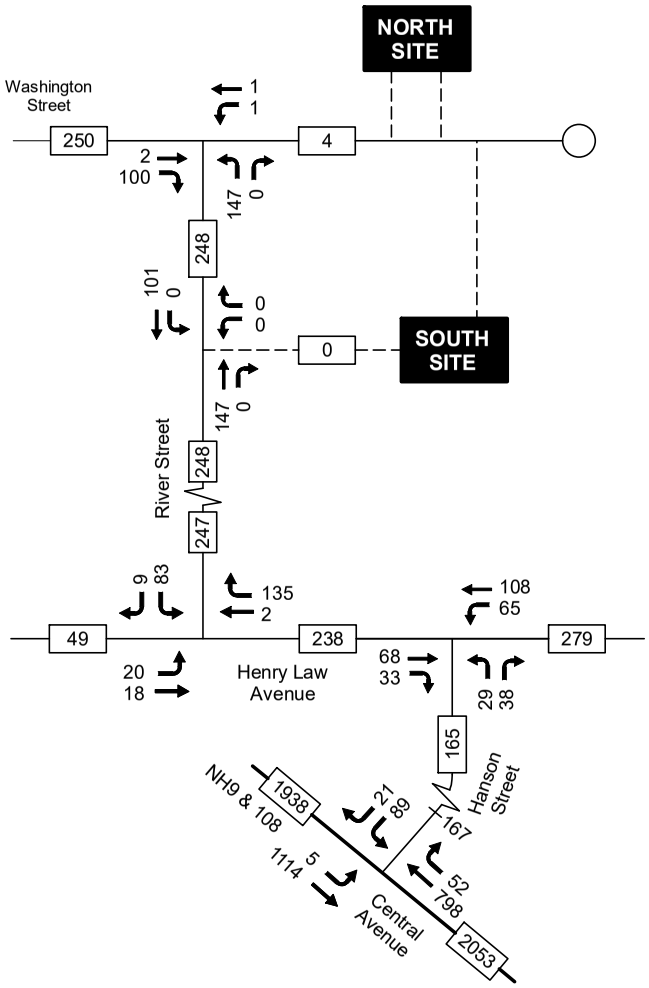
Saturday Peak Hour

1981B

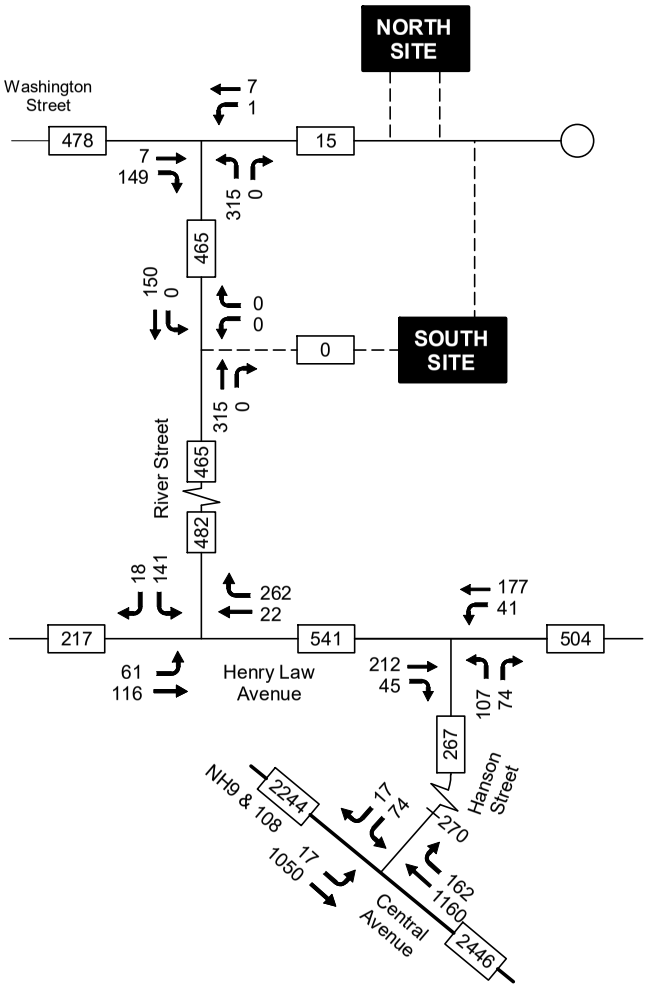
Figure 3

2022 No-Build Traffic Volumes

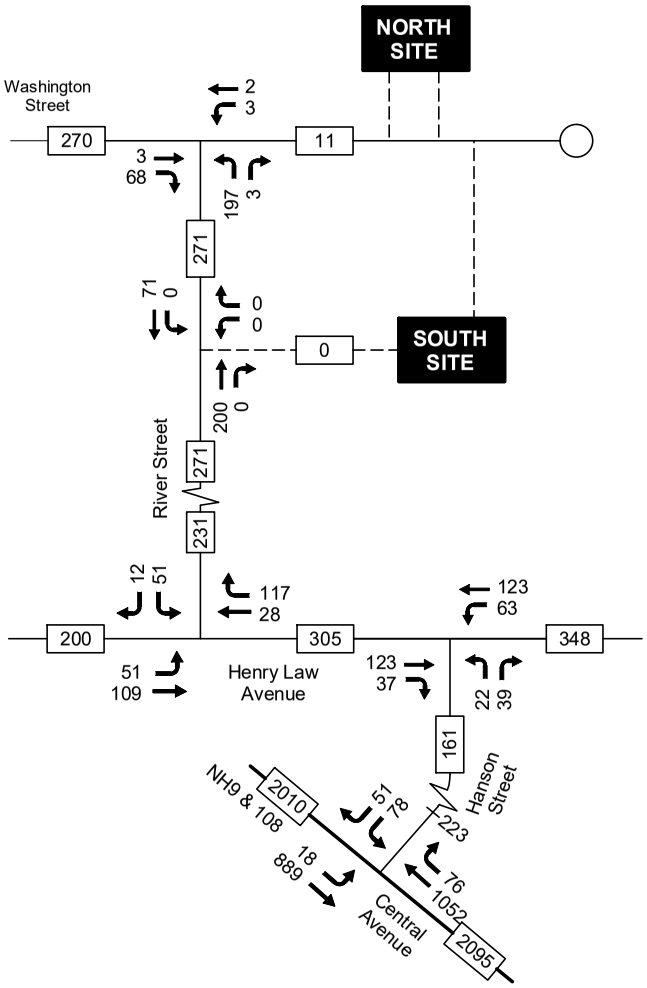
Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire



AM Peak Hour



PM Peak Hour



Saturday Peak Hour

1981B

Figure 4

2032 No-Build Traffic Volumes

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

SITE GENERATED TRAFFIC

To estimate the quantity of vehicle-trips that will be produced by the Cocheco Riverfront Development, Pernaw & Company, Inc. considered the standardized trip-generation rates and equations published by the Institute of Transportation Engineers (ITE)[1]. More specifically, the following Land Use Codes and independent variables were utilized in forecasting future trips:

- Land Use Code 221 - Multifamily Housing/Mid-Rise (independent variable = dwelling units)
- Land Use Code 710 - General Office Building (independent variable = gross floor area)
- Land Use Code 712 - Small Office Building (independent variable = gross floor area)
- Land Use Code 820 - Retail (independent variable = gross floor area)
- Land Use Code 932 - High-Turnover (Sit-Down) Restaurant (gross floor area)

The results of the trip generation analyses are summarized on Table 1. The results show that the overall development is expected to generate an average of approximately 233 vehicle-trips (91 arrivals, 142 departures) during the AM peak hour period, 291 vehicle-trips (165 arrivals, 126 departures) during the PM peak hour period, and 290 vehicle-trips (145 arrivals, 145 departures) during the Saturday midday peak hour period.

For traffic projection purposes, all vehicle-trips associated with the proposed development were considered to be "primary" trips, or new trips to the area. In actuality, some retail and restaurant trips could be "pass-by" traffic that turns into the site from the existing traffic flow on River Street.

Appendix F contains the trip generation computations for the proposed development, along with diagrams that summarize the distribution of the primary trips at the various intersections and roadway segments within the study area. It should be noted that the 2032 diagrams differ slightly from the 2022 diagrams to reflect the city's long-range plan to convert the one-way sections of Washington Street, Central Avenue and Main Street to bidirectional roadways.

[1] Institute of Transportation Engineers, *Trip Generation Manual,* 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)

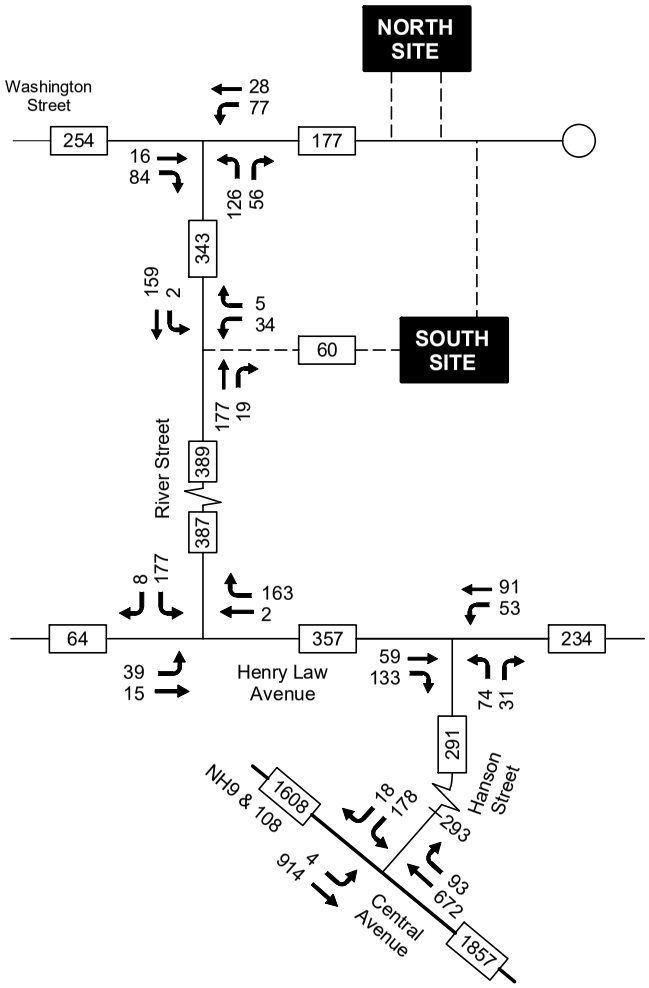
BUILD PROJECTIONS

The Build traffic projections with the proposed Cochecho Waterfront Development project fully occupied are summarized on Figures 5 (2022) and 6 (2032). These projections are based on the No-Build traffic volumes, the trip generation estimates in Table 1, and the expectation that the primary trips will be distributed in the following manner:

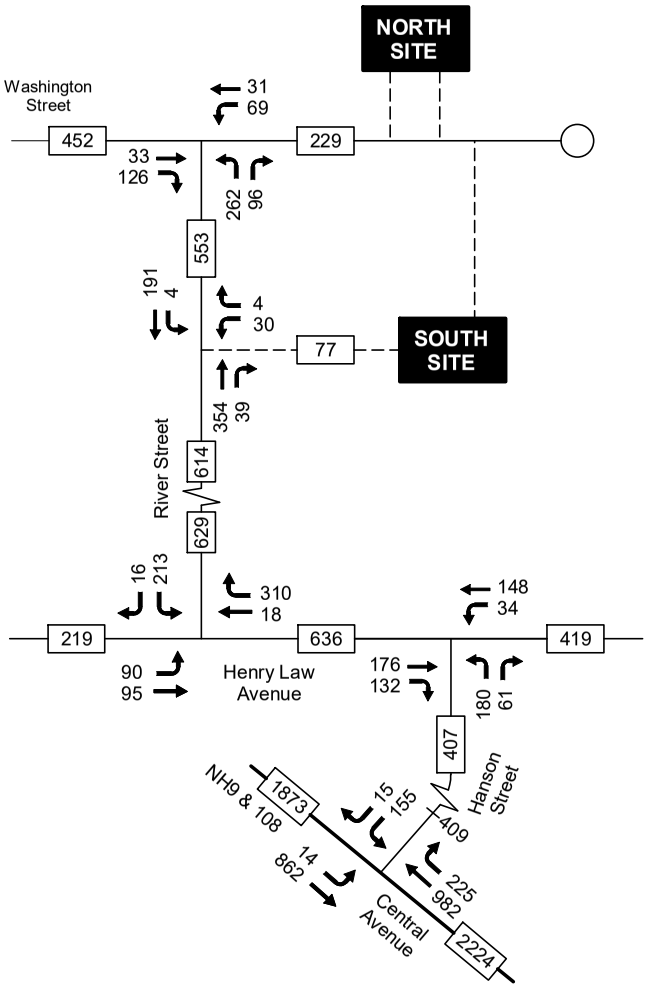
Trip Distribution Patterns

Gateway	Travel Routes	Percentage
A	To / From points east via Washington Street	3%
B	To / From points north via Main Street	19%
C	To / From points north via Portland Ave/Cocheco St	2%
D	To / From points south via Hanson Street	49%
E	To / From points east via Henry Law Avenue	2%
F	To / From points west via Silver Street	25%
		100%

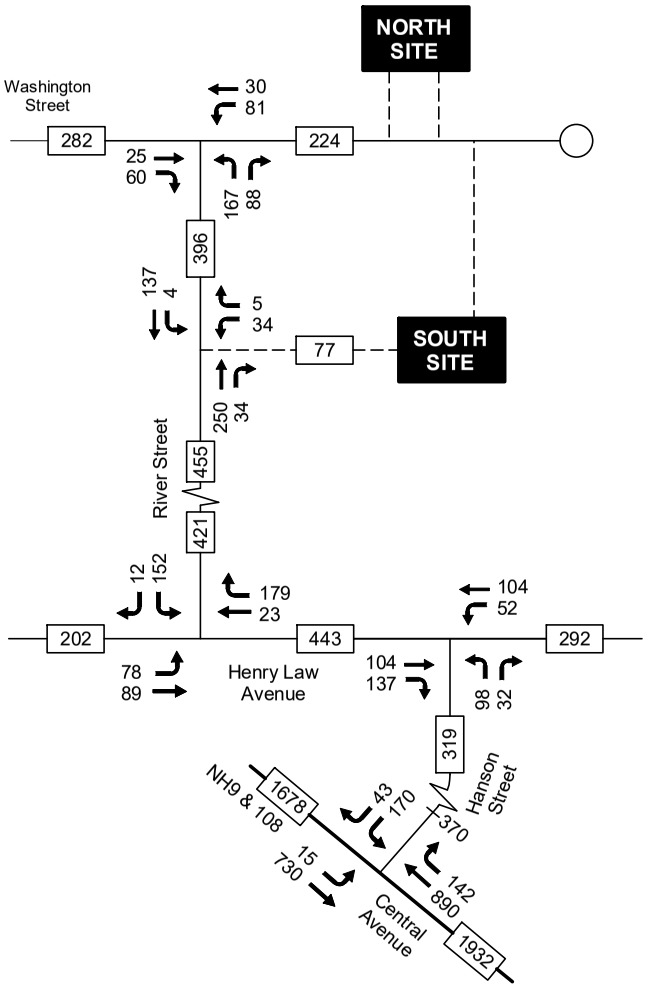
These travel patterns were based on analysis of the "journey to work" data from the latest census, existing travel patterns, and our familiarity with the study area.



AM Peak Hour



PM Peak Hour



Saturday Peak Hour

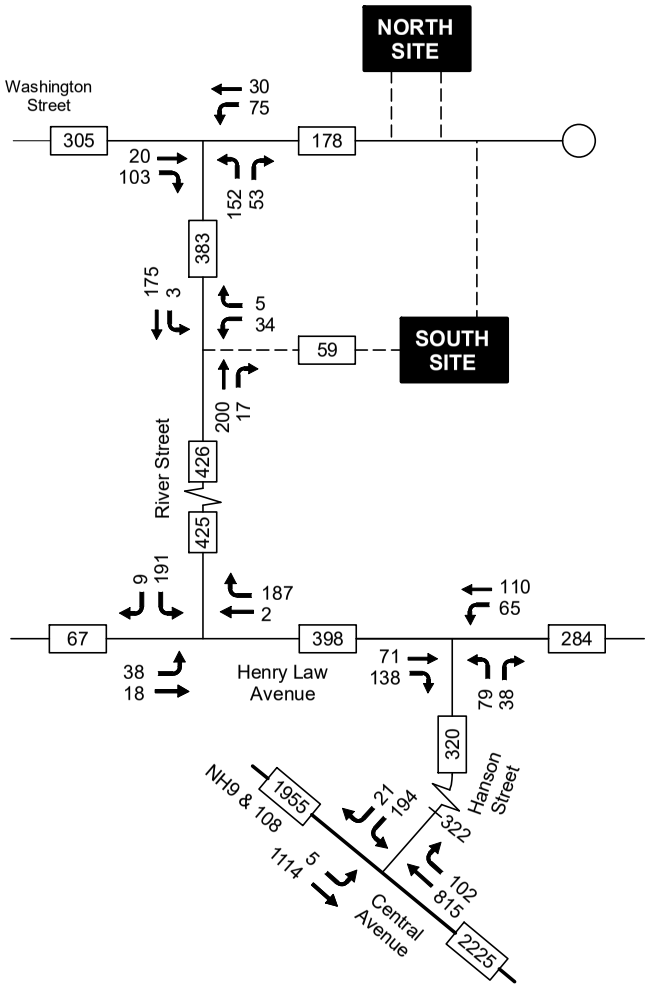
1981B

Figure 5

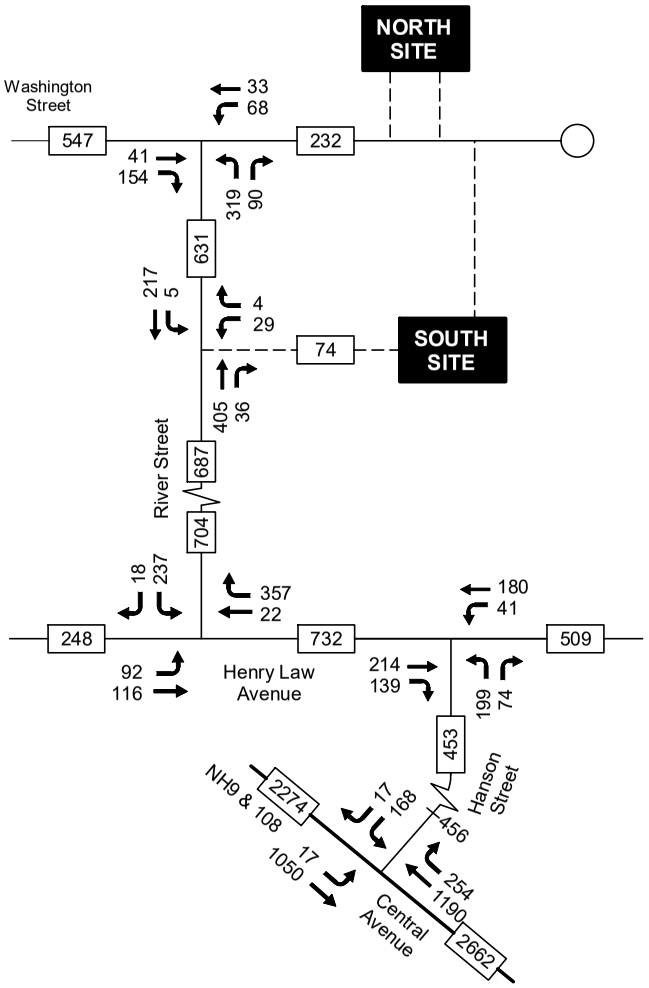
2022 Build Traffic Volumes

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

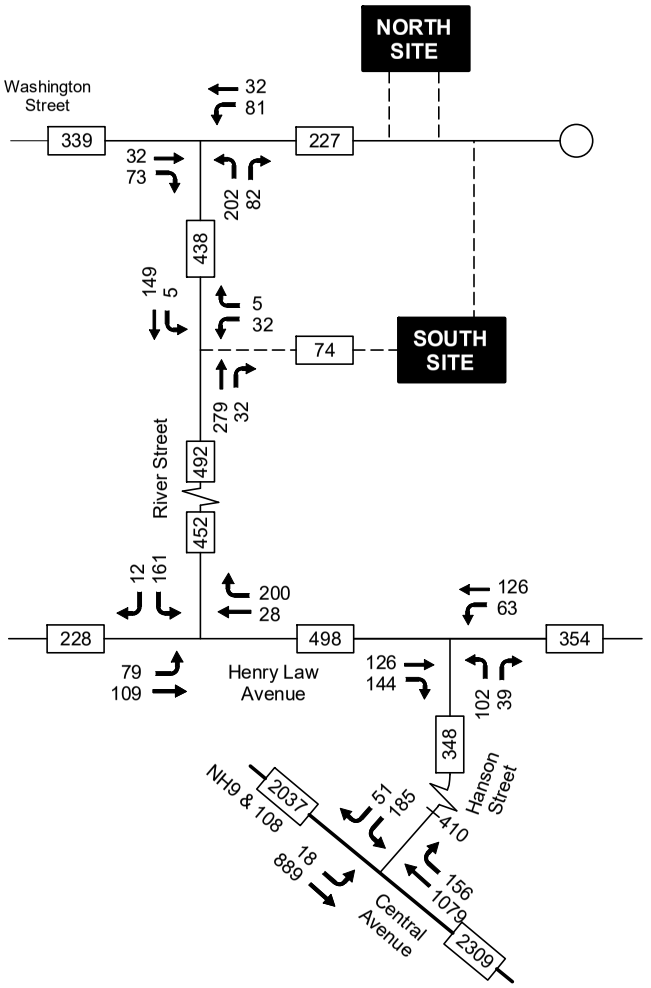
Pernaw & Company, Inc.



AM Peak Hour



PM Peak Hour



Saturday Peak Hour

1981B

Figure 6

2032 Build Traffic Volumes

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

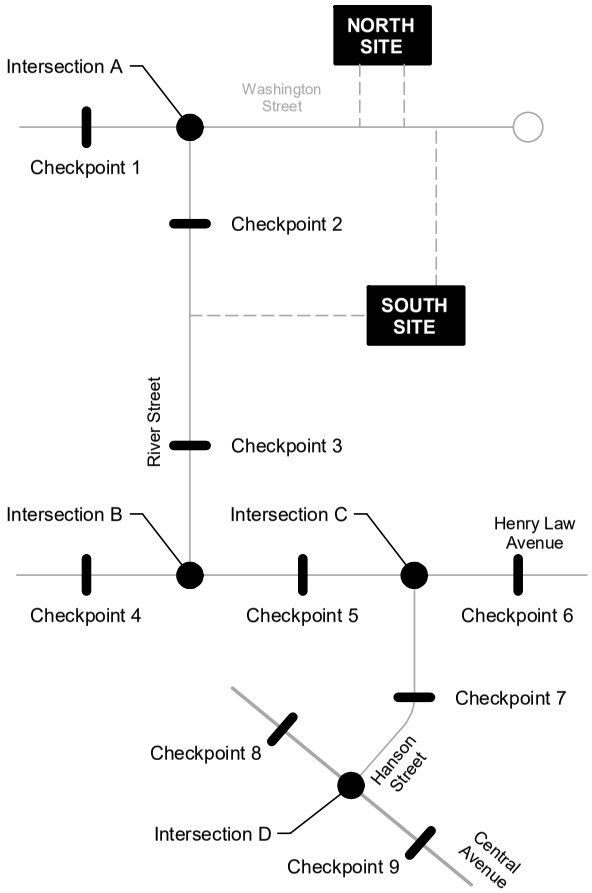
IMPACT SUMMARY

TRAFFIC VOLUME INCREASES

The net impact that the proposed Cochecho Waterfront Development will have on area roadway and intersection traffic volumes can be estimated by comparing the No-Build traffic projections with the Build projections. A comparison for the three peak hour cases is summarized on Figure 7.

In terms of roadway segments, this analysis shows that the greatest impact will occur during the PM peak hour period on the short section of River Street between the proposed site driveway and Henry Law Avenue. The traffic volume on this roadway segment is projected to increase by +233 vehicles (+59%) during the worst-case PM peak hour period. The traffic volume on River Street north of the site driveway is projected to increase by +172 vehicles (+45%) during the PM peak hour. It should be noted that the percentage increases for many of the "checkpoints" are mathematically high due to the fact that that underlying No-Build volumes are relatively low.

In terms of intersection volumes (total vehicles entering), all four study area intersections are expected to accommodate approximately +200 additional vehicles during the weekday PM and Saturday midday peak hour periods. This translates into increases that range from +11% to +56% during the weekday PM peak hour. The percentage increases during the Saturday midday peak hour are even higher given that the No-Build volumes are generally lower on weekends. The net increases during the AM peak hour will be lower than during the PM peak hour.



AM Peak Hour

Location	2022 No-Build	2022 Build	Change	% Change
Intersection A	207	387	+180 veh	87%
Intersection B	219	404	+185 veh	84%
Intersection C	280	441	+161 veh	58%
Intersection D	1706	1879	+173 veh	10%
Checkpoint 1	206	254	+48 veh	23%
Checkpoint 2	204	343	+139 veh	68%
Checkpoint 3	202	387	+185 veh	92%
Checkpoint 4	40	64	+24 veh	60%
Checkpoint 5	196	357	+161 veh	82%
Checkpoint 6	229	234	+5 veh	2%
Checkpoint 7	137	293	+156 veh	114%
Checkpoint 8	1590	1608	+18 veh	1%
Checkpoint 9	1685	1857	+172 veh	10%

PM Peak Hour

Location	2022 No-Build	2022 Build	Change	% Change
Intersection A	395	617	+222 veh	56%
Intersection B	509	742	+233 veh	46%
Intersection C	539	731	+192 veh	36%
Intersection D	2036	2253	+217 veh	11%
Checkpoint 1	394	452	+58 veh	15%
Checkpoint 2	381	553	+172 veh	45%
Checkpoint 3	396	629	+233 veh	59%
Checkpoint 4	178	219	+41 veh	23%
Checkpoint 5	444	636	+192 veh	43%
Checkpoint 6	414	419	+5 veh	1%
Checkpoint 7	222	409	+187 veh	84%
Checkpoint 8	1842	1873	+31 veh	2%
Checkpoint 9	2008	2224	+216 veh	11%

Saturday Peak Hour

Location	2022 No-Build	2022 Build	Change	% Change
Intersection A	229	451	+222 veh	97%
Intersection B	302	533	+231 veh	76%
Intersection C	334	527	+193 veh	58%
Intersection D	1776	1990	+214 veh	12%
Checkpoint 1	223	282	+59 veh	26%
Checkpoint 2	224	396	+172 veh	77%
Checkpoint 3	190	421	+231 veh	122%
Checkpoint 4	164	202	+38 veh	23%
Checkpoint 5	250	443	+193 veh	77%
Checkpoint 6	286	292	+6 veh	2%
Checkpoint 7	183	370	+187 veh	102%
Checkpoint 8	1650	1678	+28 veh	2%
Checkpoint 9	1719	1932	+213 veh	12%

1981A

Figure 7

2022 Impact Summary

Traffic Impact Assessment, Proposed Cochecho Waterfront Development, Dover, New Hampshire

TRAFFIC OPERATIONS AND SAFETY

INTERSECTION CAPACITY – UNSIGNALIZED INTERSECTIONS

The short-range (2022) and long-range (2032) traffic projections form the basis for assessing traffic operations at the four unsignalized intersections from a capacity and delay standpoint. These intersections were analyzed according to the methodologies of the *Highway Capacity Manual 2010*[2] as replicated by the latest edition of the *Synchro Signal Timing Software (Version 10),* which is capable of analyzing unsignalized intersections as well.

Capacity and Level of Service (LOS) calculations pertaining to unsignalized intersections address the quality of service for those vehicles turning into and out of the intersecting side street or driveway. The availability of adequate gaps in the traffic stream on the major street actually controls the potential capacity for vehicle movements to and from the minor approach. Levels of Service are simply letter grades (A-F) which categorize the vehicle delays associated with specific turning maneuvers. The following table describes the criteria used in this analysis.

Table 2 – Level-of-Service Criteria for Unsignalized Intersections

Control Delay (seconds/vehicle)	Level of Service by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
0 - 10	A	F
> 10 - 15	B	F
> 15 - 25	C	F
> 25 - 35	D	F
> 35 - 50	E	F
> 50	F	F

Source: Transportation Research Board, Highway Capacity Manual 2010.

Appendix G contains the computations pertaining to the unsignalized intersection capacity and Level of Service analyses.

Washington Street / River Street – The analysis of this intersection is summarized on Table 3 and confirms that all applicable traffic movements at this intersection will operate well below capacity and at LOS C or higher during all hours of the day through 2032 with the proposed development project fully occupied. Vehicle queuing (95th percentile) on the River Street approach to Washington Street is expected to increase from 2 to 4 vehicles during the 2022 PM peak hour as a result of development traffic. By 2032, the queue length is expected to increase to 7 vehicles during the PM peak hour as a result of development traffic (and the downtown two-way street system). These findings confirm that traffic congestion will not occur with the existing travel lane configuration, and continued use of stop sign control on the minor approach.

[2] Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010).

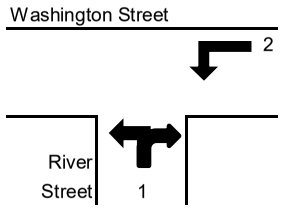
Stephen G. Pernaw & Company, Inc.

Table 3

STOP-Controlled Intersection Capacity Analysis
Washington Street / River Street

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. River Street - NB Movements												
2021 Existing	9.2	0.11	A	<1	10.3	0.27	B	1	9.4	0.15	A	1
2022 No-Build	9.4	0.14	A	1	11.0	0.34	B	2	9.7	0.19	A	1
2022 Build	11.6	0.27	B	1	17.8	0.61	C	4	12.9	0.38	B	2
2032 No-Build	9.7	0.18	A	1	12.1	0.43	B	2	10.0	0.24	B	1
2032 Build	12.3	0.32	B	1	23.9	0.74	C	7	14.4	0.45	B	2
2. Washington Street - WB LT-Turn Arrivals												
2021 Existing	7.4	0.00	A	<1	7.5	0.00	A	<1	7.4	0.00	A	<1
2022 No-Build	7.4	0.00	A	<1	7.5	0.00	A	<1	7.4	0.00	A	<1
2022 Build	7.6	0.06	A	<1	7.8	0.06	A	<1	7.6	0.06	A	<1
2032 No-Build	7.5	0.00	A	<1	7.6	0.00	A	<1	7.4	0.00	A	<1
2032 Build	7.7	0.06	A	<1	7.9	0.06	A	<1	7.7	0.06	A	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)



River Street / Proposed South Site Driveway – The analysis of this intersection is summarized on Table 4 and confirms that departure movements from the subject site will operate at LOS B during the three peak hour periods in 2022 with the site fully developed. By 2032, the departure movement is expected to operate at LOS C during the PM peak hour period. Left-turn arrivals from River Street (into the subject site) will operate at LOS A during all hours of the day through 2032 with the proposed development in full operation. These are the highest or best levels attainable, and means that vehicle delays and queuing will be minimal. In all cases, this intersection will operate well below capacity through 2032 and beyond. Traffic congestion will not result.

Henry Law Avenue / River Street – The analysis of this intersection is summarized on Table 5 and confirms that all applicable traffic movements at this intersection will operate well below capacity and at LOS C or higher during all hours of the day in 2022 with the proposed development project fully occupied. By 2032, the departure movement from River Street is expected to operate at LOS E during the worst-case PM peak hour period with a 95th percentile queue of six vehicles expected. Left-turn arrivals from Henry Law Avenue (to River Street) will operate at LOS A during all hours of the day through 2032 with the proposed development in full operation. These findings confirm that traffic congestion will not occur with the existing travel lane configuration, and continued use of stop sign control on the minor approach.

Henry Law Avenue / Hanson Street – The analysis of this intersection is summarized on Table 6 and confirms that all applicable traffic movements at this intersection will also operate well below capacity and at LOS C or higher during all hours of the day in 2022 with the proposed development project fully occupied. By 2032, the departure movement from Hanson Street is expected to operate at LOS D during the worst-case PM peak hour period with a 95th percentile queue of six vehicles expected. Left-turn arrivals from Henry Law Avenue (to Hanson Street) will operate at LOS A during all hours of the day through 2032 with the proposed development in full operation. These findings confirm that traffic congestion will not occur with the existing travel lane configuration, and continued use of stop sign control on the minor approach.

Central Avenue / Hanson Street – The analysis of this intersection is summarized on Table 7 and confirms that the left-turn departure movement from Hanson Street encounters long delays during the peak hour periods due to the heavy volume of through traffic on Central Avenue, and the vehicle queuing from the Central Avenue / Silver Street signalized intersection. It should be noted, that the HCM2010 methodology utilized in this analysis is not capable of reflecting the negative and positive effects of the nearby signalized intersections. Further, the HCM2010 states that *"if demand exceeds capacity during a 15-min period, the delay results computed by the procedure may not be accurate."*

Regardless, the analysis demonstrates that the hourly demand exceeds the hourly capacity for the left-turn departure regardless of the proposed development (LOS F). When this occurs vehicle delays, vehicle queuing, and traffic congestion are of concern. Favorably, the Hanson Street approach to Central Avenue has been widened to include a short right-turn lane for vehicles heading north on Central Avenue. This is beneficial in that the right-turn departure movement operates below capacity through 2032 and at LOS E or higher. Based on these findings, the city should investigate the feasibility of installing traffic signal control at this intersection, and interconnecting it with the existing traffic signal at Silver Street. A preliminary analysis suggests that additional improvements would be needed in order to accommodate traffic signal control.

Table 4

STOP-Controlled Intersection Capacity Analysis
River Street / Proposed South Site Driveway

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Proposed South Site Driveway - WB Movements												
2022 Build	11.3	0.07	B	<1	14.3	0.09	B	<1	12.3	0.08	B	<1
2032 Build	11.7	0.08	B	<1	15.7	0.10	C	<1	12.9	0.08	B	<1
2. River Street - SB LT-Turn Arrivals												
2022 Build	7.6	0.00	A	<1	8.3	0.01	A	<1	7.9	0.01	A	<1
2032 Build	7.7	0.00	A	<1	8.5	0.01	A	<1	7.9	0.01	A	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)

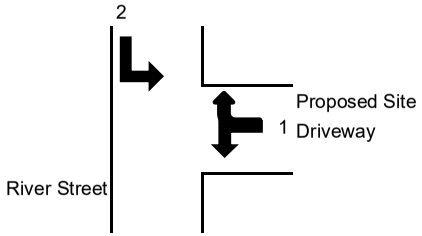


Table 5

STOP-Controlled Intersection Capacity Analysis
Henry Law Avenue / River Street

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Henry Law Avenue - EB LT-Turn Arrivals												
2021 Existing	7.4	0.01	A	<1	7.8	0.04	A	<1	7.5	0.03	A	<1
2022 No-Build	7.5	0.01	A	<1	8.0	0.05	A	<1	7.6	0.04	A	<1
2022 Build	7.6	0.03	A	<1	8.4	0.10	A	<1	7.9	0.07	A	<1
2032 No-Build	7.5	0.02	A	<1	8.2	0.06	A	<1	7.7	0.04	A	<1
2032 Build	7.7	0.03	A	<1	8.7	0.10	A	<1	8.0	0.07	A	<1
2. River Street - SB Movements												
2021 Existing	9.3	0.08	A	<1	11.6	0.19	B	1	10.1	0.08	B	<1
2022 No-Build	9.6	0.11	A	<1	13.1	0.27	B	1	10.7	0.10	B	<1
2022 Build	11.6	0.29	B	1	24.4	0.61	C	4	16.0	0.41	C	2
2032 No-Build	9.9	0.14	A	1	15.6	0.37	C	2	11.4	0.14	B	1
2032 Build	12.1	0.33	B	1	35.4	0.75	E	6	17.9	0.47	C	3

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)

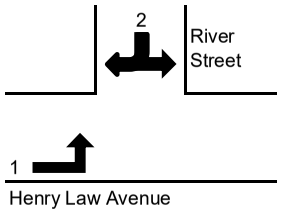


Table 6

STOP-Controlled Intersection Capacity Analysis
Henry Law Avenue / Hanson Street

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Hanson Street - NB Movements												
2021 Existing	9.7	0.08	A	<1	11.7	0.22	B	1	10.0	0.07	B	<1
2022 No-Build	10.1	0.10	B	<1	13.4	0.30	B	1	10.5	0.10	B	<1
2022 Build	12.1	0.23	B	1	20.1	0.56	C	3	14.8	0.33	B	1
2032 No-Build	10.6	0.13	B	1	16.2	0.41	C	2	11.3	0.13	B	<1
2032 Build	13.2	0.28	B	1	30.4	0.72	D	6	17.2	0.40	C	2
2. Henry Law Avenue - WB LT-Turn Arrivals												
2021 Existing	7.5	0.03	A	<1	7.6	0.03	A	<1	7.6	0.04	A	<1
2022 No-Build	7.6	0.04	A	<1	7.8	0.03	A	<1	7.7	0.05	A	<1
2022 Build	7.9	0.05	A	<1	8.1	0.04	A	<1	8.0	0.06	A	<1
2032 No-Build	7.7	0.05	A	<1	7.9	0.04	A	<1	7.8	0.06	A	<1
2032 Build	8.0	0.06	A	<1	8.2	0.05	A	<1	8.2	0.07	A	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)

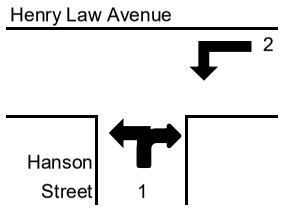
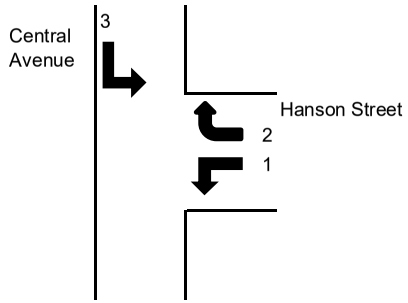


Table 7

STOP-Controlled Intersection Capacity Analysis
Central Avenue / Hanson Street

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Hanson Street - WB Left-Turns												
2021 Existing	49.8	0.49	E	2	65.2	0.47	F	2	61.9	0.49	F	2
2022 No-Build	171.0	0.98	F	6	241.0	1.04	F	5	237.7	1.07	F	5
2022 Build	>300	2.59	F	21	>300	3.04	F	17	>300	3.09	F	19
2032 No-Build	>300	2.07	F	11	>300	2.52	F	9	>300	2.54	F	10
2032 Build	>300	4.79	F	27	>300	6.35	F	21	>300	6.63	F	24
2. Hanson Street - WB Right-Turns												
2021 Existing	12.8	0.04	B	<1	16.4	0.03	C	<1	17.2	0.11	C	<1
2022 No-Build	14.8	0.05	B	<1	20.9	0.06	C	<1	22.8	0.18	C	1
2022 Build	15.5	0.06	C	<1	23.0	0.07	C	<1	25.6	0.21	D	1
2032 No-Build	17.7	0.08	C	<1	28.4	0.10	D	<1	34.2	0.31	D	1
2032 Build	18.6	0.09	C	<1	31.7	0.11	D	<1	39.4	0.35	E	1
3. Central Avenue - SB LT-Turn Arrivals												
2021 Existing	9.5	0.00	A	<1	10.2	0.02	B	<1	10.1	0.02	B	<1
2022 No-Build	10.2	0.01	B	<1	11.5	0.03	B	<1	11.2	0.03	B	<1
2022 Build	10.5	0.01	B	<1	12.3	0.03	B	<1	12.0	0.03	B	<1
2032 No-Build	11.1	0.01	B	<1	13.3	0.04	B	<1	13.0	0.05	B	<1
2032 Build	11.5	0.01	B	<1	14.4	0.04	B	<1	14.0	0.05	B	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)



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 8 — 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 8 summarizes the No-Build and Build traffic volume projections for this intersection, based on the previous study. 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). Table 9 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.

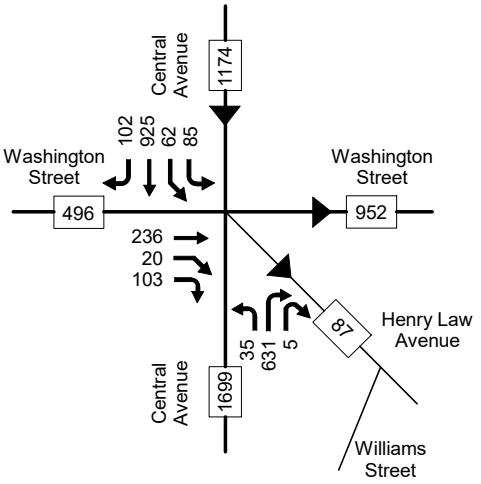
Table 9 — **Signal-Controlled Intersection Capacity Analysis Summary**
Central Avenue / Henry Law Avenue / Washington Street

	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

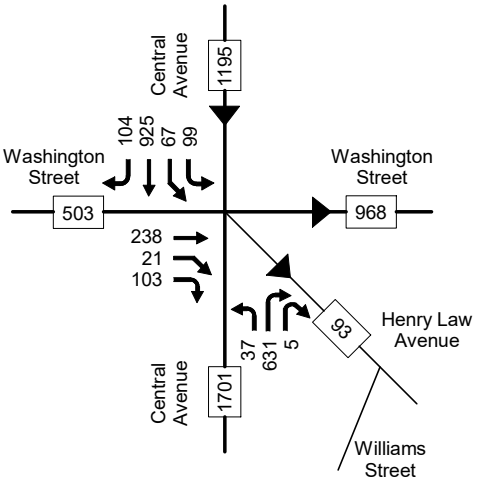
The computations pertaining to these analyses are included in Appendix H.

Previous Traffic Study Projections*
(w/o Cochecho Waterfront Development)

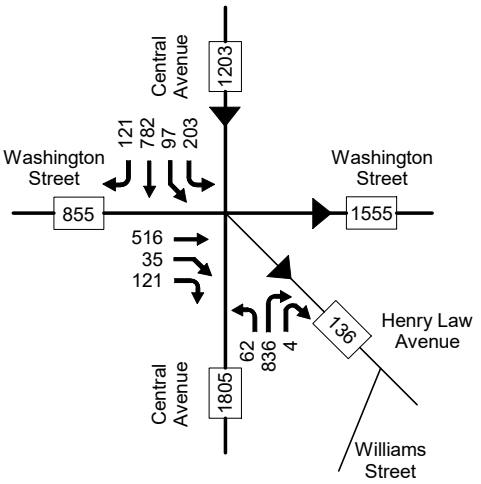


2019 AM No-Build

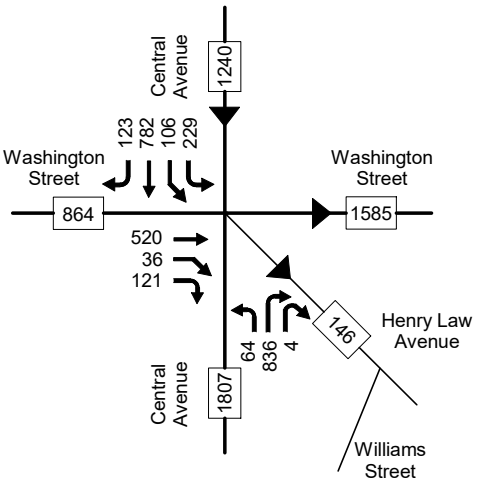
Previous Traffic Study Projections
(with Cochecho Waterfront Development)



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

1981B

Figure 8

Future Traffic Volumes - Washington St/Central Ave/Henry Law Ave Intersection

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

AUXILIARY TURN LANE WARRANTS ANALYSIS

Left-Turn Treatment – The type of treatment needed to accommodate a left-turning vehicle from any street or highway to an intersecting side street can range from no treatment, where turning volumes are low; to the provision of a bypass lane for through traffic to travel around left-turning vehicles; to the addition of a formal center turn lane used exclusively by left-turning vehicles for deceleration and storage while waiting to complete their maneuvers.

Right-Turn Treatment – At unsignalized intersections, the type of treatment needed to accommodate right-turning vehicles from any street or highway to any intersecting side street can range from radius only, where turning volumes are low; to the provision of a short 10:1 taper; to the addition of an exclusive right-turn lane, where turning volumes and through traffic volumes are significant.

Minor-Road Approach Analysis – The type of treatment needed to accommodate exiting vehicles from the minor-road approach at a stop-controlled intersection can range from a single lane (shared left-right lane) in low-volume conditions, to two exit lanes (exclusive left-turn lane and exclusive right-turn lane) where turning volumes and through traffic volumes are significant, to multiple exit lanes in extreme cases.

The two intersections that will provide direct access to the subject site were evaluated using NCHRP 457 guidelines and the 2032 Build traffic volumes to ensure safe and efficient traffic operations.

The results for the **Washington Street / River Street** intersection are summarized on Table 10 and indicates that left-turn treatment is not warranted on the Washington Street westbound approach to accommodate left-turns onto River Street. This means that the existing westbound travel lane on Washington Street will continue to function safely and adequately as a shared left-through lane. The analysis also demonstrates that the existing shared through-right lane on the Washington Street eastbound approach to this intersection will be sufficient for post-development conditions. This analysis also suggests that it may be prudent to widen the River Street approach to Washington Street to provide separate left-turn and right-turn approach lanes by 2032. Such widening is not needed in the opening year (2022).

The results of these analyses for the **River Street / Proposed Site Driveway** intersection are summarized on Table 11 and confirm that auxiliary turn lanes are not required at this intersection to safely and efficiently accommodate the 2032 post-development traffic volumes. This means a one general-purpose approach lane on each leg of the intersection is sufficient for the anticipated traffic volumes.

The computations pertaining to the auxiliary turn lane warrants analyses are contained in Appendix I.

Table 10

Auxiliary Turn Lane Warrants Analysis
Washington Street / River Street

	2032 AM Build Volumes	2032 PM Build Volumes	2032 Saturday Build Volumes	2022 PM Build Volumes
I. LEFT-TURN LANE WARRANTS ANALYSIS				
Peak Hour Inputs:				
Left-Turn Volume (WB)	75	68	81	-
Advancing Volume (WB)	105	101	113	-
Opposing Volume (EB)	123	195	105	-
Percent Lefts	71.4%	67.3%	71.7%	-
Speed (mph)	30	30	30	-
Limiting Advancing Volume (veh/h)	371	329	380	-
Left-Turn Treatment Warranted?	**NO**	**NO**	**NO**	-
II. RIGHT-TURN LANE WARRANTS ANALYSIS				
Peak Hour Inputs:				
Right-Turn Volume (EB)	103	154	73	-
Approach Volume (EB)	123	195	105	-
Speed (mph)	30	30	30	-
Limiting Right-Turn Volume (veh/h)	>1000	>1000	>1000	-
Add Right-Turn Bay?	**NO**	**NO**	**NO**	-
III. MINOR-ROAD APPROACH GEOMETRY ANALYSIS				
Peak Hour Inputs:				
Major-Road Volume (WB-EB)	228	296	218	259
% Right-Turns on Minor (NB)	26	22	29	27
Minor-Road Approach Volume	205	409	284	358
Limiting Minor-Road Volume (veh/h)	425	385	436	412
Consider TWO Approach Lanes?	**NO**	**YES**	**NO**	**NO**

Table 11 — Auxiliary Turn Lane Warrants Analysis
River Street / Proposed Site Driveway

	2032 AM Build Volumes	2032 PM Build Volumes	2032 Saturday Build Volumes
I. LEFT-TURN LANE WARRANTS ANALYSIS			
Peak Hour Inputs:			
Left-Turn Volume (SB)	3	5	5
Advancing Volume (SB)	178	222	154
Opposing Volume (NB)	217	441	311
Percent Lefts	1.7%	2.3%	3.2%
Speed (mph)	30	30	30
Limiting Advancing Volume (veh/h)	>1000	797	765
Left-Turn Treatment Warranted?	**NO**	**NO**	**NO**
II. RIGHT-TURN LANE WARRANTS ANALYSIS			
Peak Hour Inputs:			
Right-Turn Volume (NB)	17	36	32
Approach Volume (NB)	217	441	311
Speed (mph)	30	30	30
Limiting Right-Turn Volume (veh/h)	>1000	>1000	>1000
Add Right-Turn Bay?	**NO**	**NO**	**NO**
III. MINOR-ROAD APPROACH GEOMETRY ANALYSIS			
Peak Hour Inputs:			
Major-Road Volume (NB-SB)	395	663	465
% Right-Turns on Minor (WB)	13	12	14
Minor-Road Approach Volume	39	33	37
Limiting Minor-Road Volume (veh/h)	325	231	299
Consider TWO Approach Lanes?	**NO**	**NO**	**NO**

SIGHT DISTANCE

Providing and maintaining sufficient sight distances at the new site driveway intersections is an important safety consideration. The operator of a vehicle exiting from each proposed 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 in Appendix J. 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 previously 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.

STUDY FINDINGS AND RECOMMENDATIONS

Based upon the existing conditions data collected at the five existing study area intersections, the anticipated traffic increases from the proposed Cochecho Waterfront Development project, and the analysis of future traffic levels in the study area, Pernaw & Company, Inc. concludes that:

1. Vehicular access to the subject site is proposed via one site driveway on River Street, two site driveways on the north side of Washington Street, and one driveway on the south side of Washington Street. All four site driveways will function adequately with one general-purpose approach lane on each leg of the intersection, and stop sign control on the minor approaches. 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.

2. The recent traffic count data collected revealed that the traffic flow on River Street passing the subject site totaled 164 vehicles (AM), 307 vehicles (PM), and 189 vehicles (SAT) during the peak hour periods. The traffic flow on Washington Street east of River Street ranged from only 4 to 13 vehicles during the peak hour periods. During the worst-case weekday PM peak hour period, the two-way traffic volume on other streets in the study area are as follows:

   Washington Street (west of River Street) totaled 318 vehicles
   Henry Law Avenue (between River and Hanson streets) totaled 358 vehicles
   Hanson Street (south of Henry Law Avenue) totaled 177 vehicles
   Central Avenue (south of Hanson Street) totaled 1,613 vehicles

3. For traffic projection purposes, the September 2021 traffic volumes cited above were increased by a peak-month seasonal adjustment factor of 1.05, a historical background growth rate of 2.0% per year (compounded annually), and Covid-19 adjustment factors of 1.16 (weekday) and 1.11 (Saturday) to reflect post-pandemic conditions.

4. The trip generation analysis indicates that the overall development, on average, will generate approximately 233 vehicle-trips (91 arrivals, 142 departures) during the AM peak hour period, 291 vehicle-trips (165 arrivals, 126 departures) during the PM peak hour period, and 290 vehicle-trips (145 arrivals, 145 departures) during the Saturday peak hour period.

5. The trip distribution analysis indicates that the majority, approximately 80%, of the site traffic will travel to/from the south on River Street. This percentage is expected to decrease to approximately 76% when the one-way sections of Washington Street, Central Avenue, and Main Street are changed to bidirectional roadways as part of the city's long-range plan.

6. The comparison between the 2020 Build and No-Build traffic volumes revealed that site traffic will increase the utilization of the Washington Street/River Street intersection by approximately +56% (PM) during the worst-case PM peak hour period. The percentage increases during the AM and Saturday peak hour periods are mathematically higher due to the fact that the underlying No-Build volumes lower. The net impact at the other study area intersections ranges from +11% to +46%, depending upon location.

7. Analysis of all study area intersections, except for the Central Avenue / Hanson Street intersection, confirmed that all applicable turning movements at these intersections will operate below capacity through 2032 with the Cochecho Waterfront Development in full operation. Levels of Service will range from LOS A to LOS E depending upon the intersection, the traffic movement, in the peak hour period. The analysis of the Central Avenue / Hanson Street intersection confirmed that the left-turn departure movement from Hanson Street encounters long delays during the peak hour periods due to the heavy volume of through traffic on Central Avenue, and the vehicle queuing from the Central Avenue / Silver Street signalized intersection. The 2022 analysis demonstrates that the hourly demand will exceed the hourly capacity for the left-turn departure regardless of the proposed development (LOS F) during all three peak hour periods. When this occurs vehicle delays, vehicle queuing, and traffic congestion are of concern. Favorably, the Hanson Street approach to Central Avenue has been widened to include a short right-turn lane for vehicles heading north on Central Avenue. This is beneficial in that the right-turn departure movement operates below capacity through 2032 and at LOS E or higher. Based on these findings, the city should investigate the feasibility of installing traffic signal control at this intersection, and interconnecting it with the existing traffic signal at Silver Street. A preliminary analysis in Appendix H suggests that additional improvements would be needed in order to accommodate traffic signal control.

Based on the anticipated traffic increases associated with full buildout of the Cochecho Waterfront Development site, this study recommends:

A. 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.

B. 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.

C. Further study of the Central Avenue / Hanson Street intersection is needed to determine if the installation of traffic signal control is feasible and warranted at this intersection.

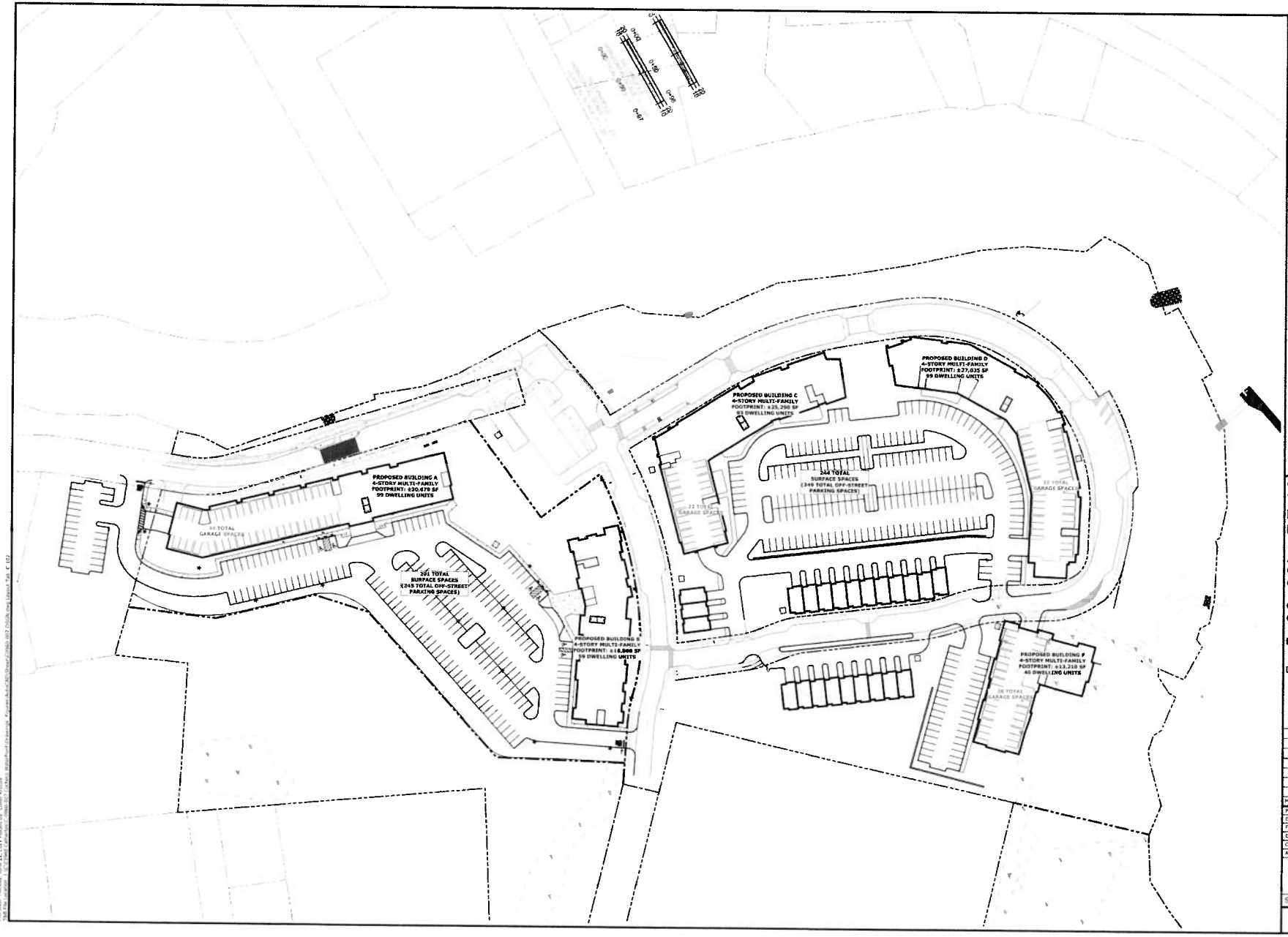


11/15/21

APPENDIX

Appendix A	Site Plan
Appendix B	Automatic Traffic Recorder Counts
Appendix C	Intersection Turning Movement Counts
Appendix D	Adjustment Factors
Appendix E	Other Development Traffic Volumes
Appendix F	Site Generated Traffic Volumes / Trip Distribution
Appendix G	Capacity and Level of Service Calculations – Unsignalized
Appendix H	Capacity and Level of Service Calculations - Signalized
Appendix I	Auxiliary Turn Lane Warrants Analysis
Appendix J	Sight Distance Photographs

Appendix A **Site Plan**



Tighe&Bond
Engineers | Environmental Specialists

N

DRAFT

SCALE IN FEET
0 60 120
GRAPHIC SCALE

Cochecho Waterfront Development Phase - I

Applicant:
CPI Management, LLC c/o Cathartes

Owner:
City of Dover

Dover File #: P20-11

Dover, New Hampshire

MARK	DATE	DESCRIPTION
PROJECT NO:		C-0960-007
DATE		
FILE		C0960-007-DSGN.DWG
DRAWN BY		CJK
CHECKED		PMC/NAH
APPROVED		RLH

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Appendix B **Automatic Traffic Recorder Counts**

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	82125067	**Type:**	SPOT
Located On:	Washington St	:	
Direction:	1-WAY		
Community:	DOVER	**Period:**	Mon 7/13/2020 - Sun 7/19/2020
AADT:	12185		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		97	71	63				77	0.6%
1:00 AM		40	32	41				38	0.3%
2:00 AM		31	41	30				34	0.2%
3:00 AM		22	25	32				26	0.2%
4:00 AM		67	57	47				57	0.4%
5:00 AM		167	171	172				170	1.2%
6:00 AM		458	406	394				419	3.0%
7:00 AM		723	676	618				672	4.8%
8:00 AM		780	723	754				752	5.4%
9:00 AM		814	751	749				771	5.5%
10:00 AM		901	852	842				865	6.2%
11:00 AM		915	1006	924				948	6.8%
12:00 PM		939	1018	987				981	7.0%
1:00 PM		986	969	1005				987	7.0%
2:00 PM		1008	1029	989				1,009	7.2%
3:00 PM		1123	1068	1127				1,106	7.9%
4:00 PM		1196	1114	1163				1,158	8.3%
5:00 PM		1134	1126	1103				1,121	8.0%
6:00 PM		904	871	842				872	6.2%
7:00 PM		711	701	669				694	5.0%
8:00 PM		527	529	526				527	3.8%
9:00 PM		325	331	359				338	2.4%
10:00 PM		234	212	228				225	1.6%
11:00 PM		152	142	150				148	1.1%
Total	**0**	**14,254**	**13,921**	**13,814**	**0**	**0**	**0**		
24hr Total		14254	13921	13814				13,996	
AM Pk Hr		11:00	11:00	11:00					
AM Peak		915	1006	924				948	
PM Pk Hr		4:00	5:00	4:00					
PM Peak		1196	1126	1163				1,162	
% Pk Hr		8.39%	8.09%	8.42%				8.30%	

New Hampshire DOT Department of Transportation

MS2

Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	82125067	**Type:**	SPOT
Located On:	Washington St	:	
Direction:	1-WAY		
Community:	DOVER	**Period:**	Mon 9/11/2017 - Sun 9/17/2017
AADT:	12813		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		102	110	114				109	0.8%
1:00 AM		48	37	44				43	0.3%
2:00 AM		30	29	44				34	0.2%
3:00 AM		37	38	36				37	0.3%
4:00 AM		54	46	67				56	0.4%
5:00 AM		186	188	200				191	1.3%
6:00 AM		469	449	452				457	3.2%
7:00 AM		770	816	798				795	5.5%
8:00 AM		863	787	893				848	5.9%
9:00 AM		698	679	687				688	4.8%
10:00 AM		753	780	834				789	5.5%
11:00 AM		795	825	874				831	5.8%
12:00 PM		811	881	926				873	6.1%
1:00 PM		855	820	904				860	6.0%
2:00 PM		921	980	1009				970	6.8%
3:00 PM		1088	1175	1062				1,108	7.7%
4:00 PM		1188	1249	1269				1,235	8.6%
5:00 PM		1211	1149	1234				1,198	8.3%
6:00 PM		1075	1004	1044				1,041	7.3%
7:00 PM		758	857	806				807	5.6%
8:00 PM		552	588	585				575	4.0%
9:00 PM		409	368	432				403	2.8%
10:00 PM		221	236	293				250	1.7%
11:00 PM		145	165	167				159	1.1%
Total	**0**	**14,039**	**14,256**	**14,774**	**0**	**0**	**0**		
24hr Total		14039	14256	14774				14,356	
AM Pk Hr		8:00	11:00	8:00					
AM Peak		863	825	893				860	
PM Pk Hr		5:00	4:00	4:00					
PM Peak		1211	1249	1269				1,243	
% Pk Hr		8.63%	8.76%	8.59%				8.66%	

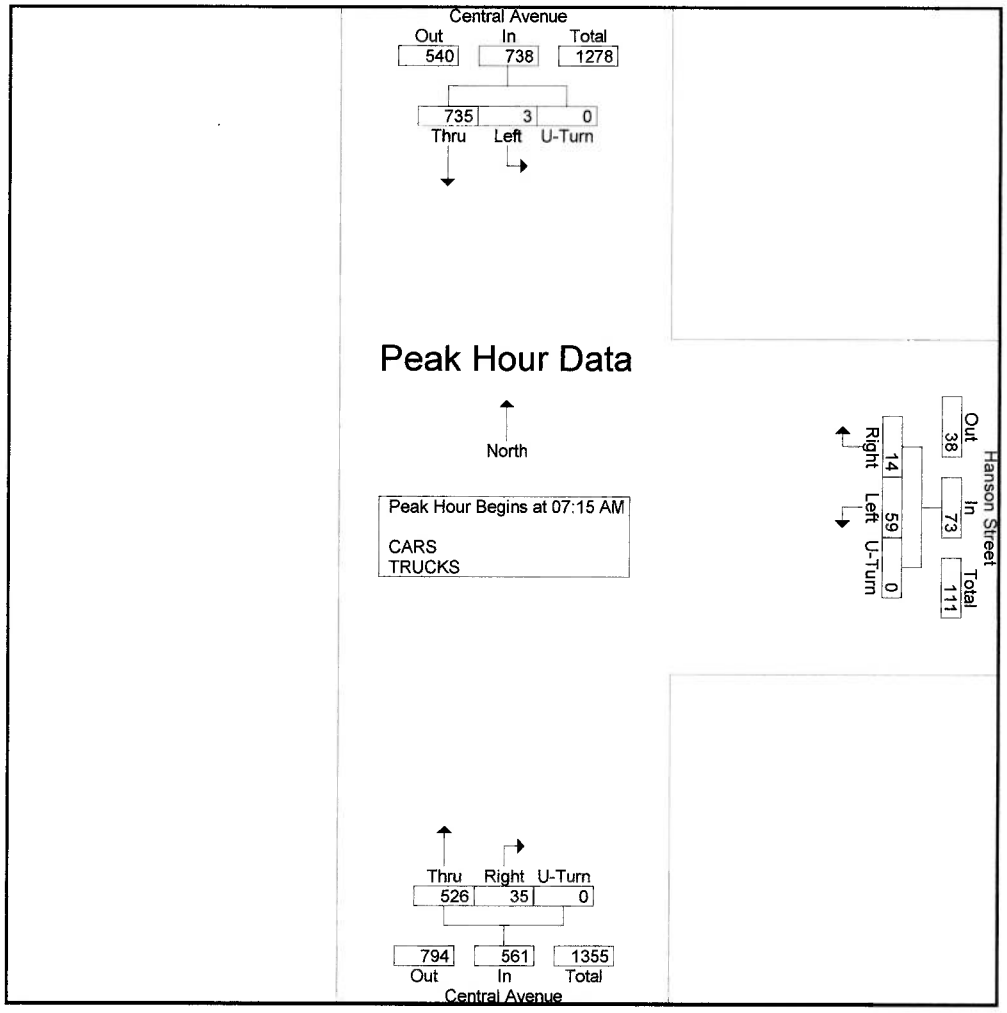
Appendix C **Intersection Turning Movement Counts**

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 2

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	173	**1**	0	174	2	13	0	15	7	130	0	137	326
07:30 AM	**228**	0	0	**228**	4	13	0	17	8	120	0	128	**373**
07:45 AM	190	1	0	191	**5**	15	0	20	**12**	137	0	**149**	360
08:00 AM	144	1	0	145	3	**18**	0	**21**	8	**139**	0	147	313
Total Volume	735	3	0	738	14	59	0	73	35	526	0	561	1372
% App. Total	99.6	0.4	0		19.2	80.8	0		6.2	93.8	0		
PHF	.806	.750	.000	.809	.700	.819	.000	.869	.729	.946	.000	.941	.920

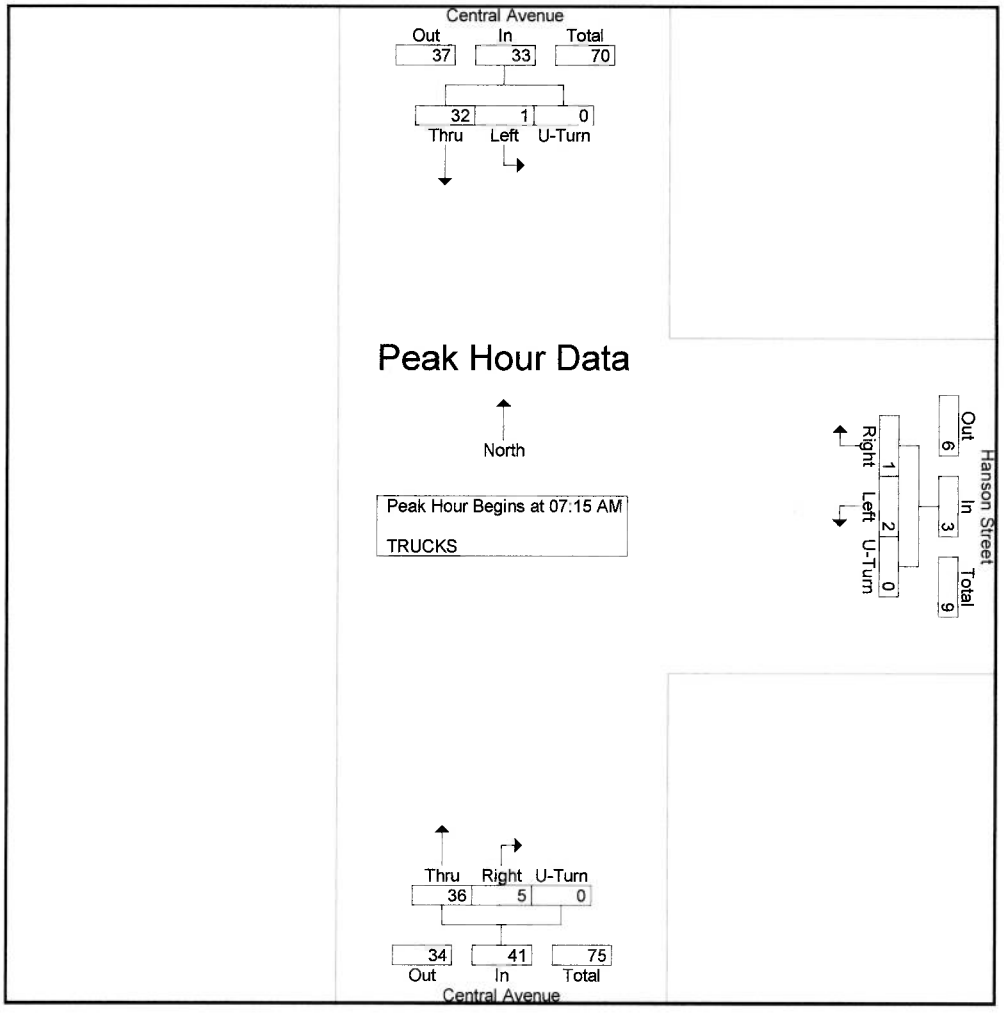


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 2

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**11**	0	0	**11**	0	0	0	0	1	5	0	6	17
07:30 AM	11	0	0	11	0	0	0	0	0	7	0	7	18
07:45 AM	8	**1**	0	9	**1**	0	0	1	1	**16**	0	**17**	**27**
08:00 AM	2	0	0	2	0	**2**	0	**2**	**3**	8	0	11	15
Total Volume	32	1	0	33	1	2	0	3	5	36	0	41	77
% App. Total	97	3	0		33.3	66.7	0		12.2	87.8	0		
PHF	.727	.250	.000	.750	.250	.250	.000	.375	.417	.563	.000	.603	.713



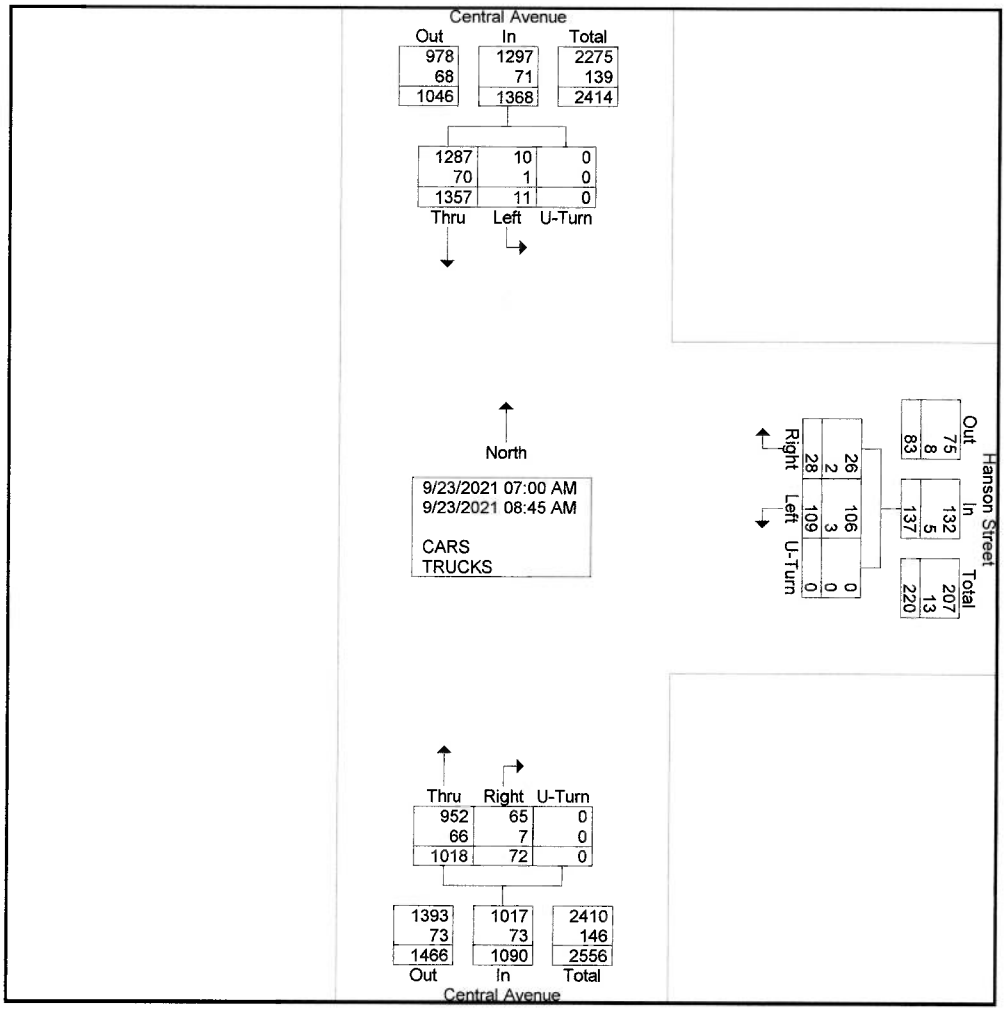
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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- CARS - TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	157	0	0	157	2	14	0	16	3	107	0	110	283
07:15 AM	173	1	0	174	2	13	0	15	7	130	0	137	326
07:30 AM	228	0	0	228	4	13	0	17	8	120	0	128	373
07:45 AM	190	1	0	191	5	15	0	20	12	137	0	149	360
Total	748	2	0	750	13	55	0	68	30	494	0	524	1342
08:00 AM	144	1	0	145	3	18	0	21	8	139	0	147	313
08:15 AM	148	4	0	152	5	9	0	14	12	128	0	140	306
08:30 AM	167	2	0	169	1	14	0	15	12	124	0	136	320
08:45 AM	150	2	0	152	6	13	0	19	10	133	0	143	314
Total	609	9	0	618	15	54	0	69	42	524	0	566	1253
Grand Total	1357	11	0	1368	28	109	0	137	72	1018	0	1090	2595
Apprch %	99.2	0.8	0		20.4	79.6	0		6.6	93.4	0		
Total %	52.3	0.4	0	52.7	1.1	4.2	0	5.3	2.8	39.2	0	42	
CARS	1287	10	0	1297	26	106	0	132	65	952	0	1017	2446
% CARS	94.8	90.9	0	94.8	92.9	97.2	0	96.4	90.3	93.5	0	93.3	94.3
TRUCKS	70	1	0	71	2	3	0	5	7	66	0	73	149
% TRUCKS	5.2	9.1	0	5.2	7.1	2.8	0	3.6	9.7	6.5	0	6.7	5.7



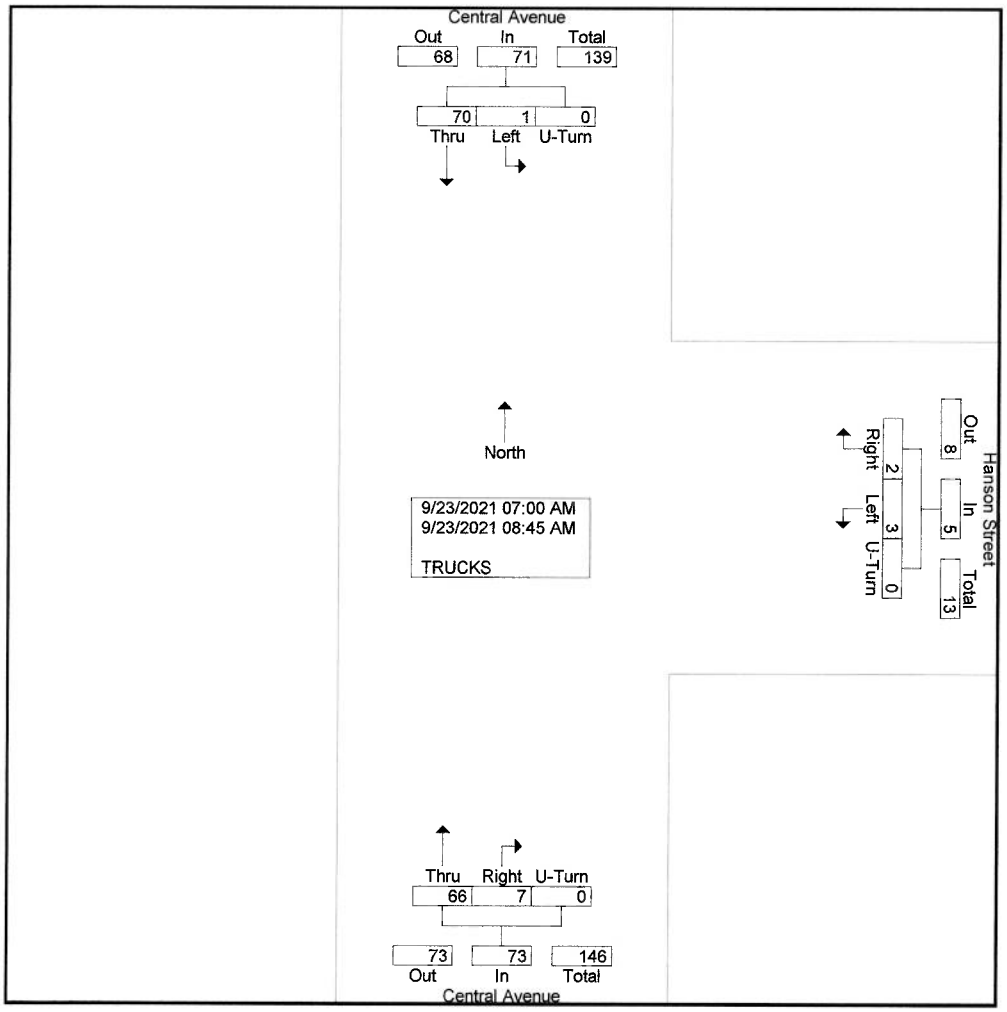
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Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	4	0	0	4	0	0	0	0	0	11	0	11	15
07:15 AM	11	0	0	11	0	0	0	0	1	5	0	6	17
07:30 AM	11	0	0	11	0	0	0	0	0	7	0	7	18
07:45 AM	8	1	0	9	1	0	0	1	1	16	0	17	27
Total	34	1	0	35	1	0	0	1	2	39	0	41	77
08:00 AM	2	0	0	2	0	2	0	2	3	8	0	11	15
08:15 AM	13	0	0	13	0	1	0	1	0	5	0	5	19
08:30 AM	11	0	0	11	0	0	0	0	2	6	0	8	19
08:45 AM	10	0	0	10	1	0	0	1	0	8	0	8	19
Total	36	0	0	36	1	3	0	4	5	27	0	32	72
Grand Total	70	1	0	71	2	3	0	5	7	66	0	73	149
Apprch %	98.6	1.4	0		40	60	0		9.6	90.4	0		
Total %	47	0.7	0	47.7	1.3	2	0	3.4	4.7	44.3	0	49	

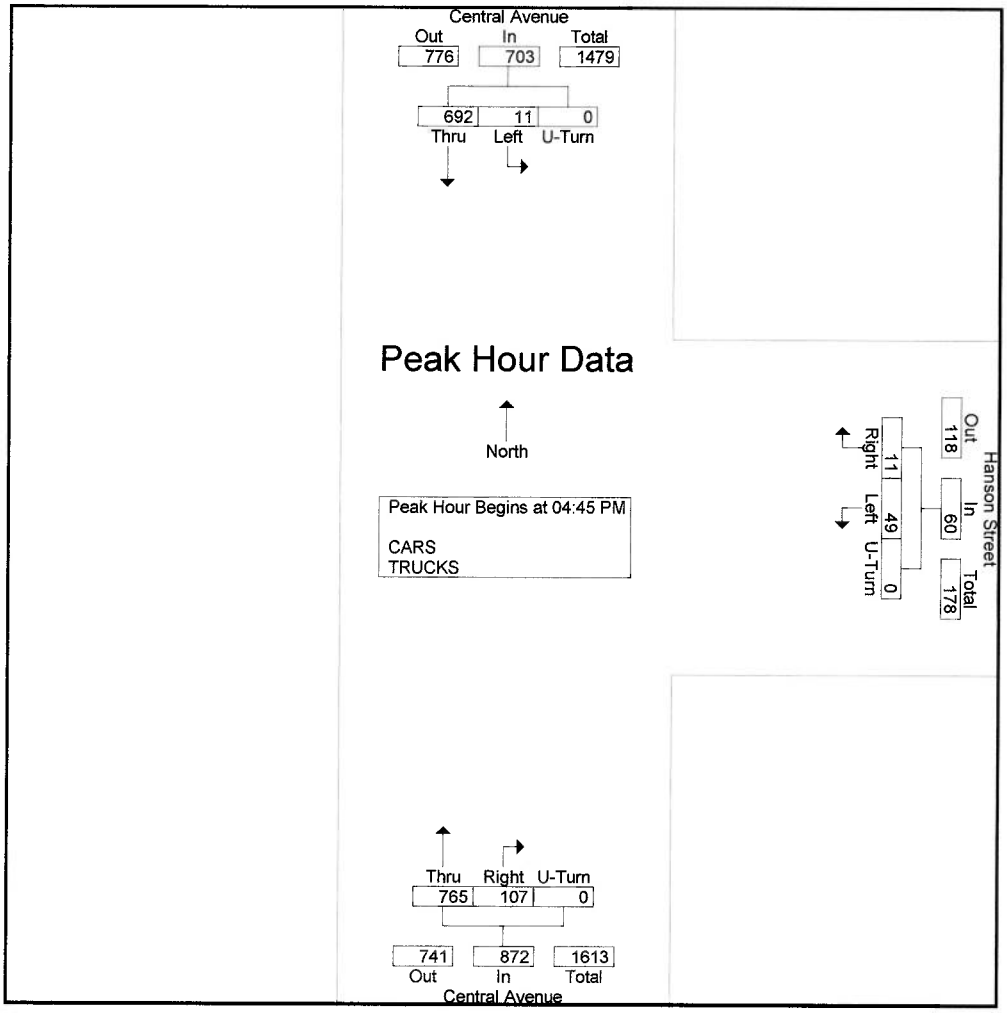


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
Start Date : 9/23/2021
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	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	**177**	**3**	0	**180**	**4**	10	0	14	21	**197**	0	218	**412**
05:00 PM	170	3	0	173	4	12	0	16	21	196	0	217	406
05:15 PM	168	2	0	170	1	**16**	0	**17**	**41**	179	0	**220**	407
05:30 PM	177	3	0	180	2	11	0	13	24	193	0	217	410
Total Volume	692	11	0	703	11	49	0	60	107	765	0	872	1635
% App. Total	98.4	1.6	0		18.3	81.7	0		12.3	87.7	0		
PHF	.977	.917	.000	.976	.688	.766	.000	.882	.652	.971	.000	.991	.992

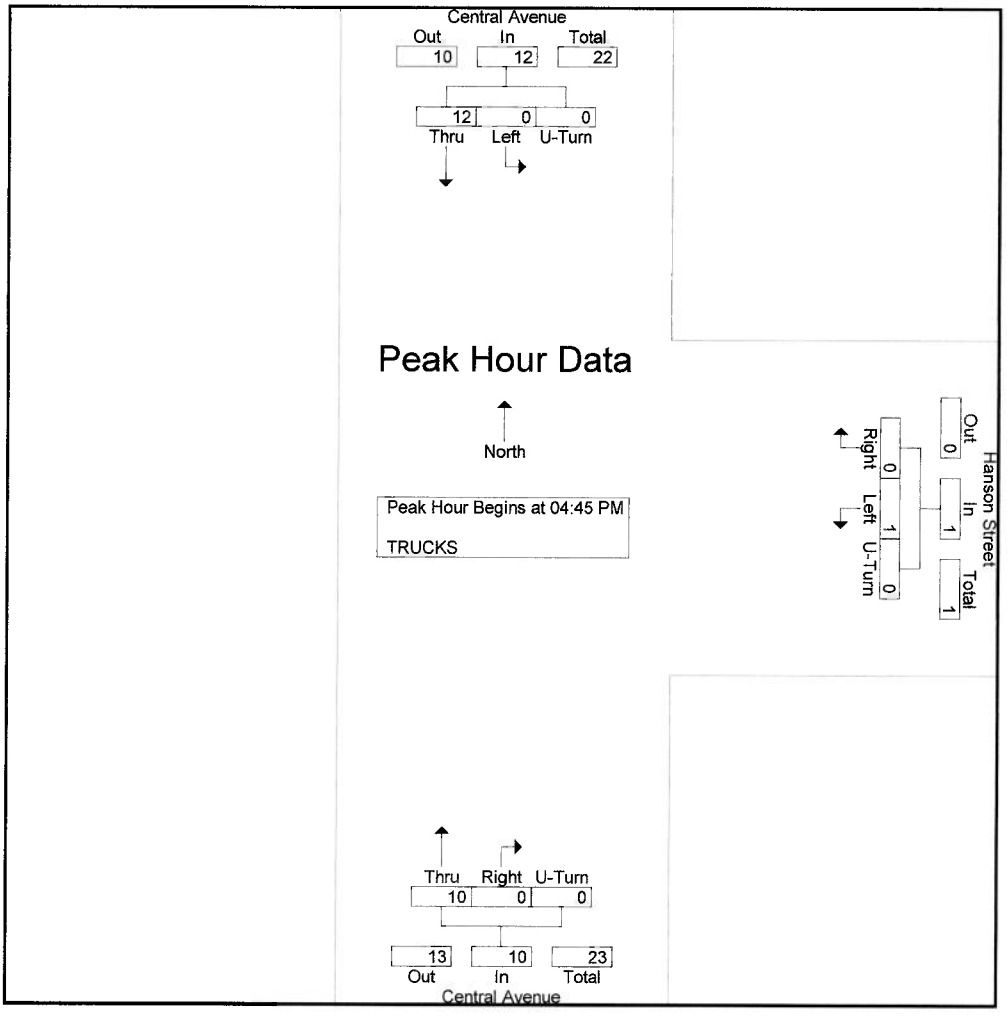


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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
Site Code : 1981A
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	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
05:00 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
05:15 PM	**5**	0	0	**5**	0	0	0	0	0	2	0	2	7
05:30 PM	2	0	0	2	0	**1**	0	**1**	0	**6**	0	**6**	**9**
Total Volume	12	0	0	12	0	1	0	1	0	10	0	10	23
% App. Total	100	0	0		0	100	0		0	100	0		
PHF	.600	.000	.000	.600	.000	.250	.000	.250	.000	.417	.000	.417	.639



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Site Code : 1981A
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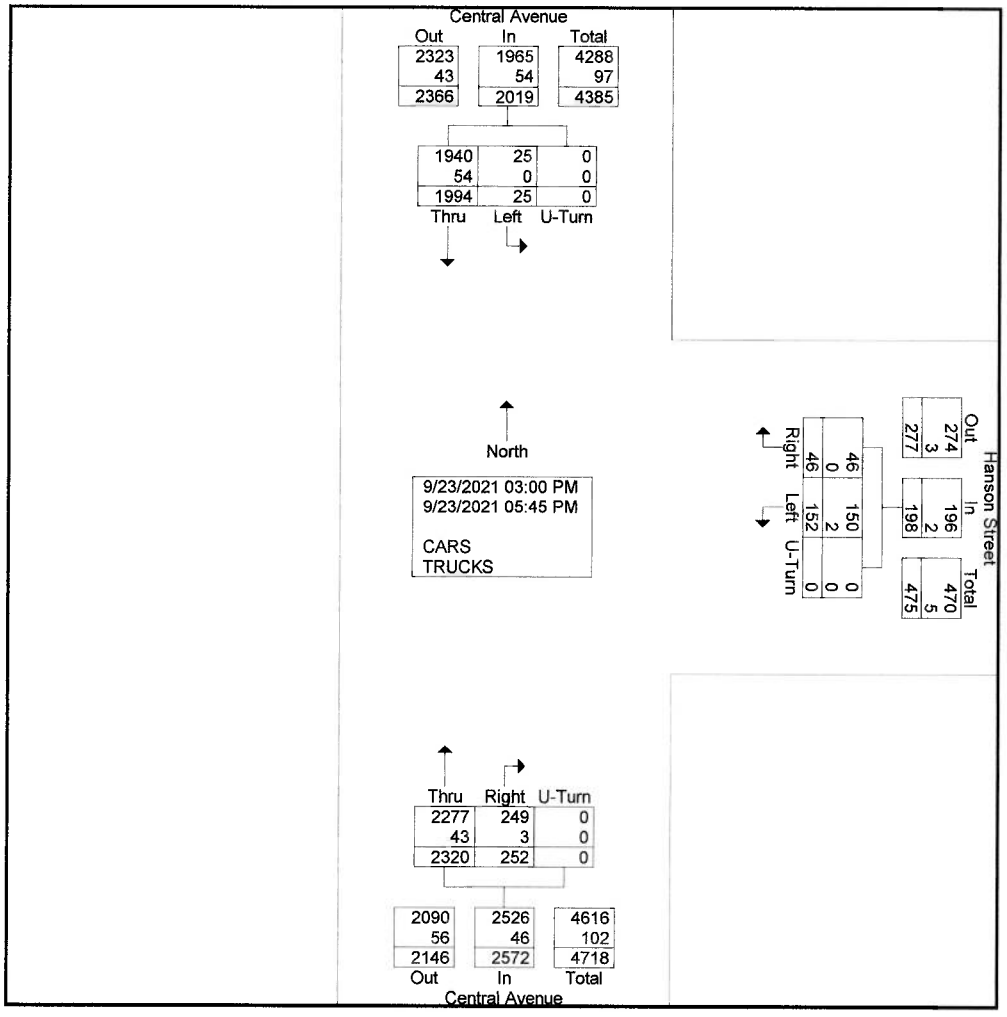
Groups Printed- CARS - TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	158	0	0	158	2	14	0	16	11	177	0	188	362
03:15 PM	177	2	0	179	3	8	0	11	15	199	0	214	404
03:30 PM	181	1	0	182	9	6	0	15	21	201	0	222	419
03:45 PM	150	3	0	153	5	15	0	20	16	216	0	232	405
Total	666	6	0	672	19	43	0	62	63	793	0	856	1590
04:00 PM	190	6	0	196	1	12	0	13	17	175	0	192	401
04:15 PM	122	0	0	122	5	13	0	18	37	189	0	226	366
04:30 PM	172	1	0	173	6	20	0	26	10	197	0	207	406
04:45 PM	177	3	0	180	4	10	0	14	21	197	0	218	412
Total	661	10	0	671	16	55	0	71	85	758	0	843	1585
05:00 PM	170	3	0	173	4	12	0	16	21	196	0	217	406
05:15 PM	168	2	0	170	1	16	0	17	41	179	0	220	407
05:30 PM	177	3	0	180	2	11	0	13	24	193	0	217	410
05:45 PM	152	1	0	153	4	15	0	19	18	201	0	219	391
Total	667	9	0	676	11	54	0	65	104	769	0	873	1614
Grand Total	1994	25	0	2019	46	152	0	198	252	2320	0	2572	4789
Apprch %	98.8	1.2	0		23.2	76.8	0		9.8	90.2	0		
Total %	41.6	0.5	0	42.2	1	3.2	0	4.1	5.3	48.4	0	53.7	
CARS	1940	25	0	1965	46	150	0	196	249	2277	0	2526	4687
% CARS	97.3	100	0	97.3	100	98.7	0	99	98.8	98.1	0	98.2	97.9
TRUCKS	54	0	0	54	0	2	0	2	3	43	0	46	102
% TRUCKS	2.7	0	0	2.7	0	1.3	0	1	1.2	1.9	0	1.8	2.1

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
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Weather: Clear
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Job Number: 1981A
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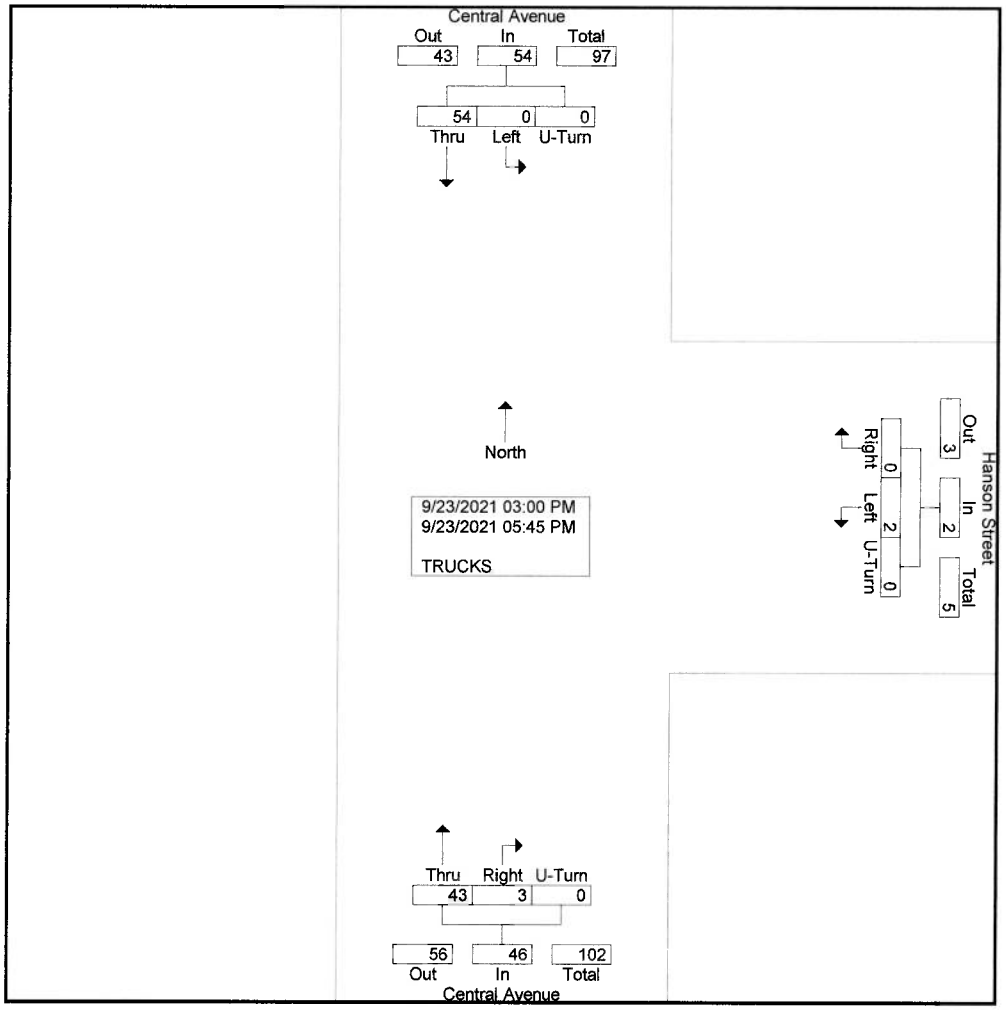
Stephen G. Pernaw & Company, Inc.
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Weather: Clear
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Town/State: Dover, NH

File Name : 1981A_INT_A__AM_&_PM_Central-Hanson
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Groups Printed- TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	4	0	0	4	0	0	0	0	0	6	0	6	10
03:15 PM	9	0	0	9	0	0	0	0	0	7	0	7	16
03:30 PM	7	0	0	7	0	0	0	0	2	4	0	6	13
03:45 PM	7	0	0	7	0	1	0	1	1	4	0	5	13
Total	27	0	0	27	0	1	0	1	3	21	0	24	52
04:00 PM	7	0	0	7	0	0	0	0	0	2	0	2	9
04:15 PM	3	0	0	3	0	0	0	0	0	3	0	3	6
04:30 PM	3	0	0	3	0	0	0	0	0	4	0	4	7
04:45 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
Total	15	0	0	15	0	0	0	0	0	11	0	11	26
05:00 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
05:15 PM	5	0	0	5	0	0	0	0	0	2	0	2	7
05:30 PM	2	0	0	2	0	1	0	1	0	6	0	6	9
05:45 PM	2	0	0	2	0	0	0	0	0	3	0	3	5
Total	12	0	0	12	0	1	0	1	0	11	0	11	24
Grand Total	54	0	0	54	0	2	0	2	3	43	0	46	102
Apprch %	100	0	0		0	100	0		6.5	93.5	0		
Total %	52.9	0	0	52.9	0	2	0	2	2.9	42.2	0	45.1	

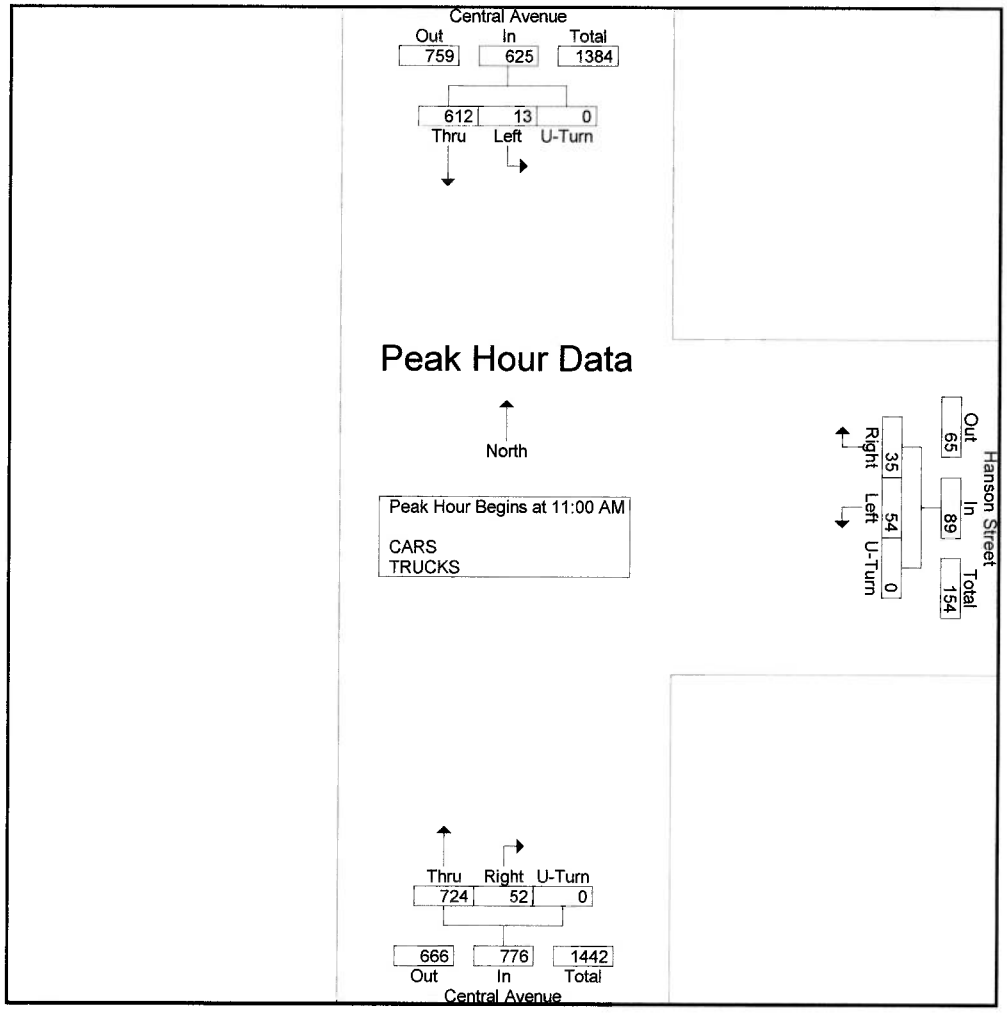


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Weather: Clear
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Job Number: 1981A
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File Name : 1981A_INT_A_SAT Central-Hanson
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	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	**162**	2	0	**164**	6	**17**	0	23	9	183	0	192	379
11:15 AM	158	2	0	160	**11**	16	0	**27**	**16**	**191**	0	**207**	**394**
11:30 AM	141	**5**	0	146	7	10	0	17	11	175	0	186	349
11:45 AM	151	4	0	155	11	11	0	22	16	175	0	191	368
Total Volume	612	13	0	625	35	54	0	89	52	724	0	776	1490
% App. Total	97.9	2.1	0		39.3	60.7	0		6.7	93.3	0		
PHF	.944	.650	.000	.953	.795	.794	.000	.824	.813	.948	.000	.937	.945

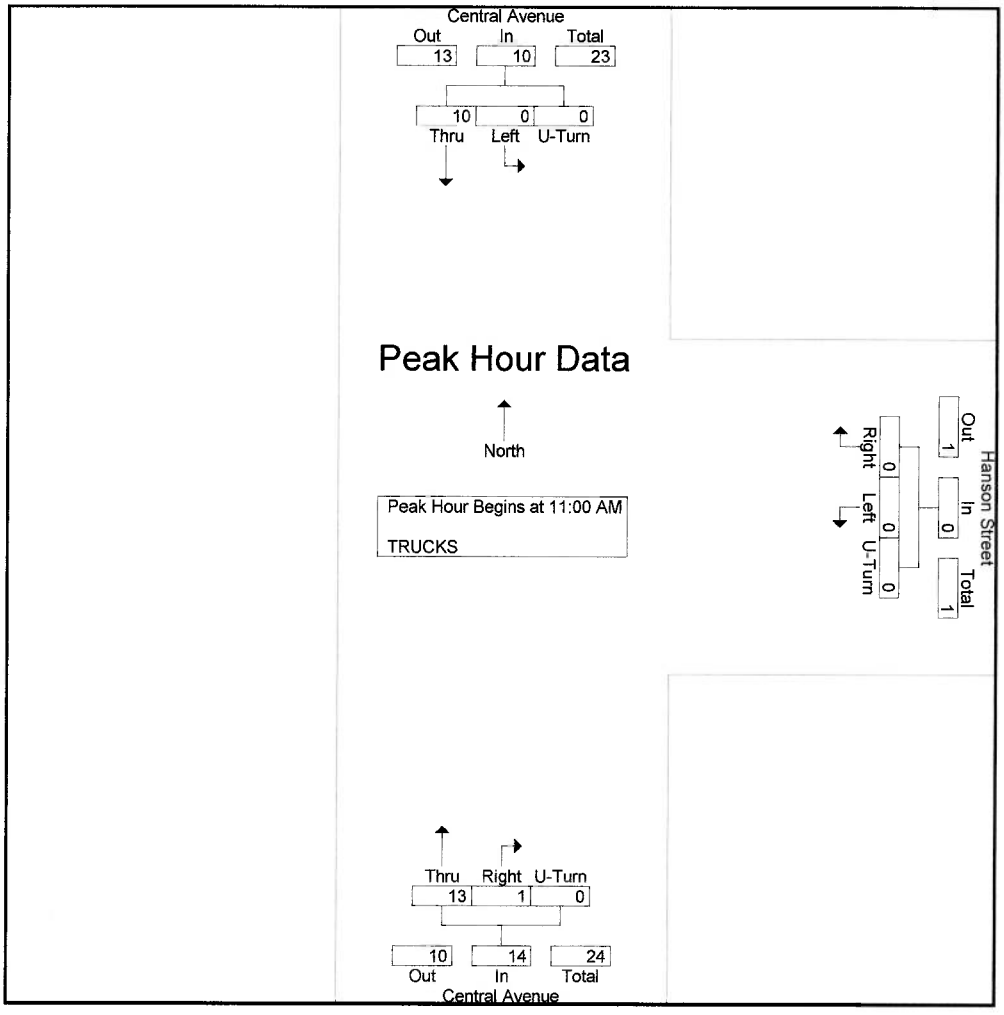


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Weather: Clear
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File Name : 1981A_INT_A_SAT Central-Hanson
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	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	**3**	0	0	**3**	0	0	0	0	0	**5**	0	**5**	**8**
11:15 AM	2	0	0	2	0	0	0	0	**1**	4	0	5	7
11:30 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
11:45 AM	2	0	0	2	0	0	0	0	0	1	0	1	3
Total Volume	10	0	0	10	0	0	0	0	1	13	0	14	24
% App. Total	100	0	0		0	0	0		7.1	92.9	0		
PHF	.833	.000	.000	.833	.000	.000	.000	.000	.250	.650	.000	.700	.750



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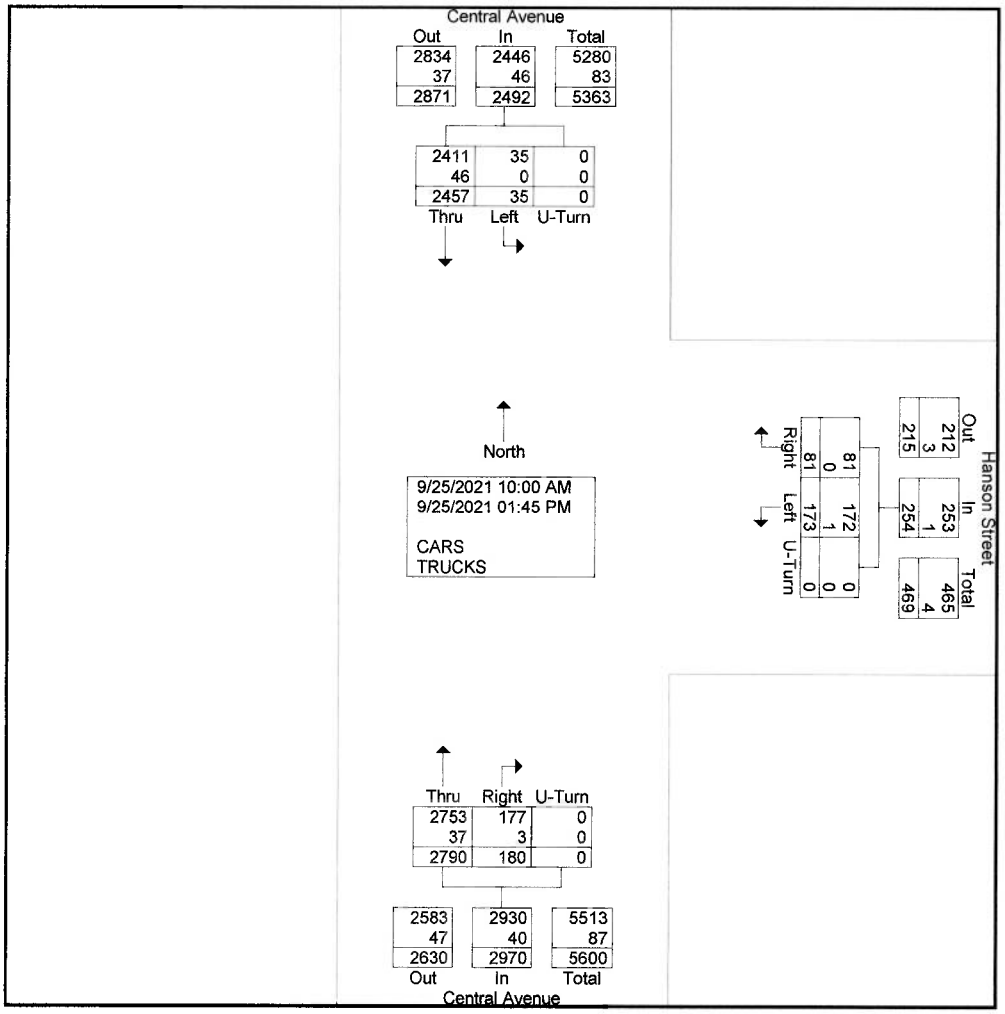
Groups Printed- CARS - TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
10:00 AM	157	0	0	157	0	11	0	11	8	152	0	160	328
10:15 AM	152	1	0	153	4	11	0	15	7	142	0	149	317
10:30 AM	154	3	0	157	5	6	0	11	8	168	0	176	344
10:45 AM	156	1	0	157	5	11	0	16	9	185	0	194	367
Total	619	5	0	624	14	39	0	53	32	647	0	679	1356
11:00 AM	162	2	0	164	6	17	0	23	9	183	0	192	379
11:15 AM	158	2	0	160	11	16	0	27	16	191	0	207	394
11:30 AM	141	5	0	146	7	10	0	17	11	175	0	186	349
11:45 AM	151	4	0	155	11	11	0	22	16	175	0	191	368
Total	612	13	0	625	35	54	0	89	52	724	0	776	1490
12:00 PM	146	5	0	151	4	14	0	18	9	198	0	207	376
12:15 PM	173	2	0	175	7	12	0	19	17	179	0	196	390
12:30 PM	136	4	0	140	3	8	0	11	16	173	0	189	340
12:45 PM	140	0	0	140	6	10	0	16	11	193	0	204	360
Total	595	11	0	606	20	44	0	64	53	743	0	796	1466
01:00 PM	177	3	0	180	4	13	0	17	13	163	0	176	373
01:15 PM	166	0	0	166	3	9	0	12	12	171	0	183	361
01:30 PM	152	1	0	153	1	8	0	9	12	169	0	181	343
01:45 PM	136	2	0	138	4	6	0	10	6	173	0	179	327
Total	631	6	0	637	12	36	0	48	43	676	0	719	1404
Grand Total	2457	35	0	2492	81	173	0	254	180	2790	0	2970	5716
Apprch %	98.6	1.4	0		31.9	68.1	0		6.1	93.9	0		
Total %	43	0.6	0	43.6	1.4	3	0	4.4	3.1	48.8	0	52	
CARS	2411	35	0	2446	81	172	0	253	177	2753	0	2930	5629
% CARS	98.1	100	0	98.2	100	99.4	0	99.6	98.3	98.7	0	98.7	98.5
TRUCKS	46	0	0	46	0	1	0	1	3	37	0	40	87
% TRUCKS	1.9	0	0	1.8	0	0.6	0	0.4	1.7	1.3	0	1.3	1.5

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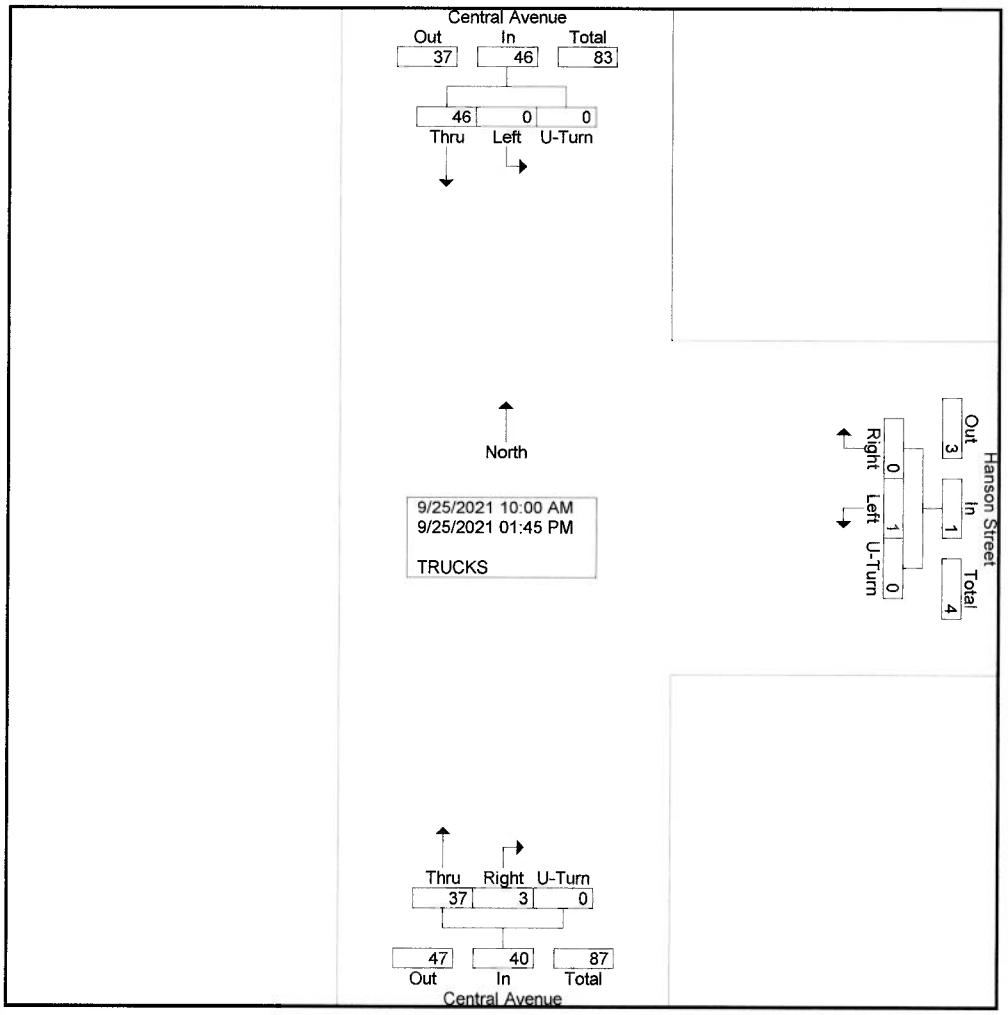
Groups Printed- TRUCKS

	Central Avenue From North				Hanson Street From East				Central Avenue From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
10:00 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
10:15 AM	2	0	0	2	0	1	0	1	0	3	0	3	6
10:30 AM	9	0	0	9	0	0	0	0	0	0	0	0	9
10:45 AM	4	0	0	4	0	0	0	0	1	2	0	3	7
Total	18	0	0	18	0	1	0	1	1	8	0	9	28
11:00 AM	3	0	0	3	0	0	0	0	0	5	0	5	8
11:15 AM	2	0	0	2	0	0	0	0	1	4	0	5	7
11:30 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
11:45 AM	2	0	0	2	0	0	0	0	0	1	0	1	3
Total	10	0	0	10	0	0	0	0	1	13	0	14	24
12:00 PM	1	0	0	1	0	0	0	0	0	4	0	4	5
12:15 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
12:30 PM	5	0	0	5	0	0	0	0	0	1	0	1	6
12:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total	9	0	0	9	0	0	0	0	0	9	0	9	18
01:00 PM	1	0	0	1	0	0	0	0	1	1	0	2	3
01:15 PM	3	0	0	3	0	0	0	0	0	3	0	3	6
01:30 PM	4	0	0	4	0	0	0	0	0	2	0	2	6
01:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	9	0	0	9	0	0	0	0	1	7	0	8	17
Grand Total	46	0	0	46	0	1	0	1	3	37	0	40	87
Apprch %	100	0	0		0	100	0		7.5	92.5	0		
Total %	52.9	0	0	52.9	0	1.1	0	1.1	3.4	42.5	0	46	

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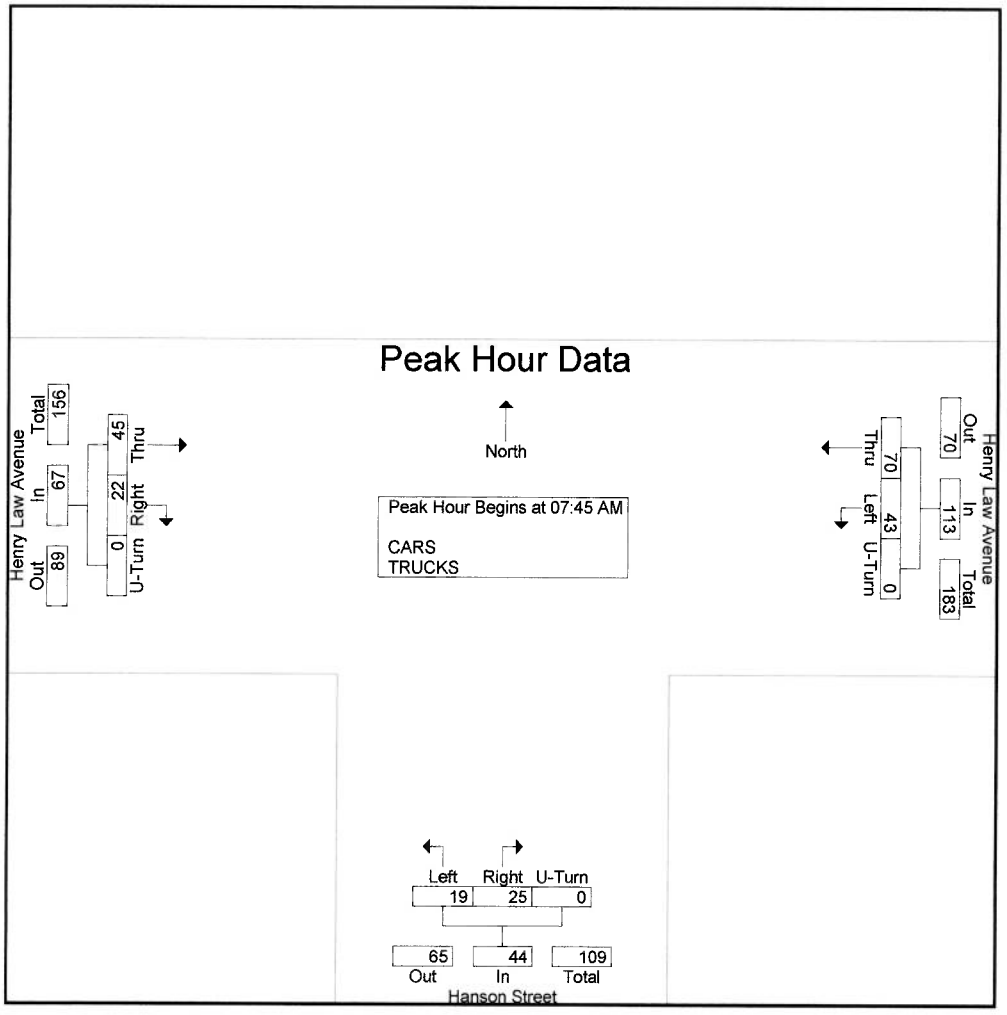


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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
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	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**20**	12	0	**32**	6	5	0	11	5	11	0	16	**59**
08:00 AM	15	**16**	0	31	6	3	0	9	6	11	0	17	57
08:15 AM	20	5	0	25	4	4	0	8	**9**	11	0	**20**	53
08:30 AM	15	10	0	25	**9**	**7**	0	**16**	2	**12**	0	14	55
Total Volume	70	43	0	113	25	19	0	44	22	45	0	67	224
% App. Total	61.9	38.1	0		56.8	43.2	0		32.8	67.2	0		
PHF	.875	.672	.000	.883	.694	.679	.000	.688	.611	.938	.000	.838	.949

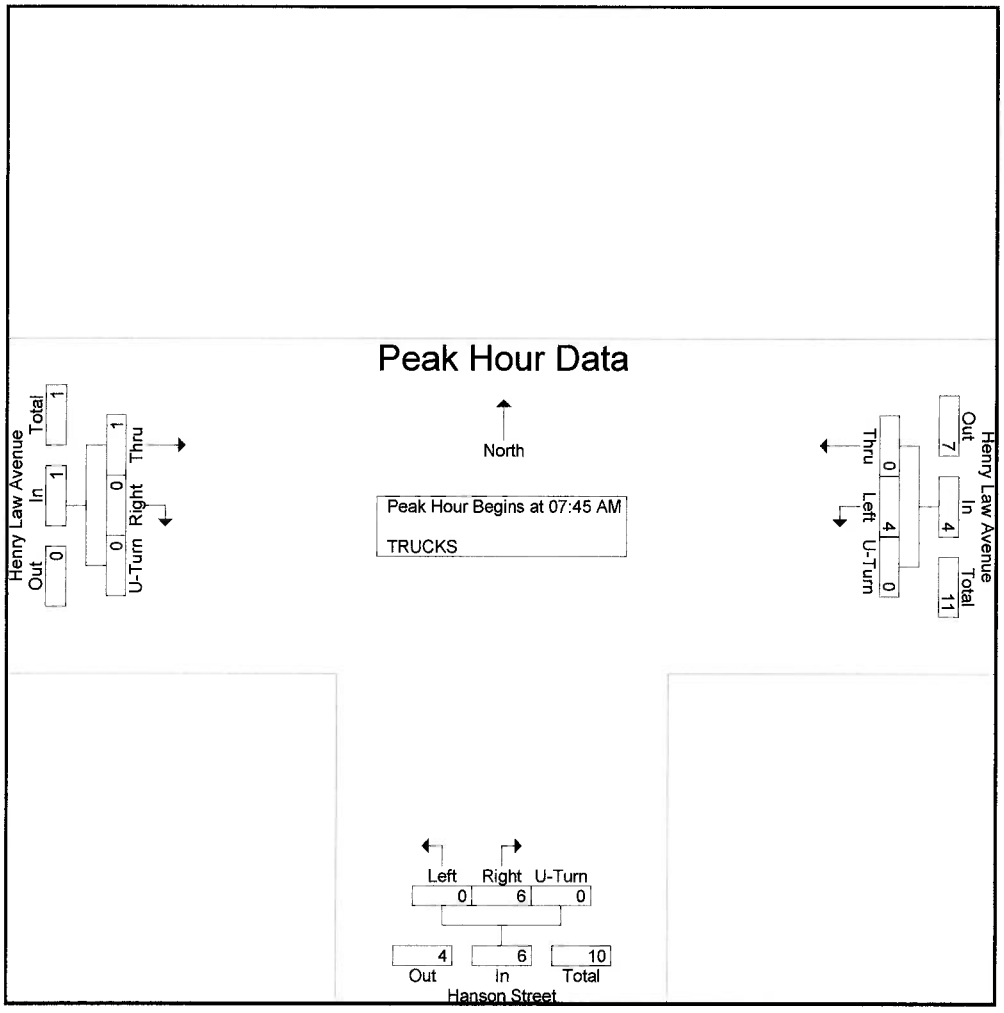


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Weather: Clear
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File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
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	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
08:00 AM	0	**2**	0	**2**	**3**	0	0	**3**	0	**1**	0	**1**	**6**
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	4	0	4	6	0	0	6	0	1	0	1	11
% App. Total	0	100	0		100	0	0		0	100	0		
PHF	.000	.500	.000	.500	.500	.000	.000	.500	.000	.250	.000	.250	.458



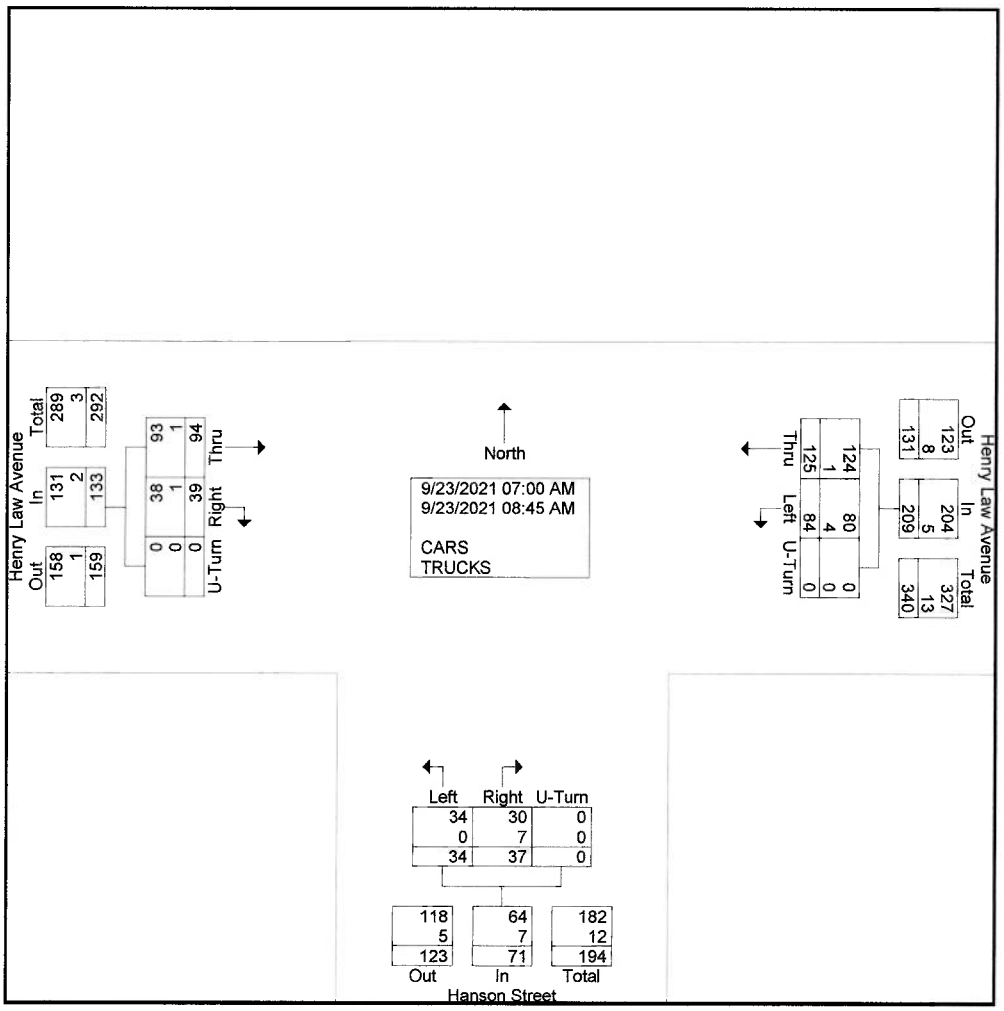
Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- CARS - TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	13	10	0	23	1	1	0	2	2	11	0	13	38
07:15 AM	17	11	0	28	2	3	0	5	4	14	0	18	51
07:30 AM	15	9	0	24	5	5	0	10	6	10	0	16	50
07:45 AM	20	12	0	32	6	5	0	11	5	11	0	16	59
Total	65	42	0	107	14	14	0	28	17	46	0	63	198
08:00 AM	15	16	0	31	6	3	0	9	6	11	0	17	57
08:15 AM	20	5	0	25	4	4	0	8	9	11	0	20	53
08:30 AM	15	10	0	25	9	7	0	16	2	12	0	14	55
08:45 AM	10	11	0	21	4	6	0	10	5	14	0	19	50
Total	60	42	0	102	23	20	0	43	22	48	0	70	215
Grand Total	125	84	0	209	37	34	0	71	39	94	0	133	413
Apprch %	59.8	40.2	0		52.1	47.9	0		29.3	70.7	0		
Total %	30.3	20.3	0	50.6	9	8.2	0	17.2	9.4	22.8	0	32.2	
CARS	124	80	0	204	30	34	0	64	38	93	0	131	399
% CARS	99.2	95.2	0	97.6	81.1	100	0	90.1	97.4	98.9	0	98.5	96.6
TRUCKS	1	4	0	5	7	0	0	7	1	1	0	2	14
% TRUCKS	0.8	4.8	0	2.4	18.9	0	0	9.9	2.6	1.1	0	1.5	3.4



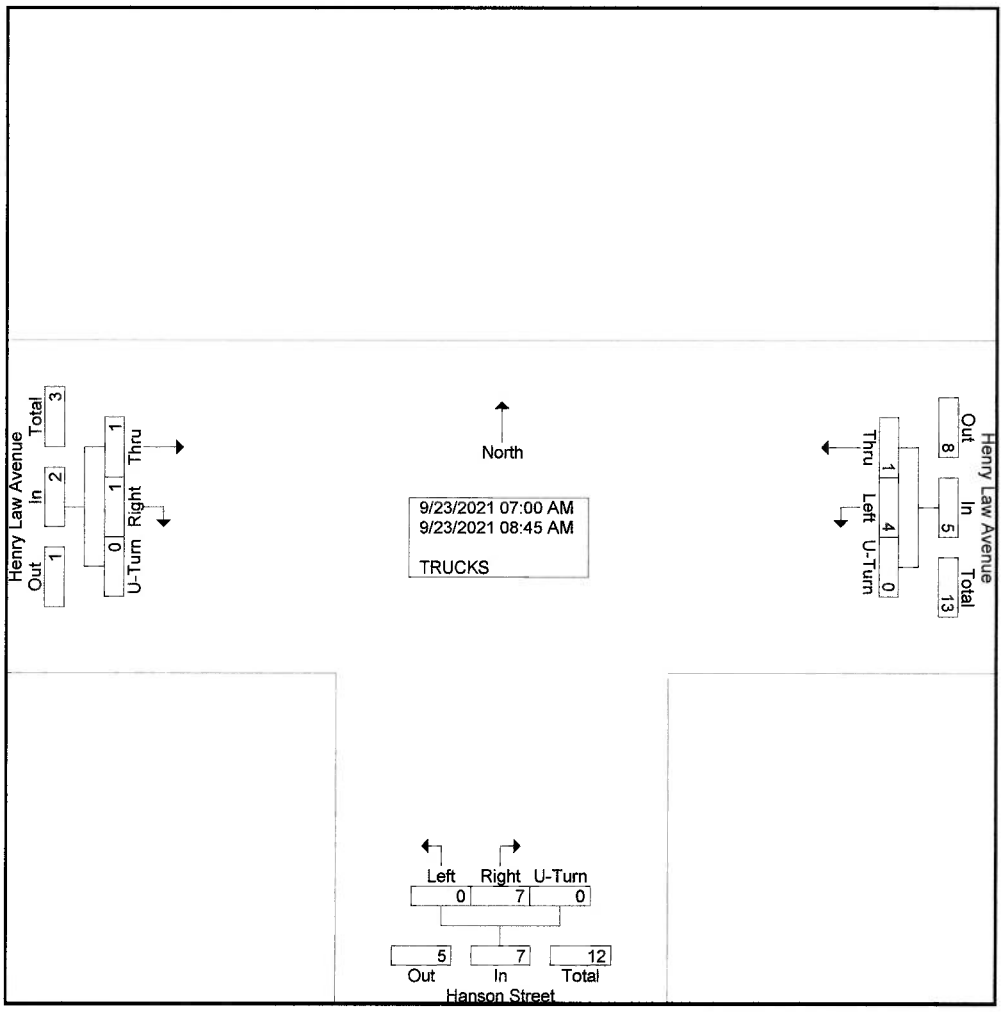
Stephen G. Pernaw & Company, Inc.
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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
07:45 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	1	0	1	3	0	0	3	0	0	0	0	4
08:00 AM	0	2	0	2	3	0	0	3	0	1	0	1	6
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
08:45 AM	1	0	0	1	0	0	0	0	1	0	0	1	2
Total	1	3	0	4	4	0	0	4	1	1	0	2	10
Grand Total	1	4	0	5	7	0	0	7	1	1	0	2	14
Apprch %	20	80	0		100	0	0		50	50	0		
Total %	7.1	28.6	0	35.7	50	0	0	50	7.1	7.1	0	14.3	

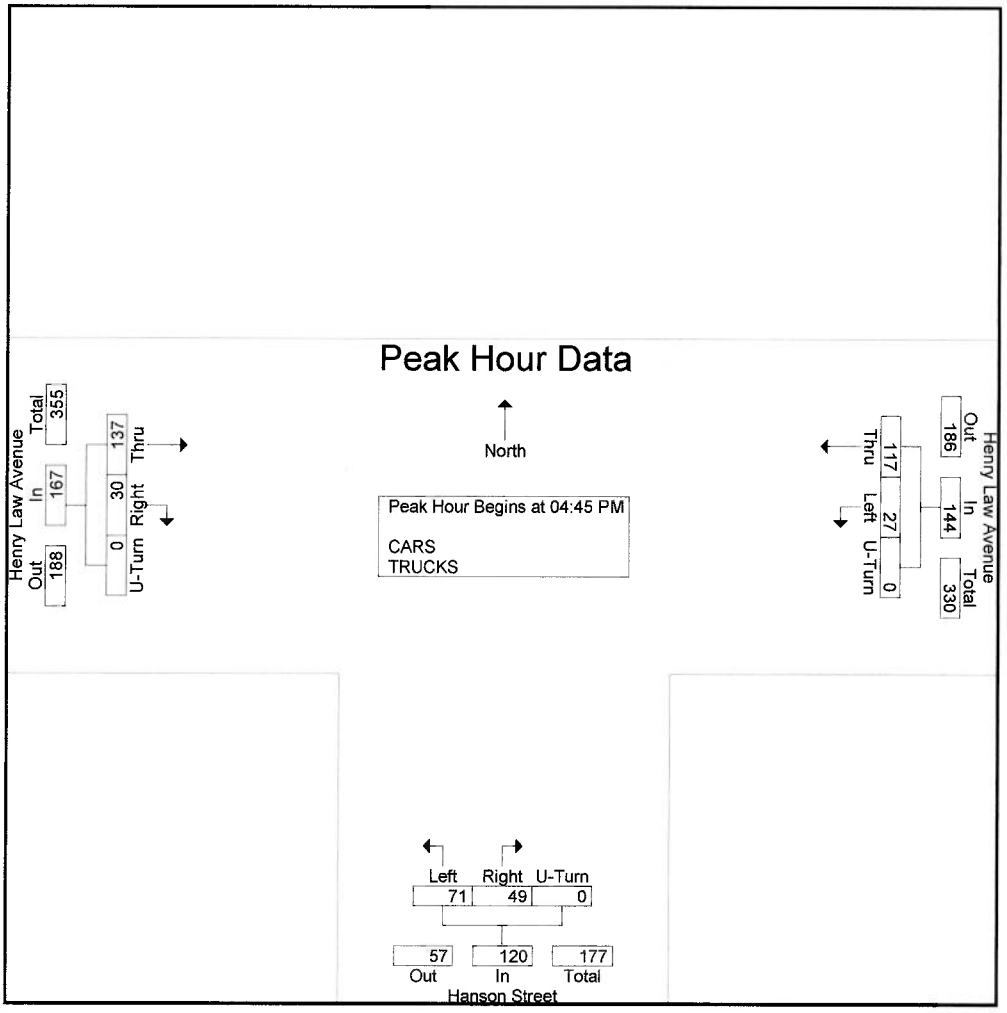


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Weather: Clear
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Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
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	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	29	7	0	36	**15**	9	0	24	6	**41**	0	**47**	107
05:00 PM	27	6	0	33	11	16	0	27	**10**	37	0	47	107
05:15 PM	**38**	**8**	0	**46**	14	**23**	0	**37**	8	33	0	41	**124**
05:30 PM	23	6	0	29	9	23	0	32	6	26	0	32	93
Total Volume	117	27	0	144	49	71	0	120	30	137	0	167	431
% App. Total	81.2	18.8	0		40.8	59.2	0		18	82	0		
PHF	.770	.844	.000	.783	.817	.772	.000	.811	.750	.835	.000	.888	.869

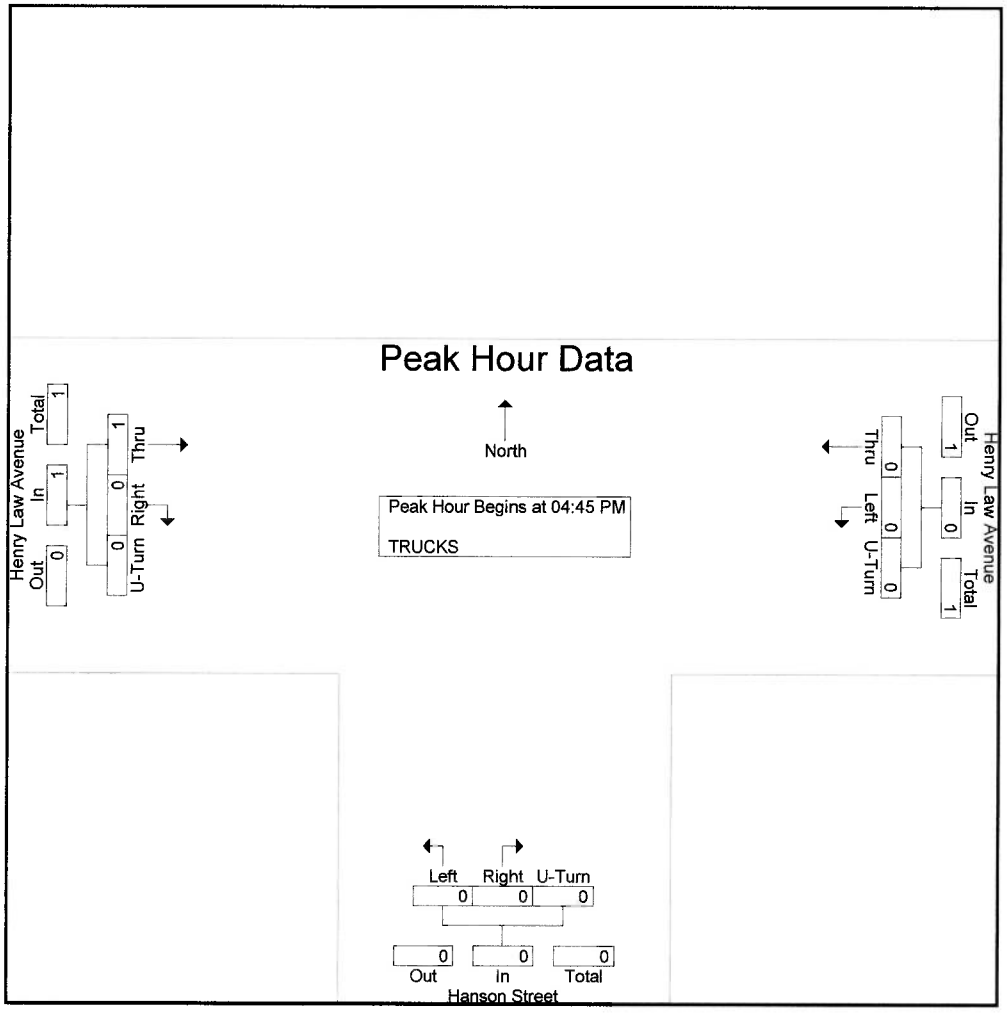


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Weather: Clear
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Job Number: 1981A
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File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
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	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250



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Job Number: 1981A
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Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

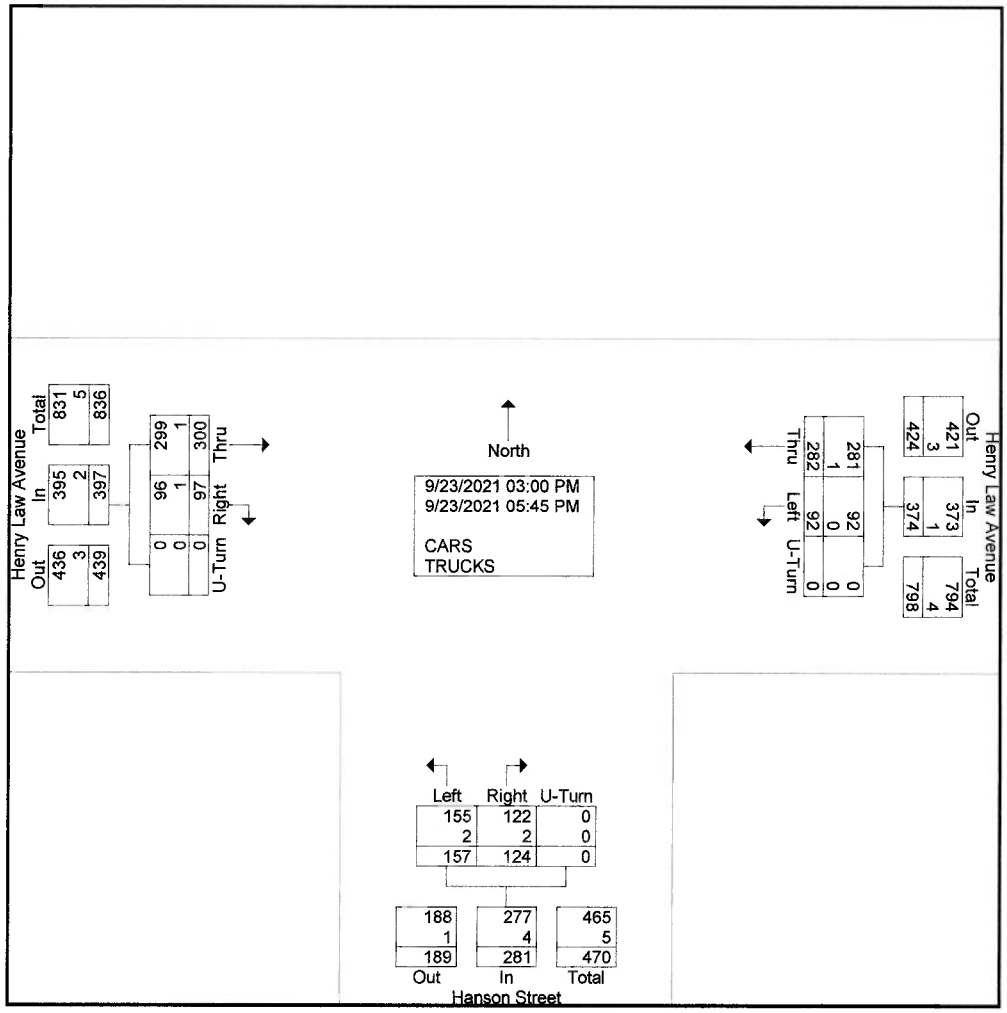
Groups Printed- CARS - TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	18	5	0	23	10	6	0	16	9	14	0	23	62
03:15 PM	23	6	0	29	10	8	0	18	4	14	0	18	65
03:30 PM	18	6	0	24	7	10	0	17	8	27	0	35	76
03:45 PM	17	9	0	26	13	9	0	22	9	26	0	35	83
Total	76	26	0	102	40	33	0	73	30	81	0	111	286
04:00 PM	18	7	0	25	9	12	0	21	8	24	0	32	78
04:15 PM	32	3	0	35	7	29	0	36	14	17	0	31	102
04:30 PM	17	12	0	29	8	4	0	12	10	24	0	34	75
04:45 PM	29	7	0	36	15	9	0	24	6	41	0	47	107
Total	96	29	0	125	39	54	0	93	38	106	0	144	362
05:00 PM	27	6	0	33	11	16	0	27	10	37	0	47	107
05:15 PM	38	8	0	46	14	23	0	37	8	33	0	41	124
05:30 PM	23	6	0	29	9	23	0	32	6	26	0	32	93
05:45 PM	22	17	0	39	11	8	0	19	5	17	0	22	80
Total	110	37	0	147	45	70	0	115	29	113	0	142	404
Grand Total	282	92	0	374	124	157	0	281	97	300	0	397	1052
Apprch %	75.4	24.6	0		44.1	55.9	0		24.4	75.6	0		
Total %	26.8	8.7	0	35.6	11.8	14.9	0	26.7	9.2	28.5	0	37.7	
CARS	281	92	0	373	122	155	0	277	96	299	0	395	1045
% CARS	99.6	100	0	99.7	98.4	98.7	0	98.6	99	99.7	0	99.5	99.3
TRUCKS	1	0	0	1	2	2	0	4	1	1	0	2	7
% TRUCKS	0.4	0	0	0.3	1.6	1.3	0	1.4	1	0.3	0	0.5	0.7

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Weather: Clear
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File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
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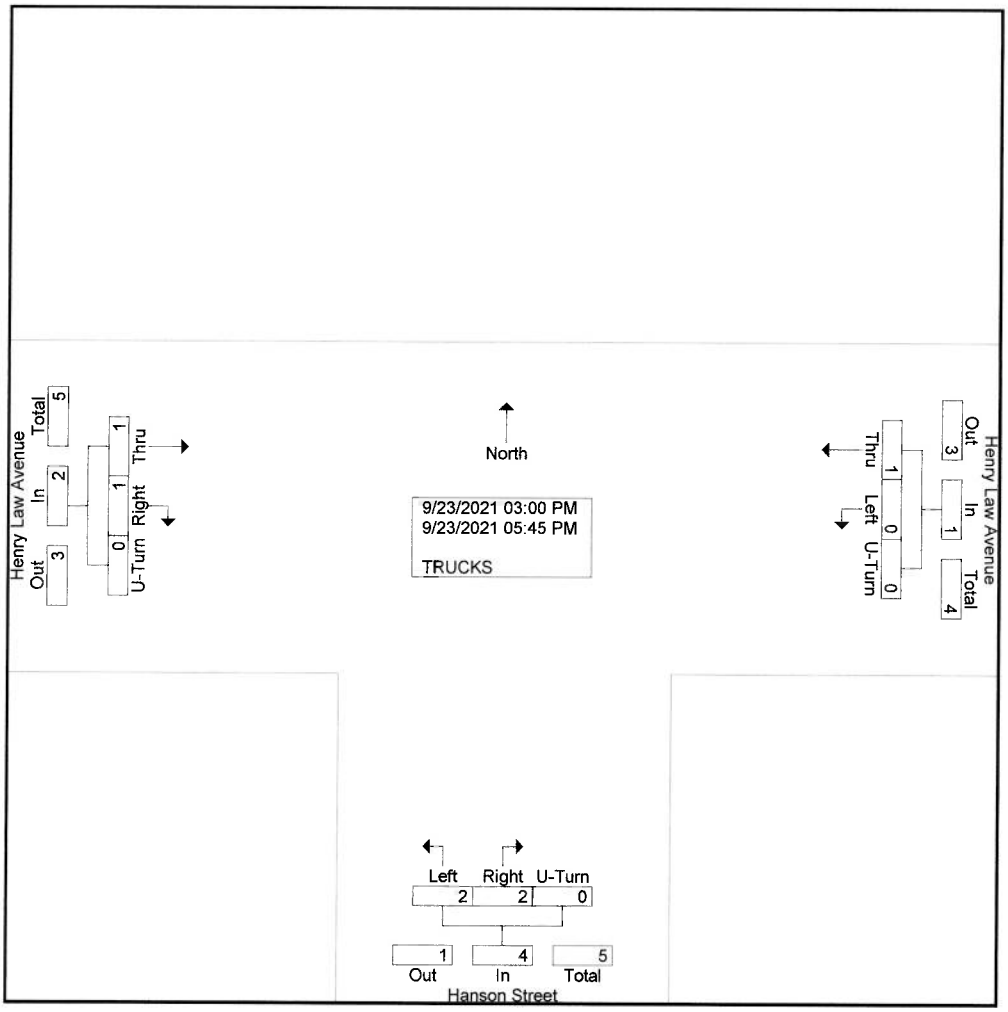
Stephen G. Pernaw & Company, Inc.
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Weather: Clear
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Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__AM_&_PM Henry Law-Hanson
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
03:45 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
Total	0	0	0	0	2	1	0	3	1	0	0	1	4
04:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	1
Grand Total	1	0	0	1	2	2	0	4	1	1	0	2	7
Apprch %	100	0	0		50	50	0		50	50	0		
Total %	14.3	0	0	14.3	28.6	28.6	0	57.1	14.3	14.3	0	28.6	

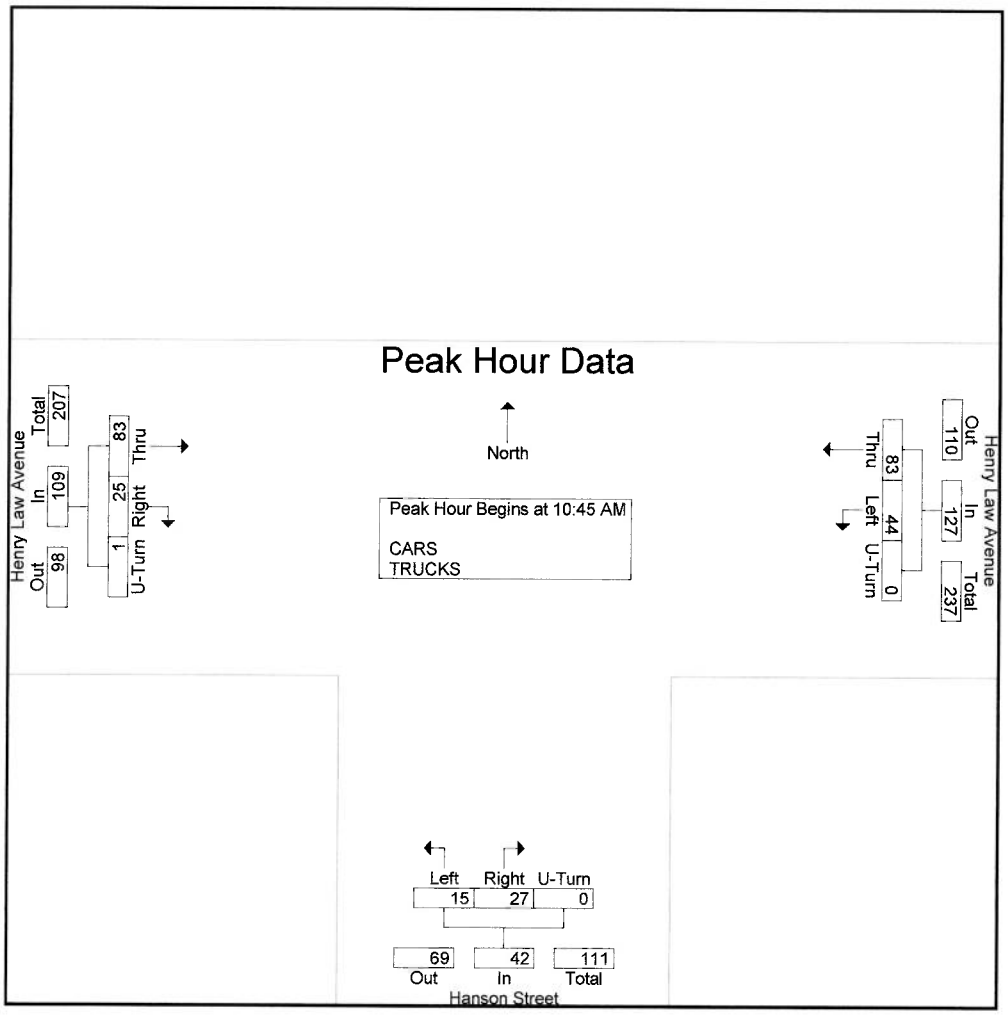


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Weather: Clear
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File Name : 1981A_INT_B__SAT Henry Law-Hanson
Site Code : 1981A
Start Date : 9/25/2021
Page No : 3

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:45 AM													
10:45 AM	25	10	0	35	5	**5**	0	10	6	**28**	**1**	**35**	**80**
11:00 AM	18	11	0	29	7	2	0	9	**9**	16	0	25	63
11:15 AM	**27**	**15**	0	**42**	**10**	4	0	**14**	4	20	0	24	80
11:30 AM	13	8	0	21	5	4	0	9	6	19	0	25	55
Total Volume	83	44	0	127	27	15	0	42	25	83	1	109	278
% App. Total	65.4	34.6	0		64.3	35.7	0		22.9	76.1	0.9		
PHF	.769	.733	.000	.756	.675	.750	.000	.750	.694	.741	.250	.779	.869

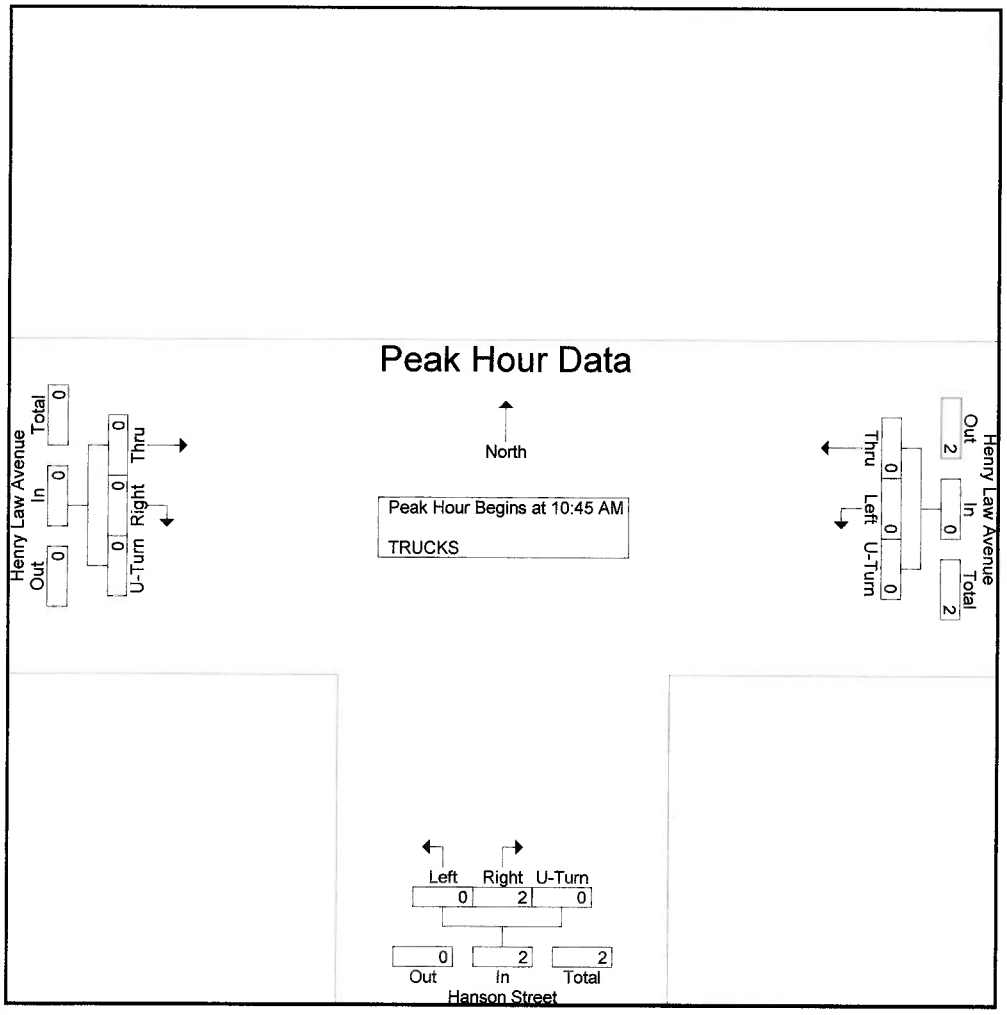


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Weather: Clear
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File Name : 1981A_INT_B__SAT Henry Law-Hanson
Site Code : 1981A
Start Date : 9/25/2021
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	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:45 AM to 11:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:45 AM													
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	**1**
11:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	2	0	0	2	0	0	0	0	2
% App. Total	0	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.500



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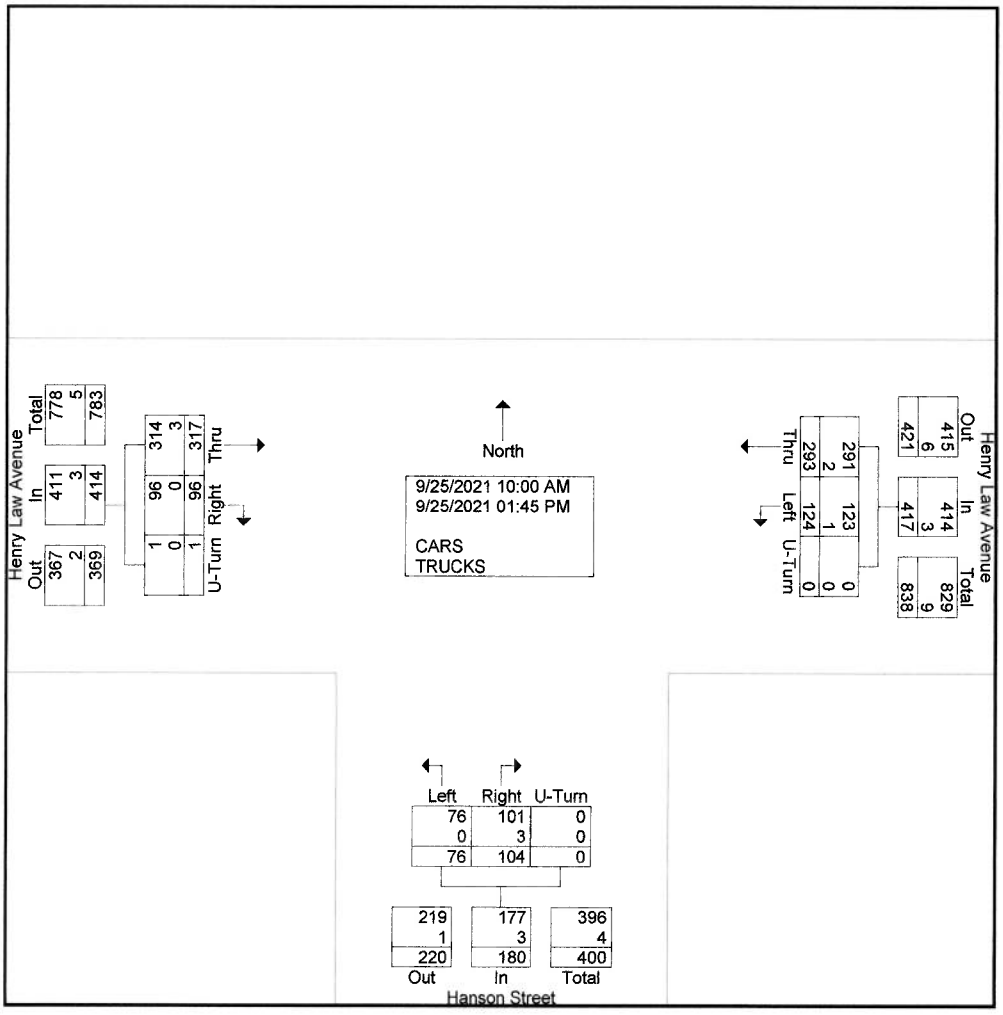
Groups Printed- CARS - TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
10:00 AM	24	4	0	28	2	4	0	6	7	14	0	21	55
10:15 AM	23	6	0	29	5	4	0	9	6	17	0	23	61
10:30 AM	24	5	0	29	4	4	0	8	1	15	0	16	53
10:45 AM	25	10	0	35	5	5	0	10	6	28	1	35	80
Total	96	25	0	121	16	17	0	33	20	74	1	95	249
11:00 AM	18	11	0	29	7	2	0	9	9	16	0	25	63
11:15 AM	27	15	0	42	10	4	0	14	4	20	0	24	80
11:30 AM	13	8	0	21	5	4	0	9	6	19	0	25	55
11:45 AM	16	10	0	26	7	5	0	12	9	21	0	30	68
Total	74	44	0	118	29	15	0	44	28	76	0	104	266
12:00 PM	17	10	0	27	8	3	0	11	9	21	0	30	68
12:15 PM	9	10	0	19	4	16	0	20	6	18	0	24	63
12:30 PM	17	4	0	21	8	9	0	17	8	25	0	33	71
12:45 PM	15	6	0	21	7	4	0	11	3	17	0	20	52
Total	58	30	0	88	27	32	0	59	26	81	0	107	254
01:00 PM	16	10	0	26	14	1	0	15	6	18	0	24	65
01:15 PM	23	7	0	30	5	4	0	9	7	25	0	32	71
01:30 PM	11	2	0	13	9	5	0	14	4	21	0	25	52
01:45 PM	15	6	0	21	4	2	0	6	5	22	0	27	54
Total	65	25	0	90	32	12	0	44	22	86	0	108	242
Grand Total	293	124	0	417	104	76	0	180	96	317	1	414	1011
Apprch %	70.3	29.7	0		57.8	42.2	0		23.2	76.6	0.2		
Total %	29	12.3	0	41.2	10.3	7.5	0	17.8	9.5	31.4	0.1	40.9	
CARS	291	123	0	414	101	76	0	177	96	314	1	411	1002
% CARS	99.3	99.2	0	99.3	97.1	100	0	98.3	100	99.1	100	99.3	99.1
TRUCKS	2	1	0	3	3	0	0	3	0	3	0	3	9
% TRUCKS	0.7	0.8	0	0.7	2.9	0	0	1.7	0	0.9	0	0.7	0.9

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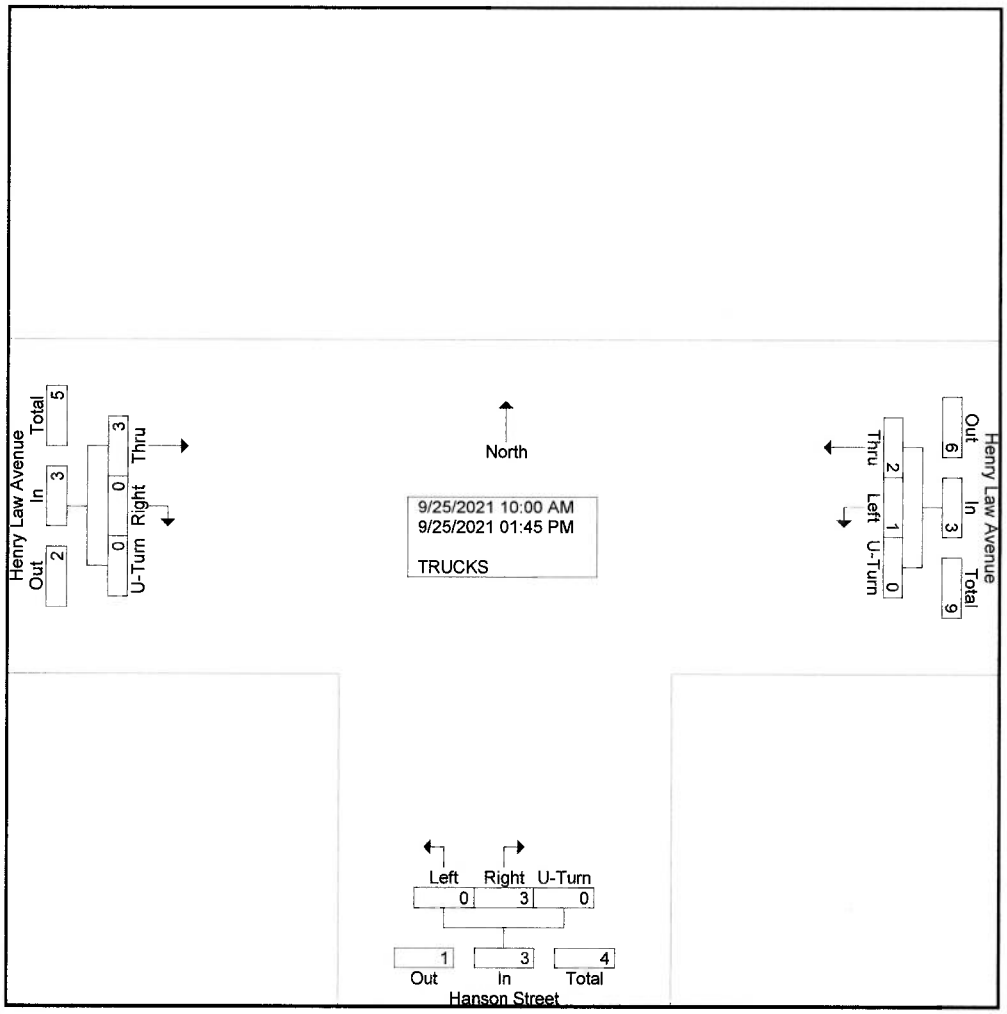
Groups Printed- TRUCKS

	Henry Law Avenue From East				Hanson Street From South				Henry Law Avenue From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
10:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	1	0	1	2
11:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
11:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	0	0	2	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
01:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
01:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	2	0	0	2	1	0	0	1	0	2	0	2	5
Grand Total	2	1	0	3	3	0	0	3	0	3	0	3	9
Apprch %	66.7	33.3	0		100	0	0		0	100	0		
Total %	22.2	11.1	0	33.3	33.3	0	0	33.3	0	33.3	0	33.3	

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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_B__SAT Henry Law-Hanson
Site Code : 1981A
Start Date : 9/25/2021
Page No : 2

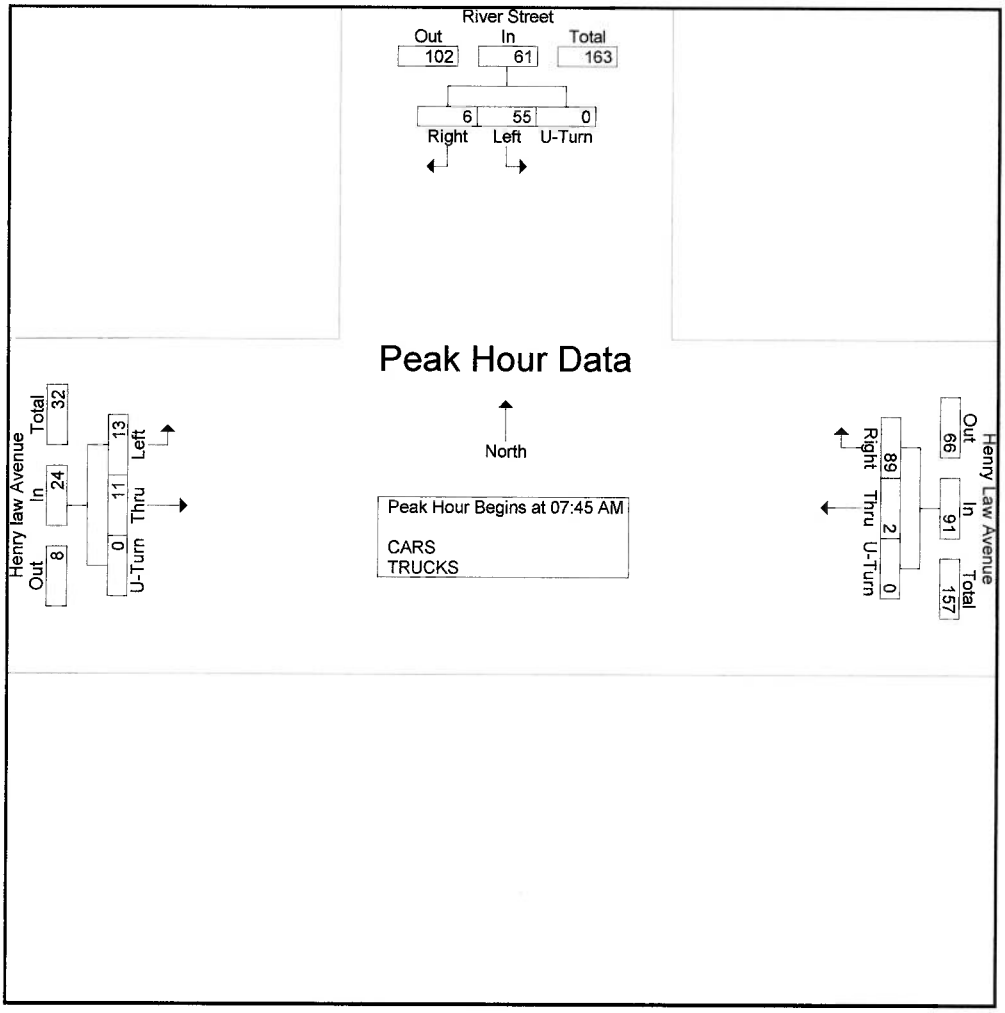


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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 2

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**3**	14	0	17	**24**	**1**	0	**25**	2	**5**	0	**7**	**49**
08:00 AM	1	13	0	14	20	0	0	20	**4**	3	0	7	41
08:15 AM	2	**17**	0	**19**	24	0	0	24	2	3	0	5	48
08:30 AM	0	11	0	11	21	1	0	22	3	2	0	5	38
Total Volume	6	55	0	61	89	2	0	91	11	13	0	24	176
% App. Total	9.8	90.2	0		97.8	2.2	0		45.8	54.2	0		
PHF	.500	.809	.000	.803	.927	.500	.000	.910	.688	.650	.000	.857	.898

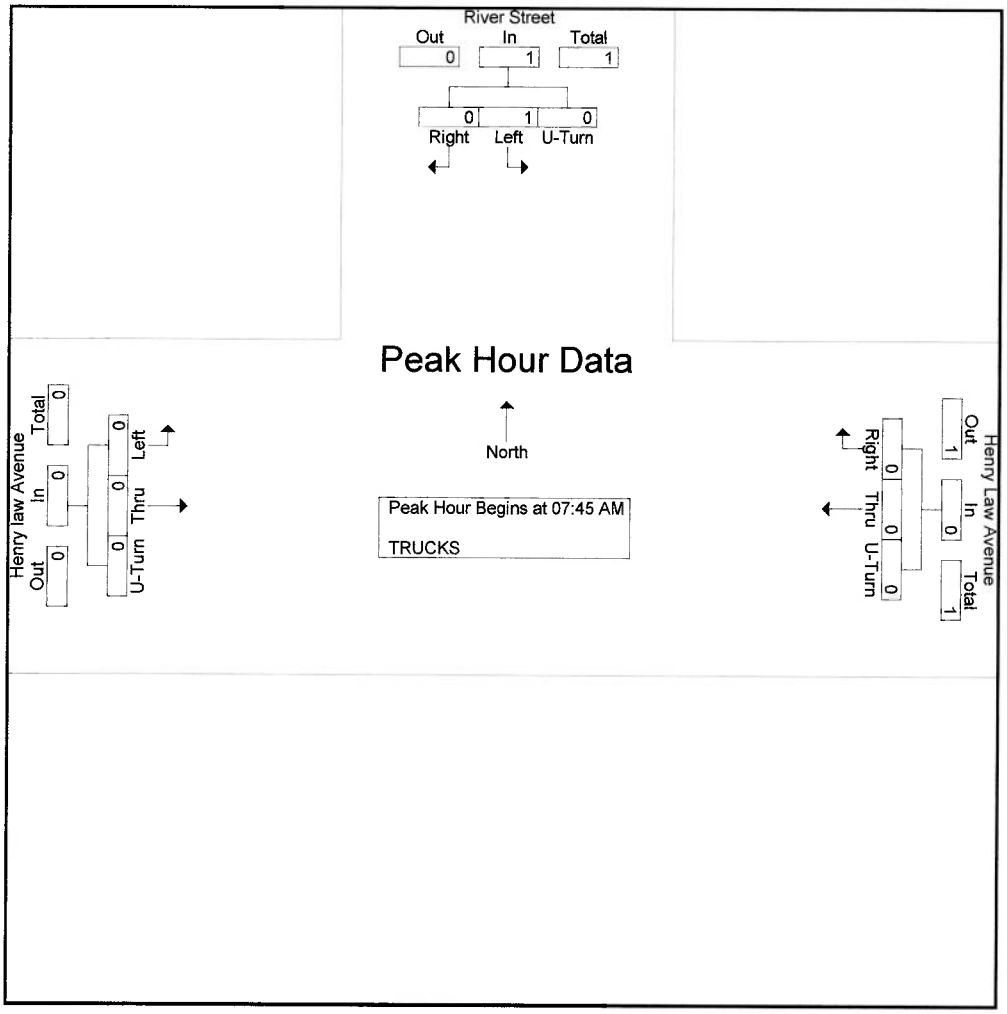


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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
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	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250



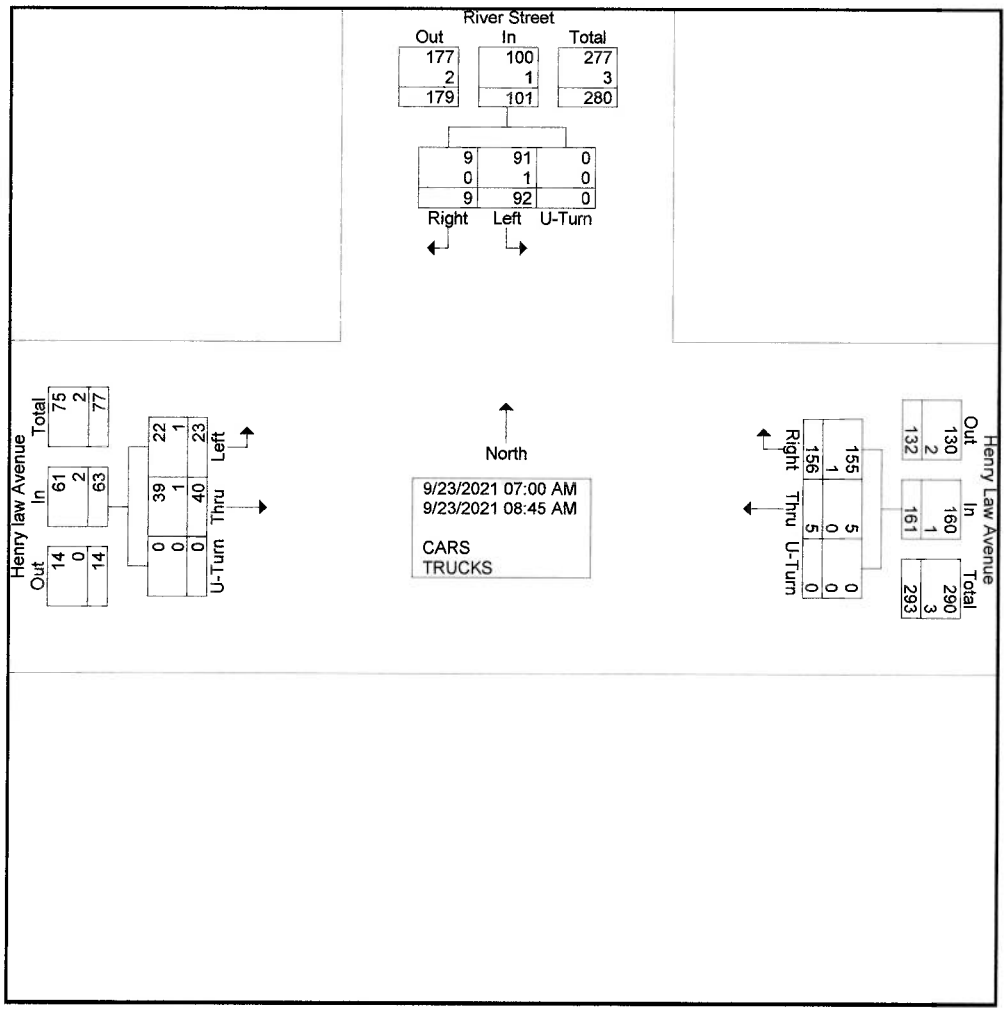
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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- CARS - TRUCKS

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	0	5	0	5	13	1	0	14	9	2	0	11	30
07:15 AM	1	10	0	11	20	1	0	21	8	2	0	10	42
07:30 AM	1	11	0	12	17	1	0	18	5	1	0	6	36
07:45 AM	3	14	0	17	24	1	0	25	2	5	0	7	49
Total	5	40	0	45	74	4	0	78	24	10	0	34	157
08:00 AM	1	13	0	14	20	0	0	20	4	3	0	7	41
08:15 AM	2	17	0	19	24	0	0	24	2	3	0	5	48
08:30 AM	0	11	0	11	21	1	0	22	3	2	0	5	38
08:45 AM	1	11	0	12	17	0	0	17	7	5	0	12	41
Total	4	52	0	56	82	1	0	83	16	13	0	29	168
Grand Total	9	92	0	101	156	5	0	161	40	23	0	63	325
Apprch %	8.9	91.1	0		96.9	3.1	0		63.5	36.5	0		
Total %	2.8	28.3	0	31.1	48	1.5	0	49.5	12.3	7.1	0	19.4	
CARS	9	91	0	100	155	5	0	160	39	22	0	61	321
% CARS	100	98.9	0	99	99.4	100	0	99.4	97.5	95.7	0	96.8	98.8
TRUCKS	0	1	0	1	1	0	0	1	1	1	0	2	4
% TRUCKS	0	1.1	0	1	0.6	0	0	0.6	2.5	4.3	0	3.2	1.2



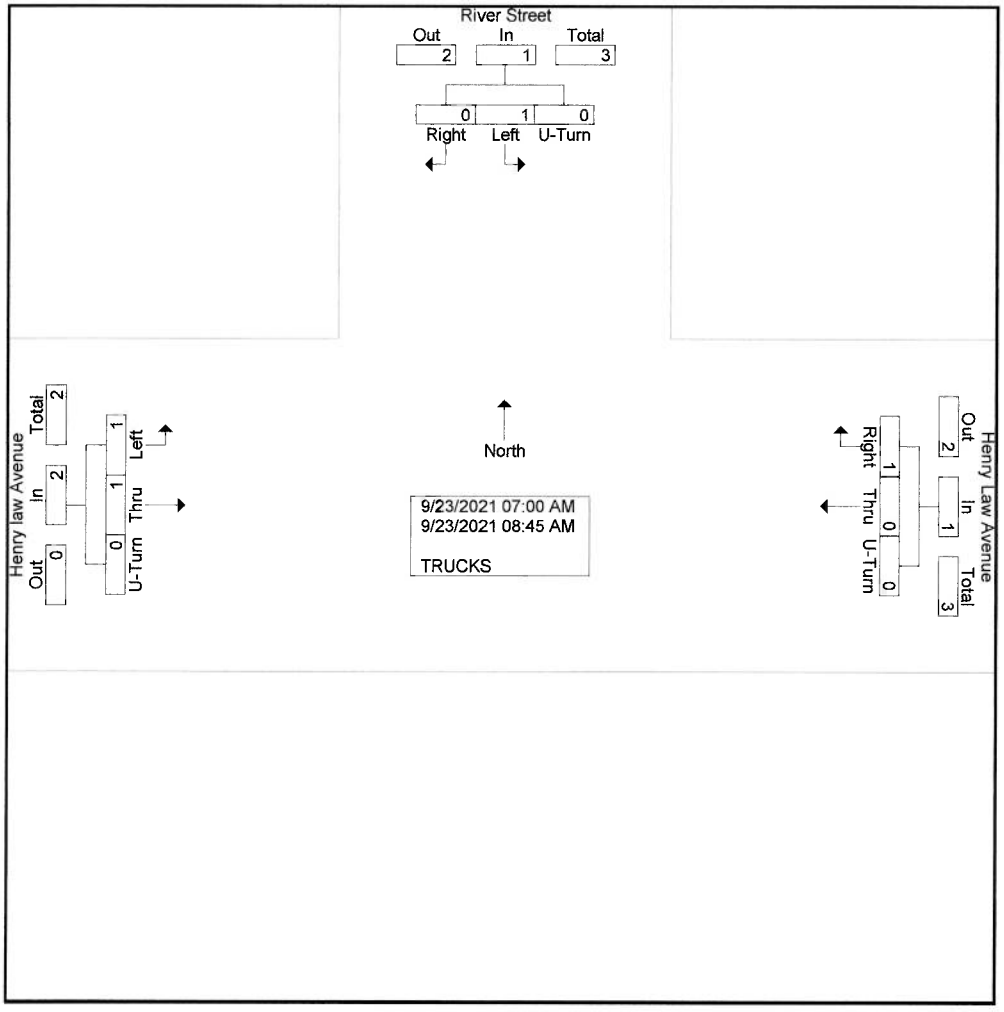
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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- TRUCKS

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	1	0	0	1	1	0	0	1	2
Total	0	1	0	1	1	0	0	1	1	0	0	1	3
Grand Total	0	1	0	1	1	0	0	1	1	1	0	2	4
Apprch %	0	100	0		100	0	0		50	50	0		
Total %	0	25	0	25	25	0	0	25	25	25	0	50	

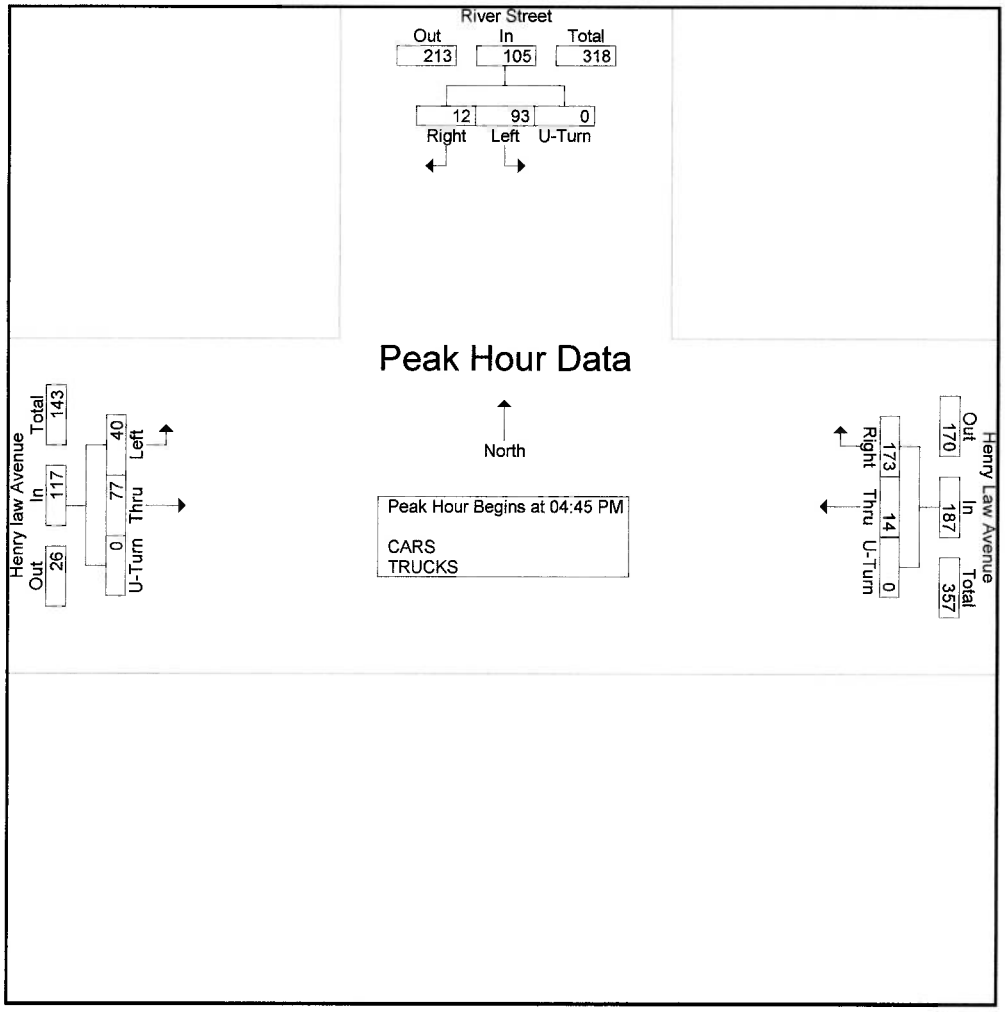


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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 3

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	4	24	0	28	34	2	0	36	**24**	**12**	0	**36**	100
05:00 PM	**5**	**27**	0	**32**	41	**4**	0	45	22	11	0	33	110
05:15 PM	3	23	0	26	**55**	4	0	**59**	18	10	0	28	**113**
05:30 PM	0	19	0	19	43	4	0	47	13	7	0	20	86
Total Volume	12	93	0	105	173	14	0	187	77	40	0	117	409
% App. Total	11.4	88.6	0		92.5	7.5	0		65.8	34.2	0		
PHF	.600	.861	.000	.820	.786	.875	.000	.792	.802	.833	.000	.813	.905

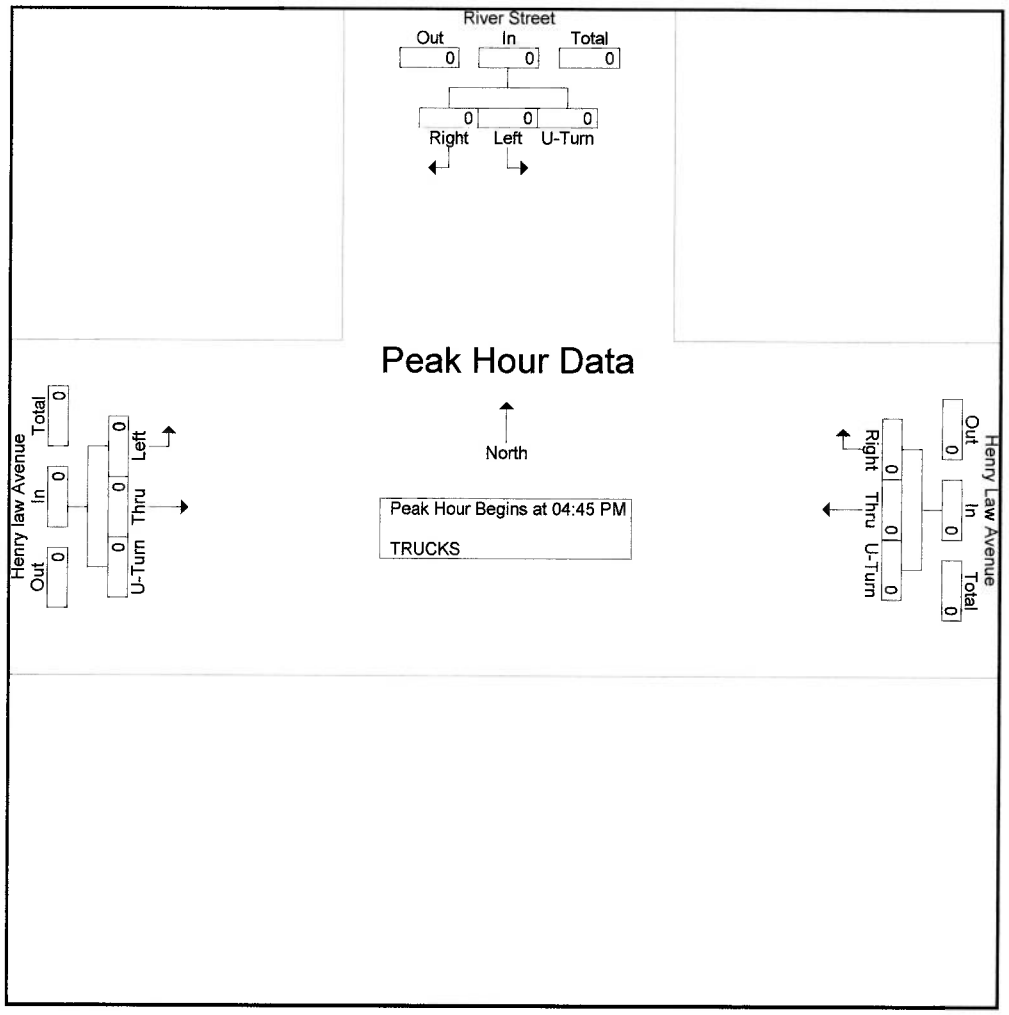


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Weather: Clear
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Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
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	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
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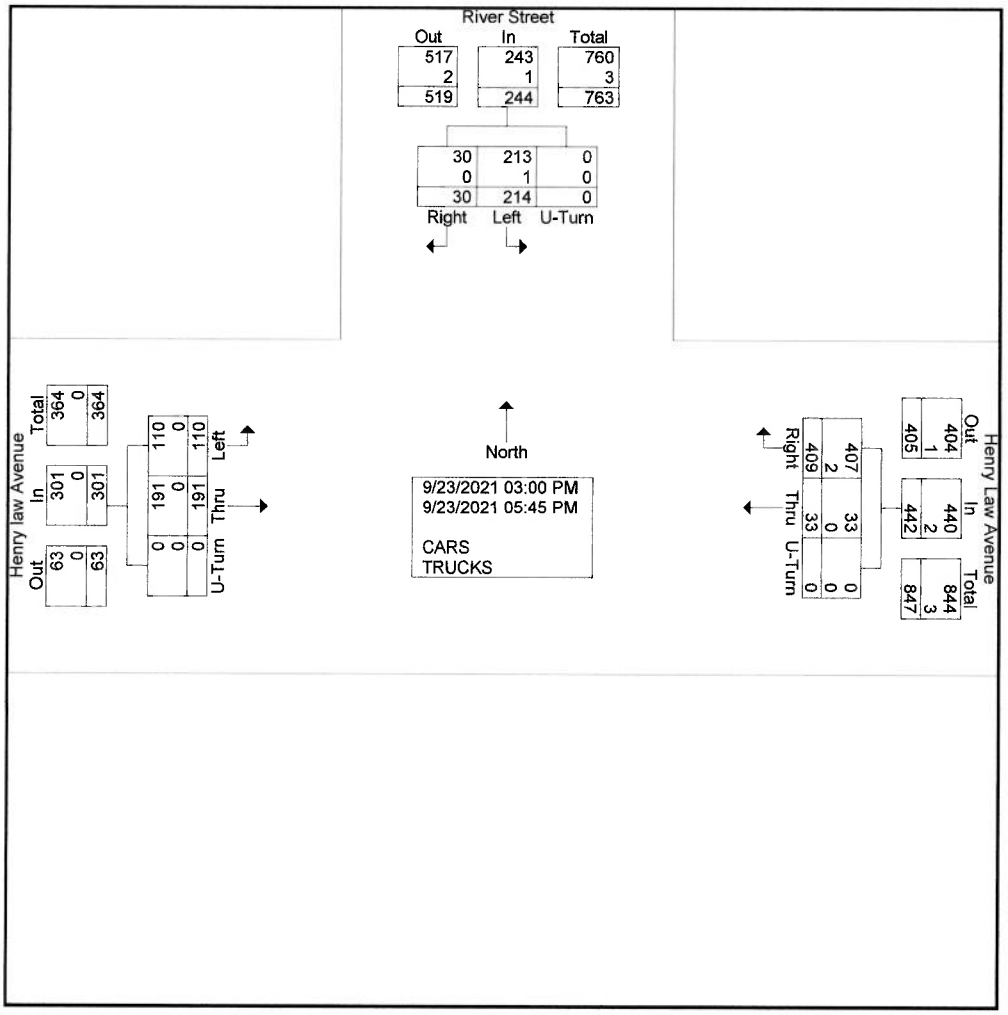
Groups Printed- CARS - TRUCKS

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
03:00 PM	3	12	0	15	20	4	0	24	11	7	0	18	57
03:15 PM	1	9	0	10	31	1	0	32	10	13	0	23	65
03:30 PM	1	15	0	16	25	4	0	29	19	6	0	25	70
03:45 PM	4	17	0	21	26	2	0	28	18	7	0	25	74
Total	9	53	0	62	102	11	0	113	58	33	0	91	266
04:00 PM	2	16	0	18	27	1	0	28	17	12	0	29	75
04:15 PM	1	20	0	21	59	3	0	62	12	8	0	20	103
04:30 PM	0	19	0	19	22	1	0	23	16	9	0	25	67
04:45 PM	4	24	0	28	34	2	0	36	24	12	0	36	100
Total	7	79	0	86	142	7	0	149	69	41	0	110	345
05:00 PM	5	27	0	32	41	4	0	45	22	11	0	33	110
05:15 PM	3	23	0	26	55	4	0	59	18	10	0	28	113
05:30 PM	0	19	0	19	43	4	0	47	13	7	0	20	86
05:45 PM	6	13	0	19	26	3	0	29	11	8	0	19	67
Total	14	82	0	96	165	15	0	180	64	36	0	100	376
Grand Total	30	214	0	244	409	33	0	442	191	110	0	301	987
Apprch %	12.3	87.7	0		92.5	7.5	0		63.5	36.5	0		
Total %	3	21.7	0	24.7	41.4	3.3	0	44.8	19.4	11.1	0	30.5	
CARS	30	213	0	243	407	33	0	440	191	110	0	301	984
% CARS	100	99.5	0	99.6	99.5	100	0	99.5	100	100	0	100	99.7
TRUCKS	0	1	0	1	2	0	0	2	0	0	0	0	3
% TRUCKS	0	0.5	0	0.4	0.5	0	0	0.5	0	0	0	0	0.3

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Weather: Clear
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File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
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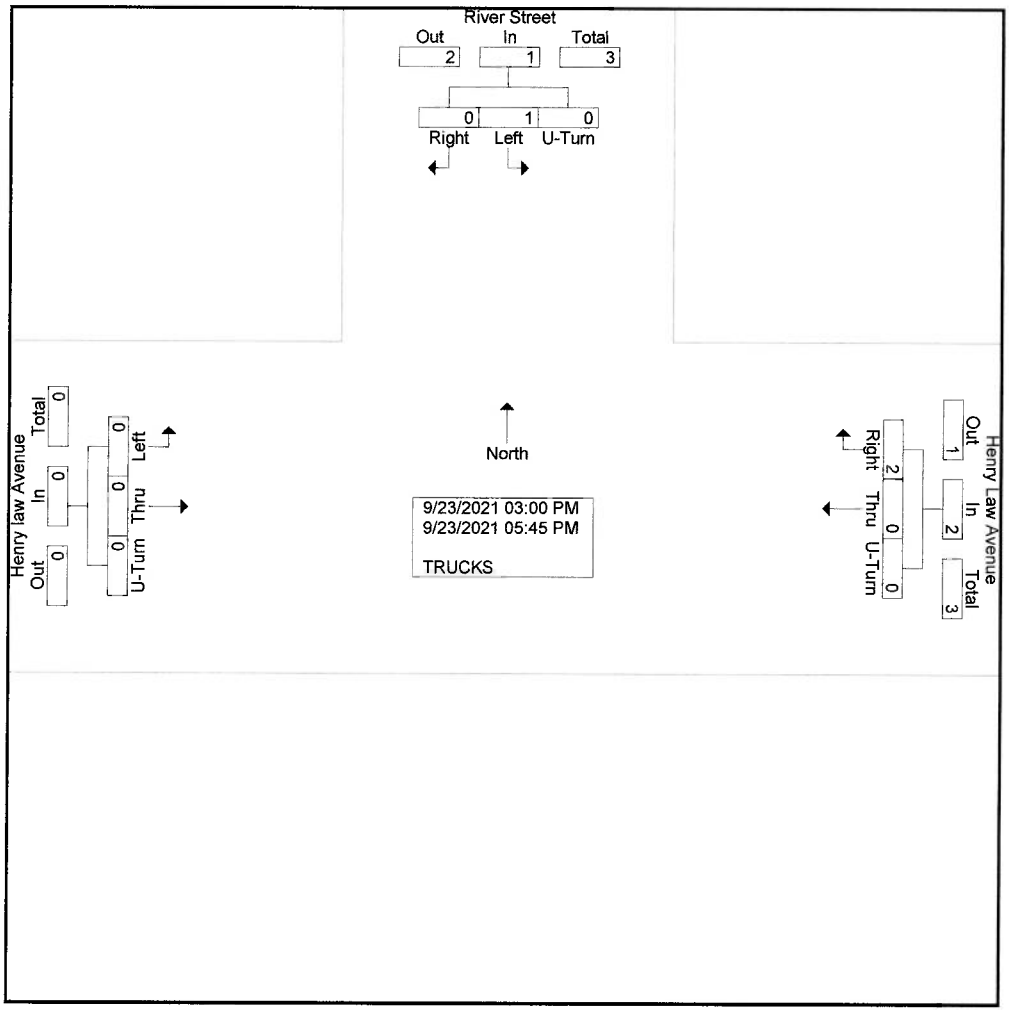
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Weather: Clear
Collected By: MV
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_C__AM_&_PM Henry Law-River
Site Code : 1981A
Start Date : 9/23/2021
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Groups Printed- TRUCKS

	River Street From North				Henry Law Avenue From East				Henry law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
03:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	1	0	0	1	0	0	0	0	2
04:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	1	2	0	0	2	0	0	0	0	3
Apprch %	0	100	0		100	0	0		0	0	0		
Total %	0	33.3	0	33.3	66.7	0	0	66.7	0	0	0	0	

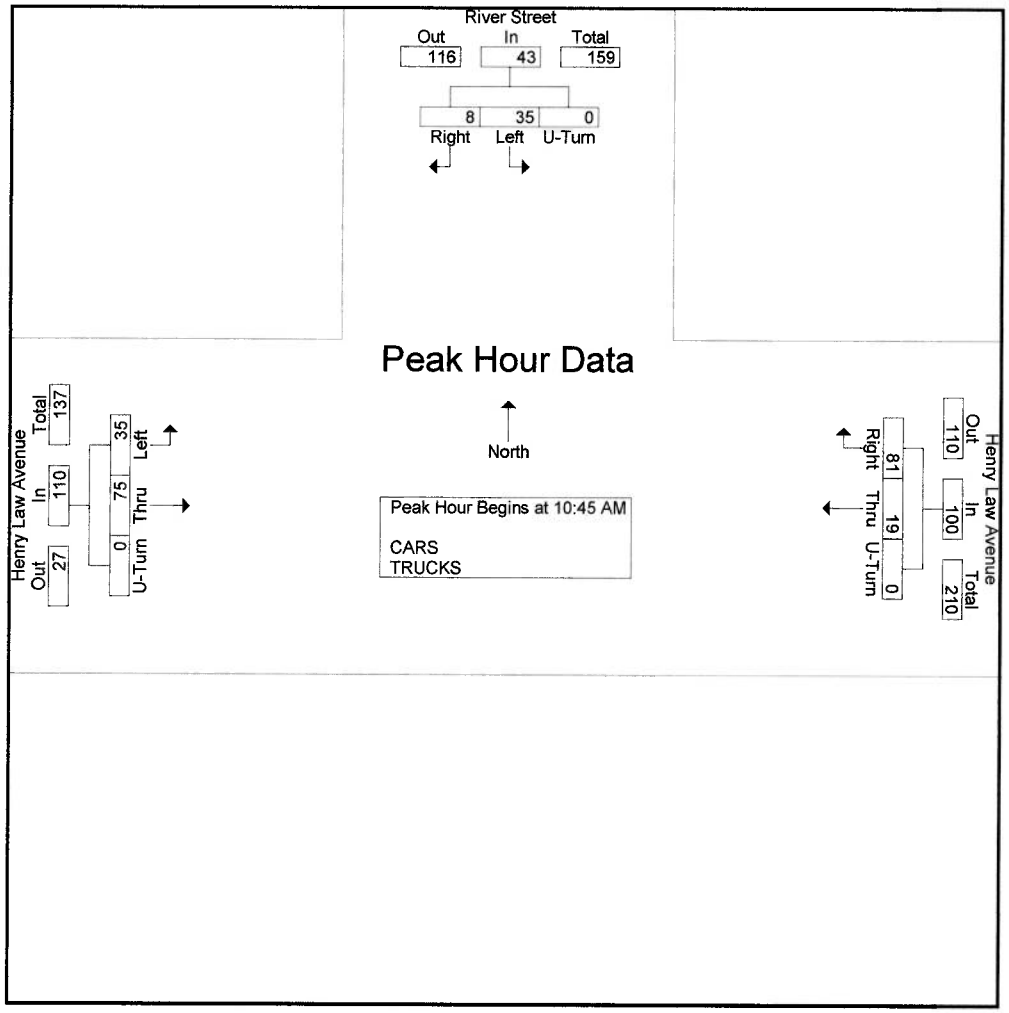


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Weather: Clear
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File Name : 1981A_INT_C__SAT Henry Law-River
Site Code : 1981A
Start Date : 9/25/2021
Page No : 3

	River Street From North				Henry Law Avenue From East				Henry Law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:45 AM to 11:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:45 AM													
10:45 AM	2	**13**	0	**15**	**26**	3	0	**29**	**22**	7	0	29	**73**
11:00 AM	2	7	0	9	16	**7**	0	23	19	**14**	0	**33**	65
11:15 AM	**3**	8	0	11	23	5	0	28	15	7	0	22	61
11:30 AM	1	7	0	8	16	4	0	20	19	7	0	26	54
Total Volume	8	35	0	43	81	19	0	100	75	35	0	110	253
% App. Total	18.6	81.4	0		81	19	0		68.2	31.8	0		
PHF	.667	.673	.000	.717	.779	.679	.000	.862	.852	.625	.000	.833	.866

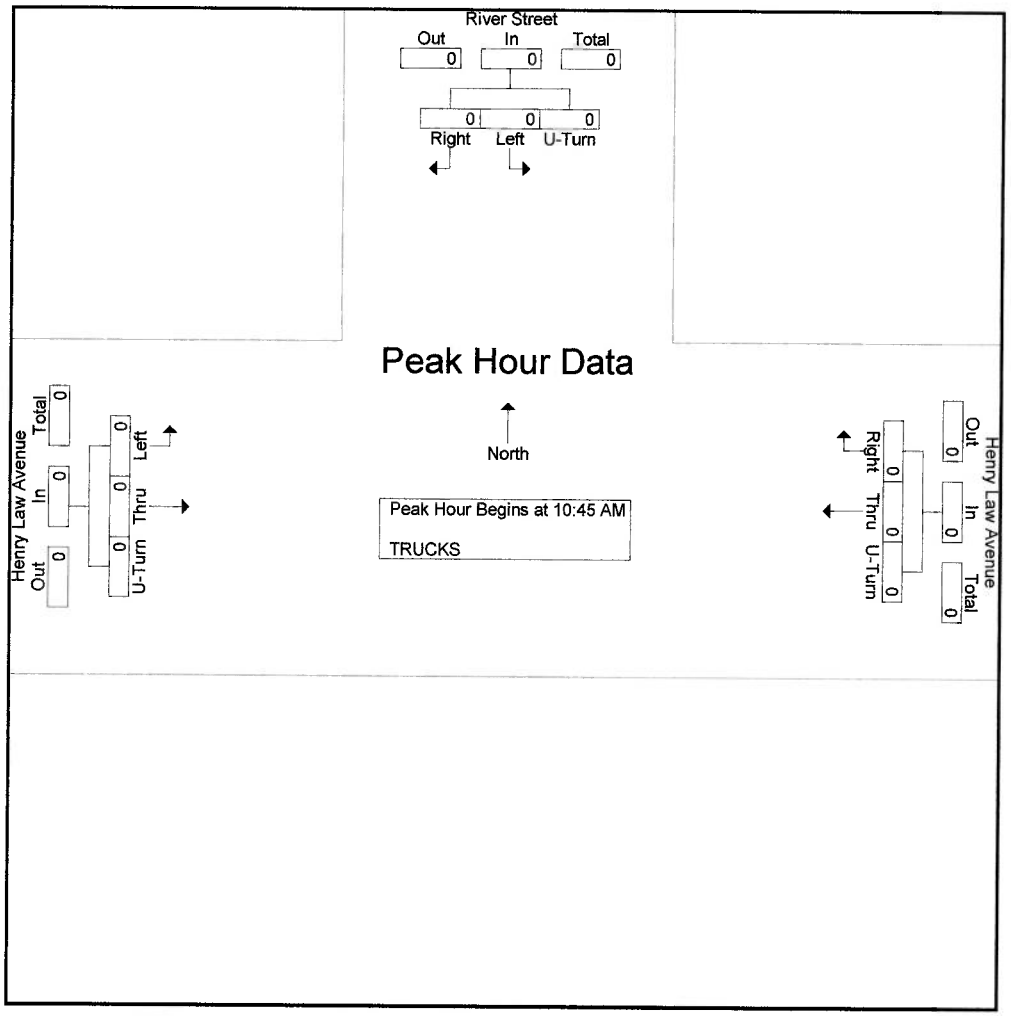


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File Name : 1981A_INT_C__SAT Henry Law-River
Site Code : 1981A
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	River Street From North				Henry Law Avenue From East				Henry Law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:45 AM to 11:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:45 AM													
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1981A
Town/Sttate: Dover, NH

File Name : 1981A_INT_C__SAT Henry Law-River
Site Code : 1981A
Start Date : 9/25/2021
Page No : 1

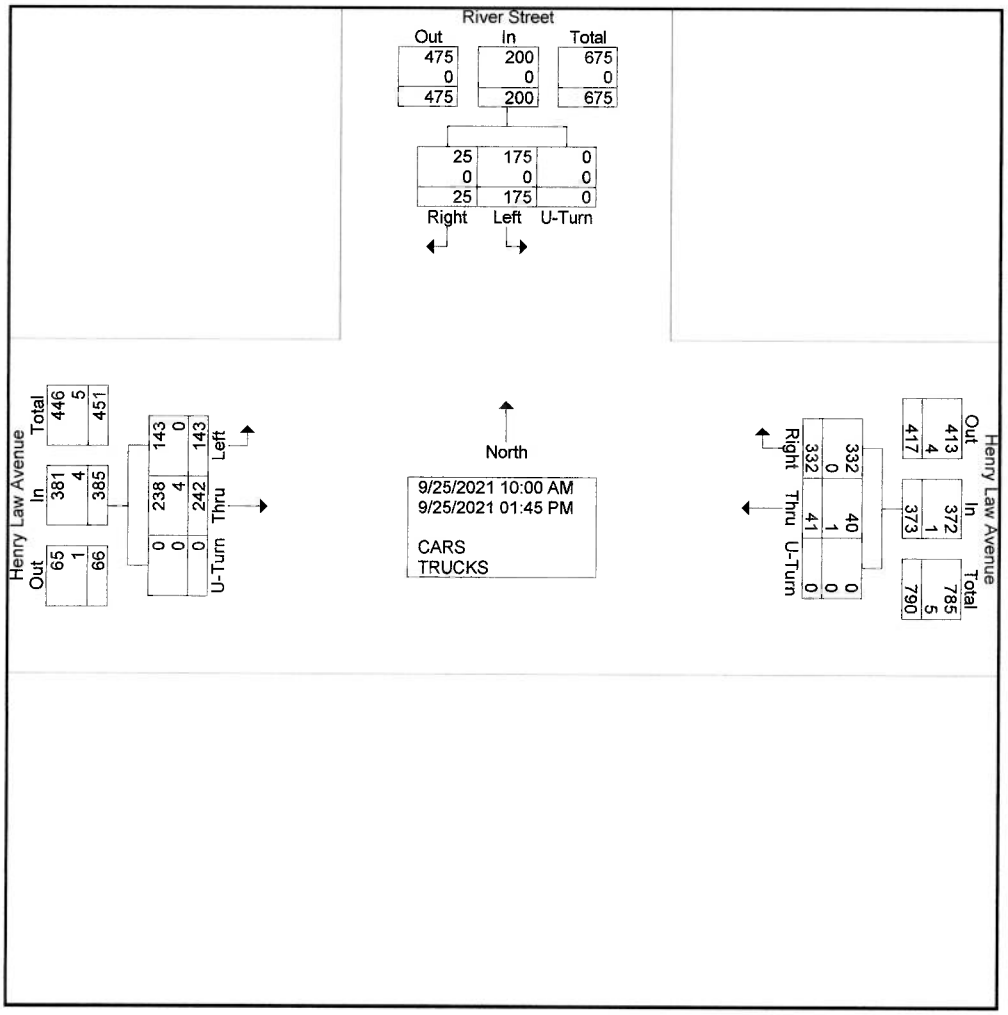
Groups Printed- CARS - TRUCKS

	River Street From North				Henry Law Avenue From East				Henry Law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	1	8	0	9	26	3	0	29	13	10	0	23	61
10:15 AM	2	9	0	11	27	0	0	27	15	11	0	26	64
10:30 AM	0	8	0	8	26	1	0	27	7	6	0	13	48
10:45 AM	2	13	0	15	26	3	0	29	22	7	0	29	73
Total	5	38	0	43	105	7	0	112	57	34	0	91	246
11:00 AM	2	7	0	9	16	7	0	23	19	14	0	33	65
11:15 AM	3	8	0	11	23	5	0	28	15	7	0	22	61
11:30 AM	1	7	0	8	16	4	0	20	19	7	0	26	54
11:45 AM	2	7	0	9	17	4	0	21	22	13	0	35	65
Total	8	29	0	37	72	20	0	92	75	41	0	116	245
12:00 PM	2	12	0	14	18	1	0	19	18	11	0	29	62
12:15 PM	1	10	0	11	22	5	0	27	15	10	0	25	63
12:30 PM	0	20	0	20	24	2	0	26	13	11	0	24	70
12:45 PM	2	8	0	10	18	1	0	19	14	9	0	23	52
Total	5	50	0	55	82	9	0	91	60	41	0	101	247
01:00 PM	0	11	0	11	16	2	0	18	13	9	0	22	51
01:15 PM	3	20	0	23	25	1	0	26	12	7	0	19	68
01:30 PM	2	15	0	17	16	1	0	17	9	3	0	12	46
01:45 PM	2	12	0	14	16	1	0	17	16	8	0	24	55
Total	7	58	0	65	73	5	0	78	50	27	0	77	220
Grand Total	25	175	0	200	332	41	0	373	242	143	0	385	958
Apprch %	12.5	87.5	0		89	11	0		62.9	37.1	0		
Total %	2.6	18.3	0	20.9	34.7	4.3	0	38.9	25.3	14.9	0	40.2	
CARS	25	175	0	200	332	40	0	372	238	143	0	381	953
% CARS	100	100	0	100	100	97.6	0	99.7	98.3	100	0	99	99.5
TRUCKS	0	0	0	0	0	1	0	1	4	0	0	4	5
% TRUCKS	0	0	0	0	0	2.4	0	0.3	1.7	0	0	1	0.5

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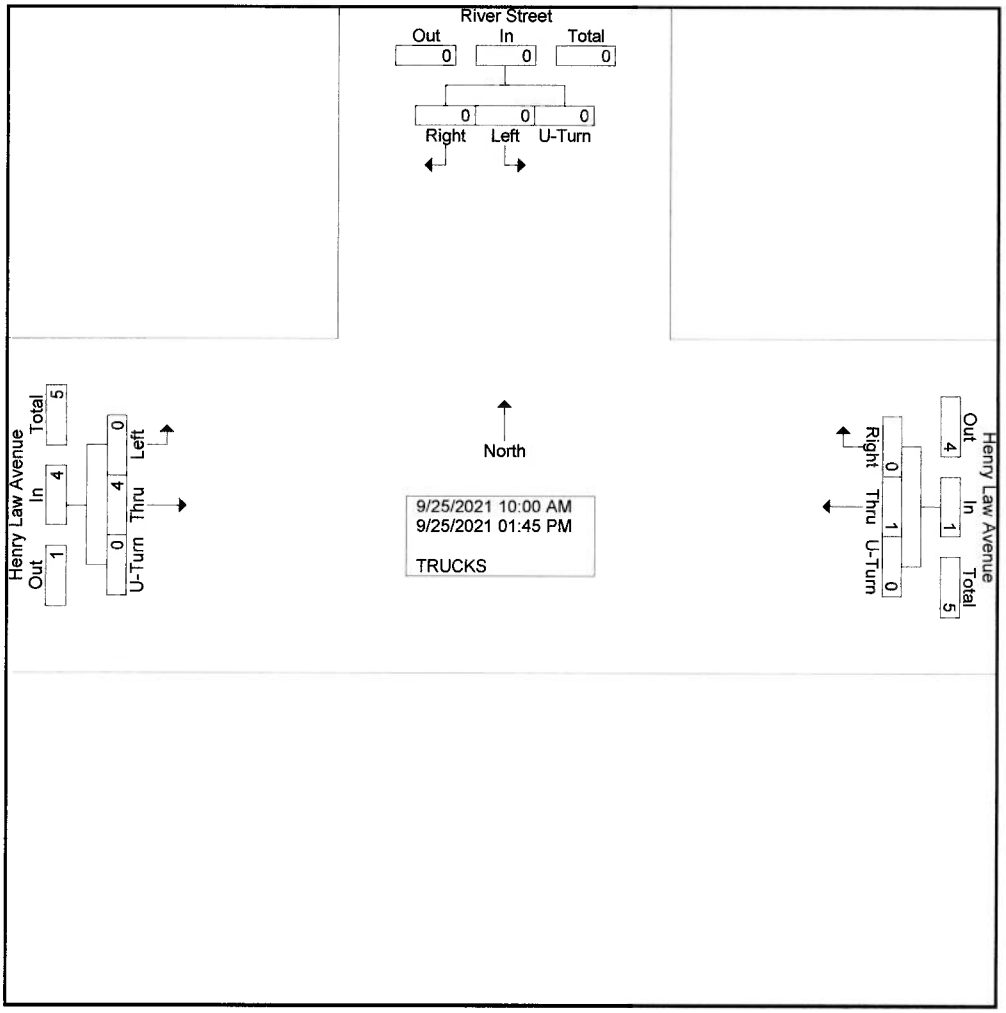
Groups Printed- TRUCKS

	River Street From North				Henry Law Avenue From East				Henry Law Avenue From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
01:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	1	0	1	2	0	0	2	3
Grand Total	0	0	0	0	0	1	0	1	4	0	0	4	5
Apprch %	0	0	0		0	100	0		100	0	0		
Total %	0	0	0	0	0	20	0	20	80	0	0	80	

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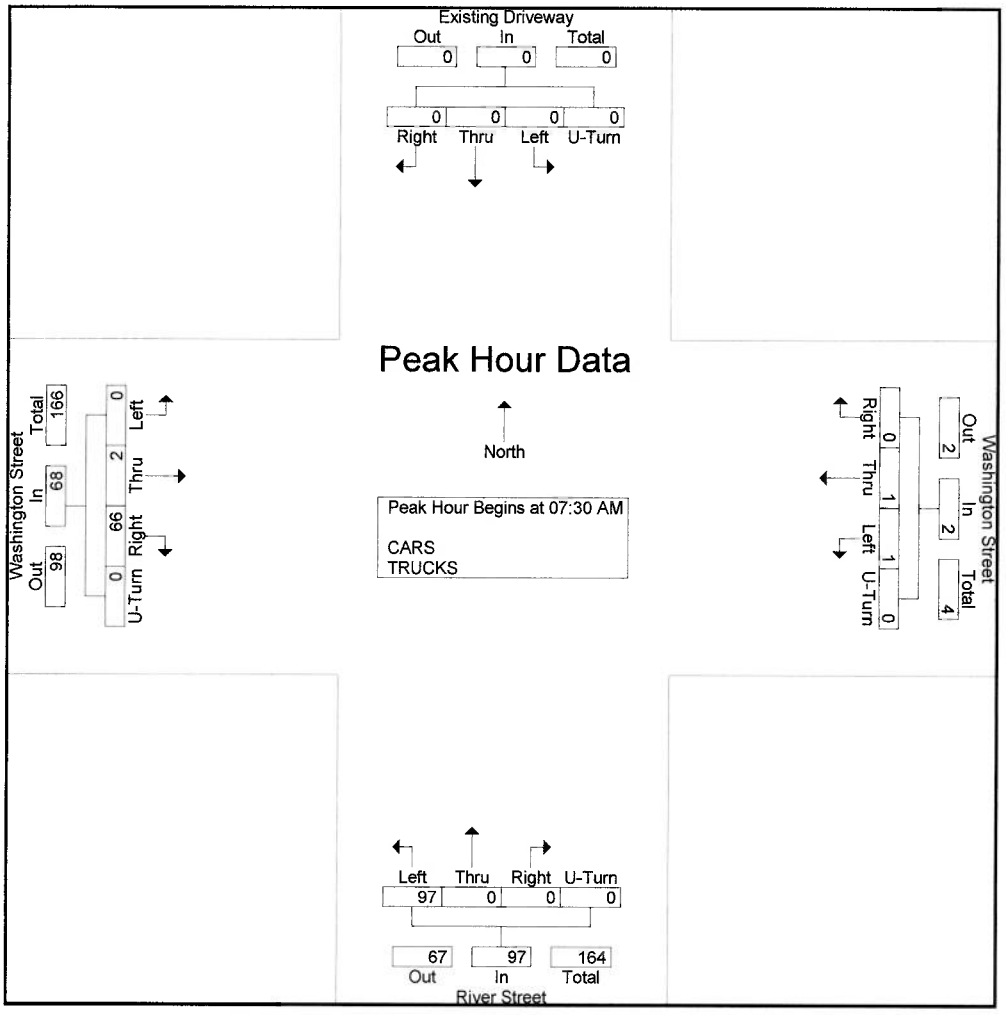


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Weather: Clear
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Job Number: 1981A
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File Name : 1981A_INT_D__AM_&_PM Wash-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 2

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	**1**	0	0	**1**	0	0	19	0	19	12	**1**	0	0	13	33
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	26	0	26	17	0	0	0	17	43
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**27**	0	**27**	15	0	0	0	15	42
08:15 AM	0	0	0	0	0	0	0	**1**	0	1	0	0	25	0	25	**22**	1	0	0	**23**	**49**
Total Volume	0	0	0	0	0	0	1	1	0	2	0	0	97	0	97	66	2	0	0	68	167
% App. Total	0	0	0	0		0	50	50	0		0	0	100	0		97.1	2.9	0	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.898	.000	.898	.750	.500	.000	.000	.739	.852

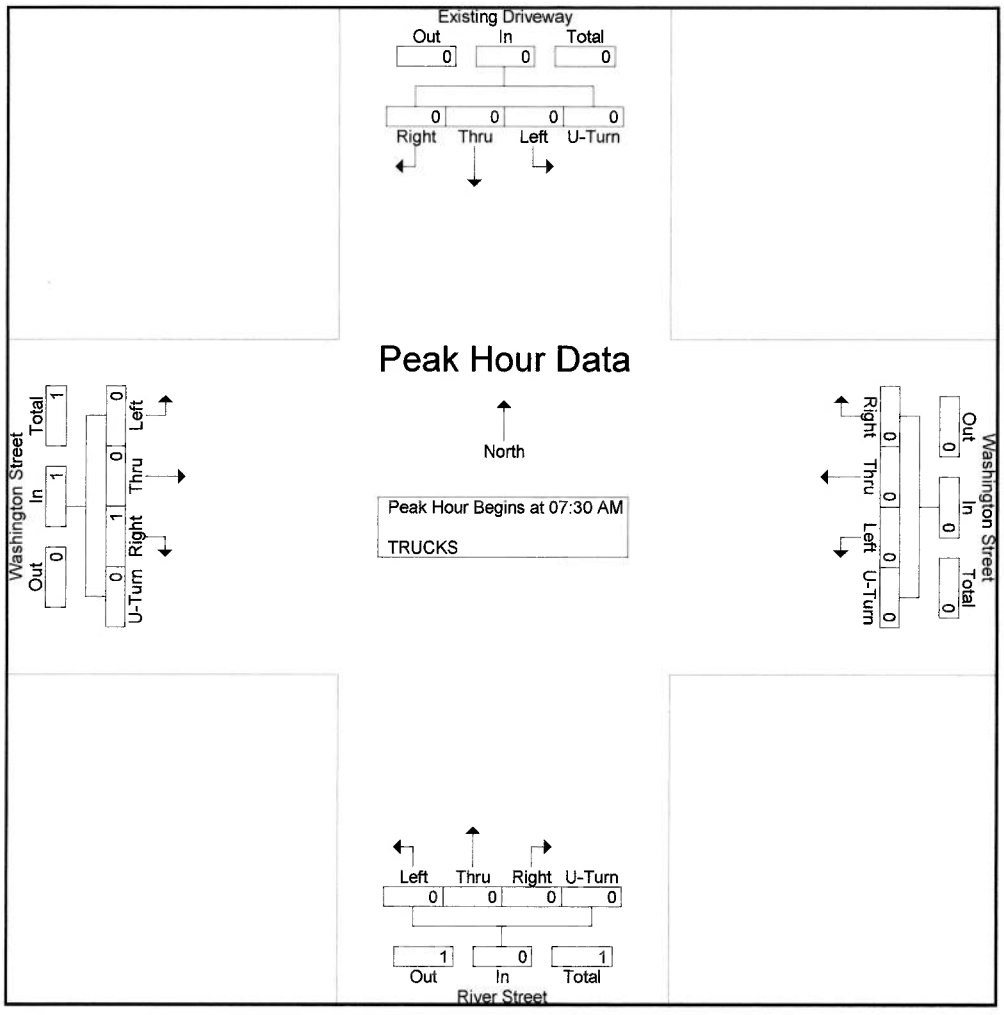


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	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**1**	**1**
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.250



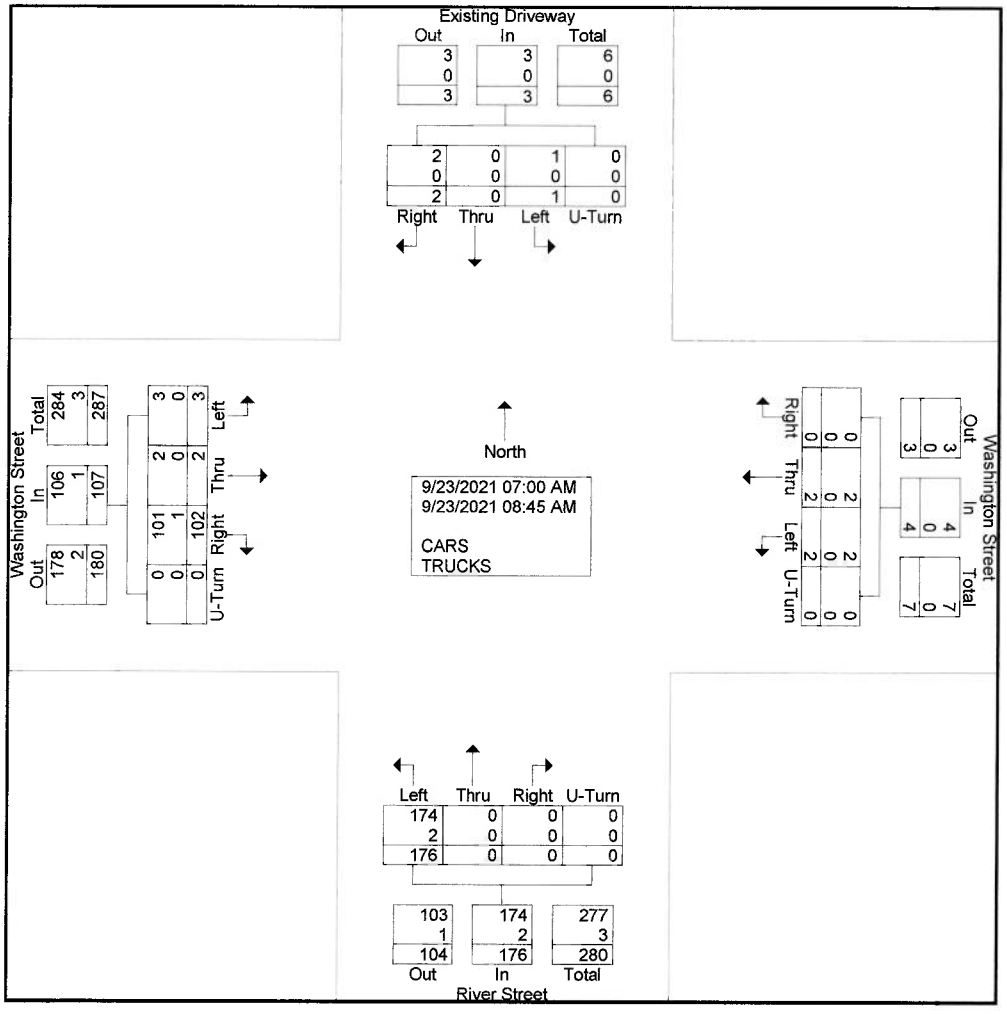
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File Name : 1981A_INT_D__AM_&_PM Wash-River
Site Code : 1981A
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Page No : 1

Groups Printed- CARS - TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	12	0	12	6	0	0	0	6	19
07:15 AM	1	0	1	0	2	0	1	0	0	1	0	0	23	0	23	10	0	2	0	12	38
07:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	19	0	19	12	1	0	0	13	33
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	26	0	26	17	0	0	0	17	43
Total	2	0	1	0	3	0	2	0	0	2	0	0	80	0	80	45	1	2	0	48	133
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	27	0	27	15	0	0	0	15	42
08:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	25	0	25	22	1	0	0	23	49
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	23	0	23	9	0	0	0	9	32
08:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	21	0	21	11	0	1	0	12	34
Total	0	0	0	0	0	0	0	2	0	2	0	0	96	0	96	57	1	1	0	59	157
Grand Total	2	0	1	0	3	0	2	2	0	4	0	0	176	0	176	102	2	3	0	107	290
Apprch %	66.7	0	33.3	0		0	50	50	0		0	0	100	0		95.3	1.9	2.8	0		
Total %	0.7	0	0.3	0	1	0	0.7	0.7	0	1.4	0	0	60.7	0	60.7	35.2	0.7	1	0	36.9	
CARS	2	0	1	0	3	0	2	2	0	4	0	0	174	0	174	101	2	3	0	106	287
% CARS	100	0	100	0	100	0	100	100	0	100	0	0	98.9	0	98.9	99	100	100	0	99.1	99
TRUCKS	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
% TRUCKS	0	0	0	0	0	0	0	0	0	0	0	0	1.1	0	1.1	1	0	0	0	0.9	1



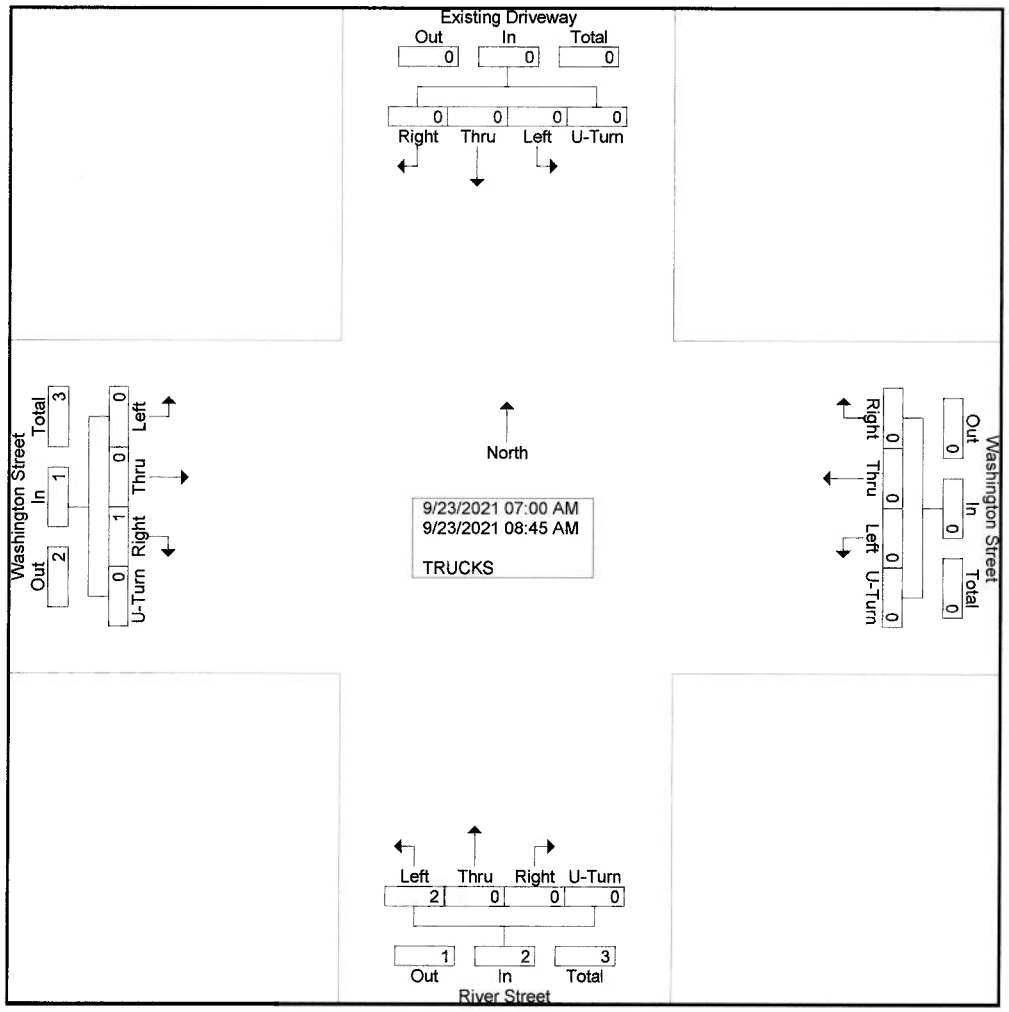
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Groups Printed- TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
Apprch %	0	0	0	0		0	0	0	0		0	0	100	0		100	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	66.7	0	66.7	33.3	0	0	0	33.3	

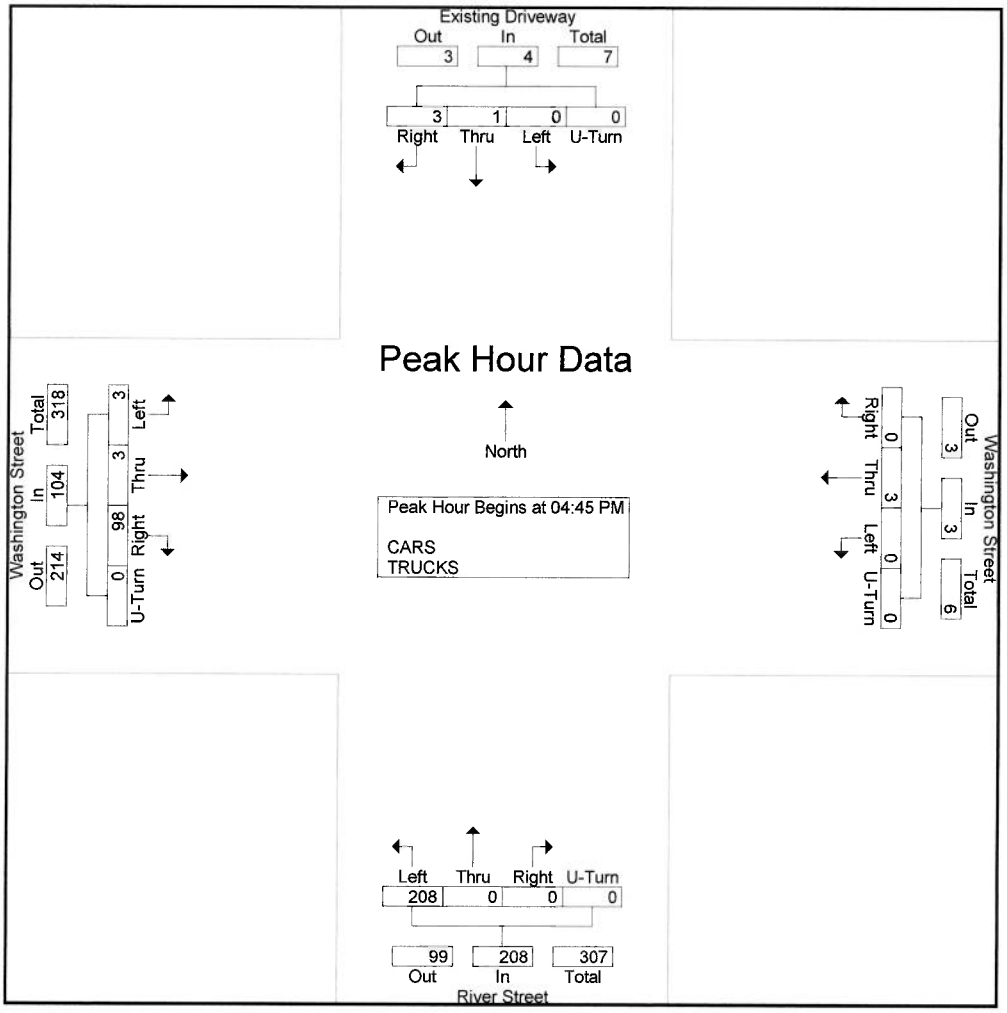


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File Name : 1981A_INT_D__AM_&_PM Wash-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 3

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**2**	**1**	0	0	**3**	0	**1**	0	0	**1**	0	0	42	0	42	24	**1**	**1**	0	26	72
05:00 PM	1	0	0	0	1	0	1	0	0	1	0	0	50	0	50	**31**	1	1	0	**33**	85
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	**63**	0	**63**	28	1	1	0	30	**94**
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	53	0	53	15	0	0	0	15	68
Total Volume	3	1	0	0	4	0	3	0	0	3	0	0	208	0	208	98	3	3	0	104	319
% App. Total	75	25	0	0		0	100	0	0		0	0	100	0		94.2	2.9	2.9	0		
PHF	.375	.250	.000	.000	.333	.000	.750	.000	.000	.750	.000	.000	.825	.000	.825	.790	.750	.750	.000	.788	.848

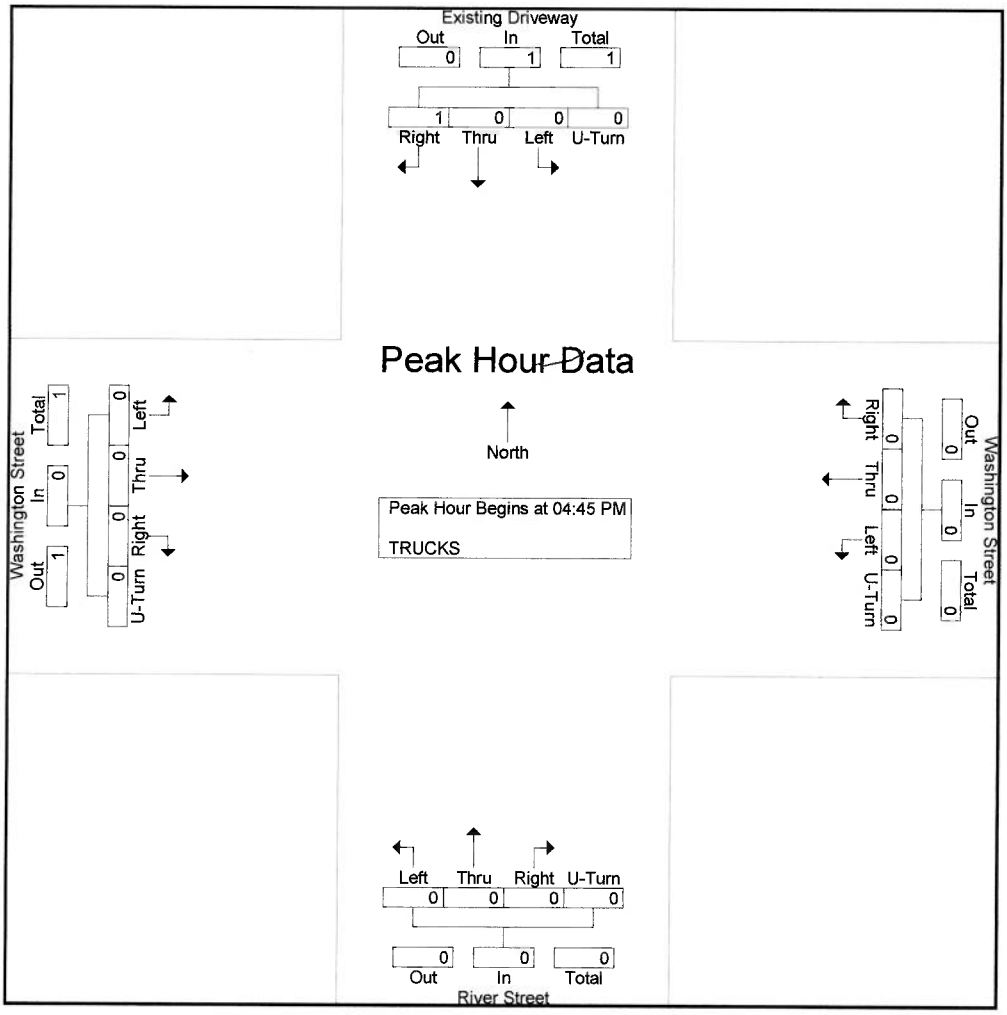


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	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	100	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250



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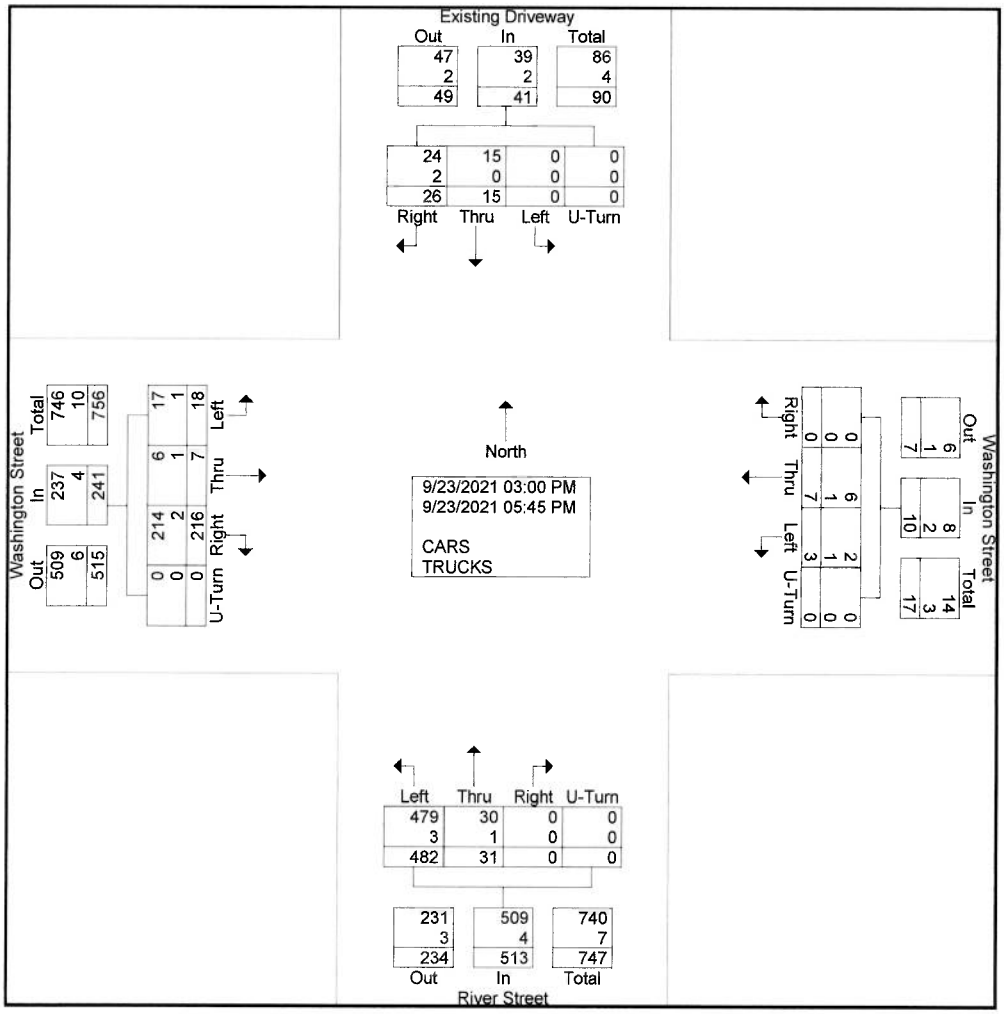
Groups Printed- CARS - TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
03:00 PM	5	6	0	0	11	0	0	0	0	0	0	1	26	0	27	9	1	2	0	12	50
03:15 PM	3	2	0	0	5	0	1	1	0	2	0	1	47	0	48	6	0	0	0	6	61
03:30 PM	1	0	0	0	1	0	0	0	0	0	0	3	29	0	32	16	0	0	0	16	49
03:45 PM	1	1	0	0	2	0	2	1	0	3	0	0	32	0	32	20	1	2	0	23	60
Total	10	9	0	0	19	0	3	2	0	5	0	5	134	0	139	51	2	4	0	57	220
04:00 PM	1	1	0	0	2	0	1	1	0	2	0	3	35	0	38	16	2	5	0	23	65
04:15 PM	9	3	0	0	12	0	0	0	0	0	0	20	45	0	65	13	0	2	0	15	92
04:30 PM	3	1	0	0	4	0	0	0	0	0	0	3	29	0	32	20	0	3	0	23	59
04:45 PM	2	1	0	0	3	0	1	0	0	1	0	0	42	0	42	24	1	1	0	26	72
Total	15	6	0	0	21	0	2	1	0	3	0	26	151	0	177	73	3	11	0	87	288
05:00 PM	1	0	0	0	1	0	1	0	0	1	0	0	50	0	50	31	1	1	0	33	85
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	63	0	63	28	1	1	0	30	94
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	53	0	53	15	0	0	0	15	68
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	31	0	31	18	0	1	0	19	50
Total	1	0	0	0	1	0	2	0	0	2	0	0	197	0	197	92	2	3	0	97	297
Grand Total	26	15	0	0	41	0	7	3	0	10	0	31	482	0	513	216	7	18	0	241	805
Apprch %	63.4	36.6	0	0		0	70	30	0		0	6	94	0		89.6	2.9	7.5	0		
Total %	3.2	1.9	0	0	5.1	0	0.9	0.4	0	1.2	0	3.9	59.9	0	63.7	26.8	0.9	2.2	0	29.9	
CARS	24	15	0	0	39	0	6	2	0	8	0	30	479	0	509	214	6	17	0	237	793
% CARS	92.3	100	0	0	95.1	0	85.7	66.7	0	80	0	96.8	99.4	0	99.2	99.1	85.7	94.4	0	98.3	98.5
TRUCKS	2	0	0	0	2	0	1	1	0	2	0	1	3	0	4	2	1	1	0	4	12
% TRUCKS	7.7	0	0	0	4.9	0	14.3	33.3	0	20	0	3.2	0.6	0	0.8	0.9	14.3	5.6	0	1.7	1.5

Stephen G. Pernaw & Company, Inc.
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Weather: Clear
Collected By: M
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_D__AM_&_PM Wash-River
Site Code : 1981A
Start Date : 9/23/2021
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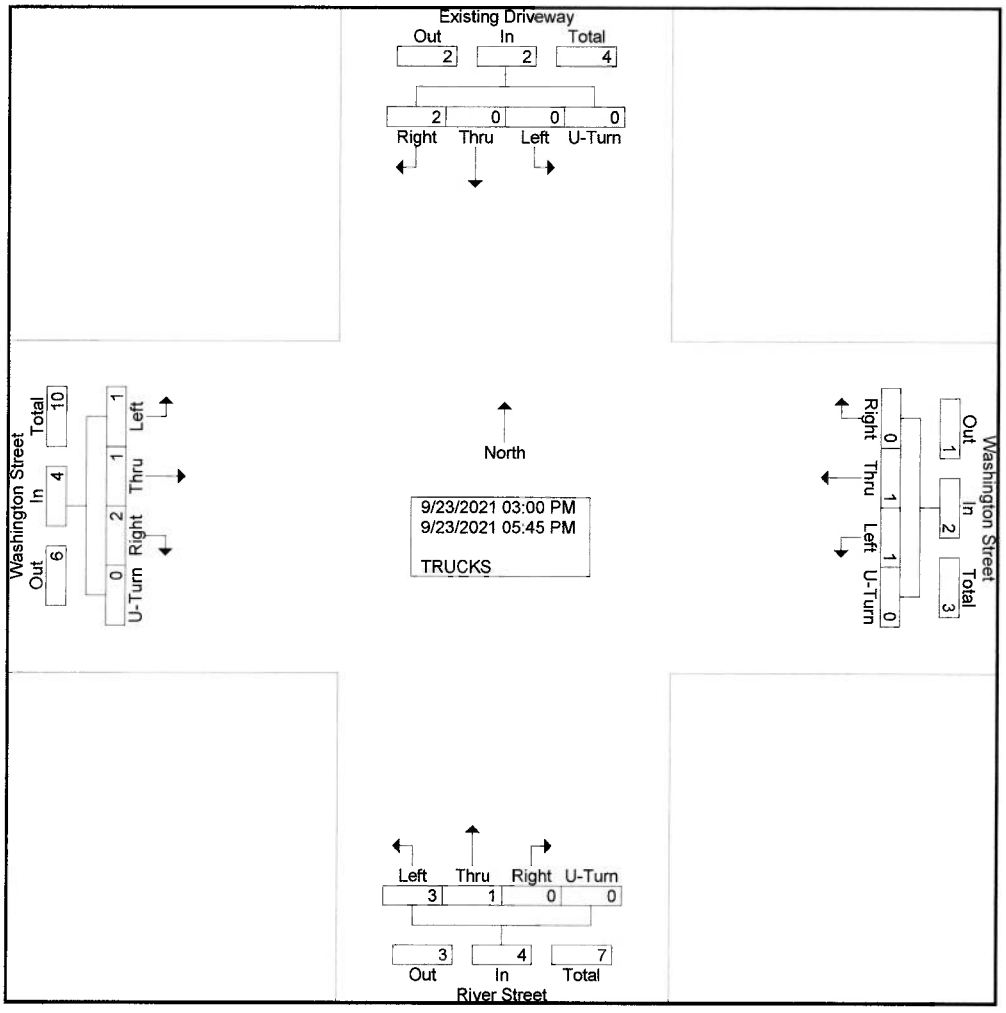
Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: M
Job Number: 1981A
Town/State: Dover, NH

File Name : 1981A_INT_D__AM_&_PM Wash-River
Site Code : 1981A
Start Date : 9/23/2021
Page No : 1

Groups Printed- TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
03:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	2
03:30 PM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
03:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2
Total	1	0	0	0	1	0	1	1	0	2	0	1	2	0	3	2	1	0	0	3	9
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	2	0	0	0	2	0	1	1	0	2	0	1	3	0	4	2	1	1	0	4	12
Apprch %	100	0	0	0		0	50	50	0		0	25	75	0		50	25	25	0		
Total %	16.7	0	0	0	16.7	0	8.3	8.3	0	16.7	0	8.3	25	0	33.3	16.7	8.3	8.3	0	33.3	

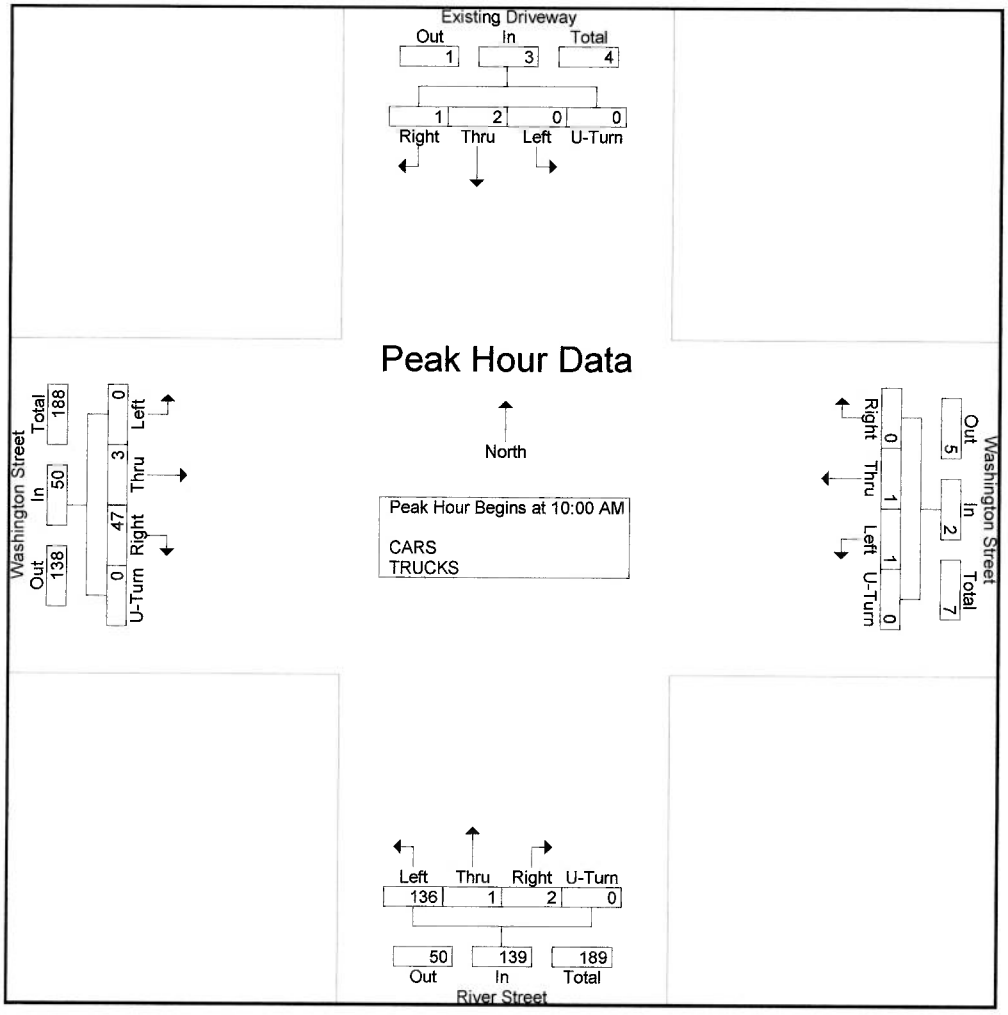


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Weather: Clear
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File Name : 1981A_INT_D__SAT Wash-River
Site Code : 1981A
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	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:00 AM																					
10:00 AM	**1**	**1**	0	0	**2**	0	0	0	0	0	**1**	**1**	32	0	34	11	0	0	0	11	47
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**37**	0	**37**	10	**2**	0	0	12	49
10:30 AM	0	0	0	0	0	0	0	**1**	0	**1**	0	0	34	0	34	7	0	0	0	7	42
10:45 AM	0	1	0	0	1	0	**1**	0	0	1	1	0	33	0	34	**19**	1	0	0	**20**	**56**
Total Volume	1	2	0	0	3	0	1	1	0	2	2	1	136	0	139	47	3	0	0	50	194
% App. Total	33.3	66.7	0	0		0	50	50	0		1.4	0.7	97.8	0		94	6	0	0		
PHF	.250	.500	.000	.000	.375	.000	.250	.250	.000	.500	.500	.250	.919	.000	.939	.618	.375	.000	.000	.625	.866

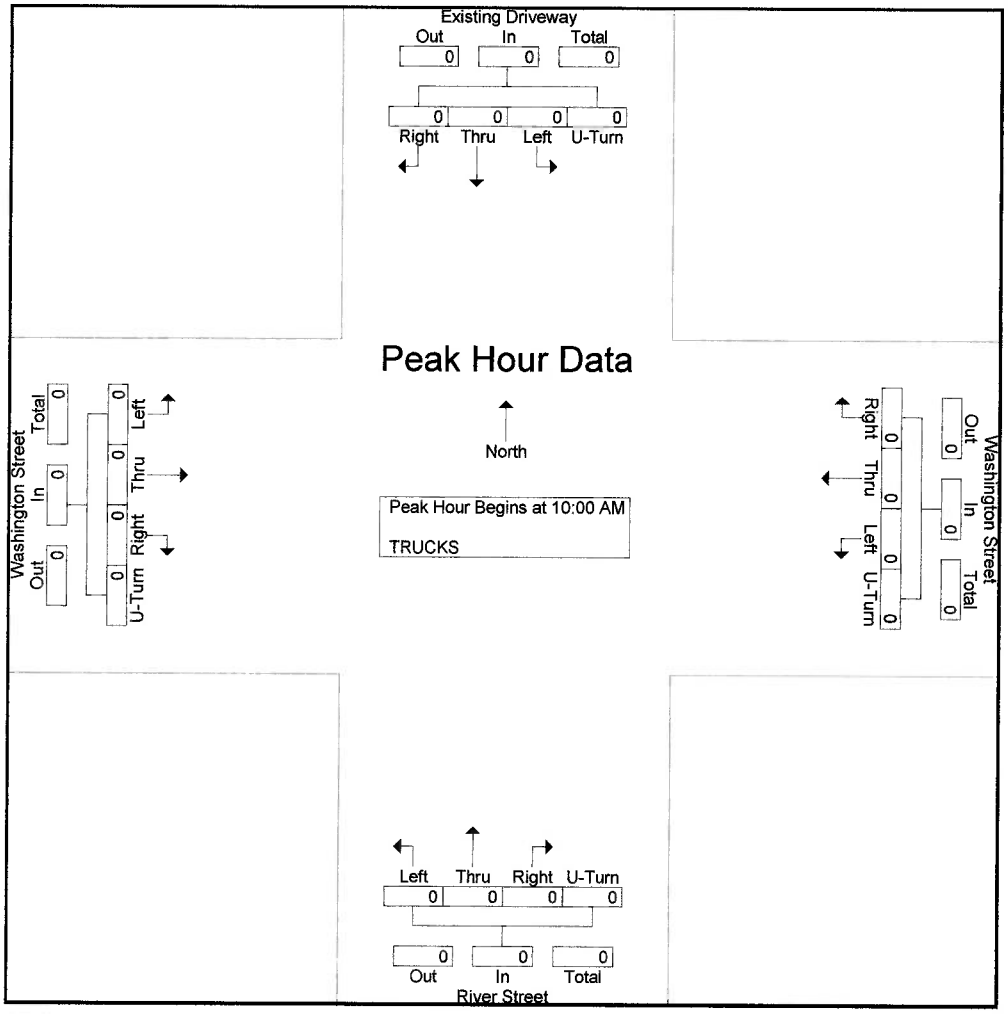


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	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:00 AM																					
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



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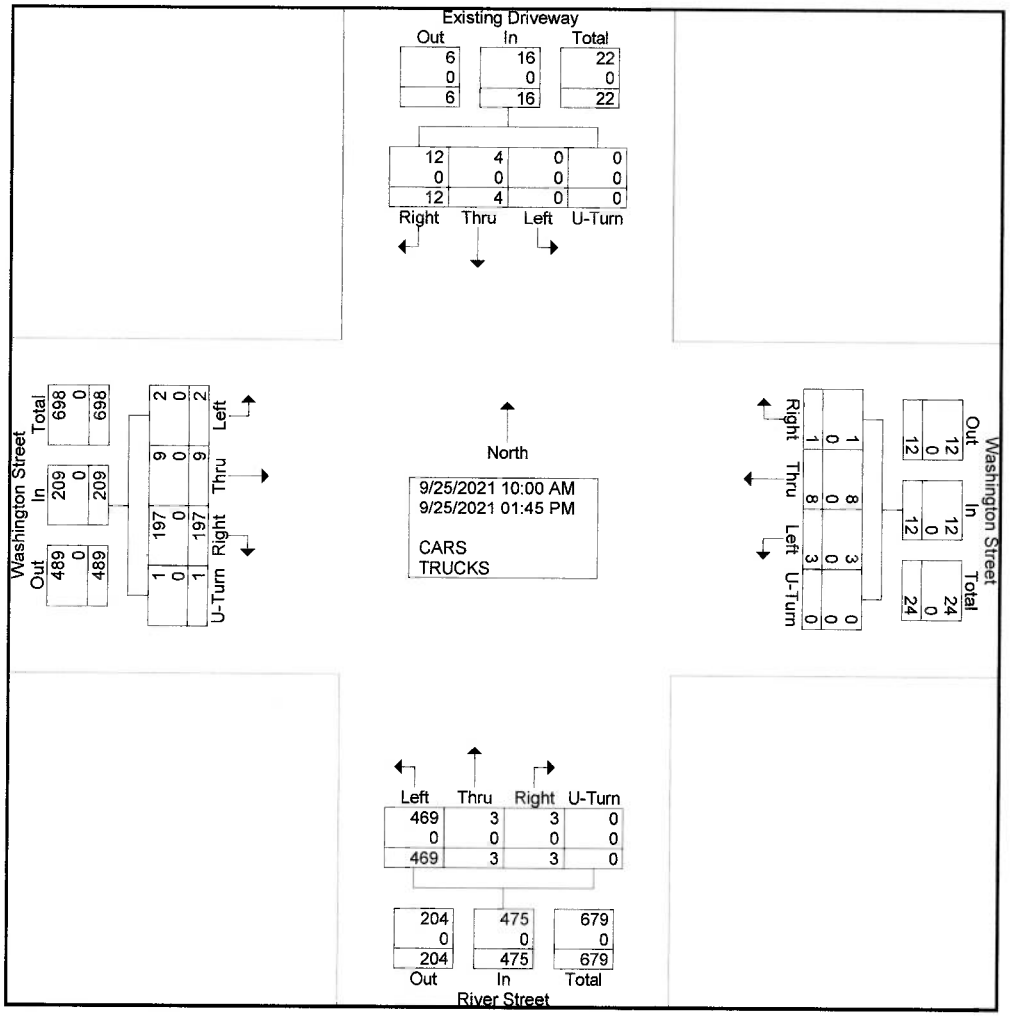
Groups Printed- CARS - TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	1	1	0	0	2	0	0	0	0	0	1	1	32	0	34	11	0	0	0	11	47
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	37	0	37	10	2	0	0	12	49
10:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	34	0	34	7	0	0	0	7	42
10:45 AM	0	1	0	0	1	0	1	0	0	1	1	0	33	0	34	19	1	0	0	20	56
Total	1	2	0	0	3	0	1	1	0	2	2	1	136	0	139	47	3	0	0	50	194
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	27	0	27	9	1	0	0	10	38
11:15 AM	0	0	0	0	0	0	3	0	0	3	1	0	32	0	33	10	2	1	0	13	49
11:30 AM	3	1	0	0	4	0	0	0	0	0	0	0	26	0	26	8	0	0	0	8	38
11:45 AM	3	1	0	0	4	1	1	0	0	2	0	0	30	0	30	8	2	0	0	10	46
Total	6	2	0	0	8	1	5	0	0	6	1	0	115	0	116	35	5	1	0	41	171
12:00 PM	3	0	0	0	3	0	0	0	0	0	0	1	28	0	29	12	0	0	0	12	44
12:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	27	0	27	10	0	0	1	11	39
12:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	36	0	36	18	0	0	0	18	55
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	25	0	26	11	0	0	0	11	37
Total	4	0	0	0	4	0	1	0	0	1	0	2	116	0	118	51	0	0	1	52	175
01:00 PM	1	0	0	0	1	0	1	0	0	1	0	0	27	0	27	14	0	0	0	14	43
01:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	28	0	28	22	0	0	0	22	51
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	26	0	26	16	0	1	0	17	43
01:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	21	0	21	12	1	0	0	13	35
Total	1	0	0	0	1	0	1	2	0	3	0	0	102	0	102	64	1	1	0	66	172
Grand Total	12	4	0	0	16	1	8	3	0	12	3	3	469	0	475	197	9	2	1	209	712
Apprch %	75	25	0	0		8.3	66.7	25	0		0.6	0.6	98.7	0		94.3	4.3	1	0.5		
Total %	1.7	0.6	0	0	2.2	0.1	1.1	0.4	0	1.7	0.4	0.4	65.9	0	66.7	27.7	1.3	0.3	0.1	29.4	
CARS	12	4	0	0	16	1	8	3	0	12	3	3	469	0	475	197	9	2	1	209	712
% CARS	100	100	0	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	100	100	100
TRUCKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% TRUCKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Stephen G. Pernaw & Company, Inc.
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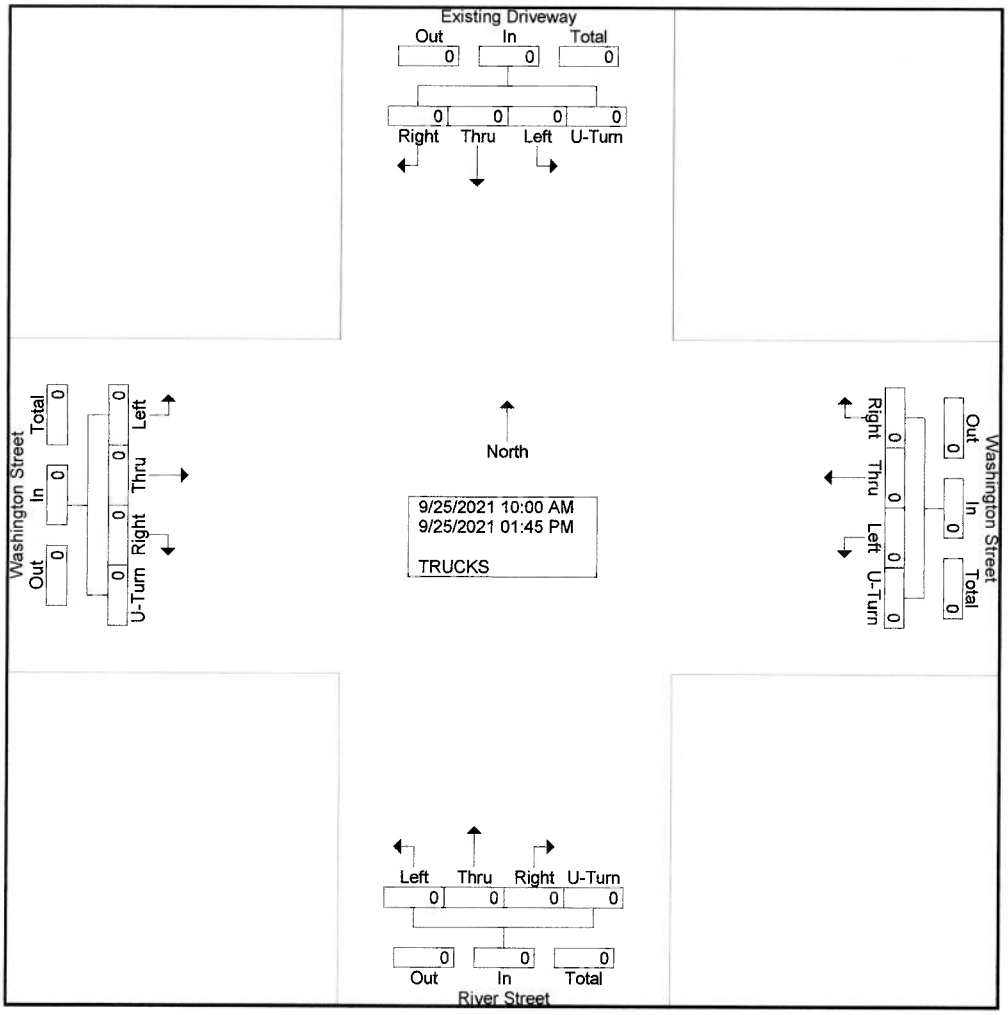
Groups Printed- TRUCKS

	Existing Driveway From North					Washington Street From East					River Street From South					Washington Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

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Appendix D Adjustment Factors

Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)

Stephen G. Pernaw & Company, Inc.

Year 2019 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,431	1.12	1.23
Feb	11,848	1.08	1.18
Mar	12,141	1.06	1.15
Apr	12,860	1.00	1.09
May	13,551	0.95	1.03
Jun	13,785	0.93	1.02
Jul	13,942	0.92	1.01
Aug	14,016	0.92	1.00
Sep	13,379	0.96	1.05
Oct	13,339	0.96	1.05
Nov	12,265	1.05	1.14
Dec	11,496	1.12	1.22

Year 2018 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,282	1.13	1.24
Feb	11,848	1.08	1.18
Mar	11,828	1.08	1.18
Apr	12,491	1.02	1.12
May	13,587	0.94	1.03
Jun	13,911	0.92	1.00
Jul	13,765	0.93	1.01
Aug	13,945	0.92	1.00
Sep	13,168	0.97	1.06
Oct	13,367	0.96	1.04
Nov	12,215	1.05	1.14
Dec	11,963	1.07	1.17

Year 2017 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	12254	1.21	1.33
Feb	13494	1.10	1.21
Mar	14,335	1.03	1.14
Apr	15004	0.99	1.09
May	15547	0.95	1.05
Jun	16310	0.91	1.00
Jul	15523	0.95	1.05
Aug	15974	0.93	1.02
Sep	15546	0.95	1.05
Oct	15104	0.98	1.08
Nov	14,544	1.02	1.12
Dec	14151	1.05	1.15

September to Peak-Month Factor 1.05

Stephen G. Pernaw & Company, Inc.

STEPHEN G. PERNAW & COMPANY, INC.
PROJECT: Proposed Cocheco Waterfront Development, Dover, NH
NUMBER: 1981B
COUNT STATION: 82125067

HISTORICAL GROWTH CALCULATIONS

LOCATION : NH9/NH108 - at Cocheco River Bridge - Dover, New Hampshire
CASE : AADT

ARITHMETIC PROJECTIONS

YEAR	AADT
2017	12813
2018	13069
2019	13226

Regression Output:

Constant	-403681
Std Err of Y Est	40.416581
R Squared	0.9812064
No. of Observations	3
Degrees of Freedom	1
X Coefficient	206.5
Std Err of Coef.	28.578838

PROJECTIONS

2021	13656
2022	13862
2023	14069
2024	14275
2025	14482
2026	14688
2027	14895
2028	15101
2029	15308
2030	15514
2031	15721

RATE = 207 VPD/YEAR

GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT
2017	12813	9.45822
2018	13069	9.47800
2019	13226	9.48994

Regression Output:

Constant	-22.53444
Std Err of Y Est	0.0032011
R Squared	0.9800428
No. of Observations	3
Degrees of Freedom	1
X Coefficient	0.0158622
Std Err of Coef.	0.0022635

PROJECTIONS

2021	13670
2022	13889
2023	14111
2024	14336
2025	14566
2026	14799
2027	15035
2028	15276
2029	15520
2030	15768
2031	16020

CONCLUSION: USE 2%/YEAR

RATE = 1.6 % / YEAR

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

List View | All DIRs

Record 2368 of 5745 Goto Record go

Location ID	82125067	**MPO ID**	
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	S0000009__	**LRS Loc Pt.**	
SF Group	04	**Route Type**	
AF Group	04	**Route**	
GF Group	E	**Active**	Yes
Class Dist Grp	Default	**Category**	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Minor Arterial	**Milepost**	
Located On	Washington St		
Loc On Alias	NH 9/NH 108 (WASHINGTON ST) EB AT COCHECO RIVER BRIDGE		

More Detail

STATION DATA

Directions: 1-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	12,185	1,196	10		11,090 (91%)	1,095 (9%)	
2019	13,226[3]		10		12,117 (92%)	1,109 (8%)	Grown from 2018
2018	13,069[3]		10		12,051 (92%)	1,018 (8%)	Grown from 2017
2017	12,813	1,269	10		11,890 (93%)	923 (7%)	
2016	11,557[3]				10,540 (91%)	1,017 (9%)	Grown from 2015

|<< < > >>| 1-5 of 14

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
	Thu 7/16/2020	60	13,814
	Wed 7/15/2020	60	13,921
	Tue 7/14/2020	60	14,254
	Thu 9/14/2017	60	14,774
	Wed 9/13/2017	60	14,256
	Tue 9/12/2017	60	14,039
	Thu 6/19/2014	60	12,926
	Wed 6/18/2014	60	13,886
	Tue 6/17/2014	60	13,531
	Thu 10/20/2011	60	15,114

VOLUME TREND

Year	Annual Growth
2020	-8%
2019	1%
2018	2%
2017	11%
2016	2%
2015	3%
2014	-5%
2011	-2%
2008	-2%
2005	-2%

CALCULATION SHEET

Stephen G. Pernaw & Company, Inc.

Project:	Cochecho - Dover	Job Number:	1981B
Calculated By:	SP	Date:	10/25/2021
Checked By:	CA	Date:	10/25/2021
Sheet No:	1	Of:	1
Subject:	Covid-19 Adjustment Factors		

I. Given:

A. NHDOT Count Station 02125001 (Dover Point Road):

September 2021 Volumes				September 2019 Volumes			
9/20/2021	M	11,152	veh	9/16/2021	M	12,495	veh
9/21/2021	T	11,638	veh	9/17/2021	T	12,728	veh
9/22/2021	W	11,753	veh	9/18/2021	W	12,879	veh
9/23/2021	TH	11,748	veh	9/19/2021	TH	12,996	veh
9/24/2021	F	11,761	veh	9/20/2021	F	13,336	veh
Average =		11,610	veh	Average =		12,887	veh
9/25/2021	S	10,473	veh	9/21/2021	S	11,167	veh

B. Annual Growth Rate = 2% per year, compounded annually

II. Calculate September traffic volume for 2021 (count month & year) from 2019 pre-Covid-19 data

Weekday: $12,887 \times 1.02^2 = 13,408$ vpd

Saturday: $11,167 \times 1.02^2 = 11,618$ vpd

III. Compare with actual September volume in 2021

Weekday: 13,408 / 11,610 = 1.16

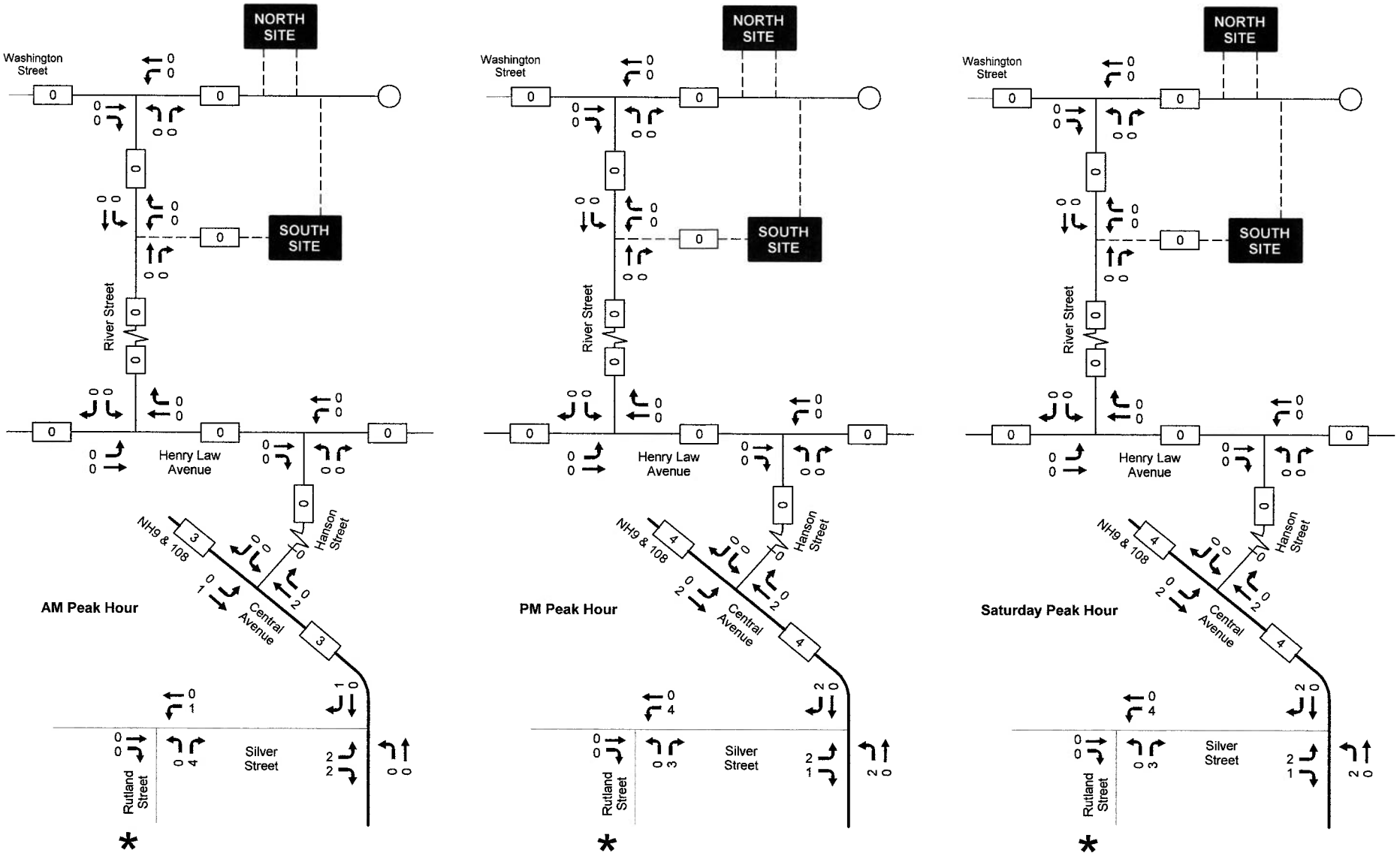
Saturday: 11,618 / 10,473 = 1.11

IV. Conclusions

September Covid-19 factor for weekday AM and PM peak hour cases = 1.16

September Covid-19 factor for Saturday midday peak hour case = 1.11

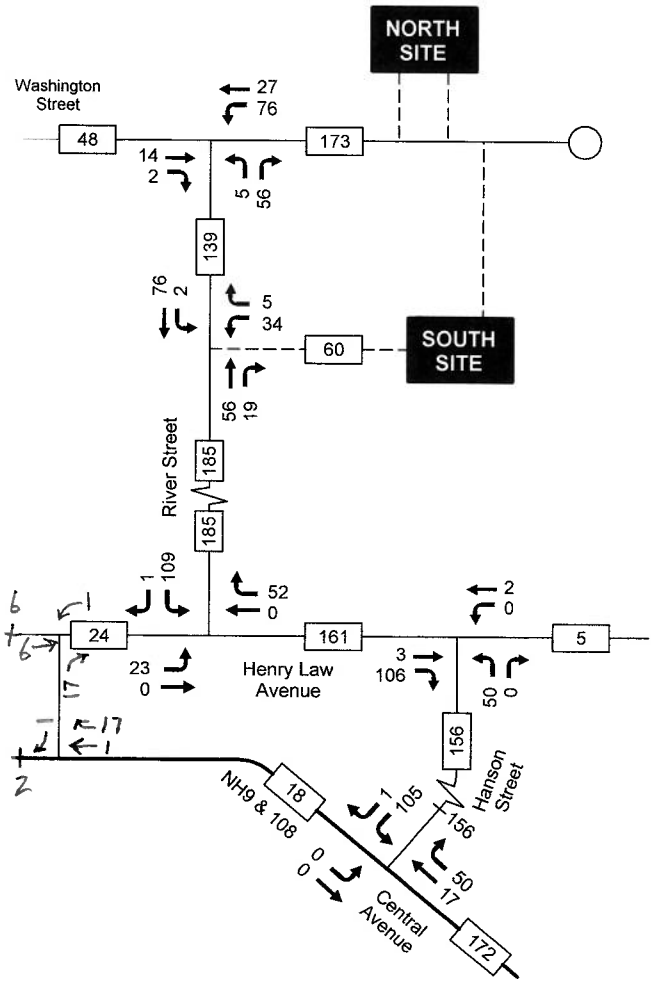
Appendix E **Other Development Traffic Volumes**



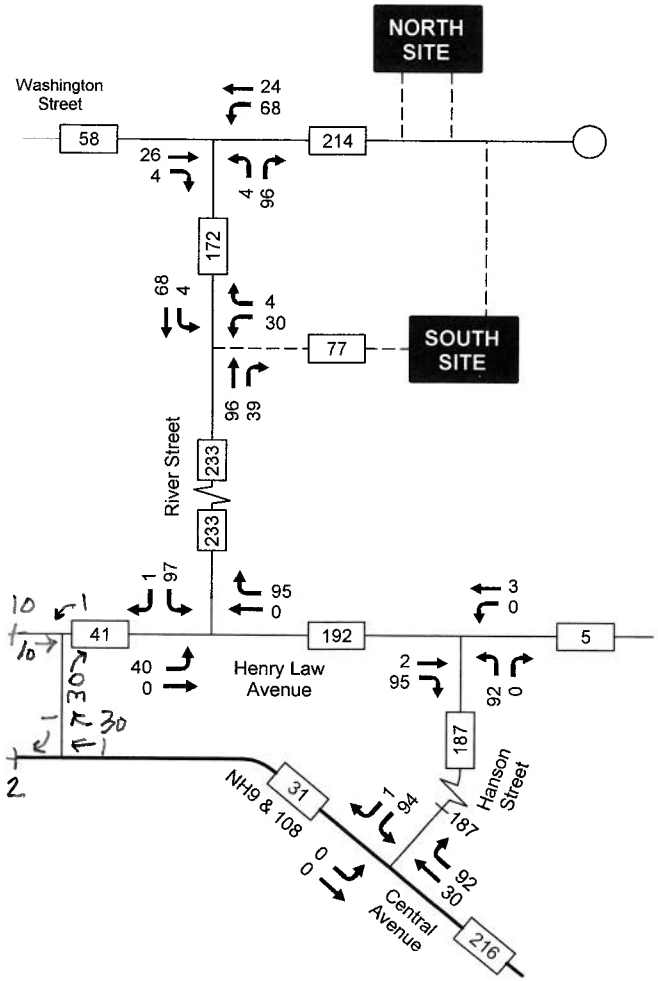
1981B

Source: "Traffic Impact Assessment, Proposed Residential Development, Dover, New Hampshire," dated 7/2/2021 by SGP & Co., Inc.

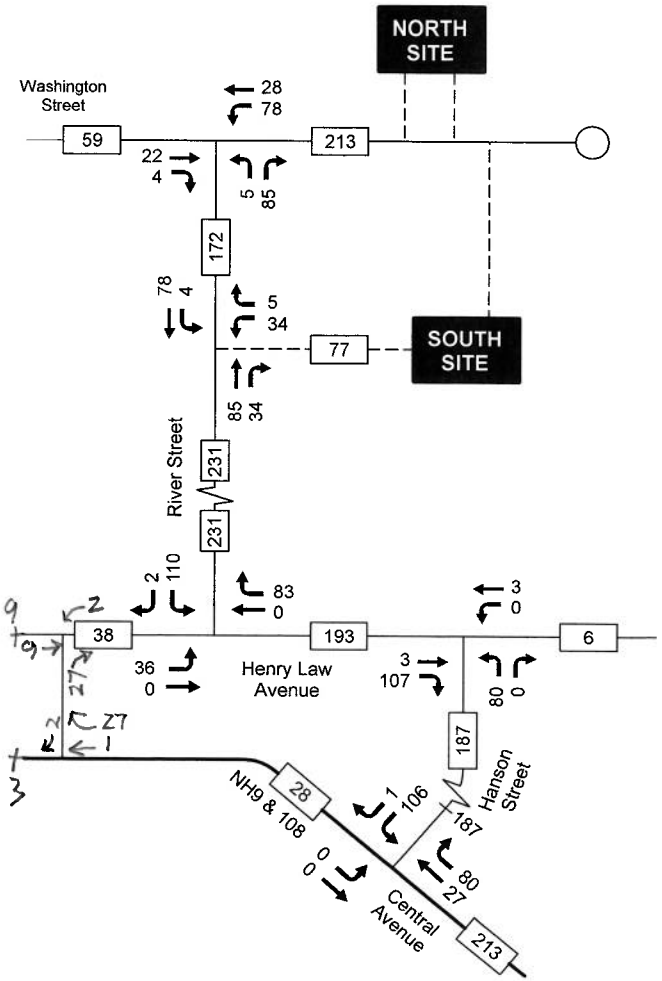
Appendix F **Site Generated Traffic Volumes / Trip Distribution**



AM Peak Hour



PM Peak Hour



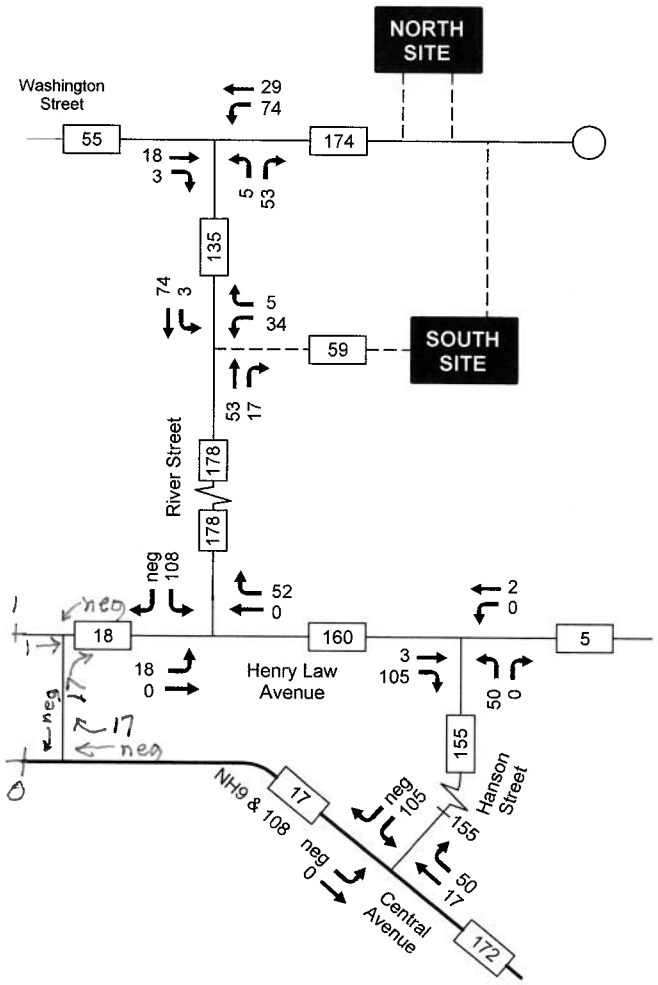
Saturday Peak Hour

1981B

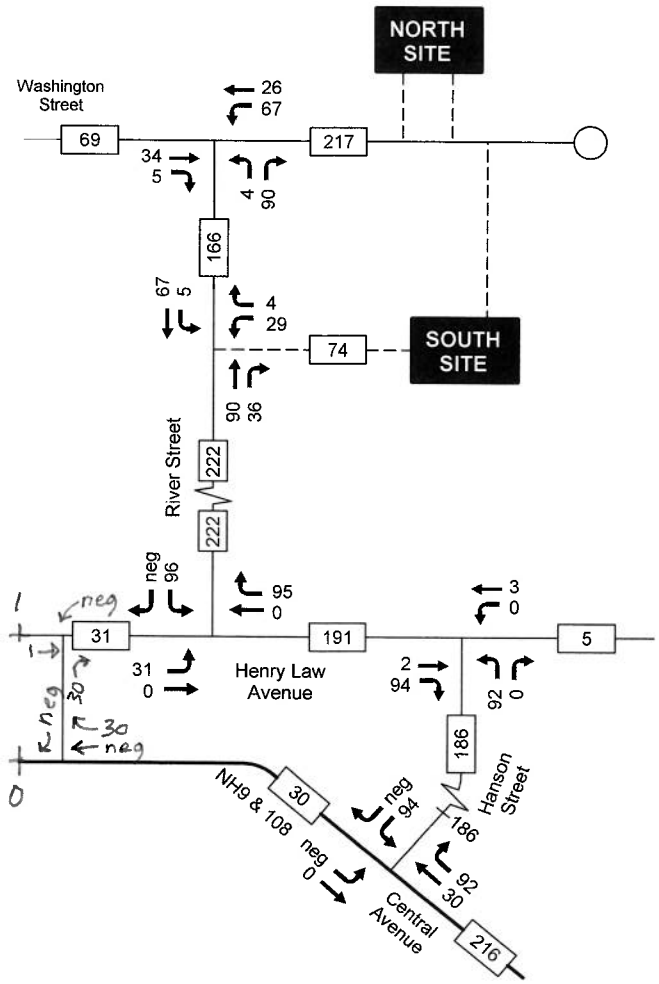
Appendix

Site Generated Traffic Volumes - 2022

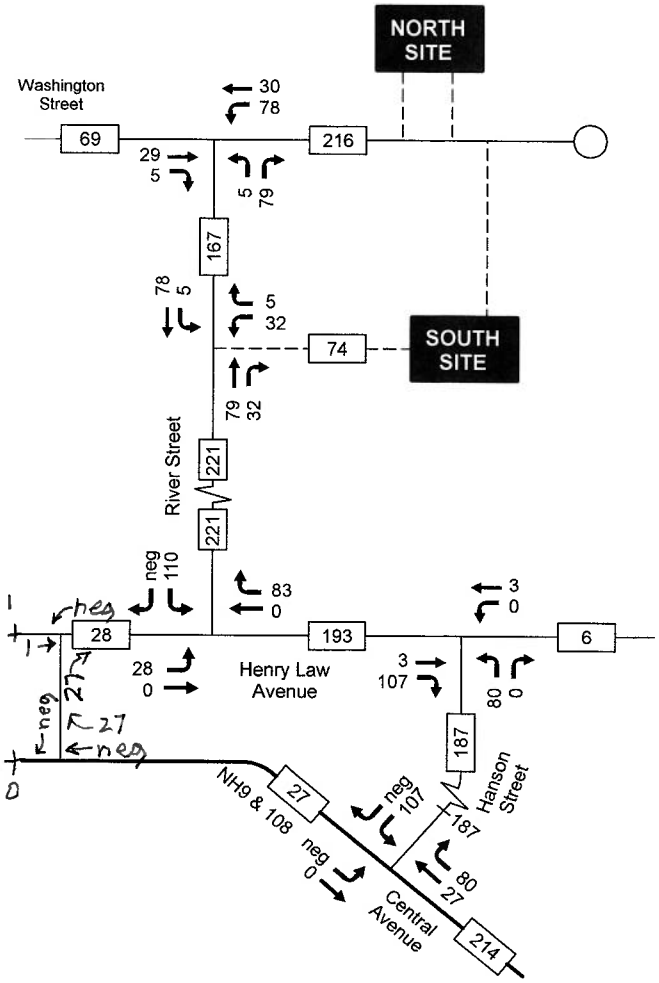
Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire



AM Peak Hour



PM Peak Hour



Saturday Peak Hour

1981B

Appendix

Site Generated Traffic Volumes - 2032

Traffic Impact and Site Access Study, Proposed Cochecho Waterfront Development, Dover, New Hampshire

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 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		2	2	04		1	1	2		0	0	0		0	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 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 *	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 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 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

Stephen G. Pernaw & Company, Inc.

TRIP DISTRIBUTION ANALYSIS

A. Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions

		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

Appendix G Capacity and Level of Service Calculations – Unsignalized

Intersection	
Int Delay, s/veh	5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	66	1	1	97	0
Future Vol, veh/h	2	66	1	1	97	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	3	89	1	1	108	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	51	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1515	-	963	1027
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1025	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1515	-	962	1027
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1024	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	962	-	-	1515	-
HCM Lane V/C Ratio	0.112	-	-	0.001	-
HCM Control Delay (s)	9.2	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection						
Int Delay, s/veh	5.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	82	1	1	121	0
Future Vol, veh/h	2	82	1	1	121	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	3	111	1	1	134	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	114	0	62	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1488	-	949	1012
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	1025	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1488	-	948	1012
Mov Cap-2 Maneuver	-	-	-	-	948	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	1024	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	948	-	-	1488	-
HCM Lane V/C Ratio	0.142	-	-	0.001	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	6.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	84	77	28	126	56
Future Vol, veh/h	16	84	77	28	126	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	22	114	86	31	140	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	136	0	282	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	203	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1461	-	712	987
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	836	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1461	-	669	987
Mov Cap-2 Maneuver	-	-	-	-	669	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	786	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.6	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	1461	-
HCM Lane V/C Ratio	0.272	-	-	0.059	-
HCM Control Delay (s)	11.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	100	1	1	147	0
Future Vol, veh/h	2	100	1	1	147	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	3	135	1	1	163	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	138	0	74	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1458	-	935	997
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	1025	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1458	-	934	997
Mov Cap-2 Maneuver	-	-	-	-	934	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	1024	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	934	-	-	1458	-
HCM Lane V/C Ratio	0.175	-	-	0.001	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	103	75	30	152	53
Future Vol, veh/h	20	103	75	30	152	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	27	139	83	33	169	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	166	0	296	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	199	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1424	-	699	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	839	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1424	-	658	965
Mov Cap-2 Maneuver	-	-	-	-	658	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.5	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1424	-
HCM Lane V/C Ratio	0.318	-	-	0.059	-
HCM Control Delay (s)	12.3	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	6	98	1	6	208	0
Future Vol, veh/h	6	98	1	6	208	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	90	90	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	124	1	7	251	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	132	0	79	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1466	-	929	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1466	-	928	998
Mov Cap-2 Maneuver	-	-	-	-	928	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	1018	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	928	-	-	1466	-
HCM Lane V/C Ratio	0.27	-	-	0.001	-
HCM Control Delay (s)	10.3	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	122	1	7	258	0
Future Vol, veh/h	7	122	1	7	258	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	90	90	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	154	1	8	311	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	163	0	96	86
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1428	-	908	978
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	907	978
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1428	-
HCM Lane V/C Ratio	0.343	-	-	0.001	-
HCM Control Delay (s)	11	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0	-

Intersection	
Int Delay, s/veh	11.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	33	126	69	31	262	96
Future Vol, veh/h	33	126	69	31	262	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	90	90	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	42	159	77	34	316	116

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	201	0	310	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1383	-	687	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1383	-	648	935
Mov Cap-2 Maneuver	-	-	-	-	648	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	801	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.4	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	706	-	-	1383	-
HCM Lane V/C Ratio	0.611	-	-	0.055	-
HCM Control Delay (s)	17.8	-	-	7.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	149	1	7	315	0
Future Vol, veh/h	7	149	1	7	315	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	90	90	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	189	1	8	380	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	198	0	114	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1387	-	887	956
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1387	-	886	956
Mov Cap-2 Maneuver	-	-	-	-	886	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	886	-	-	1387	-
HCM Lane V/C Ratio	0.428	-	-	0.001	-
HCM Control Delay (s)	12.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0	-

Intersection						
Int Delay, s/veh	14.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	154	68	33	319	90
Future Vol, veh/h	41	154	68	33	319	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	90	90	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	52	195	76	37	384	108

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	247	0	339	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	189	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1331	-	661	902
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1331	-	623	902
Mov Cap-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	23.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	669	-	-	1331	-
HCM Lane V/C Ratio	0.737	-	-	0.057	-
HCM Control Delay (s)	23.9	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	6.5	-	-	0.2	-

Intersection						
Int Delay, s/veh	6.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	47	3	2	136	3
Future Vol, veh/h	3	47	3	2	136	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	90	90	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	75	3	2	145	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	51	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1531	-	963	1033
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1531	-	961	1033
Mov Cap-2 Maneuver	-	-	-	-	961	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	1018	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	962	-	-	1531	-
HCM Lane V/C Ratio	0.154	-	-	0.002	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	56	3	2	162	3
Future Vol, veh/h	3	56	3	2	162	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	90	90	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	89	3	2	172	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	94	0	58	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1513	-	954	1024
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1513	-	952	1024
Mov Cap-2 Maneuver	-	-	-	-	952	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1018	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	953	-	-	1513	-
HCM Lane V/C Ratio	0.184	-	-	0.002	-
HCM Control Delay (s)	9.6	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Int Delay, s/veh	7.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	60	81	30	167	88
Future Vol, veh/h	25	60	81	30	167	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	90	90	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	40	95	90	33	178	94

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	135	0	301	88
Stage 1	-	-	-	-	88	-
Stage 2	-	-	-	-	213	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1462	-	695	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1462	-	651	976
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.6	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	736	-	-	1462	-
HCM Lane V/C Ratio	0.369	-	-	0.062	-
HCM Control Delay (s)	12.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.2	-

Intersection						
Int Delay, s/veh	6.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	68	3	2	197	3
Future Vol, veh/h	3	68	3	2	197	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	90	90	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	108	3	2	210	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	67	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1489	-	943	1012
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	941	1012
Mov Cap-2 Maneuver	-	-	-	-	941	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	1018	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	942	-	-	1489	-
HCM Lane V/C Ratio	0.226	-	-	0.002	-
HCM Control Delay (s)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	73	81	32	202	82
Future Vol, veh/h	32	73	81	32	202	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	90	90	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	116	90	36	215	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	167	0	325	109
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1423	-	673	950
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1423	-	629	950
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.5	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	697	-	-	1423	-
HCM Lane V/C Ratio	0.433	-	-	0.063	-
HCM Control Delay (s)	14.1	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-

Intersection						
Int Delay, s/veh	1.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	5	177	19	2	159
Future Vol, veh/h	34	5	177	19	2	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	76	76
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	38	6	197	21	3	209

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	423	208	0	0	218	0
Stage 1	208	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	591	837	-	-	1364	-
Stage 1	832	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	590	837	-	-	1364	-
Mov Cap-2 Maneuver	590	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	613	1364	-
HCM Lane V/C Ratio	-	-	0.071	0.002	-
HCM Control Delay (s)	-	-	11.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	5	200	17	3	175
Future Vol, veh/h	34	5	200	17	3	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	76	76
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	38	6	222	19	4	230

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	470	232	0	0	241	0
Stage 1	232	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	556	812	-	-	1337	-
Stage 1	811	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	554	812	-	-	1337	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	578	1337	-
HCM Lane V/C Ratio	-	-	0.075	0.003	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	4	354	39	4	191
Future Vol, veh/h	30	4	354	39	4	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	83	83	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	4	427	47	5	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	700	451	0	0	474	0
Stage 1	451	-	-	-	-	-
Stage 2	249	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	409	613	-	-	1099	-
Stage 1	646	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	407	613	-	-	1099	-
Mov Cap-2 Maneuver	407	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	424	1099	-
HCM Lane V/C Ratio	-	-	0.089	0.005	-
HCM Control Delay (s)	-	-	14.3	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection						
Int Delay, s/veh	0.7					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	4	405	36	5	217
Future Vol, veh/h	29	4	405	36	5	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	83	83	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	32	4	488	43	6	271

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	793	510	0	0	531	0
Stage 1	510	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	360	567	-	-	1047	-
Stage 1	607	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	357	567	-	-	1047	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	374	1047	-
HCM Lane V/C Ratio	-	-	0.098	0.006	-
HCM Control Delay (s)	-	-	15.7	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	5	250	34	4	137
Future Vol, veh/h	34	5	250	34	4	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	94	94	63	63
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	6	266	36	6	217

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	513	284	0	0	302	0
Stage 1	284	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	525	760	-	-	1270	-
Stage 1	769	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	522	760	-	-	1270	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	544	1270	-
HCM Lane V/C Ratio	-	-	0.08	0.005	-
HCM Control Delay (s)	-	-	12.2	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	5	279	32	5	149
Future Vol, veh/h	32	5	279	32	5	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	94	94	63	63
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	36	6	297	34	8	237

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	567	314	0	0	331	0
Stage 1	314	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	488	731	-	-	1240	-
Stage 1	745	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	485	731	-	-	1240	-
Mov Cap-2 Maneuver	485	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	508	1240	-
HCM Lane V/C Ratio	-	-	0.081	0.006	-
HCM Control Delay (s)	-	-	12.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection						
Int Delay, s/veh	4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	12	2	89	55	6
Future Vol, veh/h	13	12	2	89	55	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	91	91	80	80
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	15	14	2	98	69	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	100	0	-	0	95	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1505	-	-	-	905	1023
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1505	-	-	-	896	1023
Mov Cap-2 Maneuver	-	-	-	-	896	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	978	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	-	907
HCM Lane V/C Ratio	0.01	-	-	-	0.084
HCM Control Delay (s)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection						
Int Delay, s/veh	4.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	15	2	111	68	7
Future Vol, veh/h	16	15	2	111	68	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	91	91	80	80
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	19	17	2	122	85	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	124	0	-	0	118	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1475	-	-	-	878	1007
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1475	-	-	-	867	1007
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1475	-	-	-	878
HCM Lane V/C Ratio	0.013	-	-	-	0.107
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	39	15	2	163	171	8
Future Vol, veh/h	39	15	2	163	171	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	91	91	80	80
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	45	17	2	179	214	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	181	0	-	0	199	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1407	-	-	-	790	971
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1407	-	-	-	765	971
Mov Cap-2 Maneuver	-	-	-	-	765	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1407	-	-	-	772
HCM Lane V/C Ratio	0.032	-	-	-	0.29
HCM Control Delay (s)	7.6	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

Intersection						
Int Delay, s/veh	4.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	18	2	135	83	9
Future Vol, veh/h	20	18	2	135	83	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	91	91	80	80
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	23	21	2	148	104	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	150	0	-	0	143	76
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1444	-	-	-	850	991
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	956	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1444	-	-	-	836	991
Mov Cap-2 Maneuver	-	-	-	-	836	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	956	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1444	-	-	-	849
HCM Lane V/C Ratio	0.016	-	-	-	0.135
HCM Control Delay (s)	7.5	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection						
Int Delay, s/veh	6.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	18	2	187	191	9
Future Vol, veh/h	38	18	2	187	191	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	91	91	80	80
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	44	21	2	205	239	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	207	0	-	0	214	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1376	-	-	-	774	955
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1376	-	-	-	749	955
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1376	-	-	-	756
HCM Lane V/C Ratio	0.032	-	-	-	0.331
HCM Control Delay (s)	7.7	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.4

Intersection						
Int Delay, s/veh	3.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	77	15	173	93	12
Future Vol, veh/h	40	77	15	173	93	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	79	79	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	49	95	19	219	113	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	238	0	-	0	322	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	193	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1341	-	-	-	676	926
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	845	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1341	-	-	-	650	926
Mov Cap-2 Maneuver	-	-	-	-	650	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	845	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1341	-	-	-	673
HCM Lane V/C Ratio	0.037	-	-	-	0.19
HCM Control Delay (s)	7.8	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	95	18	215	116	15
Future Vol, veh/h	50	95	18	215	116	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	79	79	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	62	117	23	272	141	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	295	0	-	0	400	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1278	-	-	-	610	892
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1278	-	-	-	578	892
Mov Cap-2 Maneuver	-	-	-	-	578	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1278	-	-	-	602
HCM Lane V/C Ratio	0.048	-	-	-	0.265
HCM Control Delay (s)	8	0	-	-	13.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	95	18	310	213	16
Future Vol, veh/h	90	95	18	310	213	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	79	79	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	111	117	23	392	260	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	415	0	-	0	558	219
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	339	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1155	-	-	-	494	826
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1155	-	-	-	443	826
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	726	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1155	-	-	-	458
HCM Lane V/C Ratio	0.096	-	-	-	0.61
HCM Control Delay (s)	8.4	0	-	-	24.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	4

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	61	116	22	262	141	18
Future Vol, veh/h	61	116	22	262	141	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	79	79	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	75	143	28	332	172	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	360	0	-	0	487	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1210	-	-	-	543	853
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1210	-	-	-	507	853
Mov Cap-2 Maneuver	-	-	-	-	507	-
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	762	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1210	-	-	-	531
HCM Lane V/C Ratio	0.062	-	-	-	0.365
HCM Control Delay (s)	8.2	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection						
Int Delay, s/veh	11.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	92	116	22	357	237	18
Future Vol, veh/h	92	116	22	357	237	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	79	79	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	114	143	28	452	289	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	480	0	-	0	625	254
Stage 1	-	-	-	-	254	-
Stage 2	-	-	-	-	371	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1093	-	-	-	452	790
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1093	-	-	-	401	790
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	35.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1093	-	-	-	415
HCM Lane V/C Ratio	0.104	-	-	-	0.749
HCM Control Delay (s)	8.7	0	-	-	35.4
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	6.1

Intersection						
Int Delay, s/veh	3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	75	19	81	35	8
Future Vol, veh/h	35	75	19	81	35	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	86	86	72	72
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	42	90	22	94	49	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	116	0	-	0	243	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	174	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1485	-	-	-	750	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1485	-	-	-	728	1000
Mov Cap-2 Maneuver	-	-	-	-	728	-
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	861	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	767
HCM Lane V/C Ratio	0.028	-	-	-	0.078
HCM Control Delay (s)	7.5	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	89	23	96	42	10
Future Vol, veh/h	42	89	23	96	42	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	86	86	72	72
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	107	27	112	58	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	139	0	-	0	292	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1457	-	-	-	703	982
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	831	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1457	-	-	-	677	982
Mov Cap-2 Maneuver	-	-	-	-	677	-
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	831	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1457	-	-	-	720
HCM Lane V/C Ratio	0.035	-	-	-	0.1
HCM Control Delay (s)	7.6	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	6.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	89	23	179	152	12
Future Vol, veh/h	78	89	23	179	152	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	86	86	72	72
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	94	107	27	208	211	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	235	0	-	0	426	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	295	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1344	-	-	-	589	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1344	-	-	-	545	924
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1344	-	-	-	562
HCM Lane V/C Ratio	0.07	-	-	-	0.405
HCM Control Delay (s)	7.9	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2

Intersection						
Int Delay, s/veh	3.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	109	28	117	51	12
Future Vol, veh/h	51	109	28	117	51	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	86	86	72	72
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	61	131	33	136	71	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	169	0	-	0	354	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	253	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1421	-	-	-	648	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	794	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1421	-	-	-	618	960
Mov Cap-2 Maneuver	-	-	-	-	618	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	794	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1421	-	-	-	663
HCM Lane V/C Ratio	0.043	-	-	-	0.132
HCM Control Delay (s)	7.6	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	79	109	28	200	161	12
Future Vol, veh/h	79	109	28	200	161	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	86	86	72	72
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	95	131	33	233	224	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	266	0	-	0	471	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1310	-	-	-	555	902
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1310	-	-	-	512	902
Mov Cap-2 Maneuver	-	-	-	-	512	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1310	-	-	-	528
HCM Lane V/C Ratio	0.073	-	-	-	0.455
HCM Control Delay (s)	8	0	-	-	17.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.4

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	45	22	43	72	19	25
Future Vol, veh/h	45	22	43	72	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	88	88	69	69
Heavy Vehicles, %	2	0	9	0	0	24
Mvmt Flow	54	26	49	82	28	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	247	67
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	180	-
Critical Hdwy	-	-	4.19	-	6.4	6.44
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.516
Pot Cap-1 Maneuver	-	-	1475	-	746	938
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1475	-	720	938
Mov Cap-2 Maneuver	-	-	-	-	720	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	826	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	830	-	-	1475	-
HCM Lane V/C Ratio	0.077	-	-	0.033	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	56	27	53	89	24	31
Future Vol, veh/h	56	27	53	89	24	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	88	88	69	69
Heavy Vehicles, %	2	0	9	0	0	24
Mvmt Flow	67	32	60	101	35	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	99	0	304	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	221	-
Critical Hdwy	-	-	4.19	-	6.4	6.44
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.516
Pot Cap-1 Maneuver	-	-	1451	-	692	919
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1451	-	662	919
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	786	-	-	1451	-
HCM Lane V/C Ratio	0.101	-	-	0.042	-
HCM Control Delay (s)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	4.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	59	133	53	91	74	31
Future Vol, veh/h	59	133	53	91	74	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	88	88	69	69
Heavy Vehicles, %	2	0	9	0	0	24
Mvmt Flow	70	158	60	103	107	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	228	0	372	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	223	-
Critical Hdwy	-	-	4.19	-	6.4	6.44
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.516
Pot Cap-1 Maneuver	-	-	1300	-	633	843
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	819	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1300	-	602	843
Mov Cap-2 Maneuver	-	-	-	-	602	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	657	-	-	1300	-
HCM Lane V/C Ratio	0.232	-	-	0.046	-
HCM Control Delay (s)	12.1	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	68	33	65	108	29	38
Future Vol, veh/h	68	33	65	108	29	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	88	88	69	69
Heavy Vehicles, %	2	0	9	0	0	24
Mvmt Flow	81	39	74	123	42	55

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	120	0	372	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	-	-	4.19	-	6.4	6.44
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.516
Pot Cap-1 Maneuver	-	-	1425	-	633	897
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1425	-	598	897
Mov Cap-2 Maneuver	-	-	-	-	598	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	737	-	-	1425	-
HCM Lane V/C Ratio	0.132	-	-	0.052	-
HCM Control Delay (s)	10.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Intersection						
Int Delay, s/veh	4.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	138	65	110	79	38
Future Vol, veh/h	71	138	65	110	79	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	88	88	69	69
Heavy Vehicles, %	2	0	9	0	0	24
Mvmt Flow	85	164	74	125	114	55

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	249	0	440	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	-	-	4.19	-	6.4	6.44
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.516
Pot Cap-1 Maneuver	-	-	1277	-	578	823
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	778	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1277	-	542	823
Mov Cap-2 Maneuver	-	-	-	-	542	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	730	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	610	-	-	1277	-
HCM Lane V/C Ratio	0.278	-	-	0.058	-
HCM Control Delay (s)	13.2	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	30	27	117	71	49
Future Vol, veh/h	140	30	27	117	71	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	78	78	81	81
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	157	34	35	150	88	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	191	0	394	174
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	220	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1395	-	615	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1395	-	598	875
Mov Cap-2 Maneuver	-	-	-	-	598	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	687	-	-	1395	-
HCM Lane V/C Ratio	0.216	-	-	0.025	-
HCM Control Delay (s)	11.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	174	37	34	145	88	61
Future Vol, veh/h	174	37	34	145	88	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	78	78	81	81
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	196	42	44	186	109	75

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	238	0	491	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	274	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1341	-	540	828
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1341	-	520	828
Mov Cap-2 Maneuver	-	-	-	-	520	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	613	-	-	1341	-
HCM Lane V/C Ratio	0.3	-	-	0.033	-
HCM Control Delay (s)	13.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	132	34	148	180	61
Future Vol, veh/h	176	132	34	148	180	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	78	78	81	81
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	198	148	44	190	222	75

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	346	0	550	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1224	-	500	772
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	774	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1224	-	480	772
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	743	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	531	-	-	1224	-
HCM Lane V/C Ratio	0.56	-	-	0.036	-
HCM Control Delay (s)	20.1	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	212	45	41	177	107	74
Future Vol, veh/h	212	45	41	177	107	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	78	78	81	81
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	238	51	53	227	132	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	289	0	597	264
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1284	-	469	780
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1284	-	447	780
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	542	-	-	1284	-
HCM Lane V/C Ratio	0.412	-	-	0.041	-
HCM Control Delay (s)	16.2	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.1	-

Intersection						
Int Delay, s/veh	10.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	214	139	41	180	199	74
Future Vol, veh/h	214	139	41	180	199	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	78	78	81	81
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	240	156	53	231	246	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	396	0	655	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1174	-	434	727
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1174	-	411	727
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	690	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	30.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	466	-	-	1174	-
HCM Lane V/C Ratio	0.723	-	-	0.045	-
HCM Control Delay (s)	30.4	-	-	8.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	5.8	-	-	0.1	-

Intersection						
Int Delay, s/veh	2.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	25	44	85	15	27
Future Vol, veh/h	85	25	44	85	15	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	76	76	75	75
Heavy Vehicles, %	0	0	0	0	0	7
Mvmt Flow	109	32	58	112	20	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	141	0	353	125
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1455	-	649	912
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1455	-	621	912
Mov Cap-2 Maneuver	-	-	-	-	621	-
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	781	-	-	1455	-
HCM Lane V/C Ratio	0.072	-	-	0.04	-
HCM Control Delay (s)	10	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	30	52	101	18	32
Future Vol, veh/h	101	30	52	101	18	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	76	76	75	75
Heavy Vehicles, %	0	0	0	0	0	7
Mvmt Flow	129	38	68	133	24	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	167	0	417	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	269	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1423	-	596	886
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	781	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1423	-	565	886
Mov Cap-2 Maneuver	-	-	-	-	565	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	736	-	-	1423	-
HCM Lane V/C Ratio	0.091	-	-	0.048	-
HCM Control Delay (s)	10.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Intersection						
Int Delay, s/veh	4.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	104	137	52	104	98	32
Future Vol, veh/h	104	137	52	104	98	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	76	76	75	75
Heavy Vehicles, %	0	0	0	0	0	7
Mvmt Flow	133	176	68	137	131	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	309	0	494	221
Stage 1	-	-	-	-	221	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1263	-	538	806
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	778	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1263	-	507	806
Mov Cap-2 Maneuver	-	-	-	-	507	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	733	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	558	-	-	1263	-
HCM Lane V/C Ratio	0.311	-	-	0.054	-
HCM Control Delay (s)	14.3	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.2	-

Intersection						
Int Delay, s/veh	2.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	123	37	63	123	22	39
Future Vol, veh/h	123	37	63	123	22	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	76	76	75	75
Heavy Vehicles, %	0	0	0	0	0	7
Mvmt Flow	158	47	83	162	29	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	205	0	510	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1378	-	527	848
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1378	-	492	848
Mov Cap-2 Maneuver	-	-	-	-	492	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	1378	-
HCM Lane V/C Ratio	0.121	-	-	0.06	-
HCM Control Delay (s)	11.1	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	126	144	63	126	102	39
Future Vol, veh/h	126	144	63	126	102	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	76	76	75	75
Heavy Vehicles, %	0	0	0	0	0	7
Mvmt Flow	162	185	83	166	136	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	587	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1223	-	475	772
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1223	-	439	772
Mov Cap-2 Maneuver	-	-	-	-	439	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	1223	-
HCM Lane V/C Ratio	0.378	-	-	0.068	-
HCM Control Delay (s)	16.5	-	-	8.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.2	-

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	59	14	526	35	3	735
Future Vol, veh/h	59	14	526	35	3	735
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	87	87	94	94
Heavy Vehicles, %	3	7	7	14	33	4
Mvmt Flow	73	17	605	40	3	782

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1413	625	0	0	645	0
Stage 1	625	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Critical Hdwy	6.43	6.27	-	-	4.43	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.363	-	-	2.497	-
Pot Cap-1 Maneuver	151	476	-	-	809	-
Stage 1	532	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	476	-	-	809	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	444	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	42.7	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	150	476	809	-
HCM Lane V/C Ratio	-	-	0.486	0.036	0.004	-
HCM Control Delay (s)	-	-	49.8	12.8	9.5	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	2.3	0.1	0	-

Intersection						
Int Delay, s/veh	8.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	17	655	43	4	914
Future Vol, veh/h	73	17	655	43	4	914
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	87	87	94	94
Heavy Vehicles, %	3	7	7	14	33	4
Mvmt Flow	90	21	753	49	4	972

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1758	778	0	0	802	0
Stage 1	778	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Critical Hdwy	6.43	6.27	-	-	4.43	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.363	-	-	2.497	-
Pot Cap-1 Maneuver	93	389	-	-	701	-
Stage 1	451	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	389	-	-	701	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	141.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	92	389	701	-
HCM Lane V/C Ratio	-	-	0.98	0.054	0.006	-
HCM Control Delay (s)	-	-	171	14.8	10.2	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	5.7	0.2	0	-

Intersection						
Int Delay, s/veh	86.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	178	18	672	93	4	914
Future Vol, veh/h	178	18	672	93	4	914
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	87	87	94	94
Heavy Vehicles, %	3	7	7	14	33	4
Mvmt Flow	220	22	772	107	4	972

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1806	826	0	0	879	0
Stage 1	826	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Critical Hdwy	6.43	6.27	-	-	4.43	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.363	-	-	2.497	-
Pot Cap-1 Maneuver	~ 86	364	-	-	653	-
Stage 1	428	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 85	364	-	-	653	-
Mov Cap-2 Maneuver	~ 85	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s$	749.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	85	364	653	-
HCM Lane V/C Ratio	-	-	2.585	0.061	0.007	-
HCM Control Delay (s)	-	-	$ 824.2	15.5	10.5	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	20.8	0.2	0	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	31.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	89	21	798	52	5	1114
Future Vol, veh/h	89	21	798	52	5	1114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	87	87	94	94
Heavy Vehicles, %	3	7	7	14	33	4
Mvmt Flow	110	26	917	60	5	1185

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2142	947	0	0	977	0
Stage 1	947	-	-	-	-	-
Stage 2	1195	-	-	-	-	-
Critical Hdwy	6.43	6.27	-	-	4.43	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.363	-	-	2.497	-
Pot Cap-1 Maneuver	~ 53	310	-	-	597	-
Stage 1	375	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 53	310	-	-	597	-
Mov Cap-2 Maneuver	~ 53	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	284	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 540	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	53	310	597	-
HCM Lane V/C Ratio	-	-	2.073	0.084	0.009	-
HCM Control Delay (s)	-	-	$ 663.2	17.7	11.1	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	10.9	0.3	0	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	178.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	21	815	102	5	1114
Future Vol, veh/h	194	21	815	102	5	1114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	87	87	94	94
Heavy Vehicles, %	3	7	7	14	33	4
Mvmt Flow	240	26	937	117	5	1185

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2191	996	0	0	1054	0
Stage 1	996	-	-	-	-	-
Stage 2	1195	-	-	-	-	-
Critical Hdwy	6.43	6.27	-	-	4.43	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.363	-	-	2.497	-
Pot Cap-1 Maneuver	~ 50	290	-	-	556	-
Stage 1	356	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 50	290	-	-	556	-
Mov Cap-2 Maneuver	~ 50	-	-	-	-	-
Stage 1	356	-	-	-	-	-
Stage 2	283	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, $	1688.4	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	50	290	556	-
HCM Lane V/C Ratio	-	-	4.79	0.089	0.01	-
HCM Control Delay (s)	-	-	$ 1869.2	18.6	11.5	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	27	0.3	0	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	49	11	765	107	11	692
Future Vol, veh/h	49	11	765	107	11	692
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	88	88	99	99
Heavy Vehicles, %	2	0	1	0	0	2
Mvmt Flow	50	11	869	122	11	699

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1651	930	0	0	991	0
Stage 1	930	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	109	327	-	-	706	-
Stage 1	384	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	107	327	-	-	706	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	384	-	-	-	-	-
Stage 2	474	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.3	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	107	327	706	-
HCM Lane V/C Ratio	-	-	0.467	0.034	0.016	-
HCM Control Delay (s)	-	-	65.2	16.4	10.2	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	2	0.1	0	-

Intersection						
Int Delay, s/veh	7.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	61	14	952	133	14	862
Future Vol, veh/h	61	14	952	133	14	862
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	88	88	99	99
Heavy Vehicles, %	2	0	1	0	0	2
Mvmt Flow	62	14	1082	151	14	871

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2057	1158	0	0	1233	0
Stage 1	1158	-	-	-	-	-
Stage 2	899	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 61	241	-	-	572	-
Stage 1	299	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 60	241	-	-	572	-
Mov Cap-2 Maneuver	~ 60	-	-	-	-	-
Stage 1	299	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	199.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	60	241	572	-
HCM Lane V/C Ratio	-	-	1.037	0.059	0.025	-
HCM Control Delay (s)	-	-	241	20.9	11.5	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	5	0.2	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	70.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	155	15	982	225	14	862
Future Vol, veh/h	155	15	982	225	14	862
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	88	88	99	99
Heavy Vehicles, %	2	0	1	0	0	2
Mvmt Flow	158	15	1116	256	14	871

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2143	1244	0	0	1372	0
Stage 1	1244	-	-	-	-	-
Stage 2	899	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 54	215	-	-	507	-
Stage 1	272	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 52	215	-	-	507	-
Mov Cap-2 Maneuver	~ 52	-	-	-	-	-
Stage 1	272	-	-	-	-	-
Stage 2	386	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 992.8	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	52	215	507	-
HCM Lane V/C Ratio	-	-	3.042	0.071	0.028	-
HCM Control Delay (s)	-	-	$ 1086.6	23	12.3	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	16.8	0.2	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	27.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	17	1160	162	17	1050
Future Vol, veh/h	74	17	1160	162	17	1050
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	88	88	99	99
Heavy Vehicles, %	2	0	1	0	0	2
Mvmt Flow	76	17	1318	184	17	1061

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2505	1410	0	0	1502	0
Stage 1	1410	-	-	-	-	-
Stage 2	1095	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 31	171	-	-	452	-
Stage 1	226	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 30	171	-	-	452	-
Mov Cap-2 Maneuver	~ 30	-	-	-	-	-
Stage 1	226	-	-	-	-	-
Stage 2	309	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 793	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	30	171	452	-
HCM Lane V/C Ratio	-	-	2.517	0.101	0.038	-
HCM Control Delay (s)	-	-	$ 968.7	28.4	13.3	-
HCM Lane LOS	-	-	F	D	B	-
HCM 95th %tile Q(veh)	-	-	8.9	0.3	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	159.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	168	17	1190	254	17	1050
Future Vol, veh/h	168	17	1190	254	17	1050
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	88	88	99	99
Heavy Vehicles, %	2	0	1	0	0	2
Mvmt Flow	171	17	1352	289	17	1061

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2592	1497	0	0	1641	0
Stage 1	1497	-	-	-	-	-
Stage 2	1095	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 28	152	-	-	400	-
Stage 1	205	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 27	152	-	-	400	-
Mov Cap-2 Maneuver	~ 27	-	-	-	-	-
Stage 1	205	-	-	-	-	-
Stage 2	308	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, $	2449.8	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	27	152	400	-
HCM Lane V/C Ratio	-	-	6.349	0.114	0.043	-
HCM Control Delay (s)	-	-	$ 2694.5	31.7	14.4	-
HCM Lane LOS	-	-	F	D	B	-
HCM 95th %tile Q(veh)	-	-	21.1	0.4	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	2.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	35	724	52	13	612
Future Vol, veh/h	54	35	724	52	13	612
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	82	82	94	94
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	57	37	883	63	14	651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1594	915	0	0	946	0
Stage 1	915	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	119	333	-	-	725	-
Stage 1	394	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	117	333	-	-	725	-
Mov Cap-2 Maneuver	117	-	-	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	44.3	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	117	333	725	-
HCM Lane V/C Ratio	-	-	0.486	0.111	0.019	-
HCM Control Delay (s)	-	-	61.9	17.2	10.1	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	2.2	0.4	0.1	-

Intersection						
Int Delay, s/veh	6.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	64	42	863	62	15	730
Future Vol, veh/h	64	42	863	62	15	730
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	82	82	94	94
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	67	44	1052	76	16	777

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1899	1090	0	0	1128	0
Stage 1	1090	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	77	264	-	-	619	-
Stage 1	325	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	75	264	-	-	619	-
Mov Cap-2 Maneuver	75	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	430	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	111.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	75	264	619	-
HCM Lane V/C Ratio	-	-	0.898	0.167	0.026	-
HCM Control Delay (s)	-	-	171.3	21.4	11	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	4.6	0.6	0.1	-

Intersection						
Int Delay, s/veh	70.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	170	43	890	142	15	730
Future Vol, veh/h	170	43	890	142	15	730
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	82	82	94	94
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	179	45	1085	173	16	777

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1981	1172	0	0	1258	0
Stage 1	1172	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	~ 69	236	-	-	553	-
Stage 1	297	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 67	236	-	-	553	-
Mov Cap-2 Maneuver	~ 67	-	-	-	-	-
Stage 1	297	-	-	-	-	-
Stage 2	428	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s$	713.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	67	236	553	-
HCM Lane V/C Ratio	-	-	2.671	0.192	0.029	-
HCM Control Delay (s)	-	-	$ 888.4	23.8	11.7	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	17.8	0.7	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	24.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	78	51	1052	76	18	889
Future Vol, veh/h	78	51	1052	76	18	889
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	82	82	94	94
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	82	54	1283	93	19	946

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2314	1330	0	0	1376	0
Stage 1	1330	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	~ 42	191	-	-	498	-
Stage 1	249	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 40	191	-	-	498	-
Mov Cap-2 Maneuver	~ 40	-	-	-	-	-
Stage 1	249	-	-	-	-	-
Stage 2	351	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s$	438.6	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	40	191	498	-
HCM Lane V/C Ratio	-	-	2.053	0.281	0.038	-
HCM Control Delay (s)	-	-	$ 705	31.1	12.5	-
HCM Lane LOS	-	-	F	D	B	-
HCM 95th %tile Q(veh)	-	-	8.8	1.1	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	158.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	185	51	1079	156	18	889
Future Vol, veh/h	185	51	1079	156	18	889
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	82	82	94	94
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	195	54	1316	190	19	946

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2395	1411	0	0	1506	0
Stage 1	1411	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	~ 38	171	-	-	444	-
Stage 1	228	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 36	171	-	-	444	-
Mov Cap-2 Maneuver	~ 36	-	-	-	-	-
Stage 1	228	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, $	1736.2	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	36	171	444	-
HCM Lane V/C Ratio	-	-	5.409	0.314	0.043	-
HCM Control Delay (s)	-	-	$ 2205.1	35.4	13.5	-
HCM Lane LOS	-	-	F	E	B	-
HCM 95th %tile Q(veh)	-	-	23	1.3	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix H **Capacity and Level of Service Calculations - Signalized**

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

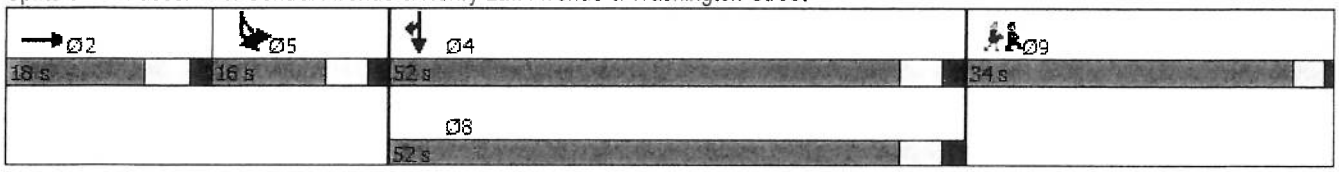
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

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

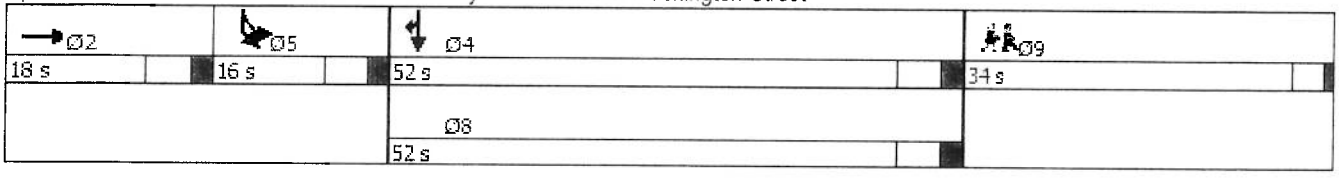
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

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

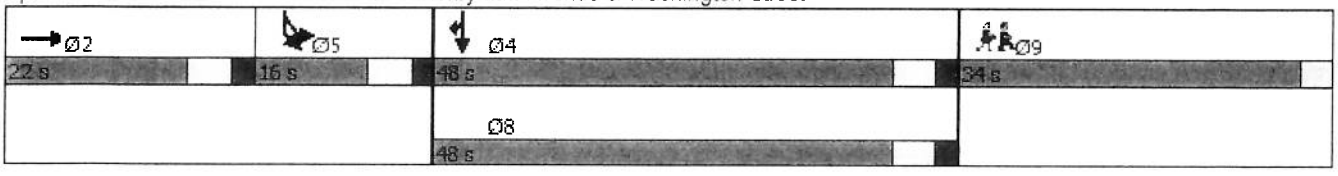
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

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

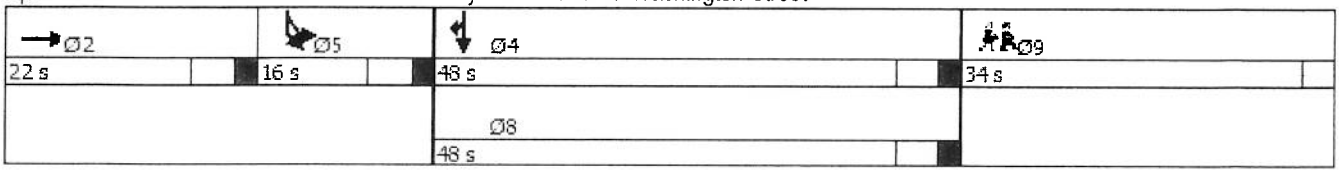
Timings
1: Central Avenue & Henry Law Avenue & Washington Street

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.

HCM Signalized Intersection Capacity Analysis
5: Central Avenue & Hanson Street

new

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	168	17	1190	254	17	1050
Future Volume (vph)	168	17	1190	254	17	1050
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1615	1881	1615	1805	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1615	1881	1615	1805	1863
Peak-hour factor, PHF	0.98	0.98	0.88	0.88	0.99	0.99
Adj. Flow (vph)	171	17	1352	289	17	1061
RTOR Reduction (vph)	0	14	0	36	0	0
Lane Group Flow (vph)	171	3	1352	253	17	1061
Heavy Vehicles (%)	2%	0%	1%	0%	0%	2%
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	8	8 1	2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	12.0	21.0	88.4	106.4	3.0	97.4
Effective Green, g (s)	12.0	21.0	88.4	106.4	3.0	97.4
Actuated g/C Ratio	0.10	0.17	0.73	0.88	0.02	0.80
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	174	279	1369	1415	44	1494
v/s Ratio Prot	c0.10	0.00	c0.72	0.16	0.01	c0.57
v/s Ratio Perm						
v/c Ratio	0.98	0.01	0.99	0.18	0.39	0.71
Uniform Delay, d1	54.6	41.6	16.0	1.1	58.3	5.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	62.8	0.0	21.2	0.1	5.6	1.6
Delay (s)	117.4	41.6	37.1	1.2	63.8	7.1
Level of Service	F	D	D	A	E	A
Approach Delay (s)	110.5		30.8			8.0
Approach LOS	F		C			A

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

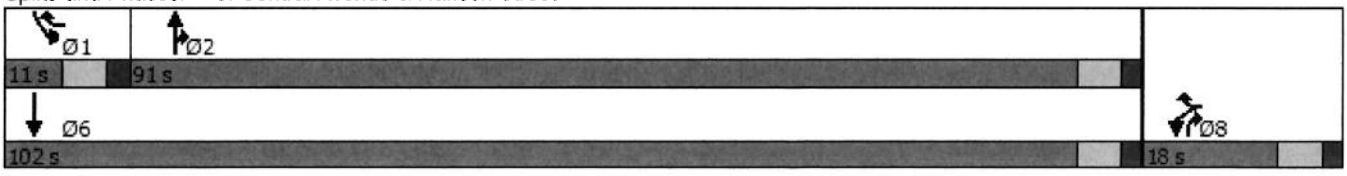
Timings
5: Central Avenue & Hanson Street

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	168	17	1190	254	17	1050
Future Volume (vph)	168	17	1190	254	17	1050
Turn Type	Prot	pt+ov	NA	pt+ov	Prot	NA
Protected Phases	8	8 1	2	2 8	1	6
Permitted Phases						
Detector Phase	8	8 1	2	2 8	1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	16.0		16.0		11.0	16.0
Total Split (s)	18.0		91.0		11.0	102.0
Total Split (%)	15.0%		75.8%		9.2%	85.0%
Yellow Time (s)	4.0		4.0		4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0		6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Min		None	Min
Act Effct Green (s)	12.0	23.0	88.4	108.9	5.0	95.0
Actuated g/C Ratio	0.10	0.19	0.74	0.92	0.04	0.80
v/c Ratio	0.96	0.05	0.97	0.19	0.22	0.71
Control Delay	111.1	17.1	33.8	0.4	62.8	9.0
Queue Delay	0.0	0.0	42.2	0.8	0.0	0.0
Total Delay	111.1	17.1	76.0	1.2	62.8	9.0
LOS	F	B	E	A	E	A
Approach Delay	102.6		62.9			9.8
Approach LOS	F		E			A

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 119
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 45.8 — Intersection LOS: D
Intersection Capacity Utilization 81.9% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Central Avenue & Hanson Street



Queues
5: Central Avenue & Hanson Street

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	171	17	1352	289	17	1061
v/c Ratio	0.96	0.05	0.97	0.19	0.22	0.71
Control Delay	111.1	17.1	33.8	0.4	62.8	9.0
Queue Delay	0.0	0.0	42.2	0.8	0.0	0.0
Total Delay	111.1	17.1	76.0	1.2	62.8	9.0
Queue Length 50th (ft)	134	0	~1023	0	13	309
Queue Length 95th (ft)	#276	21	#1313	8	38	442
Internal Link Dist (ft)	933		221			290
Turn Bay Length (ft)		200		150	150	
Base Capacity (vph)	178	326	1398	1502	76	1503
Starvation Cap Reductn	0	0	257	913	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.05	1.18	0.49	0.22	0.71

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.

Appendix I **Auxiliary Turn Lane Warrants Analysis**

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

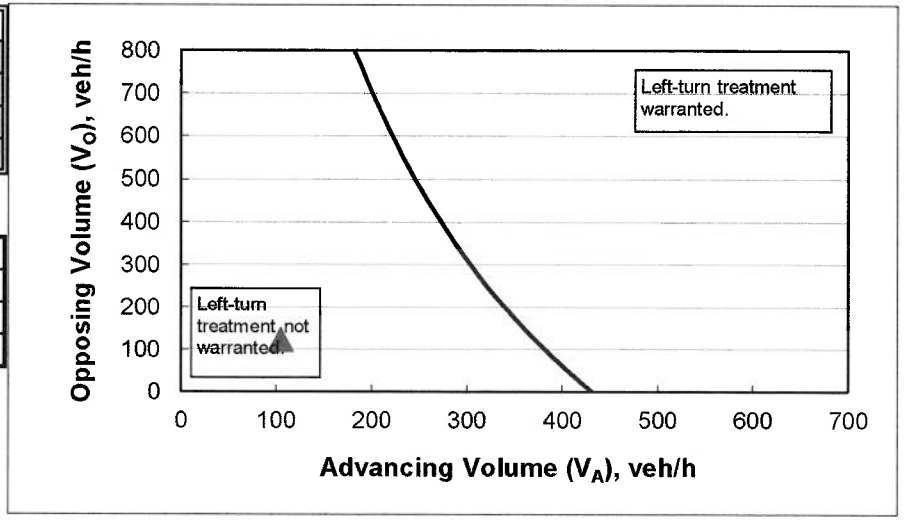
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	71%
Advancing volume (V_A), veh/h:	105
Opposing volume (V_O), veh/h:	123

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	371
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

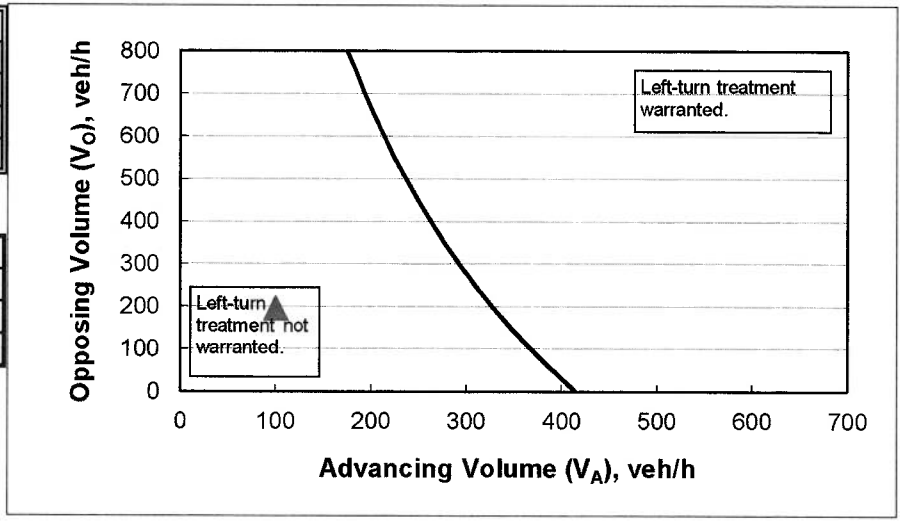
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	67%
Advancing volume (V_A), veh/h:	101
Opposing volume (V_O), veh/h:	195

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	329
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

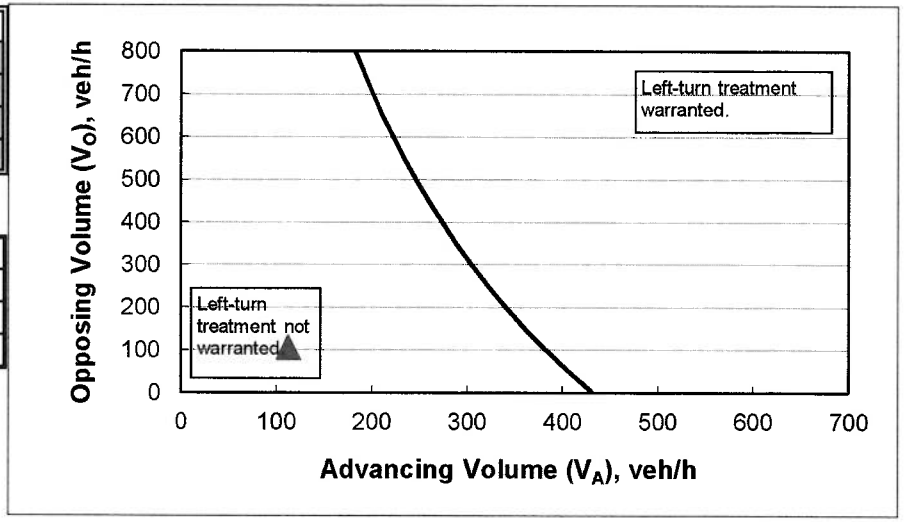
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	72%
Advancing volume (V_A), veh/h:	113
Opposing volume (V_O), veh/h:	105

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	380
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

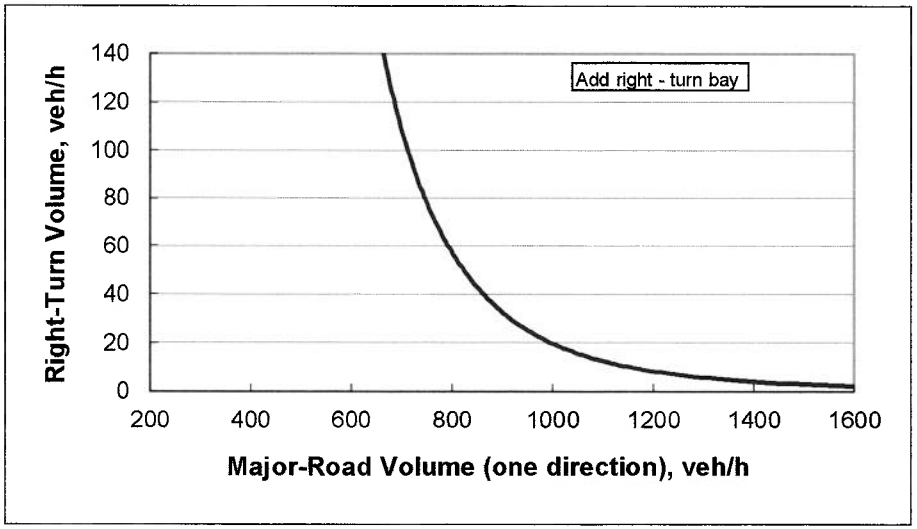
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	123
Right-turn volume, veh/h:	103

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	474966
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

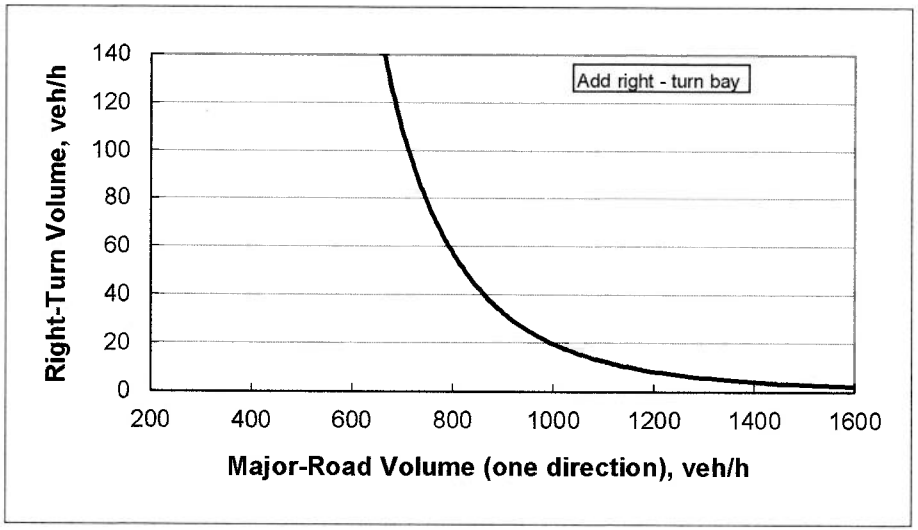
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	195
Right-turn volume, veh/h:	154

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	51550
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

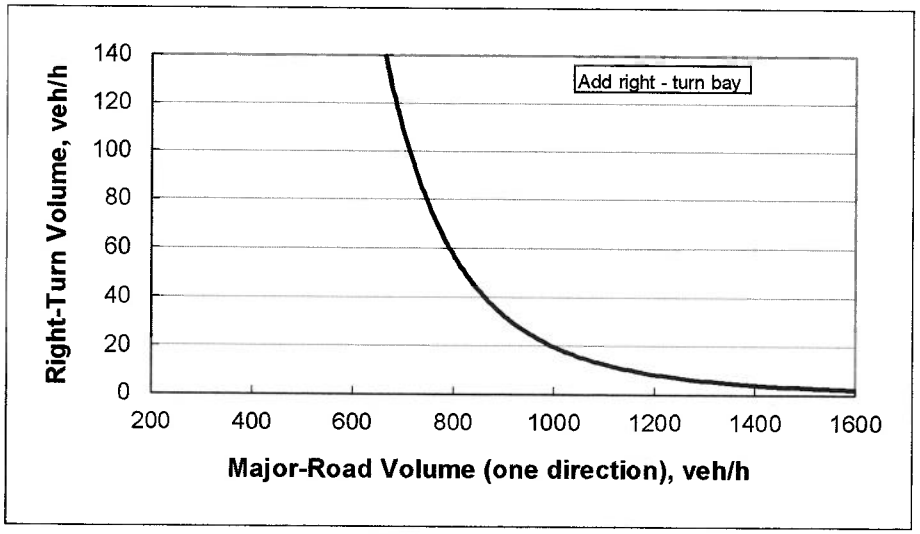
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	105
Right-turn volume, veh/h:	73

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1018137
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	228
Percentage of right-turns on minor road, %:	26%
Minor-road volume (one direction), veh/h:	205

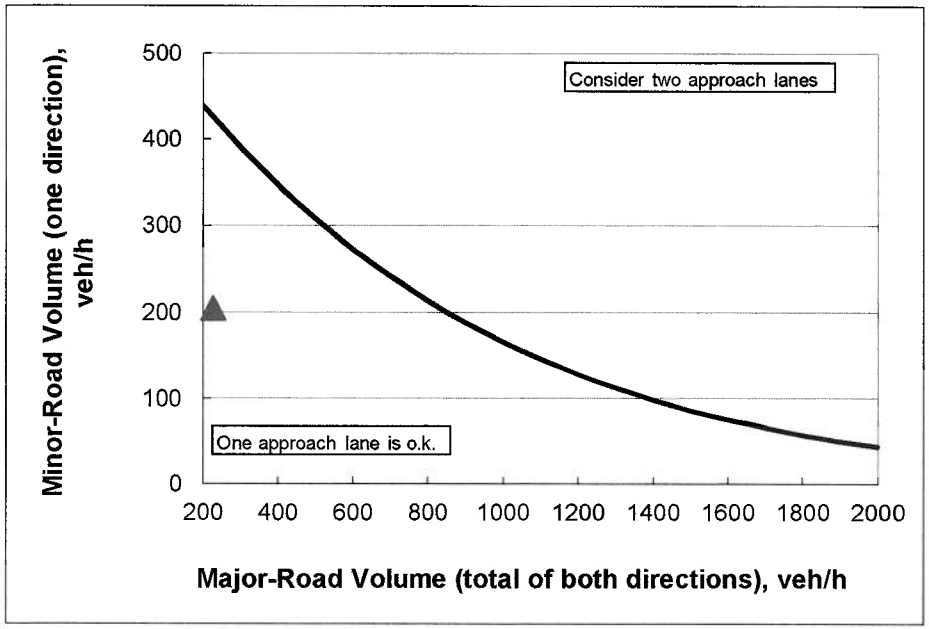
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	425
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	296
Percentage of right-turns on minor road, %:	22%
Minor-road volume (one direction), veh/h:	409

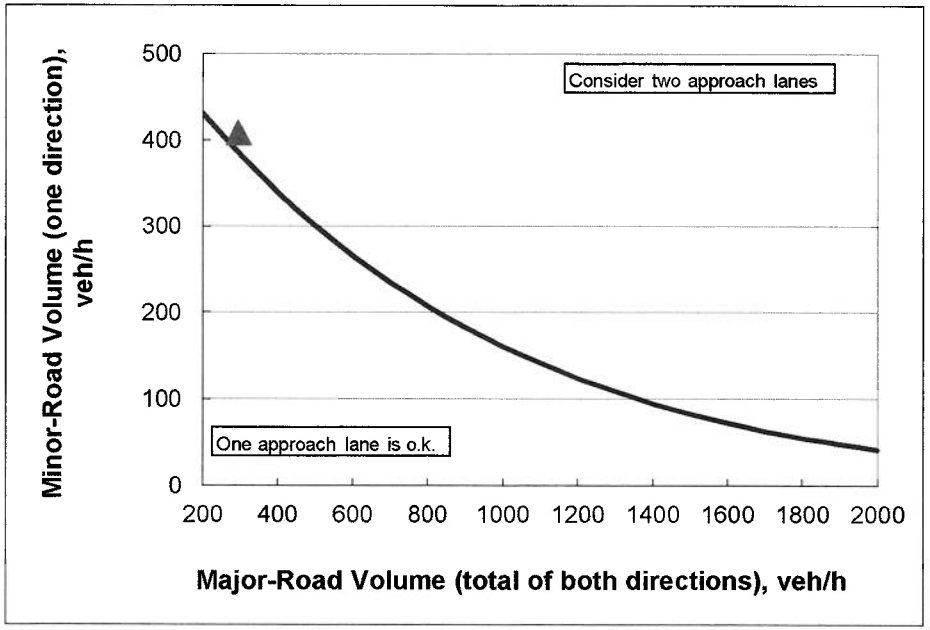
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	385
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	218
Percentage of right-turns on minor road, %:	29%
Minor-road volume (one direction), veh/h:	284

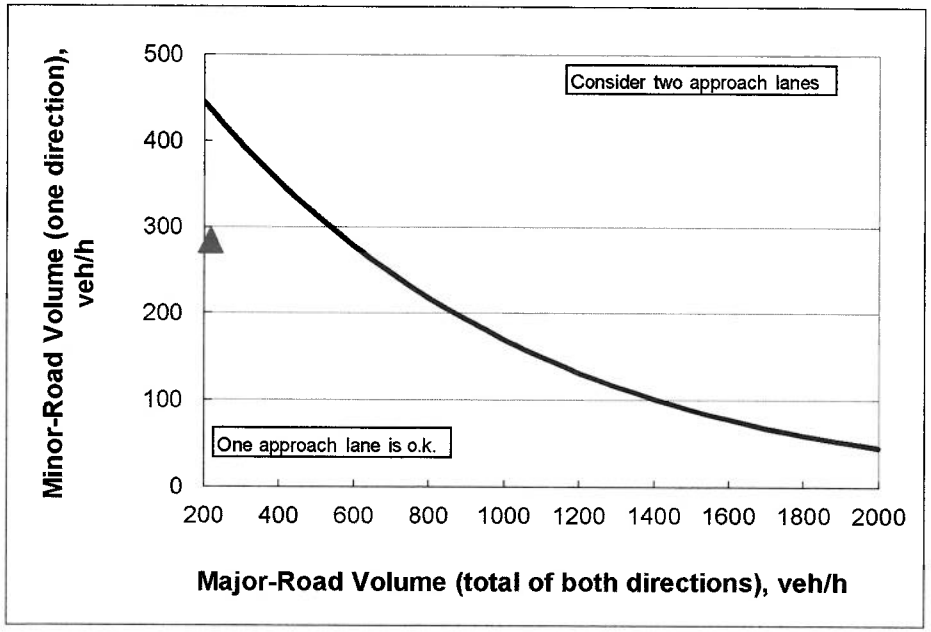
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	436
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	259
Percentage of right-turns on minor road, %:	27%
Minor-road volume (one direction), veh/h:	358

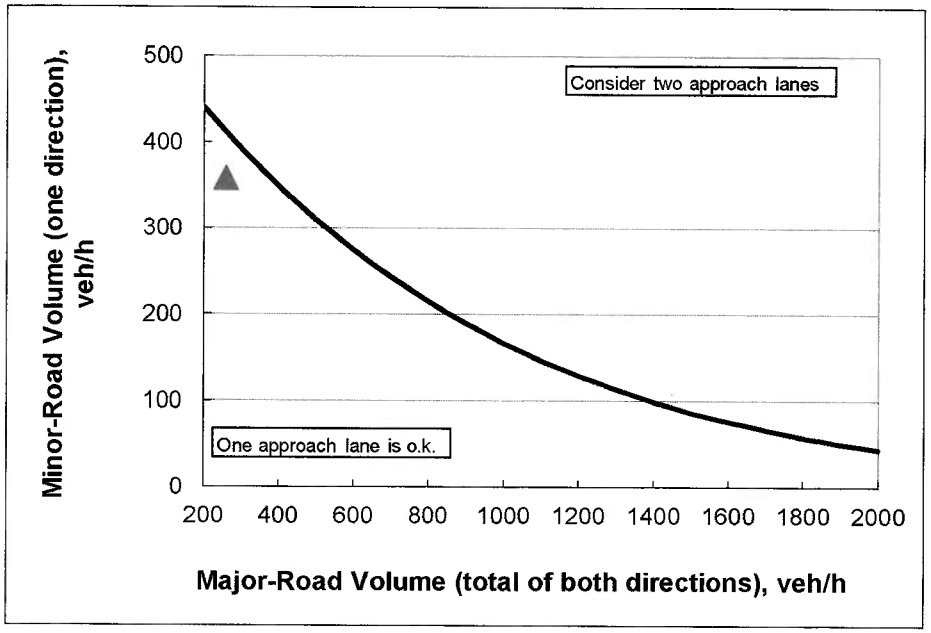
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	412
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

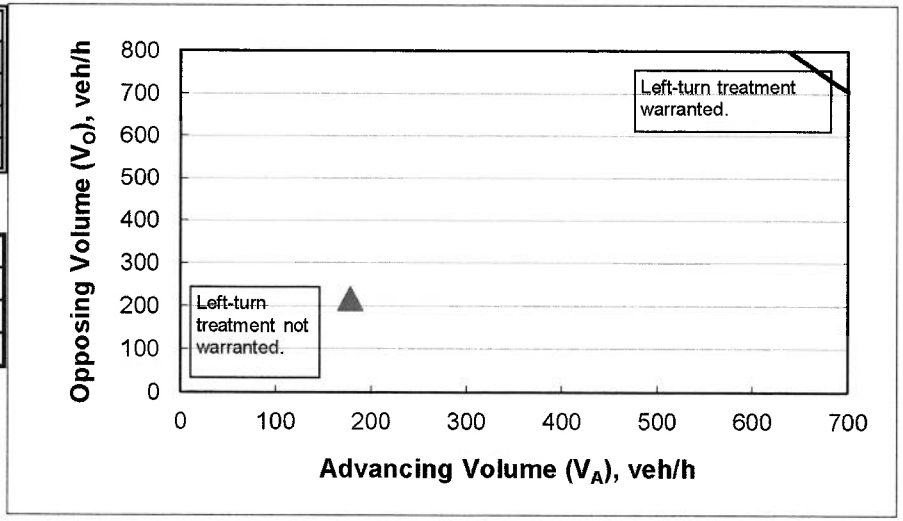
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	178
Opposing volume (V_O), veh/h:	217

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1168
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

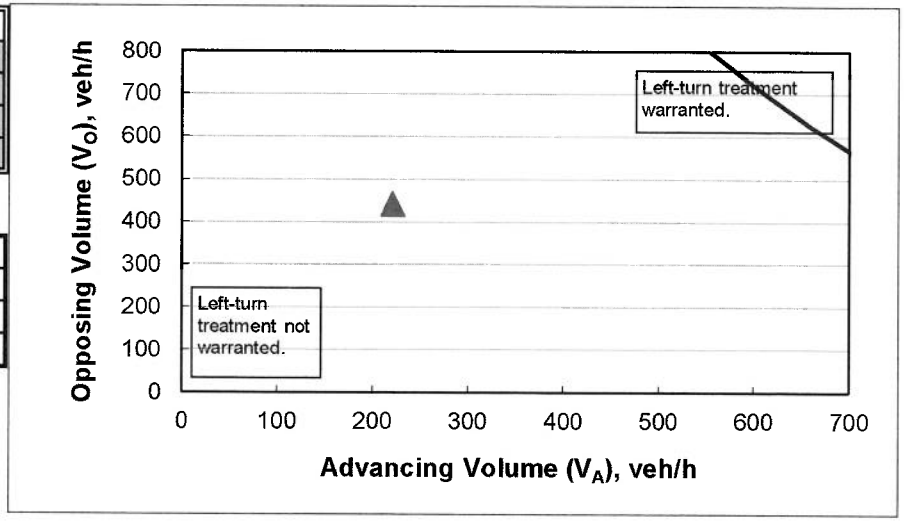
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	222
Opposing volume (V_O), veh/h:	441

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	797
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

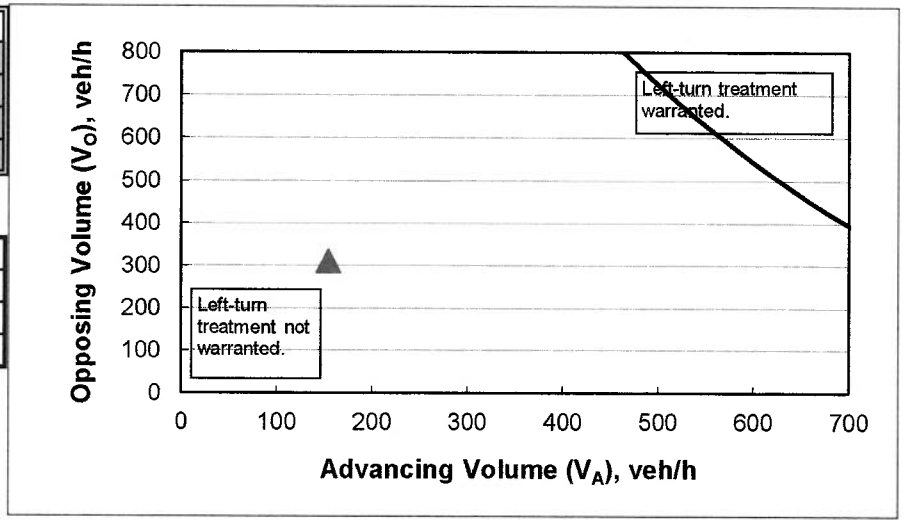
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	154
Opposing volume (V_O), veh/h:	311

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	765
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

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Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

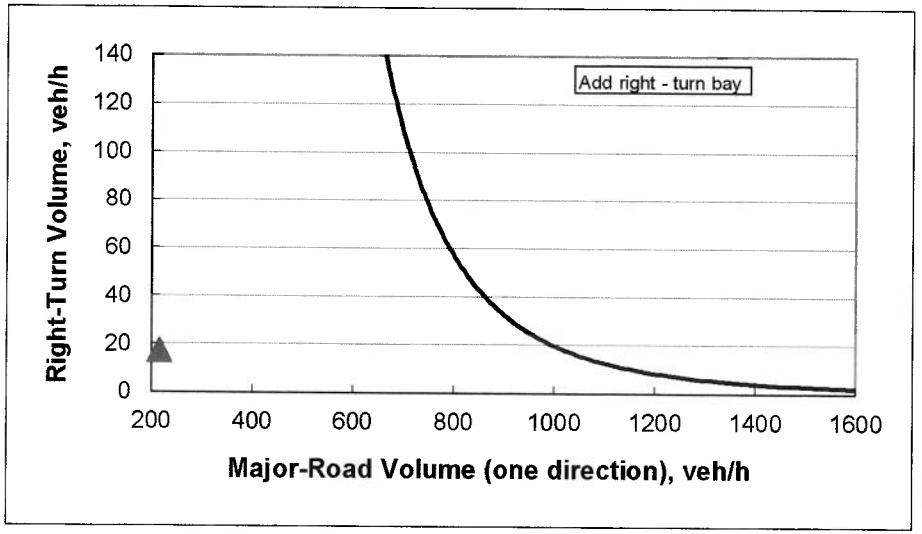
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	217
Right-turn volume, veh/h:	17

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	30797
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

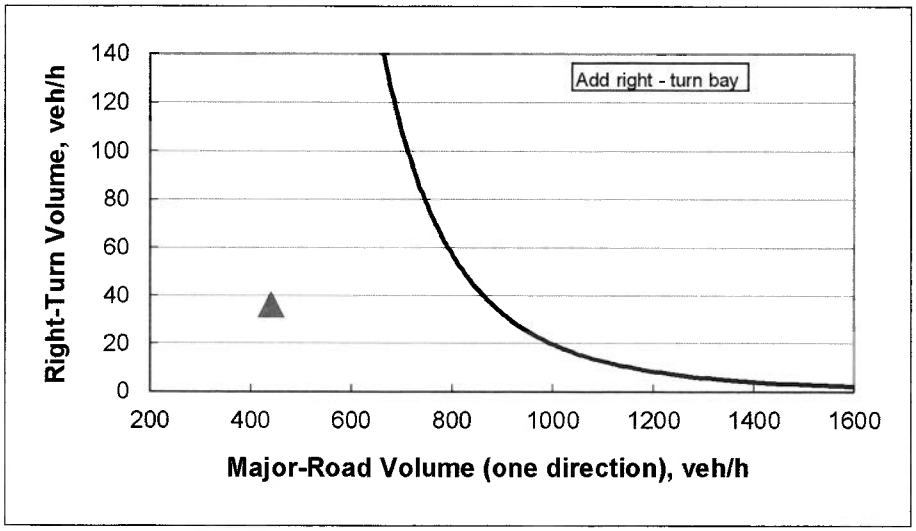
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	441
Right-turn volume, veh/h:	36

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1010
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

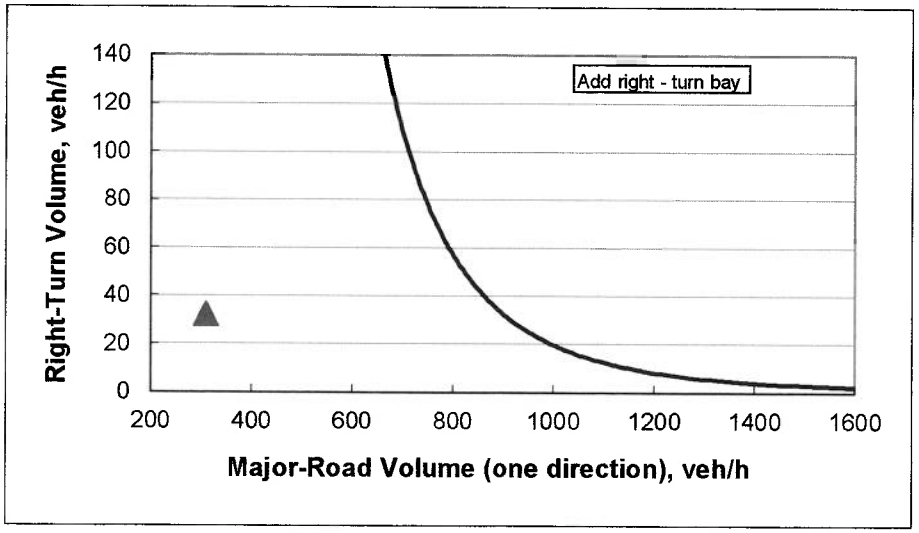
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	311
Right-turn volume, veh/h:	32

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	5436
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	395
Percentage of right-turns on minor road, %:	13%
Minor-road volume (one direction), veh/h:	39

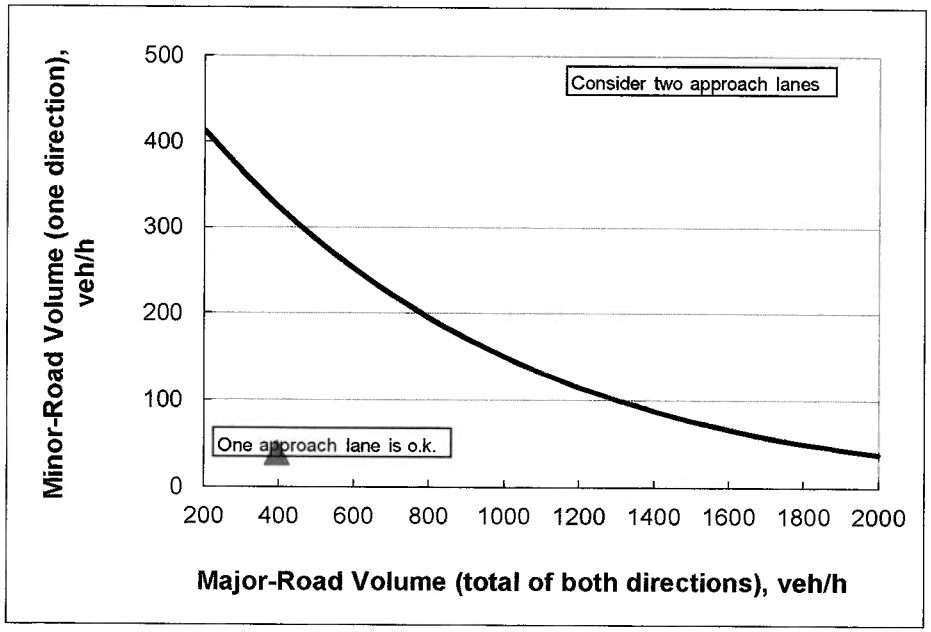
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	325
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	663
Percentage of right-turns on minor road, %:	12%
Minor-road volume (one direction), veh/h:	33

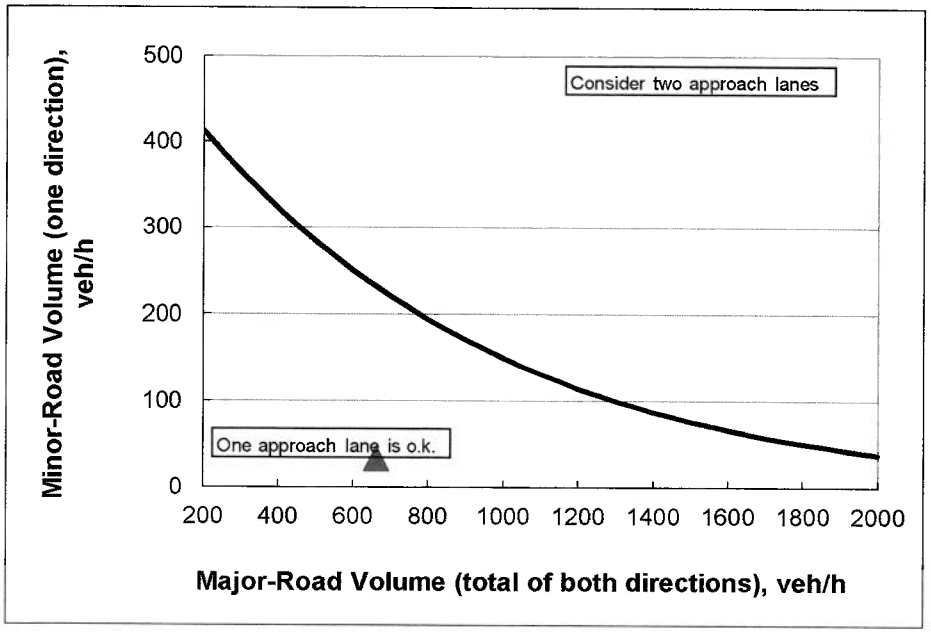
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	231
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	465
Percentage of right-turns on minor road, %:	14%
Minor-road volume (one direction), veh/h:	37

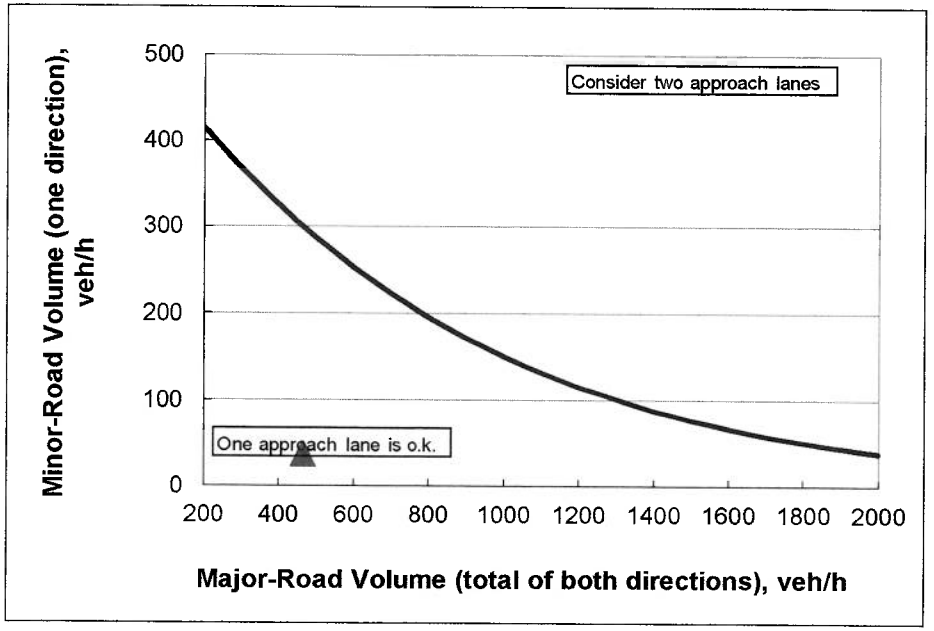
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	299
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Appendix J **Sight Distance Photographs**

Looking Left **Looking Right**





Henry Law Avenue/River Street





River Street/Proposed Site Driveway





Washington Street/Proposed West Site Driveway

Looking Left **Looking Right**





Washington Street/Proposed Middle Site Driveway





Washington Street/Proposed East Site Driveway





Washington Street/River Street