CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date:	**Tuesday, November 10, 2020**
Meeting Time:	**7:00 pm**

1. **CITIZENS' FORUM**
2. **APPROVAL OF THE PRIOR MINUTES**
   - October 27, 2020 Regular Meeting Minutes
3. **OLD BUSINESS**
4. **NEW BUSINESS**

   A. Consideration and acceptance of a Lot Line Adjustment for Mark Houston Dalzell Revocable Living Trust, Mark H. Dalzell, Trustee, Assessor's Map N, Lots 8-1-7 & 8-1-8, zoned R-40, located at Saddle Trail Drive. *(P20-69)

   B. Consideration and acceptance of a Conditional Use Permit for Michael Khavari, (Owner: Karen A. Towle, Trustee & James B. Towle & Karen A. Towle Revocable Trust), Assessor's Map I, Lot 4-A, zoned R-12, located on Leather's Lane. (Proposal is for 40 single family units with 15,383 s.f. of steep slope impact and 12,910 sq. ft. of wetland buffer impacts). *(P20-70)

   C. Consideration and acceptance of a Site Plan for Michael Khavari, (Owner: Karen A. Towle, Trustee and James B. Towle & Karen A. Towle Revocable Trust), Assessor's Map I, Lot 4-A, zoned R-12, and located at Leather's Lane. (Proposal is to develop a 16 acre parcel with a 40 unit detached condominium via TDR). *(P20-71)

5. **STAFF COMMENT**
6. **MEMBER COMMENTS**
7. **ADJOURNMENT**

*Indicates that if the application is accepted for discussion, the public hearing will be held the same evening. Note that some hearings will be continued from one meeting to another and some may be postponed. Since this is only a partial description of the proposal and may change, persons with questions or wishing to see the plans are invited to visit the Planning Office, Monday through Thursday from 8:30 am to 5:30 pm and Friday 8:30 am to 4:00 pm or email Dover-Planning@dover.nh.gov. You may also view materials at www.dover.nh.gov.

CITY OF DOVER

DOVER PLANNING BOARD – MINUTES

Meeting Type:	Regular Meeting, continued
Meeting Location:	City Council Chamber's 288 Central Avenue
Meeting Date:	**Tuesday, October 27, 2020**
Meeting Time:	**7:00 pm**

Members Present: Gina Cruikshank (Chair), Dennis Ciotti (Councilor), Ellen Ianello, Frank Torr, Dave Landry, Dave White, Lisa McGunnigle (Alternate), Tom Clark, Kyle Pimental (Alternate)

Members Not Present (excused): Erin Allgood (Alternate), Jackson Kaspari, Hayley Harmon (Vice Chair),

Members Not Present (un-excused): None

Staff Present: Christopher Parker, Assistant City Manager

Chair G. Cruikshank called the meeting to order at 7:00 p.m. and welcomed new alternate Kyle Pimental. She also noted Lisa McGunnigle would be sitting in for Jackson Kaspari, Kyle Pimental will sit for Hayley Harmon, and Ellen Ianello will act as the Vice Chair.

1. CITIZENS' FORUM

Citizens Forum Open. No one spoke. *Citizens Forum Closed.*

2. APPROVAL OF THE PRIOR MINUTES

October 13, 2020 Regular Meeting Minutes

Motion: F. Torr moved to approve the minutes as presented. Seconded by D. Landry. Vote: U/A

3. OLD BUSINESS

A. Possible vote on the City's proposed Capital Improvements (CIP) FY 2023-2027. The CIP can be found on the City Web Site at www.dover.nh.gov and in the Library, City Clerk's office, and the Planning Department.

Motion: F. Torr moved to remove from the table. Seconded by D. Ciotti. Vote: U/A

C. Parker reviewed the process and gave a summary of the Capital Improvement's Program.

K. Pimental had four comments.

- The Recreation Department along with the public would like the skate park integrated with the softball field and outdoor pool.
- Community trail phase 4 is also in the Recreation plan which should be reviewed to make sure the plans align before the project moves forward.
- Garrison Tower- there are some residents who desire a community garden there so the City should keep that in mind.
- He is also in favor of incorporating climate change with future projects.

F. Torr commented that he is not in favor of the sound barriers. It ruins the scenery.

Motion: E. Ianello moved to recommend the CIP as presented to the City Council. Seconded by D. White. Vote: U/A

4. NEW BUSINESS

A. Consideration and acceptance of a Conditional Use Permit to amend a previously approved Site Plan for DMC Real Estate Holdings, LLC, Assessor's Map H, Lot 33, zoned CM, located at 67 Knox Marsh Road.

DRAFT

(Proposal is to construct an auxiliary 44 parking field and to add two electric car charging stations). *(P18-57A)

C. Parker explained that the applicant is requesting to add an additional parking lot to the Broadview Animal Hospital lot which was previously approved at the January 22, 2019 Planning Board meeting. The additional parking requires a Conditional Use Permit. One of the requirements is to add one electric vehicle charging station for every 10 parking spaces over the allowed maximum. The applicant is requesting a waiver and proposing to provide 2 electric vehicle charging spaces rather than 5 (4.4 are required).

This application was reviewed by the Technical Review Committee on September 24, 2020

Steve Haight, Civilworks, NE, represented the application and discussed the plat.
The animal hospital opened this year and is very busy. That, along with new procedures during COVID create the need for additional parking. Mr. Haight described the plans for grading, drainage, vegetation and lighting.

The conditional use is because they will exceed maximum allowable parking. They are seeking an increase of parking on the property. They are seeking a waiver from the five electric car charging stations that would be required with the granting of the parking. The parking turn-over rate is very high for this business and customers would not utilize the service.

D. Landry needed clarification between how many charging stations are going in vs how many charging ports there will be.

Mr. Haight clarified they are proposing one station or pedestal which will have two ports and be able to charge two cars at once- requiring two parking spaces.

Discussion ensued regarding the kilowatt level being put in to satisfy the regulations vs if it will have a practical use.

Perhaps in the future the applicant should contribute towards a charging station at a better location with higher kilowatts similar to the TRC extra unit fees going towards conservation land.

D. Ciotti asked how much this unit will cost. Mr. Haight did not have a quote- he noted a range from $2500-$7500 for the unit without the cost of infrastructure to install it.

The applicant also explained this charging station will likely never be used. She has an electric car, but charges at night at her home and will not use it at work. No one passing through Dover will use it because it won't charge fast enough to be useful and the clients are not on the premises long enough to make use of it.

Motion: F. Torr moved to accept the application. Seconded by D. White. Vote: U/A

Public hearing opened.
Kevin Cooper, 85 Knox Marsh Rd is an abutter (and previous owner) and noted there is a 6' buffer. He requested a 5' berm with 6' trees so he doesn't see the parking lot. He agreed the additional parking is needed, but do they need 44 spaces?

Cameron McDermitt is one of the owners of the animal hospital. He addressed the abutters comments noting the purchase of the property did not come with stipulations.

Given the setbacks for the drainage, this area is the only location for the parking to be. The parking spaces are needed- even if the addition was not also going up, it is needed now due to COVID regulations.

He confirmed the charging stations are not expected to be used and they would prefer to request a waiver for zero charging stations.

The other owner and doctor noted she is excited to have her business in Dover. They do not need all 44 spaces immediately- they need half now. But they anticipate putting in the addition in the next year or two and it makes sense to do it all now.

No emails or calls were received by the office.
Public Hearing closed.

Mr. Haight addressed the public comment. There are berms proposed. They have no problem putting additional berm in that location and they can add trees as well.

E. Ianello noted the board knows this particular location is not ideal for the charging station, but it may not be feasible to implement a fee in lieu of the charging station for this application to move forward timely. She would not like to eliminate the charging station because it will send a bad message to future applicants.

C. Parker noted a few other applicants have had to provide the charging stations. He said the board could vote to allow a fee in lieu of the charging station for this application. The fee would have to be used for electric charging stations in Dover. He suggested the motion include language that allows the Assistant City Manager to negotiate the fee structure with the applicant.

D. White would like to take another look at this regulation. He thought the regulation was for the residents or business employees/ customers to use- not the public. He is in favor of granting the waiver, but not really in favor of the fee towards funding public stations.

C. Parker noted Chapter 153-21 states a waiver may be granted if the Board finds that
"(1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
(2) Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Motion: T. Clark made a motion that the Board grant the waiver with the staff recommended condition to have two charging stations instead of five or to have zero charging stations and have the applicant pay a financial contribution covering the cost of the two units to be paid to the City to cover costs of other electric charging station fees. Seconded by D. White.

L. McGunnigle mentioned if requiring owners to install these units, does that open up the City for liability? Are people trespassing if they use the chargers? What if people damage the property while there?

D. Ciotti can see having the stations at larger businesses, but not smaller. It should be reviewed what level of charging station we should require to be put in. If the smaller wattage units are not practical, we should not allow them.

Staff believes that the criterion 2 has been met based on the short turn-around time of customers and limited employees on-site, and recommends approval with the applicant adding a note to the plat that the Board granted waiver to Chapter 153-14.D(3)(b) and that the Board found the criteria of Chapter 153-21.A have been met.

F. Torr is not in favor of including the financial contribution. It is totally off-the-cuff and is not part of the ordinance. He is ok with having zero charging stations.

C. Parker added that although he appreciates the board's trust in him to figure out a proper fee, absent any written City guidance, he suggests in this instance the board either vote for zero stations or two stations.

D. Ciotti would prefer a higher wattage station be put in. C. Parker said the board could make that a condition.

T. Clark amended his motion:

Motion: T. Clark made a motion that the Board grant the waiver, based on criteria 1, with the staff recommended condition, to allow zero charging stations instead of five. Seconded by D. White.

E. Ianello stated that will open the door to every future applicant to want the same result and all the work we are doing to benefit the environment will go away.

K. Pimental agreed with E. Ianello.

D. White is in favor of zero stations for this location due to the lengthy discussion and some confusion. It won't send the wrong message. Also, the Planning Board should not be able to dictate the wattage level of a charging station an applicant proposes- that's not in the regulations and beyond board purview.

Vote: 5 to 4 with Pimental, Landry, Ianello and Ciotti opposed.

C. Parker noted the plan is consistent Chapter 153-4 of the Site Review Regulations of the City Code provides for site review by the Planning Board of new construction of various types. Staff recommends approval with the following conditions:

Conditions to be Met Prior of the Signing of Plans:

1. The applicant shall provide:
    a. A digital version of plan set
    b. A CAD file to the satisfaction of the Asset Management Administrator.
    c. Approval from NHDOT regarding driveway permit and if any changes are needed
2. The applicant must revise final plan set to:
    a. Add the owner's signatures to the final plat
    b. Add existing conditions plan
    c. Add LLS and PE signatures and stamps to final plan
    d. Add additional 4' berm and shrubbery along parking lot to satisfaction of Assistant City

Manager

e. Revise plan to remove electric vehicle charging station

Conditions to Be Met Prior to any Construction Activity:

3. A site construction sign with the contact information for the general contractor must be located and approved by the City.

Conditions to Be Met Prior to Occupancy:

4. Any conditions from P18-57
5. Issuance of a certificate of occupancy
6. The applicant shall provide a letter of credit or other form of security acceptable to the City for any unfinished work.

Motion: T. Clark made a motion that the Board approve the application with the staff recommended conditions. Seconded by D. White. Vote: U/A

The Vice Chair noted items B and C would be heard together.

B. Consideration and acceptance of a Conditional Use Permit for Peter Georgakilas, Assessor's Map M, Lot 102-12, zoned R-40, located on Middle Road. (Proposal is for a 13 lot open space subdivision with 875 feet of roadway and drainage, with a wetland buffer impact of 5,808 sq.ft.) *(P20-52)

C. Consideration and acceptance of an Open Space Subdivision for Peter Georgakilas, Assessor's Map M, Lot 102-12, zoned R-40, and located at Middle Road. (Proposal is to construct an 875' roadway to provide access to a 13 lot open space condominium subdivision.) *(P20-51)

C. Parker explained that the applicant proposes to subdivide Dover Tax Map M, Lot 102-12 into 13 residential lots plus an open space lot. The properties will be serviced by municipal water and private septic systems and accessed via a 875' roadway. The necessary drainage and roadway create a wetland buffer impact of 5,808 sf.

This application was reviewed by the Technical Review Committee on September 10. The Conservation Commission reviewed and endorsed the CUP application at its September 14th meeting.

The applicant is requesting three waivers with justification indicated on the application. One is for road grade, one for road length, and one for the 100' external buffer.

Christopher Berry, Berry Surveying and Engineering, represented the application and discussed the plat. Most of the site at the front is open fields and beyond the brook is wooded. The proposal is for an open space subdivision. 60% of the upland will be used for development. Over 70% of the parcel will be preserved. They are trying to keep the development to the previously disturbed portions of the lot.

In an effort to minimize wetlands impacts, they moved the road to the least-impacted option. The development was laid in around that layout of the road. The buffer impact is due to the position of the roadway. The CUP has buffer impact due to the installation of storm water treatment systems. Mr. Berry further explained the drainage proposals.

There is a cemetery on site and the development is worked around it. The cemetery is part of the open space and the buffers remain in place as does full access to it. The cemetery will be added to the maintenance plan of the condo association.

The storm water retention systems are placed in the frontage buffer because of the topography. All the water flows to that area. To reduce the visual impact from Middle Rd, they fit with the landscape and the vegetation proposed is native and will grow to help block the subdivision.

The 50' side buffers are maintained- there will be no construction in those areas and no common areas either. There is a barn structure on an abutting lot and the 100' buffer from it will be maintained.

Total daily traffic volume will add about 120 trips for the whole 13-unit subdivision. AM peak will generate about 10 trips and PM peak about 12 trips. Site distance is no issue and they also meet the intersection distance requirements.

Municipal water will be utilized. Septic will be on-site. The 75' setbacks for those are on the plan.

They are requesting three waivers:

- 100' setback and the proximity of detention systems and treatment cells- Mr. Berry reiterated the reason for this.
- Intersection geometry of the slope- they don't want to cut into the slope- they want to maintain the landscape
- Road length- standard subdivision has a minimum requirement of 500'. They are asking to reduce that because by maintaining the requirement, the development will go deeper into the wetland buffers.

Mr. Berry explained the slope of the road at the entrance for D. Ciotti. The retention pond is 4' deep and the slopes do not require a guardrail.

C. Parker speculated on the closest city sewer to the project for D. Ciotti.

E. Ianello asked if the HOA docs are included in the sale of the property. Yes, each deed will note each property is part of the HOA.

C. Parker confirmed for E. Ianello the reasoning for the 500' roadway regulation was based on a cost analysis for the City based on units. Emergency services might have had a concern if they were not proposing a turn-around.

D. Landry asked if there are any markers proposed to show the property lines.

Mr. Berry noted older subdivisions did not have them, and that is now becoming a problem, so they are proposing monuments at each corner of the lots and the corners of the roadway.

Motion: F. Torr moved to accept the application. Seconded by E. Ianello. Vote: U/A

Public hearing opened.
Todd Black, 19 Emory Ln lives across the street. He is happy the tree line will be maintained.

- Is this the extent of the development on this site, or can it be further developed?
- Will each lot have its own septic?
- Along the front entryway he and his neighbors would love to have some vegetation to block the view.

Emails from Gary Mamigonian and Brendan Driscoll were forwarded to the Board. No calls were received by the office.
Public Hearing closed.

C. Berry addressed the public comment. Future development is tough to answer- this is the practical extent to maintain an open space subdivision. Also, because there is no sewer going in, that will probably limit further development.

Each house will have their own septic system.

The buffer at the front of the property was really enhanced during TRC meetings to ensure the front of the site is buffered, but it will not be a wall of evergreens- there will be a mix.

C. Parker noted he does not think further development would occur on this property.

C. Parker noted there are three votes on this project. The first is on the Conditional Use Permit.

The Wetlands Protection District ordinance provides for Conditional Use Permits to allow impacts to wetlands and wetland buffers if standards related to demonstration of need, avoidance, minimization, and mitigation are met. This proposal is consistent with those standards and staff recommends the Planning Board approve the Conditional Use Permit with the condition that the Board approves P20-51.

Motion: D. White made a motion that the Board approve the Conditional Use Permit with the staff recommended condition. Seconded by F. Torr. Vote: U/A

C. Parker noted Chapter 157-51 states a waiver may be granted if the Board finds that
"(1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
(2) Specific circumstances relative to the subdivision, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Staff believes that the criterion 2 has been met based on the lot layout and condition of the land and private road, and recommends approval with the applicant adding a note to the plat that the Board granted a waiver to Chapter 157-32.G (road grade), 153-33.J (road length), 157-21.F (100' external buffer) and that the Board found the criteria of Chapter 157-51.A have been met.

Motion: D. White made a motion that the Board grant the waiver with the staff recommended condition. Seconded by T. Clark. Vote: U/A

C. Parker noted the plan is consistent Chapter 157-19 of the Land Subdivision Regulations of the City Code provides for open space subdivisions of existing lots. Staff recommends approval with the following conditions:

Conditions to Be Met Prior to Signing of Plans:

1. Provide:
   a. A draft deed with information about the cemetery buffer.
   b. A digital version of plan set
   c. A CAD file to the satisfaction of the Asset Management Administrator.
2. The applicant shall revise the plat to:
   a. Include the PE, CWS, and LLS signature and stamp
   b. Add the owner's signatures to the final plat submitted for signature to be recorded at the Strafford County Registry of Deeds
   c. Revise electrical underground conduit power stubs from handholes for lots 4, 5, and 11 to the satisfaction of the Building Official.
3. The applicant shall provide homeowners association documents to be reviewed and approved by the Assistant City Manager in consultation with the City's General Legal Counsel. Documentation shall include calculation used to determine reserve amount in the treasury, prior to converting ownership and maintenance obligations, including stormwater, road, septic, open space maintenance/ownership, private road requirements, and deed/easement requirements per Section 170.27.2.

Conditions to be Met Prior to Construction Activity:

4. The wetlands buffer placard shall be placed on lot 3.

Conditions to be Met Prior to the Issuance of a Building Permit:

5. The new dwelling units shall be assessed and pay the current water and sewer investment fees in place at the time of application for service.
6. The applicant shall provide a letter of credit or other form of security acceptable to the City for any unfinished work.

Conditions to be Met Prior to Occupancy:

7. Issuance of a Certificate of Occupancy.
8. Documentation that the HOA has been created and is in place.
9. Proof of deed with cemetery buffer information submitted to the satisfaction of the Assistant City Manager.
10. Impact fees per unit shall be paid per the invoice attached to the Notice of Decision

Motion: D. White made a motion that the Board approve the application with the staff recommended conditions. Seconded by L. McGunnigle. Vote: U/A

The Vice Chair noted items D and E would be heard together.

D. Consideration and acceptance of a Conditional Use Permit for Gulf Landing Properties, LLC., Assessor's Map 38, Lot 9-A-2, zoned C, located off Central Avenue. (Proposal is to build a medical rehabilitation facility on a vacant lot with the building, parking, and drainage improvements impacting 14,000 square feet of the 50-foot wetlands buffer and a septic tank closer than 75 feet to a wetland). *(P20-67)

E. Consideration and acceptance of a Site Review for Gulf Landing Properties LLC., Assessor's Map 38, Lot 9-A-2, zoned C, and located at Central Avenue. (Proposal is to construct a three story medical rehabilitation facility/treatment center with a parking lot for visitors and employees). *(P19-85)

DRAFT

C. Parker explained that the applicant proposes a medical withdrawal management facility on Central Ave near Dover Bowl. The secured building is proposed to have 64 beds and 24/7 staff. This is consistent with a variance granted on 9/19/19 to permit a hospital use (a substance abuse treatment facility) with the condition that all state licenses and permits shall be obtained.

The applicant is requesting a Conditional Use Permit to allow a septic tank within the 50' wetland buffer and to allow 14,000 s.f. of wetland buffer impact.

This application was reviewed by the Technical Review Committee on September 24, 2020 and December 12, 2019 (minutes attached). The Conservation Commission reviewed and endorsed the CUP application at its October 13, 2020 meeting.

The applicant is requesting two waivers with justification indicated on the application. One is for site specific soils mapping, and the other is for lighting, the uniformity ratio and spill over.

Christopher Berry, Berry Surveying and Engineering, represented the application and discussed the plat. They will redevelop a roadway to access the new facility which is on an underused lot in the City. The site has been manipulated in the past. There has been construction activity and storage of materials. The original concept for the site was for a mixed-use building with commercial use on the first floor and residential use above. The owner has found a need for this new proposed use of the property. The facility is classified as medical use and the layout will work if the property ever changes hands to another medical use.

This is a low intensity use. Residents will come and mostly stay inside while they receive treatment. Most will not have vehicles. Most traffic will be from medical staff and deliveries. There will be full access via the road to the site and secondary access to the light at Shaw's Plaza. The access road will be milled out, reclaimed and repaved. The entrance to Rte. 108 will have a new stop sign and cross walk.

The architecture is made to look more like a residential structure. Some of the hardscape will resemble the commercial properties in the neighborhood.

A large percentage of the property is in the wetland buffer. The wetlands have a low function value due to previous manipulations of the site. The wetlands are not in their natural state. A lot of the wetland is generated from drainage from the Central Ave area. The applicant aims to enhance the storm water system and enhance the buffer systems by adding vegetation.

Deliveries and dumpster pick up will be in the back of the site. Utilities will be there as well.

The site will sit slightly above the parking lots around it. The potential for ambulance use is low, but they have designated a parking space and loading zone for ambulance.

This facility does not accept walk-ins. People will not come and go from the site. The residents are fully vetted prior to being accepted and will be picked up when ready to leave. There are limited visiting hours.

Dover requires septic to be 50' and 75' away from wetlands. There is sewer on site, but they have to pump up to the main line at Central Ave. A pump chamber (named a septic tank on the plans) is proposed to be on site within the setback to the wetlands. The system will be so deep it will be well below the wetlands system so no chance of problem. It is concrete and water-tight inside and out.

D. Ciotti asked about the layout of the road and if it will have sidewalks. It will be laid out the same way, just repaved. There will not be sidewalks since the residents should not be walking in and out.

Discussion occurred if there should be a right-turn only or if there will not be enough traffic to warrant it.

K. Pimental brought up the parking situation. There is so much parking in that area with the various businesses nearby, he wondered if existing parking could be utilized to reduce the amount of impervious coverage.

Mr. Berry noted this particular use requires 32 spaces. The applicant agreed when he saw the site that there's too much pavement. They spoke with Dover Bowl and agreed to lease 17 spaces from their parking lot to reduce the amount of pavement they needed to add.

E. Ianello expressed her approval of the design of the building.

Motion: E. Ianello moved to accept the application. Seconded by D. Landry. Vote: U/A

Public hearing opened.
No one spoke. No emails or calls were received by the office.
Public Hearing closed.

C. Parker noted there are three votes on this project. The first is on the Conditional Use Permit.

The Wetlands Protection District ordinance provides for Conditional Use Permits to allow impacts to wetlands and wetland buffers if standards related to demonstration of need, avoidance, minimization, and mitigation are met. This proposal is consistent with those standards and staff recommends the Planning Board approve the Conditional Use Permit with the condition that the Board approves P19-85.

Motion: D. White made a motion that the Board approve the Conditional Use Permit with the staff recommended condition. Seconded by T. Clark. Vote: U/A

C. Parker noted Chapter 153-21 states a waiver may be granted if the Board finds that
"(1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
(2) Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Staff believes that the criterion 2 has been met based on the site characteristics, and recommends approval with the applicant adding a note to the plat that the Board granted waivers to Chapter 153-13.A(10) and 153-14.E and that the Board found the criteria of Chapter 153-21.A have been met.

Motion: F. Torr made a motion that the Board grant the waiver with the staff recommended condition. Seconded by D. White. Vote: U/A

C. Parker noted the plan is consistent Chapter 153-4 of the Site Plan Review Regulations of the City Code provides for site review by the Planning Board of new construction of various types. Staff recommends approval with the following conditions:

Conditions to Be Met Prior to the Signing of Plans:

1. The conditional use permit (P20-67) shall be approved.
2. The applicant shall provide the Planning Department a
   a. digital version of the plan
   b. CAD file to the satisfaction of the Asset Management Administrator
   c. Letter to Serve from Eversource
3. The applicant must revise final plan set to:
   a. Add the owner's signatures to the final plan submitted for signature
   b. Add LLS, PE, CWS, Landscape Architect, and Architect signatures and stamps to final plan
   c. Screen the generator and add a note on the location of the portable generator
   d. Ensure
      1. all building elevations match the streetscape provided
      2. the sewer discharge tank has 3' clearance around it.
   e. Add dates and permit numbers to permits as acquired
   f. Address water main and hydrant issues to the satisfaction of the City Engineer and Building Official.
   g. Add green space next to ROW
   h. Address drainage to the satisfaction of the City Engineer.

Conditions to Be Met Prior to any Construction Activity:

4. A site construction sign with the contact information for the general contractor must be located and approved by the City Engineer or Assistant City Manager.

Conditions to Be Met Prior to Issuance of a Building Permit:

5. Provide the classification of the generator
6. The wetlands buffer placards shall be installed.
7. Water and Sewer investment fees shall be paid at time of application for service.

Conditions to Be Met Prior to Occupancy:

8. Issuance of a certificate of occupancy.
9. Impact fees shall be paid per the invoice included with the Notice of Decision.
10. The applicant shall provide a letter of credit or other form of security acceptable to the City for any unfinished work.

Motion: D. White made a motion that the Board approve the application with the staff recommended conditions. Seconded by L. McGunnigle. Vote: U/A

F. Consideration and possible posting of Site Plan Amendments (updating district names and references).

C. Parker noted that with the zoning ordinance change in July, there are some housekeeping aspects within the Site Plan regulations to accomplish. The main focus of the proposed regulations is to replace the eliminated zones with the current ones. Also, there is a portion of the parking lot location regulations that is no longer necessary.

The expectation is that these would be posted now, and then carried forward with amendments, if any, proposed in the spring.

Motion: D. White moved to post the amendments. Seconded by T. Clark. Vote: U/A

5. STAFF COMMENTS

DRAFT

- TRC for Grove Street this week
- Community Trail work continues in the area of Fisher Street.
- One Planning Board meeting in months of November and December
- January board meet and greet is cancelled- a webinar will be put together instead
- Voting information for next Tuesday

6. MEMBER COMMENTS

- F. Torr asked if a sub-committee will be appointed to work on the electric charging station issue. C. Parker suggested it be part of the January workshop.

7. ADJOURNMENT

Motion: E. Ianello made a motion to adjourn at 9:25 p.m. Seconded by D. White. Vote: U/A

DRAFT

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #P20-69

Application Type:	Minor Lot Line Adjustment
Applicant(s):	Mark H Dalzell, Trustee
Owner(s):	Mark Houston Dalzell Revocable Living Trust
Location:	Saddle Trail Drive (Map N, Lots 8-1-7 & 8-1-8)
Meeting Date:	November 10, 2020

INTENT: To adjust the lot lines between two lots. Lot 8-1-7 would increase from approximately 276,460 s.f. to approximately 277,033 s.f. and lot 8-1-8 would decrease from approximately 222,446 s.f. to approximately 221,873 s.f. Tract A is 11,100 s.f +/- to be added to lot 8-1-7 and Tract B is 10,527 s.f. +/- and will be added to lot 8-1-8.

LOTS/UNITS PROPOSED: N/A

AGENDA ITEM #: 4-A

ACREAGE:	Existing:	Proposed:
Lot 8-1-7:	6.4 +/-	6.4 +/-
Lot 8-1-8:	5.1 +/-	5.1 +/-

ZONING DISTRICT: R-40

EXISTING LAND USE: Vacant

PROPOSED LAND USE: N/A

SURROUNDING LAND USE: Residential

ZBA ACTION: None

ATTACHMENTS: Application materials including LLA Plan

APPLICATION IS COMPLETE: Yes

NOTICES SENT: Abutter notices were sent by certified or first class mail to all abutters for this meeting.

PERMITS REQUIRED: None

WAIVERS REQUESTED: None

Summary of Request and Background
The applicant is proposing to adjust the lot line between the two lots moving "Tract A" which is approximately 11,100 s.f. along the river from lot 8-1-8 to lot 8-1-7 and "Tract B" which is approximately 10,527 s.f. from lot 8-1-7 to lot 8-1-8.

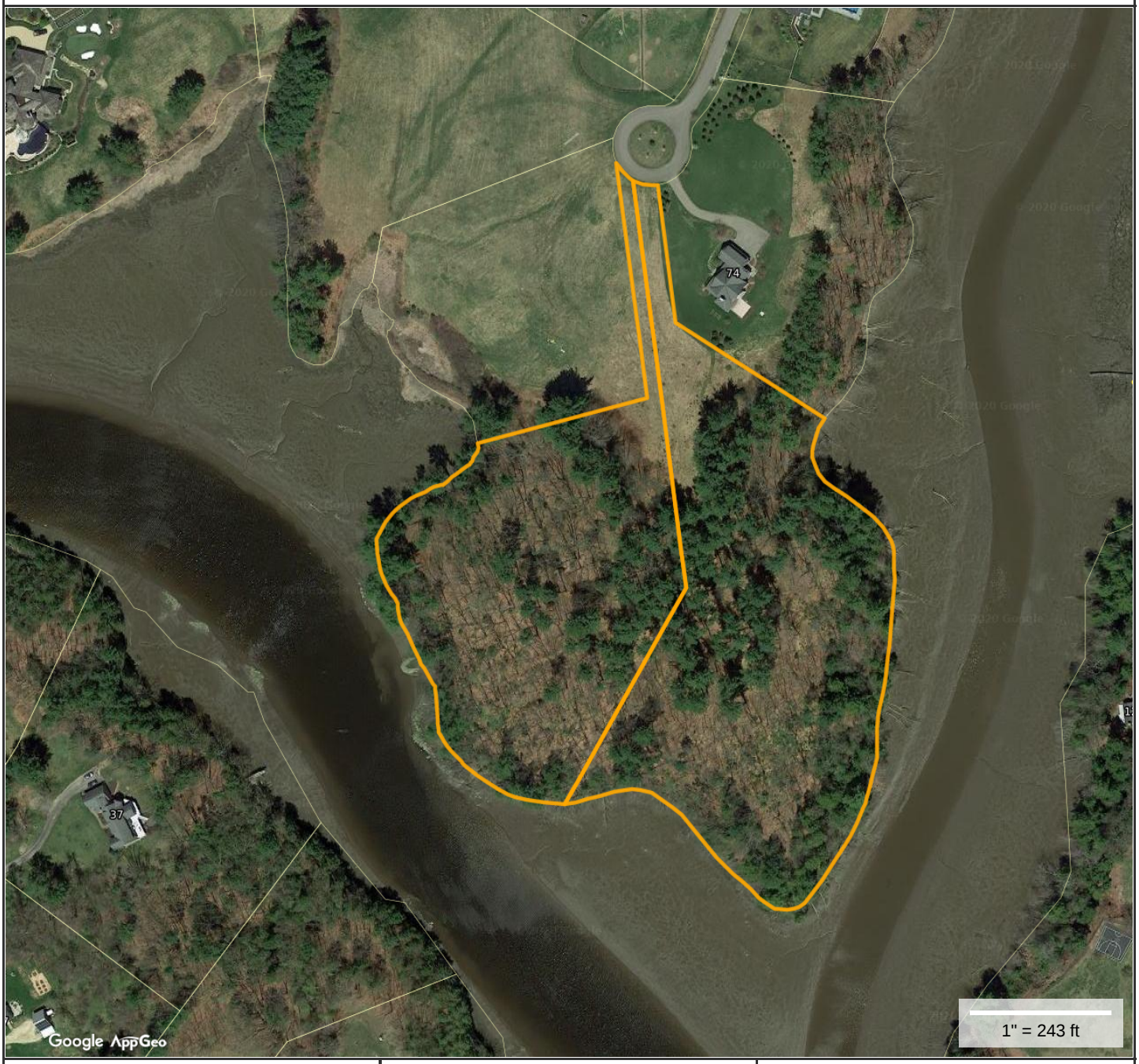
Consistency with Land Use Regulations
Chapter 157-18 of the Land Subdivision Regulations of the City Code provides for the adjustment of existing lot lines between two or more lots. This plan is consistent with those regulations.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board accept the application for review, open the public hearing, and vote to approve the minor lot line adjustment with the following conditions:

Conditions to Be Met Prior to Signing of Plans:

1. The applicant shall provide the Planning Department a
   a. digital version of the plan.
   b. CAD file to the satisfaction of the Asset Management Administrator.
2. The applicant shall revise the plat to:
   a. Add Planning file number P20-69 to the title block
   b. Add signature and stamp of LLS
   c. Add owners' signatures
   d. Revise spelling of river to "Cochecho"
   e. Revise to indicate lot 8-1-7

Saddle Trail Drive



Property Information

Property ID	N0003-000000
Location	73 THREE RIVERS FARM RD
Owner	DALZELL MARK HOUSTON TRUSTEE
Land Use	109

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/20/2020
Data updated Daily

City of Dover, New Hampshire
MINOR LOT LINE ADJUSTMENT APPLICATION

[Revision Date: June 4, 2019]

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

APPLICANT INFORMATION

Name of Applicant: Mark Houston Dalzell Revocable Living Trust Telephone # 310-977-4215
Mark H. Dalzell, Trustee

Address of Applicant: 185 Three Rivers Farm Road Dover, NH 03820

FIRST PROPERTY OWNER AND PARCEL INFORMATION

Name of 1st Property Owner (*if different from applicant*): same Telephone #_____

Address of 1st Property Owner: same

Address of Property: Saddle Trail Drive

Assessor's Map # N Lot(s) # 8-1-7

Property Deed: Book 4542 Page: 23

Zoning District(s) R-40 Overlay District(s) N/A

Size of Existing Parcel (sq. ft.): 276,460 Size of Proposed Parcel (sq. ft.): 277,033

SECOND PROPERTY OWNER AND PARCEL INFORMATION

Name of 2nd Property Owner (*if different from applicant*): same Telephone #_____

Address of 2nd Property Owner: same

Address of Property: Saddle Trail Drive

Assessor's Map # N Lot(s) # 8-1-8

Property Deed: Book 4542 Page: 23

Zoning District(s) R-40 Overlay District(s) N/A

Size of Existing Parcel (sq. ft.): 222,446 Size of Proposed Parcel (sq. ft.): 221,873

THIRD PROPERTY OWNER AND PARCEL INFORMATION N/A

Name of 3rd Property Owner (*if different from applicant*): _____ Telephone #_____

Address of 3rd Property Owner: _____

Address of Property: _____

Assessor's Map # _____ Lot(s) # _____

Property Deed: Book _____ Page: _____

Zoning District(s) _____ Overlay District(s) _____

Size of Existing Parcel (sq. ft.): _____ Size of Proposed Parcel (sq. ft.): _____

[Use additional application form if more than two lots are being adjusted]

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kevin M. McEneaney, LLS McEneaney Survey Associates

Address 24 Chestnut Street Dover, NH 03820 Telephone #: 603-742-0911

Professional License #: Kevin M. McEneaney NH LLS #661 E-mail address: kevin@surveynh.com

CONSERVATION EASEMENT HOLDER (s) N/A

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

Name of 2nd Easement Holder: _____ Telephone #_____

Address 2nd Easement Holder: _____

SIGNATURES

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

Signature of First Property Owner: Mark A. Dalzell, Trustee Date: Oct 20, 2020

Signature of Second Property Owner: Mark A. Dalzell, Trustee Date: Oct 20, 2020

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: Mark A. Dalzell, Trustee Date: Oct 20, 2020

MAD

City of Dover, New Hampshire
LOT LINE ADJUSTMENT SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, 3 weeks prior to the Planning Board meeting. Abutter/Notice Fees will be invoiced and are due 28 hours prior to Planning Board.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Mark Houston Dalzell Revocable Living Trust File Number: P20-

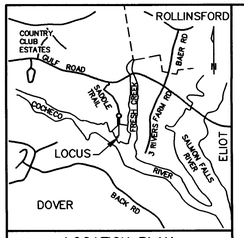
PROPERTY LOCATION: Saddle Trail Drive Tax Map: N Lot: 8-1-7 and Lot: 8-1-8

	Where/How Provided	Reviewed
1. Completed and signed Application form	x	
2. Plan Review Fees are provided	x	
3. Electronic copy of the surveyed plat layout	x	
4. Electronic copy of supplementary materials and application	x	
5. Fifteen copies of LLA plan w/scale of not less than 1"=50' or 1"=100' for larger adjustments. Plans shall contain the following items as appropriate:	x	
Location map at appropriate scale	x	
Planning File #	x	
Date, north arrow and scale	x	
Names of all abutting property owners	x	
Name and address of owners	x	
Signature & stamp of NH licensed land surveyor	x	
Zoning District boundaries, including any special or overlay districts	N/A	
Location of Conservation District areas	N/A	
Location, names and widths of existing and streets, including pavement widths, grades, curbs and crosswalks	x	
Location and widths of existing & proposed easements & right of ways	N/A	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	x	
Existing and proposed lot areas in square feet	x	
Existing and proposed buildings and structure locations	N/A	
Minimum building setbacks or build to lines on all lots	x	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	x	
Location, material and size of existing and proposed permanent monuments	x	
All applicable Dover Common Subdivision notes	x	

REVIEWED BY: _____ DATE_____

P20-69 **Saddle Trail Drive**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
N0008-001000	SADDLE TRAIL DR	BONTERRA FARMS LLC &	OTHER TWF OWNERS W/ APPURTENANT RIGHTS	31 SADDLE TRAIL DR	DOVER	NH	03820
N0008-001006	74 SADDLE TRAIL DR	GORMAN TIMOTHY	GORMAN LINDA M	74 SADDLE TRAIL DR	DOVER	NH	03820-5120
N0008-001008	SADDLE TRAIL DR	DALZELL MARK HOUSTON TRUSTEE	DALZELL MARK HOUSTON REVOCABLE LIVING TR	185 THREE RIVERS FARM RD	DOVER	NH	03820
N0008-001009	SADDLE TRAIL DR	MCKENNA MARTIN J JR & MARLENE A TRUSTEES	MCKENNA MARTIN JR AND MARLENE REVOCABLE	17 LITTLEWORTH RD	DOVER	NH	03820-4313
N0008-001010	31 SADDLE TRAIL DR	BONTERRA FARMS LLC		31 SADDLE TRAIL DR	DOVER	NH	03820
N0008-001007	SADDLE TRAIL DR	DALZELL MARK HOUSTON TRUSTEE	DALZELL MARK HOUSTON REVOCABLE LIVING TR	185 THREE RIVERS FARM ROAD	DOVER	NH	03820
N0008-001000	SADDLE TRAIL DR	BONTERRA FARMS LLC &	OTHER TWF OWNERS W/ APPURTENANT RIGHTS	31 SADDLE TRAIL DR	DOVER	NH	03820
N0008-001006	74 SADDLE TRAIL DR	GORMAN TIMOTHY	GORMAN LINDA M	74 SADDLE TRAIL DR	DOVER	NH	03820-5120
N0008-001007	SADDLE TRAIL DR	DALZELL MARK HOUSTON TRUSTEE	DALZELL MARK HOUSTON REVOCABLE LIVING TR	185 THREE RIVERS FARM ROAD	DOVER	NH	03820
N0008-001009	SADDLE TRAIL DR	MCKENNA MARTIN J JR & MARLENE A TRUSTEES	MCKENNA MARTIN JR AND MARLENE REVOCABLE	17 LITTLEWORTH RD	DOVER	NH	03820-4313
N0008-001010	31 SADDLE TRAIL DR	BONTERRA FARMS LLC		31 SADDLE TRAIL DR	DOVER	NH	03820
N0008-001008	SADDLE TRAIL DR	DALZELL MARK HOUSTON TRUSTEE	DALZELL MARK HOUSTON REVOCABLE LIVING TR	185 THREE RIVERS FARM RD	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES	KEVIN M. MCENEANEY LLS	24 CHESTNUT STREET	DOVER	NH	03820



LOCATION PLAN
(NO SCALE)

REFERENCE PLANS:

1.) "OPEN SPACE SUBDIVISION" (WITH COMMERCIAL COMPONENT) FOR WOODWIND FARMS, LLC – TAX ASSESSORS MAP N, LOT 8–1, GULF ROAD, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 100'; DATED: JULY 17, 2007, REVISED THROUGH 2/12/08; BY: DOUCET SURVEY, INC. RECORDED S.C.R.D. PLAN 93–55 AND 93–56.

2.) LOT LINE ADJUSTMENT FOR WOODWIND FARMS, LLC – TAX ASSESSORS MAP N, LOTS 8–1–4, 8–1–5 & 8–1–6, GULF ROAD, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 40'; DATED: JANUARY 28, 2008, REVISED THROUGH 2/25/08; BY: DOUCET SURVEY, INC. RECORDED S.C.R.D. PLAN 93–68.

3.) BOUNDARY LINE ADJUSTMENT PLAN FOR WOODWIND FARMS, LLC (TAX MAP N, LOTS 8 & 8–1–10), GULF ROAD, DOVER, NEW HAMPSHIRE (CITY OF DOVER PLANNING FILE #P10–52). SCALE: 1" = 50'; DATED: MARCH 1, 2011, REVISED THROUGH 06/06/11; BY: DOUCET SURVEY, INC. RECORDED S.C.R.D. PLAN 101–101.

4.) TIDE WATER FARMS SUBDIVISION – LAND OF WOODWIND FARMS, LLC (TAX MAP N, LOT 8), GULF ROAD, DOVER, NEW HAMPSHIRE (CITY OF DOVER PLANNING FILE #P10–51). SCALE: 1" = 50'; DATED: DECEMBER 1, 2010, REVISED THROUGH 06/06/11; BY: DOUCET SURVEY, INC. RECORDED S.C.R.D. PLANS 101–99 & 101–100.

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	35°48'31"	64.00'	40.00'	39.35'	S80°03'33"E
C2	38°11'00"	175.00'	116.62'	114.48'	N11°07'44"E
C3	35°48'31"	64.00'	40.00'	39.35'	S44°15'02"E

No.	Bearing	Distance
L1	N66°13'39"E	40.88'
L2	S43°49'32"E	19.21'
L3	S78°36'53"E	27.03'
L4	N87°32'09"E	37.38'
L5	S74°36'43"W	37.76'

NOTES:

1.) OWNER OF RECORD:
N / 8–1–7 MARK HOUSTON DALZELL, TRUSTEE
MARK HOUSTON DALZELL REVOCABLE LIVING TRUST
N / 8–1–8 185 THREE RIVERS FARM ROAD
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOLUME 4542, PAGE 23

2.) N / 8–1–7 – DENOTES TAX MAP AND PARCEL NUMBER.

OWNER SIGNATURE

3.) THE INTENT OF THIS PLAN IS TO ADJUST THE BOUNDARIES OF PARCEL N / 8–1–7 WITH PARCEL N / 8–1–8 AS SHOWN. TRACT A (11,100 S.F.±) IS TO BE ADDED TO PARCEL N / 8–1–7, TRACT B (10,527 S.F.) IS TO BE ADDED TO PARCEL N / 8–1–8.

4.) PARCEL AREAS:

PARCEL	EXISTING AREA	PROPOSED AREA
N / 8–1–7	276,460 S.F.± (6.4 Ac.±)	277,033 S.F.± (6.4 Ac.±)
N / 8–1–8	222,446 S.F.± (5.1 Ac.±)	221,873 S.F.± (5.1 Ac.±)

4.) THE PARCELS ARE LOCATED WITHIN THE RURAL RESIDENTIAL (R–40) DISTRICT.
DIMENSIONAL REQUIREMENTS:
MINIMUM LOT SIZE = 40,000 S.F.
MINIMUM LOT COVERAGE = 10 PERCENT
MINUMUM FRONTAGE = 150 FEET
BUILDING SETBACK REQUIREMENTS
FRONT = 40 FEET
SIDE = 25 FEET
REAR = 30 FEET
MAXIMUM BUILDING HEIGHT = 35 FEET
* SUBDIVISION WAS APPROVED UNDER THE OPEN SPACE SUBDIVISION REQUIREMENTS APPLICABLE AT THE TIME, SEE REFERENCE PLAN FOR FURTHER INFORMATION.
ZONING OVERLAY DISTRICTS:
170–27. CONSERVATION DISTRICT
170–27.1. WETLAND PROTECTION DISTRICT.
170–28.1. RIVERFRONT RESIDENTIAL OVERLAY DISTRICT.

5.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED FEBRUARY 17, 2020. VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED FEBRUARY 17, 2020.

6.) PORTIONS THE SUBJECT PARCELS ARE LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE A (BASE FLOOD ELEVATIONS NOT DETERMINED); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANEL 0330; SUFFIX E; MAP NUMBER 33017C0330E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY OF NEW ENGLAND DURING FEBRUARY 2020 WITH AN ERROR OF CLOSURE NOT GREATER THAN 1 IN 10,000.

8.) A DRIVEWAY EASEMENT OVER TRACT B IN FAVOR OF LOT N / 8–1–7 WILL BE CREATED.

9.) THE PARCELS ARE SUBJECT TO THE NEW HAMPSHIRE SHORELAND WATER QUALITY PROTECTION ACT (SWQPA).

10.) LIST OF VARIANCES, SPECIAL EXCEPTIONS, OR CONDITIONAL USE PERMITS.
PER CORRESPONDANCE WITH DOVER OFFICE OF PLANNING & COMMUNITY DEVELOPMENT ON OCTOBER 20, 2020; "WE DO NOT HAVE ANY RECORD OF VARIANCES, SPECIAL EXCEPTIONS OR CUP'S FOR THESE LOTS."

N / 20–5
PAUL F. MALONEY & MARGERY T. MALONEY, TRUSTEES
THE MALONEY FAMILY REVOCABLE TRUST OF 2012
37 MALLARD LANE
DOVER, NH 03820
4557 / 693

REF. PLAN #1
00°23'23"
NH STATE PLANE NAD 83 – GPS OBS.

M / 1–1
WILLIAM H. LAITINEN
VALERIA S. LAITINEN
220 BACK ROAD
DOVER, NH 03820
4506 / 218

M / 1
WILLIAM H. LAITINEN
VALERIA S. LAITINEN
220 BACK ROAD
DOVER, NH 03820
4506 / 218

M / 1–2
STATE OF NEW HAMPSHIRE
FISH AND GAME DEPARTMENT
11 HAZEN DRIVE
CONCORD, NH 03301
3887 / 779

650'± ALONG HIGHEST OBSERVABLE TIDE LINE OF THE COCHECO RIVER
COCHECO RIVER EBB TIDAL FLOOD
N02°10'05"E 514.17' SURVEY TIE
I.R.(tbs)
I.R.(fnd)
I.R.(set)
G.B.(fnd)
TRACT A
N71°34'57"W 164.76' SURVEY TIE
L1
L2
L3
L4
L5
NEW LOT LINES
N63°45'13"E 106.69'
N28°47'24"W 111.97'
LOT LINE TO BE ABANDONED
N28°47'24"E 266.51'
N62°15'40"W 396.62' SURVEY TIE
N07°57'49"W 313.07'
TRACT B (SEE NOTE #8)
N07°57'49"W 209.77'
NEW LOT LINE
BUILDING SETBACK LINES PER APPROVED SUBDIVISION PLANS (typ)
C1
C2
C3
N74°37'09"E 262.54'
N07°57'49"W 381.70'
N07°57'49"W 346.93'
EXISTING DRIVEWAY EASEMENT IN FAVOR OF LOT N/8–1–8 (SEE REFERENCE PLAN #1)
223.58' S07°57'49"E
265.90' S38°06'26"E
SURVEY TIE S02°31'19"W 802.01'
1530'± ALONG HIGHEST OBSERVABLE TIDE LINE OF FRESH CREEK AND THE COCHECO RIVER
100.0' CITY OF DOVER CONSERVATION AREA
FRESH CREEK EBB TIDAL FLOOD

N / 8–1–8
EXISTING LOT AREA
222,446 S.F.±
5.1 Ac.±
NEW LOT AREA
221,873 S.F.±
5.1 Ac.±

N / 8–1–8
EXISTING LOT AREA
276,460 S.F.±
6.4 Ac.±
NEW LOT AREA
277,033 S.F.±
6.4 Ac.±

N / 8–1–9
MARTIN J. MCKENNA, JR. & MARLENE A. MCKENNA, TRUSTEES
MARTIN J. MCKENNA, JR. AND MARLENE A. MCKENNA REVOCABLE LIVING TRUST
17 LITTLEWORTH ROAD
DOVER, NH 03820
4356 / 7

I.R.(fnd) N – 252508.19 E – 1204724.67

N / 8–1–6
TIMOTHY GORMAN
LINDA M. GORMAN
74 SADDLE TRAIL DRIVE
DOVER, NH 03820
4703 / 130

N / 8–1
OPEN SPACE
BONTERRA FARMS LLC
OTHER TWF OWNERS W/ APPURTENANT RIGHTS
31 SADDLE TRAIL DRIVE
DOVER, NH 03820
4582 / 497

SADDLE TRAIL DRIVE (PRIVATE; 50' WIDE R.O.W.)

G.B.(fnd) N – 252489.32 E – 1204994.74

N / 4
MARK HOUSTON DALZELL, TRUSTEE
MARK HOUSTON DALZELL REVOCABLE LIVING TRUST
185 THREE RIVERS FARM ROAD
DOVER, NH 03820
4518 / 186

LEGEND

I.R. (set) – IRON ROD W/ PLASTIC I.D. CAP (SET)
I.R.(tbs) – IRON ROD TO BE SET
I.R.(fnd) – IRON ROD (FOUND)
G.B.(fnd) – GRANITE BOUND FOUND
S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

20–2268	LLADJ	20–02	33–35
PROJECT NO	TYPE	FIELDBOOK & PAGES	

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

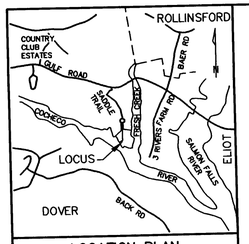
LOT LINE ADJUSTMENT PLAN
PREPARED FOR
MARK HOUSTON DALZELL REVOCABLE TRUST
TAX MAP N, LOT Nos. 8–1–7 & 8–1–8
SADDLE TRAIL DRIVE
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF	FILE: MSA\2268\DWG\20–2268
SCALE: 1" = 50'	DATE: OCTOBER 20, 2020

50 25 0 25 50 100 150 200

STATE OF NEW HAMPSHIRE No. 661 KEVIN M. McENEANEY LICENSED LAND SURVEYOR

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742–0911
SURVEYING – PLANNING – CONSULTING



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NOTES:

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N / 8–1–7 — MARK HOUSTON DALZELL, TRUSTEE
MARK HOUSTON DALZELL REVOCABLE LIVING TRUST
N / 8–1–8 — 185 THREE RIVERS FARM ROAD
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOLUME 4542, PAGE 23

2.) N / 8–1–7 – DENOTES TAX MAP AND PARCEL NUMBER.

OWNER SIGNATURE

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ZONING OVERLAY DISTRICTS:
170–27. CONSERVATION DISTRICT
170–27.1. WETLAND PROTECTION DISTRICT.
170–28.1. RIVERFRONT RESIDENTIAL OVERLAY DISTRICT.

5.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED FEBRUARY 17, 2020. VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED FEBRUARY 17, 2020.

6.) PORTIONS THE SUBJECT PARCELS ARE LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE A (BASE FLOOD ELEVATIONS NOT DETERMINED); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 330145; PANEL 0330; SUFFIX E; MAP NUMBER 33017C0330E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY OF NEW ENGLAND DURING FEBRUARY 2020 WITH AN ERROR OF CLOSURE NOT GREATER THAN 1 IN 10,000.

8.) A DRIVEWAY EASEMENT OVER TRACT B IN FAVOR OF LOT N / 8–1–7 WILL BE CREATED.

9.) THE PARCELS ARE SUBJECT TO THE NEW HAMPSHIRE SHORELAND WATER QUALITY PROTECTION ACT (SWQPA).

10.) LIST OF VARIANCES, SPECIAL EXCEPTIONS, OR CONDITIONAL USE PERMITS.
PER CORRESPONDANCE WITH DOVER OFFICE OF PLANNING & COMMUNITY DEVELOPMENT ON OCTOBER 20, 2020; "WE DO NOT HAVE ANY RECORD OF VARIANCES, SPECIAL EXCEPTIONS OR CUP'S FOR THESE LOTS."

11.) VERTICAL DATUM IS NAVD88. CONTOUR INTERVAL IS 2'. CONTOUR LINES ARE TAKEN FROM GRANIT.UNH.EDU DATABASE.

N / 20–5
PAUL F. MALONEY & MARGERY T. MALONEY, TRUSTEES
THE MALONEY FAMILY REVOCABLE TRUST OF 2012
37 MALLARD LANE
DOVER, NH 03820
4557 / 693

REF. PLAN #1
S02°31'19"W 802.01'
NH STATE PLANE NAD 83 – GPS OBS.

M / 1–1
WILLIAM H. LAITINEN
VALERIA S. LAITINEN
220 BACK ROAD
DOVER, NH 03820
4506 / 218

M / 1
WILLIAM H. LAITINEN
VALERIA S. LAITINEN
220 BACK ROAD
DOVER, NH 03820
4506 / 218

M / 1–2
STATE OF NEW HAMPSHIRE
FISH AND GAME DEPARTMENT
11 HAZEN DRIVE
CONCORD, NH 03301
3887 / 779

N / 4
MARK HOUSTON DALZELL, TRUSTEE
MARK HOUSTON DALZELL REVOCABLE LIVING TRUST
185 THREE RIVERS FARM ROAD
DOVER, NH 03820
4518 / 186

N / 8–1–9
MARTIN J. MCKENNA, JR. & MARLENE A. MCKENNA, TRUSTEES
MARTIN J. MCKENNA, JR. AND MARLENE A. MCKENNA REVOCABLE LIVING TRUST
17 LITTLEWORTH ROAD
DOVER, NH 03820
4356 / 7

N / 8–1
OPEN SPACE
BONTERRA FARMS LLC
OTHER TWF OWNERS W/ APPURTENANT RIGHTS
31 SADDLE TRAIL DRIVE
DOVER, NH 03820
4582 / 497

N/8–1–6
TIMOTHY GORMAN
LINDA M. GORMAN
74 SADDLE TRAIL DRIVE
DOVER, NH 03820
4703 / 130

N/8–1–8
EXISTING LOT AREA
222,446 S.F.±
5.1 Ac.±
NEW LOT AREA
221,873 S.F.±
5.1 Ac.±

N/8–1–8
EXISTING LOT AREA
276,460 S.F.±
6.4 Ac.±
NEW LOT AREA
277,033 S.F.±
6.4 Ac.±

COCHECO RIVER EBB TIDAL FLOOD
FRESH CREEK EBB TIDAL FLOOD
SADDLE TRAIL DRIVE (PRIVATE; 50' WIDE R.O.W.)
TRACT A
TRACT B (SEE NOTE #8)
N02°10'05"E 514.17' SURVEY TIE
N74°37'09"E 262.54'
N28°47'24"E 286.51'
N52°15'40"W 396.62' SURVEY TIE
N07°57'49"W 381.70'
N07°57'49"W 346.93'
N07°57'49"W 313.07'
N07°57'49"W 209.77'
S07°57'49"E 223.58'
S59°06'26"E 265.90'
N63°45'13"E 105.59'
S02°31'19"W 802.01' SURVEY TIE
I.R.(tbs)
I.R.(fnd)
I.R.(set)
G.B.(fnd)
LOT LINE TO BE ABANDONED
NEW LOT LINES
NEW LOT LINE
EXISTING DRIVEWAY EASEMENT IN FAVOR OF LOT N/8–1–8 (SEE REFERENCE PLAN #1)
BUILDING SETBACK LINES PER APPROVED SUBDIVISION PLANS (typ)
I.R.(fnd) N – 252508.19 E – 1204724.67
G.B.(fnd) N – 252489.33 E – 1204994.74
1636'± ALONG HIGHEST OBSERVABLE TIDE LINE OF FRESH CREEK AND THE COCHECO RIVER
CITY OF DOVER CONSERVATION AREA
-0- 2 10 20 22 24 25 26 28 30 32 34 40 42 44

TOPOGRAPHIC PLAN

LEGEND
I.R. (set) – IRON ROD W/ PLASTIC I.D. CAP (SET)
I.R.(tbs) – IRON ROD TO BE SET
I.R.(fnd) – IRON ROD (FOUND)
G.B.(fnd) – GRANITE BOUND FOUND
S.F. – SQUARE FEET
Ac. – ACRE
(TYP.) – TYPICAL
± – MORE OR LESS
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

20–2268	LLADJ	20–02	33–35
PROJECT NO	TYPE	FIELDBOOK & PAGES	

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 661 KEVIN M. McENEANEY SEAL

LOT LINE ADJUSTMENT PLAN
PREPARED FOR
MARK HOUSTON DALZELL REVOCABLE TRUST
TAX MAP N, LOT Nos. 8–1–7 & 8–1–8
LOTS 7 & 8 SADDLE TRAIL DRIVE
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF	FILE: MSA\2268\DWG\20–2268
SCALE: 1" = 50'	DATE: OCTOBER 20, 2020

50 25 0 25 50 100 150 200

McENEANEY SURVEY ASSOCIATES of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742–0911
SURVEYING – PLANNING – CONSULTING

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #P20-70

Application Type:	Conditional Use Permit
Applicant(s):	Michael Khavari
Owner(s):	Michael Khavari
Location:	Leathers Lane (Assessor's Map I, Lot 4-A)
Meeting Date:	November 11, 2020

INTENT: To construct a 40 unit development through TDR and impact 15,383 s.f. of steep slopes and 12,910 s.f. of wetland buffer.

LOTS/UNITS PROPOSED: 40

AGENDA ITEM: # 4-B

ACREAGE: 15.9 acres

ZONING DISTRICT: R-12

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Residential

SURROUNDING LAND USE: Residential and Bellamy River

ZBA ACTION: None

ATTACHMENTS:

- Site Plan Application and Materials and TRC minutes from 10/8/20 and 9/17/20 and Conservation Commission minutes from 10/13/20

APPLICATION IS COMPLETE: Yes

NOTICES SENT: Abutter notices were sent by verified or first class mail to all abutters for this meeting

PERMITS REQUIRED: CUP, NOI, SWPPP

WAIVER REQUESTED: None

Summary of Request and Background
The Board voted to sell the applicant 12 units at their meeting on January 28, 2020 meeting, a maximum of 45 units. Now that the applicant has finished the engineering design plans, they are proposing 40 units (thus buying 7 units which will be limited to 1,400 s.f.).

The units would be served by private sewer via an easement and public water. The streets are intended to be private.

The Technical Review Committee reviewed the application at their September 17 and October 8 TRC meetings.

The Conservation Commission endorsed this project with the recommendation "that the plan be modified to change to a 2:1 side slope on the road and add a guardrail in the area of impact G and insure that the area within 400 feet of the river be maintained as undisturbed in perpetuity". The applicant has revised the plans since then to address that recommendation.

The applicant has provided a written narrative explaining how they meet the criteria of the conditional use permits for the Conservation District including how the avoid, minimize, mitigate, and the efficacy of the soil erosion and sedimentation control plan. The narrative, paired with the verbal description at the Conservation Commission meeting exemplifies how the design has changed since the first proposal to meet the CUP criteria.

Consistency with Land Use Regulations
The Wetlands Protection District ordinance provides for Conditional Use Permits to allow impacts to wetlands and wetland buffers if standards related to demonstration of need, avoidance, minimization, and mitigation are met. This proposal is consistent with those standards.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board accept the item for review, open the public hearing, table the public hearing, and continue this item until December 15, 2020 so that a site walk can occur before then.

Leathers Lane

Property Information

Property ID	I0004-A00000
Location	LEATHERS LN
Owner	TOWLE KAREN A TRUSTEE
Land Use	131

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/20/2020
Data updated Daily

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #P20-71

Application Type:	TDR Site Plan
Applicant(s):	Michael Khavari
Owner(s):	Michael Khavari
Location:	Leathers Lane (Assessor's Map I, Lot 4-A)
Meeting Date:	November 11, 2020

INTENT: To create a 40 unit private condominium site-plan with a main road and 3 spurs. Previous TDR request was approved up to 45 units.

LOTS/UNITS PROPOSED: 40

AGENDA ITEM: # 4-C

ACREAGE: 15.9 acres

ZONING DISTRICT: R-12

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Residential

SURROUNDING LAND USE: Residential and Bellamy River

ZBA ACTION: None

ATTACHMENTS:

- Site Plan Application and Materials and TRC minutes from 10/8/20 and 9/17/20 and Conservation Commission minutes from 10/13/20

APPLICATION IS COMPLETE: Yes

NOTICES SENT: Abutter notices were sent by verified or first class mail to all abutters for this meeting

PERMITS REQUIRED: CUP, NOI, SWPPP

WAIVER REQUESTED: None

Summary of Request and Background
The Board voted to sell the applicant 12 units at their meeting on January 28, 2020 meeting, a maximum of 45 units. Now that the applicant has finished the engineering design plans, they are proposing 40 units (thus buying 7 units which will be limited to 1,400 s.f.).

The units would be served by private sewer via an easement and public water. The streets are intended to be private.

The Technical Review Committee reviewed the application at their September 17 and October 8 TRC meetings.

The Conservation Commission endorsed this project with the recommendation "that the plan be modified to change to a 2:1 side slope on the road and add a guardrail in the area of impact G and insure that the area within 400 feet of the river be maintained as undisturbed in perpetuity". The applicant has revised the plans since then to address that recommendation.

Consistency with Land Use Regulations
Chapter 153-4 of the Site Review Regulations of the City Code provides for site review by the Planning Board of new construction of various types. This plan is consistent with those regulations.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board accept the item for review, open the public hearing, table the public hearing, and continue this item until December 15, 2020 so that a site walk can occur before then.

Leathers Lane

Property Information

Property ID	I0004-A00000
Location	LEATHERS LN
Owner	TOWLE KAREN A TRUSTEE
Land Use	131

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/20/2020
Data updated Daily

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: May 18, 2017]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Michael Khavari Telephone # 603-531-9106

Address of Applicant: 40 Harrison Avenue Portsmouth, NH 03801

E-Mail Address: mick.khavari@gmail.com

Name of Property Owner (if different from applicant): Karen A. Towle, Trustee Telephone # 603-332-3145
James B. Towle & Karen A. Towle Revocable Trust

Address of Property Owner: 26 Anita Street Rochester, NH 03867

PROPERTY INFORMATION

Assessor's Map # I-2 Lot(s) # I-4-A-0

Address of Property: Leather's Lane

Zoning District(s) R-12 Overlay District(s) TDR

Existing Use of Property: Undeveloped

CONDITIONAL USE PERMIT INFORMATION

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

☒ Conservation District	☐ RCM Use Overlay District	☐ I-1 District Uses
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

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

1) Conservation District: There will be a 15,383 s.f. impact on the 20% slope area for the construction of the road and its associated grading.

2) Wetland Protection District: NO WETLAND IMPACT ARE PROPOSED. There will be a 12,910 s.f. impact to the wetland buffer for the installation of certain drainage structures and associated grading.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: An Alteration of Terrain Permit will be applied for with the State of New Hampshire Department of Environmental Services

Name of Professional That Prepared Plans: Stephen J. Haight, P.E. - Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: Stephen J. Haight, P.E.#7978 E-mail address: shaight@civilworksne.com

SIGNATURES

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

Signature of Property Owner: See Attached Letter of Authorization Date: 8/28/20
Karen A. Towle, Trustee

Signature of Applicant (if different from owner): Date: 10/27/20
Michael Khavari

Signature of Agent: Date: 10/27/20
Stephen J. Haight, P.E.

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: See Attached Letter of Authorization Date: 8/28/20
Karen A. Towle, Trustee

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
I-2	I-4-A-0	Karen A. Towle, Trustee James B. Towle & Karen A. Towle Rev Trust	26 Anita Street Rochester, NH 03867

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Michael Khavari	N/A	40 Harrison Avenue Portsmouth, NH 03801

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, P.E.	Civilworks New England	P.O. Box 1166 Dover, NH 03821
Kevin M. McEneaney, LLS	McEneaney Survey Associates	24 Chestnut Street Dover, NH 03820

Conservation Easement Holder: N/A

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: June 4, 2019]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Michael Khavari Telephone # 603-531-9106

Address of Applicant: 40 Harrison Avenue Portsmouth, NH 03801

E-Mail Address: mick.khavari@gmail.com

Name of Property Owner (*if different from applicant*): Karen A. Towle, Trustee Telephone #603-332-3145
James B. Towle & Karen A. Towle Revocable Trust

Address of Property Owner: 26 Anita Street Rochester, NH 03867

PROPERTY INFORMATION

Address of Property: Leather's Lane

Assessor's Map # I-2 Lot(s) # I-4-A-0

Zoning District(s) R-12 Overlay District(s) TDR

Size of Parcel: 692,200± sq. ft. 15.99± ac. Property Deed: Book 4630 Page: 448

Existing Use of Property: Undeveloped

SITE PLAN INFORMATION

Describe Proposed Use: 40 Unit Detached Condominium

Area of Parcel to be Developed: 8.5± ac. 370, 260± sq. ft.

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

Number of Parking Spaces: Existing N/A Proposed N/A

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

Number of Employees Total: N/A In Maximum Shift: N/A

Disposition of Parcel: N/A

Building Setbacks: N/A

Building Footprint _____ sq. ft.

Front Yard _____ ft.

Total Building Area _____ sq. ft.

Rear Yard _____ ft.

Paved Area _____ sq. ft.

Side Yard: Right____ ft. Left_____ ft.

City Water? X Yes ___ No How far is city water from the property? at Leather's Lane

City Sewer? X Yes ___ No How far is city sewer from the property? at Leather's Lane

BUILDING INFORMATION N/A

Type of Building to be Built: _____

Height of Building: _____ Finished Floor Elevation: _____

Number of Seats (where applicable) _____

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

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: None Requested

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

_____

_____

_____

_____

_____

_____

_____

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kevin M. McEneaney, LLS
McEneaney Survey Associates

Address 24 Chestnut Street Dover, NH 03820 Telephone #: 603-742-0911

Professional License #: NH LLS #661 E-mail address: kevin@surveynh.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Stephen J. Haight, P.E.
Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH P.E.#7978 E-mail address: shaight@civilworksne.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Michael Khavari

Address 40 Harrison Avenue Portsmouth, NH 03801 Telephone #: 603-531-9106

Professional License #: NH Architect #04659 E-mail address: mick.khavari@gmail.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Jeffrey R. Hyland Ironwood Design Group, LLC

Address 55 Main Street, Suite 129 Newmarket, NH 03857 Telephone #: 603-772-0590

Professional License #: NH Landscape Architect #0026 E-mail address: jhyland@fewood.com

~~SOIL~~ WETLAND SCIENTIST INFORMATION

Name of ~~Soil~~ Wetland Scientist and Company (Licensed in N.H.) Damon E. Burt, CWS Fraggle Rock Environmental

Address 38 Garland Road Strafford, NH 03884 Telephone #: 603-969-5574

Professional License #: Damon E. Burt, NH CWS#163 E-mail address: frenvironmental@gmail.com

CONSERVATION EASEMENT HOLDER N/A

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner: See Attached Letter of Authorization — Date: 10/27/20
Karen A. Towle, Trustee

Signature of Applicant (*if different from owner*): _____ — Date: 10/27/20
Michael Khavari

Signature of Agent: _____ — Date: 10/27/20
Stephen J. Haight, P.E.

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: See Attached Letter of Authorization — Date: 10/27/20
Karen A. Towle, Trustee

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: See Attached Letter of Authorization — Date: 10/27/20
Karen A. Towle, Trustee

Signature of Applicant (*if different from owner*): _____ — Date: 10/27/20
Michael Khavari

CERTIFICATION OF FEES

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

Signature of Property Owner: See Attached Letter of Authorization — Date: 10/27/20
Karen A. Towle, Trustee

Signature of Applicant (*if different from owner*): _____ — Date: 10/27/20
Michael Khavari

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

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

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

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

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

APPLICANT: Michael Khavari File Number: P20-____

PROJECT TITLE: 40 Unit Detached Condominium Site Plan

PROPERTY LOCATION: Leather's Lane Tax Map: I-2 Lot: I-4-A-0

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

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

REVIEWED BY: _____ DATE_____ TRC DATE_____

PHASE I THREATENED AND ENDANGERED WILDLIFE AND HABITAT ASSESSMENT OUTLINE

Please include the following in order (additional supporting information can be included as Appendices)

Part 1: Findings and Summary (follow format of this part) P. 2 - 3

Part 2: NHB Datacheck Results Letter, Figures, Site Photographs P. 4

1. NHB Datacheck Results Letter P. 5 - 11
2. Aerial Photo P. 12
3. Site Plan P. 13
4. Habitat Map P. 14
5. NH Wildlife Action Plan - Land Cover Figure P. 15
6. NH Wildlife Action Plan - Habitat Rankings and Conservation Parcels P. 16
7. Photo Documentation P. 17 - 23

Part 3: Detailed Evaluation P. 24

PROPOSED PROJECT: P. 24
PROJECT SITE AND SURROUNDING LAND USE DESCRIPTION: P. 24
THREATENED AND ENDANGERED AND WILDLIFE HABITAT EVALUATION: P. 25 - 26
SITE VISIT(S) EFFORT: P. 27
POTENTIAL IMPACTS AND PROPOSED CONSERVATION MEASURES: P. 27

Part 4: Appendices P. 28

A. Resume of Mark West P. 29 - 30
B. TNC Connect the Coast Map P. 31
C. Conservation Land Map P. 32
D. NH Fish Survey Map P. 33
E. Town of Dover Rare Species List P. 34
F. Amy Lamb Correspondence P. 35 - 42

PART 1: SUMMARY AND FINDINGS

Mark C. West	NHB19-4041
West Environmental, Inc.	Leather's Lane
48 Stevens Hill Rd, Nottingham, NH 03290	Leather's Lane, Dover, NH
mark@westenv.net	Michael Khavari
603-778-5292	[AOT APPLICATION # *(if known)]*

PROPOSED PROJECT:
West Environmental, Inc. (WEI) has prepared this report to document an assessment of wildlife habitat on a sixteen (16) acre parcel between Leathers Lane, Back River Road, and the Bellamy River. The property is bordered by residential land use including single family homes and condominium developments. Most of this site is forested and there are two wooded swamps and an intermittent stream that flows into the tidal mud flats of the Bellamy River.

We have included plant community descriptions, photo documentation, an aerial photo habitat map, development plan, and findings. A list of rare species known occurrences prepared by the NH Natural Heritage Bureau was used to help identify potential rare wildlife species that may utilize the site. The Natural Heritage Data check is attached, and it found no wildlife species in the project vicinity. The site was analyzed for all threatened and endangered wildlife species found in New Hampshire.

PHASE I Threatened and Endangered Wildlife and Habitat Assessment Findings:
Check one

No threatened and endangered wildlife and habitat present, no threatened or endangered wildlife, habitat, or wildlife corridors likely to be impacted by project activities.

Threatened and endangered wildlife and habitat present; HOWEVER, NO threatened or endangered wildlife, habitat, or wildlife corridors likely to be impacted by project activities. No conservation measures are proposed.

X Threatened and endangered wildlife and habitat present or wildlife corridors present. Proposed actions have the potential for impacts. Conservation measures incorporated into the proposed project or project design.

THREATENED AND ENDANGERED WILDLIFE AND HABITAT:

- There were no wildlife species identified on NHB DATACHECK RESULTS LETTER.
- Potential Bald Eagle Habitat exists along the Bellamy River including the river and the forested riverbanks and slopes. There are no vernal pools onsite and the forested wetlands does not flood to more than six inches deep.

PART 1: SUMMARY AND FINDINGS

NHB19-4041
Leather's Lane
Leather's Lane, Dover, NH
Michael Khavari
[AOT APPLICATION #] *(if known)*

Printed name, date and signature of Individual that conducted the Phase I Threatened and Endangered Wildlife and Habitat Assessment. *Note: By signing this document, the qualified wildlife biologist (Env. Wq. 1503.19(h)) is assuming responsibility for the wildlife assessment. Credentials need to be included in Part 4: Appendices.*

Mark C. West — **Name – printed**

10/23/2020 — **Date**

Signature

Check Applicable Requested Action

X Request for NHFG Concurrence with Findings in compliance with Env. Wq. 1503.19(h)(1)a

☐ **Request for NHFG Concurrence with Findings and Proposed Conservation Measures in compliance with Env. Wq. 1503.19(h)(1)b***

Requests further coordination with NHFG to discuss proposed conservation measures and/or, potential focused survey needs (Phase II)*

***New Hampshire Fish and Game's review and recommendations are based on the information provided in this assessment. Changes to project scope may affect NHFG and/or NHDES determination on potential impacts and whether conservation measures and project design modifications proposed are still applicable or sufficient.**

Other:

PART 2: NHB Datacheck Results Letter, Figures, Site Photographs

1. NHB Datacheck Results Letter P. 5 - 11
2. Aerial Photo P. 12
3. Site Plan P. 13
4. Habitat Map P. 14
5. NH Wildlife Action Plan - Land Cover Figure P. 15
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7. Photo Documentation P. 17 - 23

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Michael Khavari
40 Harrison Avenue
Portsmouth, NH 03801

From: Amy Lamb, NH Natural Heritage Bureau
Date: 12/30/2019 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB19-4041 Town: Dover Location: Tax Maps: I-4A
Description: The project consists of a single family residential subdivision. The property has frontage on the Bellamy River however there is no development, or site disturbances proposed within 500 feet of the Bellamy River reference line. The proposed undeveloped portion of the site adjacent to the river is to be deed restricted open space.

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: Please send NHB the language of the open space deed restriction for our review.

Natural Community	State[1]	Federal	Notes
Low brackish riverbank marsh*	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

Plant species	State[1]	Federal	Notes
eastern grasswort (*Lilaeopsis chinensis*)*	E	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
perennial saltmarsh American-aster (*Symphyotrichum tenuifolium var. tenuifolium*)*	E	--	Threats to this estuarine species are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
seaside brookweed (*Samolus valerandi ssp. parviflorus*)*	E	--	Occurs on river and streambanks, as well as estuarine and seashore habitats. Threats include direct destruction of the plants and major alterations of their habitat.

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

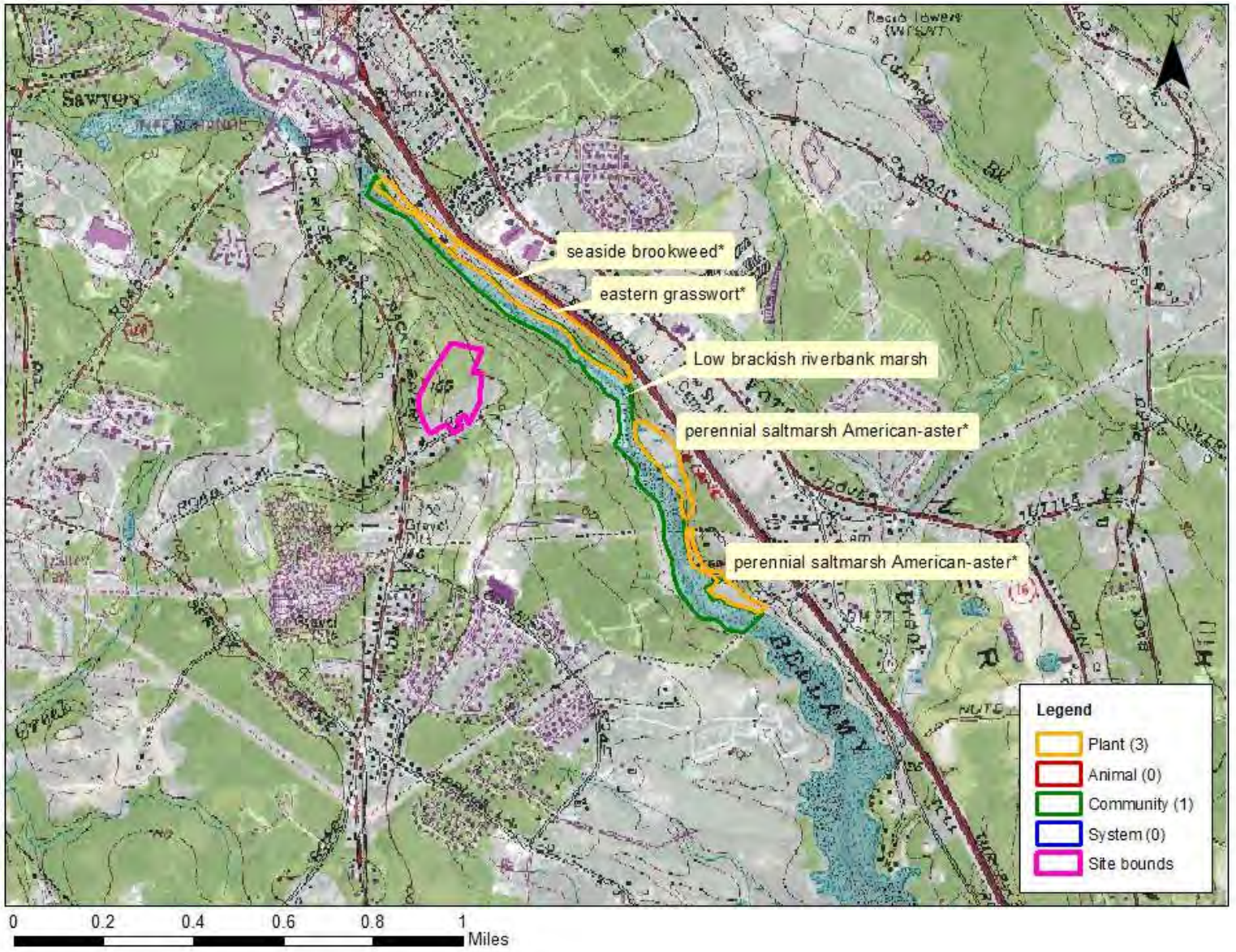
NH Natural Heritage Bureau
NHB Datacheck Results Letter

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

NHB19-4041


seaside brookweed*
eastern grasswort*
Low brackish riverbank marsh
perennial saltmarsh American-aster*
perennial saltmarsh American-aster*
Legend
Plant (3)
Animal (0)
Community (1)
System (0)
Site bounds
0
0.2
0.4
0.6
0.8
1
Miles

New Hampshire Natural Heritage Bureau - Community Record

Low brackish riverbank marsh

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: --

Detailed Description: Numerous EO's present in marsh dominated by *Spartina alterniflora*, *S. patens* and other halophytes. *Aster tenuifolius*, *Polygonum exsertum*, *Scirpus robustus*, *Lilaeopsis chinensis* and *Samolus parviflorus*.
General Area: A intertidal mudflat beneath tidal marsh and steep forested banks below the Spaulding Turnpike.
General Comments: Undeveloped and pristine despite proximity to turnpike.
Management Comments: --

Location

Survey Site Name: Bellamy River Estuary
Managed By:

County: Strafford
Town(s): Dover
Size: 33.3 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Dover. Bellamy River estuary. From below the Greek Cemetery to the northern reaches of *Polygonum exsertum* population.

Dates documented

First reported: 1989 Last reported: 1989-09-19

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Plant Record

eastern grasswort (*Lilaeopsis chinensis*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: A good population.

Detailed Description: 1989: 7 patches, 10 percent in fruit. Scattered within a total population area of ca. 24 square yards. 1972: Lasky specimen at FF. 1947: Hodgdon specimen (#5435) at NHA. Collected 0.5 to 1 mile above Varney Brook.
General Area: Brackish tidal marsh. *Samolus parviflorus*, *Spartina alterniflora*, *Eleocharis parvula*. Trapped in mud and open mud flats and cobblestone.
General Comments: --
Management Comments: --

Location

Survey Site Name: Bellamy River Estuary
Managed By:

County: Strafford
Town(s): Dover
Size: 11.0 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Dover. Bellamy River Estuary. 1947: Along estuary, 0.5 to 1.0 miles above Varney Brook. 1972: In mud of brackish water in Bellamy River estuary in Dover.

Dates documented

First reported: 1947
Last reported: 1989-08-29

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Plant Record

perennial saltmarsh American-aster (*Symphyotrichum tenuifolium var. tenuifolium*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:	A good B.
Detailed Description:	1989: 2 patches, 71 plants in southern area, 22 in northern area. 90 percent in flower.
General Area:	Brackish tidal marsh. With *Spartina alterniflora*, *S. patens*, *Aster subulatus*.
General Comments:	55 gallon drum nearby.
Management Comments:	--

Location

Survey Site Name:	Bellamy River Estuary		
Managed By:			
County:	Strafford		
Town(s):	Dover		
Size:	9.5 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Dover. Bellamy River estuary. Near New Saint Marys Cemetery. North side of river.

Dates documented

First reported:	1989	Last reported:	1989-08-29

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Plant Record

seaside brookweed (*Samolus valerandi ssp. parviflorus*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:	--
Detailed Description:	1989: North shore with 7 scattered patches totaling ca. 90 flowering plants and 230 first year rosettes on 13 square miles of occupied area. South shore with 12 flowering plants and 60 rosettes on 1 square mile of area. 1972: Lasky specimen at FF. Specimen #50051 at NHA.
General Area:	Flowering plants and basal rosettes under bent-over *Spartina alterniflora* mats and on high-tide ditched areas. 1972: Wet soil on shore.
General Comments:	1989: Only general vicinity of lowest mill searched on south side of river and several hundred yards above mill.
Management Comments:	--

Location

Survey Site Name:	Bellamy River Estuary		
Managed By:			
County:	Strafford		
Town(s):	Dover		
Size:	13.9 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

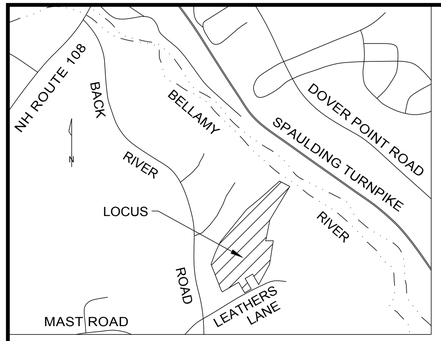
Directions: Dover. Bellamy River estuary. At Sawyers Mills and scattered along northern shore up to 0.5 mile below lowest mill.

Dates documented

First reported:	1970	Last reported:	1989-08-11

CONFIDENTIAL – NH Dept. of Environmental Services review

Leather's Lane
Aerial Map
Legend
Associated Family Footcare Cr
Katie Ln
Holiday Dr
Wingate Ln
16
Spaulding Turnpike (Toll road)
Katie Ln
Back River Rd
Leather's Ln
Katie Ln
Rosanna Dr
Fords Landing Dr
Google Earth
1000 ft
N



LOCATION PLAN

SCALE: 1" = 1,000'±

DARK AREA IS WETLAND
(ALSO NO DEVELOPMENT)

OPEN SPACE
NO DEVELOPMENT
2.10 ACRES

OPEN SPACE
400' FROM RIVER

UNDISTURBED AREA
(NOT INCLUDING OPEN SPACE)
4.99 ACRES

DISTURBED AREA
8.94 ACRES

LIMIT OF DISTURBANCE

GRID NORTH
GPS OBS: 08/19/2019

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)

WEST ENVIRONMENTAL INC

48 Stevens Hill Road, Nottingham, NH 03290
603-734-4298 ♦ mark@westenv.net

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE

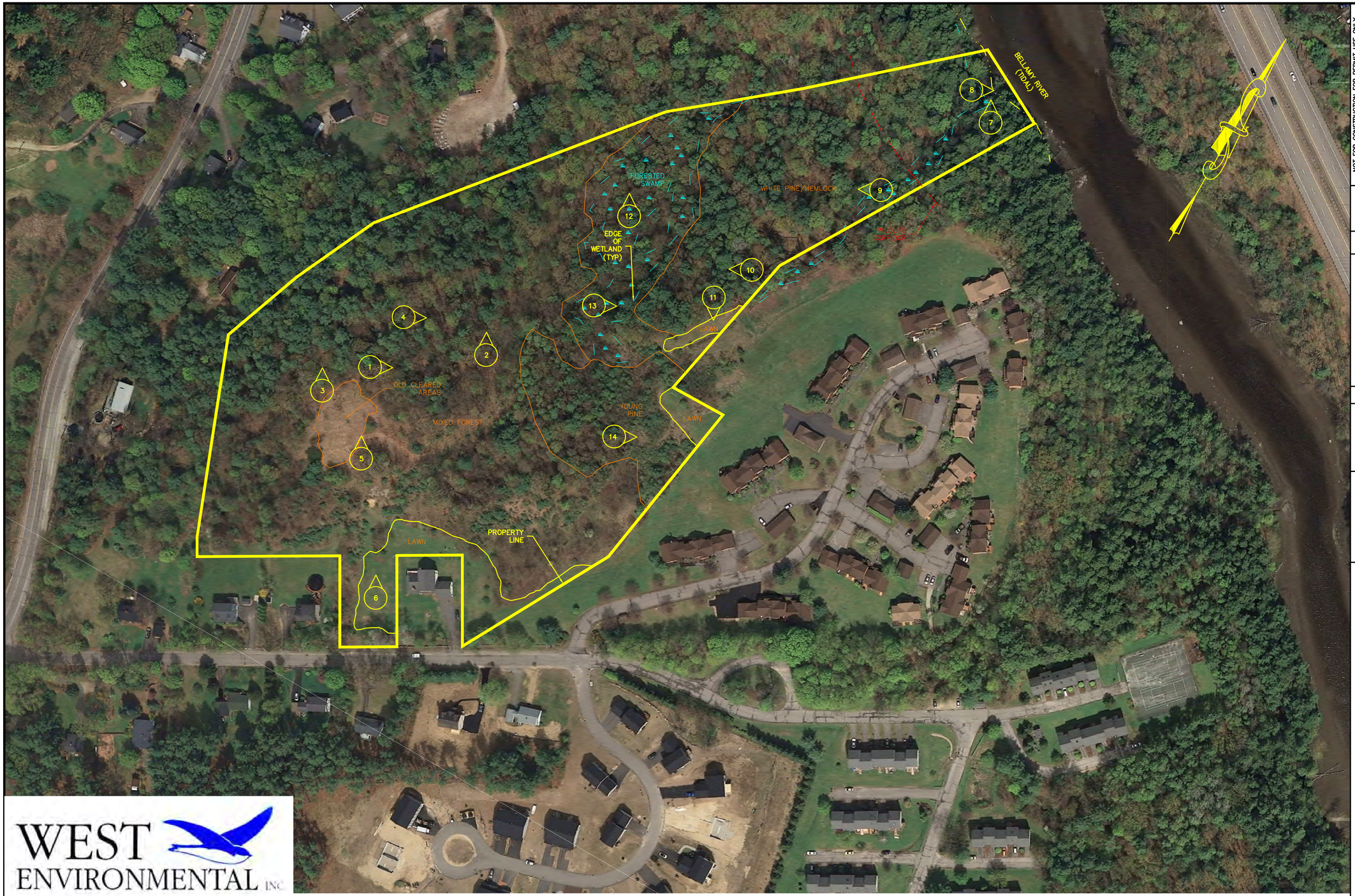
DATE: 10-2-20
SCALE: 1"=60'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO.: 19038
FILE: DISTURBANCE

LIMITS OF DISTURBANCE AND OPEN SPACE

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

1 OF 1



GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

WEST ENVIRONMENTAL INC

48 Stevens Hill Road, Nottingham, NH 03290
603-734-4298 ◆ mark@westenv.net

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND
Civil Engineering & Land Surveying
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE

DATE: 10-23-20
SCALE: 1"=80'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

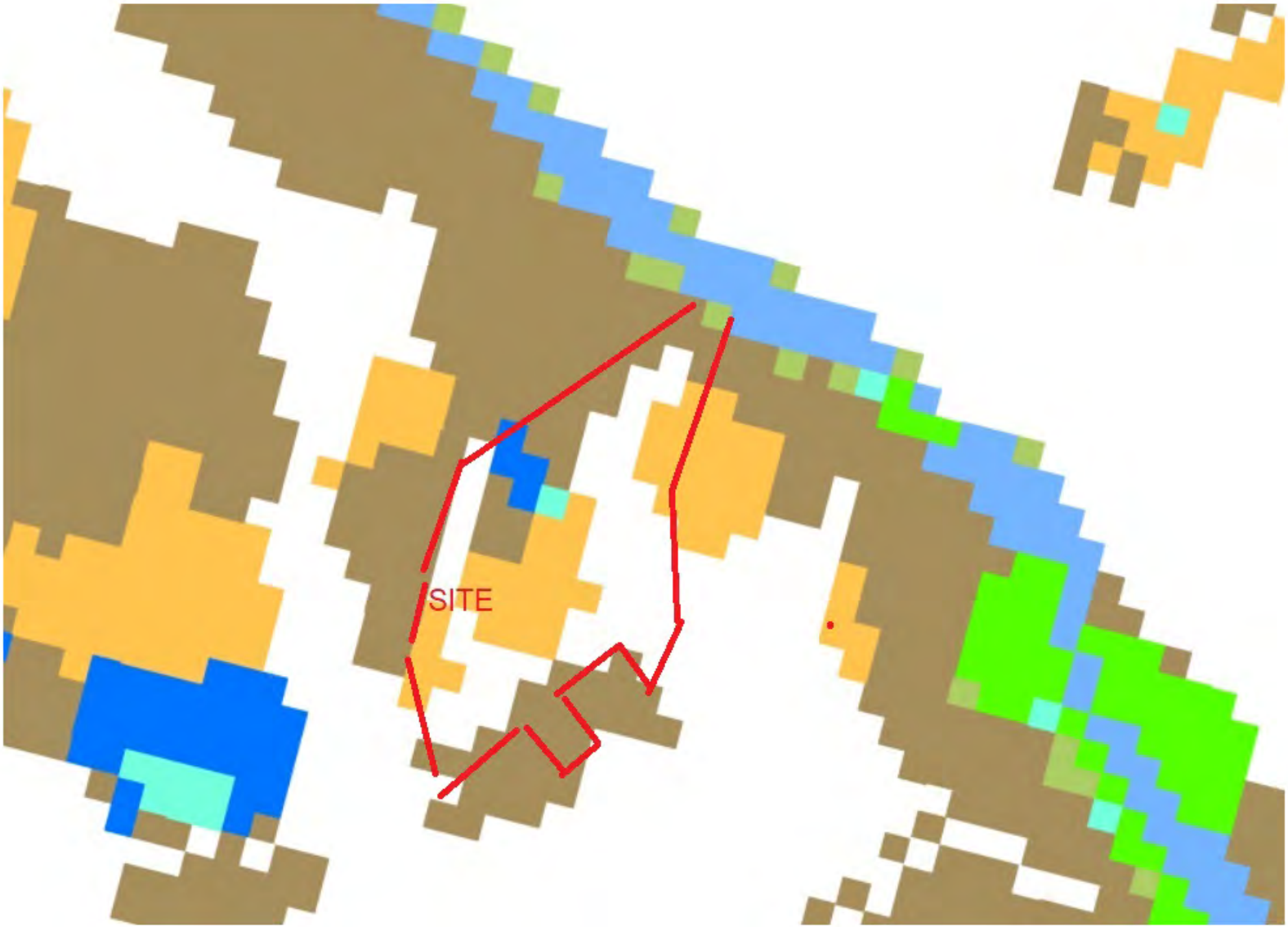
WILDLIFE HABITAT MAP

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

1 OF 1

LAND COVER FIGURE



HABITAT RANKINGS & CONSERVATION PARCELS

PHOTO DOCUMENTATION

1. This is a typical view of the mixed forest within the development envelope.

2. This is a view of an old woods road through the forest.

3. There are several stone walls throughout the site.

4. There are areas of brush dominated by oriental bittersweet in the forest.

5. This is a view of one of the two small open areas.

6. This is the lawn area along the southern boundary of the site

7. The slopes adjacent the river (open space) are steep and wildlife trails are present.

8. Most of the river habitat is mudflats with a few small brackish marsh areas.

9. This is a view of the stone stream channel in the proposed open space area.

10. This is a view of a very large bittersweet vine in the development envelope.

11. Looking east at the adjacent condominiums from the development envelope onsite.

12. This is a view of the forested wetland in the proposed undeveloped area.

13. Portions of the wetland have a thick cover.

14. This is a view of the young pine forest area.

PART 3: Detailed Evaluation

PROPOSED PROJECT:
This project proposes forty (40) single family condominiums with 2,320 linear feet of private roadway and three stormwater basins. The development footprint includes 8.94 acres. There will be a 2.10-acre open space area that includes all land within 400' of the Bellamy River. There are no wetland impacts associated with this project. The only activities allowed in this area are passive recreation trails (see Draft Deed Restrictions in Appendix A). An additional 4.99 acres of land will be undeveloped and includes some wetlands. This 16-acre forested site includes gentle to moderate slopes that slope east towards the Bellamy River where they become steep on the riverbanks.

PROJECT SITE AND SURROUNDING LAND USE DESCRIPTION:
The site is bordered by dense residential development to the south and northeast. The Bellamy River constitutes the eastern boundary with the Spaulding Turnpike directly to the east of it. There is a large commercial development east of the turnpike. Back River Road is to the west with an undeveloped parcel dominated by wooded and scrub-shrub wetland. There is a small conservation parcel 500m to the west. The landscape position of this parcel reduces its overall habitat value as it decreases the opportunity for wildlife corridors and connections.

This site is situated in a relatively developed landscape. The most important habitat is the land adjacent the Bellamy River and this area is proposed for open space and will be deed restricted. Wildlife trails were observed along the steep slopes adjacent the river. Most of the site is forested with several wetland drainages. There are no vernal pools onsite. The small stream is intermittent with 2-3-foot-wide stone channel contained within the site. We have attached the connect the coast map prepared by the Nature Conservancy which indicates that there are no significant wildlife corridors on or adjacent the site.

The site includes some stone walls, brush piles and dead cavity trees. There are potential roost trees along the Bellamy River. A list of plant communities follows.

PLANT COMMUNITIES

Dominant Upland Forest Community
Canopy: shagbark hickory, black oak, red oak (dom), white oak, white ash, dead trees – black cherry, sugar maple, black birch
Sapling: beech, red cedar, white ash, white oak, shagbark hickory, black oak, red oak
Shrub: common buckthorn, white pine, maple leaf viburnum, burning bush, autumn olive, multiflora rose
Herb: grasses
Vine: bittersweet

Small Openings 70' x 70' – small patches of exposed soil, no rabbit scat
Shrub: locust, red oak, meadowsweet, white pine, black cherry, white birch, sweet fern
Herb: goldenrod, poverty grass, grass species, cow vetch
Vine: bittersweet, dewberry

Wetland – PFO1E Palustrine forested broad-leaved deciduous seasonally saturated – Red Maple swamp that is drained by a small intermittent stream.
Canopy: red maple, white ash
Sapling: American elm

Shrub: multiflora rose, common white pine, winterberry, glossy buckthorn, speckled alder
Herb: horsetail, sensitive fern, small white aster, narrow leaved goldenrod, sedges
Vine: Virginia creeper, poison ivy, bittersweet
Hydrology: pit & mound

Riverfront Upland Forest – travel corridor along river with steep slopes
Canopy: white pine, eastern hemlock
Shrub: red oak, hemlock
Herb: minimal coverage

Wildlife Observations
Species noted: chipping sparrow, house sparrow, blue jay, catbird, robin, chickadee, yellow bellied sapsucker, flicker, mourning dove, goldfinch, house wren, Canada goose, double-crested cormorant, grackle, chipmunk, gray squirrel, deer (tracks & scat)

THREATENED AND ENDANGERED WILDLIFE AND HABITAT EVALUATION:
All Threatened and Endangered species known to occur in New Hampshire were considered in this evaluation. Many species were eliminated from consideration based on the habitat types on this site.

Below is a review of the wildlife species known to occur in the City of Dover. The habitat requirements for these species is analyzed to determine the likelihood of their presence. Other that the Bald Eagle and American Eel this site does not appear to provide suitable habitat for these rare species or other threatened or endangered wildlife species. The Bald Eagle should not be impacted due to the protection of the open space area along the river.

Mammals
New England Cottontail - Sylvilagus transitionalis -- E
The habitat requirements for this species is Early Successional Habitat, Shrublands and Shrub Wetlands. There are two small open areas 0.10 acres on the site which have short (less than 3') shrubs and saplings. These areas are isolated within developed landscape. They are not connected to any other Early Successional communities. These areas were carefully searched for rabbit scat and none was found.

Vertebrates - Birds
Bald Eagle - Haliaeetus leucocephalus Threatened
The only suitable habitat for this species is located along the Bellamy River. This project will preserve 2.10 acres adjacent to the river as deed restricted open space. There will be no roads or building within 800' of the river. There should be no impacts to this species habitat.

Cliff Swallow - Petrochelidon pyrrhonota -- Threatened
Eastern Meadowlark - Sturnella magna -- Threatened
Upland Sandpiper - Bartramia longicauda -- Endangered
The lack of large fields on or near this site eliminates habitats for these three species.

Reptiles
Blanding's Turtle - Emydoidea blandingii – Endangered
Spotted Turtle - Clemmys guttata -- Threatened
The site does not have any freshwater pond, deep marsh, shallow marsh habitat or vernal pools. The closest wetland habitat is over 500' away and across a road; however, there is no habitat to attract them onto this site. In addition, there was no reference to either of these species in the Natural Heritage Memo indicating the lack of suitable habitat in the vicinity of this project.

Northern Black Racer - Coluber constrictor constrictor - Threatened
The lack of open fields, dry sandy soils reduces the potential habitat for this species onsite along with the habitat fragmentation surrounding the site. Rock outcrops and stone piles were also not observed in the proposed development envelope. The closest potential habitat is several miles away. This project does not appear to have any impact on this species.

American Eel - Anguilla rostrata – Special Concern
A 2007 Fish Survey found this species in the Bellamy River. This species will not be impacted based on the protection of the open space area.

Ringed Boghaunter - Williamsonia lintneri – Endangered
There are no open peatlands or shallow marsh habitats that would support this species on or adjacent to this site.

Besides the Potential Bald Eagle and American Eel Habitat associated with the Bellamy River which will be protected by the open space area no other threatened or endangered species, designated critical habitat for threatened or endangered species, or travel corridors for threatened or endangered species is present on the site or potentially impacted by the project.

Email Correspondence with Amy Lamb of NH Natural Heritage Bureau is attached in Appendix F, and she has reviewed the open space deed restrictions related to the construction of a nature trail.

SITE VISIT(S) EFFORT**:**
Date: August 10th and October 8th, 2020
Weather Conditions: 8/10 – sunny and dry with a light breeze, 84 degrees; 10/8 – sunny and breezy, 74 degrees
Duration of Visit: 8/10 – 4.5 hrs.; 9/8 – 2.5 hrs
Site Conditions:
Discussion: The first site inspection included a reconnaissance of the entire site with a focus on the riparian buffer, wetlands, and forest habitat. The two open areas were searched very carefully for scat and wildlife sign. Habitat features were noted, and photo documentation was collected.
The second inspection included a tour of the neighborhood and habitats that surround the site in addition to a follow-up walk of the proposed development envelope.

POTENTIAL IMPACTS AND PROPOSED CONSERVATION MEASURES:

This project proposes 40 single family homes with a road network and drainage structures to manage stormwater and protect water quality. Nine acres of the upland forest will be utilized for development leaving 5 acres of undeveloped area that includes the forested wetlands. A total of 2.10 acres will be deed restricted open space which will include the slopes and bank of the Bellamy River. This area will protect the forested habitat adjacent the river and the roost trees and wildlife trails observed in that area. This is the most important habitat associated with this site and could also provide feeding habitat for Common Tern and the four Endangered bat species in New Hampshire. This is why the permanent protection of this area is a critical element of the development plan.

The remaining habitat features found on this site do not appear to support any rare or threatened species based on plant communities, habitat structure and surrounding large scape development.

The proposed development will impact a mixed forest habitat adjacent to other developed areas. The project provides and balance of development and protection resulting in forty four percent of the site left undeveloped. There will be impact to the non-endangered wildlife species that utilize the upland forest.

Besides the Potential Bald Eagle and American Eel Habitat along the Bellamy River which will be preserved as open space no other threatened or endangered species, designated critical habitat for threatened or endangered species, or travel corridors for threatened or endangered species is present on the site or potentially impacted by the project.

PART 4: Appendices

A. Resume of Mark West P. 29 - 30
B. TNC Connect the Coast Map P. 31
C. Conservation Land Map P. 32
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F. Amy Lamb Correspondence P. 35 - 42

WEST ENVIRONMENTAL INC.
48 Stevens Hill Road, Nottingham, NH 03290
(603) 734-4298 mark@westenv.net

WILDLIFE RESUME - MARK C. WEST

SKILLS
Plant Community Identification
Wildlife Habitat Assessment
Wetland Delineation Inventory and Assessment
Vernal Pool Documentation and Assessment
Bird Identification
Wildlife Photography

EDUCATION
B.A. in Environmental Studies, New England College, Henniker, NH, 1980
Concentration in Ornithology
Specialized Postgraduate Studies:
USACE Highway Methodology Training Workshop
Certificate of Training: 1987 U.S. Army Corps of Engineers Wetland Delineation Manual
Postgraduate-Wetlands, University of New Hampshire
Postgraduate-Wetland Delineation, University of Massachusetts-Amherst

WORK EXPERIENCE
1980 *Research Assistant*, Red-shouldered Hawk Nest Location Survey Audubon Society of NH
1981 *Hack Site Attendant*, Peregrine Fund, Deal Island Wildlife Refuge, Maryland.
1982 *Field Biologist*, Westport River Osprey Project, Westport, MA.
1983-1984 *Marine Biologist*, Princess Cruise Lines Whale Watches, Plymouth, MA
1984-1988 *Ranger /Naturalist*, Ipswich River Wildlife Sanctuary Massachusetts Audubon Society, Topsfield, MA.
1988-1989 Senior *Ecologist,* Natural Resources Consulting Services, Concord, NH
1989-1998 Senior *Wetland Scientist*, Gove Environmental Services, Inc., Exeter, NH
1999-2001 Adjunct *Professor, Environmental Studies* Antioch New England Graduate School, Keene, NH
1998-Present President*/Wetland Scientist,* West Environmental, Inc., Nottingham, NH.

Town Wide Wetland Inventories
Auburn, Brentwood, Exeter, Fremont, Manchester, Newfields, Newington, Newmarket, Nottingham, Pelham, Plaistow, Salem, Sandown

ARM Studies over 20 between 2009 and 2019 covering sites from 100 to 1,800 acres

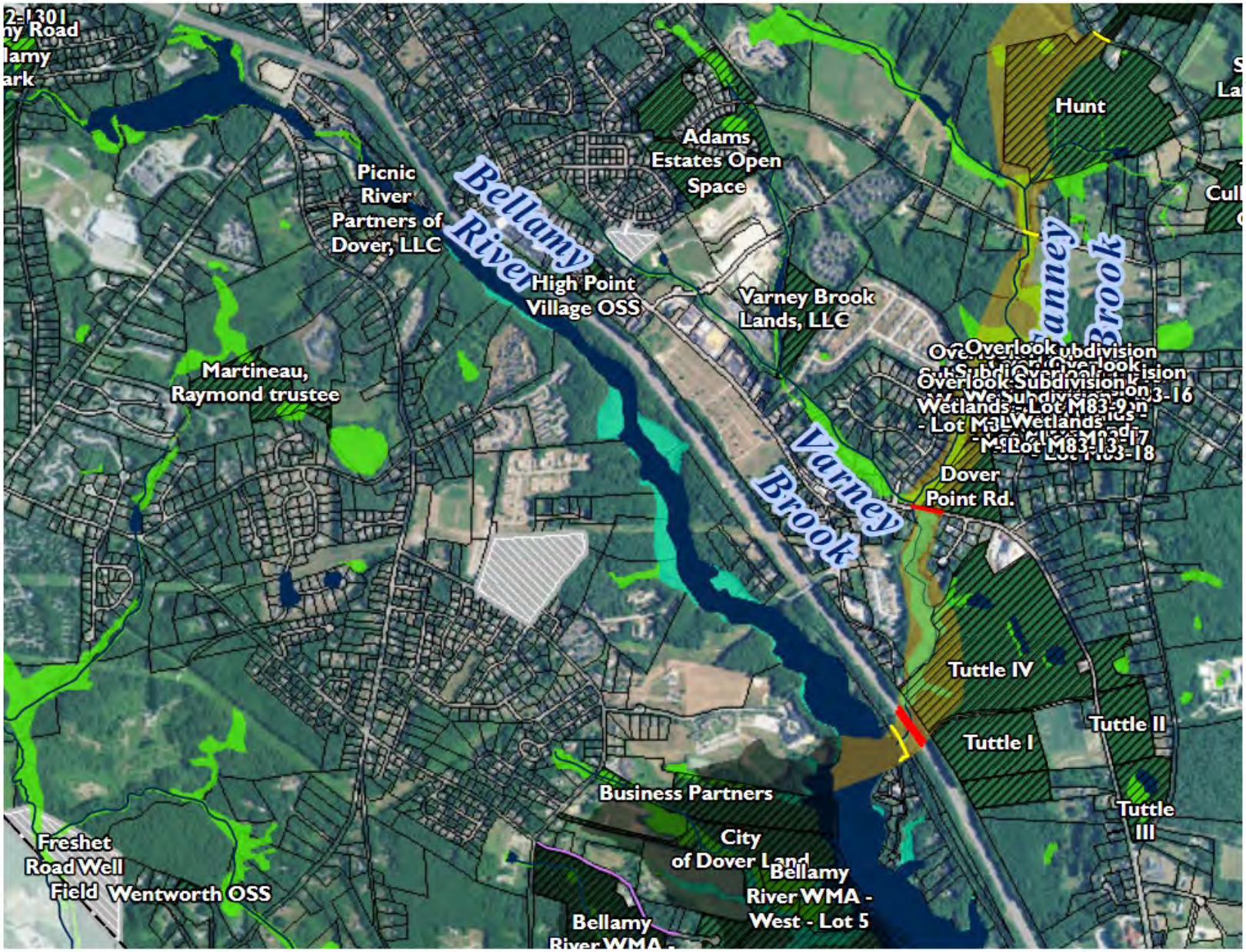
THREATENED AND ENDANGERED SPECIES SURVEYS

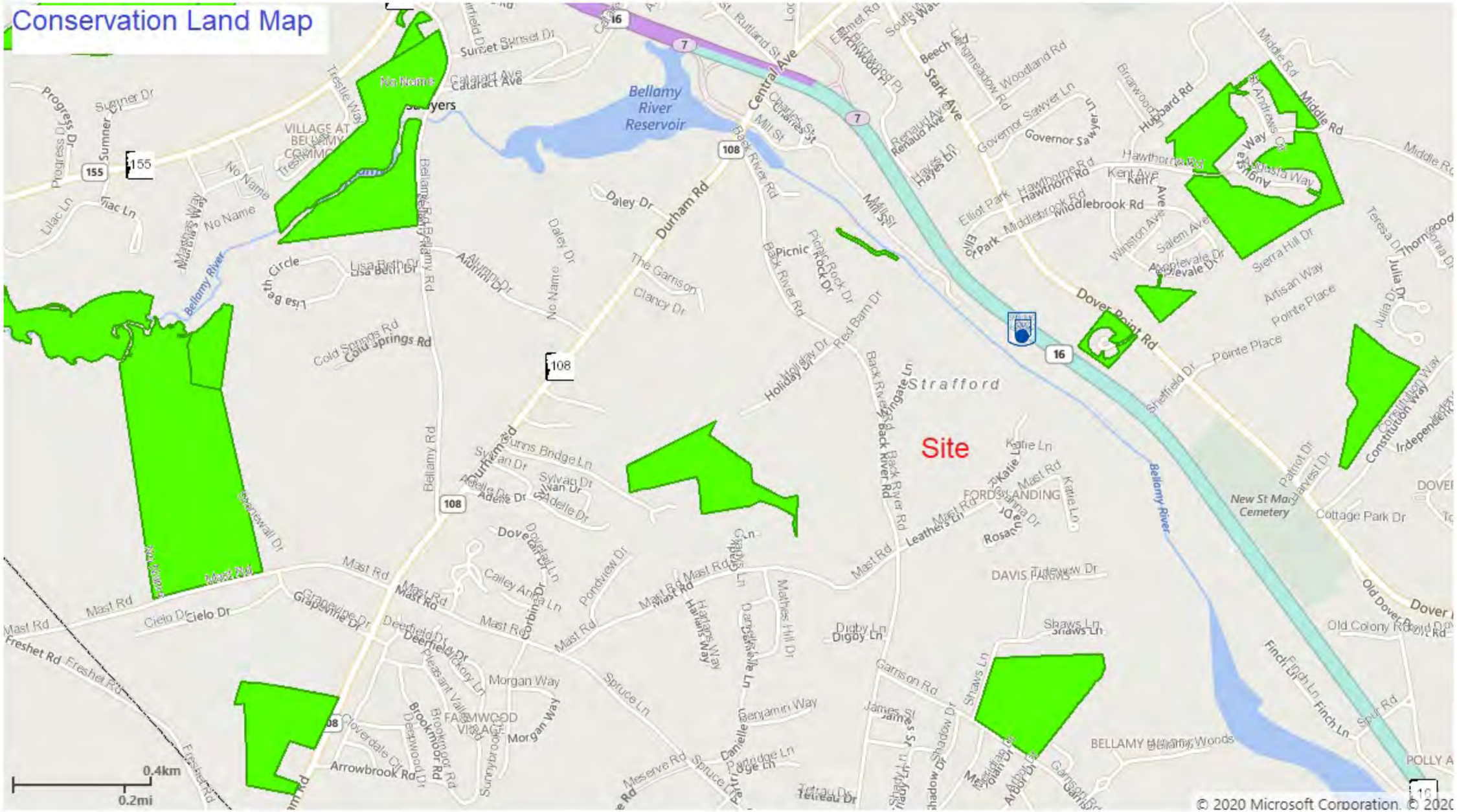
2007 Merrimack River Bald Eagle Roosting Site Survey Brown Ave Property Manchester
2009 Portsmouth City-wide Vernal pool Survey
2010 Blanding's Turtle Survey Lorden Parcel Londonderry, NH
2010 Oak Ridge Subdivision Wildlife Habitat Assessment Nottingham, NH 17 vernal pools
2010 Exeter River Floodplain Bio-Inventory Danville Fremont, Sandown
2011 Stoneyfield Farm Habitat Index Sites for New England Cottontail Habitat Enhancement
2011 Lamprey River Floodplain Bio-Inventory Epping, Lee, Durham, Newmarket documented Blanding's and Wood Turtle Habitat
2012 NRCS Wetland Reserve Documented Wood Turtle & Blanding's Turtle Habitat Nottingham
2014 Wildlife Habitat Assessment of Milton CAT Site - Londonderry, NH
2014 Wildlife Habitat Assessment of Prologis Site - Londonderry, NH
Bald Eagle, Eastern Hognose Snake, New England Cottontail, Northern Black Racer, Spotted Turtle, Blanding's Turtle
2015 NE Cottontail Survey Silver Street Project Dover, NH
2016 Horsburgh ARM Study Fremont Documented Blanding's Turtle Habitat
2016 Mathes ARM Study for NH Fish and Game Londonderry Documented Blanding's Turtle
2017 Borthwick Forest Development – Review of Wildlife Habitat Study for City of Portsmouth
2018 Brighton Hill and Loverin Hill ARM Studies for NH Fish and Game Croyden, Grantham, Newport 3,181 acres Documented Least Bittern Habitat
2019 Sanborn ARM Study Auburn Documented Blanding's Turtle Habitat

PUBLIC SERVICE

New Hampshire Board of Natural Scientists
Past Chairman, Nottingham Conservation Commission
Past President, New Hampshire Association of Wetland Scientists
Past Chairman, Board of Directors, Bear Paw Regional Greenways
Past Member of Board of Directors, New England Chapter of the Society of Wetland Scientists
Assistant to NH Wetlands Bureau in Wetland Delineation Training
Member of Steering Committee-Analysis of Wetland Mitigation in NH, NHDES/EPA
Trainer for USACE Highway Methodology Workbook Supplement in New Hampshire
Trainer for Method for Cooperative Evaluation of Non-tidal Wetlands in NH
Member of Wetlands Advisory Committee, Audubon Society of NH
Member of Site-Specific Wildlife Habitat Assessment Committee

TNC CONNECT THE COAST MAP




Conservation Land Map
Site
Bellamy River Reservoir
Bellamy River
Durham Rd
Central Ave
Dover Point Rd
Back River Rd
Strafford
FORDS LANDING
DAVIS FARMS
FARMWOOD VILLAGE
BELLAMY WOODS
New St Mary's Cemetery
Mast Rd
Freshet Rd
Arrowbrook Rd
Cold Springs Rd
Lisa Beth Dr
Daley Dr
Picnic Rock Dr
Cottage Park Dr
Old Dover Rd
Old Colony Rd
Finch Ln
Shaws Ln
Digby Ln
Garrison Rd
Morgan Way
Spruce Ln
Cielo Dr
Deerfield Dr
Sylvan Dr
Adelle Dr
Sumner Dr
Progress Dr
Lilac Ln
Trestle Way
Cataract Ave
Sunset Dr
Middle Rd
Hubbard Rd
Hawthorne Rd
Middlebrook Rd
Kent Ave
Sierra Hill Dr
Artisan Way
Pointe Place
Sheffield Dr
Julia Dr
Thornwood Dr
Teresa Dr
Constitution Way
Independence Way
Patriot Dr
Harvest Ln
Katie Ln
Rosanna Dr
Leathers Ln
Pondview Dr
Grapevine Dr
Cranewall Dr
Mathes Hill Dr
Benjamin Way
Danielle Ln
Partridge Ln
Tetreau Dr
Finch Ln
Spur Rd
Stark Ave
Beech Ln
Governor Sawyer Ln
Renaud Ave
Hayes Ln
Elliot Park
Winston Ave
Salem Ave
Applevale Dr
Mill St
Charles St
Back River Rd
Picnic Rock Dr
Red Barn Dr
Holiday Dr
Kingate Ln
Alumni Dr
Bellamy Rd
Lisa Beth Dr
Cloverdale Cir
Brookmoor Rd
Deepwood Dr
Pleasant Valley Ln
Harlans Way
Cailley Anna Ln
Dovecrest Ln
Gravelly Hill Rd
Meserve Rd
James St
Shadow Dr
Middle Rd
Woodland Rd
Governor Sawyer Ln
Briarwood Rd
Elmwood Pl
Rutland St
Sunset Dr
Turnpike Rd
Bellamy River Rd
Trestle Way
Lisa Beth Dr
Sylvan Dr
Adelle Dr
Sumner Dr
Progress Dr
Lilac Ln
Cataract Ave
Sunset Dr
Middle Rd
Hubbard Rd
Hawthorne Rd
Middlebrook Rd
Kent Ave
Sierra Hill Dr
Artisan Way
Pointe Place
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Thornwood Dr
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Cranewall Dr
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Danielle Ln
Partridge Ln
Tetreau Dr
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Stark Ave
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Renaud Ave
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Mill St
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Back River Rd
Picnic Rock Dr
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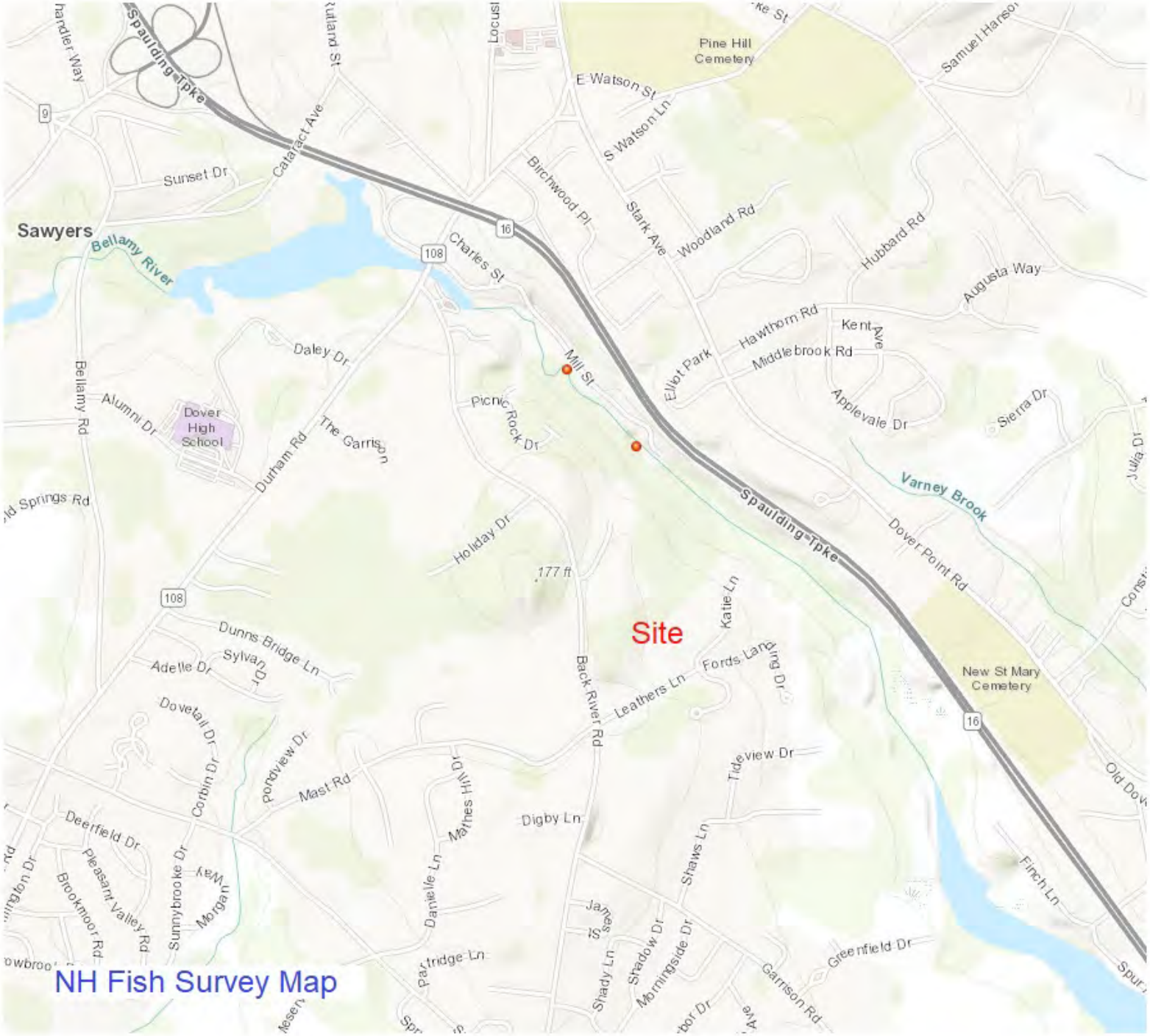
Holiday Dr
Kingate Ln
Alumni Dr
Bellamy Rd
Lisa Beth Dr
Cloverdale Cir
Brookmoor Rd
Deepwood Dr
Pleasant Valley Ln
Harlans Way
Cailley Anna Ln
Dovecrest Ln
Gravelly Hill Rd
Meserve Rd
James St
Shadow Dr
Middle Rd
Woodland Rd
Governor Sawyer Ln
Briarwood Rd
Elmwood Pl
Rutland St
Sunset Dr
Turnpike Rd
Bellamy River Rd
Trestle Way
Lisa Beth Dr
Sylvan Dr
Adelle Dr
0.4km
0.2mi
© 2020 Microsoft Corporation


Site
NH Fish Survey Map
Sawyers
Bellamy River
Spaulding Tpke
Pine Hill Cemetery
New St Mary Cemetery
Dover High School
Varney Brook
Mill St
Picnic Rock Dr
Holiday Dr
Back River Rd
Leathers Ln
Fords Landing Dr
Dover Point Rd
Durham Rd
The Garrison
Bellamy Rd
Alumni Dr
Daley Dr
Dunns Bridge Ln
Adelle Dr
Sylvan Dr
Dovetail Dr
Corbin Dr
Pondview Dr
Mast Rd
Deerfield Dr
Pleasant Valley Rd
Brookmoor Rd
Sunnybrooke Dr
Morgan Way
Mathes Hill Dr
Danielle Ln
Partridge Ln
Digby Ln
James St
Shady Ln
Stradow Dr
Morningside Dr
Shaws Ln
Tideview Dr
Katie Ln
Garrison Rd
Greenfield Dr
Finch Ln
Old Dover
Elliot Park
Hawthorn Rd
Middlebrook Rd
Kent Ave
Applevale Dr
Sierra Dr
Augusta Way
Hubbard Rd
Woodland Rd
Stark Ave
Birchwood Pl
S Watson Ln
E Watson St
Samuel Hanson
Cataract Ave
Rutland St
Sunset Dr
Chandler Way
Charles St
177 ft
9
16
108

NH Natural Heritage List of Wildlife Species in Dover NH

Mammals

New England Cottontail - Sylvilagus transitionalis -- E 3 24 Vertebrates –

Birds

Bald Eagle - Haliaeetus leucocephalus T SC 3 140

Cliff Swallow - Petrochelidon pyrrhonota -- T 2 29

Eastern Meadowlark - Sturnella magna -- T 2 28 ~

Upland Sandpiper - Bartramia longicauda -- E Historical 6

Reptiles

** Blanding's Turtle - Emydoidea blandingii -- E 1 1098

Northern Black Racer - Coluber constrictor constrictor

Spotted Turtle - Clemmys guttata -- T 4 165

Fish

American Eel - Anguilla rostrata -- SC 6 177

Invertebrates

Ringed Boghaunter - Williamsonia lintneri -- E 1 15

NHB review: NHB19-4041

Lamb, Amy <Amy.Lamb@dncr.nh.gov> Mon, Dec 30, 2019 at 1:30 PM
To: "mick.khavari@gmail.com" <mick.khavari@gmail.com>

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Amy Lamb
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2834

NHB19-4041_Khavari.pdf
303K

NHB review: NHB19-4041

Mick Khavari <mick.khavari@gmail.com> Thu, Jan 2, 2020 at 5:44 PM
To: "Lamb, Amy" <Amy.Lamb@dncr.nh.gov>

Hi Amy,

Happy New Year... Thank you for sending the review memo for my project. That was really fast! :)

This is my first time reading one of these reports so I just want to make sure I'm following the correct protocol.

It seems like there were some plant species that were found at the river bank. As noted we will have a 500' buffer of open space between that area and our project. Your only comment was to send you the language of the open space deed restriction. My attorney is drafting that language currently and I will send it to you as soon I I have it ready.

I have two questions:

- Is the deed restriction language the last thing that you need from me to finalize the report? (anything else you need from me for NHB?)
- Also, there were no potential impacts to wildlife in your memo, so I assume that I do NOT need to contact NH Fish & Game... is this correct?

Thanks for your help!

Cheers,
Mick Khavari
603-531-9106

[Quoted text hidden]

NHB review: NHB19-4041

Lamb, Amy <Amy.Lamb@dncr.nh.gov> Fri, Jan 3, 2020 at 8:26 AM
To: Mick Khavari <mick.khavari@gmail.com>

Hi Mick,

Thank you for checking in.

Yes, since you noted that there will be no development within 500' of the river at this site, I wanted to review the deed restriction language to see whether it would be protective of the riverbank habitat and forested buffer in perpetuity. Sometimes easements can be retractable or allow for a certain amount of future development, usually for recreation but sometimes for other reasons.

You are correct, NH Fish & Game does not need to be contacted for this project.

Thanks again. I'll look for the deed restriction language in the near future.

Best,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Mick Khavari <mick.khavari@gmail.com>
Sent: Thursday, January 02, 2020 8:45 PM
To: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Subject: Re: NHB review: NHB19-4041

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

[Quoted text hidden]

NHB review: NHB19-4041

Mick Khavari <mick.khavari@gmail.com> Thu, Apr 9, 2020 at 3:25 PM
To: "Lamb, Amy" <Amy.Lamb@dncr.nh.gov>

Hi Amy,

We've finally received the deed restriction language for the open space within our proposed project on Leathers Lane in Dover. I'm attaching it here for your review.

My understanding is that this language was the only outstanding item from us in order for you to finalize your review. Please let me know if I've missed anything, and what our next steps are with NHB.

Cheers,
Mick Khavari
603-531-9106
[Quoted text hidden]

NHB19-4041_Deed Language.pdf
64K

PROJECT FILE ID: # NHB19-4041, DOVER NH

Draft Language for Open Space Deed Restriction for NHB Review

SECTION (TBD). OPEN SPACE USE LIMITATIONS

The Declarant on behalf of itself and its successors in interest covenants that Open Space as depicted on the Condominium Site Plan, is and shall forever be and remain subject to the following restrictions, which covenants and restrictions shall bind the Declarant, its successors in interest, and the Owner of each Unit:

(a) The purpose of the Open Space after completion of the proposed improvements depicted on the Condominium Site Plan is to retain the area forever in its undeveloped, scenic and open space condition and to prevent any use of the Open Space that will significantly impair, or interfere with, its conservation value;

(b) To protect and conserve the natural biological diversity of the region and other rare plants and animals, exemplary natural communities, wetlands and other significant wildlife habitats on the Restricted Property;

(c) It shall be maintained in perpetuity as open space.

(d) There shall be no motorized vehicles permitted upon the Open Space;

(e) No structure or improvement of any kind, size or shape shall be constructed, placed or introduced onto the Open Space.

(f) Upon completion of the proposed improvements depicted on the Plan, no filling or excavation of soil or other alteration of topography or cutting or removal of standing trees shall be allowed, except those that present an imminent threat to person or property. In addition, trees may be removed in accordance with accepted silvicultural practices as outlined in the publication entitled Good Forestry Practices in the Granite State by the Society for the Protection of NH Forests. No disturbance of other natural features shall be allowed unless such activities are commonly necessary to maintain the existing natural environment of the open space.

(g) There shall be no dumping or depositing of trash, debris, stumps, yard waste, hazardous fluid or materials, vehicle bodies or parts within the Open Space.

(h) No discharge of firearms or shooting with a bow and arrow or trapping of animals shall be permitted upon the Open Space in violation of RSA 207:3-a, as amended.

(i) The Open Space comprises a portion of the Common Area of the Condominium. As such, maintenance, if any, in the Open Space will be performed pursuant to the other provisions of this Declaration and the Bylaws. Costs for the maintenance, monitoring and annual reporting of the Open Space will be treated as a Common Expense and paid by the Unit Owners in accordance with the provisions of this Declaration. The term maintenance shall include monitoring and reporting of the conditions of the open space requirements by the Association or by the City of Dover. The Association will be responsible for annually monitoring the Open Space and reporting any violations to the City of Dover.

(j) Such reasonable rules and regulations as may from time to time be promulgated by the Condominium Association for open space recreational uses.

(k) Access to the Open Space shall be as depicted on the Plan.

(l) The Open Space shall be used only by Unit Owners and their guests.

(m) Acceptance of any deed for any Unit within the condominium constitutes acknowledgement by the purchaser of the existence of these restrictions.

NHB review: NHB19-4041

Mick Khavari <mick.khavari@gmail.com> Mon, May 4, 2020 at 10:37 AM
To: "Lamb, Amy" <Amy.Lamb@dncr.nh.gov>

Hi Amy,

Thanks for the call on Friday.

Here is the list of the intended constraints for the creation of trails within the Open Space. I hope this email description here will provide the mutual understanding in order for you to proceed with the remainder of your analysis/report for the project this week.

- Trails may be created within the Open Space, intended for passive recreation.
- Trails would not be created within two-hundred (200) feet of the Bellamy River.
- The trails would be limited to eight (8) feet wide max and be comprised of natural surface material.
- The surface of trails may be cleared of roots & rocks and smoothed if necessary.
- Additional surface materials, if used, would be sourced from on-site materials.

Please let me know if you need anything else and feel free to call me anytime to discuss.

Cheers,
Mick Khavari
603-531-9106

[Quoted text hidden]

NHB review: NHB19-4041

Lamb, Amy <Amy.Lamb@dncr.nh.gov> Mon, May 4, 2020 at 11:39 AM
To: Mick Khavari <mick.khavari@gmail.com>

Hi Mick,

Thank you for providing the proposed language regarding any trail building within the protected Open Space portion of the development. The stipulations you outlined are certainly reasonable, and NHB supports this approach. I am copying the language into my email for clarity:

- Trails may be created within the Open Space, intended for passive recreation.
- Trails would not be created within two-hundred (200) feet of the Bellamy River.
- The trails would be limited to eight (8) feet wide max and be comprised of natural surface material.
- The surface of trails may be cleared of roots & rocks and smoothed if necessary.
- Additional surface materials, if used, would be sourced from on-site materials.

As an aside, I went hiking on some local trails this weekend, and have attached a photo because it is about the same size and type of trail that you described. I paced it off, and the trail was about 8' wide, with the ground surface left natural. I just thought this might be of interest.

Please print this email and include it along with your NHB DataCheck letter (NHB19-4041) in your permit application. NHB has no further comments. Thank you and take care,

Amy

Amy Lamb
Ecological Information Specialist

[Quoted text hidden]

[Quoted text hidden]

IMG_20200501_183604.jpg
7652K

Lamb, Amy 1:43 PM (2 hours ago)
to me

Hi Mick,

Thank you very much for reaching out to tell me about the new proposed drainage swale. As the swale will be >400 feet from the Bellamy River, NHB has no concerns about this addition to the project.

Thanks and take care,

Amy

On: 21 July 2020 15:42, "Mick Khavari" <mick.khavari@gmail.com<mailto:mick.khavari@gmail.com>> wrote:
EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Hi Amy,

Thank you again for working with me on my Dover project. We're close to being ready to submit our site plan to the city for approvals.

Our civil engineer needs a drainage swale on the property in the same area where we discussed having trails (but not extending as close to the river as the trails might).

The drainage swale would NOT be within 400' of the Bellamy River. Given the good distance, I thought this might be a non-issue but wanted to loop you in for full transparency.

Let me know if you have any thoughts or concerns with that. Email or call anytime.

Cheers,
Mick
603-531-9106<tel:603-531-9106>

August 26th, 2020

LETTER OF AUTHORIZATION

I, Karen A. Towle, authorize Michael Khavari and his agents, including Stephen J. Haight of Civilworks New England and Francis X. Bruton of Bruton & Berube, to sign and represent all necessary applications to the Planning Board or any other City of Dover or State of New Hampshire Board or Committee, relative to the permitting and development of my property located at Tax Map I, Lot 4-A on Leathers Lane, Dover, NH.

Sincerely,

Karen A. Towle

Karen A. Towle

PROJECT NARRATIVE

for
A 40 Unit Detached Condominium
Leather's Lane, Dover, NH
Tax Map I-2, Lot I-4-A-0

PROJECT OVERVIEW

The project proponent will be developing a 16 acre parcel on Leather's Lane with a forty (40) unit detached condominium. Site improvements will include private roads to service the units, sidewalks, underground utilities, city water and sewer, storm water mitigation and associated site grading, site lighting, a comprehensive landscape plan and a mail kiosk. Off-site improvements will include an upgrade to Leathers Lane at the Back River Road intersection with a dedicated right turn only exit lane and a combined straight and left turn lane, as well as a painted cross walk across Leathers Lane.

On January 29, 2020 the Planning Board granted a TDR for an additional twelve (12) units for a development total of 45 units. The project as proposed is for a total of 40 units of which seven (7) are TDR units. There will be no wetland impacts with this project. Along with Site Review approval from the Planning Board the project proponent will be requesting Conditional Use Permits for impacts to Dover Conservation District 20% slopes and wetland buffers. The proposed impacts are limited to road and driveway construction and installation of grading and drainage structures.

This project submittal has been revised to address comments by recent Technical Review Committee and Conservation Commission. Per these comments, the revisions include a slight change to the design grade resulting in a reduction in the wetland buffer impact.

The project consists of the following general construction:

- Select clearing and grubbing of lot limited to just the areas required to construct the improvements, leaving as much natural buffer as is practicable;
- Installation of storm water management features, roads and underground utilities and site lighting;
- House site and utility construction;
- Installation of site landscaping and stabilization of the remaining areas with loam and seed.

PROJECT LOCATION AND SITE CHARACTERISTICS

The project site is located on the north side of Leathers Lane adjacent to the existing Davis Court Condominium. The parcel is within the Medium Density Residential (R-12) District, and the Transfer of Development Rights (TDR). The parcel of land contains +/- 16 acres, currently undeveloped, shown on Tax Map I-2, Lot I-4-A-0, bounded by residential lots, Davis Farm development, and the Bellamy River. There is a 50 foot right away along Leathers Lane to access the property.

PROJECT NARRATIVE

for
A 40 Unit Detached Condominium
Leather's Lane, Dover, NH
Tax Map I-2, Lot I-4-A-0

WETLAND BUFFER AND 20% SLOPE IMPACTS

There are no wetland impacts for this project. The proposed impacts are limited to road and driveway construction and installation of grading and drainage structures. There are 15,383 SF of grading and road impacts to 20% slopes and 12,910 SF of grading and drainage structure impacts to the wetland buffer. The Conservation Commission has reviewed this project and based on their review grading changes were implemented that have reduced the amount of wetland buffer impacts which are reflected in the plans and identified herein. The Conservation Commission voted to provide a positive recommendation for approval of the Conditional Use permit to the planning board at their October 13, 2020 meeting.

DRAINAGE

The site has been designed to mitigate all developed storm water on site. All site drainage will be captured by a closed drainage system which will direct all runoff to 1 of 2 wet ponds, an infiltration pond and a level lip spreader prior to discharging to existing drainage ways on site. The drainage mitigation system has been designed to reduce post development flows to abutting properties to less than the existing conditions. The drainage system has been designed to provide mitigation of both storm water quantity and quality.

TRAFFIC

A traffic study was completed for the project by Steven Pernaw and Company Inc. on January 2, 2020. The traffic report is an attachment to this application. In summary, the analysis concludes that the development will result in approximately one additional vehicle per minute on Leathers Lane during the worst case PM peak hour period but will not affect the Leathers Lane intersection with Back River Road. However, based on discussions with City Staff and the abutters during the TDR hearing, the project proponent has committed to providing an upgrade to Leathers Lane and create a dedicated right hand turn lane and a dedicated straight/left lane with a painted cross walk.

UTILITIES

The proposed project will connect to City water and will connect to City sewer via the existing pump station that services both Davis Court and Fords Landing. Civilworks has prepared an analysis of the system and has determined that the pump system has sufficient capacity to accommodate the proposed 40 3-bedroom units. The project will also connect to Unitil natural gas and Eversource electric. Each of these services are currently available in the Leathers Lane right-of-way.

SOILD WASTE

Solid waste will be managed on site and the Condominium Association will contract with a private waste hauler.

PROJECT NARRATIVE

for
A 40 Unit Detached Condominium
Leather's Lane, Dover, NH
Tax Map I-2, Lot I-4-A-0

POSTAL SERVICES

Postal services will be provided on site with a postal kiosk located on the in-bound side of the project entrance road.

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

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

City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

NOTICE OF DECISION

January 29, 2020

Michael Khavari
40 Harrison Avenue
Portsmouth, NH 03801

Karen A. Towle, Trustee of the James B. Towle and Karen A Towle Revocable Trust
26 Anita Street
Rochester, NH 03867

Re: Transfer of Development Rights for Michael Khavari, (Owner: Karen A. Towle and Trustee of the James B. Towle and Karen A. Towle Revocable Trust), Assessor's Map I, Lot 4-A, zoned R-12, and located at Leathers Lane. (Proposal is to request to buy 12 additional units to total 45 single-family units). (P19-74)

Dear Michael Khavari & Karen A Towle, Trustee of the James B Towle and Karen A Towle Revocable Trust:

Please be advised that on Tuesday, January 28, 2020 the Dover Planning Board voted to conditionally approve the sale of 12 units through Transfer of Development Rights. For your reference, according to our records, the current school district is Garrison Elementary and the Ward is 4. **The specific conditions are included with this letter.**

In addition to the conditions of approval, please provide the following to the Planning Office:

- ☐ Four (4) full size plans and One (1) 11" x 17" plan
- ☐ One (1) recordable paper copy of the plan
- ☐ One (1) CAD file format of the plan
- ☐ One (1) PDF digital version of the plan

The plans must be submitted within ninety (90) days from Planning Board approval. Upon receipt, the Planning Board Chair will sign them approved.

If you have any questions, please do not hesitate to contact my office.

Sincerely,

Christopher G. Parker, AICP
Assistant City Manager, Planning & Strategic Initiatives

EC: Building Inspection Office
Engineering Office
Assessing Office
Francis X. Bruton, III
McEneaney Survey Associates

Conditions to Be Met Prior to Granting the TDR:	**Submitted**	**Reviewed**
1. Payment of the TDR fee ($107,216)	☐	☐
2. Add Planning file number P19-74 to plan.	☐	☐
3. Add TDR yield calculation to plan.	☐	☐

Conditions to Be Met Prior to the Issuance of a Building Permit:	**Submitted**	**Reviewed**
4. Full site plan approval by the Planning Board.	☐	☐

DAVE WHITE, P.E.
City Engineer
d.white@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6450
www.dover.nh.gov

City of Dover, New Hampshire

COMMUNITY SERVICES DEPARTMENT

August 24, 2020

Jase R. Gregoire
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821

RE: Tax Map I Lot 4A Leathers Lane

To Whom It May Concern:

This letter is written confirmation that the City of Dover is able to serve the above referenced development with *water* from Leathers Lane or Back River Road. There is no public sewer available on Leathers Lane or Back River Road. It appears that private sewer was extended onto this lot as part of the adjoining lot development (of which this lot was a part of). I cannot comment on its availability or capacity.

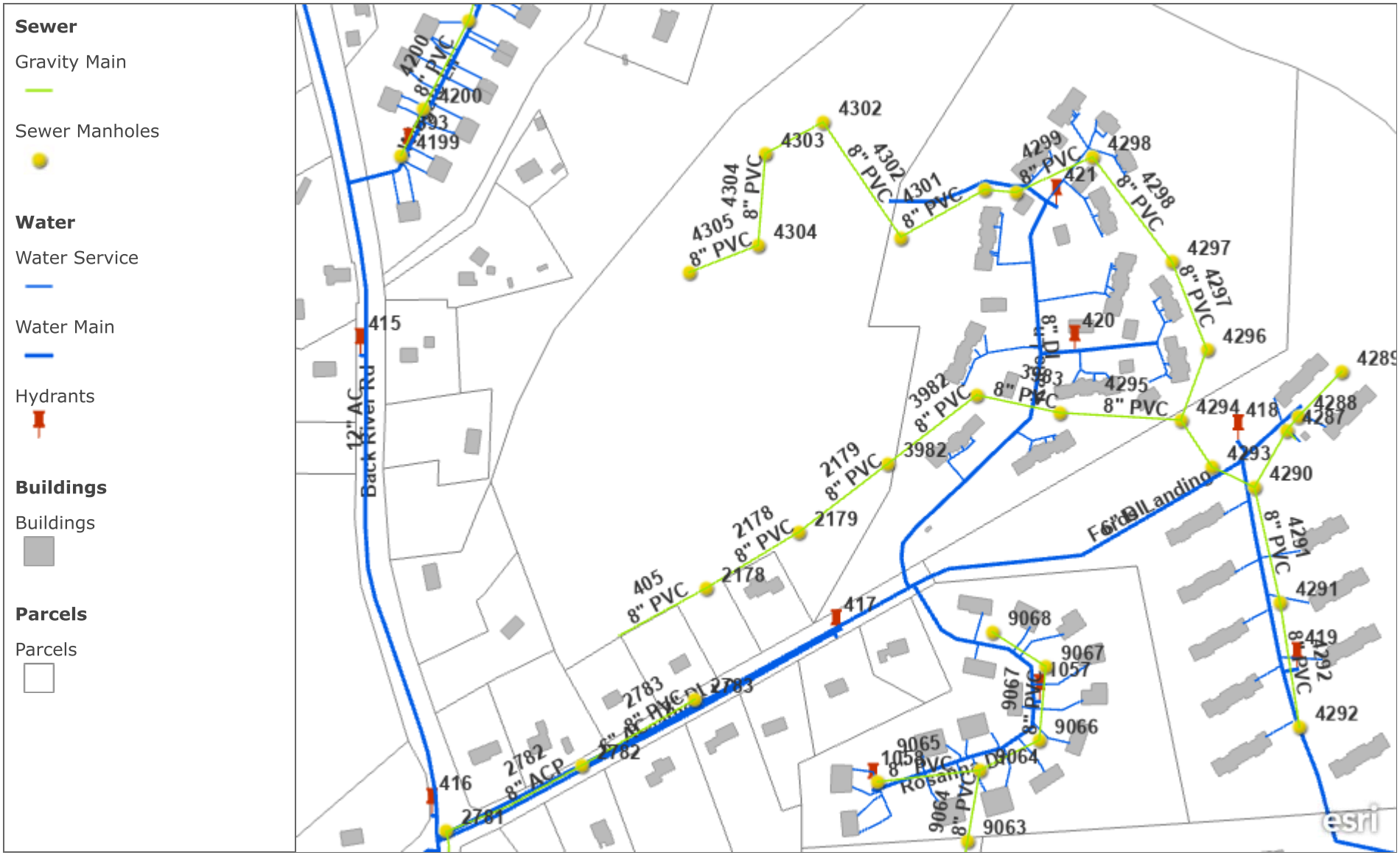
Any water and sanitary sewer work shall conform to the City's Water and Sewer Ordinances, as well as the requirements of Dover's Community Services Utilities Division. There is also adequate supply and capacity in the water system. If you have any questions, please feel free to call me at 516-6450.

Sincerely,

Dave White

Dave White, PE
City Engineer

Municipal Infrastructure



Municipal Infrastructure

Esri Community Maps Contributors, BuildingFootprintUSA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Jase Gregoire

From: Jase Gregoire
Sent: Tuesday, August 18, 2020 4:22 PM
To: Busby, Michael J
Cc: Hanson, Mary Jo; Collins, Mark T; Emmons, Trevor S; mick.khavari@gmail.com
Subject: CNE#19038-Leathers Lane-Tax Map I, Lot 4-A- Ability to Serve
Attachments: 19038-Leathers Lane-Overall Site Plan (8-18-20).pdf

Good Afternoon Mr. Busby,

As part of the Site Planning process in the City of Dover they require that we reach out to the Utility providers and request an acknowledgment of an ability to serve.

Attached is a sketch plan showing the location of the property.

The project proponent will be in contact with you to set up a work order and provide load information.

If you have any questions or require additional information please do not hesitate to contact me directly

Best regards

Jase Gregoire

Jase R. Gregoire
Staff Engineer
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821
O: 603.749.0443
F: 603.749.7348
jgregoire@civilworksne.com
www.civilworksne.com

Jase Gregoire

From: Jase Gregoire
Sent: Tuesday, August 18, 2020 4:13 PM
To: beaulieu@unitil.com
Cc: mick.khavari@gmail.com
Subject: CNE#19038-Leathers Lane- Ability to Serve
Attachments: 19038 Leathers Lane Unitil Request for Service (8-18-20).pdf

Good Afternoon Mr. Beaulieu,

As part of the Site Planning process in the City of Dover they require that we reach out to the Utility providers and request an acknowledgment of an ability to serve.

Attached is a sketch plan showing the location of the property and load calculations for the projected gas load for the building.

If you have any questions for require and additional information please do not hesitate to contact me directly

Best regards

Jase Gregoire

Jase R. Gregoire
Staff Engineer
Civilworks New England/Haight Engineering, PLLC
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jgregoire@civilworksne.com
www.civilworksne.com

Stormwater Management System Inspection & Maintenance Plan

For

LEATHERS LANE
MAP I-2, LOT I-4-A-0

Leathers Lane
Dover, New Hampshire
Strafford County

AUGUST 28, 2020

Prepared For:

MICHAEL KHAVARI
40 Harrison Ave
Portsmouth, New Hampshire 03801

Prepared By:

CIVILWORKS NE
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03820

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Michael Khavari, Dover, NH**. The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff while at the same time ensuring the recharge of groundwater resources through continued infiltration.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NH DES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals. It is recommended to update annually in advance of the winter season in order to facilitate adjustments.

Owner

Leathers Lane
Michael Khavari
40 Harrison Ave
Portsmouth, New Hampshire 03801

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party

Leathers Lane
Michael Khavari
40 Harrison Ave
Portsmouth, New Hampshire 03801

Phone: 603-531-9106
Email: mick.khavari@gmail.com

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NH DES in writing.

Management Company

Michael Khavari
40 Harrison Ave
Portsmouth, New Hampshire 03801

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NH DES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NH DES upon request.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff and to recharge the underlying groundwater resources. As a result, its design includes the following elements:

- Pipe/Culverts
- Wet Ponds
- Infiltration Basin
- Energy Dissipation Structures (Rip Rap)
- Grass Lined Swale
- Outlet Structures
- Catch Basins
- Pavement
- Litter / Trash Removal

Structure callouts in ( ) correlate to the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff and to effectively recharge the underlying groundwater resources.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

WET PONDS:

- Inspect at least once per year.
- Periodic mowing to control vegetation growth.
- Remove any woody vegetation.
- Remove any debris from pond and outlet structure.
- Remove accumulated sediment.

INFILTRATION BASIN:

- Inspect and remove any debris from inlet and outlet structures
- Remove any accumulated sediment
- Inspect and repair outlet structures and appurtenances
- Inspection of infiltration components at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Periodic mowing of embankments.
- Removal of woody vegetation from fill embankments.
- Inspection and repair of embankments and spillways.
- If an infiltration system does not drain within 72 hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to removal of accumulated sediments or reconstruction of the infiltration trench.

ENERGY DISSIPATION STRUCTURES (RIP RAP): As Applicable

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

GRASS LINED SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swale (at least twice annually), maintain a 4” stand of vegetative growth.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

CATCH BASIN(S):

- Inspect once per year.
- Inspect for floatables, sediment accumulation, and hydrocarbons (oils and grease).
- Remove all floatables immediately and sediment accumulations ≥ 1 foot.
- Hydrocarbons shall be removed immediately by skimming, absorbent materials, or other methods and should be disposed of in accordance with applicable State and Federal regulations.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Anti-icing Data Form in the appendix).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions
- Minimize the use of salt during the winter
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for sediment accumulation and clogging	≥ 2 in. sediment depth
Wet Ponds	Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris	Remove/Dispose of accordingly Mow twice per year Remove/Dispose of accordingly
Infiltration Basin	Bi-Annually	• Check for sediment accumulation • Check for debris • Inspect for woody vegetation • Maintain healthy stand of veg., 4" minimum • Inspect for invasive species • Check for water draining	Remove any accumulated Sediment Remove from inlet/outlet structures Remove Immediately Mow twice per year Remove/Dispose of accordingly 72 hours after a 2.5 inch storm event in a 24 hour period
Energy Dissipation (ED) Structures (RipRap)	Annually	• Check for displaced stones • Check for woody vegetation	Replace immediately Remove annually
Grass Lined Swale	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., 4" minimum • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore vegetation in-kind Mow twice per year Remove/Dispose of accordingly
Outlet Structure(s)	Annually	• Inspect once per year • Inspect for clogging and sediment accumulation. • Remove all debris immediately and sediment accumulations ≥ 2 inches	≥ 2 in. sediment Remove immediately
Catch Basins	Annually	• Check for sediment accumulation • Check for floatable contaminants	≥ 1 ft. sediment depth Remove all floatables
Pavement • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As Req. 1 - 2 x's Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize as Req. Sweep/Vacuum as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contains a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance: _____ Inspector: _____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

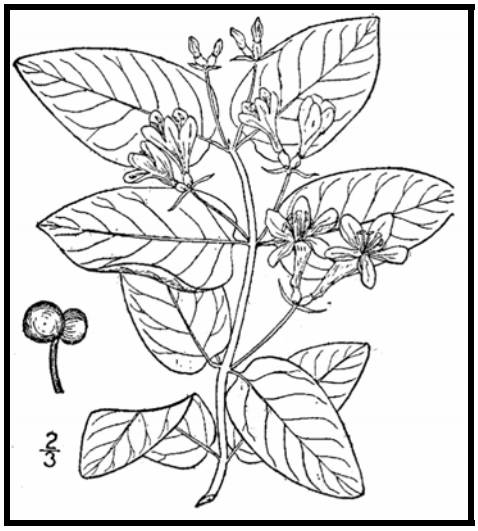
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

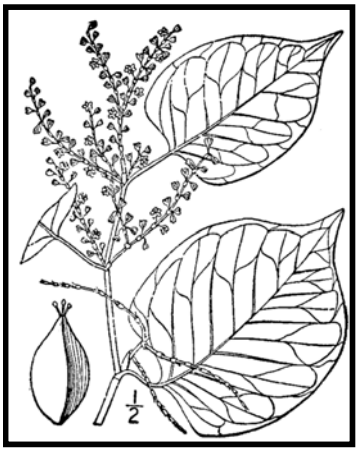
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
 </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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Stephen G. Pernaw & Company, Inc.
P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com
Transportation: Engineering • Planning • Design

M E M O R A N D U M

Ref: 1980A

To: Michael Khavari

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Development – Traffic Evaluation
Dover, New Hampshire

Date: January 2, 2020

As requested, Pernaw & Company, Inc. has conducted this *"Traffic Evaluation"* regarding your proposed residential development project located on the north side of Leathers Lane in Dover, New Hampshire. Although a "Standard Analysis" is sufficient for a development project of this size and type, this study evaluates the Back River Road/Leathers Lane intersection and quantifies the impact that this development will have on traffic operations and capacity, for both the 2021 and 2031 cases. The purpose of this memorandum is to summarize our research of available traffic count data, our recent traffic counts at the subject intersection, the trip generation analyses for the proposed development, the post-development traffic projections, and the results of the intersection capacity and Level of Service analyses. This study has determined that physical modifications to the subject intersection are not required to accommodate the additional traffic from the proposed development. To summarize:

Proposed Development – According to the plan entitled *"Conceptual Development Plan"* prepared for Michael Khavari by McEneaney Survey Associates of New England (see Attachment 1), this development project involves the construction of 45 single-family residential homes on a 16-acre parcel with frontage on the north side of Leathers Lane. Access to the site is proposed via one two-way site access road that will intersect Leathers Lane approximately 640-feet east of Back River Road. This access road will loop through the site and have several cul-de-sacs extending from it. Figure 1 shows the location of the site with respect to the area road system as well as the location of a nearby NHDOT automatic traffic recorder station.

Existing Conditions – The Back River Road/Mast Road/Leathers Lane intersection functions as a typical four-leg intersection with stop sign control on the two minor approaches. This intersection provides one general-use travel lane on each approach. The pavement markings at this intersection are limited to a double-yellow centerline and single-white edge lines on Back River Road and a white stop line on Mast Road. The Leathers Lane has no pavement markings.

Leathers Lane functions as a two-lane local street and it has no outlet. This street currently provides access to Rosanna Drive, Davis Farm, and Ford's Landing where approximately 23 single-family homes and 115 multi-family dwelling units are located.

= AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)

= INTERSECTION TURNING MOVEMENT COUNT LOCATION (SGP)

NORTH

1980A

Figure 1

Site Location / 2018 Average Annual Daily Traffic Volumes

Traffic Evaluation, Proposed Residential Development, Dover, New Hampshire

Existing Roadway Volumes – Research at the NHDOT revealed that a short-term Automatic Traffic Recorder count was conducted on Mast Road in October 2019. This count station is located east of Spruce Lane as shown on Figure 1. According to the NHDOT reports, this section of Mast Road carried an Annual Average Daily Traffic (AADT) volume of approximately 1,196 vehicles per day (vpd) in 2018, up slightly from 1,173 vpd in 2017. This data is summarized graphically on Page 4 and demonstrates that traffic demand in the general area typically reaches peak levels during the AM and PM commuter periods on weekdays (see Attachments 2 & 3).

Existing Intersection Volumes – To quantify the current traffic volume and travel patterns at the Back River Road/Mast Road/Leathers Lane intersection, our office conducted turning movement and vehicle classification counts on Wednesday, November 20, 2019 and Thursday, November 21, 2019 from 7:00 to 9:00 AM and from 3:00 to 6:00 PM. This new 2019 intersection count data is summarized on Figure 2. Several facts and conclusions are evident from this data.

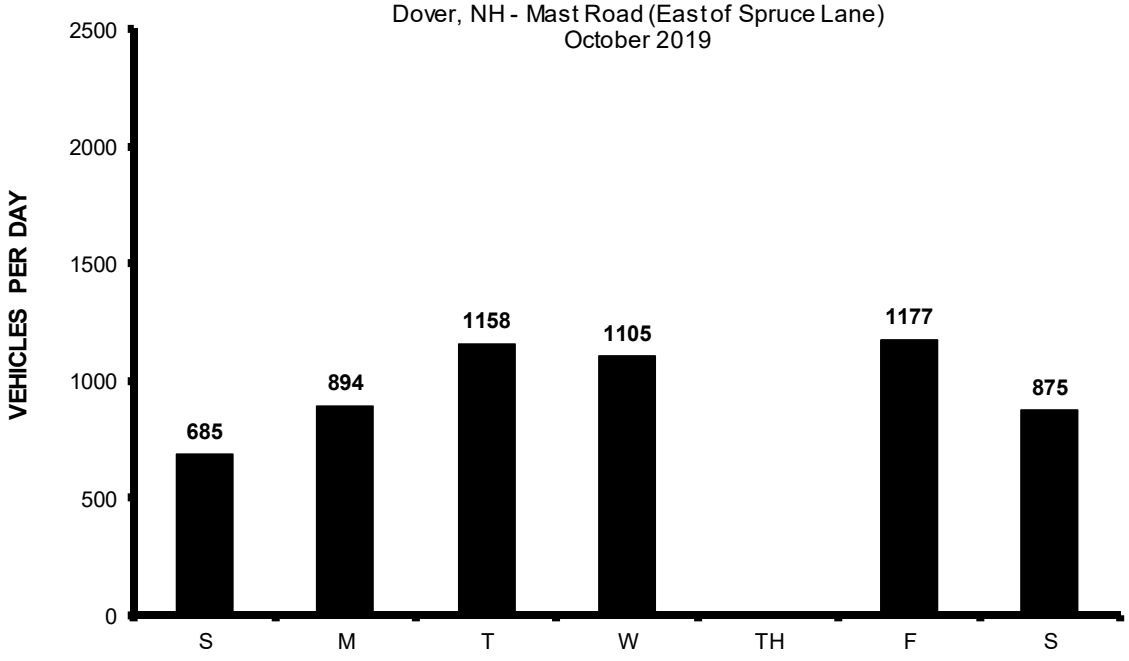
- The Thursday traffic volumes represented the higher of the two count days and were therefore selected for analysis purposes.
- The highest hourly traffic volumes in the study area occurred from 7:30 to 8:30 AM and from 4:30 to 5:30 PM. The traffic volumes during the AM peak hour were generally higher than those that occurred during the PM peak hour; likely due to the nearby Garrison Elementary School.
- Back River Road traffic volumes (north of Leathers Lane) totaled 750 (AM) and 588 (PM) during the peak hour periods. During the AM peak hour period the directional flow on Back River Road was split evenly between northbound and southbound. During the PM peak hour the majority (55%) traveled in the southbound direction.
- The traffic volume on Leathers Lane totaled 64 (AM) and 86 (PM) vehicles during the peak hour periods. The majority were exiting during the AM peak hour (86%) and entering Leathers Lane during the PM peak hour (73%).
- During the AM peak hour (7:30 to 8:30 AM) our office observed 55 vehicles departing from Leathers Lane. Vehicle delays on the Leathers Lane approach to Back River Road were monitored during this hour and ranged from 0-58 seconds. The average delay was approximately 7 seconds per vehicle and vehicle queuing was observed to be minimal (2 vehicles maximum; two occurrences).
- Analysis of the count data from both count days revealed that the majority (55%) of vehicles on Leathers Lane traveled to/from points north via Back River Road (toward NH108).

Attachments 4-21 contains the detail sheets pertaining to the raw turning movement count data.

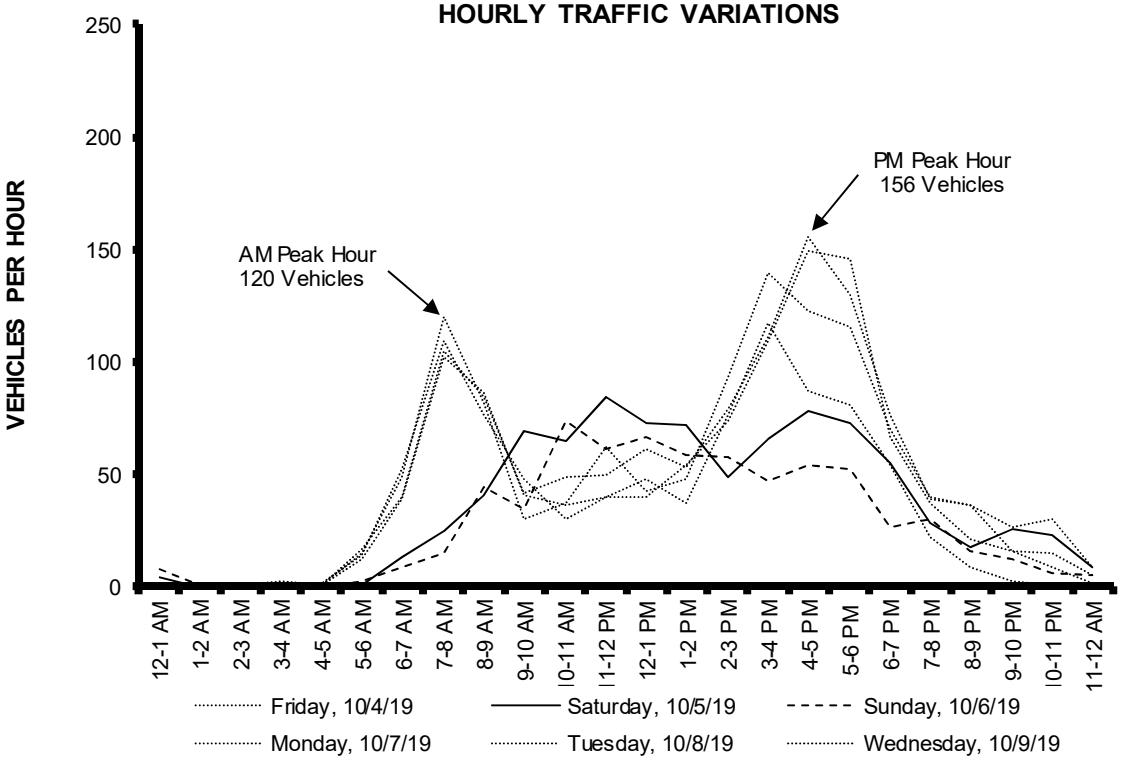
Public Transit – The subject site is not located close to any transit route. Wildcat Transit (Dover Route 3) can be reached by walking approximately one mile to Central Avenue (NH108). The Coast Public Transit system and Amtrak service is available at the Dover Transportation Center, located approximately 2.5 miles from the site. C&J Bus Lines stops at the NHDOT Park & Ride facility near Exit 9 on the Spaulding Turnpike.

DAILY TRAFFIC VARIATIONS

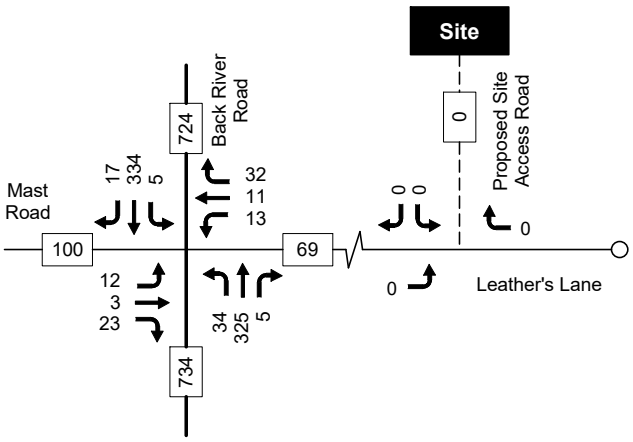
Dover, NH - Mast Road (East of Spruce Lane)
October 2019



HOURLY TRAFFIC VARIATIONS

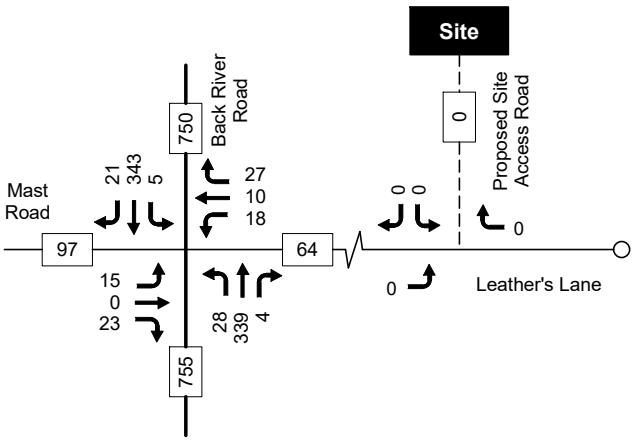


Wednesday, November 20, 2019

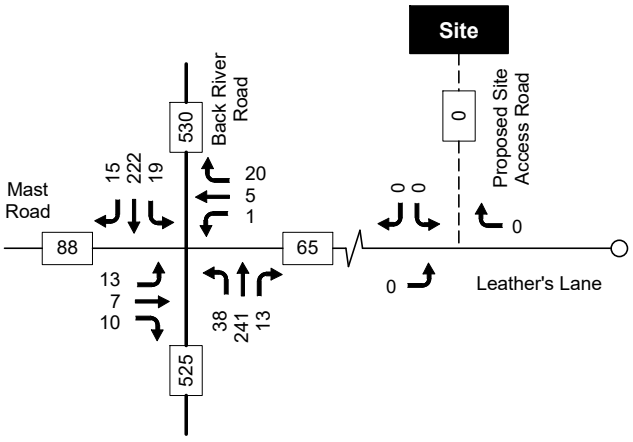


AM Peak Hour
7:30 - 8:30 AM
(Sum = 814 veh)

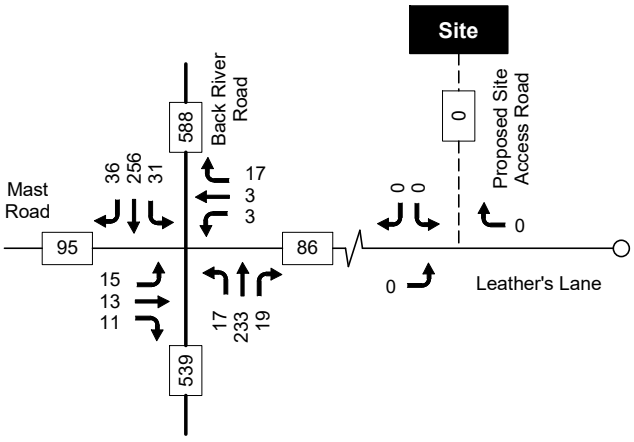
Thursday, November 21, 2019



AM Peak Hour
7:30 - 8:30 AM
(Sum = 833 veh)



PM Peak Hour
3:00 - 4:00 PM
(Sum = 604 veh)



PM Peak Hour
4:30 - 5:30 PM
(Sum = 654 veh)

NORTH

1980A

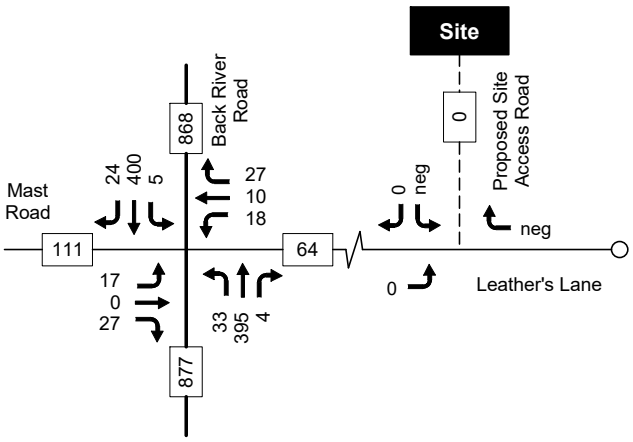
Figure 2

2019 Existing Traffic Volumes

Traffic Evaluation, Proposed Residential Development, Dover, New Hampshire

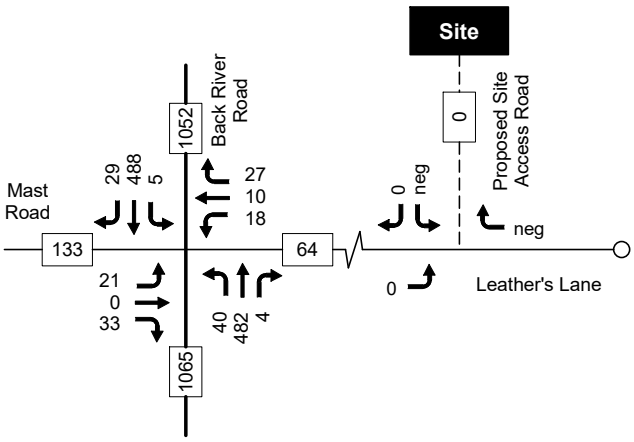
No-Build Traffic Volumes – The weekday peak hour traffic volume projections without the proposed residential development for 2021 (Opening Year) and 2031 (Horizon Year) were derived from the November 2019 traffic count data using a peak-month seasonal adjustment factor of 1.12 and an annual background growth rate of 2.0% per year (see Attachments 22 - 24). The No-Build traffic projections are summarized on Figure 3 and represent peak-month traffic conditions.

2021 NO-BUILD

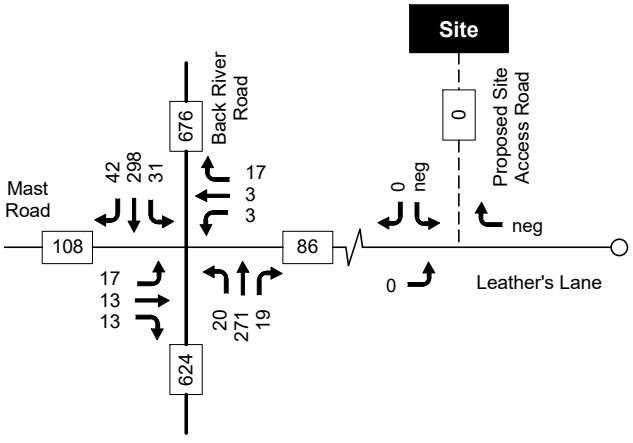


AM Peak Hour

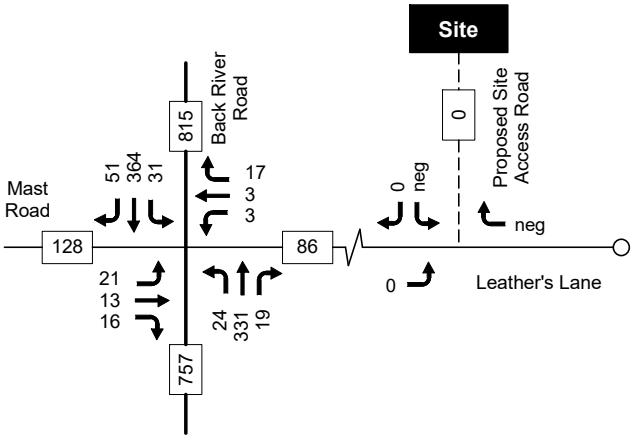
2031 NO-BUILD



AM Peak Hour



PM Peak Hour



PM Peak Hour

NORTH

1980A

Figure 3

No-Build Traffic Volumes

Traffic Evaluation, Proposed Residential Development, Dover, New Hampshire

Trip Generation - To estimate the quantity of vehicle-trips that will be produced by the proposed residential development, the standard trip generation rates and equations published by the Institute of Transportation Engineers[1] (ITE) were considered. Since the conceptual development plan (with 45 residences) is marked "preliminary," the trip generation estimates and traffic projections contained herein are based on 50 dwelling units to cover any minor changes to the plan, and to introduce conservativeness in the analysis.

Based upon ITE Land Use Code 210 (Single-Family Detached Housing), the overall development is expected to generate approximately 40 vehicle-trips (10 arrivals, 30 departures) during the AM peak hour and 52 vehicle-trips (33 arrivals, 19 departures) during the PM peak hour, on an average weekday basis. These results are based upon the number of units as the independent variable.

Table 1 — Trip Generation Summary

		50 Residential Dwelling Units
Weekday Total		
	Entering	275 veh
	Exiting	275 veh
	Total	550 trips
Weekday AM Peak Hour		
	Entering	10 veh
	Exiting	30 veh
	Total	40 trips
Weekday PM Peak Hour		
	Entering	33 veh
	Exiting	19 veh
	Total	52 trips

[1] ITE Land Use Code 210 - Single-Family Detached Housing (trip equation method)

This type of use generates "primary" trips which are considered to be new trips to the area. The computations pertaining to the trip generation analysis are attached (Attachment 25).

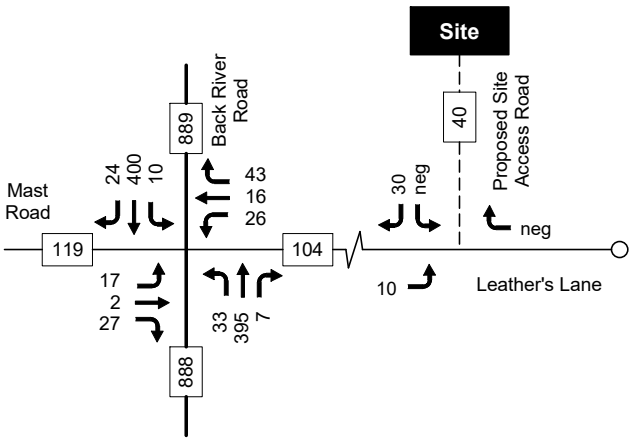
Build Traffic Projections - Figure 4 summarizes the 2021 and 2031 Build traffic projections for the study area intersection and these are based on the No-Build traffic projections (Figure 3), the trip generation estimates from Table 1, and the expectation that site traffic will be distributed accordingly:

To/From Points North (via Back River Road)	55%
To/From Points West (via Mast Road)	20%
To/From Points South (via Back River Road)	25%
	100%

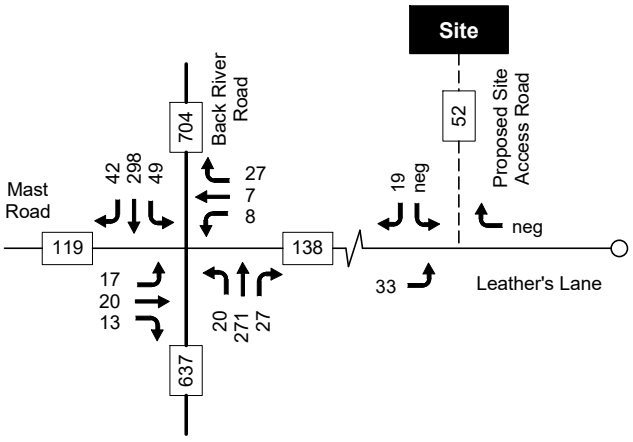
These percentages are based on analysis of the travel patterns observed at the study area intersection over the two-day count period. Attachment 26 shows the distribution of site traffic throughout the study area.

[1] Institute of Transportation Engineers, *Trip Generation*, 10th Edition (Washington, D.C., 2017)

2021 BUILD

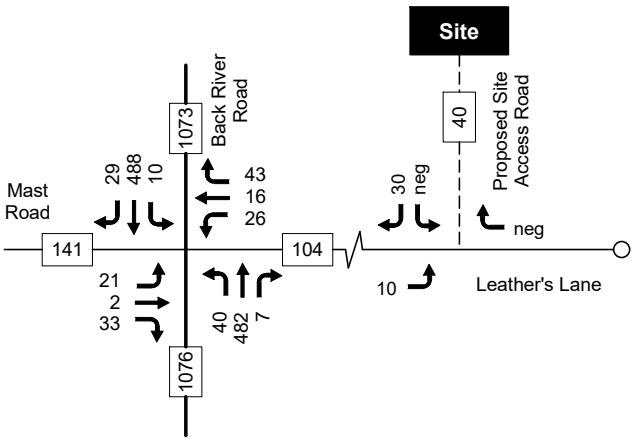


AM Peak Hour

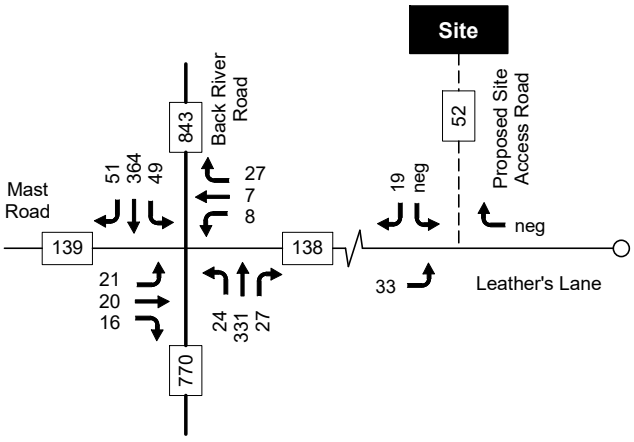


PM Peak Hour

2031 BUILD



AM Peak Hour



PM Peak Hour

NORTH

1980A

Figure 4

Build Traffic Volumes

Traffic Evaluation, Proposed Residential Development, Dover, New Hampshire

Intersection Capacity and Level of Service - The short-range (2021) and long-range (2031) traffic projections form the basis for assessing traffic operations at the Back River Road/Mast Road/Leathers Lane intersection from a capacity and delay standpoint. This intersection was 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 approaches, in terms of vehicles per hour. 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

Level of Service	Control Delay (seconds/vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

Source: Transportation Research Board, Highway Capacity Manual 2010.

The results of the analysis for the **Back River Road/Mast Road/Leathers Lane** intersection are summarized on Table 3 and show that all applicable turning movements will operate well below capacity in 2021 with the proposed development fully occupied. The long-range analysis of 2031 conditions (using the HCM software) indicates that departures from the Mast Road and Leathers Lane approaches will be operating close to capacity during the 2031 AM peak hour period, with longer vehicle delays anticipated.

The 2021 Opening Year analysis revealed that site traffic will increase vehicle delays on the Leathers Lane approach to Back River Road by less than two seconds during the AM and PM peak hour periods. In terms of vehicle queuing on the Leathers Lane approach to Back River Road, site traffic is expected to increase the 95th percentile queue by approximately +1 vehicle (from 3 to 4 vehicles) during the AM peak hour. During the PM peak hour, the 95th percentile queue is expected to increase by less than one vehicle.

Left-turn arrivals from Back River Road on to Mast Road and on to Leathers Lane are expected to operate at LOS A during all hours of the day through the horizon year and beyond with the proposed development fully occupied.

[2] Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010).

Table 3

STOP-Controlled Intersection Capacity Analysis
Back River Road / Mast Road / Leathers Lane

		Weekday AM Peak Hour				Weekday PM Peak Hour			
		Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
Back River Road - NB App.	2019 Existing	1.1	0.05	A	4	0.7	0.02	A	2
	2021 No Build	1.3	0.06	A	4	0.7	0.02	A	2
	2021 Build	1.4	0.06	A	4	0.9	0.02	A	2
	2031 No Build	2.5	0.09	A	7	1.0	0.02	A	3
	2031 Build	2.8	0.09	A	8	1.1	0.02	A	3
Mast Road - EB App.	2019 Existing	7.3	0.25	A	3	6.7	0.12	A	2
	2021 No Build	12.2	0.39	B	3	7.8	0.14	A	3
	2021 Build	12.8	0.46	B	3	8.7	0.19	A	3
	2031 No Build	38.4	0.80	E	6	8.6	0.20	A	3
	2031 Build	41.3	0.98	E	6	10.3	0.26	B	3
Leathers Lane - WB App.	2019 Existing	8.2 **	0.27	A	3	4.9	0.05	A	2
	2021 No Build	9.0	0.37	A	3	5.2	0.06	A	2
	2021 Build	10.8	0.58	B	4	6.9	0.13	A	2
	2031 No Build	17.4	0.62	C	4	5.9	0.07	A	2
	2031 Build	22.6	0.98	C	5	7.1	0.15	A	2
Back River Road - SB App.	2019 Existing	0.7	0.01	A	1	0.9	0.03	A	2
	2021 No Build	0.8	0.01	A	1	1.0	0.03	A	2
	2021 Build	0.9	0.02	A	2	1.3	0.04	A	2
	2031 No Build	1.0	0.01	A	2	1.1	0.03	A	3
	2031 Build	1.6	0.02	A	4	1.4	0.04	A	3
Overall Intersection Delay									
	2019 Existing	2.0		A		1.7		A	
	2021 No Build	2.4		A		1.8		A	
	2021 Build	3.0		A		2.3		A	
	2031 No Build	4.8		A		2.0		A	
	2031 Build	6.2		A		2.6		A	

[1] SimTraffic Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] SimTraffic Level of Service, [4] SimTraffic 95th Percentile Queue (vehicles)
** Actual observed delay = 7 sec = LOS A

The computations pertaining to the intersection capacity and Level of Service analyses are found on Attachments 27-56.

Minor-Road Approach Analysis – Given the results of the capacity analysis for the Leathers Lane approach to Back River Road, consideration was given to the need for improvements in this area. 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.

Analysis of the 2031 Build traffic volumes using NCHRP 457 guidelines is summarized on Table 4 below and confirms that providing one shared left-through-right lane on the Leathers Lane approach to Back River Road is sufficient for the anticipated traffic volumes with the proposed development fully occupied.

Table 4 — Minor-Road Approach Geometry Back River Road / Leather's Lane

	2031 AM Build Volumes	2031 PM Build Volumes
Peak Hour Inputs		
Major-Road Volume (NB-SB)	1056	847
% Right-Turns on Minor (WB)	51	64
Minor-Road Approach Volume	85	42
Limiting Minor-Road Volume (veh/h)	194	280
Conclusion		
Consider TWO Approach Lanes	**NO**	**NO**

The computations pertaining to this analysis are found on Attachments 57 & 58.

Findings & Conclusions – Based on the existing conditions data collected at the Back River Road/Mast Road/Leathers Lane intersection, the anticipated traffic increases from the full build-out of the proposed residential development, and the analysis of future traffic levels at the subject intersection, Pernaw & Company, Inc. concludes that:

1. According to NHDOT reports, Mast Road (west of the study area) carried an Annual Average Daily Traffic (AADT) volume of approximately 1,196 vehicles per day (vpd) in 2018, up slightly from 1,173 vpd in 2017.

2. The November 2019 intersection count data collected by our office at the Back River Road/Mast Road/Leathers Lane intersection revealed that it accommodated 833 (AM) and 654 (PM) vehicles during the peak hour periods, on the higher of the two count days. Similarly, Leathers Lane accommodated 64 (AM) and 86 (PM) vehicles during the peak hour periods. During the AM peak hour period when the exiting traffic volume was highest, the majority turned right on to Back River Road (toward NH108).

3. Vehicle delays and queuing were monitored during the AM peak hour. Actual vehicle delays ranged from 0-58 seconds. The average delay was approximately 7 seconds per vehicle and vehicle queuing was observed to be minimal (2 vehicles maximum; two occurrences).

4. The trip generation analysis indicates that the proposed residential development will generate approximately 40 vehicle-trips during the AM peak hour (10 arrivals, 30 departures) and 52 vehicle-trips during the PM peak hour (33 arrivals, 19 departures). This translates into less than one additional vehicle per minute, on average, during the worst-case peak hour periods. The majority are expected to travel to/from points north on Back River Road (via NH108), similar to the existing residents that utilize Leathers Lane. This means that right-turn departures and left-turn arrivals will continue to be most prevalent.

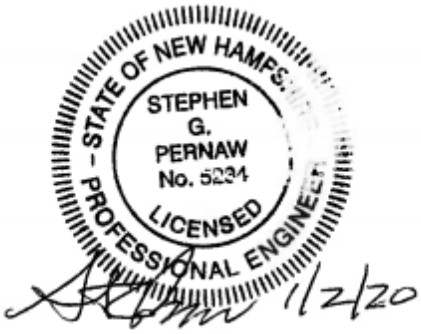
5. The intersection capacity and Level of Service (LOS) analyses of the Back River Road/Mast Road/Leathers Lane intersection confirmed that all applicable traffic movements will continue to operate below capacity in 2021 with the proposed development fully occupied. By 2031, the Leathers Lane approach will be operating close to capacity during the AM peak hour period. Site traffic is expected to increase vehicle-delays on the Leathers Lane approach to Back River Road by approximately +2 seconds (2021) and +5 seconds (2031) during the AM peak hour period. During the PM peak hour, vehicle delays will increase by less than 2 seconds.

6. The Back River Road/Mast Road/Leathers Lane intersection is not a candidate for traffic signal control as none of the warrants in the *"Manual on Uniform Traffic Control Devices"* (MUTCD) are close to being satisfied. This means that this intersection should continue to operate under stop sign control on the minor approaches.

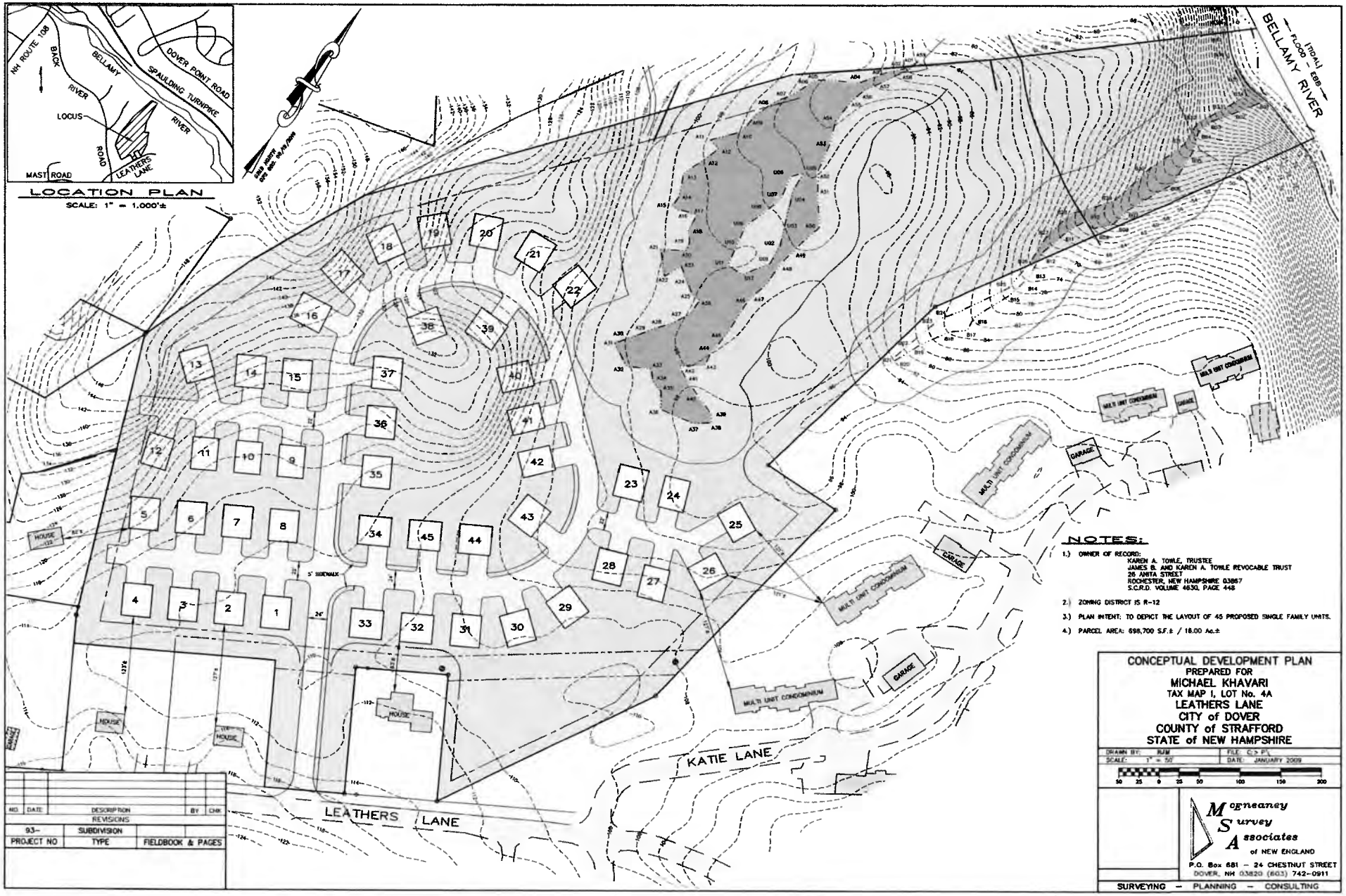
7. From a traffic operations and safety standpoint, providing ample sight distances looking left and right from the proposed site access road approach to Leathers Lane is an important safety consideration. The new access road approach to Leathers Lane should operate under stop sign control, and be delineated with a 18-inch white stop line and a short section of 4-inch double-yellow centerline to separate inbound and outbound vehicles.

In conclusion, the proposed development will result in approximately one additional vehicle per minute on Leathers Lane during the worst-case PM peak hour period; however intersection Level of Service will remain unchanged, except for borderline situations. Physical modifications to the subject intersection are not necessary as a result of the proposed residential development.

Attachments



A T T A C H M E N T S



PRELIMINARY 12/16/2019

Attachment 1

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	82125116	**Type:**	SPOT
Located On:	Mast Rd	**:**	
Direction:	2-WAY		
Community:	DOVER	**Period:**	Mon 10/7/2019 - Sun 10/13/2019
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	0	0	0					0	0.0%
1:00 AM	2	1	0					1	0.1%
2:00 AM	0	0	1					0	0.0%
3:00 AM	0	1	0					0	0.0%
4:00 AM	1	1	2					1	0.1%
5:00 AM	12	17	14					14	1.4%
6:00 AM	39	40	52					44	4.1%
7:00 AM	102	105	109					105	10.0%
8:00 AM	86	84	76					82	7.8%
9:00 AM	41	42	48					44	4.1%
10:00 AM	36	49	30					38	3.6%
11:00 AM	40	50	40					43	4.1%
12:00 PM	48	61	40					50	4.7%
1:00 PM	37	53	54					48	4.6%
2:00 PM	76	79	74					76	7.3%
3:00 PM	117	111	109					112	10.7%
4:00 PM	87	156	149					131	12.4%
5:00 PM	81	130	146					119	11.3%
6:00 PM	54	76	67					66	6.2%
7:00 PM	22	39	37					33	3.1%
8:00 PM	9	36	21					22	2.1%
9:00 PM	3	16	16					12	1.1%
10:00 PM	1	9	15					8	0.8%
11:00 PM	0	2	5					2	0.2%
Total	**894**	**1,158**	**1,105**	**0**	**0**	**0**	**0**		
24hr Total	894	1158	1105					1,052	
AM Pk Hr	7:00	7:00	7:00						
AM Peak	102	105	109					105	
PM Pk Hr	3:00	4:00	4:00						
PM Peak	117	156	149					141	
% Pk Hr	13.09%	13.47%	13.48%					13.35%	

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

Excel Version

Weekly Volume Report

Location ID:	82125116	**Type:**	SPOT
Located On:	Mast Rd	**:**	
Direction:	2-WAY		
Community:	DOVER	**Period:**	Mon 9/30/2019 - Sun 10/6/2019
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM					1	4	8	4	0.5%
1:00 AM					1	0	1	1	0.1%
2:00 AM					1	0	0	0	0.0%
3:00 AM					3	1	2	2	0.2%
4:00 AM					1	2	0	1	0.1%
5:00 AM					15	1	3	6	0.7%
6:00 AM					49	13	9	24	2.6%
7:00 AM					120	25	15	53	5.8%
8:00 AM					82	41	44	56	6.1%
9:00 AM					30	69	35	45	4.9%
10:00 AM					37	65	74	59	6.4%
11:00 AM					62	84	61	69	7.6%
12:00 PM					43	73	67	61	6.7%
1:00 PM					48	72	59	60	6.5%
2:00 PM					93	49	58	67	7.3%
3:00 PM					140	66	47	84	9.2%
4:00 PM					123	78	54	85	9.3%
5:00 PM					116	73	52	80	8.8%
6:00 PM					70	55	27	51	5.6%
7:00 PM					40	28	30	33	3.6%
8:00 PM					36	18	16	23	2.6%
9:00 PM					27	26	12	22	2.4%
10:00 PM					30	23	6	20	2.2%
11:00 PM					9	9	5	8	0.8%
Total	**0**	**0**	**0**	**0**	**1,177**	**875**	**685**		
24hr Total					1177	875	685	912	
AM Pk Hr					7:00	11:00	10:00		
AM Peak					120	84	74	93	
PM Pk Hr					3:00	4:00	12:00		
PM Peak					140	78	67	95	
% Pk Hr					11.89%	9.60%	10.80%	10.76%	

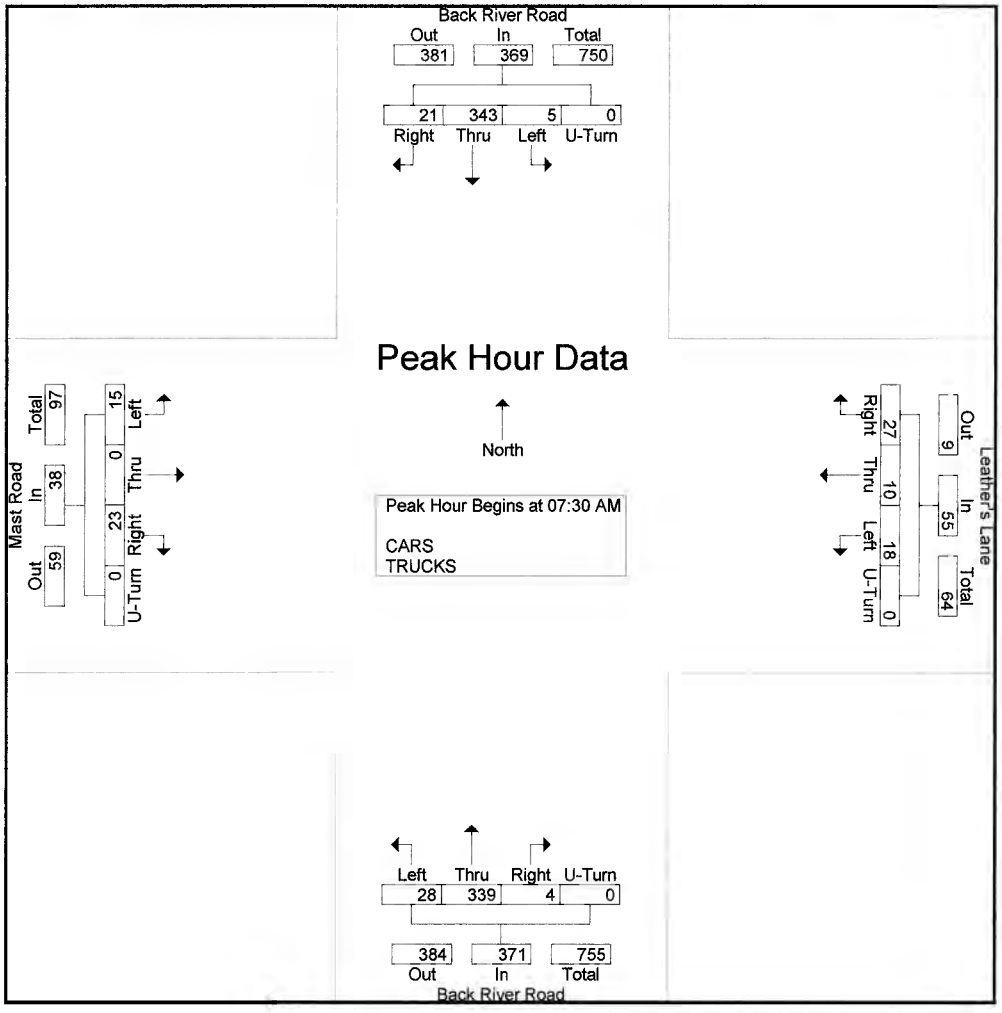
Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 2

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	2	54	**2**	0	58	**10**	**4**	0	0	14	0	58	5	0	63	4	0	**7**	0	11	146
07:45 AM	2	101	1	0	104	8	1	3	0	12	0	57	3	0	60	**10**	0	5	0	**15**	191
08:00 AM	5	**147**	1	0	**153**	3	1	**10**	0	14	1	**129**	**11**	0	**141**	6	0	2	0	8	**316**
08:15 AM	**12**	41	1	0	54	6	4	5	0	**15**	**3**	95	9	0	107	3	0	1	0	4	180
Total Volume	21	343	5	0	369	27	10	18	0	55	4	339	28	0	371	23	0	15	0	38	833
% App. Total	5.7	93	1.4	0		49.1	18.2	32.7	0		1.1	91.4	7.5	0		60.5	0	39.5	0		
PHF	.438	.583	.625	.000	.603	.675	.625	.450	.000	.917	.333	.657	.636	.000	.658	.575	.000	.536	.000	.633	.659



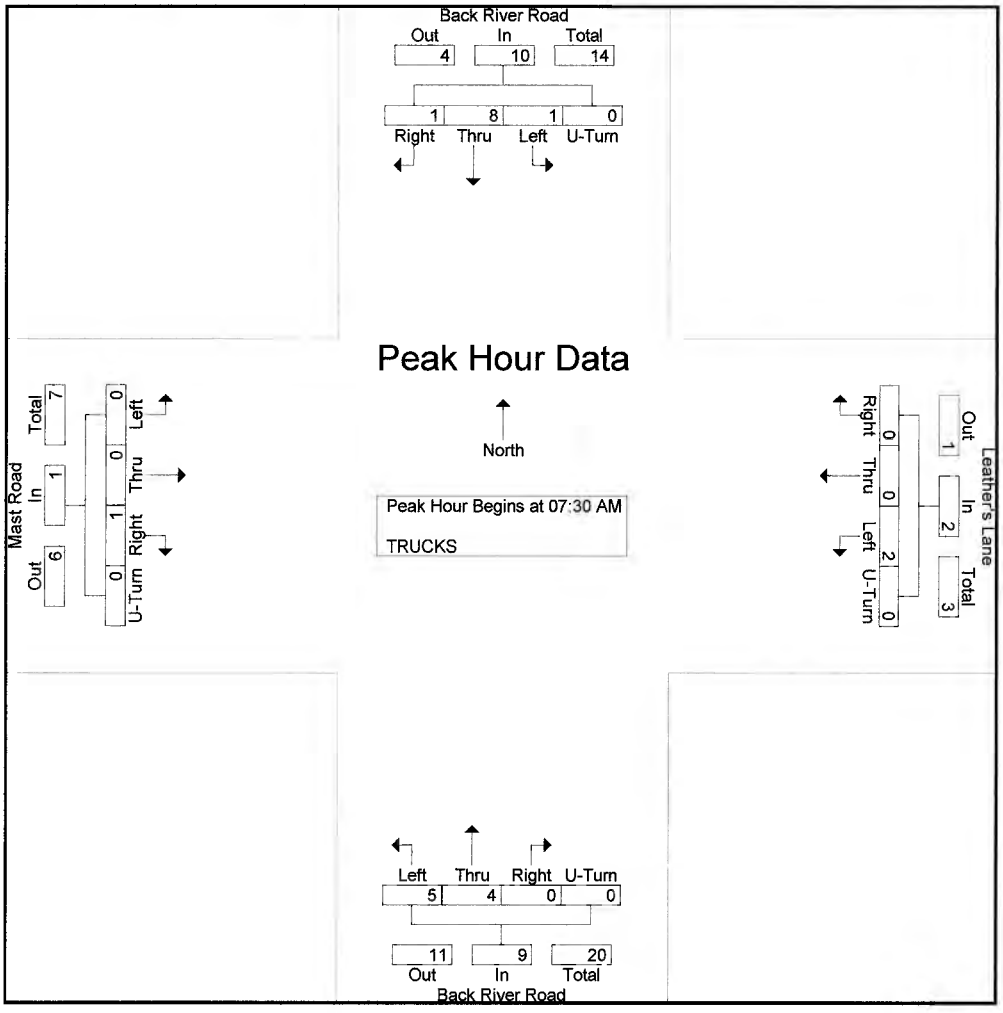
Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 2

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	**1**	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
07:45 AM	0	2	0	0	2	0	0	0	0	0	0	**2**	0	0	2	0	0	0	0	0	**4**
08:00 AM	0	**4**	**1**	0	**5**	0	0	**1**	0	**1**	0	0	2	0	2	**1**	0	0	0	**1**	**9**
08:15 AM	0	1	0	0	1	0	0	1	0	1	0	1	**3**	0	**4**	0	0	0	0	0	6
Total Volume	1	8	1	0	10	0	0	2	0	2	0	4	5	0	9	1	0	0	0	1	22
% App. Total	10	80	10	0		0	0	100	0		0	44.4	55.6	0		100	0	0	0		
PHF	.250	.500	.250	.000	.500	.000	.000	.500	.000	.500	.000	.500	.417	.000	.563	.250	.000	.000	.000	.250	.611



Stephen G. Pernaw & Company, Inc.

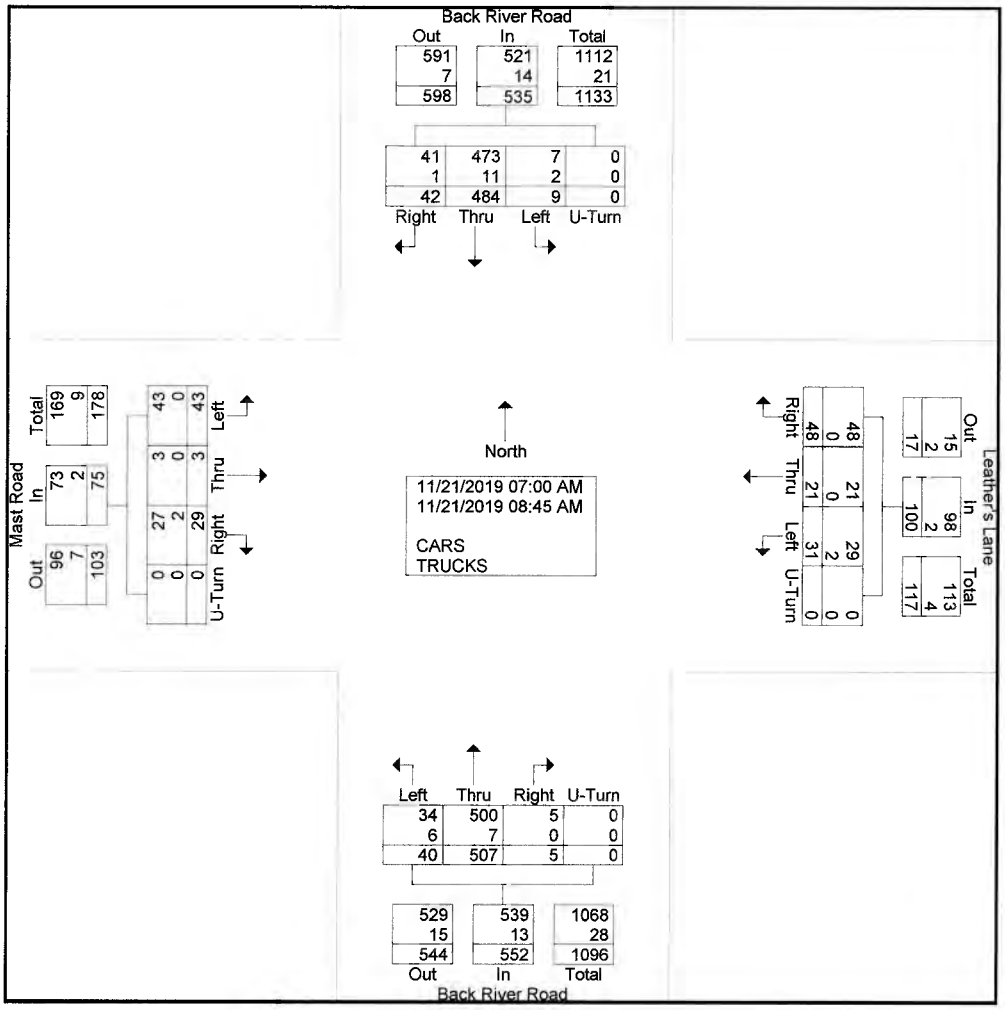
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 1

Groups Printed- CARS - TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	6	30	1	0	37	7	3	4	0	14	0	46	6	0	52	3	1	9	0	13	116
07:15 AM	7	47	1	0	55	2	4	4	0	10	0	38	2	0	40	1	0	10	0	11	116
07:30 AM	2	54	2	0	58	10	4	0	0	14	0	58	5	0	63	4	0	7	0	11	146
07:45 AM	2	101	1	0	104	8	1	3	0	12	0	57	3	0	60	10	0	5	0	15	191
Total	17	232	5	0	254	27	12	11	0	50	0	199	16	0	215	18	1	31	0	50	569
08:00 AM	5	147	1	0	153	3	1	10	0	14	1	129	11	0	141	6	0	2	0	8	316
08:15 AM	12	41	1	0	54	6	4	5	0	15	3	95	9	0	107	3	0	1	0	4	180
08:30 AM	5	32	1	0	38	5	2	1	0	8	1	43	3	0	47	0	1	6	0	7	100
08:45 AM	3	32	1	0	36	7	2	4	0	13	0	41	1	0	42	2	1	3	0	6	97
Total	25	252	4	0	281	21	9	20	0	50	5	308	24	0	337	11	2	12	0	25	693
Grand Total	42	484	9	0	535	48	21	31	0	100	5	507	40	0	552	29	3	43	0	75	1262
Apprch %	7.9	90.5	1.7	0		48	21	31	0		0.9	91.8	7.2	0		38.7	4	57.3	0		
Total %	3.3	38.4	0.7	0	42.4	3.8	1.7	2.5	0	7.9	0.4	40.2	3.2	0	43.7	2.3	0.2	3.4	0	5.9	
CARS	41	473	7	0	521	48	21	29	0	98	5	500	34	0	539	27	3	43	0	73	1231
% CARS	97.6	97.7	77.8	0	97.4	100	100	93.5	0	98	100	98.6	85	0	97.6	93.1	100	100	0	97.3	97.5
TRUCKS	1	11	2	0	14	0	0	2	0	2	0	7	6	0	13	2	0	0	0	2	31
% TRUCKS	2.4	2.3	22.2	0	2.6	0	0	6.5	0	2	0	1.4	15	0	2.4	6.9	0	0	0	2.7	2.5



Stephen G. Pernaw & Company, Inc.

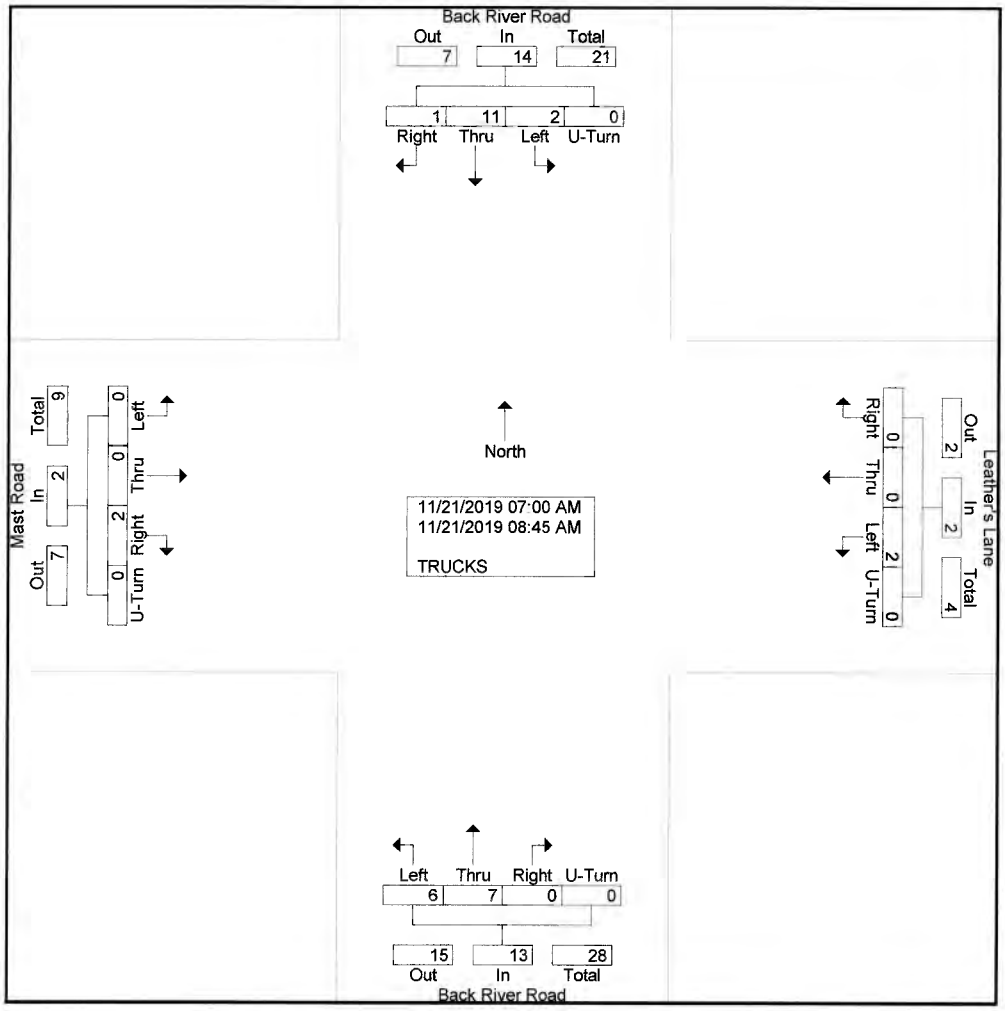
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 1

Groups Printed- TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	1	1	0	2	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	5
07:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
07:45 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Total	1	5	1	0	7	0	0	0	0	0	0	5	0	0	5	1	0	0	0	1	13
08:00 AM	0	4	1	0	5	0	0	1	0	1	0	0	2	0	2	1	0	0	0	1	9
08:15 AM	0	1	0	0	1	0	0	1	0	1	0	1	3	0	4	0	0	0	0	0	6
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
08:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	6	1	0	7	0	0	2	0	2	0	2	6	0	8	1	0	0	0	1	18
Grand Total	1	11	2	0	14	0	0	2	0	2	0	7	6	0	13	2	0	0	0	2	31
Apprch %	7.1	78.6	14.3	0		0	0	100	0		0	53.8	46.2	0		100	0	0	0		
Total %	3.2	35.5	6.5	0	45.2	0	0	6.5	0	6.5	0	22.6	19.4	0	41.9	6.5	0	0	0	6.5	



Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
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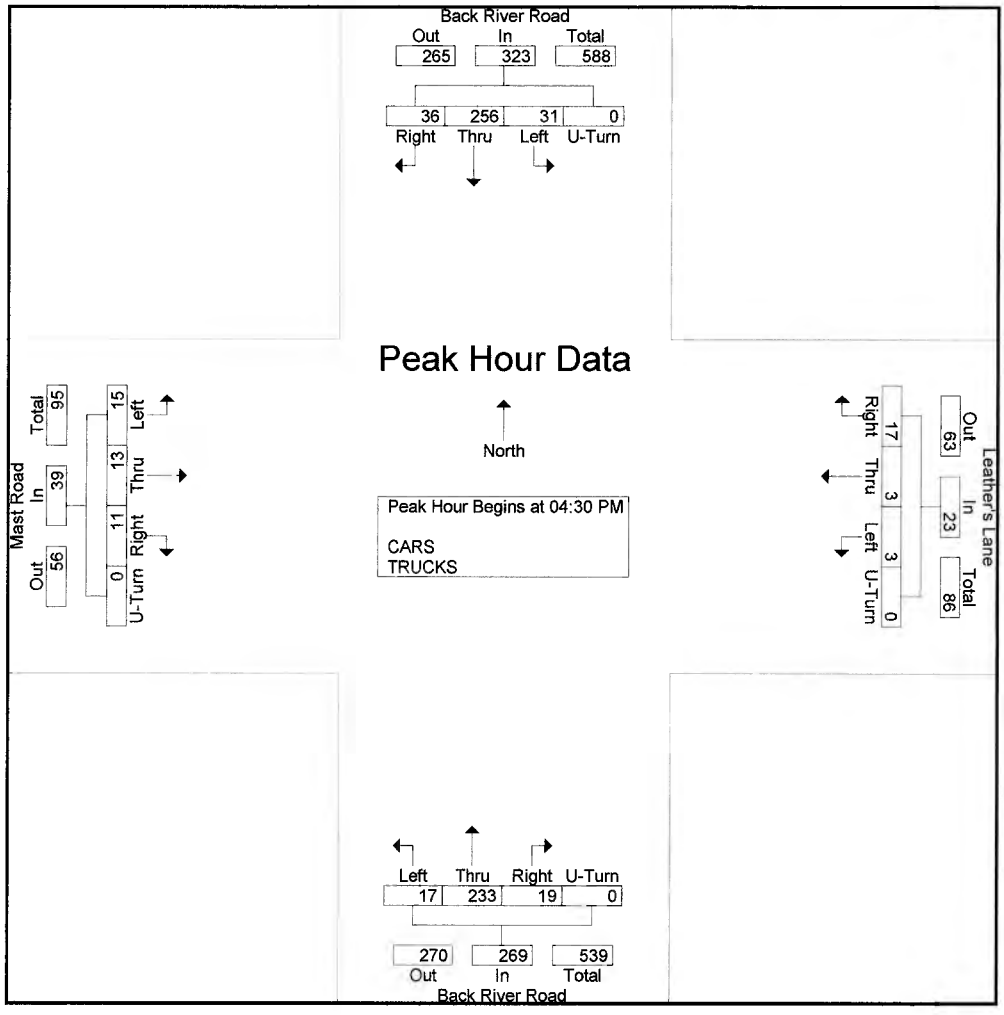
	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	6	**67**	10	0	83	3	0	**2**	0	5	2	57	**5**	0	64	3	**4**	2	0	9	161
04:45 PM	7	62	**12**	0	81	1	**2**	0	0	3	**6**	51	5	0	62	1	3	**6**	0	10	156
05:00 PM	5	65	5	0	75	**7**	0	1	0	**8**	6	**65**	3	0	**74**	**4**	3	5	0	**12**	**169**
05:15 PM	**18**	62	4	0	**84**	6	1	0	0	7	5	60	4	0	69	3	3	2	0	8	168
Total Volume	36	256	31	0	323	17	3	3	0	23	19	233	17	0	269	11	13	15	0	39	654
% App. Total	11.1	79.3	9.6	0		73.9	13	13	0		7.1	86.6	6.3	0		28.2	33.3	38.5	0		
PHF	.500	.955	.646	.000	.961	.607	.375	.375	.000	.719	.792	.896	.850	.000	.909	.688	.813	.625	.000	.813	.967



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Weather: Clear
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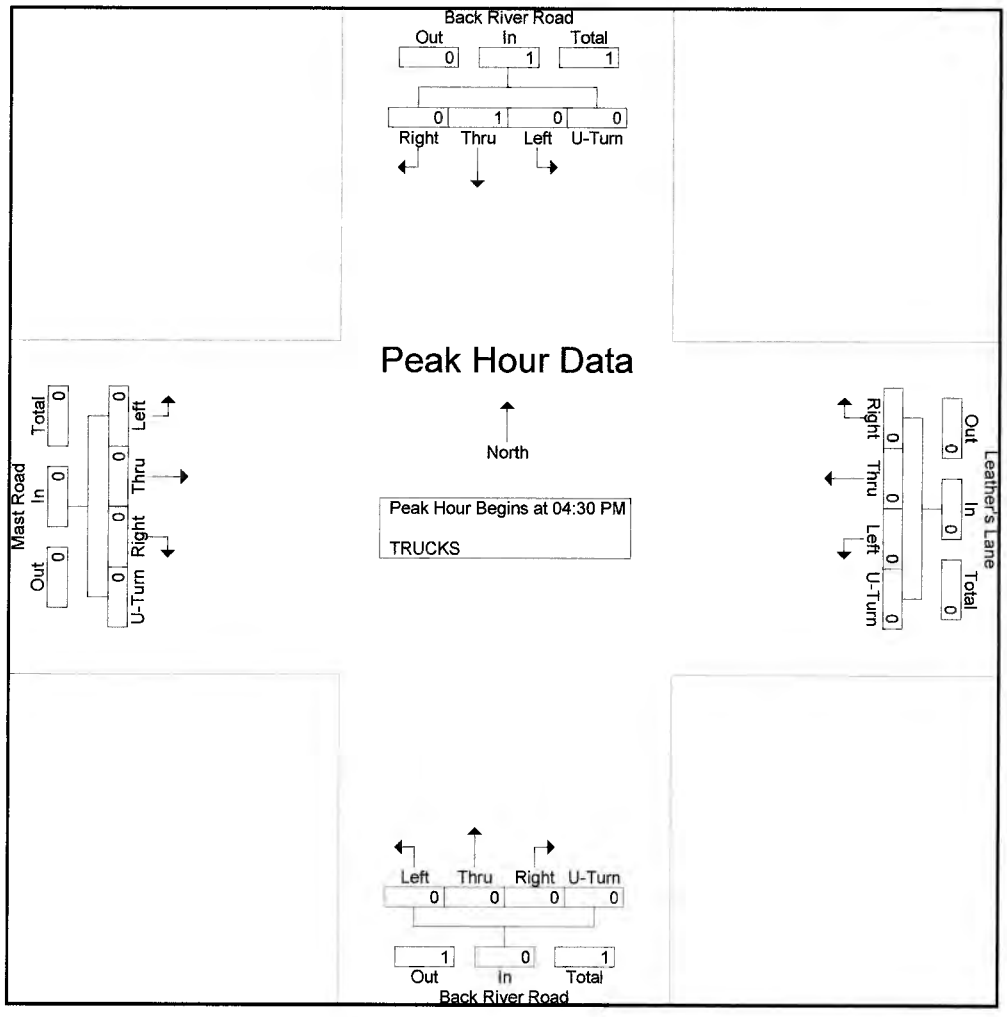
	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
05:00 PM	0	**1**	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
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250



Stephen G. Pernaw & Company, Inc.

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Weather: Clear
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Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 1

Groups Printed- CARS - TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	4	76	4	0	84	2	2	1	0	5	4	75	15	0	94	6	4	3	0	13	196
03:15 PM	5	68	8	0	81	7	2	1	0	10	3	69	13	0	85	1	1	3	0	5	181
03:30 PM	6	50	3	0	59	4	1	2	0	7	4	63	6	0	73	2	0	2	0	4	143
03:45 PM	5	40	5	0	50	4	1	0	0	5	3	54	4	0	61	1	1	3	0	5	121
Total	20	234	20	0	274	17	6	4	0	27	14	261	38	0	313	10	6	11	0	27	641
04:00 PM	5	47	3	0	55	4	0	1	0	5	2	58	7	0	67	3	3	7	0	13	140
04:15 PM	5	50	5	0	60	4	0	2	0	6	0	46	5	0	51	4	1	3	0	8	125
04:30 PM	6	67	10	0	83	3	0	2	0	5	2	57	5	0	64	3	4	2	0	9	161
04:45 PM	7	62	12	0	81	1	2	0	0	3	6	51	5	0	62	1	3	6	0	10	156
Total	23	226	30	0	279	12	2	5	0	19	10	212	22	0	244	11	11	18	0	40	582
05:00 PM	5	65	5	0	75	7	0	1	0	8	6	65	3	0	74	4	3	5	0	12	169
05:15 PM	18	62	4	0	84	6	1	0	0	7	5	60	4	0	69	3	3	2	0	8	168
05:30 PM	9	39	6	0	54	2	1	0	0	3	1	40	8	0	49	1	1	13	0	15	121
05:45 PM	8	65	4	0	77	5	1	2	0	8	2	44	4	0	50	4	0	7	0	11	146
Total	40	231	19	0	290	20	3	3	0	26	14	209	19	0	242	12	7	27	0	46	604
Grand Total	83	691	69	0	843	49	11	12	0	72	38	682	79	0	799	33	24	56	0	113	1827
Apprch %	9.8	82	8.2	0		68.1	15.3	16.7	0		4.8	85.4	9.9	0		29.2	21.2	49.6	0		
Total %	4.5	37.8	3.8	0	46.1	2.7	0.6	0.7	0	3.9	2.1	37.3	4.3	0	43.7	1.8	1.3	3.1	0	6.2	
CARS	82	685	69	0	836	49	11	12	0	72	38	673	77	0	788	33	24	56	0	113	1809
% CARS	98.8	99.1	100	0	99.2	100	100	100	0	100	100	98.7	97.5	0	98.6	100	100	100	0	100	99
TRUCKS	1	6	0	0	7	0	0	0	0	0	0	9	2	0	11	0	0	0	0	0	18
% TRUCKS	1.2	0.9	0	0	0.8	0	0	0	0	0	0	1.3	2.5	0	1.4	0	0	0	0	0	1

Stephen G. Pernaw & Company, Inc.

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Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
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File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
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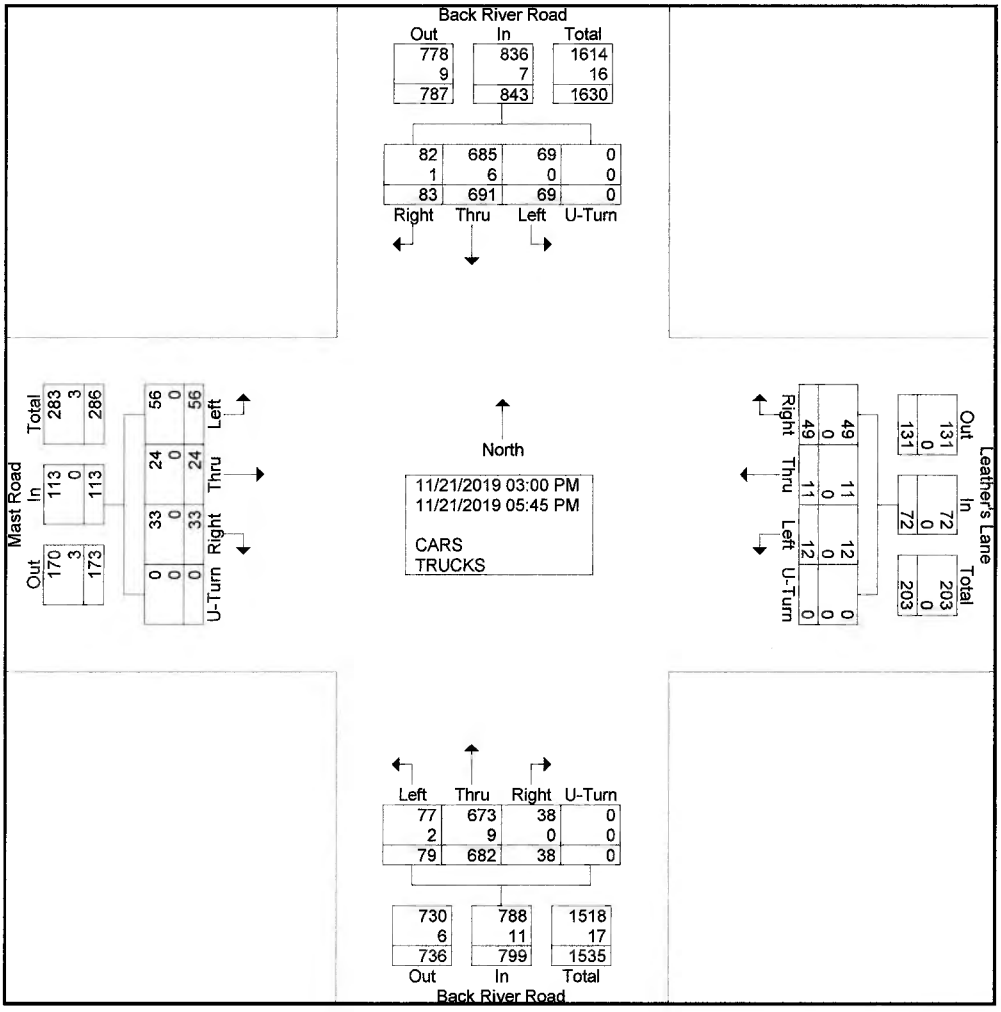

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Weather: Clear
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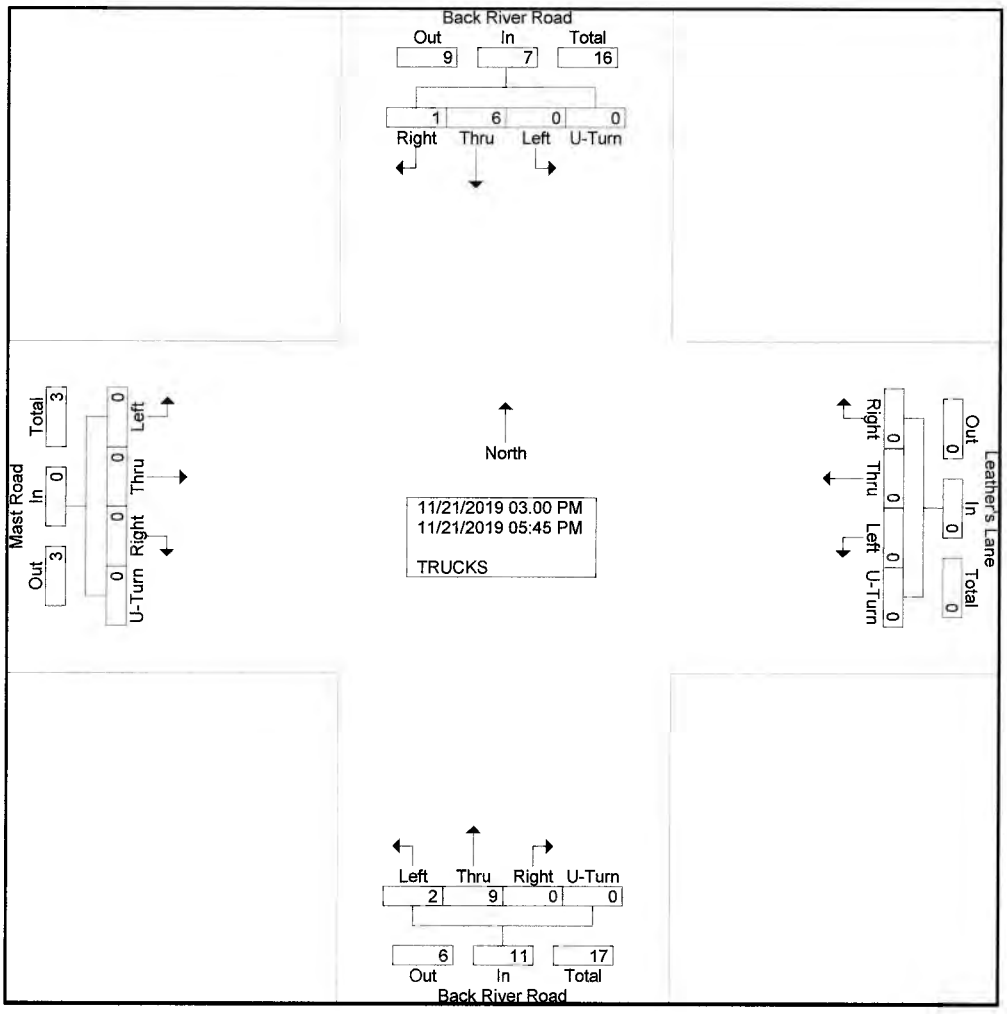
File Name : 1980A_INT_A_AM_&_PM_Thurs_727224_11-21-2019
Site Code : 1980A
Start Date : 11/21/2019
Page No : 1

Groups Printed- TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
03:15 PM	0	1	0	0	1	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	7
03:30 PM	1	0	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
03:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	5	0	0	6	0	0	0	0	0	0	8	2	0	10	0	0	0	0	0	16
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:00 PM	0	1	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	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1	6	0	0	7	0	0	0	0	0	0	9	2	0	11	0	0	0	0	0	18
Apprch %	14.3	85.7	0	0		0	0	0	0		0	81.8	18.2	0		0	0	0	0		
Total %	5.6	33.3	0	0	38.9	0	0	0	0	0	0	50	11.1	0	61.1	0	0	0	0	0	



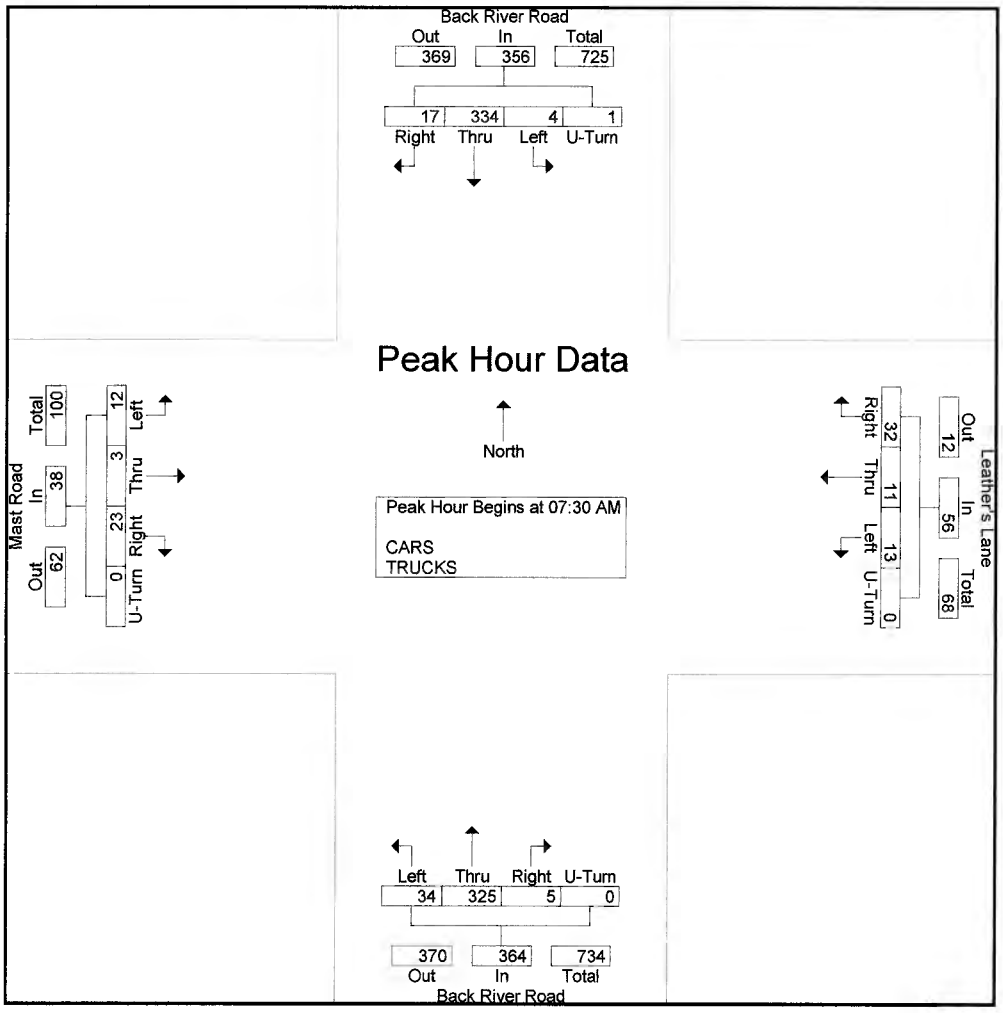
Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Wed 11-20-2019
Site Code : 1980A
Start Date : 11/20/2019
Page No : 2

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	4	56	**1**	0	61	**11**	**3**	2	0	16	0	46	7	0	53	6	**2**	**5**	0	13	143
07:45 AM	2	**125**	1	0	**128**	10	3	**5**	0	**18**	1	76	3	0	80	**14**	0	3	0	**17**	243
08:00 AM	4	104	1	0	109	9	2	5	0	16	**2**	**133**	**12**	0	**147**	2	0	2	0	4	**276**
08:15 AM	**7**	49	1	**1**	58	2	3	1	0	6	2	70	12	0	84	1	1	2	0	4	152
Total Volume	17	334	**4**	1	356	32	11	13	0	56	5	325	34	0	364	23	3	12	0	38	814
% App. Total	4.8	93.8	1.1	0.3		57.1	19.6	23.2	0		1.4	89.3	9.3	0		60.5	7.9	31.6	0		
PHF	.607	.668	1.00	.250	.695	.727	.917	.650	.000	.778	.625	.611	.708	.000	.619	.411	.375	.600	.000	.559	.737



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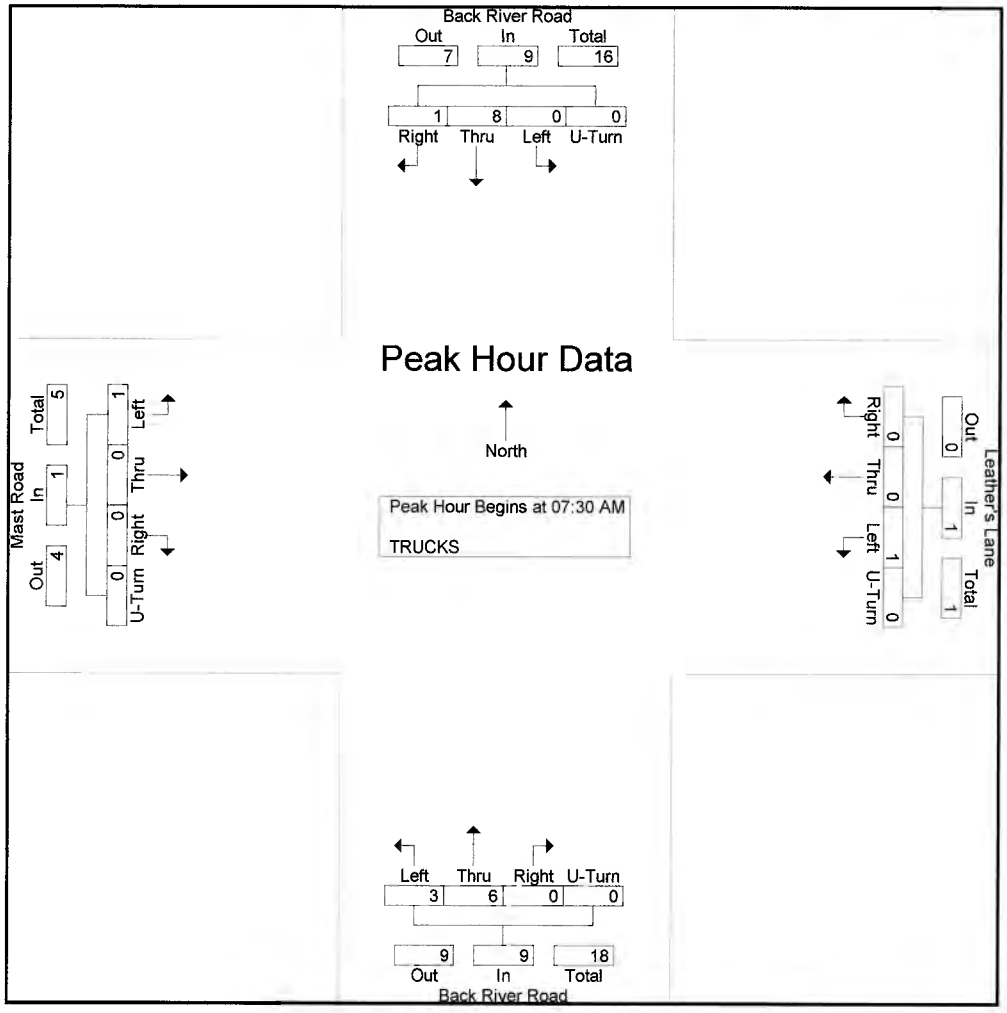
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Wed 11-20-2019
Site Code : 1980A
Start Date : 11/20/2019
Page No : 2

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	**1**	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	0	1	0	0	1	0	0	**1**	0	**1**	0	2	0	0	2	0	0	0	0	0	4
08:00 AM	0	**4**	0	0	**4**	0	0	0	0	0	0	1	**2**	0	3	0	0	0	0	0	**7**
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	**3**	1	0	**4**	0	0	**1**	0	**1**	6
Total Volume	1	8	0	0	9	0	0	1	0	1	0	6	3	0	9	0	0	1	0	1	20
% App. Total	11.1	88.9	0	0		0	0	100	0		0	66.7	33.3	0		0	0	100	0		
PHF	.250	.500	.000	.000	.563	.000	.000	.250	.000	.250	.000	.500	.375	.000	.563	.000	.000	.250	.000	.250	.714



Stephen G. Pernaw & Company, Inc.

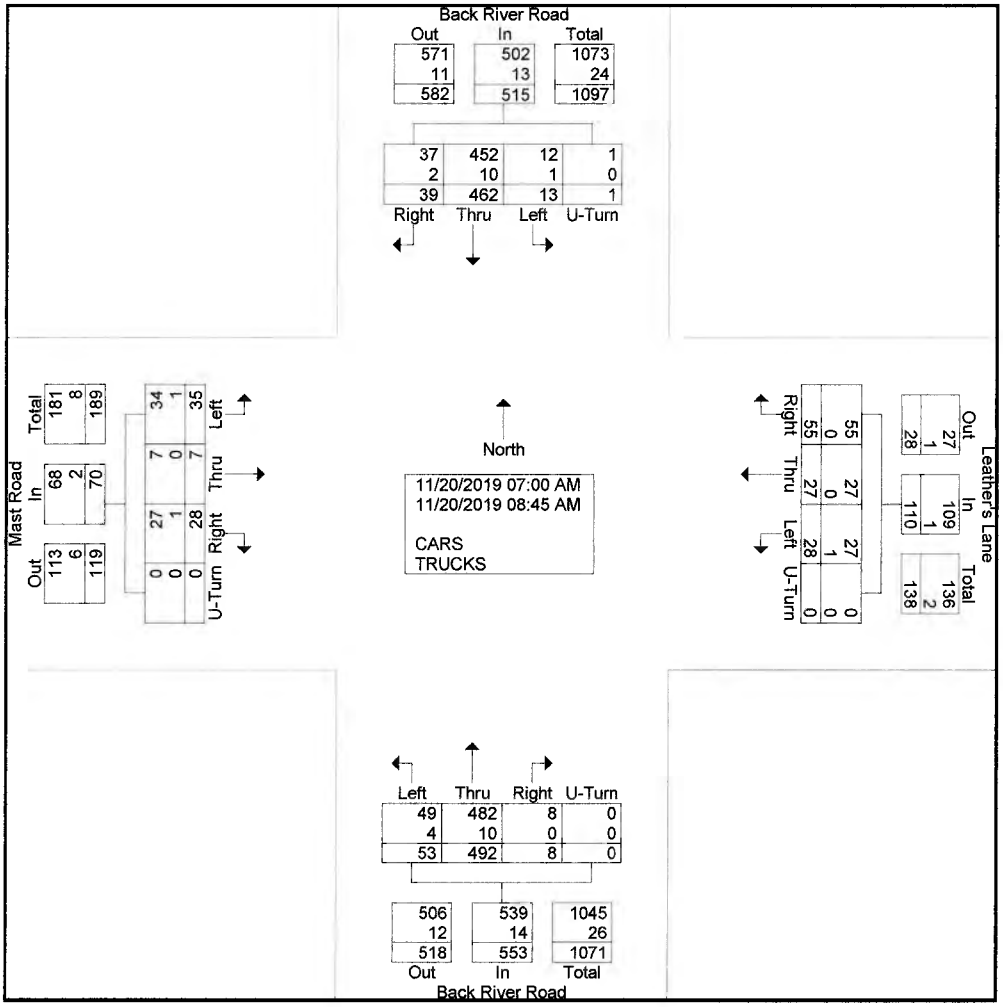
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Wed 11-20-2019
Site Code : 1980A
Start Date : 11/20/2019
Page No : 1

Groups Printed- CARS - TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	7	25	0	0	32	11	4	6	0	21	1	51	6	0	58	1	1	1	0	3	114
07:15 AM	6	54	4	0	64	6	5	4	0	15	0	47	1	0	48	3	0	13	0	16	143
07:30 AM	4	56	1	0	61	11	3	2	0	16	0	46	7	0	53	6	2	5	0	13	143
07:45 AM	2	125	1	0	128	10	3	5	0	18	1	76	3	0	80	14	0	3	0	17	243
Total	19	260	6	0	285	38	15	17	0	70	2	220	17	0	239	24	3	22	0	49	643
08:00 AM	4	104	1	0	109	9	2	5	0	16	2	133	12	0	147	2	0	2	0	4	276
08:15 AM	7	49	1	1	58	2	3	1	0	6	2	70	12	0	84	1	1	2	0	4	152
08:30 AM	4	30	3	0	37	3	4	1	0	8	1	34	7	0	42	0	1	5	0	6	93
08:45 AM	5	19	2	0	26	3	3	4	0	10	1	35	5	0	41	1	2	4	0	7	84
Total	20	202	7	1	230	17	12	11	0	40	6	272	36	0	314	4	4	13	0	21	605
Grand Total	39	462	13	1	515	55	27	28	0	110	8	492	53	0	553	28	7	35	0	70	1248
Apprch %	7.6	89.7	2.5	0.2		50	24.5	25.5	0		1.4	89	9.6	0		40	10	50	0		
Total %	3.1	37	1	0.1	41.3	4.4	2.2	2.2	0	8.8	0.6	39.4	4.2	0	44.3	2.2	0.6	2.8	0	5.6	
CARS	37	452	12	1	502	55	27	27	0	109	8	482	49	0	539	27	7	34	0	68	1218
% CARS	94.9	97.8	92.3	100	97.5	100	100	96.4	0	99.1	100	98	92.5	0	97.5	96.4	100	97.1	0	97.1	97.6
TRUCKS	2	10	1	0	13	0	0	1	0	1	0	10	4	0	14	1	0	1	0	2	30
% TRUCKS	5.1	2.2	7.7	0	2.5	0	0	3.6	0	0.9	0	2	7.5	0	2.5	3.6	0	2.9	0	2.9	2.4



Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
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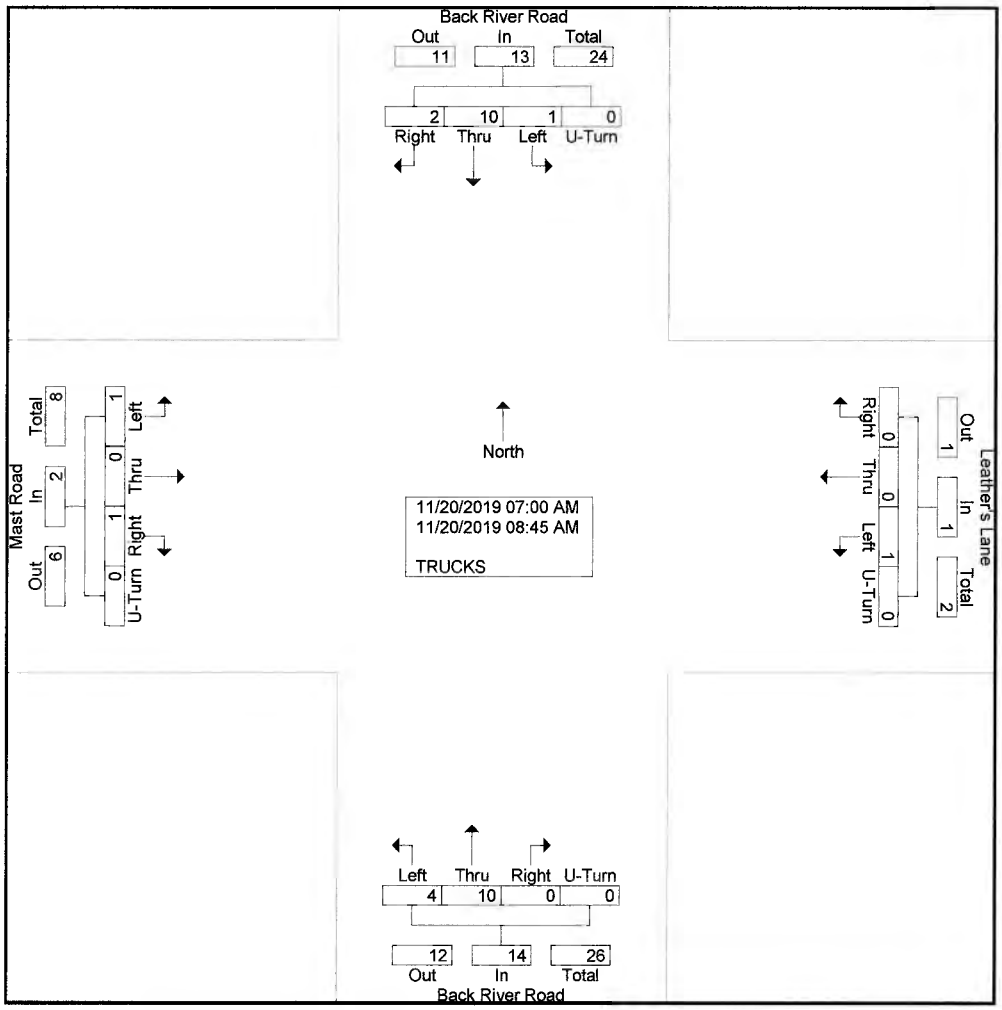
Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Wed 11-20-2019
Site Code : 1980A
Start Date : 11/20/2019
Page No : 1

Groups Printed- TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	2	0	0	2	0	0	0	0	0	2
07:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4
Total	1	3	1	0	5	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	10
08:00 AM	0	4	0	0	4	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	7
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	6
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
08:45 AM	1	2	0	0	3	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	6
Total	1	7	0	0	8	0	0	0	0	0	0	6	4	0	10	1	0	1	0	2	20
Grand Total	2	10	1	0	13	0	0	1	0	1	0	10	4	0	14	1	0	1	0	2	30
Apprch %	15.4	76.9	7.7	0		0	0	100	0		0	71.4	28.6	0		50	0	50	0		
Total %	6.7	33.3	3.3	0	43.3	0	0	3.3	0	3.3	0	33.3	13.3	0	46.7	3.3	0	3.3	0	6.7	



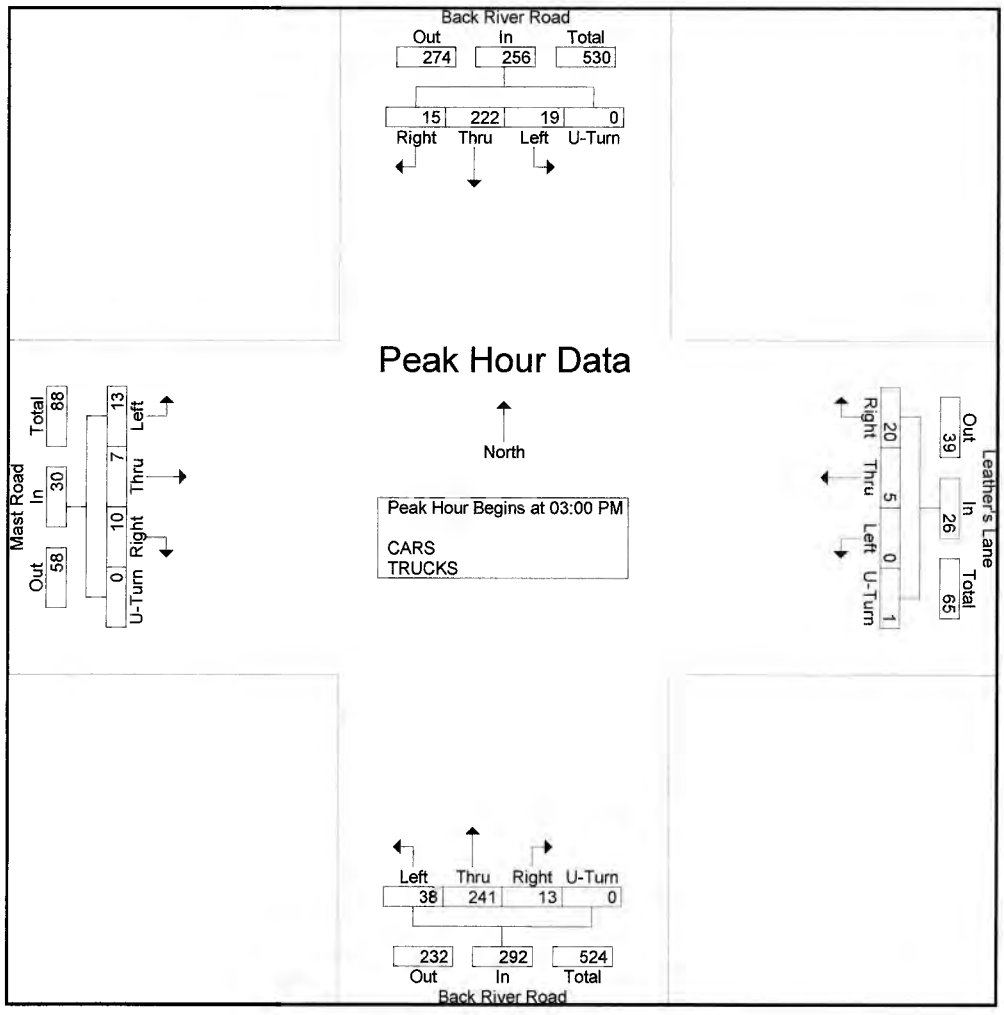
Stephen G. Pernaw & Company, Inc.

P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1980A
Town/State: Dover, NH

File Name : 1980A_INT_A_AM_&_PM_Wed 11-20-2019
Site Code : 1980A
Start Date : 11/20/2019
Page No : 3

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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 03:00 PM																					
03:00 PM	**5**	**77**	**8**	0	**90**	**7**	1	0	**1**	**9**	5	70	**14**	0	**89**	**4**	1	3	0	8	**196**
03:15 PM	1	53	4	0	58	3	1	0	0	4	2	57	10	0	69	3	2	3	0	8	139
03:30 PM	5	46	3	0	54	5	0	0	0	5	**6**	**71**	6	0	83	2	**4**	3	0	**9**	151
03:45 PM	4	46	4	0	54	5	**3**	0	0	8	0	43	8	0	51	1	0	**4**	0	5	118
Total Volume	15	222	19	0	256	20	5	0	1	26	13	241	38	0	292	10	7	13	0	30	604
% App. Total	5.9	86.7	7.4	0		76.9	19.2	0	3.8		4.5	82.5	13	0		33.3	23.3	43.3	0		
PHF	.750	.721	.594	.000	.711	.714	.417	.000	.250	.722	.542	.849	.679	.000	.820	.625	.438	.813	.000	.833	.770



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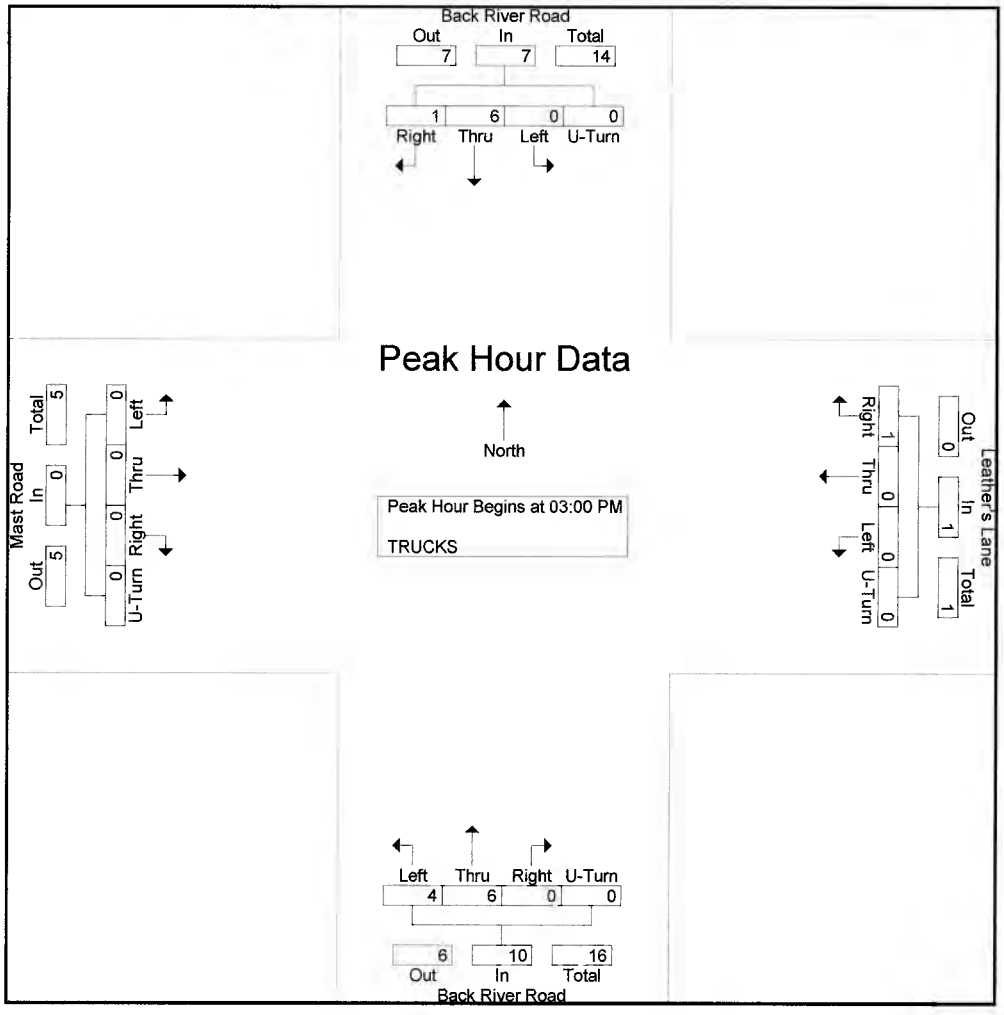
	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road From West					
Start Time	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	Int. Total
Peak Hour Analysis From 03:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	**4**	0	0	**4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
03:15 PM	0	1	0	0	1	0	0	0	0	0	0	**5**	1	0	**6**	0	0	0	0	0	**7**
03:30 PM	**1**	0	0	0	1	**1**	0	0	0	**1**	0	1	**3**	0	4	0	0	0	0	0	6
03:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	6	0	0	7	1	0	0	0	1	0	6	4	0	10	0	0	0	0	0	18
% App. Total	14.3	85.7	0	0		100	0	0	0		0	60	40	0		0	0	0	0		
PHF	.250	.375	.000	.000	.438	.250	.000	.000	.000	.250	.000	.300	.333	.000	.417	.000	.000	.000	.000	.000	.643



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Page No : 1

Groups Printed- CARS - TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	77	8	0	90	7	1	0	1	9	5	70	14	0	89	4	1	3	0	8	196
03:15 PM	1	53	4	0	58	3	1	0	0	4	2	57	10	0	69	3	2	3	0	8	139
03:30 PM	5	46	3	0	54	5	0	0	0	5	6	71	6	0	83	2	4	3	0	9	151
03:45 PM	4	46	4	0	54	5	3	0	0	8	0	43	8	0	51	1	0	4	0	5	118
Total	15	222	19	0	256	20	5	0	1	26	13	241	38	0	292	10	7	13	0	30	604
04:00 PM	9	61	4	0	74	3	2	1	0	6	2	53	6	0	61	5	0	5	0	10	151
04:15 PM	6	57	6	0	69	4	2	2	0	8	1	50	0	0	51	4	2	0	0	6	134
04:30 PM	10	45	8	0	63	1	1	0	0	2	2	61	5	0	68	3	1	2	0	6	139
04:45 PM	9	60	9	0	78	6	0	0	0	6	3	35	3	0	41	1	2	4	0	7	132
Total	34	223	27	0	284	14	5	3	0	22	8	199	14	0	221	13	5	11	0	29	556
05:00 PM	5	56	8	0	69	7	0	2	0	9	1	44	3	0	48	3	3	6	0	12	138
05:15 PM	9	54	7	0	70	7	1	3	0	11	1	50	4	0	55	2	4	7	0	13	149
05:30 PM	8	54	3	0	65	8	1	0	0	9	2	55	3	0	60	3	0	4	0	7	141
05:45 PM	6	40	9	0	55	7	3	1	0	11	3	37	1	0	41	3	0	4	0	7	114
Total	28	204	27	0	259	29	5	6	0	40	7	186	11	0	204	11	7	21	0	39	542
Grand Total	77	649	73	0	799	63	15	9	1	88	28	626	63	0	717	34	19	45	0	98	1702
Apprch %	9.6	81.2	9.1	0		71.6	17	10.2	1.1		3.9	87.3	8.8	0		34.7	19.4	45.9	0		
Total %	4.5	38.1	4.3	0	46.9	3.7	0.9	0.5	0.1	5.2	1.6	36.8	3.7	0	42.1	2	1.1	2.6	0	5.8	
CARS	76	643	73	0	792	61	15	9	1	86	27	615	59	0	701	34	19	45	0	98	1677
% CARS	98.7	99.1	100	0	99.1	96.8	100	100	100	97.7	96.4	98.2	93.7	0	97.8	100	100	100	0	100	98.5
TRUCKS	1	6	0	0	7	2	0	0	0	2	1	11	4	0	16	0	0	0	0	0	25
% TRUCKS	1.3	0.9	0	0	0.9	3.2	0	0	0	2.3	3.6	1.8	6.3	0	2.2	0	0	0	0	0	1.5

Stephen G. Pernaw & Company, Inc.

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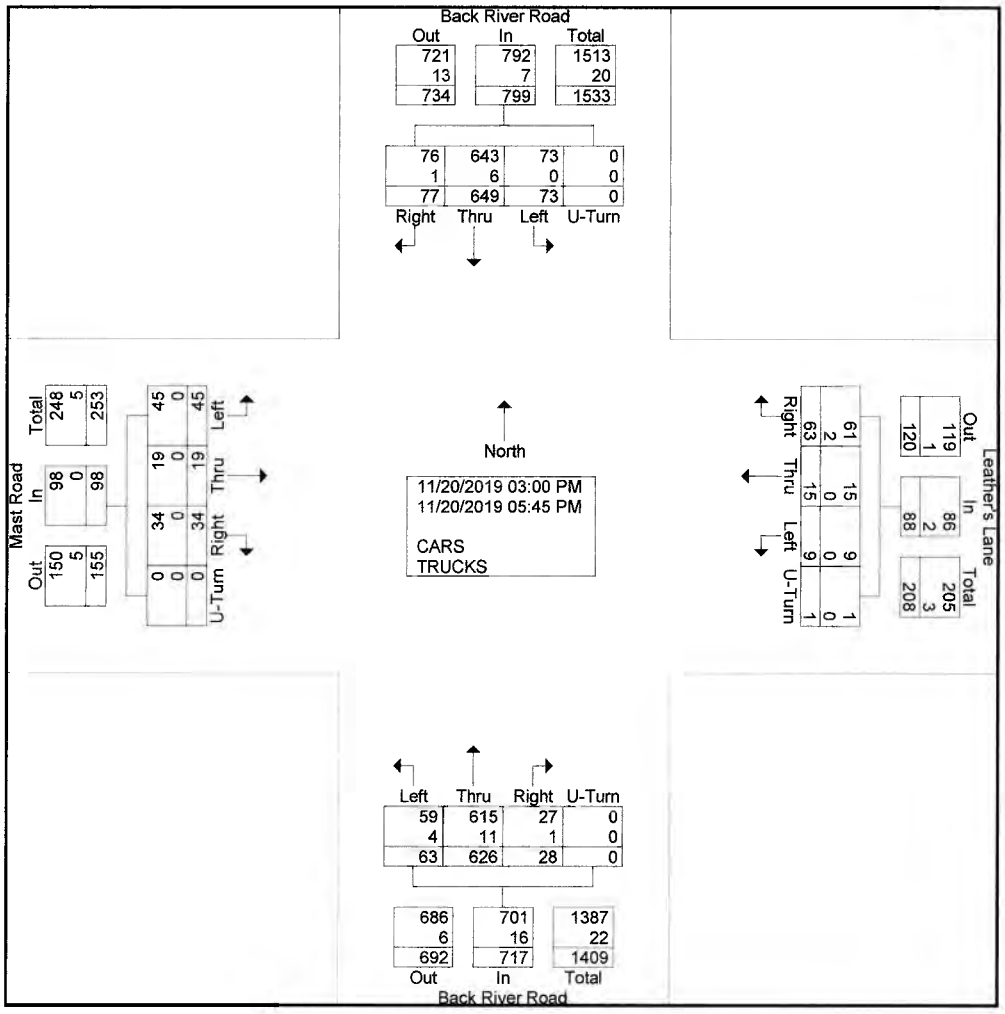
Page No : 2



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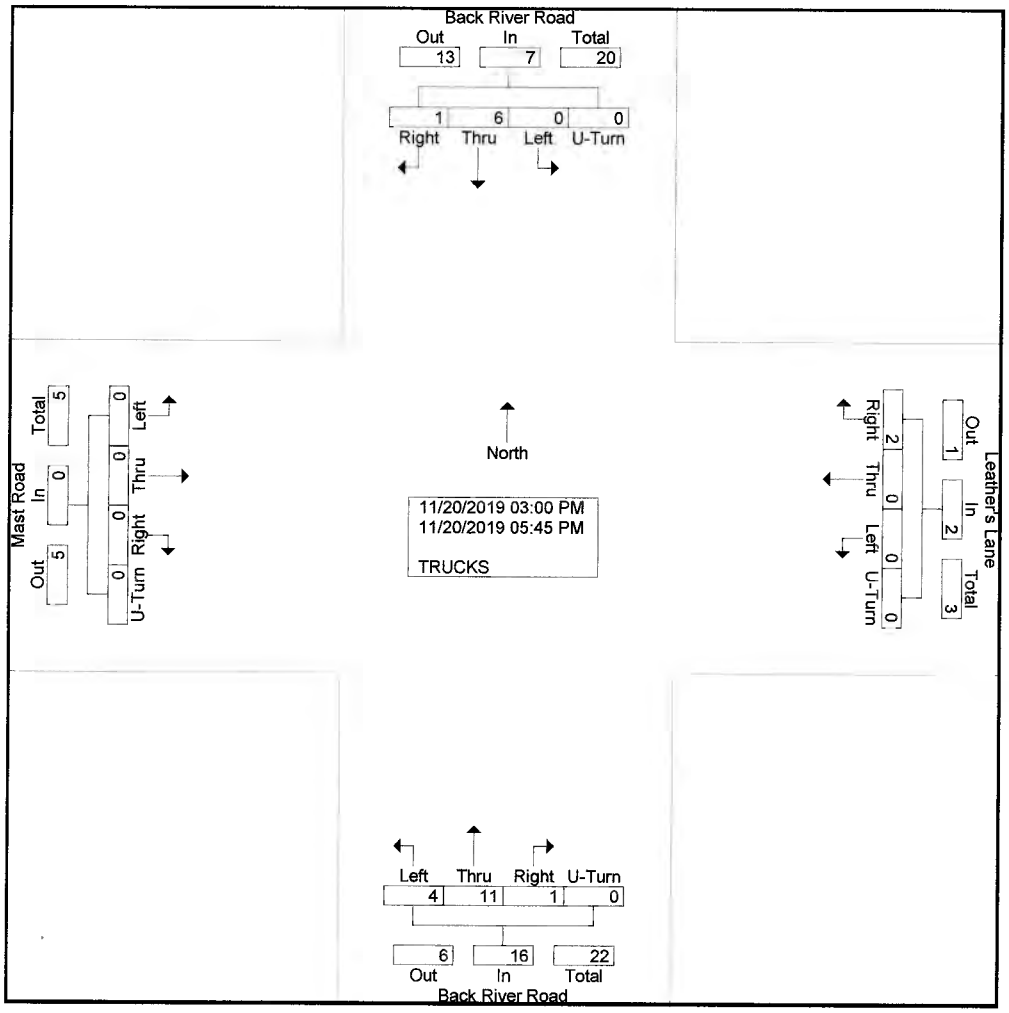
Page No : 1

Groups Printed- TRUCKS

	Back River Road From North					Leather's Lane From East					Back River Road From South					Mast Road 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	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
03:15 PM	0	1	0	0	1	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	7
03:30 PM	1	0	0	0	1	1	0	0	0	1	0	1	3	0	4	0	0	0	0	0	6
03:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	6	0	0	7	1	0	0	0	1	0	6	4	0	10	0	0	0	0	0	18
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	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	1	1	0	0	2	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total	0	0	0	0	0	1	0	0	0	1	1	3	0	0	4	0	0	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Grand Total	1	6	0	0	7	2	0	0	0	2	1	11	4	0	16	0	0	0	0	0	25
Apprch %	14.3	85.7	0	0		100	0	0	0		6.2	68.8	25	0		0	0	0	0		
Total %	4	24	0	0	28	8	0	0	0	8	4	44	16	0	64	0	0	0	0	0	



Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)

Stephen G. Pernaw & Company, Inc.

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	14335	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	14544	1.02	1.12
Dec	14151	1.05	1.15

Year 2016 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	13573	1.16	1.25
Feb	14038	1.12	1.21
Mar	15731	1.00	1.08
Apr	16139	0.97	1.05
May	15705	1.00	1.08
Jun	16766	0.94	1.01
Jul	15752	1.00	1.08
Aug	16529	0.95	1.03
Sep	17007	0.92	1.00
Oct	16598	0.94	1.02
Nov	15649	1.00	1.09
Dec	14638	1.07	1.16

Average Peak-Month Factor	**1.12**

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125116	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	L1250082__	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	Local	Milepost	
Located On	Mast Rd		
Loc On Alias	MAST RD EAST OF SPRUCE LANE (EB-WB) (81125158-81125159)		

More Detail

STATION DATA

Directions: 2-WAY | EB | WB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	1,196[3]		16	65	1,103 (92%)	93 (8%)	Grown from 2017
2017	1,173	192	16	65	1,154 (98%)	18 (2%)	
2016	768	117	15	63	700 (91%)	68 (9%)	
2015	979[3]						Grown from 2014
2014	950[3]						Grown from 2013

|<< | < | > | >>| 1-5 of 15

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
	Wed 10/9/2019	60	1,105
	Tue 10/8/2019	60	1,158
	Mon 10/7/2019	60	894
	Sun 10/6/2019	60	685
	Sat 10/5/2019	60	875
	Fri 10/4/2019	60	1,177
	Thu 8/31/2017	60	1,332
	Wed 8/30/2017	60	1,302
	Tue 8/29/2017	60	1,327
	Thu 8/11/2016	60	796

|<< | < | > | >>| 1-10 of 53

VOLUME TREND

Year	Annual Growth
2018	2%
2017	53%
2016	-22%
2015	3%
2014	2%
2013	3%
2010	11%
2007	-34%
2004	44%
2000	3%

Stephen G. Pernaw & Company, Inc.

STEPHEN G. PERNAW & COMPANY, INC.
PROJECT: Proposed Residential Development, Dover, New Hampshire
NUMBER: 1980A
COUNT STATION: 82125116

HISTORICAL GROWTH CALCULATIONS

LOCATION : Mast Rd (East of Spruce Lane) - Dover, New Hampshire
CASE : AADT

ARITHMETIC PROJECTIONS

YEAR	AADT
2017	1173
2018	1196

Regression Output:

Constant	-45218
Std Err of Y Est	#DIV/0!
R Squared	1
No. of Observations	2
Degrees of Freedom	0
X Coefficient	23
Std Err of Coef.	#DIV/0!

PROJECTIONS

2019	1219
2020	1242
2021	1265
2022	1288
2023	1311
2024	1334
2025	1357
2026	1380
2027	1403
2028	1426
2029	1449

RATE = 23 VPD/YEAR

GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT
2017	1173	7.06732
2018	1196	7.08674

Regression Output:

Constant	-32.09896
Std Err of Y Est	#DIV/0!
R Squared	1
No. of Observations	2
Degrees of Freedom	0
X Coefficient	0.0194181
Std Err of Coef.	#DIV/0!

PROJECTIONS

2019	1219
2020	1243
2021	1268
2022	1293
2023	1318
2024	1344
2025	1370
2026	1397
2027	1424
2028	1452
2029	1481

RATE = 2.0 % / YEAR

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: 1980A

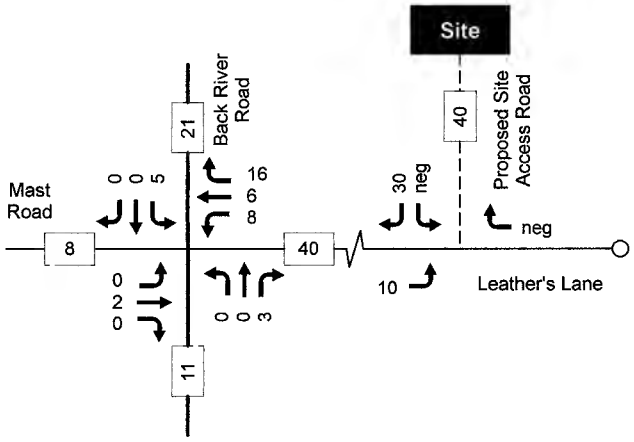
Open Date: 11/25/2019
Analysis Date: 11/25/2019

ITE	Land Use		Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		*	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
210	SFHOUSE 1		275	275	550	10	30	40	33	19	52
	50 Dwelling Units										
Unadjusted Volume			275	275	550	10	30	40	33	19	52
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			275	275	550	10	30	40	33	19	52

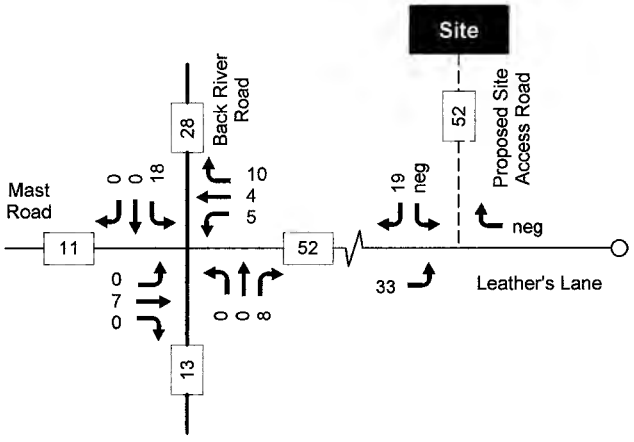
Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC



AM Peak Hour



PM Peak Hour

NORTH

Appendix

Site Generated Traffic Volumes

Traffic Evaluation, Proposed Residential Development, Dover, New Hampshire

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	0	23	18	10	27	28	339	4	5	343	21
Future Vol, veh/h	15	0	23	18	10	27	28	339	4	5	343	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	92	92	92	66	66	66	60	60	60
Heavy Vehicles, %	0	0	4	11	0	0	18	1	0	20	2	5
Mvmt Flow	24	0	37	20	11	29	42	514	6	8	572	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1227	1210	590	1225	1224	517	607	0	0	520	0	0
Stage 1	606	606	-	601	601	-	-	-	-	-	-	-
Stage 2	621	604	-	624	623	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.21	6.5	6.2	4.28	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.599	4	3.3	2.362	-	-	2.38	-	-
Pot Cap-1 Maneuver	157	184	504	149	181	562	898	-	-	960	-	-
Stage 1	487	490	-	472	493	-	-	-	-	-	-	-
Stage 2	478	491	-	458	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	133	170	504	130	167	562	898	-	-	960	-	-
Mov Cap-2 Maneuver	133	170	-	130	167	-	-	-	-	-	-	-
Stage 1	455	484	-	441	460	-	-	-	-	-	-	-
Stage 2	413	459	-	419	475	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25	27	0.7	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	898	-	-	240	223	960	-	-
HCM Lane V/C Ratio	0.047	-	-	0.251	0.268	0.009	-	-
HCM Control Delay (s)	9.2	0	-	25	27	8.8	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	1	0	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	27	18	10	27	33	395	4	5	400	24
Future Vol, veh/h	17	0	27	18	10	27	33	395	4	5	400	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	92	92	92	66	66	66	60	60	60
Heavy Vehicles, %	0	0	4	11	0	0	18	1	0	20	2	5
Mvmt Flow	27	0	43	20	11	29	50	598	6	8	667	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1424	1407	687	1426	1424	601	707	0	0	604	0	0
Stage 1	703	703	-	701	701	-	-	-	-	-	-	-
Stage 2	721	704	-	725	723	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.21	6.5	6.2	4.28	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.599	4	3.3	2.362	-	-	2.38	-	-
Pot Cap-1 Maneuver	115	140	443	108	137	504	822	-	-	892	-	-
Stage 1	431	443	-	415	444	-	-	-	-	-	-	-
Stage 2	422	443	-	403	434	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	125	443	90	122	504	822	-	-	892	-	-
Mov Cap-2 Maneuver	93	125	-	90	122	-	-	-	-	-	-	-
Stage 1	391	436	-	377	403	-	-	-	-	-	-	-
Stage 2	351	402	-	359	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36.9	39	0.7	0.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	822	-	-	181	164	892	-	-
HCM Lane V/C Ratio	0.061	-	-	0.386	0.365	0.009	-	-
HCM Control Delay (s)	9.7	0	-	36.9	39	9.1	0	-
HCM Lane LOS	A	A	-	E	E	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.7	1.5	0	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	2	27	26	16	43	33	395	7	10	400	24
Future Vol, veh/h	17	2	27	26	16	43	33	395	7	10	400	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	92	92	92	66	66	66	60	60	60
Heavy Vehicles, %	0	0	4	11	0	0	18	1	0	20	2	5
Mvmt Flow	27	3	43	28	17	47	50	598	11	17	667	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1457	1430	687	1448	1445	604	707	0	0	609	0	0
Stage 1	721	721	-	704	704	-	-	-	-	-	-	-
Stage 2	736	709	-	744	741	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.21	6.5	6.2	4.28	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.599	4	3.3	2.362	-	-	2.38	-	-
Pot Cap-1 Maneuver	109	136	443	104	133	502	822	-	-	888	-	-
Stage 1	422	435	-	414	443	-	-	-	-	-	-	-
Stage 2	414	440	-	393	426	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	80	120	443	84	117	502	822	-	-	888	-	-
Mov Cap-2 Maneuver	80	120	-	84	117	-	-	-	-	-	-	-
Stage 1	383	421	-	376	402	-	-	-	-	-	-	-
Stage 2	326	400	-	341	412	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.6	54.4	0.7	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	822	-	-	159	160	888	-	-
HCM Lane V/C Ratio	0.061	-	-	0.459	0.577	0.019	-	-
HCM Control Delay (s)	9.7	0	-	45.6	54.4	9.1	0	-
HCM Lane LOS	A	A	-	E	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	2.1	3	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	0	33	18	10	27	40	482	4	5	488	29
Future Vol, veh/h	21	0	33	18	10	27	40	482	4	5	488	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	92	92	92	66	66	66	60	60	60
Heavy Vehicles, %	0	0	4	11	0	0	18	1	0	20	2	5
Mvmt Flow	33	0	52	20	11	29	61	730	6	8	813	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1728	1711	837	1734	1732	733	861	0	0	736	0	0
Stage 1	853	853	-	855	855	-	-	-	-	-	-	-
Stage 2	875	858	-	879	877	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.21	6.5	6.2	4.28	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.599	4	3.3	2.362	-	-	2.38	-	-
Pot Cap-1 Maneuver	70	92	364	65	89	424	717	-	-	793	-	-
Stage 1	357	378	-	340	378	-	-	-	-	-	-	-
Stage 2	347	376	-	330	369	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	77	364	49	75	424	717	-	-	793	-	-
Mov Cap-2 Maneuver	51	77	-	49	75	-	-	-	-	-	-	-
Stage 1	306	370	-	291	324	-	-	-	-	-	-	-
Stage 2	267	322	-	277	362	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	112.8	89	0.8	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	717	-	-	107	97	793	-	-
HCM Lane V/C Ratio	0.085	-	-	0.801	0.616	0.011	-	-
HCM Control Delay (s)	10.5	0	-	112.8	89	9.6	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	4.5	2.9	0	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	21	2	33	26	16	43	40	482	7	10	488	29
Future Vol, veh/h	21	2	33	26	16	43	40	482	7	10	488	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	92	92	92	66	66	66	60	60	60
Heavy Vehicles, %	0	0	4	11	0	0	18	1	0	20	2	5
Mvmt Flow	33	3	52	28	17	47	61	730	11	17	813	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1761	1734	837	1757	1753	736	861	0	0	741	0	0
Stage 1	871	871	-	858	858	-	-	-	-	-	-	-
Stage 2	890	863	-	899	895	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.21	6.5	6.2	4.28	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.599	4	3.3	2.362	-	-	2.38	-	-
Pot Cap-1 Maneuver	67	89	364	63	86	422	717	-	-	790	-	-
Stage 1	349	371	-	339	376	-	-	-	-	-	-	-
Stage 2	340	374	-	322	362	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	42	73	364	45	70	422	717	-	-	790	-	-
Mov Cap-2 Maneuver	42	73	-	45	70	-	-	-	-	-	-	-
Stage 1	298	355	-	290	321	-	-	-	-	-	-	-
Stage 2	244	320	-	262	347	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	171.3	169.7	0.8	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	717	-	-	91	94	790	-	-
HCM Lane V/C Ratio	0.085	-	-	0.977	0.983	0.021	-	-
HCM Control Delay (s)	10.5	0	-	171.3	169.7	9.7	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	5.6	5.8	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	13	11	3	3	17	17	233	19	31	256	36
Future Vol, veh/h	15	13	11	3	3	17	17	233	19	31	256	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	72	72	72	91	91	91	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	19	16	14	4	4	24	19	256	21	32	267	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	669	665	286	670	674	267	305	0	0	277	0	0
Stage 1	350	350	-	305	305	-	-	-	-	-	-	-
Stage 2	319	315	-	365	369	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	374	383	758	373	379	777	1267	-	-	1298	-	-
Stage 1	671	636	-	709	666	-	-	-	-	-	-	-
Stage 2	697	659	-	658	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	346	365	758	341	361	777	1267	-	-	1298	-	-
Mov Cap-2 Maneuver	346	365	-	341	361	-	-	-	-	-	-	-
Stage 1	659	617	-	696	654	-	-	-	-	-	-	-
Stage 2	659	647	-	611	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	11.5	0.5	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1267	-	-	417	590	1298	-	-
HCM Lane V/C Ratio	0.015	-	-	0.115	0.054	0.025	-	-
HCM Control Delay (s)	7.9	0	-	14.8	11.5	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	13	13	3	3	17	20	271	19	31	298	42
Future Vol, veh/h	17	13	13	3	3	17	20	271	19	31	298	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	72	72	72	91	91	91	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	21	16	16	4	4	24	22	298	21	32	310	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	763	759	332	765	771	309	354	0	0	319	0	0
Stage 1	396	396	-	353	353	-	-	-	-	-	-	-
Stage 2	367	363	-	412	418	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	324	338	714	323	333	736	1216	-	-	1252	-	-
Stage 1	633	607	-	668	634	-	-	-	-	-	-	-
Stage 2	657	628	-	621	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	298	320	714	291	315	736	1216	-	-	1252	-	-
Mov Cap-2 Maneuver	298	320	-	291	315	-	-	-	-	-	-	-
Stage 1	619	588	-	653	620	-	-	-	-	-	-	-
Stage 2	618	614	-	572	575	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	12.1	0.5	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	371	536	1252	-	-
HCM Lane V/C Ratio	0.018	-	-	0.143	0.06	0.026	-	-
HCM Control Delay (s)	8	0	-	16.3	12.1	8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	20	13	8	7	27	20	271	27	49	298	42
Future Vol, veh/h	17	20	13	8	7	27	20	271	27	49	298	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	72	72	72	91	91	91	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	21	25	16	11	10	38	22	298	30	51	310	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	815	806	332	812	813	313	354	0	0	328	0	0
Stage 1	434	434	-	357	357	-	-	-	-	-	-	-
Stage 2	381	372	-	455	456	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	298	318	714	300	315	732	1216	-	-	1243	-	-
Stage 1	604	585	-	665	632	-	-	-	-	-	-	-
Stage 2	645	622	-	589	572	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	260	295	714	260	292	732	1216	-	-	1243	-	-
Mov Cap-2 Maneuver	260	295	-	260	292	-	-	-	-	-	-	-
Stage 1	591	555	-	650	618	-	-	-	-	-	-	-
Stage 2	589	608	-	522	543	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	14	0.5	1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	330	458	1243	-	-
HCM Lane V/C Ratio	0.018	-	-	0.187	0.127	0.041	-	-
HCM Control Delay (s)	8	0	-	18.4	14	8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.4	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	13	16	3	3	17	24	331	19	31	364	51
Future Vol, veh/h	21	13	16	3	3	17	24	331	19	31	364	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	72	72	72	91	91	91	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	26	16	20	4	4	24	26	364	21	32	379	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	911	907	406	915	923	375	432	0	0	385	0	0
Stage 1	470	470	-	427	427	-	-	-	-	-	-	-
Stage 2	441	437	-	488	496	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	257	278	649	256	272	676	1138	-	-	1185	-	-
Stage 1	578	563	-	610	589	-	-	-	-	-	-	-
Stage 2	599	583	-	565	549	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	233	260	649	225	255	676	1138	-	-	1185	-	-
Mov Cap-2 Maneuver	233	260	-	225	255	-	-	-	-	-	-	-
Stage 1	561	543	-	592	572	-	-	-	-	-	-	-
Stage 2	557	566	-	512	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.9	13.4	0.5	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	303	458	1185	-	-
HCM Lane V/C Ratio	0.023	-	-	0.204	0.07	0.027	-	-
HCM Control Delay (s)	8.2	0	-	19.9	13.4	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.2	0.1	-	-

HCM 6th TWSC
1: Back River Road & Leather's Lane/Mast Road

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	20	16	8	7	27	24	331	27	49	364	52
Future Vol, veh/h	21	20	16	8	7	27	24	331	27	49	364	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	72	72	72	91	91	91	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	26	25	20	11	10	38	26	364	30	51	379	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	963	954	406	962	966	379	433	0	0	394	0	0
Stage 1	508	508	-	431	431	-	-	-	-	-	-	-
Stage 2	455	446	-	531	535	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	237	261	649	237	257	672	1137	-	-	1176	-	-
Stage 1	551	542	-	607	586	-	-	-	-	-	-	-
Stage 2	589	577	-	536	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	239	649	198	235	672	1137	-	-	1176	-	-
Mov Cap-2 Maneuver	203	239	-	198	235	-	-	-	-	-	-	-
Stage 1	535	511	-	589	569	-	-	-	-	-	-	-
Stage 2	531	560	-	466	496	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.1	16.1	0.5	0.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	269	381	1176	-	-
HCM Lane V/C Ratio	0.023	-	-	0.262	0.153	0.043	-	-
HCM Control Delay (s)	8.2	0	-	23.1	16.1	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.5	0.1	-	-

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.1	0.2	0.1	0.1
Total Del/Veh (s)	6.5	6.8	9.0	7.0	7.5	7.3

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	7.5	6.7	7.6	9.4	10.4	8.2

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.4	0.3	0.3	0.4	0.3
Total Del/Veh (s)	1.1	1.0	1.1	1.1	1.4	1.1

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.4	0.3	0.4	0.4
Total Del/Veh (s)	0.6	0.6	0.9	0.5	0.8	0.7

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.3	0.3	0.4	0.3
Total Del/Veh (s)	1.9	1.8	2.1	1.9	2.4	2.0

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	66	86	121	68
Average Queue (ft)	25	33	17	4
95th Queue (ft)	53	63	70	30
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.2	0.2	0.2	0.2
Total Del/Veh (s)	10.6	11.8	11.0	8.0	17.8	12.2

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	8.5	8.1	8.4	8.9	11.8	9.0

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.4	0.3	0.3	0.5	0.4
Total Del/Veh (s)	1.1	1.1	1.5	1.1	1.7	1.3

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.4	0.5	0.4	0.4	0.4
Total Del/Veh (s)	0.8	0.6	1.0	0.6	0.8	0.8

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.3	0.4	0.4	0.4	0.4
Total Del/Veh (s)	2.2	2.2	2.5	2.0	3.2	2.4

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	80	83	114	54
Average Queue (ft)	30	32	21	4
95th Queue (ft)	63	62	76	29
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.2	0.2	0.2	0.2
Total Del/Veh (s)	10.4	15.0	12.2	8.8	17.2	12.8

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	11.4	9.7	10.2	9.2	13.3	10.8

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.4	0.3	0.4	0.5	0.4
Total Del/Veh (s)	1.2	1.4	1.6	1.1	1.8	1.4

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.3	0.4	0.4	0.4	0.4
Total Del/Veh (s)	0.9	0.8	1.0	0.7	0.9	0.9

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.4	0.3	0.3	0.4	0.4	0.4
Total Del/Veh (s)	2.9	2.9	3.0	2.4	3.5	3.0

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	84	91	128	65
Average Queue (ft)	30	42	22	7
95th Queue (ft)	65	74	80	39
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.2	0.2	0.2
Total Del/Veh (s)	19.2	27.8	23.5	29.2	82.3	38.4

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.1	0.2	0.1	0.1
Total Del/Veh (s)	19.2	15.2	9.7	28.4	14.1	17.4

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	1.7	0.5	0.4	0.4	0.5	0.7
Total Del/Veh (s)	3.9	2.0	1.2	1.6	3.8	2.5

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.6	0.5	0.5	0.5	0.5	0.5
Total Del/Veh (s)	1.2	0.8	1.0	1.2	0.8	1.0

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	1.0	0.4	0.4	0.4	0.5	0.6
Total Del/Veh (s)	4.7	3.9	3.1	4.6	7.9	4.8

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	143	92	232	91
Average Queue (ft)	43	35	38	7
95th Queue (ft)	114	70	147	46
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.2	0.2	0.2
Total Del/Veh (s)	30.7	35.6	21.2	28.9	77.4	41.3

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.3	0.2
Total Del/Veh (s)	27.7	19.7	15.3	25.7	26.6	22.6

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.6	0.9	0.4	0.4	0.5	0.6
Total Del/Veh (s)	3.0	3.5	1.3	1.7	4.5	2.8

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	1.2	0.5	0.5	0.6	0.5	0.6
Total Del/Veh (s)	3.7	1.2	1.0	1.4	0.9	1.6

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.8	0.6	0.4	0.4	0.5	0.5
Total Del/Veh (s)	7.1	5.9	3.7	4.9	9.2	6.2

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	146	157	253	150
Average Queue (ft)	44	48	41	15
95th Queue (ft)	114	103	155	79
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	7.4	6.0	6.6	6.2	7.8	6.7

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	3.8	3.7	4.4	4.9	6.7	4.9

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.2	0.2	0.3	0.2	0.2
Total Del/Veh (s)	0.6	0.7	0.6	0.8	0.6	0.7

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3
Total Del/Veh (s)	0.9	0.9	0.9	0.8	1.0	0.9

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.2
Total Del/Veh (s)	1.6	1.5	1.6	1.7	1.9	1.7

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	36	53	57
Average Queue (ft)	26	18	7	7
95th Queue (ft)	49	43	33	33
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	8.0	6.8	8.2	7.0	8.6	7.8

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	4.0	4.8	5.4	4.5	6.1	5.2

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.3	0.3	0.3	0.3	0.3
Total Del/Veh (s)	0.5	0.8	0.7	0.7	0.9	0.7

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3
Total Del/Veh (s)	1.0	1.0	1.0	0.9	1.1	1.0

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3
Total Del/Veh (s)	1.7	1.7	1.9	1.7	2.1	1.8

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	40	70	57
Average Queue (ft)	28	18	9	8
95th Queue (ft)	50	43	39	35
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	8.5	7.3	8.6	7.5	11.3	8.7

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.2	0.1
Total Del/Veh (s)	6.8	5.5	5.7	5.6	9.3	6.9

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.3	0.3	0.3	0.3	0.3
Total Del/Veh (s)	0.6	0.9	0.8	0.8	1.2	0.9

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3
Total Del/Veh (s)	1.5	1.3	1.2	1.0	1.2	1.3

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3
Total Del/Veh (s)	2.3	2.0	2.2	2.1	2.8	2.3

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	75	61	63	62
Average Queue (ft)	31	26	10	14
95th Queue (ft)	56	50	41	47
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	8.6	7.6	8.2	8.0	9.8	8.6

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	4.6	4.9	5.6	6.2	7.2	5.9

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.3	0.3	0.3	0.3
Total Del/Veh (s)	1.0	0.9	0.9	0.8	1.3	1.0

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.4	0.2	0.3	0.4	0.3
Total Del/Veh (s)	1.3	1.1	1.1	0.9	1.2	1.1

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.2	0.3	0.3	0.3
Total Del/Veh (s)	2.1	1.8	2.0	1.8	2.4	2.0

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	65	36	88	78
Average Queue (ft)	30	18	13	13
95th Queue (ft)	53	42	52	50
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

SimTraffic Performance Report

1: Back River Road & Leather's Lane/Mast Road EB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	11.0	12.3	8.9	8.5	11.3	10.3

1: Back River Road & Leather's Lane/Mast Road WB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.2	0.1
Total Del/Veh (s)	6.8	6.5	6.5	7.0	8.3	7.1

1: Back River Road & Leather's Lane/Mast Road NB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.3	0.3	0.3	0.3
Total Del/Veh (s)	1.0	1.2	1.0	0.8	1.4	1.1

1: Back River Road & Leather's Lane/Mast Road SB, Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.4	0.3	0.3	0.4	0.3
Total Del/Veh (s)	1.6	1.4	1.5	1.2	1.4	1.4

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Del/Veh (s)	0.3	0.3	0.3	0.3	0.3	0.3
Total Del/Veh (s)	2.7	2.6	2.4	2.2	2.9	2.6

Queuing and Blocking Report

Intersection: 1: Back River Road & Leather's Lane/Mast Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	77	57	88	82
Average Queue (ft)	32	25	13	19
95th Queue (ft)	59	48	54	61
Link Distance (ft)	326	355	299	317
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

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:	1056
Percentage of right-turns on minor road, %:	51%
Minor-road volume (one direction), veh/h:	85

OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	194
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

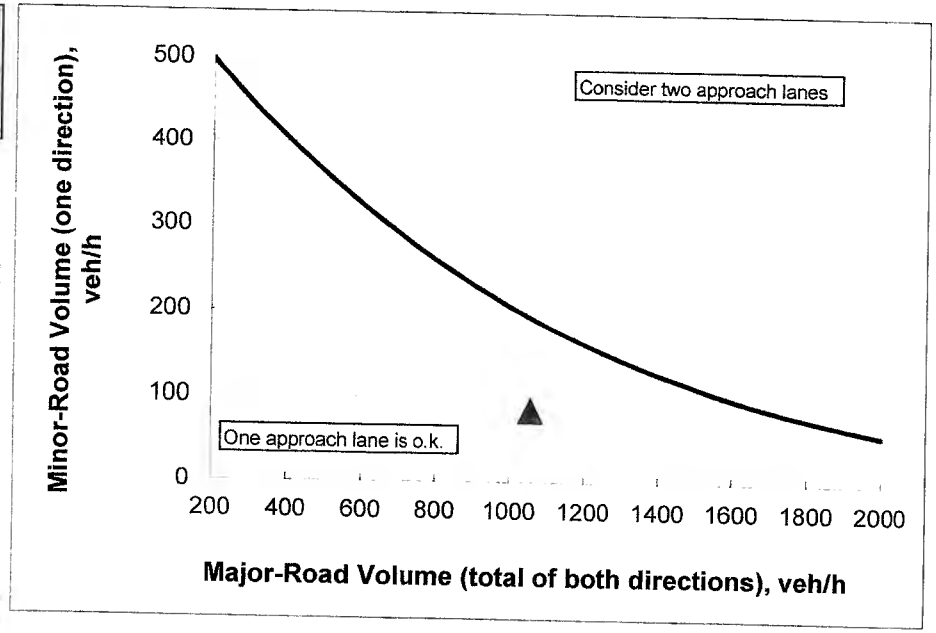


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Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	847
Percentage of right-turns on minor road, %:	64%
Minor-road volume (one direction), veh/h:	42

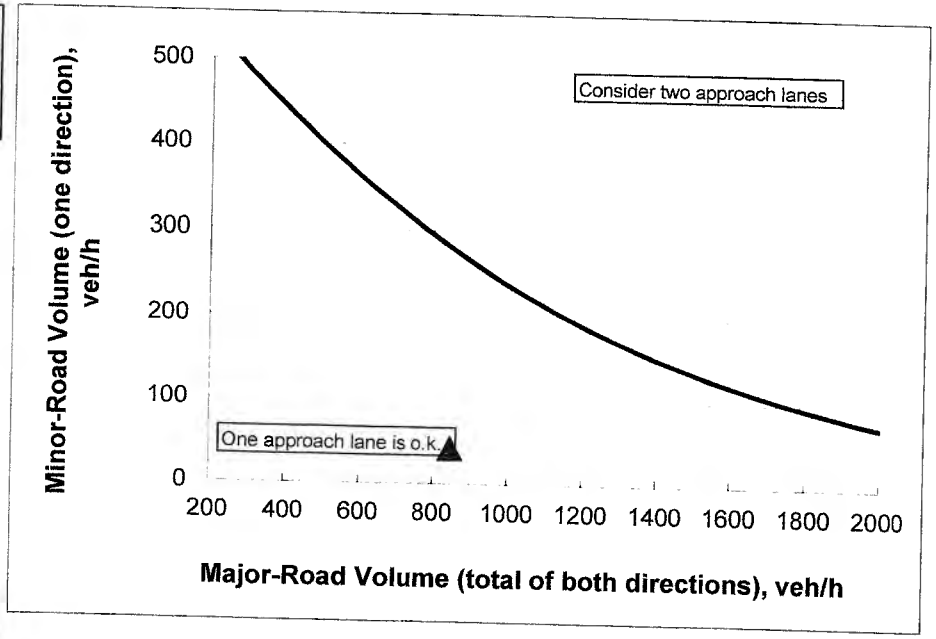
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	280
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



CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

To: City of Dover Planning Department
Cc: Michael Kavari
From: Douglas J. LaRosa
Date: June 10, 2020

Re: Ford's Landing Pump Station Analysis
Residential Development Proposal
Leathers Lane - Dover, NH
Civilworks Reference No. 19038

Historical Overview of Site and Wastewater Collection and Distribution:

The site is a vacant 15.9+/- Acre Lot; Tax Map I4-A. The Leathers Lane proposes to construct a 40 unit residential development. This 40 Unit development was formerly a portion of the Davis Farm Development. In 1985, two separate landowners, the owner of Davis Farm and the owner of Fords Landing, agreed to combine the effluent flows into one pump station. The current pump station was designed for and constructed to handle both Fords Landing and Davis Farm proposed and future development. Fords landing was approved with 65 Units. Davis Farm was approved with 110 Units. Only 40 of the 110 Davis Farm Units were actually constructed. At the time of construction of Fords Landing Pump Station there were 175 approved Units that planned to use the pump station designed for the combined Davis Farm and Fords Landing Developments.

Executive Summary:

The Existing Pump Station has been constructed with two 25 Horsepower, alternating suction pumps that pump 275 gallons per minute at 117 feet of total dynamic head. Per "The Design and Use of Pressure Systems Handbook", Table 5-1 page 43, indicates this flow rate of sewage is adequate to handle over 300 units. Therefore the Fords Landing Pump Station has adequate capacity to handle an additional 40 units of wastewater, as the total number of units that the pump station will service is 145 and the total number of units that it could handle is over 300. The recorded, existing sewer easement granted "Leather's Lane" the right to use the pump station. The recorded sewer easement provides a formula that adjusts or prorates the cost for use and maintenance based on the total number of units. The existing wet well has a 500 gallon drawdown per the original design calculations.

Sewage Flow Calculations:

Existing Sewage Flow to Pump Station:

Fords Landing:
65 Units x 2.36 people per unit (Dover Average) x 71.24 GPD/Capita (Metcalf and Eddy Wastewater Engineering Manual Table 3-2 as required by ME Wastewater Engineering Manual 5th Edition)
= **10,697 GPD**

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Davis Farm:
40 Units x 2.36 people per unit (Dover Average) x 71.24 GPD/Capita (Metcalf and Eddy Wastewater Engineering Manual)
= **6,538 GPD**

Total Existing Sewage Flow = 10,697 GPD + 6,538 GPD = 17,235 GPD

Proposed Sewage Flow to Pump Station:

Leathers Lane Proposed Development:
40 Units x 2.36 people per unit (Dover Average) x 71.24 GPD/Capita (Metcalf and Eddy Wastewater Engineering Manual)
= **6,538 GPD**

Total Existing + Proposed Sewage Flow = 17,235 GPD + 6,538 GPD = 23,773 GPD.

Sewage Flow in Gallons per Minute:
23,773 Gallons per Day/1,440 Minutes per Day = 16.5 Gallons per Minute Average Flow

Peak Flow = Average Flow X 6 = 16.5 GPM x 6 Peaking Factor = 99 GPM

At Peak Flow 500 Gallon Wet Well will fill in 5 Minutes.
At Peak Flow Wet well will be emptied in 1.8 Minutes at 275 GPM.

At Average Flow Wet well will fill in 500 Gal./16.5 GPM Influent = 30.3 Minutes
At 275 GPM, 500 gallon Wet well will empty at 1.8 Minutes

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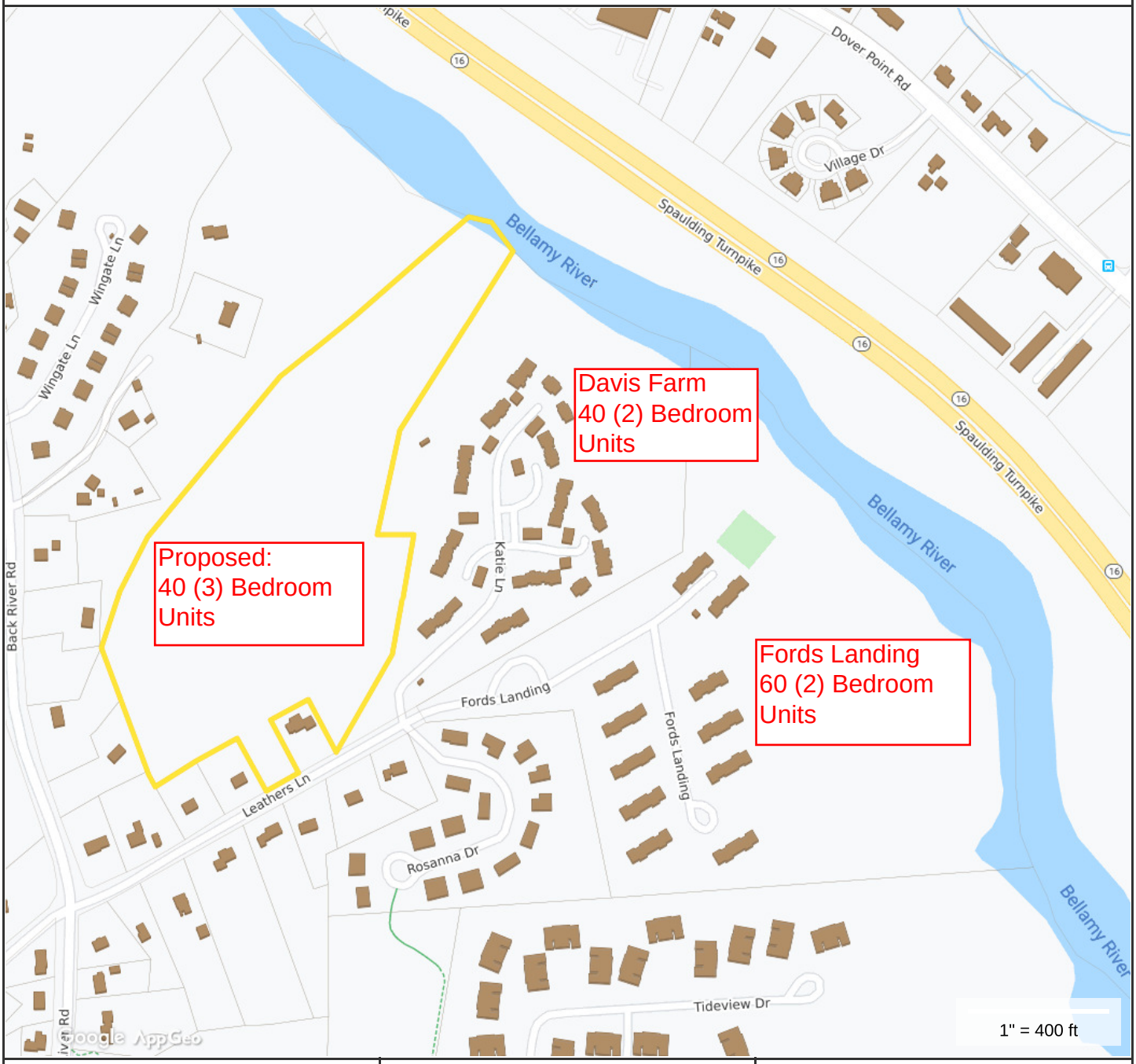
Sincerely,

Stephen J Haight, PE

DJL

Dwelling Exhibit - Leathers Lane, Ford's Landing & Davis Farm



Property Information

Property ID	I0004-A00000
Location	LEATHERS LN
Owner	TOWLE KAREN A TRUSTEE
Land Use	131

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/20/2020
Data updated Daily

DESIGN and USE of PRESSURE SEWER SYSTEMS

David Thrasher

LEWIS PUBLISHERS

ell for positive displacement pumps. However, its use ith centrifugal pumps has been discouraged.

Further research into the centrifugal pump pressure wer system has indicated that the Probability Method is ot as accurate as would normally be desired. Plus, a new t of design criteria has been published for Hot Springs illage that replaces the criteria utilizing the probability ethod.[26] The new criteria utilizes the Rational Method as plained in the following text.

1.2 Rational Method

In the design of the Glide Pressure Sewer System in ouglas County, Oregon, Bowne has used a method of dermining design flows that was developed by the Battelle stitute.[16] Basically, in using this method the pressure wer mains are sized to accommodate the actual amount sewage generated by the number of homes served. This ethod has been termed the "Rational Method" and is prerred for use with centrifugal pump pressure sewer sysms. Bowne has stated that, since the Rational Method as been successfully employed before for centrifugal mp pressure sewer systems, and since it is logical, it is s opinion that the rational design approach should be sed for these systems.[23]

Figure 5-1 shows a typical design chart taken from the attelle Institute's study[16] while Figure 5-2 shows a mped effluent design chart developed by Cooper Comunities, Inc. specifically for Tellico Village, Tennessee.[27] igure 5-3 is a graph of recommended design flows as pubshed in the State of Florida Guidelines.[13]

No. of Dwellings	Total Av. Flow (GPM)	GPM Av. Flow (GPM)	Peak to Av. Flow Ratio	Peak Flow (GPM)	Suggested Design Flow (GPM)
1	150	.104	4.47	.465	15
5	750	.521	4.40	2.29	25
10	1,500	1.04	4.36	4.53	
20	3,000	2.08	4.30	8.94	35
30	4,500	3.12	4.26	13.29	
40	6,000	4.17	4.22	17.60	
50	7,500	5.21	4.19	21.83	45
60	9,000	6.25	4.17	26.06	
70	10,500	7.29	4.14	30.18	
80	12,000	8.33	4.12	34.32	50
90	13,500	9.37	4.10	38.42	
100	15,000	10.42	4.08	42.51	50
110	16,500	11.46	4.06	46.53	
120	18,000	12.50	4.04	50.50	60
130	19,500	13.54	4.03	54.57	
140	21,000	14.58	4.01	58.47	65
150	22,500	15.62	4.00	62.48	
160	24,000	16.67	3.98	66.35	70
170	25,500	17.71	3.97	70.31	
180	27,000	18.75	3.96	74.25	80
190	28,500	19.79	3.95	78.18	
200	30,000	20.83	3.93	81.86	90
210	31,500	21.87	3.92	85.73	
220	33,000	22.92	3.91	89.62	
230	34,500	23.96	3.90	93.44	100
240	36,000	24.99	3.89	97.21	
250	37,500	26.04	3.88	101.04	
260	39,000	27.08	3.87	104.80	110
270	40,500	28.12	3.86	108.54	
280	42,000	29.16	3.85	112.27	
290	43,500	30.12	3.84	116.00	
300	45,000	31.25	3.83	119.69	125

The suggested design flows in the last column represent a suggested interpolation at random intervals to facilitate line sizing and hydraulic calculations. In the lower range of accumulative homes (under 100), the influence of the storage-pumping action of the contributing units, when compared to the calculated peak flow, will determine the most acceptable lowest suggested design flow to use.

Figure 5-1. Suggested Design Flows for 150 GPD Average Daily Flow (3.0 People Per Dwelling) (50 GPD Per Capita) from Battelle[16]

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JOB 19038 -
SHEET NO. 1 OF
CALCULATED BY DJR DATE 6-9-2020
CHECKED BY DATE
SCALE

PUMP STATION ANALYSIS; LEATHERS LANE DAVIS FARM & FORDS LANDING

OBJECTIVE: DETERMINE IF THE EXISTING PUMP STATION @ FORDS LANDING IS ADEQUATE TO PROVIDE SEWER PUMPING CAPABILITIES TO THE PROPOSED 40 UNIT LEATHERS LANE DEVELOPMENT

KNOWN: DAVIS FARM A 40 UNIT (2) BEDROOM DEVELOPMENT USES THE PUMP STATION

TABLE 3.2 WASTE WATER BY METCALF & EDDY

DATA = 40 UNITS × 2.31** CAPITA/UNIT × 71.24 GPD/CAPITA

LEATHERS LANE = 6,583 GPD ADDITIONAL

DOVER DATA
+ 32,191 RESIDENTS
++ 13,662 HOUSING UNIT
= 2.36 CAPITA/UNIT

+ - US CENSUS BUREAU
++ - " "

DAVIS FARM
40 × 2.31 × 71.24 = 6,583 GPD

FORDS LANDING
65 × 2.31 × 71.24 = 10,697 GPD

23,863 GPD

EXISTING PUMP STATION: 275 GPM @ 117' TDH (DESIGN)

FIG 5-1 - 275 GPM WILL SERVE OVER 300 UNITS
PUMP ADEQUATE FOR 135 TOTAL UNITS

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603.749.0443

JOB 19038 - LEATHERS LANE

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

ORIGINAL DAVIS FARM APPROVED FOR
110 UNITS (REF DAVIS FARM SITE PLAN SCHED #28A-3

FORDS LANDING - 65 UNITS

TOTAL 175 UNITS

EASEMENT 1263-021

estimating wastewater flowrates was often the responsibility of the engineer, but today p lation projection data are usually available from local, regional, and state planning agenc

Wastewater flowrates can vary depending on the quantity and quality of the water sup the potable water billing rate structure, the extent of conservation measures, geogra location, rates of infiltration/inflow, and other economic and social characteristics of community. In a report published by the U.S. Geological Survey (Kenny et al., 2009), average domestic water use per capita by state varied from a high of 715 L/capita·d (189 capita·d) to a low of 193 L/capita·d (51 gal/capita·d). The average for the country was 37 capita·d (99 gal/capita·d), which is consistent with the data reported in Table 3–1. If i assumed that 50 to 90 percent of the water supply becomes wastewater, the average waste ter flowrates would vary from 188 to 338 L/capita·d (50 to 89 gal/capita·d). The reason t an average range is given is that no one has an accurate estimate of the extent of water c servation measures that have been implemented, which varies from community to comn nity. The typical average range reflects an estimate of the current (2013) extent to whi conservation measures have been implemented in different parts of the country.

Data on the typical flowrate values for residential sources in the United States as a fur tion of the number of residents with the current (2013) level of conservation and with si nificant water conservation are given in Table 3–2. The data from Table 3–2 are plotted Fig. 3–2. As shown on Fig. 3–2, as the number of persons per residence increases, t average wastewater flowrate per capita decreases. In the case with significant conservatio measures, the per capita value approaches a value of about 150 L/capita·d (39.6 gal/capita·d At the present time this asymptotic value represents a reasonable estimate of what can b achieved with extensive water conservation measures and fixtures and appliances. Assumir an occupancy rate of 3.3 persons per residence, the range of anticipated wastewater flowrat will vary from about 250 to 175 L/capita·d (66 to 46 gal/capita·d). The value of 250 L/capita· (66 gal/capita·d) is within the range of typical per capita values reported above. With th passage of time, it is anticipated that the right-hand curve on Fig. 3–2 will move to th left. It is estimated that reaching significant conservation may take more than 20 y. Reduce household water use not only changes the quantity of wastewater generated, but, as discusse later in this chapter, the characteristics of wastewater as well.

Commercial Districts. Depending on the function and activity, unit flowrates for com mercial facilities can vary widely. Because of the wide variations that have been observed

Table 3–2
Typical wastewater flowrates from urban residential sources in the United States

Household size, no. of persons	Flowrate, gal/capita·d		Flowrate, L/capita·d	
	With current level of conservation	With extensive conservation	With current level of conservation	With extensive conservation
1	103	74	390	280
2	77	54	290	205
3	68	48	257	180
4	63	44	240	168
5	61	42	230	160
6	59	41	223	155
7	58	40	218	151
8	57	39	215	149

SEWAGE PUMP STATION CALCULATIONS & DETAILS

SEWAGE PUMP STATION SPECIFICATIONS

SANITARY SEWERAGE SPECIFICATIONS

FORD'S LANDING
MAST ROAD EXTENSION
DOVER, NH

REV.1 MAY 17, 1985

Richard P. Millette and Associates
500 Market Street, P.O. Box 4006
Portsmouth, NH 03801

SEWAGE PUMP STATION CALCULATIONS & DETAILS

RICHARD P. MILLETTE AND ASSOCIATES
Noble's Island, 500 Market Street
P. O. Box 4006
PORTSMOUTH, NEW HAMPSHIRE 03801
(603) 431-2222

JOB GAVIN
SHEET NO. 1 OF 2
CALCULATED BY FRS DATE DEC 14, 1983
CHECKED BY DATE
SCALE REV. 1 MAY 17, 1985

PUMP STATION DESIGN

STATIC HEAD:

INV IN @ PROPOSED WET WELL = 46.41
EXIST INV @ SMH IN BACK RIVER RD. = 143.42

143.42 - 46.41 = 101.59

DESIGN FLOW: TOTAL NO. OF UNITS = 65

65 UNITS × 2 BEDROOMS/UNIT × 150 GAL/DAY/BDRM = 19,500 GAL/DAY

= 13.5 GPM (AVG)

× 6 = 81 GPM (PEAK)

DYNAMIC HEAD

GIVEN: 2542' OF 6" PVC FORCE MAIN
Q (PUMP) = 275 GPM
= .61'/100' OF PIPE

$2542 \times \frac{.61}{100} = 15.4'$

TDH = 15.4 + 101.59 = 117'

CYCLE TIME: $t = \frac{V}{Q-I} + \frac{V}{I}$

WHERE: t = TOTAL CYCLE TIME IN MINUTES
Q = PUMP CAPACITY IN GPM
I = DESIGN FLOW IN GPM
V = WET WELL STORAGE VOLUME IN GALLONS

$t_{PEAK} = \frac{500}{275-81} + \frac{500}{81} = 8.8$ MIN.

$t_{AVG} = \frac{500}{275-13.5} + \frac{500}{13.5} = 38.9$ MIN.

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JOB GAVIN

SHEET NO. 2 OF 2

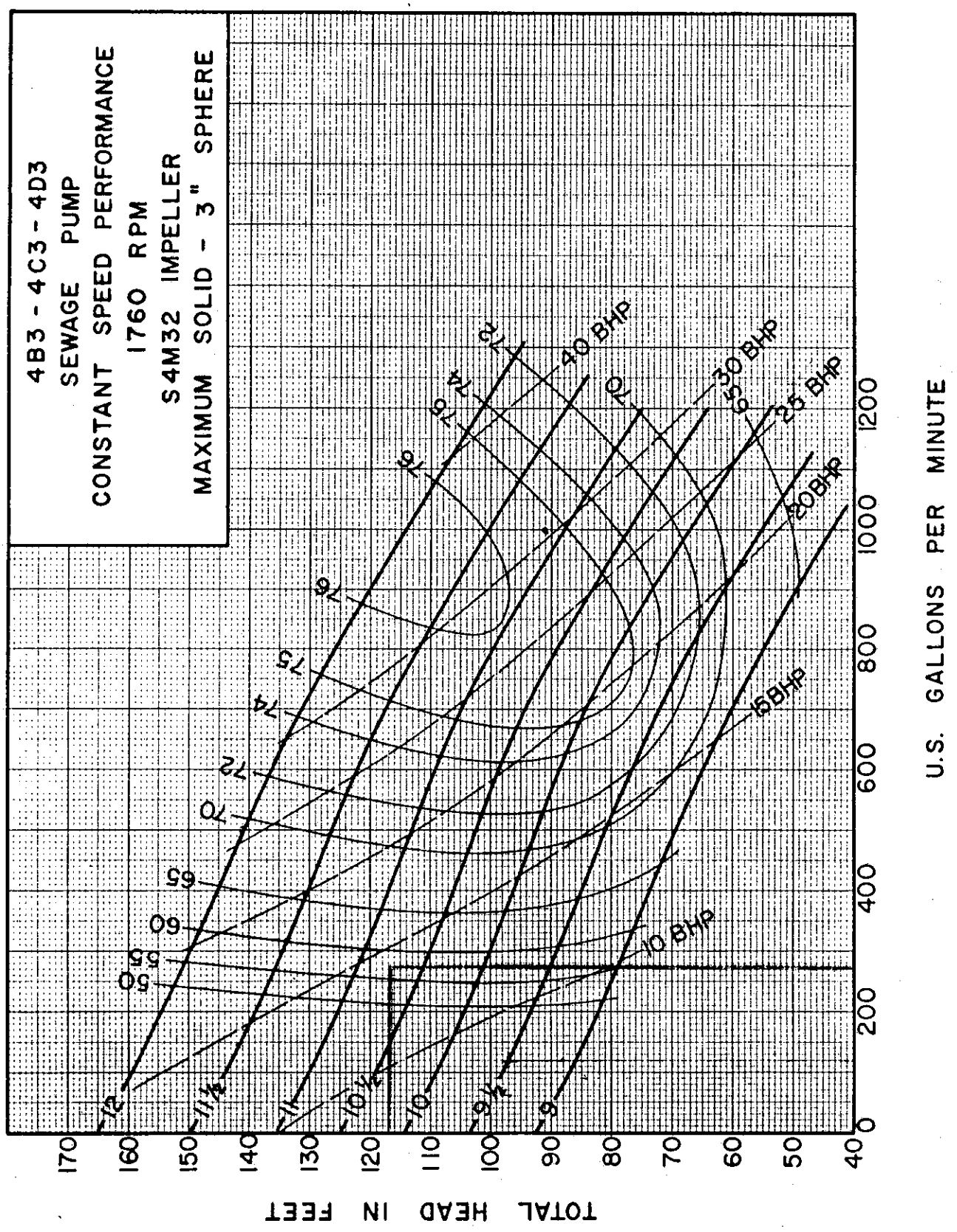
CALCULATED BY ERS DATE DEC. 14, 1984

CHECKED BY _____ DATE _____

SCALE _____

∴ USE SMITH & LOVELESS 4C3 PUMPS, CAPABLE OF 275 GPM @ 117 TDH, 20 HP, 1760 RPM, 3 PHASE, 60 CYCLE, 230 VOLT MOTORS

FORM 204 Available from NEBS INC. Townsend, Mass 01470


4B3 - 4C3 - 4D3
SEWAGE PUMP
CONSTANT SPEED PERFORMANCE
1760 RPM
S4M32 IMPELLER
MAXIMUM SOLID - 3" SPHERE
40 BHP
30 BHP
25 BHP
20BHP
15BHP
10 BHP
TOTAL HEAD IN FEET
U.S. GALLONS PER MINUTE

RICHARD P. MILLETTE AND ASSOCIATES
Noble's Island, 500 Market Street
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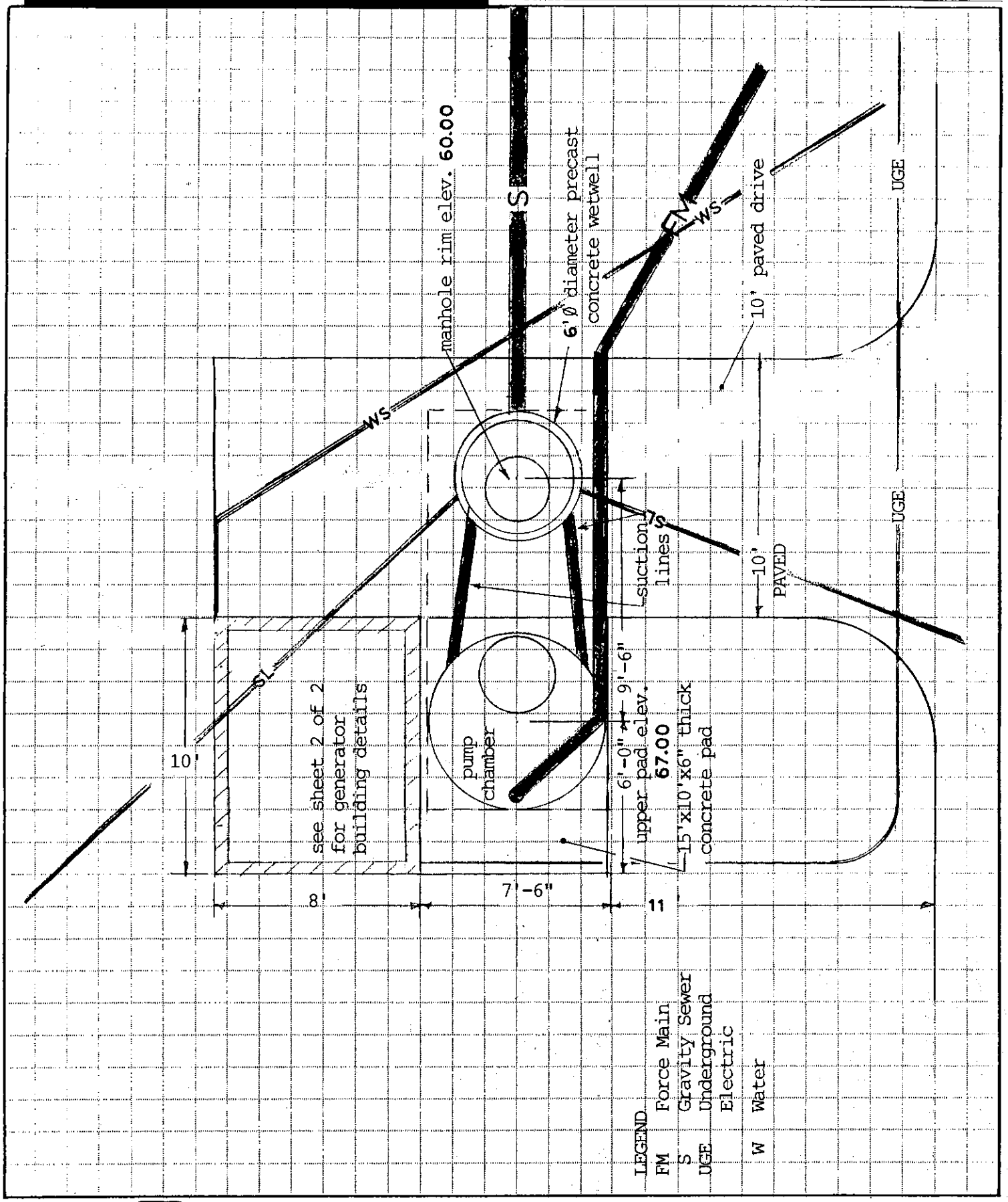
JOB Gavin

SHEET NO. 1 OF 2

CALCULATED BY FRS DATE 11/30/84

CHECKED BY RPM DATE 11/30/84

SCALE 1"-5' REV. 1 5/17/85



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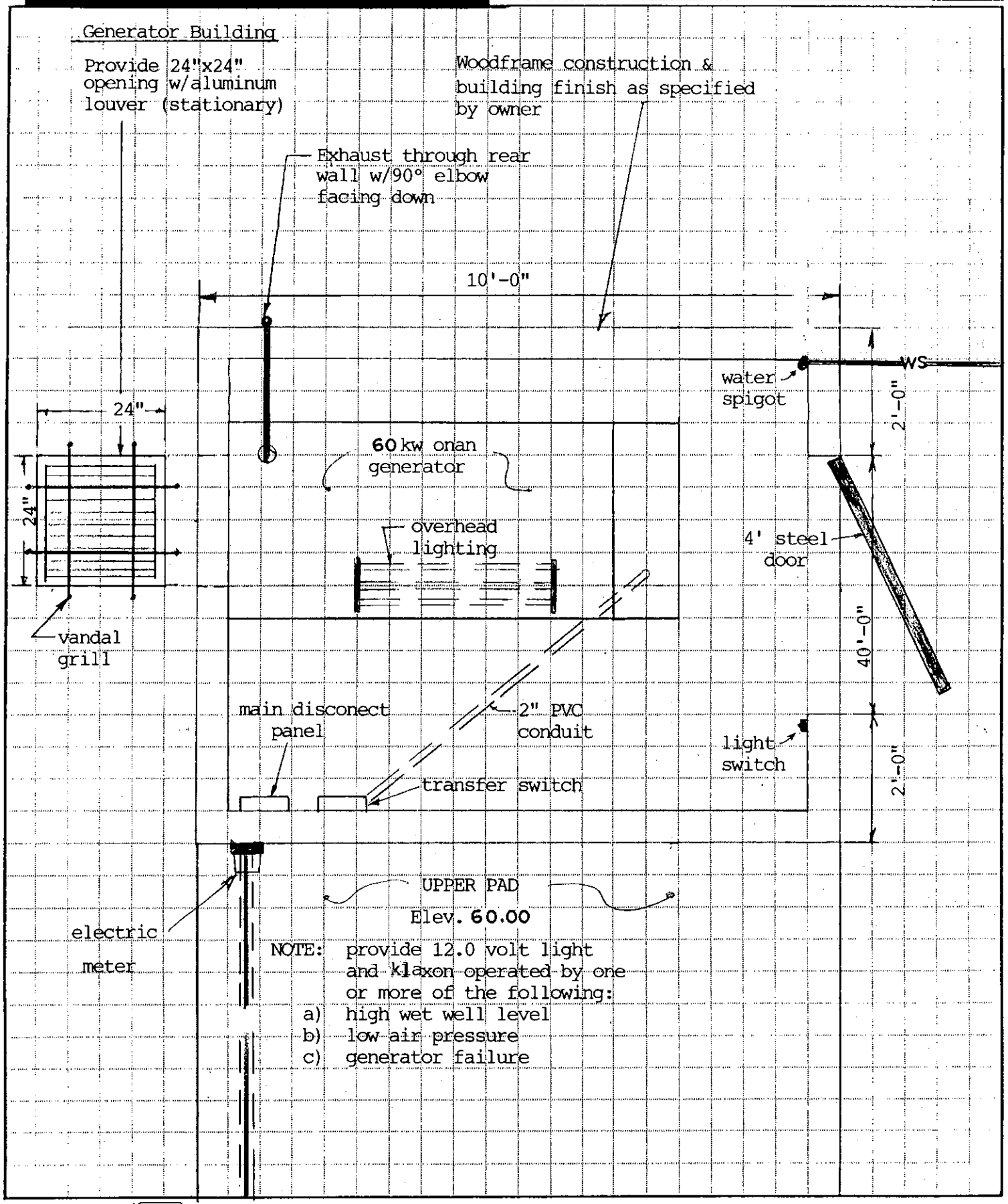
JOB Gavin 83550
SHEET NO. 2 OF 2
CALCULATED BY FRS DATE 11/30/84
CHECKED BY RPM DATE 11/30/84
SCALE 1"-2' REV. 1 5/17/85



FORM 204 Available from NEBS INC. Townsend, Mass 01470

SEWAGE PUMP STATION SPECIFICATIONS

SPECIFICATIONS
7'-0" and 8'-0" DIAMETER
FACTORY-BUILT PUMPING STATION

GENERAL

The contractor shall furnish and install one factory-built, automatic pumping station. The station shall be complete with all needed equipment factory-installed in a welded steel chamber with welded steel entrance tube and with ladder to provide access.

The principal items of equipment shall include two vertical, close-coupled, motor driven, non-clog sewage pumps; valves; internal piping; central control panel with circuit breakers, motor starters and automatic pumping level controls; lighting; sump pump; ventilator; dehumidifier and all internal wiring.

These specifications describe equipment as manufactured by Smith & Loveless, Division - Ecodyne Corporation. This is not done, however, to eliminate others equally as good and efficient. Any substitution of equipment or materials will be considered for one reason only: that the equipment proposed for substitution is superior or equal in construction and/or efficiency to that described in the specifications and work space equal to or greater than shown on the drawings is provided, and that high quality has been demonstrated by at least five years of service in similar installations.

If, prior to the execution of the contract, the engineer's approval is obtained for alternate equipment, the contractor shall, at his own expense, make any changes in the structures, building, piping or electrical necessary to accommodate the equipment and if engineering is required due to substitution of other material, the contractor shall pay the engineer for the engineering service.

It will be assumed that the cost to the contractor of the equipment proposed to be substituted is less than the specified equipment and if the substitution is approved, the contractor's bid price shall be reduced by an amount equal to the net savings.

Substitution of equipment other than that specified and shown will not be considered after the execution of the contract.

OPERATING CONDITIONS

Each pump shall be capable of delivering 275 GPM of raw unscreened sewage against a total dynamic head of 117 feet. The minimum pump efficiency at this condition shall be _____%. Due to the energy conservation requirements, the minimum efficiency will be enforced. The maximum allowable speed shall be 1760 RPM. The minimum rated horsepower of each pump motor shall be 20.
All openings and passages shall be large enough to permit the passage of a sphere 3" in diameter. The anticipated operating head range is from 114 feet minimum to 117 feet maximum.

PUMP CHAMBER

The station shall be built by the Manufacturer in two major sections, consisting of the pump chamber and the required section(s) of entrance tube, for ease in shipment and handling. These sections shall be joined at the job site by welding.

The field weld joints shall then be cleaned and heavily coated with Versapox epoxy resin, provided by the Manufacturer. The pump chamber shall contain all pumps and other equipment and shall be a vertical cylinder of circular cross-section with shell of ASTM A-36 steel plate. The top and bottom of the station shall be 3/8" thick ASTM A-36 steel plate.

The exterior of the station shall be designed so all welds exposed to ground water after installation are continuous or sealed throughout their length so that water cannot seep between uncoated steel surfaces. In addition, the structure shall be designed so that sharp corners and similar difficult-to-coat conditions are held to an absolute minimum. The thickness of the steel cylinder shall be determined by the structural requirements for the depth of bury involved and shall be a minimum of 1/4". It shall be the responsibility of the Manufacturer to determine the structural requirements of the shell based on the external loads specified on the plans.

Lifting eyes adequate to support the entire weight of the pump station shall be provided and welded to the station head. Tie-down holes shall be provided for anchoring the discharge line at the point it leaves the station. Lifting loops shall be located on the ceiling of the pump station over each pump at an adequate height to permit a hoist to be used for pump disassembly.

A sump with walls of 1/4" structural-grade steel plate shall be provided. Where the steel suction and discharge lines pass through the station walls, they shall be welded to the station shell with a continuous weld.

ENTRANCE TUBE

The entrance tube shall be provided in one or more sections as required and the diameter shall be as shown on the drawings. The entrance tube shall be constructed of ASTM A-36 structural grade steel plate. The length shall be adequate to place the cover above the surrounding ground as shown on the drawings. The entrance tube shall be adequately stiffened and the field joints arranged so that the joint may be welded from the outside of the tube with all welding being performed in a down-hand position. The bottom of the tube shall be attached to an angle, shop welded, to the head of the pump station. This field joint shall also be weldable in the down-hand position. Two lifting loops shall be provided on each section of entrance tube for handling and installation.

The entrance tube cover shall be of fiber glass reinforced plastic and shall have a reflective color to reduce heat absorption. The cover shall have a suitable drip lip around the edge and shall be provided with a weatherproof lock of the pin tumbler type which can be opened from the inside without a key. The lock shall be self-locking upon closing the lid. Air intake vents shall be molded into the lid so that they will form a common duct with the ladder rails to provide ventilating air to the station. The vents shall be covered with screens to exclude rodents and foreign objects.

The fiberglass cover shall have a rung which forms an extension of the access ladder when the cover is latched in the open position. A latch mechanism shall be provided to keep the cover open under any normal load. A gasket shall be provided on the top of the tube to seal the cover and protect the top edge of the entrance tube.

The access ladder shall have aluminum grooved non-slip rungs of 1" nominal outside diameter spaced on 12" centers. The side rails of the ladder shall be 3" x 4" rectangular steel tubing which shall also serve as air ducts for the station ventilation system. The ladder rungs shall be installed between the side rails so that the support of the operator is not dependent upon a weld in shear. (In lieu of ladder rails as air ducts, two (2) rigid metal ducts of minimum 4" diameter may be furnished.) The ladder sections in the entrance tube shall be lined up accurately by self-aligning projections. Neoprene rubber sleeves shall be provided to seal the joint between the adjoining vent sections.

WELDING

All steel in the station structure shall be joined by electric arc welding with fillets of adequate section for the joint involved. Where required to exclude ground water, all welded joints on the exterior of the station shall be continuous throughout their length.

PROTECTION AGAINST CORROSION

After welding, all inside and outside surfaces of the structure, pumps and piping shall be steel shot-blasted to a 2-mil minimum profile commercial blast. Immediately after cleaning, a single 6-mil minimum thickness inert coating shall be factory applied to all inside and outside surfaces. The coating shall be Versapox epoxy resin, formulated for abrasion and corrosion resistance. The dry coating shall contain a minimum of 85% epoxy resin with the balance being pigments and thixotropic agents.

A touch-up kit shall be provided for repair of any mars or scratches occurring during installation. This kit shall contain detailed instructions for use and shall be the same material as the original coating. A heavy synthetic rubber mat shall be cemented to the station floor to protect the coating on the steel floor.

Two 17-pound magnesium anode packs shall be provided for cathodic protection. The anode packs shall be provided with 15' long insulated copper leads. Copper lugs shall be provided by the Manufacturer on opposite sides of the station for anode connections.

PUMPS

The pumps shall be vertical, non-clog sewage pumps of heavy cast iron construction especially designed for the use of mechanical seals. In order to prevent seal damage caused by lineal movement of the shaft, the shaft bearing nearest the pump impeller shall be locked in place so that end play is limited to the clearance within the bearing. To minimize seal failure resulting from shaft deflection in the mechanical seal caused by the radial thrust of the pump, the shaft from the top of the impeller to the lower bearing shall have a minimum diameter of 1-7/8" for motor frame sizes 213 through 286; 2-1/8" for motor frame sizes 324 and 326; and 3" for frame size 364 and larger. The motor shaft between bearings shall be larger.

The bearing nearest the impeller shall be designed for the combined thrust and radial load. The upper bearing shall be free to move axially with the thermal expansion of the shaft and shall carry only radial loads.

The shaft shall be a solid stainless steel shaft through the pump and bottom bearing to eliminate corrosion within the pump or the mechanical seal. Removable shaft sleeves will not be acceptable unless the solid shaft under the sleeve meets the specified minimum diameter.

The pump impellers shall be of the enclosed type made of close-grained cast iron and shall be balanced. The impeller shall be keyed and secured to the motor shaft by a stainless steel cap screw equipped with a Nylock or other suitable self-locking device. The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily removable without the use of special tools. Both the end of the shaft and the bore of the impeller shall be tapered to permit easy removal of the impeller from the shaft. To prevent the buildup of stringy materials, grit and other foreign particles around the pump shaft, all impellers less than full diameter shall be trimmed inside the impeller shroud. The shroud shall remain full diameter so that close minimum clearance from the shroud to volute is maintained. (In lieu of full diameter shrouds, stainless steel wear rings may be furnished.)

The motor shall be attached to the pump volute by a one-piece cast iron adapter and backhead. The pump shall be arranged so that the rotating element can easily be removed from the volute without disconnecting the seal system or electrical wiring or disassembling the motor, impeller, backhead or seal, so that any foreign object may be removed from the pump or suction elbow. Volute or suction elbow clean-outs will not be an acceptable substitute.

The pump shaft shall be sealed against leakage by a double mechanical seal installed in a bronze seal housing constructed in two sections with registered fit. The housing shall be recessed into the pump backhead and securely fastened thereto with stainless steel cap screws. The inside of the seal housing shall be tapered to facilitate the replacement of the seal parts. The seal shall be of double carbon and ceramic construction with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramics shall be held in mating position with the stationary carbons by a stainless steel spring. The seal housing with assembled parts shall be so constructed as to be readily removable from the shaft as a unit and shall be provided with tapped jackscrew openings to assist in removing it from the backhead.

The seal shall be pressurized and lubricated by water taken directly from the pump backhead through a filter to the seal housing and introduced between the upper and lower sealing surfaces. The filter shall be of corrosion-resistant materials and shall screen out all solids larger than 50 microns. The seal system shall contain a brass valve connected near the top of the seal housing to permit the relief of any air trapped in the seal unit. A manually operated brass valve shall also be provided to vent the pump volute.

The pump volute shall be free from projections that might cause clogging or interfere with flow through the pump.

The pump shall be supported by a heavy cast iron base with four legs to provide maximum rigidity and balance. The height shall be sufficient to permit the use of an increasing suction elbow which shall be provided when the nominal pump size is smaller than the suction line. The suction and discharge openings shall be flanged, faced and drilled 125-pound American Standard.

MOTORS

The pump motors shall be vertical, solid shaft, NEMA P-base, squirrel-cage induction type, suitable for 3 phase, 60 cycle, 230 volt electric current. They shall have Class F insulation, suitable for temperatures up to 115° C, but the motors shall have Class B temperature limits of 90° C rise by resistance, at 115% of rated load. The motors shall have normal starting torque and low starting current, as specified for NEMA Design B characteristics. They shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in a cast connection box and shall be clearly identified.

The motors shall have 1.15 service factor. The service factor shall be reserved for the owner's protection. The motors shall not be overloaded beyond their nameplate rating, at the design condition, nor at any head in the operating range as specified under Operating Conditions.

The motor-pump shaft shall be centered, in relation to the motor base, within .005". The shaft run-out shall be limited to .003".

The motor shaft shall equal or exceed the diameter specified under sewage pumps, at all points from immediately below the top bearing to the top of the impeller. To reduce overhung loads, the dimension from the centerline of the lower bearing to the top of the impeller hub shall not exceed 6". A bearing cap shall be provided for the bottom motor bearing. Bearing housings shall be provided with fittings for lubrication as well as grease relief fittings.

The motor shall be fitted with heavy lifting eyes, each capable of supporting the entire weight of the pump and motor.

CONTROL

The control equipment shall be mounted within a NEMA Type 1, dead-front enclosure, fabricated of steel and reinforced as required. The circuit breaker, motor-starter section shall be provided with removable covers, complete with suitable latching devices. All circuit breakers, motor-starter reset buttons and pump control switches shall be mounted so that they are operable without opening the high voltage cabinet. The blower timer shall be mounted on the lower front hinged section. The pressure switches shall be mounted on the side of the cabinet. It shall not be necessary to remove the front of the cabinet to make minor adjustments to the blower timer, etc., or the pressure switches.

A grounding type convenience duplex outlet shall be provided on the side of the cabinet for operation of 115 volt AC devices.

Thermal magnetic air circuit breakers shall be provided for branch disconnect service and over-current protection of all motor, control and auxiliary circuits. Magnetic across-the-line starters with under-voltage release and overload coils for each phase shall be provided for each pump motor to give positive protection. Each single-phase auxiliary motor shall be equipped with an over-current protection device, in addition to its branch circuit breaker, or shall be impedence protected.

All switches shall be labeled and a coded wiring diagram shall be provided.

To control the operation of the pumps with variations of sewage level in the wet well, an air bubbler system shall be provided, complete with two air compressors, flow indicator, bubbler line, and a sensitive pressure switch for each pump.

The two air compressors shall be of the close-coupled, oil-less type. Each compressor shall have a minimum capacity of 0.2 cubic feet of free air per minute at 10 PSI. It shall incorporate a single phase, 60 cycle, 115 volt, drip-proof, brushless type, electric motor. A motor driven timer shall be provided to automatically alternate the compressors every five minutes. Wiring and piping of the air compressors shall be so arranged that one compressor may be removed without removing the other compressor from service. If a stored air bubbler system is used, two (2) compressors with tanks shall be provided including an alternator to alternate the compressors. Additionally, a purge system to divert the full tank air pressure to the system shall be provided.
The pressure switches shall be of the mercury-tube type, with sensitive pressure elements and independent high and low adjustments for each pump capable of a minimum differential of 18" of water.

An automatic alternator with manual "On-Off" switch shall be provided to change the sequence of operation of the pumps on the completion of each pumping cycle. Provisions shall also be made for the pumps to operate in parallel, should the level in the wet well continue to rise above the starting level for the low level pump.

DEHUMIDIFIER AND VENTILATING BLOWER

A dehumidifier assembly with hermetically sealed freon refrigeration type compressor, expansion coil, fan and condenser coil shall be furnished to maintain the relative humidity of the air in the pump chamber low enough to keep the electrical equipment dry and to prevent condensation on the walls.

The moisture removing capability of the dehumidifier will vary with the temperature and relative humidity within the station. The minimum capacity rating at 80° F and 68% relative humidity shall be 15.5 pints per day. The maximum capacity at 80° F and 90% relative humidity shall be 25 pints per day. The dehumidifier shall be controlled automatically by an adjustable humidistat. The dehumidifier shall be located above the floor on a shelf and the condensate drained to the sump.

Fresh air shall be drawn into the station through the air inlet ducts which form the side rails of the ladder. The ventilating blower shall be mounted in an air receiver chamber directly below the ladder. The squirrel-cage ventilating blower shall have a minimum capacity of 215 CFM and shall be controlled by a 15-minute cycle timer with a range of 0-100% so as to provide essentially continuous ventilation without exceeding the capabilities of the dehumidifier.

When the entrance cover is raised, the lights and ventilating blower shall be turned on automatically by a mercury tilt switch mounted in the lid. A manual switch shall be provided for operation of the lights and ventilating blower with the cover closed. The air vent lines shall have suitable screens to prevent the entrance of foreign objects.

LIGHTING

Adequate lighting, consisting of a twin 40-watt fluorescent lamp fixture shall be provided for the convenience and safety of the operator. The lighting shall provide illumination for all areas in the station. The lighting shall be controlled by a mercury tilt switch and a manual switch located on the fiber glass cover. The mercury tilt switch shall turn the lights on automatically when the entrance lid is raised. The manual switch shall maintain the lighting circuit when the lid is closed in inclement weather.

SUMP PUMP

A submersible sump pump with close-coupled, vertical motor shall be installed in the sump. It shall have a minimum capacity of 1000 GPH at design head. The design head this pump will operate against is the static head from the sump to 3' below grade, plus allowance for pipe friction both inside and outside the pump chamber. A mechanical seal on the shaft shall exclude water from the motor housing. The sump pump shall be controlled automatically by a built-in float switch, capable of operation on a 5" differential. It shall discharge through double check valves and a gate valve within the sump chamber.

PIPING

Pump suction lines shall be Schedule 40 steel, plain-end pipe terminating outside the pump chamber, with bronze fitted, double-disc gate valve inside the chamber. The discharge line from each pump shall be fitted with a bronze fitted check valve and a bronze fitted, double-disc gate valve. A special M.J. gasket shall be provided to adapt the plain-end steel pipe to cast iron M.J. bells. The diameter of all pipe and valves shall be as shown on drawings.

The check valves shall be of the spring-loaded lever type so that the clapper can be lifted to back-flush the pump and suction line. Four-inch, straight-through check valves and increasing check valves up to 6" x 8" shall have stainless steel shafts with double "O" rings and grease fittings at both ends where the shaft passes through the body of the valve. Straight-through check valves 6" and larger and increasing check valves, 6" x 10", shall have stainless steel shaft with non-lubricated packing glands. The common discharge riser pipe and the discharge outlet shall be Schedule 40 steel, plain-end pipe terminating outside the pump chamber.

The air bubbler line furnished by the station Manufacturer in the station shall be 1/2" nominal tubing, terminating in a 1/2" NPT fitting in the entrance tube to accept the 1/2" flexible bubbler line extending to the wet well.

A return loop in the bubbler line shall be provided to protect the station from flooding.

WIRING

The pump station shall be completely wired at the factory, except for the power feeder lines. All wiring in the pump station shall meet the requirements of the National Electrical Code and shall be coded as indicated on the wiring diagram. All wiring outside the panel shall be in conduit, except for 115-volt accessory items, which are provided with connecting insulated service cord. The Manufacturer shall provide conduit from the control panel across the ceiling, and up the entrance tube to receive the feeder lines. The conduit shall terminate in a threaded conduit connection through the wall of the entrance tube above ground level.

Accessory items such as the sump pump, dehumidifier and air compressor shall be plugged into selectively polarized, grounded convenience outlets, located close to their installed position so that such items can be readily removed and serviced if necessary.

FACTORY TESTS

All components of the pump station shall be given an operational test at the factory to check for excessive vibration, for leaks in the piping or seals and for correct operation of the automatic control system and all auxiliary equipment. The pump suction and discharge lines shall be coupled to a reservoir and the pumps shall recirculate water for at least one hour under simulated service conditions. The automatic control shall be adjusted to start and stop the pumps at approximately the levels required by the job conditions.

Factory test instrumentation must include flow measuring with indicator; compound suction gauge; bourdon tube type discharge pressure gauge; electrical meters to measure amperes, volts, kilowatts and power factor; speed indicator; vibrometer capable of measuring both amplitude and frequency.

A description of test equipment must be included with submittal data.

SPARE PARTS

A complete replacement pump shaft seal assembly shall be furnished within the lift station. The spare seal container shall include complete installation instructions. A spare filter element for the seal filter shall also be provided, in the same container as the pump shaft seal. Spare volute gaskets for the sewage pumps shall also be furnished.

INSTALLATION AND OPERATING INSTRUCTIONS

Installation of the pump chamber, entrance tube and related appurtenances shall be done in accordance with written instructions provided by the Manufacturer.

The Manufacturer shall further provide a complete and detailed Installation, Operation and Maintenance Manual. This manual shall cover, in addition to installation and general operating procedures, the operation, maintenance, and servicing procedures of the major individual components provided with the pump station.

The Manufacturer shall provide the services of a factory-trained representative for a maximum period of one day to perform initial startup of the pump station and to instruct the owner's operating personnel in the operation and maintenance of the equipment.

GUARANTEE

The Manufacturer shall have a minimum of five years' experience in the design and manufacture of automatic factory-built underground pump stations and shall guarantee for one year from date of start up or eighteen months from date of shipment, whichever is shorter, that the structure and all equipment will be free from defects in design, material and workmanship. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the Manufacturer will not be accepted. The Manufacturer shall assume prime responsibility for the guarantee of the station and all components.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the Manufacturer shall provide a replacement part without cost to the owner. He shall further provide, without cost, such labor as may be required to replace, repair or modify major components such as the station structure, pumps, pump motors, sewage piping manifold, etc. After startup service has been performed, the labor to replace accessory items, such as dehumidifier, sump pump, alternator, etc., shall be the responsibility of others.

The replacement or repair (including cost of parts and labor) of those items normally consumed in service, such as pump seals, fluorescent tubes, oil, grease, etc., shall be considered as part of routine maintenance and station upkeep.

It is not intended that the Manufacturer assume responsibility for contingent liabilities or consequential damages of any nature resulting from defects in design, material, workmanship or delays in delivery, replacement or otherwise.

Generating Quality

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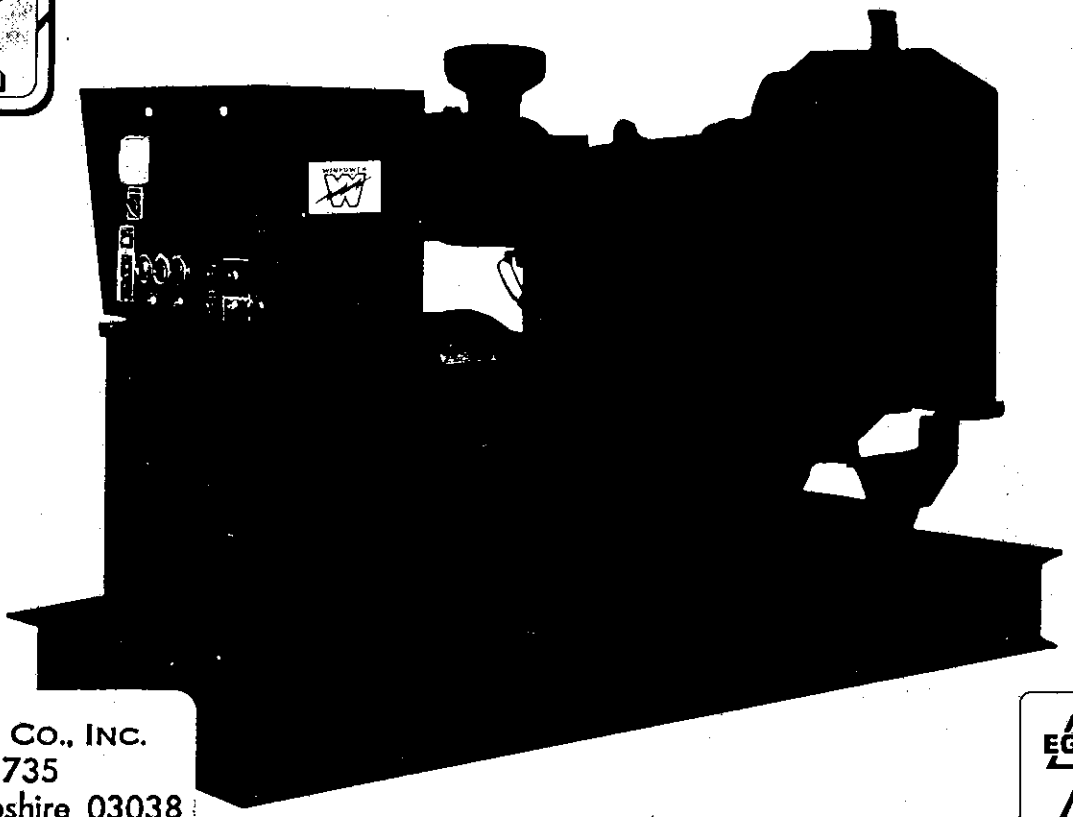

C. R. SWANEY CO., INC.
P.O. Box 735
Derry, New Hampshire 03038
(603) 432-9888

EGSA ELECTRICAL GENERATING SYSTEMS ASSOCIATION

MODEL SELECTION AND RATING TABLE

MODEL NUMBER	VOLTS	PHASE	WIRE*	CONTINUOUS STANDBY SERVICE		
				KW	KVA AND PF	AMPS
DR60H4 – C	120/240	1	3	60	60 @ 1.0PF	250
DR60H4 – P	240/480	1	3	60	60 @ 1.0PF	125
DR60H4 – D	120/208	3	4	60	75 @ 0.8PF	208.2
DR60H4 – J	120/240	3	4	60	75 @ 0.8PF	180.4
DR60H4 – T	240	3	3	60	75 @ 0.8PF	180.4
DR60H4 – N	240/416	3	4	60	75 @ 0.8PF	104.1
DR60H4 – L	277/480	3	4	60	75 @ 0.8PF	90.2

*This is one machine with 12 leads reconnectable for different outputs available. Your Winpower Alternator will not be obsoleted by voltage or phase changes due to modernization of incoming service. All models are easily reconnectable by a competent electrician to any of the listed values in the model selection chart. For prime power derate to 55 KW. 50 HZ models are available but derated to 20% from prime power service.

The Winpower Brushless Alternator with solid state voltage regulator eliminates many of the problems which occur in the field with conventionally excited or statically excited revolving field generators and offers the user many advantages: Reduced maintenance (rotor is only moving part in system) – radio interference reduced to a minimum – will not deteriorate in moist or corrosive atmosphere – excellent voltage regulation – high instantaneous overload capabilities for motor start – modular control panel, optional instrumentation may be factory or field mounted – 12 lead reconnectable construction allows wide choice of voltages from one machine. Ideal for construction, rental yard, standby and oil field use.

Winpower Alternator Sets are job dependable on all applications. The engines that power Winpower Alternators are universally accepted, heavy-duty industrial engines customized for generator application. Parts and service are available anywhere.

Since 1925, the Winpower Corporation has built precision electric alternators and plants which enjoy a world wide reputation for efficiency, quality construction and long life performance.

Ask the powerhouse.

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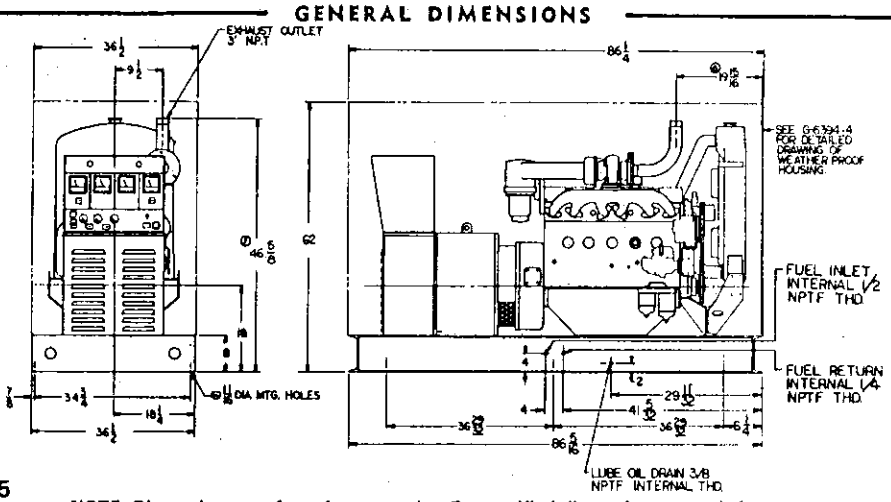
NEWTON, IOWA 50208 U.S.A.
PHONE: (515) 792-1301 / CABLE: WINPOWER / TELEX II: 910-520-1557

GENERAL DIMENSIONS



IF-5195

NOTE: Dimensions are for reference only. For certified dimensions consult factory.

Reliability - Performance - Advanced Design

— SPECIFICATIONS —

DIESEL ENGINE

TYPE: 4-cycle; overhead valve; 6-cylinder; 4-in. bore; 4½-in. stroke; compression ratio 16:1, 339 cu. in. piston displacement; BMEP 120-psi at continuous generator load. Piston speed, 1350-fpm. At 1800-rpm, 114 bhp maximum. Hercules D-3300T engine.

BATTERY CHARGING: Belt-driven Alternator; 12-volt DC, 35-amp output. Voltage regulator. Negative ground.

COOLING SYSTEM: Radiator cooled; 7 gallon water capacity; self-sealing water pump (capacity 31-gpm); belt driven pusher fan, cooling air volume 7200-cfm; heat rejection to coolant 2760 BTU/min. Thermostat temperature control. High water temperature cut-out.

FUEL SYSTEM: Roosa Master fuel injection system. Dry type air cleaner; integral fuel transfer pump. For standby service optional day tank and fuel booster pump (electric) recommended, fuel lift 7-ft. Automatic fuel shut-off. Combustion air required, 175-cfm.

FUEL: Premium diesel fuels are recommended but not required. Domestic furnace oil No. 2D is suitable. 5.31 gals, per hour.

GOVERNOR: Gear driven, mechanical flyweight, governor. Speed regulation from no load to full load, 5-percent.

LUBRICATION SYSTEM: Gear driven oil pump, full pressure lubrication to all bearings; oil cooler; full-flow oil filter, pressure relief valve. Lube oil capacity, 8-qt. Oil pressure gauge. Oil level indicator. Low oil pressure cut-out.

STARTING SYSTEM: Negative ground, 12-volt, 2-wire remote. Solenoid shift starter. Cranking Limiter. For standby service use Optional Automatic Line Transfer Panel.

VALVES: Valve in head. Hi alloy exhaust and intake valves.

BATTERY: 12 volt, 150 AMP/HR. (465 amperes minimum cold cranking current at 0°F)

AC ALTERNATOR

TYPE: Brushless, 4 Pole, Revolving Field. Direct connected with rotor coupled to engine by means of flexible disc coupling. Laminations designed for minimum reactance and loss. Amortisseur winding to reduce wave form distortion on single phase loads and to dampen swings during parallel operation.

EXCITER: Revolving Armature, 3 Phase, AC Generator. Full wave rectified output fed to the alternator revolving field through rotating full wave rectifier assembly. Ample reserve capacity for field forcing. The electrical characteristics of the exciter design precludes losing residual magnetism, however, as an added plus feature, this unit has a built in static automatic field flashing circuit.

BEARING: Cartridge type, extra wide, double sealed, prelubricated, oversized for long, smooth operation and safety.

INSULATION: Class F as defined by NEMA MG1-1.65. Insulation varnish conforms to MIL-V-1137.

COOLING: Centrifugal blower draws air through the alternator and discharges at drive end.

VOLTAGE REGULATOR: Solid State Regulator with no moving parts or vibrating contacts. Electromagnetic interference surpressed. Only one relay is used in the voltage regulator circuit and operates only during start up. This plug-in type relay is equipped with a plastic cover to protect it from dust, dirt and moisture.

UNIT PERFORMANCE CHARACTERISTICS

VOLTAGE REGULATION: ±1% from no load to rated full load. The transient voltage is limited to 15% maximum dip on going from no load to rated load and 20% maximum overshoot in going from rated load to no load. Recovery to stable operation within 1.5 seconds. ± 5% voltage adjustment by means of rheostat.

FREQUENCY REGULATION: 3% 1.8 HZ from no load to full load. Recovery to stable operation within two seconds on maximum load change in the rating.

VOLTAGE WAVE FORM: Wave form deviation factor less than 5% at any load and power factor within alternator rating.

INSTANTANEOUS KVA: Instantaneous KVA rating is 200% of normal rating at 0.4 power factor.

TEMPERATURE RISE: Temperature rise is within NEMA MG1-22.40 definition.

STANDARD EQUIPMENT

Reconnecting Box, Load Terminals, Field Flashing Circuit, Battery Rack, Modular Control Panel including Voltmeter and Selector Switch, 2 Panel Lights with Switch, Voltage Regulator with Rheostat and 2 Position Switch (Off and Automatic), Battery Charge Rate Ammeter, Water Temperature Gauge (Electrically Operated), Oil Pressure Gauge (Electrically Operated), Automatic Shutdown Device for Overcranking — High Water Temperature — Low Oil Pressure with indicating Light. Start/Stop/Remote Switch. Remote Start/Stop Terminals. Instruction Manual.

OPTIONAL ACCESSORIES AT ADDITIONAL COST

(See accessory data and price sheets)

Ammeter and Selector Switch, Frequency Meter, Running Time Meter, Field Circuit Breaker, Individual Indicating Lights, Overspeed Shutdown Device, Synchronizing Lights and Associated Controls, Line Circuit Breaker, Muffler, Flexible Exhaust Tubing Kits, Automatic Line Transfer Controls, Batteries, Battery Cables, Vibration Isolators, Fuel Lines, Electric Fuel Booster Pump, Day Tanks and Levelometers.

CHANGES: We reserve the right to make changes in any product with the understanding that quality and performance are not impaired.

SELECTING THE PROPER SIZE: Be sure that the unit that you select is large enough to take care of your total present requirements and anticipated needs. The cost of additional capacity is small compared to the inconvenience of having insufficient current to meet all demands instantly, or the cost of changing models at a later date.

RATINGS: Alternator electrical specifications in accordance with EGSA, NEMA, IEEE standards. Horsepower ratings are in accordance with ICEI and SAE test codes, corrected to 500 feet MSL and 85 degrees F. Reduce ratings 3% for each 1,000 feet above 8,000 feet MSL and 1% for each 10 degrees F. above 85 degrees F.

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SANITARY SEWERAGE

SANITARY SEWERAGE SPECIFICATIONS

FOR

JOHN GAVIN

MAST ROAD EXTENSION

DOVER, N.H.

DECEMBER 14, 1984

16. NEW HAMPSHIRE WATER SUPPLY & POLLUTION CONTROL COMMISSION REQUIREMENTS

The following special conditions are as required by New Hampshire Water Supply and Pollution Control Commission for construction of sanitary manholes and sanitary sewers. These specifications are cited herein as additions to the requirements found in other sections of this specification. In case of conflict, these special conditions should govern.

16.1 Sanitary Manholes

a. General

The work covered by this section includes the furnishing of all plant, labor, equipment, appliances, and materials, and performing all operations in connection with the satisfactory installation of manholes, and all incidental work, complete, in strict accordance with the specifications and applicable drawings and standard details, and conditions of the contract.

The Contractor shall provide the Engineer with shop drawings of all pre-cast material and a description of all methods of jointing he proposes to use on this portion of the contract.

It is the intention of these specifications and the desire of the Commission that the manhole, including all component parts, have adequate space, strength and leakproof qualities considered requirements, and configuration shall be as shown on the drawing. Manholes may be an assembly of pre-cast sections with or without steel reinforcement, with approved jointing, or concrete cast monolithically in place with or without reinforecement. In any approved manhole, the complete structure shall be of such material and quality as to withstand loads of 8 tons (H20 loading) without failure and prevent leakage in excess of one gallon per day per vertical foot. A period generally in excess of 25 years is to be understood in both cases. It is further intended that any pointing of joints shall be accomplished after leakage tests have been satisfactorily completed except as noted in Section 16.1 f "Leakage Tests".

b. Measurement and Payment

Measurement for manholes shall be as stipulated in the proposal.

Payment for manholes shall be at the unit price and shall constitute full compensation including overhead and profit for furnishing all plant, labor, equipment, appliances and materials, and performing all operations in connection with the satisfactory installation of manholes under the specifications herein, and shall include excavation and backfill, furnishing and installing frame and cover, invert and shelf, connecting the sewer to the manhole, and testing for leakage.

c. Description

Manholes shall be constructed at the locations, to the elevations, and in accordance with notes and details shown on the drawings as well as the standard details.

Manholes shall be as shown on the standard details and of the types following:

1. Barrels and cone sections shall be pre-cast reinforced or non-reinforced concrete, or poured-in-place reinforced or nonreinforced concrete.

2. Base sections shall be monolithic to a point 6" above the crown of the incoming pipe, and shall be pre-cast reinforced concrete or pre-cast nonreinforced concrete.

3. Horizontal joints between sections of pre-cast concrete barrels shall be of a type approved by the Commission, which type shall, in general, depend for water-tightness upon an elastomeric or mastic-like sealant.

4. Pipe to manhole joints shall be only as approved by the Commission and, in general, will depend for water-tightness upon either an approved non-shrinking mortar or elastomeric sealant.

5. Cone sections shall be eccentric - see standard detail.

6. There shall be no manhole steps.

7. All pre-cast sections and bases shall have the date of manufacture and the name or trademark of the manufacturer impressed or indelibly marked on the inside wall.

d. Materials

Materials shall be as follows:

Concrete for poured-in-place bases or complete manholes shall conform to the requirements for Class A concrete in Section 520 of the New Hampshire Department of Public Works and Highways Standard Specifications.

Reinforcing steel for poured-in-place concrete shall conform to the requirements of the New Hampshire Department of Public Works and Highways Standard Specifications for Billet-steel bars or Welded Steel Wire Fabric.

Pre-cast concrete barrel sections, cones, and bases shall conform to ASTM C 478 except as may be otherwise shown on the Standard Details.

Manhole frame and cover shall provide a 30" diameter clear opening. The cover shall have the letter "S" or the word "SEWER" in 3" letters cast into the top surface.

The castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be machined at the foundry, before shipment to prevent rocking of covers in any orientation.

All castings shall be thoroughly cleaned and subject to a careful hammer inspection.

Castings shall be at least Class 30 conforming to the ASTM Standard Specification for Gray Iron Castings, Designation A48.

Before being shipped from the foundry, castings shall be sandblasted and given two coats of coal-tar-pitch varnish, applied in a satisfactory manner so as to make a smooth coating, tough, tenacious, and not brittle or with any tendency to scale off. Coatings damaged in transit or handling shall be repaired by the Contractor to the satisfaction of the Engineer.

Bricks - See Section 16.1 g for brick and mortar.

e. Installation of Manhole Bases and Sections

Pre-cast bases shall be placed on a 6" layer of compacted bedding materials as described below. The excavaton shall be properly dewatered while placing bedding material and setting the base or pouring concrete. Water-stops shall be used at the horizontal joint of poured-in-place manholes.

Inlet and outlet stubs shall be connected and sealed in accordance with the manufacturers recommended procedure and as shown on the Standard Details, or cast integrally with the poured base.

Barrel sections and cones of the appropriate combination of heights shall then be placed, using manufacturers recommended procedure for sealing the horizontal joints, and as shown on the Standard Details or the remaining barrel of the manhole shall be cast above the base.

A leakage test shall then be made as described in Section 16.1 f.

Following satisfactory completion of the leakage test, the frame and cover shall be placed on the top or some other means of preventing accidental entry by unauthorized persons, children, animals, etc., until the Contractor is ready to make adjustment to grade.

Bedding Material shall consist of crushed stone and/or natural stone graded to the following specifications:

100% passing	1" screen)	Equivalent to Standard Stone Size #67
90-100% passing	3/4" screen)	Section 703 of N.H.D.P.W.H. Standard
20- 55% passing	3/8" screen)	Specifications
0- 10% passing	#4 sieve)	
0- 5% passing	#8 sieve)	

f. Leakage Tests

1. General - Leakage tests shall be made and observed by the Engineer on each manhole. The test shall be an exfiltration test made as described below.

2. Preparation for Test - After the manhole has been assembled in place, all lifting holes and those exterior joints within 6 feet of ground surface shall be filled and pointed with an approved non-shrinking mortar. The test shall be made prior to placing the shelf and invert and before filling and pointing the horizontal joints below the 6-foot depth line. If the ground water table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test. All pipes and other openings into the manhole shall be suitably plugged and the plugs braced to prevent blow out.

3. Test Procedure - The manhole shall then be filled with water to the top of the cone section. If the excavation has not been back filled and observation indicates no visible leakage, that is, no water visibly moving down the surface of the manhole, the manhole may be considered to be satisfactorily water-tight. If the test as described above is unsatisfactory as determined by the Engineer or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted if the Contractor so wishes, to allow for absorption. At the end of this period, the manhole shall be refilled to the top of the cone, if necessary, and the measuring time of at least 8 hours begun. At the end of the test period, the manhole shall be refilled to the top of the cone,

measuring the volume of water added. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed 1 gallon per vertical foot for a 24-hour period. If the test fails this requirement, but the leakage does not exceed 3 gallons per vertical foot per day, repairs by approved methods may be made as directed by the Engineer to bring the leakage within the allowable rate of 1 gallon per foot per day. Leakage due to a defective section or joint or exceeding 3 gallons per vertical foot per day, shall be cause for the rejection of the manhole. It shall be the contractor's responsibility to uncover the manhole as necessary and to disassemble, reconstruct or replace it as directed by the Engineer. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed.

4. Backfilling - The test may be conducted either before or after backfilling around the manhole. However, if the Contractor elects to backfill prior to testing, for any reason, it shall be at his own risk and it shall be incumbent upon the Contractor to determine the reason for any failure of the test. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorption, etc., i.e., it will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the Contractor shall take any steps necessary to assure the Engineer that the water table is below the bottom of the manhole throughout the test.

5. Infiltration Test - If the groundwater table is above the highest joint in the manhole, and if there is no leakage into the manhole as determined by the Engineer, such a test can be used to evaluate the water-tightness of the manhole. However, if the Engineer is not satisfied, the Contractor shall lower the water table and carry out the test as described hereinbefore.

g. Brick Masonry

This section applies to brick masonry, for the shelf, invert, and grade adjustment.

Brick. The brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.

Rejected brick shall be immediately removed from the work.

Mortar. The mortar shall be composed of Portland cement, hydrated lime, and sand, in the proportions of 1 part cement to 1/2 part lime to 4 1/2 parts sand, (by volume). The proportion of cement to lime

may vary from 1:1/4 for hard brick 1:3/4 for softer brick, but in no case shall the volume of sand exceed three times the sum of the volume of cement and lime.

Cement. Cement shall be Type II Portland cement conforming to ASTM C-150, Standard Specifications for Portland cement.

Hydrated lime shall be Type S conforming to the ASTM Standard Specification for Hydrated Lime for Masonry Purposes, Designation C207.

Sand shall consist of inert natural sand conforming to the ASTM Standard Specifications for Concrete (Fine) Aggregates, Designation C33 as follows:

GRADING:

Sieve	Percent Passing
# 3/8	100
4	95 - 100
8	80 - 100
16	50 - 85
50	10 - 30
100	2 - 10
Fine Modulus	2.3 - 3.1

Laying Brick. Only clean bricks shall be used in brickwork for manholes. The brick shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.

Curing. Brick masonry shall be protected from too rapid drying by the use of burlaps kept moist, or by other approved means, and shall be protected from the weather and frost, all as required.

h. Setting Manhole Frames and Covers

Manhole frames shall be set with the tops conforming accurately to the grade of the pavement or finished ground surface or as indicated on the drawings. Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

Manhole covers shall be left in place in the frames on completion of other work at the manholes.

16.2 SANITARY SEWERS

a. General

The Contractor shall furnish all sanitary sewer pipe and fittings, jointing materials, labor, tools and equipment necessary to lay and joint the pipe in accordance with the specifications therein.

b. Asbestos-Cement-Non-Pressure Pipe

Pipe and Fittings shall be of the class shown on the plans conforming to ASTM Specifications C-428 and/or C-644, Type II. Manufacturer's certificate of compliance shall be furnished to the Engineer prior to installation. Methods of shipping and storage on site shall be such as to avoid injury to the pipe. Damaged pipe shall be rejected and removed from the job site.

Joints shall be of the sleeve-coupling type conforming to ASTM Specifications C-428 and/or C-644, Type II. Compression rings shall be of Oil Resistant rubber type of elastomeric material and shall conform to ASTM Specifications D-1869. Manufacturer's instructions for installation shall be followed.

c. Ductile Iron Pipe, Fittings, and Joints

Ductile iron pipe and fittings shall be Class 52 and shall conform to the following standards of the United States of America Standards Institute:

A21.51 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, For Water or Other Liquids.

A21.50 Thickness Design of Ductile Iron Pipe and with ASTM A-536 Ductile Iron Castings.

Joints shall be as specified in Section 02570.3c, Cast-Iron Pipe, Fittings, and Joints.

d. Ring-Tite PVC Gravity Sewer Pipe and Fittings

1. Scope: This specification designates general requirements for unplasticized polyvinyl chloride (PVC) Plastic Gravity Sewer Pipe with integral wall bell and spigot joints for the conveyance of domestic sewage.

2. Materials: Pipe and fittings shall meet the requirements of ASTM Specification D3034 for SDR 35. The pipe shall be colored green for in-ground identification as sewer pipe. Manufacturer's certificate of compliance shall be furnished to the Engineer prior to installation. Methods of shipping and storage on site shall be such as to avoid injury to the pipe. Damaged pipe shall be rejected and removed from the job site.

3. Pipe: Pipe shall be suitable for use as a gravity sewer conduit. Provisions must be made for contraction and expansion at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross-section rubber ring, factory assembled, securely locked in place to prevent displacement during assembly. Sizes and dimensions shall be as shown on the Drawings. Standard laying lengths shall be 20 ft. and 12.5 ft. +/- 1 inch. At manufacture's option, random lengths of not more than 15% of total footage of each size may be shipped in lieu of standard lengths.

4. Drop Impact Test: Pipe (6" long section) shall be subjected to impact from a free falling tup (20-lb. Tup A.) in accordance with ASTM Method of Test D2444. No shattering or splitting (denting is not a failure) shall be evident when the following energy is impacted:

Nominal Size Inches	Ft.-Lbs.
4	150
6	210
8	210
10	220
12	220
15	220

5. Fittings: All fittings and accessories shall be as manufactured and furnished by the pipe supplier or approved equal and have bell and/or spigot configurations compatible with that of the pipe.

6. Temperature for Testing: Pipe shall be designed to pass all tests at 73 degrees Fahrenheit.

7. Pipe Stiffness: Minimum "pipe stiffness" at 5% deflection shall be 46 psi for all sizes when tested in accordance with ASTM Method of Test D2412, "External Loading Properties of Plastic Pipe by Parallel-Plate Loading".

8. Joint Tightness: Two sections of pipe shall be assembled in accordance with the manufacturer's recommendation. Joint shall be tested in accordance with ASTM D3212, "Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seals."

9. Flattening: There shall be no evidence of splitting, cracking, or breaking when the pipe is tested as follows:

   Flatten specimen of pipe, six inches long between parallel plates in a suitable press until the distance between the plates is forty percent of the outside diameter of the pipe. The rate of loading shall be uniform and such that the compression is completed within two to five minutes.

e. Installation of Pipe

1. Pipe Handling

   The Contractor shall arrange for the delivery of the pipe sections at approved locations in the vicinity of that portion of the sewer line in which the pipe sections are to be laid. To this end, he shall do such work as is necessary for access and for delivery of the pipe. Pipes shall be stored in an approved, orderly manner so

that there will be a minimum of re-handling from the storage area to the final position in the trench and so that there is a minimum of obstruction and inconvenience to any kind of traffic. Deliveries shall be scheduled so that the progress of the work is at no time delayed and also so that large quantities of pipe shall not be stored for excessive lengths of time in crowded locations or in locations where large storage areas might be considered objectionable. Storage of pipe will be restricted to approved or permitted areas.

The spigot end of vitrified clay pipes shall be stored on a block to prevent damage. The bell or groove end of each length of R.C. pipe shall be placed in storage on a block to prevent damage. Care shall be taken that the lengths do not roll together.

Each pipe section shall be handled into its position in the trench in such manner and by such means as the Engineer approves as satisfactory, and these operations will be restricted to those considered safe for the workmen and such as to cause no injury to the pipe or to any property.

The Contractor will be required to furnish slings, straps and/or approved devices to provide satisfactory support of the pipe when it is lifted. Transportation from delivery areas to the trench shall be restricted to operations which can cause no injury to the pipe units.

The pipe shall not be dropped from trucks or into the trench.

The Contractor shall have on the job-site with each pipe-laying crew all the proper tools to handle and cut the pipe. The use of hammer and chisel, or any other method which results in rough edges, chips and damaged pipe, shall be prohibited.

Damaged pipe coating and/or lining shall be restored before installation as approved or directed by the Engineer.

2. Control of Alignment

The Engineer will establish the location of the pipe, manholes and other appurtenances, and will establish bench marks along the route of the pipeline at convenient intervals for the use of the Contractor and for his own reference in checking the pipe and manhole invert and other elevations throughout the project.

The Contractor may elect to use this information to set line and use a level or transit to set grade.

The Contractor may use a laser beam to assist in setting the pipe provided he can demonstrate satisfactory skill in its use.

The use of string levels, hand levels, carpenter levels or other relatively crude devices for transferring grade or setting pipe will not be permitted.

During construction, the Contractor shall provide the Engineer, at his request, all reasonable and necessary materials, opportunities and assistance for setting stakes and making measurements, including the furnishing of one or two rodmen or chainmen as needed at intermittent times. He shall not proceed until he has made timely demand upon the Engineer for, and has received from him, such controls and instructions as may be necessary as the work progresses. The work shall be done in strict conformity with such controls and instructions. The Contractor shall carefully preserve bench marks, reference points and stakes, and in case of willful or careless destruction, by his own men, he will be charged with the resulting expense and shall be responsible for any mistakes or delay that may be caused by their unnecessary loss or disturbance.

3. Preparation of Bed

As soon as excavation has been completed to proper depth, as shown on the Standard Trench Section, a layer of bedding material shall be placed to the elevation necessary to bring the pipe to grade and compacted. It shall be the Contractor's responsibility to control any water in the trench below the pipe invert and he shall place concrete, clay or other impermeable material in the bedding at intervals to prevent horizontal movement of the groundwater which might induce settling of the bed, or make it difficult to handle water in the trench.

4. Laying Pipe

Each pipe length shall be inspected for cracks, defects in coating or lining, and any other evidences of unsuitability. Before lowering in place, the pipe shall be struck with a suitable tool to verify its soundness.

Pipe shall be laid in the dry and at no time shall water in the trench be permitted to flow into the sewer.

The pipe shall then be laid on the trench bedding as shown on the Standard Trench Section, and the spigot pushed home. Jointing shall be in accordance with the manufacturer's instructions and appropriate ASTM Standards, and the Contractor shall have on hand for each pipe-laying crew, the necessary tools, gauges, pipe cutters, etc., necessary to install the pipe in a workmanlike manner. Pipe laying shall proceed upgrade with spigot ends pointing in the direction of flow.

Blocking under the pipe will not be permitted except where a concrete cradle is proposed, in which case pre-cast concrete blocks shall be used.

After the pipe has been set to grade, additional bedding material shall be placed in 6-inch layers up to the spring line of the pipe. Tamping bars shall be carefully employed to assure compaction of the bedding under the lower quadrants of the pipe.

After this, the sand blanket shall be carefully placed in 6-inch layers to a depth of 12 inches over the crown of the pipe. Each layer shall be thoroughly compacted with mechanical equipment. Care shall be taken that the equipment does not damage the pipe.

At this point, the pipe shall be checked for line and grade and any debris, tools, etc., shall be removed.

If inspection of the pipe is satisfactory, the Contractor may then refill or backfill the remainder of the trench in accordance with the Standard Trench Section.

At any time that work is not in progress, the end of the pipe shall be suitably closed to prevent the entry of animals, earth, etc.

At the end of each day's work or at intervals of no more than 200 feet of pipe, the Engineer, with the Contractor, will inspect the pipe for alignment with lamps or mirrors. Unsatisfactory work shall be dug up and re-installed to the satisfaction of the Engineer.

5. Leakage Tests

Leakage Tests

At intervals along the sewer work not to exceed 1,000 feet, all portions of all sewers shall be subjected to leakage tests under the direction of the Engineer and witnessed by him. The Contractor shall have on hand all plugs, pumps, weirs, water trucks, etc., necessary to conduct the tests. Allowable leakage shall be limited to not more than 300 gallons per inch of diameter per mile of pipe per day. Should the work fail the leakage test, corrective action shall be taken by the Contractor in a manner approved by the Engineer and Commission. If directed by the Engineer, all portions of the section tested shall be dug up and re-laid.

In general, the use of sealants, applied from the inside of the pipe, will not be approved.

Infiltration

When the ground water is two feet or more above the crown of the pipe at the upper end of the section to be tested, an infiltration test shall be made. The upper end of the section to be tested shall be plugged and a V-notch weir of appropriate size shall be fitted into the lower end so as to prevent leakage around the weir plate. Commercially manufactured weir plates made and calibrated for the purpose may be used.

Exfiltration

When ground water is not present as described above, an exfiltration test shall be made. The sewer shall be plugged at the lower manhole in the outlet pipe and at the upper manhole in the inlet pipe. Water shall be introduced at the lower manhole and the line filled to a point four to six feet above the crown of the pipe at the upper end. Before any measurements are made a period of about 2 hours should be permitted to allow for absorption and escape of any trapped air. The loss of water from the system over a period of at least four hours shall then be measured and the leakage rate computed.

Air Test

When requested by the Contractor, leakage testing by means of low pressure air may be permitted, provided acceptable procedures are followed.

f. House Services, Wye Branches and Chimneys

1. Scope

The Contractor shall furnish and install house services, wye branches and chimneys at locations shown on the drawings and/or as directed by the Engineer.

2. Materials

Materials for house services, wye branches and chimneys shall be of the same material and quality as that for the main sewer or as specified elsewhere in the specifications.

3. Installation

Installation shall be as shown on the "House Sewer Details". House services shall not be connected directly to manholes. The opening of the house service, wye branch or chimney shall be suitably plugged with a watertight cap or plug.

Before backfilling, the Contractor shall make the necessary measurements to locate the opening later. In addition, an approved ferrous rod or pipe shall be placed over the plugged opening, extending to within 2 inches of the final ground surface.

g. Connecting to Existing Sewers and Manholes

1. Sewers

Where new construction is intended to connect to an existing sewer, a new manhole shall be installed at the connection unless waived by the Engineer and the Commission. Special care shall be taken to insure a tight joint between the new and existing sewers.

2. Manholes

Where new construction is intended to connect to an existing brick or block manhole, the existing manhole shall be replaced. If the existing manhole is of concrete or pre-cast concrete and in satisfactory condition, as determined by the Engineer, this requirement may be waived by the Engineer and the Commission.

h. Proximity to Water Mains

New Hampshire Water Supply and Pollution Control Commission design standards require 10 ft. separation. However, should construction operations reveal or expose a waterline (main or service) running approximately parallel and less than 10 ft. horizontally from the proposed sewer installation and where it is not practicable to relocate the sewer, the following methods of protection must be employed:

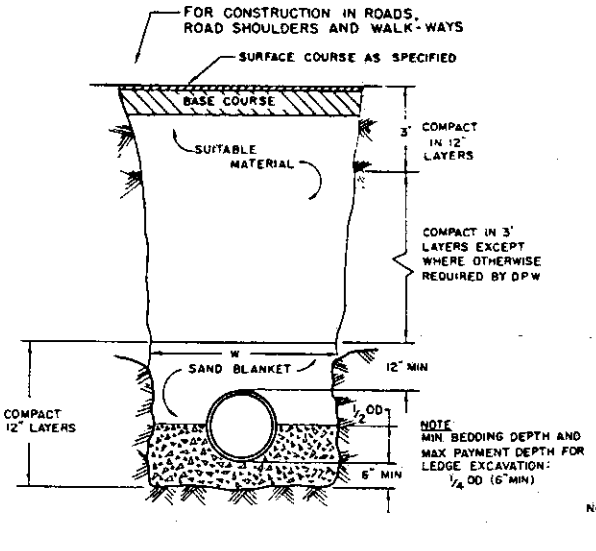
If the waterline can be kept at least 18 in. above and 3 ft. to one side of the sewer, as shown and suported on a bench of original soil, no other protection is required.

If the above separation cannot be achieved, the sewer shall be encased in concrete, as shown on these drawings, or else cast-iron or ductile iron pipe of the same size shall be utilized. Appropriate manufactured fittings shall be employed to adapt the iron pipe to the contract sewer pipe.

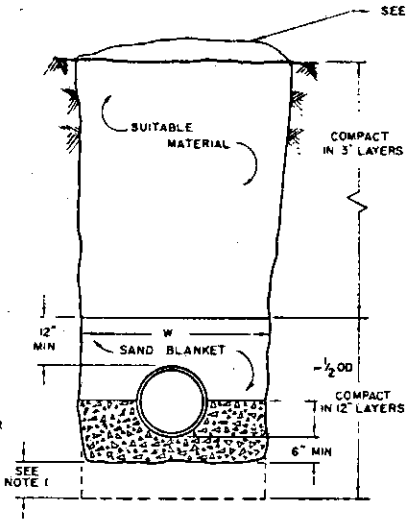
Should the waterline cross-over the new sewer with less than 18 in. separation, the sewer for a distance of 10 feet on each side of the waterline shall be encased in concrete as shown, or else cast-iron or ductile iron pipe shall be utilized. Appropriate manufactured fittings shall be employed to adapt the iron pipe to the contract sewer pipe. As an alternative, the waterline may be raised, if feasible, to achieve the required separation.

i. Concrete Cradle or Encasement

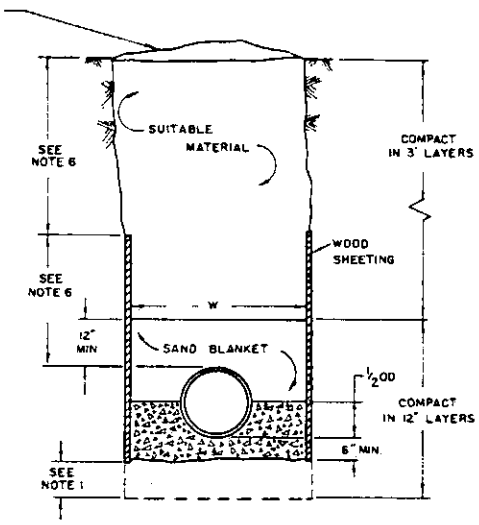
When indicated on the drawings, sewer pipe shall be covered with a concrete arch encasement in accordance with the Standard Trench Section, or entirely encased. Before pouring the concrete, the pipe shall be properly jointed and set to grade on the bedding, in the case of arch encasement (or on concrete blocks, in the case of complete encasement). The pipe shall also be braced against any horizontal movement.



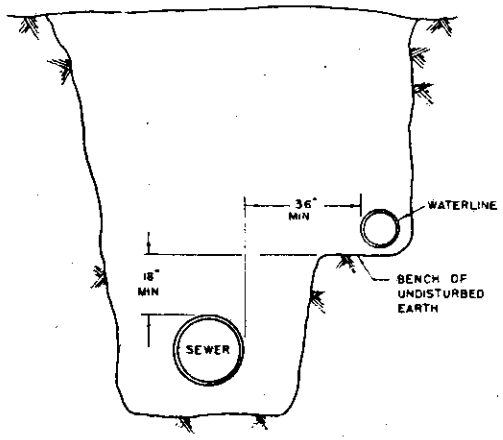
LEDGE CONSTRUCTION



EARTH CONSTRUCTION

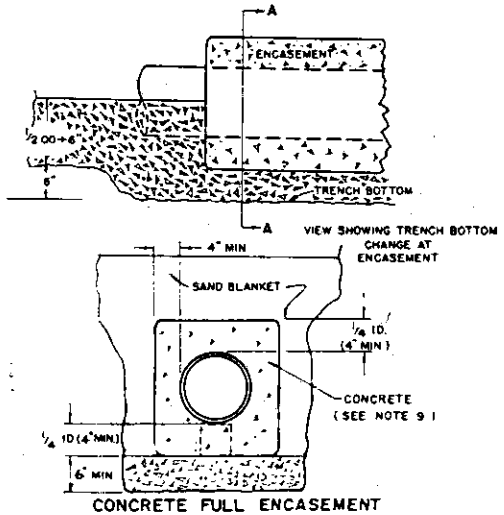


EARTH CONSTRUCTION WITH SHEETING



WATER AND SEWER IN SAME TRENCH

(SPECIAL CONDITIONS SEE NOTE 10)



CONCRETE FULL ENCASEMENT

(SEE NOTE 11)

SECTION A-A

NOTES

1 - ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE REFILL WITH BEDDING MATERIAL SEE ALSO NOTE 7

2 BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90-100% PASSING	3/4 INCH SCREEN
20-55% PASSING	3/8 INCH SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1½ INCH SHALL BE USED

3 - SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER SO GRADED THAT 90-100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A # 200 SIEVE. BLANKET MAY BE OMMITED FOR CAST-IRON, DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE

4 - SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALK-WAYS AND TRAVELED WAYS, SUITABLE MATERAIL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX IN. IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION

IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY WILL BE PRESERVED

5 - BASE COURSE, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

6. WOOD SHEETING: IF REQUIRED, WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

7 - W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.

8 - FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE

9.- CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000#) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE: 1 INCH

NOTES CONTD:

10.- NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION DESIGN STANDARDS REQUIRE 10 FT. SEPARATION. HOWEVER, SHOULD CONSTRUCTION OPERATIONS REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FT HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICABLE TO RELOCATE THE SEWER, THE FOLLOWING METHODS OF PROTECTION MUST BE EMPLOYED.

A - IF THE WATERLINE CAN BE KEPT AT LEAST 18 IN ABOVE AND 3 FT TO ONE SIDE OF THE SEWER, AS SHOWN AND SUPPORTED ON A BENCH OF ORIGINAL SOIL, NO OTHER PROTECTION IS REQUIRED

B- IF THE ABOVE SEPARATION CANNOT BE ACHIEVED, THE SEWER SHALL BE ENCASED IN CONCRETE, AS SHOWN ON THESE DRAWINGS, OR ELSE CAST-IRON OR DUCTILE IRON PIPE OF THE SAME SIZE SHALL BE UTILIZED. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE

SHOULD THE WATERLINE CROSS-OVER THE NEW SEWER WITH LESS THEN 18 IN SEPARATION, THE SEWER FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE WATERLINE SHALL BE ENCASED IN CONCRETE AS SHOWN, OR ELSE CAST IRON OR DUCTILE IRON PIPE SHALL BE UTILIZED. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE AS AN ALTERNATIVE, THE WATERLINE MAY BE RAISED, IF FEASIBLE, TO ACHIEVE THE REQUIRED SEPARATION

SHOULD THE WATERLINE IN EITHER SITUATION BE AT OR BELOW THE SEWER ELEVATION, THE WATERLINE OR THE SEWER MUST BE RELOCATED TO ACHIEVE 10 FT HORIZONTAL SEPARATION OR THE WATERLINE RAISED TO ACHIEVE THE REQUIRED VERTICAL SEPARATION

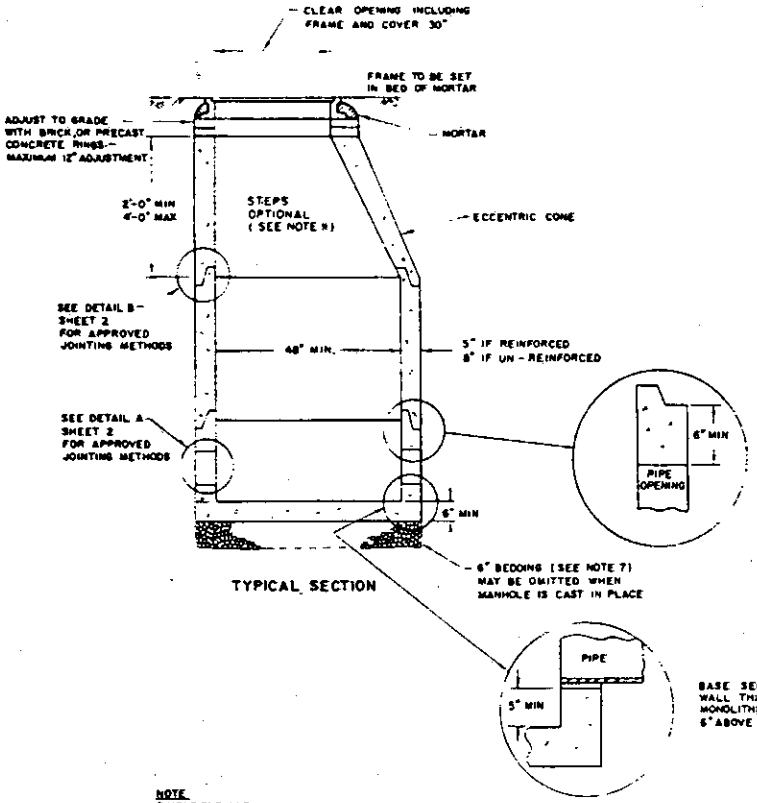
11 - IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS

REVISIONS	
DATE	CHANGE
AUG 74	SAND BLANKET SPECIFICATION WHICH CHANGED "W" DESCRIPTION
DEC 74	REVISED LAST PARAGRAPH IN NOTE #3
JAN 75	ADDED NOTE 11
DEC 77	FULL ENCASEMENT FROM REINFORCED CONCRETE

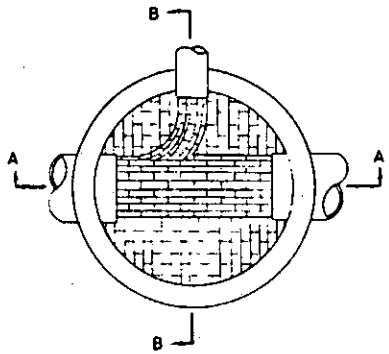
NEW HAMPSHIRE
WATER SUPPLY & POLLUTION CONTROL COMMISSION

STANDARD TRENCH SECTION

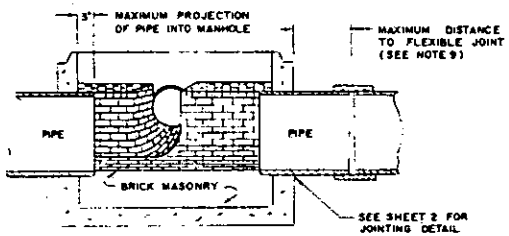
SCALE NONE DATE: APRIL 1973



TYPICAL SECTION



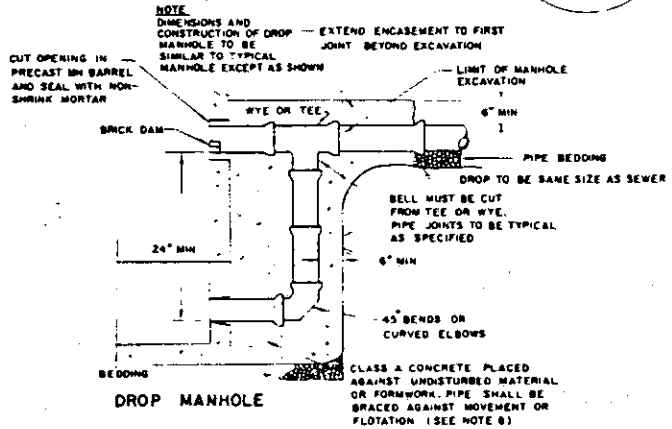
PLAN



SECTION A-A

BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6" ABOVE THE PIPE CROWN

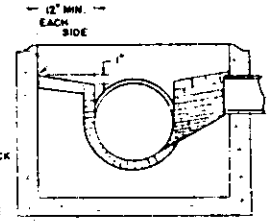
NOTE
DIMENSIONS AND CONSTRUCTION OF DROP MANHOLE TO BE SIMILAR TO TYPICAL MANHOLE EXCEPT AS SHOWN



DROP MANHOLE

TOP OF SHELF SHALL BE 1" ABOVE CROWN OF HIGHEST PIPE

NOTE
CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE



SECTION B-B

NOTE
INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST

NOTE SEPARATE CONSTRUCTION SPECIFICATIONS ARE ATTACHED OR INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS

NOTES

1 - IT IS THE INTENTION OF THE COMMISSION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE COMMISSION FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2 - BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED OR NON-REINFORCED CONCRETE, OR POURED IN PLACE REINFORCED OR NON-REINFORCED CONCRETE

3 - PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478

4 - LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS

5 - INVERTS AND SHELVES MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW A" CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY

6 - 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) LETTER "S" FOR SEWERS OR "D" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER

7 - BEDDING - SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33

100% PASSING 1 INCH SCREEN	0-10% PASSING #4 SIEVE
90-100% PASSING 3/4 INCH SCREEN	0-5% PASSING #8 SIEVE
20-55% PASSING 3/8 INCH SCREEN	

WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1 1/2 INCH TO 1/2 INCH SHALL BE USED

8 - CONCRETE FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000#) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS

CEMENT 6.0 BAGS PER CUBIC YARD
WATER 5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE 1 INCH

9 - FLEXIBLE JOINT A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES

RCP & CI PIPE - ALL SIZES - 48"
AC & VC PIPE - UP THROUGH 12" DIA - 18"
AC & VC PIPE - LARGER THAN 12" DIA - 36"

10 - SHALLOW MANHOLE IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 8 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS

11 - MANHOLE STEPS MAY BE PERMITTED UPON REQUEST BY THE OWNER AS SECONDARY ADDITIONAL SAFETY FEATURE SUPPLEMENTARY TO THE PRIMARY PORTABLE LADDER ENTRY AND WHEN INSTALLED UNDER THE FOLLOWING CONDITIONS:

1. THE STEPS SHALL BE MANUFACTURED OF 5/8 INCH ROUND STAINLESS STEEL OR FORGED ALUMINUM ALLOY THEY SHALL BE SHAPED SO THAT THEY CANNOT BE PULLED OUT OF THE CONCRETE WALL IN WHICH THEY ARE EMBEDDED
2. THE STEPS SHALL BE EMBEDDED IN THE CONCRETE BY THE MANUFACTURER DURING MANUFACTURE OR IMMEDIATELY FOLLOWING REMOVAL OF THE FORMS. SECURING THE STEPS WITH MORTAR IN DRILLED OR CAST HOLES, WILL NOT BE ACCEPTABLE
3. THE STEPS SHALL BE OF THE DROP TYPE WITH A DEPRESSED SECTION FOR HANDHOLD, APPROXIMATLEY 14" X 10" IN DIMENSION.

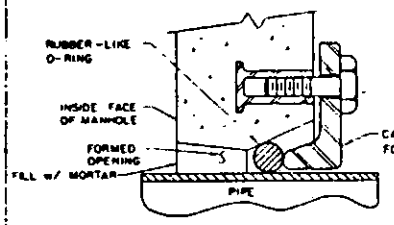
REVISIONS	
DATE	CHANGE

NEW HAMPSHIRE
WATER SUPPLY & POLLUTION CONTROL COMMISSION

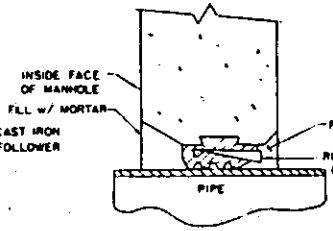
STANDARD MANHOLE

SHEET 1 OF 2

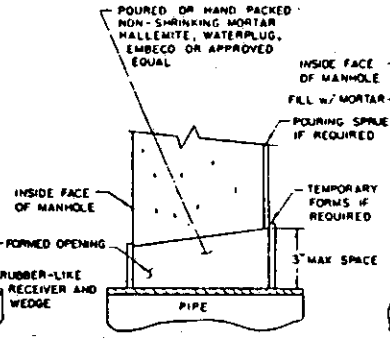
SCALE NONE	DATE JUNE 1973



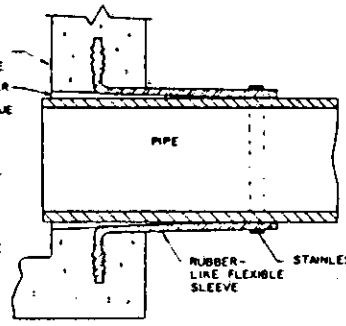
RES-SEAL
(OR EQUAL)



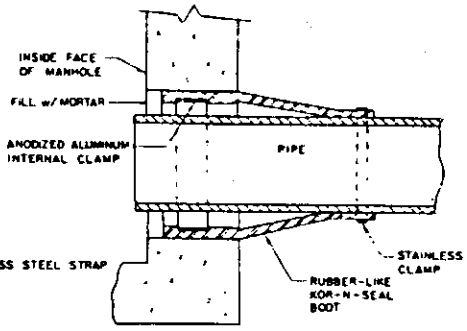
PRESS-WEDGE II
(OR EQUAL)



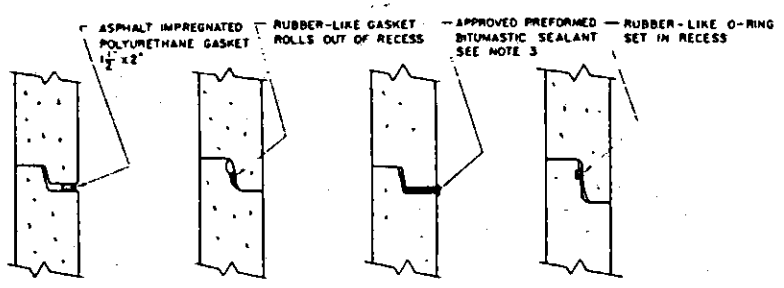
NON-SHRINKING MORTAR



LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR EQUAL)

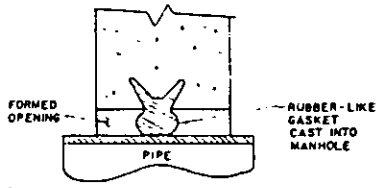


KOR-N-SEAL JOINT SLEEVE
(OR EQUAL)



NOTE ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

DETAIL-B



A-LOK
(OR EQUAL)

NOTE ALL GASKETS, SEALANTS, MORTAR ETC SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

DETAIL-A

NOTES:

1 – HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE COMMISSION, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET

2 – PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE COMMISSION AND IN GENERAL, WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT

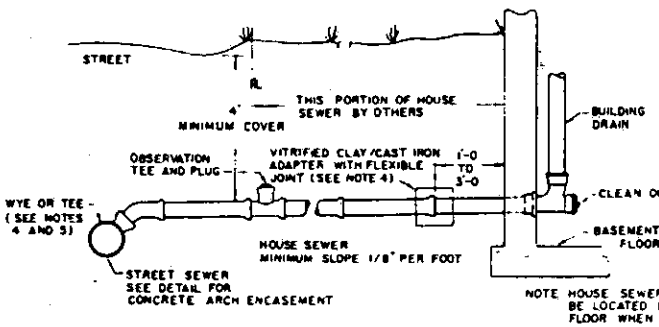
3 – FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY
APPROVED BITUMASTIC SEALANTS
RAM-NEK
KENT SEAL NO 2

REVISIONS	
DATE	CHANGE
MARCH 74	ADDED "A-LOK" DETAIL
JANUARY 75	ADDED "FILL w/ MORTAR"

NEW HAMPSHIRE
WATER SUPPLY & POLLUTION CONTROL COMMISSION

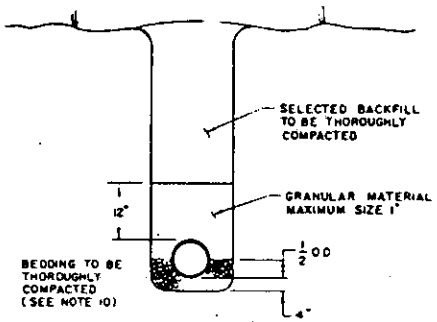
STANDARD MANHOLE
SHEET 2 OF 2

SCALE NONE | DATE JUNE 1973

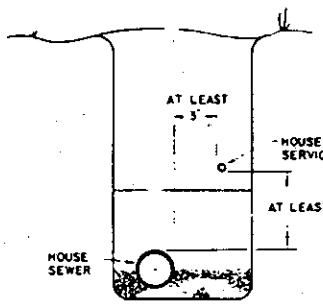


NOTE HOUSE SEWER MAY ALSO BE LOCATED BELOW BASEMENT FLOOR WHEN REQUIRED

VITRIFIED CLAY SEWER AND HOUSE SEWER

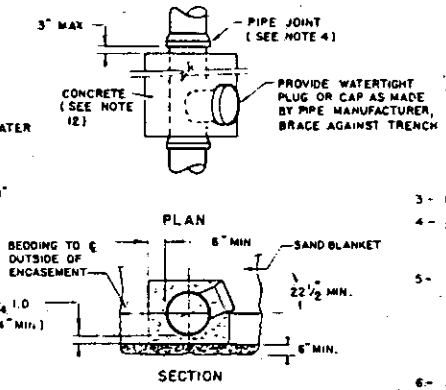


TRENCH CROSS-SECTION

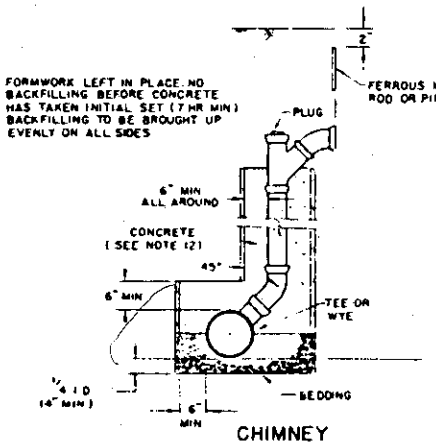


WATER AND SEWER IN SAME TRENCH

(SEE NOTE 9)



CONCRETE FULL ENCASEMENT



CHIMNEY

(SEE NOTE 13)

NOTES

1- MINIMUM SIZE PIPE FOR HOUSE SERVICE SHALL BE FOUR INCHES

2- PIPE AND JOINT MATERIALS

A VITRIFIED CLAY PIPE

1- PIPE AND FITTINGS SHALL BE EXTRA STRENGTH CLAY PIPE CONFORMING TO THE REQUIREMENTS OF ASTM C-700

2- JOINTS SHALL BE MADE WITH OIL RESISTANT GASKETS IN ACCORDANCE WITH ASTM C-425 TYPE III MANUFACTURERS INSTRUCTIONS FOR INSTALLATION SHALL BE FOLLOWED

B ASBESTOS-CEMENT-NON-PRESSURE SEWER PIPE

1- PIPE AND FITTINGS SHALL CONFORM TO ASTM TENTATIVE SPECIFICATIONS C644 TYPE II

2- JOINTS SHALL BE OF THE SLEEVE-COUPLING TYPE CONFORMING TO ASTM SPECIFICATIONS C644 TYPE II COMPRESSION RINGS SHALL BE OF OIL RESISTANT RUBBER TYPE OR ELASTOMERIC MATERIAL AND SHALL CONFORM TO ASTM SPECIFICATION D1869 MANUFACTURERS INSTRUCTIONS FOR INSTALLATION SHALL BE FOLLOWED

C. CAST-IRON PIPE FITTINGS AND JOINTS

1- CAST IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE

A21.1 THICKNESS DESIGN OF CAST IRON PIPE
A21.4 CEMENT MORTAR LINING FOR CAST IRON PIPE AND FITTINGS
A21.6 CAST IRON PIPE CENTRIFUGALLY CAST IN METAL MOLDS FOR WATER OR OTHER LIQUIDS
A21.8 CAST IRON PIPE CENTRIFUGALLY CAST IN SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS
A21.10 CAST IRON FITTINGS, 2 INCHES THROUGH 48 INCHES FOR WATER AND OTHER LIQUIDS

2- JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE JOINTS AND GASKETS SHALL CONFORM TO A21.11 RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE AND FITTINGS

D DUCTILE-IRON PIPE, FITTINGS AND JOINTS

1- DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE
A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS
A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS

2- JOINTS SHALL BE AS SPECIFIED IN C2 ABOVE, CAST IRON PIPE JOINTS

3- DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE

4- JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED

5- TEES OR WYES. WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE FOLLOWING MANUFACTURERS INSTRUCTIONS USING A BOLTED, CLAMPED, OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 6" DIAMETER.*

6- PIPE INSTALLATION. THE PIPE SHALL BE HANDLED, PLACED, AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE-FILL FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES

THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7- TESTING. THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS (PRIOR TO BACKFILLING)

A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND, WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE ASERTED JUST UPSTREAM FROM THE OPENING IN THE TEE AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYTEM ABOVE THE PLUG TO A HEIGHT OF 3 FEET ABOVE THE LEVEL OF THE PLUG.

B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT

* DOES NOT APPLY TO INSTALLATIONS WHERE "Y" & "Y" ARE USED

NOTES CONTD

7- C DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.

LEAKAGE OBSERVED IN ANY OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG UP IF NECESSARY AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS

8- ILLEGAL CONNECTION. NOTHING BUT SANITARY WASTE FLOW FROM HOUSE TOILETS, SINKS, LAUNDRY ETC SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS OR SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE, OR GROUND WATER, SHALL NOT BE PERMITTED

9- HOUSE WATER SERVICE SHOULD NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, BUT WHEN NECESSARY, SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE HOUSE SEWER AS SHOWN

10- BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33
6" 100% PASSING 1 INCH SCREEN 90-100% PASSING 3/4 INCH SCREEN 20-55% PASSING 3/8 INCH SCREEN
0-10% PASSING #4 SIEVE 0-5% PASSING #8 SIEVE
WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1 1/2 INCH TO 1/2 INCH SHALL BE USED

11- LOCATION. THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS IN ADDITION A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER

12- CONCRETE. CONCRETE SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FULLOWS
CEMENT 6.0 BAGS/C.Y. WATER 5.75 GALS / BAG CEMENT
AGGREGATE 1 1/2" MAX

13- CHIMNEYS. IF VERTICAL DROP INTO SEWER IS GREATER THAN 4', A CHIMNEY SHALL BE CONSTRUCTED FOR THE HOUSE CONNECTION

REVISIONS	
DATE	CHANGE

NEW HAMPSHIRE
WATER SUPPLY & POLLUTION CONTROL COMMISSION

HOUSE SEWER DETAILS

SCALE NONE DATE AUGUST 1973

Landscape Best Management Practices
Operations and Maintenance Plan

Leathers Lane 40-Unit Condominium Development

Tax Map 1 Lot 4a – Dover, NH

Prepared For:
Michael Khavari
40 Harrison Avenue
Portsmouth, NH 03801
August 28, 2020

Prepared By:
Ironwood Design Group, LLC
Newmarket, New Hampshire 03857

Ironwood
Landscape Architecture • Planning

Landscape Maintenance

Introduction

The landscape enhancements proposed for the Leathers Lane 40-Unit Condominium Development will require only modest maintenance at various times throughout the year. This is particularly true during the first 1-2 years following installation when plants are becoming established.

Identified below are basic (minimum) maintenance tasks:

Weekly Tasks

1. Mow and edge lawns as seasonal growth dictates. Lawns to be cut to 3.5" height.
2. Prune back any shrubs overhanging curbs or sidewalks.
3. Remove litter from plants bed.
4. Remove any broken or fallen branches from trees. Remove sucker growth from tree trunks.
5. Remove weeds larger than 2 inches high or wide from plant beds. Weeds 2 inches and larger must be removed, not just killed. **The application of herbicides such as Roundup is discouraged.**
6. Any invasive species seedlings observed should be removed and disposed of properly.
7. Replace bark mulch which has been washed out of plant beds. Smooth mulch layer if it has been disturbed.
8. Check plants for signs of stress, pests or disease and notify Owner for authorization to replace.
9. Complete any items required on the Monthly Checklist.
10. Water any plants that are dry and stressed.

Annual Tasks

Early Spring:

1. Prune any winter damage such as tree branches that interfere with public safety. Prune all street trees yearly to encourage strong growth. Trees adjacent to pedestrian sidewalks shall have branches pruned to 6' height.
2. Apply pelletized lime to lawns at a rate of 80lbs/1000sf.
3. Apply a low nitrogen granular fertilizer to shrubs beds and lawns. Fertilizer should not be applied if heavy rain fall is forecasted. A soil analysis is recommended every two years to determine exact application rate and need for fertilization.
4. Trim any perennial foliage left in the fall for winter interest to within six inches of the ground
5. Add new mulch to plant beds where the mulch depth has been reduced to less than 2 inches. Mulch depth shall not exceed 2". Mulch is not required where shrubs or groundcover completely hide the soil surface from view.
6. Gently prune shrubs at appropriate time of year based on species, for shape and form. **DO NOT shear.**

Monthly Tasks

June:

1. Mow stormwater facilities

July:

No additional items

August:

No additional items

September:

1. Inventory all plant materials. Inventory shall include an exact count of all shrubs and trees. Replace any dead or missing plants.

October:

1. Mow stormwater facilities

November:

1. Remove leaves from lawn areas and planting beds.
2. Remove perennial vegetation that has dies back for the season
3. Apply “WILT-PRUF” to broadleaf evergreens when temperature permits.

December:

1. Prune any tree branches that interfere with public safety. Prune all parking lot and street trees yearly to encourage strong growth.

Stormwater Detention Facilities, Buffer Plantings, and Swales

Introduction

The stormwater management facilities at Leathers Lane are used to attenuate stormwater flow, remove sediment and other stormwater pollutants from runoff, and infiltrate stormwater. The stormwater detention areas consist of an excavated area seeded with a diverse herbaceous mix of vegetation.

The stormwater detention areas have a pretreatment area to capture and remove larger sediment particles. The pretreatment area consists of sumps or forebays covered with stone riprap to minimize erosion. Overflow pipes and swales discharge water that cannot be adequately stored and treated in the facility.

Task or Activity	Time or Frequency					
	Weekly	Spring	Summer	Fall	Winter	After Major Rain Events
Replace dead or dying plants		X				
Rake and redistribute/replenish soil that has eroded and reseed		X				X
Remove weeds	X	X	X	X		
Prune woody plants		X				
Inspect for standing water						X
Remove accumulated sediment from sediment traps / pretreatment areas		X	X	X	X	X
Remove accumulated leaves, litter, and plant debris		X		X		
Mowing of seeded areas (Height 6")		X (late Spring)		X (late Fall)		
Remove accumulated debris and garbage	X					X

Access

Maintenance of access routes shall include removal of tree seedlings and woody vegetation, repair of eroded areas and removal of litter and debris.

Erosion

The soil in the facility and in areas draining to the facility shall be inspected for eroded areas. Eroded areas shall be filled with soil or mulch and seeded.

Sediment Accumulation & Clogging

Sediment accumulation within the facility may reduce the infiltration capacity and impair proper performance of the facility. The facility shall be inspected for accumulation of sediment and excessive sediment accumulation shall be removed with the area re-mulched and replanted.

Outlet Structure Maintenance

The Owner will be responsible for outlet structure maintenance. Periodically, the orifice on the outlet pipe may clog with debris. Debris should be removed and appropriately disposed of off-site.

Riprap

The facility may have riprap at points where runoff enters or leaves the facility. The riprap is used to prevent erosion of soils from stormwater flows. The facility shall be checked to make sure that an adequate amount of riprap exists to prevent erosion and additional riprap added if necessary.

Debris & Litter

A bioretention device is expected to accumulate debris and litter. Debris and litter should be removed on a monthly basis to maintain appearance and public acceptance of the bioretention device.

Plant Maintenance

The vegetation type is important to ensure that the facility operates correctly. Proper vegetation maintenance includes watering during establishment of seeded areas and mowing at 6” twice a year.

Snow Storage

Snow shall not be dumped directly onto the facility. Snow may be piled upgradient of the facility, preferably upgradient of the pretreatment forebay or sump.

Chlorides

The facility is not suitable for treating chlorides. Chloride use on source areas tributary to the Facility should be reduced or eliminated if possible. Chloride use can be reduced or eliminated by minimizing the amount of compound used, using alternative deicers or using clean sand. Aggressive sweeping in these areas, along with pretreatment sumps and filter strips, will reduce the impact of the sand on the facility.

C. Conditional Use Permits. *Conditional Use Permits may be granted by the PLANNING BOARD for the following uses within the Conservation District:*

(1) STREETs, roads and other access ways and utility rights-of-way, communications equipment, easements including power lines and pipe lines, if essential to the productive use of land not so zoned and if so located and constructed as to minimize any detrimental impact of such uses upon the wetlands or other environmentally sensitive areas, where it is physically impossible to locate such ways over land not so zoned. Economic advantage alone shall not be deemed a sufficient reason for such a routing.

The parcel is constrained with wetland areas, steep slope areas and areas of exposed bedrock. Following a TDR approval in January of 2020, two (2) Technical Reviews and a favorable response from the Conservation Commission, the resulting site design minimizes impact to these "Conservation District" areas while providing for storm water mitigation and roadway design meeting the City of Dover regulations. There are no wetland impacts proposed. Wetland buffer impacts are for storm water management and road slope construction. Based on Conservation Commission input road side slopes were minimized to 2:1 to minimize as much as practicable the impacts to the wetland buffer.

(2) The undertaking of a use not otherwise permitted in the Conservation District which may include the erection of a STRUCTURE, dredging, filling, draining or otherwise ALTERING the surface configuration of the land, provided that:

(a) The APPLICANT shall demonstrate that the proposed use is essential to the productive use of land not in the district; is located and constructed to minimize any detrimental impact of such use upon the surface waters or other environmentally sensitive areas, where it is physically impossible to locate such a use on land not in the district; and economic advantage alone shall not be deemed a sufficient reason for such proposed use.

There are no wetland impacts proposed for this project. The proposed impacts are limited to road and driveway construction and installation of grading and drainage structures. There are 15,383 SF of grading and road impacts to 20% slopes and 12,910 SF of grading and drainage structure impacts to the wetland buffer.

(b) A soil erosion and sedimentation control plan is submitted and followed to verify the planned avoidance of sediment pollutant runoff to bodies of water. This plan will address the following (if applicable), but should not be limited to:
- *(i.) Stabilization of exposed soils and soil stockpiles;*
- *(ii.) Protection of steep SLOPEs from erosion;*
- *(iii.) Construction site waste management;*
- *(iv.) Inspection and maintenance of runoff control measures (BMPs);*
- *(v.) Minimization of land clearing;*
- *(vi.) Stabilization of drainage ways;*
- *(vii.) Installation of perimeter controls;*

(viii.) Installation of sediment trapping devices; and
(ix.) Storm drain inlet protection.

The site has been designed in accordance with the City of Dover regulations as well as NHDES storm water standards. The systems have been designed to mitigate all developed storm water on site. All site drainage will be captured by a closed drainage system which will direct all runoff to 1 of 2 wet ponds, an infiltration pond and a level lip spreader prior to discharging to existing drainage ways on site. The drainage mitigation system has been designed to reduce post development flows to abutting properties to less than the existing conditions. The drainage system has been designed to provide mitigation of both storm water quantity and quality.

(c) *Necessary state and federal approvals have been applied for. Said permits shall be received prior to the issuance of the Conditional Use Permit by the Planning and Community Development Department.*

A NHDES Alteration of Terrain permit is required for this project and is pending. As is customary in the City Dover Planning Board process the Planning Board will grant a conditional approval pending receipt of applicable State permit.

(d) *A written review by the Conservation Commission of the environmental effects of the proposed use upon the area in question has been submitted. The Commission's review shall address the following, but is not limited to:*

(i) Attempted avoidance of the impact;
(ii) Minimization of the impact;
(iii) Planned mitigation of the effects of the impact; and
(iv) Efficacy of the soil erosion and sedimentation control plan.

Through a number of meetings with the City planning staff, the TRC and with the Conservation Commission the layout has evolved to minimize impacts to the 20% slopes and wetland buffer. The project was reviewed with the Conservation Commission at their October 13, 2020 regularly scheduled meeting. After review and input the Conservation Commission voted unanimously to recommend acceptance to the conditional use permit to Planning Board. The storm water management system has been designed to mitigate storm water and several acres of the parcel has been set aside as no build and no disturbance. A robust landscape plan has also been developed to buffer abutting parcels.

P19-74A & P19-74B Leathers Lane

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
I0003-000000	ROSANNA DR	PRPC DEVELOPMENT GROUP LLC		60 FARMINGTON RD SUITE 400	ROCHESTER	NH	03867
I0003-A00000	31 LEATHERS LN	ANDERSON JORDAN E &	O ROURKE HANNAH E	31 LEATHERS LN	DOVER	NH	03820
I0003-B00000	FORDS LANDING D	GAVIN JOHN T		P.O. BOX 145	RYE BEACH	NH	03871
I0003-C00000	29 LEATHERS LN	LAPOINTE SETH E &	TICKNER BRONWYN	29 LEATHERS LN	DOVER	NH	03820
I0004-000000	10 LEATHERS LN	WELSH HANNAH K &	WELSH THOMAS H	10 LEATHERS LN	DOVER	NH	03820
I0004-001000	4 LEATHERS LN	SWORSKI BRIAN JOSEPH &	SWORSKI STEPHANIE ANN	4 LEATHERS LN	DOVER	NH	03820
I0004-002000	14 LEATHERS LN	STRAWBRIDGE VICTOR W II & AJEMIAN MERIN	VWS AND MCA REVOCABLE TRUST	14 LEATHERS LN	DOVER	NH	03820
I0004-A00001	18 LEATHERS LN	GIGUERE GUY J &	GIGUERE MARGARET A	327 CRANBERRY MEADOW RD	BERWICK	ME	03901
I0004-A00002	22 LEATHERS LN	CARREL DANIEL T &	CARREL CAROL A	22 LEATHERS LN	DOVER	NH	03820
I0004-A00003	28 LEATHERS LN	SPEIDEL MARK E & DIANA TRUSTEES	SPEIDEL FAMILY REVOCABLE TRUST	PO BOX 181	DOVER	NH	03821-0181
I0004-B00000	KATIE LN	DAVIS FARM CONDOS		KATIE LN	DOVER	NH	03820
I0004-B00011	11 KATIE LN	SPEIDEL PEGGY		11 KATIE LN	DOVER	NH	03820
I0004-B00012	12 KATIE LN	HOLTON LINDA M TRUSTEE	HOLTON LINDA M REVOCABLE TRUST	12 KATIE LN	DOVER	NH	03820
I0004-B00013	13 KATIE LN	STRAUS DOROTHY E		33 MILL POND RD	DURHAM	NH	03824
I0004-B00031	31 KATIE LN	HUDSON KATHLEEN A		31 KATIE LN	DOVER	NH	03820
I0004-B00032	32 KATIE LN	FROST AARON MARC		32 KATIE LN	DOVER	NH	03820
I0004-B00033	33 KATIE LN	MERRITT KAYLEIGH MARIA &	MERRITT RONALD C	33 KATIE LN	DOVER	NH	03820
I0004-B00034	34 KATIE LN	COLAN MARK	COLAN LINDA	34 KATIE LANE	DOVER	NH	03820
I0004-B00101	101 KATIE LN	WEEKS SILVIA		101 KATIE LN	DOVER	NH	03820
I0004-B00102	102 KATIE LN	TEGAN JANET R REV TRUST	TEGAN JANET R TRUSTEE	102 KATIE LN	DOVER	NH	03820
I0004-B00103	103 KATIE LN	VINCENT DAVID W		103 KATIE LN	DOVER	NH	03820-3078
I0004-B00104	104 KATIE LN	MACE RANDA V LIVING REVOCABLE TRUST	MACE RANDA V TRUSTEE	104 KATIE LANE	DOVER	NH	03820
I0004-B00111	111 KATIE LN	LAUSBERG RACHEL C		111 KATIE LN	DOVER	NH	03820
I0004-B00112	112 KATIE LN	TRASK HAROLD P	TRASK LINDA P	112 KATIE LN	DOVER	NH	03820
I0004-B00113	113 KATIE LN	SHANNON KEVIN	SHANNON CHRISTINE	113 KATIE LANE	DOVER	NH	03820
I0004-B00121	121 KATIE LN	JOHNSON NANCY A TRUSTEE	JOHNSON NANCY A REVOCABLE TRUST	121 KATIE LANE	DOVER	NH	03820
I0004-B00122	122 KATIE LN	DAMIANO PAUL J &	DAMIANO GINA	122 KATIE LN	DOVER	NH	03820
I0064-000000	68 BACK RIVER RD	BIRCHENOUGH STEVEN		68 BACK RIVER RD	DOVER	NH	03820
I0065-000000	66 BACK RIVER RD	MJC DOVER POINT PROPERTIES LLC		335 DOVER POINT RD	DOVER	NH	03820
I0066-000000	72 BACK RIVER RD	HANSON PETER D		72 BACK RIVER RD	DOVER	NH	03820
I0067-000000	60 BACK RIVER RD	ROBERTS JUDITH & TOWLE SPEIDEL DIANA TRU	ROBERTS SANFORD AND JUDITH REVOCABLE LIV	60 BACK RIVER RD	DOVER	NH	03820
I0067-A00000	74 BACK RIVER RD	TOWLE LYDIA M		PO BOX 1392	DOVER	NH	03821-1392
I0067-B00000	62 BACK RIVER RD	TOWLE JONATHAN P TRUSTEE	TOWLE JONATHAN P 2008 TRUST	62 BACK RIVER RD	DOVER	NH	03820
I0068-000000	78 BACK RIVER RD	DUTKOWSKI HENRY S		78 BACK RIVER RD	DOVER	NH	03820
I0069-A00000	17 LEATHERS LN	ALMY ROBERT E &	ALMY PATRICIA	17 LEATHERS LN	DOVER	NH	03820
I0069-B00000	21 LEATHERS LN	DEMERS CAROLYN R	DEMERS ALFRED R	21 LEATHERS LN	DOVER	NH	03820
I0069-C00000	25 LEATHERS LN	DEKORNE JOSEPH H JR		25 LEATHERS LN	DOVER	NH	03820
		MICHAEL KHAVARI		40 HARRISON AVENUE	PORTSMOUTH	NH	03820
		KAREN A TOWLE	JAMES B TOWLE AND KAREN A TOWLE REVOCABLE TRUST	26 ANITA STREET	ROCHESTER	NH	03867
		CIVILWORKS NEW ENGLAND/HAIGHT ENGINEERING PLL(	STEPHEN J HAIGHT & KEVIN MCENEANEY, NH LLS	181 WATSON ROAD	DOVER	NH	03821

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE NOTES – P20-71

Application Type:	Site Plan Review
Applicant(s):	Michael Khavari
Owner(s):	Karen A. Towle, Trustee and James B. Towle & Karen A Towle Revocable Trust
Location:	Leather's Lane (Tax Map I, Lot 4A)
Date:	October 8, 2020

INTENT: To create a 40 unit private condominium subdivision with a main road and 3 spurs. Previous TDR request was approved up to 45 units.

LOTS/UNITS PROPOSED: 40 units

AGENDA ITEM #: 1

ACREAGE: 15.9 acres

ZONING DISTRICT: R-12

EXISTING LAND USE: Vacant

SURROUNDING LAND USE: Residential, Bellamy River

ZBA ACTION:

PERMITS REQUIRED: Conditional Use Permit

WAIVERS REQUESTED: N/A

ATTENDANCE:
Donna Benton, Planning
Elena Piekut, Zoning
Dan Barufaldi, Economic Development
Frank Torr, Planning Board
Dave White, Engineering
Jim Maxfield, Fire/IS

Others:
Steve Haight
Michael Khavari
FX Bruton
Stephen McKinney

Approval of October 1, 2020 Minutes:
F.Torr moved to approve the October 1, 2020 TRC meeting minutes. D.White seconded. Vote: U/A.

Planning Comments:

- Provide HOA docs which include:
  - Language about private roadway and conversion process
  - The calculation used to determine the reserve amount in the treasury
  - Maintenance of the Open Space, 15'/30' no cut/no disturb buffer around the boundary, no limited common areas, roadway and other common obligations.
  - That prior to converting the ownership and maintenance obligations from the developer to the Association, the Engineer of Record shall meet with the Association and review maintenance obligations, including stormwater, open space and roadway maintenance
- Impact fees will be assessed $355,800
- W/S investment fees are applicable
- Condition of approval: Prior to the last CO being issued, the Engineer of Record shall meet with the Association and review the as-builts for the project.
- This property is in current use, and if developed will be receiving a land use change tax. Provide a revised current use map.
- Revise plans:
  - Signature of Owner
  - Add Stamp and signature of PE, LLS, and architect needed on each plan submission
  - Add street names, all ending with "Drive" and labeled "Private" or request waiver and replace "Dogwood"
  - Add common subdivision note 14
  - Add TDR setbacks.
  - Revise site note 2 on sheet 4 to include that the roadway is private and per 157-47B there are no City services provided unless the roadway conforms with public road specifications and the Planning Board has reviewed and agreed to amend the approval to allow a public roadway.
  - Revise the Site Construction Sign note on page 4 to indicate that it shall also indicate that the roadway is private and is intended to remain private with no City services performed on the roadway

- Revise the Site Plan sheets to indicate the presence of a 30' no cut/no disturb buffer per TDR. The 15' should only be used where absolutely necessary and not be the entire site. Provide plan to Planning Staff and add a note to the plan "Applicant will work with City Staff post construction to replace any plantings as necessary to meet the intent of the 15' no cut no disturb buffer"

Fire/Inspections Comments:

- Replace "Dogwood" name
- Lane/Circle requires waiver

Police Department Comments:

- Add note that trash toters will be used rather than dumpsters
- May need to contribute to Route 108 improvements based upon Traffic Study

Engineering Comments:

- Submit roundabout design at minimum for this project and maybe they either build it or contribute to it if its viable.
- Concerned about some drainage
- There are still issues with separation of utilities.
- Curb box locations need to be shown and if in pavement then use roadboxes.
- The sidewalk and sign detail don't meet city spec

Economic Development Comments: N/A

Planning Board Comments: N/A

Next steps:
Revise plans for Planning and Engineering. 10/13 Conservation Commission. 10/27 Planning Board meeting if plans are acceptable to staff.

TRC paused at 11:04am

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE NOTES – P20-71

Application Type:	Site Plan Review
Applicant(s):	Michael Khavari
Owner(s):	Karen A. Towle, Trustee and James B. Towle & Karen A Towle Revocable Trust
Location:	Leather's Lane (Tax Map I, Lot 4A)
Date:	September 17, 2020

INTENT: To create a 40 unit private condominium subdivision with a main road and 3 spurs. Previous TDR request was approved up to 45 units.

LOTS/UNITS PROPOSED: 40 units

AGENDA ITEM #: 3

ACREAGE: 15.9 acres

ZONING DISTRICT: R-12

EXISTING LAND USE: Vacant

SURROUNDING LAND USE: Residential, Bellamy River

ZBA ACTION:

PERMITS REQUIRED: Conditional Use Permit

WAIVERS REQUESTED: N/A

ATTENDANCE:
Christopher Parker, Planning
Jim Maxfield, Inspection Services
Chief Breault, Police
Alan Dews, Engineering
Elena Piekut, Zoning
Frank Torr, Planning Board

Others:
Donna Benton
Michael Khavari
Steve Haight
FX Bruton

Planning Comments:

- The HOA docs which include:
  - Language about private roadway and conversion process
  - The calculation used to determine the reserve amount in the treasury
  - Maintenance of the Open Space, 30' no cut/no disturb buffer around the boundary, no limited common areas, roadway and other common obligations.
  - That prior to converting the ownership and maintenance obligations from the developer to the Association, the Engineer of Record shall meet with the Association and review maintenance obligations, including stormwater, open space and roadway maintenance
- Impact fees will be assessed $355,800
- W/S investment fees are applicable
- Condition of approval: Prior to the last CO being issued, the Engineer of Record shall meet with the Association and review the as-builts for the project.
- Is there any active recreation?
- Revise plans:
  - To correctly note the property is Map I lot 4A
  - Signature of Owner
  - Add Stamp and signature of PE, LLS, and architect needed on each plan submission
  - Update project file number to title block (P19-74A) on all sheets
  - Add street names, all ending with "Drive" and labeled "Private"
  - Add common subdivision notes 14, 15, 30, 31 and 32
  - Correct TDR setbacks.
  - Revise neighborhood plan to show the project.
  - Revise the landscape plan so all trees are min 3.5 – 4" caliper.
  - Revise site note 2 on sheet 4 to include that the roadway is private and per 157-47B there are no City services provided unless the roadway conforms with public road specifications and the Planning Board has reviewed and agreed to amend the approval to allow a public roadway.
  - Revise the Site Construction Sign note on page 4 to indicate that it shall also indicate that the roadway is private and is intended to remain private with no City services performed on the roadway

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE NOTES – P20-71

Application Type:	Site Plan Review
Applicant(s):	Michael Khavari
Owner(s):	Karen A. Towle, Trustee and James B. Towle & Karen A Towle Revocable Trust
Location:	Leather's Lane (Tax Map I, Lot 4A)
Date:	September 17, 2020

- Add a note to the Site Plan sheets directing the reader to the general notes sheet.
- ID TDR calculation and lots, if restricted sized lots are to be used, otherwise add a note that the project is using the TDR option to not size restrict.
  - Staff can provide example language if needed.
- Revise the Site Plan sheets to indicate the presence of a 30' no cut/no disturb buffer per TDR.
- Remove the errant Map I lot 4B from sheet 7 (lower right corner)
- Revise sheet 14 to reduce overlap of text.
- Fence in rendering.

Fire/Inspections Comments:

- Provide an accessible route to the mail kiosk. Indicate on plan and provide detail elevation of kiosk.
- Submit street names for private roads.
- Nearest proximity of structure 21'

Police Department Comments:

- Back River Road northbound traffic queue at Route 108 intersection during AM and PM peak are untenable under current conditions. Traffic Memo makes no mention of this intersection, focusing solely on the Back River/Mast/Leathers intersection. From the TAM, Back River currently has 458 northbound cars during AM peak (55% of 833). Your trip generation analysis indicates you would add 30 additional departures during AM peak, the majority of which will be right turns northbound on Back River. This increases the traffic queue on Back River northbound at Route 108 by 4.5% to 5%. How do you proposed to help mitigate this?
- Define solid waste collection measures. No dumpsters are shown.
- Sheet 4, Note 15: commercial vehicle route during construction shall not utilize Mast Road or Spruce Lane
- Extend reconstructed sidewalk to connect from proposed roadway to Back River Road (430' additional beyond what you are already proposing). It is currently in poor condition.
- Consider traffic calming measures along straightaway of proposed private roadway.
- Private road names?
- Assume conversion of intersection of Leathers, Rosanna, Katie, and Fords Landing Way to an all-way stop include details (stop lines, new stop signs) as addendum to Sheet 23. Staff will present this to a future TAC meeting.

Engineering Comments:

- The engineer should investigate installing a small roundabout at the intersection of Back River and Leathers Lane.
- Revised the plans to:
  - Reconstruct the sidewalk from Back River to this project.
  - Add detectable warning panels on sidewalks on Leather's Lane
  - Show the grading on the utility plans or the utilities on in the background of the grading plan
  - Update the electrical to provide a min 7 feet of separation between water/sewer/drain and gas and UGE.
  - Water line changes
    - Spec stainless steel tapping sleeve and gate
    - Foster gates to tees where anchor tees aren't used
    - Place curb boxes at right of way line and out of pavement if possible. If in pavement use a road box
    - Place hydrants or blow offs at end of mains
    - Add gates at each branch.
    - Spec size of side branches
  - Sewer line changes
    - No sewer services into smh
  - Stormwater changes
    - Add some catchbasins at key points (on corners)
    - Look at waterflow off Leathers Lane. Catchbasins may be needed here.
  - When did they start installing gates on gas services?

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE NOTES – P20-71

Application Type:	Site Plan Review
Applicant(s):	Michael Khavari
Owner(s):	Karen A. Towle, Trustee and James B. Towle & Karen A Towle Revocable Trust
Location:	Leather's Lane (Tax Map I, Lot 4A)
Date:	September 17, 2020

Economic Development Comments:

- Are colors and materials accurate? Look dark

Planning Board Comments:

- TBD

Next steps:
Revise the plans and schedule second TRC to review. Cons Com will need to review on 10/13 before Planning Board on 11/10.

Adjournment:
Motion to adjourn at 12:46pm made by F.Torr. Seconded by J.Maxfield. Vote: U/A

CITY OF DOVER

DOVER CONSERVATION COMMISSION – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	**Room 305 McConnell Center** – 61 Locust St., Dover, NH
Meeting Date:	Tuesday, October 13, 2020
Meeting Time:	5:30 pm

MEMBERS PRESENT: Bill Hunt (Chair), Steve Fellows (Vice Chair), Robert Atwood (Secretary), Abigail Lyon, Amy Kramer-Perry, Jason Aube

Absent (Excused):

Absent (Un-excused): Richard Erickson

STAFF PRESENT: Steve Bird (City Planner)

OTHERS PRESENT: Lindsey Williams (City Council Liaison) Steve Riker, Chris Berry, Stephen Haight, Jase Gregoire, FX Bruton, Michael Khavari, Stephen McKinney, David Croft, others

1. **The meeting was convened at 5:30 PM and a roll call was done.**
2. **CITIZEN'S FORUM:**

   David Croft: I am a member of the Davis Farm Owners Association and we have concerns with this development. Concerns include wildlife impacts, watershed and river, impacts to wetland buffers and steep slopes, cutting trees in the buffer, economic advantage alone, impacts on quality of life and property values, and environmental impacts.

3. **APPROVAL OF THE PRIOR MEETING MINUTES** – September 14, 2020

Lyon moved to approve the September 14, 2020 minutes, Kramer-Perry seconded. Vote: 5-0 Motion passes; Fellows abstaining

4. **OLD BUSINESS:** NONE
5. **NEW BUSINESS:**

A. NHDES Permit by Notification for Anthony & Stephanie Retrosi Revocable Trust (Agent: Steve Riker, Ambit Engineering, Inc.), Assessor's Map L, Lot 114, zoned R-20, located at 318 Dover Point Road.

Riker was present to explain the proposal for the repair/replacement of an existing dock (3.5' x 40' fixed wood pier, an 8.5' x 8' pier section a 2.5' x 20' gangway and an 8' x 12' float) adjacent to the tidal Cochecho River. The work will result in 354 sq. ft. of permanent impacts to tidal wetlands. Seeking the Chair's signature on the application. The existing dock is in need of repair. It will be replaced in kind, same footprint and size. I have a letter from the NH Natural Heritage Bureau stating no impact. We are reducing the number of piles from 16 to 8.

Hunt: Will you be constructing the dock by barge?

Riker: Yes a barge will be used and sections will be constructed off site.

Fellows: How will the old piles be removed? How old is the dock?

Riker: Yes we will use a vibratory hammer to remove piles. Dock is present on a 1972 aerial.

Fellows moved to endorse the NHDES Permit by Notification, Atwood seconded. Vote 6-0 Motion passes

The Chair signed one copy of the application and returned it to applicant.

B. City of Dover Conditional Use Permits for Gulf Landing Properties, LLC. (Agent: Chris Berry), Assessor's Map 38, Lot 9-A-2, zoned B-3, located off Central Avenue.

Berry was present to explain the proposal to build a medical rehabilitation facility on a vacant lot with the building, parking, and drainage improvements impacting 14,000 square feet of the 50-foot wetlands buffer and a septic tank closer than 75 feet to a wetland. The site was subject to a DES action for illegal fill in past. We were before you in the past for a different mixed used proposal, but this requires less parking and we have an easement from Dover Bowl for parking. The storm water design uses a gravel wetland on site. The existing wetlands have low function and value. There is no wetland impacts. The second Cup is related to a septic tank for the sewer pump being closer than 75 feet to wetland.

Hunt: How does this wetland buffer impact compare to the last plan?

Berry: It is about the same but there is less impervious cover now.

Lyon: What do you consider full treatment for nitrogen and phosphorous?

Berry: We meet AOT standards even though a permit is not required.

Lyon: Can you reduce the number of parking spaces further?

Berry: This is the minimum number of spaces that we need on site.

Lyon: What kind of plantings are you proposing?

Berry: We are going to install native species and blueberry bushes along the back of the parking.

Lyon: Can we require the applicant to remove some of the invasive species?

Bird: The CUP process allow you to recommend conditions so you have to consider what is reasonable.

Fellows: The removal could further impact the wetland areas in the process.

Fellows moved to endorse the two Dover CUP's, Aube seconded. Vote 6-0 Motion passes

C. City of Dover Conditional Use Permit for Michael Khavari, (Owner: Karen A. Towle, Trustee & James B. Towle & Karen A. Towle Revocable Trust), (Agent: Steve Haight, Civilworks NE), Assessor's Map I, Lot 4-A, zoned R-12, located on Leather's Lane.

Bird distributed copies of a letter from the Davis Farm Owners Association (DFOA) and copies of 10 e-mails supporting the DFOA letter

Haight was present to explain the proposal for 40 single family units, with impacts to the Conservation District 20% slopes of 15,389 sq. ft. and 12,029 sq. ft. of wetland buffer impacts. About 6-7 acres of the parcel will be undeveloped. We have been to the Planning Board for approval of the increase in number of units through TDR and to a couple of TRC meetings. This is phase 2 of the Davis Farm project from the 1980s. We were approved for 45 units by the Planning Board but are proposing only 40 units. The wetland buffer impacts are due to drainage and the 20% slope impacts are due to roadway and grading. We have talked with DES about the project and that is why we have a 400 foot buffer from the river. All drainage is being treated on site with a wet pond. No houses impact wetland buffers. We need an AOT permit from DES, but no wetlands are impacted so no wetlands permit is required. We have an extensive landscape plan.

Aube: What is the total impact area of the project?

Haight: About 300,000 square feet is disturbed.

Aube: Is there any alternative that would have less impact?

Haight: The 20% slope impacts are where there is bedrock at the surface. No houses are in wetlands buffers. Road design affects impacts. Impacts are less than the 1986 plan. 8 acres are being left undisturbed.

Perry: What is the condition of the land now?

Haight: It is mostly trees. There was a timber harvest in the past and some gravel excavation. A 400 foot buffer from the river will be preserved.

Williams: What year was the wetlands delineation done?

Haight: It was done last year by Damon Burt.

Aube: Did you do a design with no impacts?

Haight: We went through multiple designs and reduced the number of units to minimize impacts as much as we could.

Williams: Were any designs done with consideration for not cutting off the wildlife corridors?

Haight: We had Mark West look at the site for wildlife impacts. The river corridor is prime area.

Aube: Did he look at the NH Fish & Game Wildlife Action Plan?

Haight: Yes that was part of his review and it is now a requirement of the AOT permit.

Hunt: What is impacting the wetlands buffer the most?

Haight: It is the grading for drainage.

Aube: Can you reduce the impact area by using a retaining wall along the road?

Haight: It is possible but the height would have to be quite tall. We need to keep the pond width due to the required width to length ratio. Rather than a retaining wall we could look a side slope along the road of 2:1 instead of 3:1 to reduce buffer impact.

Bird: Are the wetlands on the Davis Farm lot more or less valuable? Could you shift the wet pond in that direction to reduce impacts on the larger wetlands on site?

Haight: We have not looked at that wetland but we can't shift the pond and still keep grading on our lot.

Kramer-Perry: Did you consider less buildings to lessen the impacts?

Haight: Yes but we looked at what is allowed and we are proposing less than the 45 approved.

Bird: How does your project density compare to the adjacent condominium projects?

Haight: We are at a lower density than Davis Farms and Ford's Landing.

(Perry left the meeting at 6:55 PM)

There was a discussion of various road layout options and dead end roads.

Lyon: Have you considered designs to benefit wildlife like box culverts for wildlife passage?

Haight: No we have not looked at those, but there is not really a good location.

Khavari*:* The wildlife report from the state says that there are no impacts to rare and endangered species.

Fellows: Can we see the 45 unit plan? How many units could you have with zero impacts?

Haight: Part of the process is determining a viable project.

Bruton: If we went down to the baseline of 33 units we wouldn't have any reductions to the infrastructure so it would be similar impacts.

Haight: We have a landscape maintenance plan and a storm water operation and maintenance plan that has to be approved by the Planning Board and it is part of the AOT review and is included in the HOA documents.

Aube: How can we be assured that the open area is being protected long term?

Bruton: The notation is on the plan, included in the conditions of approval and in HOA documents.

Lyon: Could we ask for a retaining wall and guardrail to reduce the wetland buffer impacts?

Haight: I would prefer a 2:1 side slope instead of a retaining wall.

Williams: What is the process for communicating with the abutters and residents who have expressed concerns in these e-mails?

Khavari: I have offered to meet with any abutters and have sent letters with my phone number.

Lyon: Wildlife impacts are a major concern for abutters. Can we make a recommendation?

Aube: I like that the land adjacent to the river will be undisturbed, that no wetlands are impacted, the project has already been reduced in number of units, there is only a small part of the parcel that is in the highest tier for wildlife habitat, a wildlife action plan has been prepared by West, it is not practical to eliminate all impacts, they have made a good faith effort to avoid impacts and the plan strikes a balance.

Fellows: I was originally skeptical, but it seems that impacts have been minimized and without a drastic cut in the number of units you would not reduce impacts. Further reduction in wetland buffer would desirable. Overall I am favorable to the plan.

Hunt: I am sympathetic to abutters concerns which will be addressed at the Planning Board level.

Fellows moved to endorse the Dover CUP application with the recommendations that the plan be modified to change to a 2:1 side slope on the road and add a guardrail in the area of impact G and insure that the area within 400 feet of the river be maintained as undisturbed in perpetuity, Atwood seconded. Vote 5-0 Motion passes

D. Request for expenditures from the Conservation Fund for:

1. Open Lands Committee - Conservation Easement Appraisal – not to exceed $6,000

Bird explained that the Open Lands Committee was working with a landowner on a potential conservation easement and they need to have an appraisal completed to determine a value of the conservation easement. The property is confidential at this time. $6,000 should be enough to complete the appraisal. There is adequate funding available in the fund.

Fellows moved to approve the expenditure as requested, not to exceed $6,000, Lyon seconded. Vote 5-0 Motion passes

6. REPORT FROM THE CHAIR

A. Review of Correspondence Received From NH Department of Environmental Services: None

7. OTHER BUSINESS: NONE

8. ADJOURNMENT

Lyon moved to adjourn at 7:54 PM, Fellows seconded. Vote 5-0 Motion passes

CIVILWORKS NEW ENGLAND

181 WATSON ROAD P.O. BOX 1166 DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

September 29, 2020

City of Dover
288 Central Ave
Dover, NH 03820

Attn: Christopher G. Parker, Assistant City Manager/Director of Planning

Re: Subdivision/Site Plan Site Review & Conditional Use Permit Applications
Leathers Lane (Tax Map I, Lot 4A)
Dover Planning file: P19-74A

Civilworks New England Reference No. 190384

Dear Mr. Parker:

On behalf of the applicant Michael Khavari, we are pleased to resubmit the revised Subdivision/Site Plan based on the 9/17/20 TRC meeting.

We have addressed the Committee Notes (**Responses in Bold)** as follows:

Planning Comments:

- *The HOA docs language about private roadway and conversion process*
  The HOA document will have language to address the private roadway conversion process.
- *The calculation used to determine the reserve amount in the treasury*
  The HOA documents will address the calculation for the reserve amount
- *Maintenance of the Open Space, 30' no cut/no disturb buffer around the boundary, no limited common areas, roadway and other common obligations*.
  There is no 30' no cut buffer required with this TDR. There will be a 15' not cut buffer after development. This note has been added to the plans. The HOA documents will address the disposition of the limited common area, roadway and other common obligations
- *That prior to converting the ownership and maintenance obligations from the developer to the Association, the Engineer of Record shall meet with the Association and review maintenance obligations, including stormwater, open space and roadway maintenance*
  The applicant is aware of this condition
- *Impact fees will be assessed $355,800*
  Noted
- *W/S investment fees are applicable*
  Noted

- *Condition of approval: Prior to the last CO being issued, the Engineer of Record shall meet with the Association and review the as-builts for the project.*
  Noted:
- Is there any active recreation?
  There is no active recreation. Passive recreation will be available with trails throughout the parcel.

Revise plans:

- *To correctly note the property is Map I lot 4A*
  The tax map and lot have been updated on the plan set
- *Signature of Owner*
  Owner signature will be added prior to final approval
- *Add Stamp and signature of PE, LLS, and architect needed on each plan submission*
  Stamps and signatures will be added prior to final approval
- *Update project file number to title block (P19-74A) on all sheets*
  Project file has been updated on all sheets.
- *Add street names, all ending with "Drive" and labeled "Private"*
  Street names have been added and the designation private has been added
- *Add common subdivision notes 14, 15, 30, 31 and 32 Correct TDR setbacks.*
  The common site notes have been added to the notes sheet.
- *Revise neighborhood plan to show the project.*
  The project outline has been added to the neighborhood plan
- *Revise the landscape plan so all trees are min 3.5 – 4" caliper.*
  The tree caliper has been updated on the landscape plan
- *Revise site note 2 on sheet 4 to include that the roadway is private and per 157-47B there are no City services provided unless the roadway conforms with public road specifications and the Planning Board has reviewed and agreed to amend the approval to allow a public roadway. Revise the Site Construction Sign note on page 4 to indicate that it shall also indicate that the roadway is private and is intended to remain private with no City services performed on the roadway*
  The notes have been revised as requested
- *Add a note to the Site Plan sheets directing the reader to the general notes sheet.*
  The requested note has been added to each sheet
- *ID TDR calculation and lots, if restricted sized lots are to be used, otherwise add a note that the project is using the TDR option to not size restrict.*
  As discussed at TRC, the TDR approval plan has been added to the plan set and the building sizes have been clarified with a note on the TDR plan.
- *Staff can provide example language if needed.*
- *Revise the Site Plan sheets to indicate the presence of a 30' no cut/no disturb buffer per TDR.*

As discussed at TRC, this TDR predates the current TDR ordinance therefore a 30' no cut is not required. However, the Applicant has provided a "15' no cut buffer after development". This note has been added to the plan set.

- *Remove the errant Map I lot 4B from sheet 7 (lower right corner)*
  The errant note has been relocated.
- *Revise sheet 14 to reduce overlap of text.*
  Note conflicts have been addressed throughout the plan set.

Fire/Inspections Comments:

- *Provide an accessible route to the mail kiosk. Indicate on plan and provide detail elevation of kiosk.*
  A tip down ramp has been added at the mail kiosk.
- *Submit street names for private roads.*
  Road names have been added to the Plans
- *Nearest proximity of structure 21'*
  Confirmed. Each unit is a minimum of 21' from an adjacent unit.

Police Department Comments:

- *Back River Road northbound traffic queue at Route 108 intersection during AM and PM peak are untenable under current conditions. Traffic Memo makes no mention of this intersection, focusing solely on the Back River/Mast/Leathers intersection. From the TAM, Back River currently has 458 northbound cars during AM peak (55% of 833). Your trip generation analysis indicates you would add 30 additional departures during AM peak, the majority of which will be right turns northbound on Back River. This increases the traffic queue on Back River northbound at Route 108 by 4.5% to 5%. How do you proposed to help mitigate this?*
  As discussed at TRC, the applicant is upgrading the Leathers Lane/Back River Road intersection with a dedicated right turn lane and a shared left where none exist today.
- *Define solid waste collection measures. No dumpsters are shown.*
  Solid waste collection is private and will also be noted in the HOA documents.
- *Sheet 4, Note 15: commercial vehicle route during construction shall not utilize Mast Road or Spruce Lane*
  The note has been revised to indicate that construction vehicles shall not use Mast Road or Spruce Lane during the construction of the Leathers lane project.
- *Extend reconstructed sidewalk to connect from proposed roadway to Back River Road (430' additional beyond what you are already proposing). It is currently in poor condition.*

- **The applicant has agree to repave the existing sidewalk from the intersection of Back river Road to the project entrance. This is noted on the site plan.**
- *Consider traffic calming measures along straightaway of proposed private roadway.*
  As discussed at TRC this is a private roadway and no additional traffic calming measures are proposed.
- *Private road names?*
  Private road names will end in Drive and have been added to the plans.
- *Assume conversion of intersection of Leathers, Rosanna, Katie, and Fords Landing Way to an all-way stop include details (stop lines, new stop signs) as addendum to Sheet 23. Staff will present this to a future TAC meeting.*
  As discussed at TRC: no action is required by the applicant.

Engineering Comments:

- *The engineer should investigate installing a small roundabout at the intersection of Back River and Leathers Lane.*
  As discussed at TRC the Applicant is providing upgrades to the Leathers Lane/Back River Road intersection (on Leathers Lane).

Revised the plans to:

- *Reconstruct the sidewalk from Back River to this project.*
  The Applicant has agree to repave the existing sidewalk.
- *Add detectable warning panels on sidewalks on Leather's Lane*
  Panels have been added.
- *Show the grading on the utility plans or the utilities on in the background of the grading plan*
  A separate plan set has been created and emailed to Engineering with grading and utilities shown.
- *Update the electrical to provide a min 7 feet of separation between water/sewer/drain and gas and UGE.*
  The utilities have the separation required.

Water line changes

- *Spec stainless steel tapping sleeve and gate*
  So noted.
- *Foster gates to tees where anchor tees aren't used*
  So noted
- *Place curb boxes at right of way line and out of pavement if possible. If in pavement use a road box*
- *Place hydrants or blow offs at end of mains*
- *Add gates at each branch.*
- *Spec size of side branches*
- *Sewer line changes*
- *No sewer services into smh*

Done and noted on the plans

CIVILWORKS NEW ENGLAND
181 WATSON ROAD P.O. BOX 1166 DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

Stormwater changes

- *Add some catchbasins at key points (on corners)*
  The system has been designed to accommodate all flow from the development
- *Look at waterflow off Leathers Lane. Catchbasins may be needed here.*
  Stormwater runoff along Leathers Lane will remain in Leathers lane and will not enter into the project.
- *When did they start installing gates on gas services?*
  The utility plan has been updated.

Economic Development Comments:

- *Are colors and materials accurate? Look dark*
  The colored plans of the houses are strictly for presentation purposes. Actual house colors will likely vary.

We look forward to discussing this application with the Technical Review Committee. Please feel free to call with any questions or comments.

Sincerely,
CIVILWORKS NEW ENGLAND

Stephen J Haight PE

10/6/2020

To: Christopher Parker, Assistant City Manager/Director of Planning, City of Dover, 288 Central Avenue, Dover, NH 03820

Comments & Concerns ~ Khavari Subdivision Proposal for Leathers Lane

The Davis Farm Owners Association (DFOA) and it's Board was not a party to any negotiations or discussions resulting in the Khavavri Subdivision Proposal for Leathers Lane. Other abutters have been consulted. To the best of our knowledge, Ford's Landing (maintenance responsibility) has not been involved in assessment of the sewer line nor appraised of any findings. Neither has Davis Farm, whose property would be impacted and residents disrupted and financially disadvantaged .

It is regrettable that our community of 40 units was neither notified nor consulted prior to Site Plan completion. The mid-January 2020 meeting with Davis Farm representatives as well as others was merely a Q&A session with some information presented with no level of detail.

DFOA has serious concerns and objections relative to the Site Plan proposal and potential forthcoming CUP applications (not posted/unavailable as of 10/03 2020) that would enable the Site Plan. The DFOA concerns and objections are discussed below and submitted as comments. 10/06 2020

40 Units ~ DFOA does not support the 40 Unit Subdivision. When was the site plan approved? Was public forum used to discuss and approve the site plan?

Existing Sewer Line - On sheet 4 of the site plans under General Notes #15 states "The parcel is subject to and benefits from the sewer easement as shown on the reference plans." Sheet 22 Utility Plan does not show the sewer line nor the easement crossing our property. The Davis Farm Plan shows the existing sewer lines coming from the Towle parcel. The sewer easement deed, SCRD Book 1263, Page 21, where Davis Farm granted the easement to the Towles predecessor states the

easement is 20' wide and "perpetual easement limited to the right to construct, operate, maintain, repair, and reconstruct sewers and appurtenances within a 20 foot wide permanent easement" The easement is "10 feet on either side on an existing sewer line".
1). Applicant must inspect the sewer line for its condition and integrity at their expense with no cost to DFOA or Ford's Landing; subsequent repairs or improvements are the sole financial responsibility of the applicant.
2). No construction activity or necessary repairs will be permitted outside the boundaries of the easement; the easement boundaries must be clearly marked to prohibit any construction activity outside the boundaries.
3) In the event of necessary repairs and/or construction, applicant is required to locate and mark the location of all DF utilities at their cost.
4). A temporary fence marking said boundaries is required if any construction activity re: sewer line is necessary.

Site Plan Infringement on Wetlands Buffer & Slope Requirements ~ This comment/objection is not only relative to environmental protection but to the number of allowed units as well. The **site plan does not appear to meet the slope and wetlands requirements**. As such the number should be reduced accordingly to the 33 units the TDR might allow (or less if the slope and wetland requirements are not met).

30' No Cut Buffer or a 6' Fence ~ The **30' No Cut Buffer must be adhered to** as numerous (9) proposed units will be visible to Davis Farm buildings. Fifteen feet of No Cut Buffer is unacceptable. Absent the 30' No Cut Buffer, a 6 foot privacy fence would be required to preserve privacy and residents' peaceful enjoyment of their homes and property.

The Lack of an Active Recreation Area and its Impact on Davis Farm ~ Davis Farm is **private property** and is maintained as such. It should not be the 'dog-walk park' (non-residents are having to be asked to leave the property) nor the site of other recreational activities non-residents might wish to engage in on Davis Farm's open areas. Cluster housing in a livable walk-able community (similar to DF) or fewer units would solve this problem.

Right Turn Lane Not a Solution ~ The proposed right turn lane at the Leathers Lane / Back River Road interaction **does nothing to mitigate the impact of 80 additional vehicles on Leathers Lane.** Rather, it will make traffic worse with more backups and obstructed vision for drivers trying to go straight or turn left.It will create a dangerous situation for children at the school bus stop at that corner and their parents who wait with them in cars in cold/inclement weather. The issue is the additional number of vehicles on the roads.

Inappropriate Traffic Study ~ At the City of Dover Planning Board Meeting of 01/28 2020 the developer's traffic study was dismissed due to the November timeframe. Any traffic study must be done professionally by a disinterested party not an individual or individuals directly employed by the developer. The comment (based on 09/17 2020 TRC Review) to the City of Dover Police Department concern (re: the untenable situation at the 108/Back River Road intersection) does not address that concern. There will be 40 to 80 additional vehicles added to that intersection no matter what is done at Leathers Lane/Back River Road. Now comes an additional request to build 44 units at 54 Back River Road that will further add at a minimum 44 more vehicles onto Back River Road and both intersections, Leather Lane/Mast Road/Back River Road and 108/Back River Road.

Placement of Stop Signs ~ This is a positive recommendation by the City Engineer but it is **unclear who the responsible party will be** and whether the developer will be responsible for the placement of a stop sign at the exit of the new access road. That will be necessary and appropriate for the 120 plus households that use Leathers Lane.

Construction Vehicles ~ The 09/17 2020 TRC meeting comments include a note that no construction vehicles will be allowed to use Mast Road or Spruce Lane. Recognizing that there is no alternative to the use of Leathers Lane **there must be safeguards and requirements in writing** to protect access, safety and convenience for the 120 plus households using Leathers Lane. A further concern, Leathers Lane was repaved in the not too distant past but is already crumbling and pot holed from constant heavy usage. Multiple years of construction vehicles using Leathers Lane

will destroy the roadway. Is the City of Dover committed to repairs post construction?

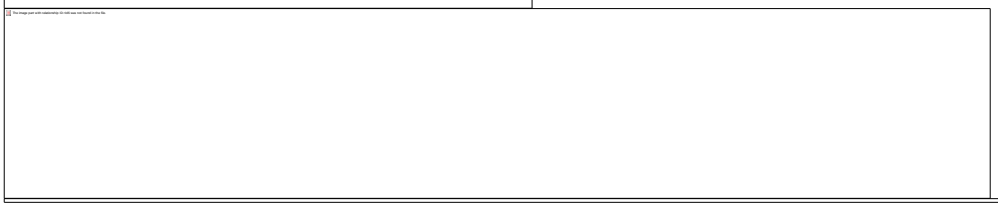
DFOA requests that an ongoing monthly meeting be established between the developers, DFOA and other impacted nearby residences to insure that all parties are well informed and issues may be raised and solved with a goal of mutual benefit.

The Davis Farm Owners Association looks forward to being involved in discussing and resolving our concerns with the City of Dover Planning Board. 10/06 2020

Sincerely,

Stephen McKinney - President, DFOA
Vacant - Treasure, DFOA
David Croft - Secretary, DFOA
James Gunter -Property Manager of Davis Farm Owners Association

Davis Farm Owners Association
100 Katie Lane
Dover, NH 03820
PHONE 603-767-7231
FAX 603-740-0605
EMAIL guntersrepairsandmore@comcast.net



From: Parker, Christopher G.
Sent: Tuesday, October 27, 2020 4:09 PM
To: 'Stephen McKinney' <mckfam51@gmail.com>; Benton, Donna <d.benton@dover.nh.gov>; 'n.usbelgere@dover.nh.gov' <n.usbelgere@dover.nh.gov>
Subject: Concerns regarding leather's Lane plan

Good evening, Mr. McKinney,

As promised at the TRC meeting, and in anticipation of our meeting tomorrow afternoon, staff wanted to wait to answer some of the comments/questions raised in your attachment that we provided the TRC. Thank you for your patience as we waited to see how the Conservation Commission meeting went before responding.

The members and association of Davis Farm were notified of the November 12, 2019 Planning Board meeting and subsequently January 28, 2020 meeting where the Planning Board voted on the maximum number of units via TDR.

If staff spoke with any other abutter, it was because they came to City staff with questions.

I am attaching the revised plans that were submitted on 10/23/20. The project is scheduled to be on the November 10 Planning Board agenda.

40 units:
The site plan has not been approved. The process is that the applicant came to the Planning Board on November 12, 2019 and January 28, 2020 for the request to purchase TDR units and set a maximum total number of units. Then they submitted for TRC, then Conservation Commission, then comes back to the Planning Board to review the site plan. That is when abutters get notified again. You might recall that the applicant originally asked for 60 total units, then in January reduced that request to 45 units. This has been further reduced to 40 units, in an effort to not impact wetlands, wetlands buffers or steep slopes with structures, and respond to abutter concerns.

Sewer Easement:
Regarding the sewer easement. One of the first items that staff recommended the property owner and developer complete was a legal review and feasibility study of the sewer line and pump station. We had concerns that the original easement document might have either expired or have limitations. It appears that the easement was open ended and based upon the multi-family zoning in place at the time. I have attached what has been submitted, which is a general review of the capacity and status of the line. Regarding the capacity, before the Planning Board meeting, the City Engineer will review and provide comment. Looking at your list of concerns (1-4) for this section, we believe that you are being reasonable in your expectation. The applicant should, at their cost, take responsibility for any improvements or updates that are needed to the sewer line and pump station. If these involve impacts outside of the easement area they will need to privately negotiate to accomplish that with you or Ford's Landing.

Site Plan Infringement on Wetlands Buffer & Slope Requirements
Staff understands this concern. The applicant explained that there are no impacts to the wetlands and there are no homes in the buffer area. The wetland buffer and steep slopes have grading and/or infrastructure in them and unless the number of units dramatically decreases, the impact would be the same. If there were a smaller number of homes directly affecting the impacted area, staff would not be supportive of the CUP and would ask the applicant to revise the plan. But the latest plan shows that the applicant met the criteria of minimalizing and avoiding the conservation areas. The applicant has requested that a Conditional Use Permit be granted to allow the impacts to wetland buffers and steep slopes. Under the Zoning Ordinance this is

allowed. The first step of the review, after TRC, was the Conservation Commission's review and endorsement of the impacts. The Commission reviewed and endorsed the request at its meeting on October 13th. As part of its endorsement, the Commission recommended that the plan be modified to change to a 2:1 side slope on the road and add a guardrail in the area of impact G and insure that the area within 400 feet of the river be maintained as undisturbed in perpetuity. The Planning Board will receive this information and typically incorporates it into their approval, should the Board grant approval. If the Board agrees that further reduction of impact would be necessary, the number of units may be altered.

30' buffer:
When the applicant submitted the plans, the zoning required a 15' no cut/no disturb buffer. The applicant is now grandfathered under those zoning and meets that zoning code including the reduced sized units. They have worked with staff to agree that after construction, additional landscaping needed will be added to maintain the effect of the 15' no cut/no disturb buffer requirement that was in place when they submitted (before it was changed to 30'). In addition, the applicant's Engineer has indicated that the applicant is happy to work with the abutters to construct a fence along the shared boundary line, if that is desirable.

Active Recreation:
This is a requirement of multi-family housing units rather than single family per our zoning ordinance so staff does not have the jurisdiction to require active recreation as part of this project. If you find that others are using Davis Farm's infrastructure or trespassing onto your property your association certainly has the right to ask them to leave or call the proper authorities.

Right-turn lane/Traffic Study:
The traffic study submitted indicates that providing one shared left-through-right lane on the Leathers Lane approach to Back River Road is sufficient for the anticipated traffic volumes with the proposed development fully occupied. The study also concludes that "the proposed development will result in approximately one additional vehicle per minute on Leathers Lane during the worst-case PM peak hour period; however intersection Level of Service will remain unchanged, except for borderline situations. Physical modifications to the subject intersection are not necessary as a result of the proposed residential development."

The Planning Board has the jurisdiction to ask for a peer-review of the traffic study. You can certainly ask the Board to consider that option during the public hearing. Staff is aware of the other 44 units being proposed off of Back River Road and has asked that traffic engineer to take these 40 units into consideration in their analysis.

Placement of Stop Signs:
Yes, this would be the responsibility of the developer and a requirement before the first Certificate of Occupancy.

Construction Vehicles:
I will pass along the concern to the Community Services Department which oversees the pavement index and plans the paving projects each year.

As an aside, the applicant has expressed he is happy to meet with your association and has provided his telephone number (603-531-9106).

Thank you for being a concerned abutter and providing questions ahead of time. We appreciate hearing concerns so we or the applicant can address them accordingly.

Have a good evening and I'll see you tomorrow afternoon.

Chris

Christopher G. Parker, AICP
Assistant City Manager: Director of Planning and Strategic Initiatives
City of Dover, NH
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Dover, NH 03820-4169
e: c.parker@dover.nh.gov
p: 603.516.6008 f: 603.516.6049

Dover: First in New Hampshire, First with you!
www.dover.nh.gov
http://dovernhplanning.tumblr.com/
Facebook: https://www.facebook.com/DoverNHPlanning
Twitter: @DoverNHPlanning

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D. Benton

CUP Conservation Commission/Planning Board Discussion
P19-74A - Applicant Michael Khavari
Tax Map I, Lot 4A - Leathers Lane

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DFOA requests that these comments be made part of the public record.

The Davis Farm Owners Association (DFOA) opposes the granting of a Conditional Use Permit (CUP) for the Khavari Major Subdivision on Leathers Lane and urges the Conservation Commission to deny this application.

It is regrettable that the discussion today is not about a conservation easement but rather an attempt to disturb **Areas With Slopes Greater Than 20% and Wetland Protection Districts**. Absent such a conservation effort, limited undeveloped land along the Bellamy River deserves special consideration. Once developed it is gone. Surely this unique parcel along the west side of the Bellamy River is as worthy of as much protection as possible as the east side of the river due to its contributions to the ecological system (such as the wildlife corridor along the river) and the cultural identity of our community.

The 2020 extreme drought and its impact on Dover's water supply should make us pause and question how we can preserve land and natural vegetation now that will allow replenishment of the aquifer to ensure the water supply of a growing Dover in the future. This major project would add a significant amount of impervious surfaces even without granting a CUP. As such, no further disturbance of the Areas with Greater than 20% Slopes and the Wetland Protection District should be allowed.

A detailed discussion behind DFOA's opposition is as follows:

This application was granted a Conditional Approval for a Transfer of Development Rights on January 28, 2020; therefore, subject to the TDR regulations amended on 08-22-2018.

The **170-27.2(B) Transfer of Development Rights** regulations only requirement is that the land to be developed has the "*least conservation value*". There is no definition as to what that term means. It is a well-established matter of law that you must rely upon the plain language of the regulations where there is no clear definition. Furthermore, the regulation does not say lesser value and if so, lesser to what? It clearly states the least conservation value.

Under the Purpose and Intent of the regulation regarding **Overriding Districts**, **170-27.2(A)** "the regulations of this district are designed to guide development activities in areas with extended periods of high water table, with susceptibility to flooding and with unique or fragile geologic, ecological or nature features." These features are located on the subject property.

The applicant has presented a site plan that depicts three of the land features that the City has considered land features worthy of conserving because of their environmental quality:

170-27.(B)(1) Conservation District – the Bellamy River and land within 100' of the river.

170-27.(B)(4) Areas with slopes of greater than 20%, the applicant will be asking for Conditional Use Permits to disturb those areas.

170-27.1 Wetland Protection District – there are two wetlands shown on the conceptual plan one larger and one which appears to be a natural drainage path the applicant will be asking for Conditional Use Permits to disturb those areas.

Clearly, the proposed disturbance in these areas on the subject tract is to *gain* additional units solely for economic purposes. **As stated in 170-27.(C)(1) "*Economic advantage alone shall not be deemed a sufficient reason for such a routing.*"**

All three of the land features are located on the subject tract.

Additionally, the subject property is not developed and is wooded with a healthy wildlife corridor to and along the Bellamy River. We are not looking at an old gravel pit or a debilitated developed site to be redeveloped.

It is our opinion the applicant has not provided the planning board and the public adequate data and studies required to meet the high standard of the "least conservation value" set forth in the City's regulations.

170-27(C)(2)(a) Conservation District - states the applicant must provide:

(a) The APPLICANT shall demonstrate that the proposed use is essential to the productive use of land not in the district; is located and constructed to minimize any detrimental impact of such use upon the surface waters or other environmentally sensitive areas, *where it is physically impossible to locate such use on land not in the district; and* ***"Economic advantage alone shall not be deemed a sufficient reason for such proposed use"***.

There is more than enough land located outside the Conservation Overlay Areas to allow the applicant the reasonable use of his property.

170-27(E)(9) states:

"The PLANNING BOARD may assess the APPLICANT reasonable fees to cover the costs of special investigative studies and for the review of documents required by applications."

The DFOA request the applicant provide a wildlife study regarding the wildlife corridor located on the subject property leading to the Bellamy River and connecting to the properties in already protected with Conservation Easements.

170-27.1(F) states:

(a) ***Demonstration of Need:*** The proposed construction (within the wetland buffer***) is essential to the productive use of land or water outside the Wetlands Protection District***.

Since the Conditional Approval of the TDR for this project allows the lot to be developed without any property line setbacks, of which the applicant is taking full advantage of, only reinforces the fact that the need to impact any Conservation District area, is ***not essential for the productive use*** of the property, but ***only for economic gain***.

170-27.2(B) of the TDR zoning regulations states:

Purpose and Intent. Within the City of Dover there are certain lands that possess significant conservation features, including but not limited to ***wetlands***, groundwater recharge zones, ***forested areas***, ***wildlife habitat***, farmland, scenic viewsheds, historic landmarks, ***and linkages to other such areas***. Because of their unique assemblages of flora and fauna and their significant contribution to the ecological system and/or the cultural identity of our community, **these lands are worthy of special protection.**

The City of Dover furthermore, has a limited supply of land suitable for development. The purpose of this overriding district is to promote intensive development on the developable land possessing the ***least conservation value*** and to permanently protect lands possessing significant conservation features that provide unique values in their undisturbed condition.

In closing, we understand the Planning Board's desire to conserve the limited amount of open space remaining on the east side of the Spaulding Turnpike. But surely properties located on the west side of the turnpike still have significant environmental values that must be protected as stated in the Master Plan and the City's Zoning Regulations. There is developable land in the subject tract that would not necessitate crossing the 20% slope areas and disturbing the wetlands. A redesign could pull this project out of the slope areas and might negate cutting down natural vegetation to build a retention pond.

The DFOA believe the purpose and intent of the Overriding District and Transfer of Development Rights regulations, supports our position that the CUP <u>not be granted</u>.

We strongly oppose the granting of the Conditional Use Permit for this application based on environmental qualifications of conservation value per the Master Plan Guidelines and Zoning regulations.

Comments:

- This property should not be considered the least conservation value as it meets all of the criteria.
- This property consists of all the criteria of natural resources including the Bellamy River, steep slopes, soils, vegetation, wetlands and wildlife.
- This piece of land does not meet the definition of the *<u>least conservation value</u>*.
- This is a ***heavily used thru-way and habitat for all wildlife*** and connects the undeveloped areas between Route 155 to the Bellamy River and the conservation along the river to the Piscataqua River.
- This Land is one of the few remaining areas on the West side abutting the Bellamy River.
- **The land meets all the criteria of Conservation value:**
  Wildlife (particularly as a wildlife corridor) – Forest – Vegetation – Water Resources – Slopes and Soil all in its natural state.

Master Plan - Natural Resources

Master Plan: Stewardship of Resources Chapter (2016)

NH Wildlife Action Plan: https://www.wildlife.state.nh.us/wildlife/wap.html

Natural Resources

Section 2

This section describes the natural features that contribute to Dover's unique sense of place, the resources available for human use, and options for balancing future development with the conservation and protection of these resources for future generations.

Dover's natural resources have shaped the land use and development patterns throughout the community's history. From the Abenaki people living along the Piscataqua, Cochecho and Bellamy Rivers in pre-colonial days, to the first European settlements taking advantage of the Great Bay's fishing and water transportation opportunities and favorable farming soils, to our current community, the beauty, economic, and recreational opportunities in this area have drawn people to adopt—and adapt. Like many New Hampshire Great Bay communities, Dover developed around the rivers and ocean access, using these natural resources to power industry and transport goods and people.

Cochecho River in Downtown Dover

Natural resources are a critical consideration in establishing a sustainable and resilient land use management plan for Dover. Environmental factors such as slope, soils, vegetation, wildlife, and water resources have shaped Dover's development history and character and should continue to inform and guide future development. These natural resources and open spaces support the integrity of the local ecosystem and provide residents with a healthy and enjoyable environment in which to live. They are critical to the future resiliency of the community.

These natural systems provide both opportunities and constraints for growth. Steep slopes and wetlands, for example, are less suitable for development, while better drained, flatter areas are more suitable. On the other hand, these well-drained areas may be associated with groundwater recharge areas and prime agricultural soils that require protection. Ensuring that Dover can meet the environmental challenges of the future and remain resilient in the face of climate change and population demands will require a carefully considered effort to protect its natural resources.

Survey Results

Many respondents of the 2016 Survey identified water resources such as the Cochecho and Bellamy Rivers, conservation areas, trails, open space, and parks as Dover's most significant natural resources. The responses reflect the value of the riverfront and Great Bay environments to the community. Many responses mentioned the importance of conserving open space, natural areas, and farmland.

Master Plan - Conservation and Open Space Chapter (2012)

This land should be considered for conservation as it is abundant with habitat and natural resources.

Master Plan: Conservation and Open Space Chapter (2012)

Here are the major questions addressed, and the recommended actions.

A. Does Dover have the right balance of protected lands? Should we re-orient or redefine acquisition priorities?

The Open Lands Committee uses a scoring system to rank potential acquisitions; this has worked well over the past decade. However as Dover continues to develop, there will be fewer acres available for protection. It also seems reasonable to project there will be fewer funds available for land protection.

While there is no significant imbalance in the current protected inventory, the Open Lands Committee (in concert with the Conservation Commission) should modify their scoring system to emphasize future tracts that meet one or more of the following criteria:

1. Tracts adjacent to existing tracts. 25 acres of contiguous land provide much more wildlife protection than 25 acres located in 5 or 10 physically separate locations
2. Tracts fronting rivers or ponds. These provide public access to the water, act as wildlife habitat corridors, and reduce the possibility of water pollution.
3. Tracts which would assist in filling in the community trail

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D. Does any other city-owned land warrant protection as conservation land?

Separate from wellheads, the City owns various tracts of land that are neither currently in use, nor do they have an intended purpose. Do any of these warrant some level of conservation protection?

It is possible that some of these tracts of land have a significant conservation value that has never been evaluated. Each should be evaluated prior to being offered for sale by the city.

Master Plan - Land Use Analysis Chapter (2015)

Master Plan: Land Use Analysis Chapter (2015)

This parcel should be evaluated and categorized in the Low Density Residential category.

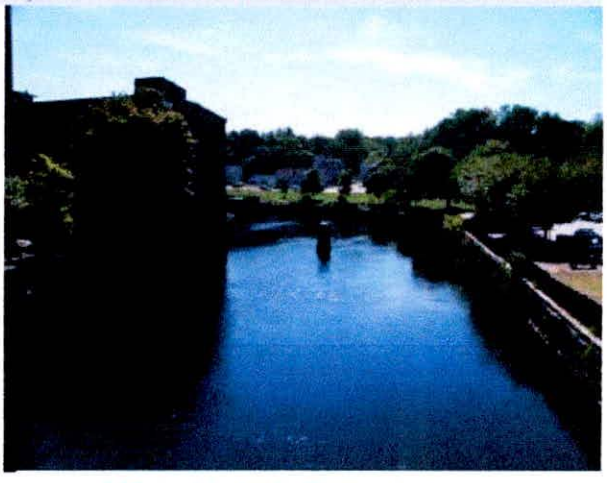
This land abuts the Bellamy River, has distinct features, eco-system and natural resources.

Low Density Residential:

- Continue to promote lower density residential zoning (e .g. conservation subdivisions) and promote agricultural uses along with land conservation measures.
- Continue to identify and purchase conservation easements on properties with critical natural resources.

Natural Resources and Ecological Services

Currently, 16 percent of the land area in Dover (3,111 acres) is permanently protected. The remainder of the land in the city includes a mix of development, and a network of critical natural resources that contribute to the city's beauty, ecological services, and overall resilience. Natural resources such as steep slopes, soils, vegetation, wildlife and water resources which add to Dover's character also contribute to the quality of life for Dover residents. Beyond the call for continued strategic conservation initiatives, the Open Space and Conservation Chapter calls for encouraging all new developments to protect and where possible enhance valuable natural and open space resources. Dover has a history of protecting important natural resources over the last 25 years through a combination of land use regulations and outright purchase (both fee simple and protective easement), and this should continue.



10 View of Cochecho River in the downtown

These natural resources provide both opportunities and constraints for growth, and provide valuable ecological services that should be considered city-wide. An ecological service is any positive benefit that a natural resource provides the larger ecosystem and to people. This is also an important distinction when considering how Dover's land use regulations guide the design of new developments on individual parcels, and their corresponding open space, landscaping, and storm water infrastructure.

Consider this property when meeting your Land Use Goal - Objective LU 2:

Objective LU 2	Enhance the quality of Dover's natural environment by ensuring long-term protection, conservation and resiliency of i ecological and water resources, shorelines, open space, and wildlife.

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Conservation & Environment Concerns

Relative to the Khavari Leathers Lane Proposal

- **What price the watershed, the river and the riverine environment and ecosystem?**
- **What price the existing wildlife corridor?**
- **What price the abutters' property values?**
- **What price the abutters' experiential quality of property, quality of life?**

- **Why the need to build into the wetland buffer? Why?**
- **Why the need to disturb Wetland Protection Districts? Why**
- **Why the need to cut the 30' no cut area back to a 'revegetated' 15' ? Why?**
- **Why the need to ignore slope requirements when it comes to the roadways? Why?**

Economic Advantage

"Economic advantage shall not be deemed a sufficient reason for such ..." **170-27.(C)(1)**

"within the City of Dover there are certain lands that possess significant conservation features, including but not limited to *wetlands*. Groundwater recharge zones, *forested areas, wildlife habitat,* farmland, scenic viewsheds, historic landmarks, *and linkages to other such areas.* Because of their unique assemblages of flora and fauna and their significant contribution to the ecological system and/or the cultural identity of our community, these lands are worthy of special protection. The City of Dover furthermore, has a limited supply of land suitable for development. The purpose of this overriding district is to promote intensive development on the developable land possessing the least conservation value and to permanently protect lands possessing significant conservation features that provide unique values in their undisturbed condition." 170-27.2B of the TDR zoning regulations

Thank you,
Stephen McKinney
71 Katie Lane
Dover, NH 03820

Parker, Christopher G.

From: Liz Calder <gram27@comcast.net>
Sent: Thursday, November 5, 2020 7:31 AM
To: Parker, Christopher G.
Cc: Stephen McKinney
Subject: DAVIS FARM OWNER'S STATEMENT AGAINST THE KAVARHI CONDITIONAL USE PERMIT AND SITE PLAN

Security Notice: External sender. Use caution with hyperlinks or attachments.

FROM ELIZABETH CALDER, 142 KATIE LANE.I REQUEST THAT MY WORDS BECOME PART OF THE PUBLIC RECORD.

I WILL START WITH MY PREFERENCE TO NOT SEE ANY CHANGE BUT SINCE IT SEEMS INEVITABLE I AM GOING TO VOICE MY OPINION:
REGARDING THE EXPECTED DEMOLITION OF GREEN SPACE AND WETLANDS, I WOULD LIKE TO SEE SOME KIND OF BARRIER ERECTED ALONG THE EDGE OF THE LAND LINE FOR SEVERAL REASONS: TO KEEP YOUR REFUSE ON YOUR LAND - BOULDERS, FOOD WRAPPERS, BOTTLES ETC. THAT BARRIER SHOULD BE SUBSTANTIAL SO THE DESTRUCTION CREW CANNOT JUST PUSH IT OVER; IN OTHER WORDS EVERYONE WHO POSSIBLY WILL BE INVOLVED IN THE DESTRUCTION OF THE GREEN SPACE SHOULD BE RESPECTFUL OF DAVIS FARM PROPERTY

NO PARKING ON DAVIS FARM PROPERTY WITHOUT EXPRESS PERMISSION OF THE DFOA AND NO PARKING ON THE GRASS. NO CLOGGING UP OF LEATHERS LANE WITH TRUCKS, CARS, AND OTHER MACHINERY.

I VOTE AGAINST ANY SUBSTANTIAL NUMBER OF HOUSES, CONDOS OR WHATEVER POSSIBLE MAY BE BUILT ON WHAT WE HAVE ALWAYS CONSIDERED AS OUR GREEN SPACE. WE HAVE LET IT GROW AND NUTURE SMALL WILDLIFE FOR THE PAST 34 YEARS, MAY IT REMAIN SO.

BY THE WAY, DID YOU KNOW THAT WETLANDS ARE PROTECTED BY LAW IN MANY AREAS OF THIS COUNTRY? I WISH I WAS AN ORATOR SO I WOULD HAVE THE MANY WORD I HAD TWENTY YEARS AGO. MY BRAIN IS CRAMMED AT 88. I WISH I COULD STUN THE PLANNING BOARD WITH MY THOUGHTS FOR THE GREEN SPACE, WETLANDS, SMALL WILDLIFE SURROUNDING DAVIS FARM AND TRYING TO KEEP IT FROM FALLING BY THE WAYSIDE —I CANNOT. I HOPE THAT MY SINCERITY WILL COME THROUGH AND YOU WILL RECONSIDER.

RESPECTFULLY, ELIZABETH CALDER

40 UNIT SITE PLAN

TAX MAP I, LOT 4A

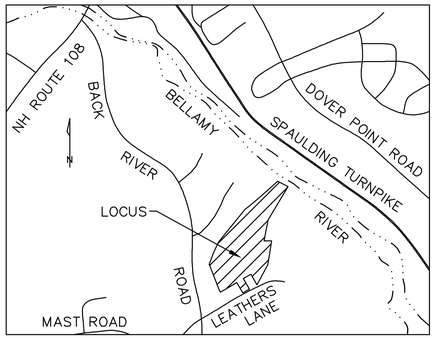
LEATHERS LANE

DOVER, NH

AUGUST 28,2020

REVISED: SEPTEMBER 28, 2020

REVISED: OCTOBER 20, 2020



LOCATION PLAN

SCALE: 1" = 1,000'±

OWNER

JAMES B. AND KAREN A. TOWLE REVOCABLE TRUST
KAREN A TOWLE, TRUSTEE
26 ANITA STREET
ROCHESTER, NH 03867

_____ DATE

APPLICANT

MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH 03801

_____ DATE

CIVIL ENGINEER

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

LAND SURVEYOR

McENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 681
24 CHESTNUT STREET
DOVER, NH 03820
(603) 742-0911

LANDSCAPE ARCHITECT

IRONWOOD DESIGN GROUP
55 MAIN STREET, SUITE 129
NEWMARKET, NH 03857
(603) 659-5949

WETLAND SCIENTIST

DAMON BURT
FRAGGLE ROCK ENVIRNMENTAL SERVICES
38 GARLAND ROAD
STRAFFORD, NH 03884
CERTIFIED WETLAND SCIENTIST #163

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PLANNING FILE NO.: P19-74A

ABUTTERS LIST

TAX MAP	LOT NO.	NAME & ADDRESS
I	67-B	TOWLE JONATHAN P TRUSTEE JONATHAN P 2008 TRUST 62 BACK RIVER ROAD DOVER, NH 03820
I	68	ARLEN WILLIAM O, & DOBECKI LINDSAY R 78 BACK RIVER ROAD DOVER, NH 03820
I	4-2	STRAWBRIDGE VICTOR W II & AJEMIAN MERIN, VWS AND MCA REVOCABLE TRUST 14 LEATHERS LANE DOVER, NH 03820
I	4	WELSH HANNAH K & WELSH THOMAS H 10 LEATHERS LANE DOVER, NH 03820
I	4-A-1	GIGUERE GUY J & GIGUERE MARGARET A 32 CRANBERRY MEADOW ROAD BERWICK, ME 03901
I	4-A-2	CARREL DANIEL T & CARREL CAROL A 22 LEATHERS LANE DOVER, NH 03820
I	4-A-3	SPEIDEL MARK E & DIANA TRUSTEE SPEIDEL FAMILY REVOCABLE TRUST P.O. BOX 181 DOVER, NH 03821-0181
I	69-B	DEMERS CAROLYN R, & DEMERS ALFRED R 21 LEATHERS LANE DOVER, NH 03820
I	69-C	DEKORNE JOSEPH H JR 25 LEATHERS LANE DOVER, NH 03820
I	4-B	DAVIS FARM CONDOS KATIE LANE DOVER, NH 03820
I	67-A	TOWLE LYDIA M. P.O. BOX 1392 DOVER, NH 03821
I	3-C	LAPOINTE SETHE. & LAPOINTE BRONWYN T. 29 LEATHERS LANE DOVER, NH 03820
		SPAULDING TURNPIKE STATE OF NEWHAMPSHIRE

I / 4-A — TAX MAP / LOT NUMBER

GRID NORTH
CPS OBS: 08/19/2019

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

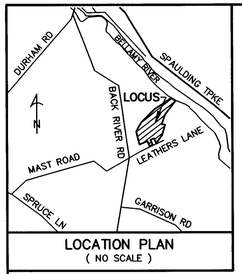
DESIGN BY: RSM
DRAWN BY: CAD
SCALE: 1"=80'
DATE: 8-28-20
PROJECT NO: 19038
FILE: SITE.DWG
APPROVED BY: SJH

NEIGHBORHOOD PLAN

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

2



LOCATION PLAN
(NO SCALE)

LIST OF ABUTTERS

	NAME	ADDRESS	BOOK / PAGE
I / 4-2	VICTOR W. STRAWBRIDGE, II & MERIN C. AJEMIAN	14 LEATHERS LANE	
I / 4	VWS AND MCA REVOCABLE TRUST	DOVER, NH 03820	4655 / 35
I / 4A-1	HANNAH K. WELSH	10 LEATHERS LANE	
I / 4A-2	THOMAS H. WELSH	DOVER, NH 03820	4546 / 642
I / 4A-3	GUY J. GIGUERE	327 CRANBERRY MEADOW ROAD	
I / 69B	MARGARET A. GIGUERE	BERWICK, ME 03901	3792 / 905
I / 69C	DANIEL T. CARREL	22 LEATHERS LANE	
I / 3C	CAROL A. CARREL	DOVER, NH 03820	4222 / 452
I / 3A	MARK E. & DIANA SPEIDEL, TRUSTEES	P.O. Box 181	4202 / 744 &
K / 40B	THE SPEIDEL FAMILY REVOCABLE TRUST OF 2014	DOVER, NH 03821-0181	4202 / 747
K / 31	CAROLYN R. DEMERS	21 LEATHERS LANE	
	ALFRED R. DEMERS	DOVER, NH 03820	883 / 203
	JOSEPH H. DEKORNE, JR.	25 LEATHERS LANE	
		DOVER, NH 03820	4341 / 506
	SETH E. LAPOINTE	29 LEATHERS LANE	
	BRONWYN TICKNER LAPOINTE	DOVER, NH 03820	3836 / 172
	JORDAN E. ANDERSON	31 LEATHERS LANE	
	HANNAH E. O'ROURKE	DOVER, NH 03820	4248 / 142
	M & E JESPERSEN REALTY, L.L.C.	5 DOVER POINT ROAD	2057 / 792
		DOVER, NH 03820	

SANITARY SEWER STRUCTURE SCHEDULE

SEWER CLEANOUT (SCO)
SHOWN ON SCRD 40-54
NOT FOUND

SMH 2178
RIM = 111.2
BRICK SHELF = 106.0
INV. IN 8" PVC = 105.5
INV. OUT 8" PVC = 105.3
NEXT SMH 2179 169'

SMH 2179
RIM = 110.1
BRICK SHELF = 105.1
INV. IN 8" PVC = 104.3
INV. OUT 8" PVC = 104.2
NEXT SMH 3982 287'

SMH 3982
RIM = 107.8
BRICK SHELF = 98.4
DROP INV. VENT = 101.4
INV. IN 8" PVC = 97.9
INV. OUT 8" PVC = 97.7

LEGEND

- I.R.(fnd) – IRON ROD (FOUND)
- D.H.(fnd) – DRILL HOLE (FOUND)
- I.R.(set) O – IRON ROD W/ I.D. CAP (SET)
- UP 410/5 – UTILITY POLE W/ I.D. Nos.
- CB – CATCH BASIN
- WG – WATER GATE VALVE
- FH – FIRE HYDRANT
- – TREE LINE
- S.F. – SQUARE FEET
- Ac. – ACRE
- (TYP.) – TYPICAL
- ± – MORE OR LESS
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- TP10 – TEST PIT (SEE NOTE 11)
- 92 – EXISTING CONTOUR (2 FOOT INTERVAL)
- 40B – SOIL TYPE
- – SOIL LINE
- A50 – WETLAND
- – EDGE OF WETLAND
- – EXPOSED LEDGE
- – SLOPES IN EXCESS OF 20%
- – STONEWALL

5.) ZONING DISTRICT IS R-12; TDR OVERLAY DISTRICT (170-27.2).

DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 12,000 S.F.
MINIMUM LOT COVERAGE	= 30 PERCENT
MINIMUM FRONTAGE	= 100 FEET
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO LINE	= 15 FEET MINIMUM
	= 25 FEET MAXIMUM
SIDE SETBACK	= 15 FEET
REAR SETBACK	= 30 FEET
MAXIMUM BUILDING HEIGHT	= 35 FEET MAXIMUM

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE A (NO BASE FLOOD ELEVATIONS DETERMINED); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED 8/2019.
VERTICAL DATUM IS NH STATE PLANE (NAVD88) BASED ON GPS OBSERVATION DATED 8/2019.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES, INC. ON DURING 2019 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.

9.) THE IMPROVEMENTS AND UTILITIES SHOWN ARE FROM OBSERVATIONS MADE IN THE FIELD OR REFERENCE PLANS. LOCATIONS OF UNDERGROUND UTILITIES NOT MARKED ON THE SURFACE WERE NOT LOCATED. ALL VISIBLE UTILITIES ARE SHOWN.

10.) SITE SPECIFIC SOIL MAP PREPARED BY JOSEPH W. NOEL, NH C.S.S. #017, SEE REPORT.

11.) SOIL TEST PITS SHOWN WERE OBSERVED BY JOSEPH W. NOEL, NH C.S.S. #017; NH DESIGNER #1104, AND FIELD LOCATED BY THIS OFFICE.

12.) WETLANDS FLAGGED LINES SHOWN WERE DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF FRAGGLE ROCK ENVIRONMENTAL SERVICES DURING JUNE 2019 IN ACCORDANCE WITH THE 1987 CORPS. OF ENGINEERS WETLANDS DELINEATION MANUAL AND LOCATED BY THIS OFFICE.

13.) PARCEL IS SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE BELLAMY RIVER REFERENCE LINE.

14.) THE PARCEL IS SUBJECT TO AND BENEFITS FROM THE SEWER EASEMENT AS SHOWN ON REFERENCE PLANS.

NOTES:

1.) OWNER OF RECORD:
KAREN A. TOWLE, TRUSTEE
JAMES B. AND KAREN A. TOWLE REVOCABLE TRUST
26 ANITA STREET
ROCHESTER, NEW HAMPSHIRE 03867
S.C.R.D. VOLUME 4630, PAGE 448

2.) I / 4A – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA: 692,200 S.F.± / 15.9 Ac.±

4.) THE INTENT OF THIS PLAN IS TO DEPICT THE PARCEL BOUNDARIES AND EXISTING SITE CONDITIONS AS OF JULY 2020.

REFERENCE PLANS:

1.) LOT LINE ADJUSTMENT PLAN OF LAND – LOT NOS. 4A & 67B, TAX MAP I, BACK RIVER ROAD & LEATHERS LANE, DOVER, NEW HAMPSHIRE, COUNTY OF STRAFFORD. SCALE: 1" = 80'; DATED: JULY 1, 2011, REVISED THROUGH 9/28/11; BY: CIVILWORKS. RECORDED S.C.R.D. PLAN 102-77.

2.) BOUNDARY ADJUSTMENT PLAT – DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE – PREPARED FOR JAMES B., SR. & KAREN TOWLE REVOCABLE TRUST AND MARK E. & DIANA L. SPEIDEL. SCALE: 1" = 40'; DATED: MARCH 5, 2004; BY: ORVIS / DREW LLC. RECORDED S.C.R.D. PLAN 79-33.

3.) SITE PLAN – DAVIS FARM A CONDOMINIUM – BACK RIVER VENTURES. SCALE: 1" = 50'; DATED: MARCH 6, 1987; BY: CIVIL CONSULTANTS. RECORDED S.C.R.D. PLAN 33-12.

4.) MINOR SUBDIVISION OF LAND PREPARED FOR CHRISTOPHER & MELISSA SNOW, TAX MAP I, LOT No. 4, BACK RIVER ROAD & LEATHERS LANE, CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE. SCALE: 1" = 20'; DATED: SEPTEMBER 4, 2014, REVISED THROUGH 5/21/15; BY: McENEANEY SURVEY ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 109-64.

No.	Bearing	Distance
L1	N88°53'06"E	100.00'
L2	S59°39'17"W	100.03'
L3	N29°56'56"W	34.97'
L4	N21°14'35"W	10.00'

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

19-2233	EXIST. COND.	19-06	55-73
PROJECT NO	TYPE	FIELDBOOK & PAGES	

EXISTING CONDITIONS PLAN
OF LAND OF
JAMES & KAREN TOWLE REVOCABLE TRUST
PREPARED FOR
MICHAEL KHAVARI
TAX MAP I, LOT No. 4A
LEATHERS LANE
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. P 20-__

DRAWN BY: RJM	FILE: 2233\DWGS\19-2233 EC
SCALE: 1" = 60'	DATE: JULY 17, 2020

60 30 0 30 60 120 180 240

STATE OF NEW HAMPSHIRE – No. 661 – KEVIN M. McENEANEY – LICENSED LAND SURVEYOR – SIGNATURE

McENEANEY SURVEY ASSOCIATES of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911

SURVEYING – PLANNING – CONSULTING

GENERAL NOTES

1. OWNER OF RECORD:
   KAREN A. TOWLE, TRUSTEE
   JAMES B. AND KAREN A. TOWLE REVOCABLE TRUST
   26 ANITA STREET
   ROCHESTER, NEW HAMPSHIRE 03867
   S.C.R.D. VOLUME 4630, PAGE 448

   APPLICANT:
   MICHAEK KHAVARI
   40 HARRISON AVENUE
   PORTSMOUTH, NH 03801
2. | I / 4A | – DENOTES TAX MAP AND PARCEL NUMBER.
3. PARCEL AREA: 692,200 S.F.± / 15.9 Ac.±
4. ZONING DISTRICT IS R–12; TDR OVERLAY DISTRICT (170–27.2).

   DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 12,000 S.F.
MINIMUM LOT COVERAGE	= 30 PERCENT
MINIMUM FRONTAGE	= 100 FEET
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO LINE	= 15 FEET MINIMUM
	= 25 FEET MAXIMUM
SIDE SETBACK	= 15 FEET
REAR SETBACK	= 30 FEET
MAXIMUM BUILDING HEIGHT	= 35 FEET MAXIMUM

6. A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE A (NO BASE FLOOD ELEVATIONS DETERMINED); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTMBER 30, 2015.
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12. SOIL TEST PITS SHOWN WERE OBSERVED BY JOSEPH W. NOEL, NH C.S.S. #017; NH DESIGNER #1104 AND FIELD LOCATED BY THIS OFFICE.
13. WETLANDS FLAGGED LINES SHOWN WERE DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF FRAGGLE ROCK ENVIRONMENTAL SERVICES DURING JUNE 2019 IN ACCORDANCE WITH THE 1987 CORPS. OF ENGINEERS WETLANDS DELINEATION MANUAL AND LOCATED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND.
14. PARCEL IS SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE BELLAMY RIVER REFERENCE LINE.
15. THE PARCEL IS SUBJECT TO AND BENEFITS FROM THE SEWER EASEMENT AS SHOWN ON REFERENCE PLANS.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. 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.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT AND POLES.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. 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.
8. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS 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.
9. 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.
10. EXISTING ("OLD") WATER SERVICES TO THE SUBJECT SITE SHALL BE DISCONNECTED AND SHUT–OFF AT THE WATER MAIN.
11. EXISTING SEWER SERVICES TO BE CUT AND PERMANENTLY CAPPED AT PROPERTY LINE.
12. ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.

SITE NOTES:

1. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A PLAN REFERENCED AND PREPARED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND (SEE EXISTING CONDITIONS PLAN IN THIS PLAN SET)
2. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH THE CONSTRUCTION OF 2,300 OF ROADWAY, DRAINAGE IMPROVEMENTS, SIDEWALKS AND UTILITIES FOR A 40 UNIT DETACHED CONDOMINIUM. THE ROADWAYS ARE PRIVATE AND PER 157–47B THERE ARE NO CITY SERVICES PROVIDED. ANY PROPOSED CHANGE FROM PRIVATE ROADS WILL REQUIRE REVIEW OF THE REQUEST BY PLANNING BOARD.
3. EXTERIOR LIGHTING SHALL BE CUT–OFF TYPE FIXTURES PER CHAPTER 153–14–E AND SHALL PROVIDE LIGHTING DIRECTED ON–SITE ONLY.
4. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
5. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS, AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
6. ON–SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
7. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
8. SEE DETAILS FOR SIGN LEGENDS.
9. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNERS REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE–DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
10. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
12. BUILDING ADDRESSES TO BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
13. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS AND NH RSA 155–A. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS.
14. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
15. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR AND SHALL NOT USE MAST ROAD OR SPRUCE LANE.
16. THE SUBJECT PARCEL(S) IS (ARE) SERVED BY MUNICIPAL WATER AND SEWER.
17. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBANCE ACTIVITY OCCURS.
18. AS–BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON PAPER AND IN A DIGITAL FORMAT IN PDF AND AUTOCAD DWG, AUTOCAD DXF OR AN ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. 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.
19. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY–FRIDAY 7 AM–6 PM, SATURDAY HOURS 9 AM–4 PM, AND NO SUNDAY WORK HOURS. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR AND THE SIGN SHALL NOTE THE THE ROADWAY IS PRIVATE. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
20. 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.
21. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
22. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
23. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
24. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
    HTTP://WWW.UNH.EDU/UNHSC/PTAPP
25. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
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. FIRE DEPARTMENT ACCESS ROAD(SO SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
28. THE ROADWAY WITH PRIVATE UTILITY EASEMENTS SHALL NOT BE ACCEPTED AS PUBLIC ROAD BY THE CITY UNLESS THE EASEMENTS ARE EXPUNGED PRIOR TO THE TRANSFER OF LAND TO THE CITY. LICENSE AGREEMENTS FOR ANY AND ALL PRIVATE UTILITIES WITHIN THE RIGHT OF WAY MAY BE GRANTED BY THE CITY UPON ACCEPTANCE OF THE UNENCUMBERED ROADWAY CONSISTENT WITH APPLICABLE STATE LAW.
29. PRIOR TO CONVEYING THE OWNERSHIP AND MAINTENANCE OBLIGATIONS FROM THE DEVELOPER TO THE ASSOCIATION, THE ENGINEER OF RECORD SHALL MEET WITH THE ASSOCIATION AND REVIEW MAINTENANCE OBLIGATIONS, INCLUDING STORMWATER, OPENSPACE AND ROADWAY MAINTENANCE.
30. PRIOR TO THE LAST C.O. BEING ISSUED, THE ENGINEER OF RECORD SHALL MEET WITH THE ASSOCIATION AND REVIEW THE AS–BUILT FOR THE PROJECT.
31. REFUSE PICKUP WILL BE BY PRIVATE CONTRACTOR AND WILL BE TRASH TOTERS.
32. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
33. NHDES AOT: PENDING
34. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.
    CONDITIONAL USE PERMIT: PENDING
    PB 19–74 TO ALLOW UP TO AN ADDITIONAL 12 UNITS (VIA TDR)
    TO A MAXIMUM OF 45 UNITS : GRANTED 1–29–20

GRADING NOTES:

1. ALL ROAD DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS FOR CONSTRUCTION OF THE CITY OF DOVER, N.H. AND "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION", LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING PER THE ABOVE REFERENCED "STANDARD SPECIFICATIONS".
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. DENSITY REQUIREMENTS:

LOCATION	MINIMUM DENSITY
BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREA	90%

   * ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T–191, T–204, OR T–238 AND T–239.
10. SEE GENERAL EROSION CONTROL NOTES ON DETAIL SHEET.
11. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
12. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
13. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OR REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
14. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
15. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
16. PLACARDS SHALL BE INSTALLED ALONG THE EDGE OF WETLAND PRIOR TO CONSTRUCTION.

UTILITY NOTES:

1. THE PROJECT SITE IS SERVED BY CITY WATER AND SEWER.
2. THE BEST AVAILABLE INFORMATION WAS USED TO DETERMINE THE LOCATION AND SIZE OF EXISTING UTILITIES. THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE EXACT SIZE AND LOCATION OF UTILITIES SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO COMMENCING WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AS SHOWN. THE CONTRACTOR SHALL VERIFY THEIR EXACT LOCATIONS WITH THE RESPECTIVE UTILITY OWNERS PRIOR TO WORK BEING PERFORMED. CALL DIGSAFE AT 1–888–388–7233 OR "811".
4. 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.
5. UNDERGROUND ELECTRIC, TELEPHONE, AND CABLE TV CONDUITS SHALL BE INSTALLED IN ACCORDANCE WITH/PER EVERSOURCE, VERIZON, COMCAST, AND UNITIL STANDARDS.
6. PROPOSED INSTALLATION OF UNDERGROUND CONDUITS FOR TELEPHONE, ELECTRIC AND GAS SERVICE SHALL BE COORDINATED WITH THE RESPECTIVE CONTACTS ARE AS FOLLOWS:
   ELECTRIC: EVERSOURCE 1.800.362.7764
   CABLE: COMCAST 603.334.3615
   GAS: UNITIL 866.933.3821
7. SEE ELECTRICAL DRAWINGS AND DETAILS FOR OUTDOOR LIGHTING CONDUIT LOCATIONS.
8. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
9. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
10. SEWAGE LOADING (PER ENV. – Wq 1008.03 TABLE 1008–1)
    40 – 3 BEDROOM RESIDENTIAL TOWNHOMES =
    3 BDRMS x 150 GALS./DAY/BDRM x 40 = 18,000 GPD
11. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
12. APPROVED BACKFLOW PREVENTORS SHALL BE INSTALLED ON BOTH FIRE AND DOMESTIC WATER LINES. AS APPLICABLE
13. ALL UNUSED WATER SERVICES SHALL BE REMOVED BACK TO THE CORPORATION AT THE MAIN.
14. TAPPING SLEEVE AND GATES SHALL BE STAINLESS STEEL.
15. USE FOSTER GATES TO TEES WHERE ANCHOR TEE'S ARE NOT USED.
16. CURB BOXES SHALL BE PLACED AT RIGHT OF WAY AND OUT OF PAVEMENT AS POSSIBLE. IF IN PAVEMENT USE ROAD BOX.

LEGEND

S.F.	SQUARE FEET
Ac.	ACRE
±	MORE OR LESS
(TYP.)	TYPICAL
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TBR	TO BE REMOVED
TYP	TYPICAL
	EXISTING UTILITY POLE
	EXISTING SIGN
	EXISTING WATER SHUT–OFF
	EXISTING WATER VALVE
	EXISTING GAS VALVE
	EXISTING HYDRANT
	EXISTING LIGHT/SIGNAL POLE
S	EXISTING SEWER MANHOLE
D	EXISTING DRAINAGE MANHOLE
	EXISTING CATCHBASIN
5'R	PAVEMENT RADIUS
SGC	SLOPE GRANITE CURB
SBC	SLOPED BITUMINOUS CURB
VGC	VERTICAL GRANITE CURB
T.O.W.	TOP OF WALL
x 74.00	EXISTING SPOT GRADE
94	EXISTING GRADE
OHW	OVERHEAD WIRES
E	EXISTING ELECTRIC
W	EXISTING WATER LINE
S	EXISTING SEWER LINE
D	EXISTING DRAINAGE LINE
G	EXISTING GAS LINE

	PROPOSED SIGN
74	PROPOSED FINISH GRADE
x 74.00	PROPOSED SPOT GRADE
PD	PROPOSED DRAIN LINE
	PAVEMENT WITH CURB
	SILT BARRIER
PG	PROPOSED GAS
PW	PROPOSED WATER
	PROPOSED FENCE
PE	PROPOSED ELECTRIC
PD	PROPOSED DRAIN LINE
PUD	PROPOSED UNDERDRAIN LINE
	PROPOSED CATCHBASIN
GFF	GARAGE FINISH FLOOR
FF	FINISH FIRST FLOOR
BSMT	FINISH BASMENT FLOOR
	INLET PROTECTION
	HANDICAP PARKING SYMBOL
	PROPOSED CONCRETE
	PROPOSED SIDEWALK
	PROPOSED POROUS PAVEMENT
	PROPOSED GRASS PAVERS

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19–74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10–20–20
1	REVISED PER TRC COMMENTS	SJH	9–28–20

DATE: 8–28–20
SCALE: XX
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

NOTE SHEET

4

GRID NORTH
GPS OBS: 08/19/2019

EXPOSED BEDROCK LEDGE

20% SLOPE (TYP)

TUPELO DRIVE 22'

SHAGBARK DRIVE 24'

WILDFLOWER DRIVE 22'

LITTLE LEAF DRIVE 22'

WOODRUSH DRIVE (PRIVATE) 24'

PROPOSED RESIDENTAL UNIT (TYP)

SEWER EASEMENT

WETLANDS WERE DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163

50' WETLAND BUFFER (TYP)

EDGE OF WETLAND

UPLAND

20% SLOPE

HOG RIVER SETBACK

BELLAMY RIVER

MAST ROAD

BACK RIVER ROAD

LEATHERS LANE

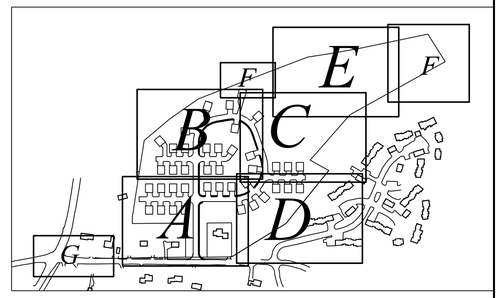
SEE NOTE #2

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

NOTES:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. REPAVE THE EXISTING SIDEWALK FROM BACK RIVER ROAD TO THE ENTRANCE OF THE PROJECT TO THE EXISTING LIMITS.
3. UNDER THE "TDR" APPROVAL THE 7 UNITS PURCHASED ARE UNITS 4, 12, 15, 16, 34, 35, & 40.



KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74

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2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=80'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

OVERALL SITE PLAN

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

5

GRID NORTH
OPS OBS: 19/19/2019

PROPOSED TREELINE

PROPOSED TREELINE

STONEWALL TO BE REMOVED

PROPOSED TREELINE

PROPOSED TREELINE

PROPOSED TREELINE

TREES TO BE REMOVED

PROPOSED TREELINE

PROPOSED TREELINE

PROPOSED TREELINE

TREES TO BE REMOVED

SIDEWALK & CURBING TO BE REMOVED

SIDEWALK & CURBING TO BE REMOVED

CURBING TO BE REMOVED

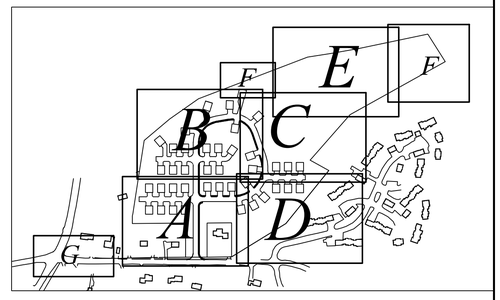
SIDEWALK TO BE REMOVED

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.



KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74

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DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

DEMOLITION PLAN

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

6

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
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Dover, New Hampshire 03820
(603) 749-0443

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1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

I / 4-2

34' (TYP)

40' (TYP)

24' (TYP)

PROPOSED UNIT 5

PROPOSED UNIT 6

PROPOSED UNIT 7

PROPOSED UNIT 8

PROPOSED UNIT 4

PROPOSED UNIT 3

PROPOSED UNIT 2

PROPOSED UNIT 1

PROPOSED UNIT 29

PROPOSED UNIT 26

PROPOSED UNIT 27

PROPOSED UNIT 28

PROPOSED UNIT 40

PROPOSED 5' WIDE SIDEWALLK

PROPOSED LIGHT POLE BASE

PROPOSED 5' WIDE BITUMINOUS SIDEWALK (TYP)

PROPOSED RAMP & TIP DOWN CURB

PROPOSED 5' BITUMINOUS SIDEWALK

PROPOSED RAMP WITH AND TIP DOWN CURB

PROPOSED CONCRETE PAD WITH APPROVED ADA TACTILE MAT & TIP DOWN CURB

PROPOSED MAIL KIOSK

PROPOSED "NO OUTLET" SIGN

PROPOSED R1-1 "STOP" SIGN STOP BAR & LEGEND

PROPOSED TIP DOWN CURB

END BCC

BEGIN BCC

END BCC WITH TIP DOWN CURB (TYP)

BEGIN BCC WITH TIP-DOWN CURB (TYP)

END SGC BEGIN BCC

BEGIN SGC

FLUSH

15' TDR NO CUT POST DEVELOPMENT (TYP)

15' ZONING SETBACK

20' SEWER EASEMENT

I / 4A-2

I / 4A-3

I / 4B

LEATHERS LANE

G GAS MAIN

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRID NORTH
GPS OBS: 08/19/2019

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

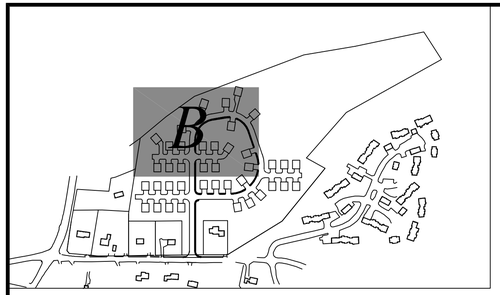
KEY PLAN
NOT TO SCALE

SITE PLAN - A

PROJECT: LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

APPLICANT: MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

7



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

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GRID NORTH
GPS OBS: 08/19/2019

I / 67B

I / 67A

I / 68

PROPOSED UNIT 12

PROPOSED UNIT 13

PROPOSED UNIT 14

PROPOSED UNIT 15

PROPOSED UNIT 16

PROPOSED UNIT 17

PROPOSED UNIT 18

PROPOSED UNIT 19

PROPOSED UNIT 20

PROPOSED UNIT 21

PROPOSED UNIT 22

PROPOSED UNIT 23

PROPOSED UNIT 24

PROPOSED UNIT 25

PROPOSED UNIT 9

PROPOSED UNIT 10

PROPOSED UNIT 11

PROPOSED UNIT 30

PROPOSED UNIT 31

15' TDR NO CUT POST DEVELOPMENT (TYP)

30' UTILITY EASEMENT

PROPOSED 5' WIDE BITUMINOUS SIDEWALLK

PROPOSED RAMP & TIP DOWN CURB

PROPOSED GUARDRAIL

PROPOSED LIGHT POLE BASE

END BCC WITH TIP DOWN CURB (TYP)

BEGIN BCC WITH TIP-DOWN CURB (TYP)

34' (TYP)

40' (TYP)

24' (TYP)

18'

22'

24'

12'

124'R BCC

100'R

136'R

32'R

6+00

7+00

8+00

9+00

10+00

4+00

5'R

10'R

20'R

BEGIN BCC

END BCC

BCC

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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(603) 749-0443

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SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

SITE PLAN - B

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

APPLICANT:
MICHABL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

8

UPLAND

EDGE OF WETLANDS

50' WETLAND SETBACK

50' WETLAND SETBACK

EDGE OF WETLANDS

BEGIN BCC

PROPOSED RAMP & TIP DOWN CURB

END BCC

PROPOSED UNIT 29

BCC 124'R

5'R

BEGIN BCC

5'R

100'R

9+00

124'R

PROPOSED GUARDRAIL

24'

BCC

END BCC

10+00

PROPOSED 5' WIDE BITUMINOUS SIDEWALK

PROPOSED RAMP & TIP DOWN CURB

5'R

PROPOSED UNIT 31

5'R

BEGIN BCC

136'R

160'R

END BCC

34' (TYP)

PROPOSED RAMP & TIP DOWN CURB

11+00

PROPOSED UNIT 30

5'R

BEGIN BCC

5'R

PROPOSED RAMP & TIP DOWN CURB

BCC

40' (TYP)

PROPOSED UNIT 32

PROPOSED UNIT 33

PROPOSED UNIT 34

20'R

BCC

5'R

END BCC

5'R

BCC

5'R

5'R

BCC

5'R

5'R

BCC

END BCC

22'

12+00

BEGIN BCC WITH TIP-DOWN CURB (TYP)

BEGIN BCC WITH TIP-DOWN CURB (TYP)

20'R

5'R

24' (TYP)

5'R

BCC

5'R

5'R

BCC

5'R

5'R

BCC

END BCC

PROPOSED UNIT 29

15' TDR NO CUT POST DEVELOPMENT (TYP)

1 / 4B

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

NOTE:

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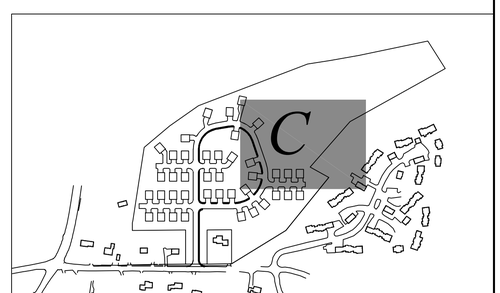
GRID NORTH
GPS OBS: 08/19/2016



KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

NO.	REVISION	APP'D	DATE
2	REVSED PER TRC COMMENTS	SJH	10-20-20
1	REVSED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

SITE PLAN - C

9

PROPOSED RAMP & TIP DOWN CURB

PROPOSED UNIT 29

END BCC

PROPOSED RAMP & TIP DOWN CURB

PROPOSED 5' WIDE BITUMINOUS SIDEWALK (TYP)

BEGIN BCC

PROPOSED UNIT 38

PROPOSED UNIT 39

PROPOSED UNIT 40

20'R

BCC

5'R

END BCC

5'R BCC 5'R

22'

91.00

BEGIN BCC WITH TIP-DOWN CURB (TYP)

BEGIN BCC WITH TIP-DOWN CURB (TYP)

END BCC

24' (TYP)

PROPOSED UNIT 37

PROPOSED UNIT 36

PROPOSED UNIT 35

40' (TYP)

34' (TYP)

BCC 136'R

BCC 160'R

12.00

13.00

160'R

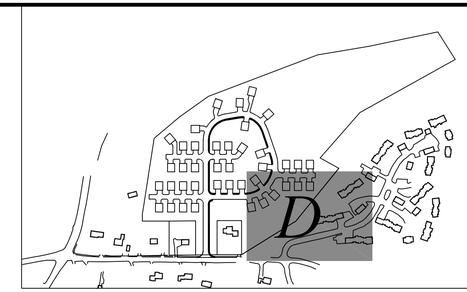
15' TDR NO CUT POST DEVELOPMENT (TYP)

1 / 4B

GRID NORTH
GPS OBS: 08/19/2019

SEWER EASEMENT

KATIE LANE



KEY PLAN
NOT TO SCALE

NOTE:
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2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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PROJECT NO:19038
FILE: SITE.DWG

SITE PLAN - D

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

10

PROPOSED 25 LF
15" HDPE
S=0.012

PROPOSED
UNIT 5
PROPOSED
G.F.F.=116.37
F.F.=116.95

PROPOSED
UNIT 6
PROPOSED
G.F.F.=115.53
F.F.=116.11

PROPOSED
UNIT 7
PROPOSED
G.F.F.=114.69
F.F.=115.27

PROPOSED
UNIT 8
PROPOSED
G.F.F.=113.85
F.F.=114.43

INV.IN
=110.50

PROPOSED
HEADWALL
T.O.W.=114.00

PROPOSED
SILTSOXX
(TYP)

INV.OUT
=110.20

INV.IN
=110

115.97 | 115.13 | 114.29 | 113.45

P2

PCB3

PDMH1

PROPOSED HEADWALL

PROPOSED 33 LF
15" HDPE
S=0.009

116.06 | 115.22 | 114.38 | 113.54

PROPOSED
UNIT 4
PROPOSED
G.F.F.=116.46
F.F.=117.04

PROPOSED
UNIT 3
PROPOSED
G.F.F.=115.62
F.F.=116.20

PROPOSED
UNIT 2
PROPOSED
G.F.F.=114.78
F.F.=115.36

PROPOSED
UNIT 1
PROPOSED
G.F.F.=113.94
F.F.=114.52

PROPOSED
HEADWALL
T.O.W.=112.00

INV.OUT
=108.40

PCB1

P1

PCB2

INV.IN=109.50

PROPOSED
SILTSOXX
(TYP)

PROPOSED 18 LF
HDPE 18"
S=0.008

PROPOSED 137 LF
15" HDPE
S=0.043

PROPOSED
UNIT 26
PROPOSED
G.F.F.=112.74

PROPOSED 7 LF
15" HDPE
S=0.043

PROPOSED
UNIT 27
PROPOSED
G.F.F.=111.50

PROPOSED
UNIT 28
PROPOSED
G.F.F.=109.27

PROPOSED
UNIT 39
PROPOSED
G.F.F.=105.6
F.F.=106.8

112.24 | 111.00 | 108.77

PCB4

PDMH1

PROPOSED
HEADWALL
T.O.W.=112.00

INV.OUT
=108.40

PROPOSED 50 LF
24" HDPE
S=0.010

107.56

PROPOSED
UNIT 40
PROPOSED
G.F.F.=108.20
F.F.=108.82

NORTH AMERICAN
GREEN ON SLOPE

WET 'POND
(WP1)
(SEE DETAIL)

NORTH AMERICAN
GREEN ON SLOPE

PROPOSED 15 LF
18" HDPE
S=0.007

OS-WP1
(SEE DETAIL)

PROPOSED 10 LF
24" HDPE
S=0.010

PDMH3

PROPOSED
SILTSOXX
(TYP)

PROPOSED
SILTSOXX

TBM 2
NAIL IN
UP 2373
ELEV. = 122.16

TBM 1
NAIL IN 18"ø
POPLAR TREE
ELEV. = 117.14

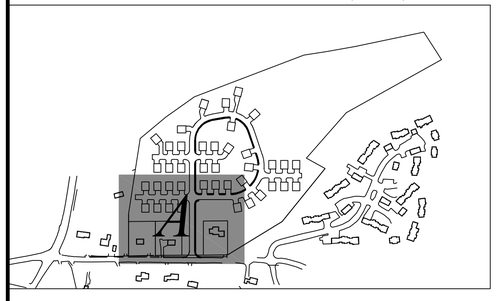
4+00 | 3+00 | 2+00 | 1+00 | 0+00 | 1+00 | 2+00 | 3+00 | 4+00

	P1	PCB1	PDMH1
	L=8'	RIM=112.25	RIM=113.50
	18" HDPE	INV.IN=108.85	INV.IN (PDMH2)=109.40
	S=0.081	INV.OUT=108.75	INV.IN (PCB3)=109.40
			INV.IN (PCB4)=109.40
	P2	PCB2	INV.OUT=108.90
	L=5'	RIM=112.25	
	15" HDPE	INV.IN=108.60	PDMH3
	S=0.040	INV.OUT=108.50	RIM=108.50
			INV.IN=104.40
		PCB3	INV.OUT=104.30
		RIM=113.00	
		INV.IN=109.80	
		INV.OUT=109.70	
		PCB4	
		RIM=113.00	
		INV.OUT=109.70	

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRID NORTH
GPS OBS: 06/19/2019

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)



KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

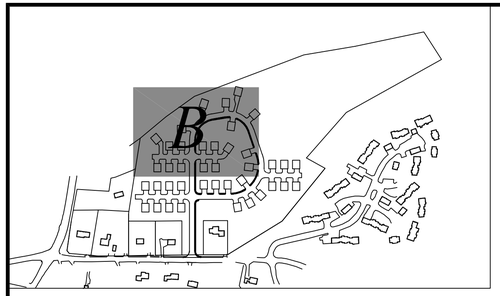
DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

GRADING, DRAINAGE & EROSION CONTROL PLAN -A

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

11



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

GRID NORTH
GPS OBS: 08/19/2019

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

P3
L=5'
15" HDPE
S=0.100

PCB5
RIM=121.65
INV.IN=118.50
INV.OUT=117.15

PDMH2
RIM=119.90
INV.IN=115.40
INV.OUT=115.30

PCB6
RIM=121.65
INV.IN=116.80
INV.OUT=116.70

1:1 SLOPE IN COMPETENT ROCK

NORTH AMERICAN GREEN ON SLOPE (TYP)

PROPOSED UNIT 12
PROPOSED G.F.F.=126.39 F.F.=135.37

PROPOSED UNIT 13
PROPOSED G.F.F.=124.30 F.F.=133.30

PROPOSED UNIT 14
PROPOSED G.F.F.=122.62 F.F.=131.62

PROPOSED HEADWALL

INV.IN =119.00

PROPOSED UNIT 15
PROPOSED G.F.F.=125.93 F.F.=134.93

PROPOSED SILTSOXX (TYP)

PROPOSED UNIT 16
PROPOSED G.F.F.=125.47 F.F.=134.47

PROPOSED UNIT 16
PROPOSED G.F.F.=119.47 F.F.=128.47

PROPOSED UNIT 17
PROPOSED G.F.F=119.99 F.F.=120.15

30' UTILITY EASEMENT

PROPOSED UNIT 18
PROPOSED G.F.F.=124.58 F.F.=133.96

PROPOSED UNIT 19
PROPOSED G.F.F.=114.84 BSMT=106.46

PROPOSED SILTSOXX (TYP)

INV.IN =115.55

INV.OUT =115.20

PROPOSED HEADWALL T.O.W.=118.00

PROPOSED 32 LF 12" HDPE S=0.009

PROPOSED 6" -D50 4'x10' RIP-RAP

PROPOSED UNIT 20
PROPOSED G.F.F.=118.33 F.F.=127.83

PROPOSED UNIT 21
PROPOSED G.F.F.=122.37 F.F.=131.37

PROPOSED UNIT 22
PROPOSED G.F.F.=123.49 F.F.=132.49

PROPOSED UNIT 23
PROPOSED G.F.F.=124.58 F.F.=133.96

PROPOSED 33 LF 15" HDPE S=0.011

PROPOSED 45 LF 15" HDPE S=0.029

PROPOSED UNIT 9
PROPOSED G.F.F.=122.80 F.F.=123.38 BSMT=114.38

PROPOSED UNIT 10
PROPOSED G.F.F.=125.20 F.F.=125.78 BSMT=116.78

PROPOSED UNIT 11
PROPOSED G.F.F.=126.16 F.F.=126.74 BSMT=117.74

PDMH2

PROPOSED UNIT 24
PROPOSED G.F.F.=122.45 F.F.=123.03 BSMT=114.03

PROPOSED UNIT 25
PROPOSED G.F.F.=123.57 F.F.=124.05 BSMT=115.05

PROPOSED HEADWALL TOW=107.50

PCB7

P4

PROPOSED UNIT 31
PROPOSED G.F.F.=107.96 F.F.=108.60

PROPOSED 68 LF 18" HDPE S=0.015

PROPOSED UNIT 30
PROPOSED G.F.F=105.3 F.F.=106.10

INV.IN=102.00

PROPOSED HEADWALL TOW=105.00

125.36 | 124.57 | 119.57 | 117.92 | 117.85 | 114.44 | 107.46 | 104.84
125.14 | 123.90 | 122.22 | 121.97 | 123.09 | 124.18
125.76 | 124.08 | 122.40 | 121.95 | 123.07

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

GRADING, DRAINAGE & EROSION CONTROL PLAN - B

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

12

PROPOSED
F.F.=119.47
=128.47

PROPOSED UNIT 29
PROPOSED G.F.F.=114.84 BSMT=106.46

PROPOSED SILTSOXX (TYP)

PROPOSED HEADWALL T.O.W.=118.00

114.44

PROPOSED HEADWALL TOW=107.50

INV.IN =105.50

P4
107.46

PROPOSED UNIT 31
PROPOSED G.F.F.=107.96 F.F.=108.60

PDMH5

PROPOSED 68 LF 18" HDPE S=0.015

PROPOSED UNIT 30
PROPOSED G.F.F=105.3 F.F..=106.10

104.84

PCB11

INV.IN=102.00

PROPOSED HEADWALL TOW=105.00

PROPOSED UNIT 29

P6

PCB9

NORTH AMERICAN GREEN ON SLOPE (TYP)

PROPOSED DOUBLE ROW SILTSOXX

PROPOSED 18 LF 15" HDPE S=0.011

PROPOSED 55 LF 15" HDPE S=0.031

PCB8

PCB7

PROPOSED RIP-RAP #4

PROPOSED 7 LF 24" HDPE S=0.014 INV.OUT=99.00

PTS1 (SEE DETAIL)

PROPOSED UNIT 32
PROPOSED G.F.F.= F.F.=108.73 BSMT=96.73

PROPOSED UNIT 33
PROPOSED G.F.F.= F.F.=106.33 BSMT=97.33

PROPOSED UNIT 34
PROPOSED G.F.F.= F.F.=106.83 BSMT=97.83

104.71

105.27

105.83

P5
104.65

105.21

105.77

PROPOSED 38 LF 18" HDPE S=0.008

NORTH AMERICAN GREEN ON SLOPE

PROPOSED 25 LF 24" HDPE S=0.020

INV.OUT=92.75

50' WETLAND BUFFER

PROPOSED EMERGENCY SPILLWAY

PROPOSED LEVEL LIP SPREADER

PROPOSED GRASS SWALE #3

PROPOSED RIP-RAP #3

OS-WP2
(SEE DETAIL)

PROPOSED GRASS SWALE #2

PROPOSED RIP-RAP #2

PROPOSED 13' 24" HDPE S=0.019

INV.OUT=97.50

OS-IB1
(SEE DETAIL)

99.25

INFILTRATION BASIN 1 (IB1) (SEE DETAIL)

PROPOSED DOUBLE ROW SILTSOXX

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P4	PCB7	PDMH5
L=15'	RIM=108.20	RIM=106.25
15" HDPE	INV.IN=105.00	INV.IN (PCB8)=102.00
S=0.033	INV.OUT=104.00	INV.IN (PCB11)=99.50
		INV.OUT=99.10
	PCB8	
	RIM=108.20	
	INV.IN=103.88	
	INV.OUT=103.78	
	PCB11	
	RIM=108.20	
	INV.IN=100.60	
	INV.OUT=100.50	

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT DEVELOPMENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRID NORTH
GPS OBS: 08/19/2019

C

KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74A

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CIVIL ENGINEERING
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Dover, New Hampshire 03820
(603) 749-0443

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DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

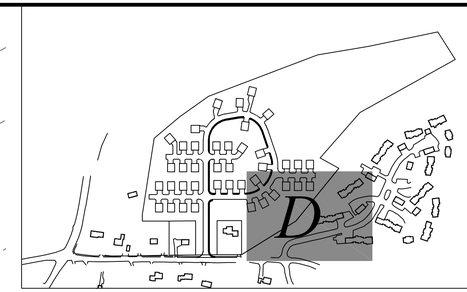
GRADING, DRAINAGE & EROSION CONTROL PLAN - C

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

13

INV.IN=102.00
PROPOSED HEADWALL TOW=105.00
PROPOSED 38 LF 18" HDPE S=0.008
NORTH AMERICAN GREEN ON SLOPE
PROPOSED DOUBLE ROW SILTSOXX
P5
P6
PCB9
PROPOSED UNIT 29
PROPOSED G.F.F=105.61 F.F.=106.23
PROPOSED 18 LF 15" HDPE S=0.006
INV.IN =102.00
PROPOSED HEADWALL TOW=105.00
PCB10
PROPOSED UNIT 37
PROPOSED G.F.F= F.F.=105.63
PROPOSED UNIT 36
PROPOSED G.F.F.= F.F.=106.23
PROPOSED UNIT 35
PROPOSED G.F.F.= F.F.=106.73
PROPOSED GRASS SWALE #1
PROPOSED RIP-RAP #1
INV.OUT=101.00
PROPOSED UNIT 38
PROPOSED G.F.F.=105.27 F.F.=105.90
PROPOSED SILTSOXX (TYP)
PROPOSED UNIT 39
PROPOSED G.F.F.=106.37 F.F.=107.0
PROPOSED UNIT 40
PROPOSED G.F.F.=108.20 F.F.=108.82
PROPOSED 110 LF 24" HDPE S=0.008
PDMH4
PROPOSED 275 LF 24" HDPE S=0.008
GRID NORTH GPS OBS: 08/19/2019



KEY PLAN
NOT TO SCALE

P5
L=8'
15" HDPE
S=0.113

P6
L=16'
15" HDPE
S=0.047

PCB9
DOUBLE GRATE
RIM=104.35
INV.IN=101.25
INV.OUT=101.10

PCB10
RIM=104.35
INV.IN (PCB9)=101.00
INV.IN (P5)=101.00
INV.OUT=100.90

PDMH4
RIM=107.75
INV.IN=102.00
INV.OUT=101.90

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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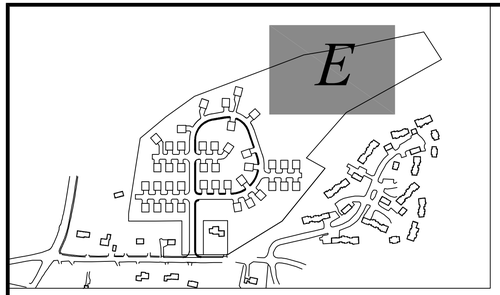
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

GRADING, DRAINAGE & EROSION CONTROL PLAN - D

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

14



KEY PLAN
NOT TO SCALE

GRID NORTH
OPS OBS: 08/19/2019

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.

EDGE OF WETLAND

50' WETLAND BUFFER

PROPOSED 25 LF 24" HDPE S=0.020

INV.OUT=92.75

PROPOSED EMERGENCY SPILLWAY

PROPOSED LEVEL LIP SPREADER

PROPOSED GRASS SWALE #3

PROPOSED RIP-RAP #3

98

98

97.5

95

97.5

96

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74A

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Dover, New Hampshire 03820
(603) 749-0443

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2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

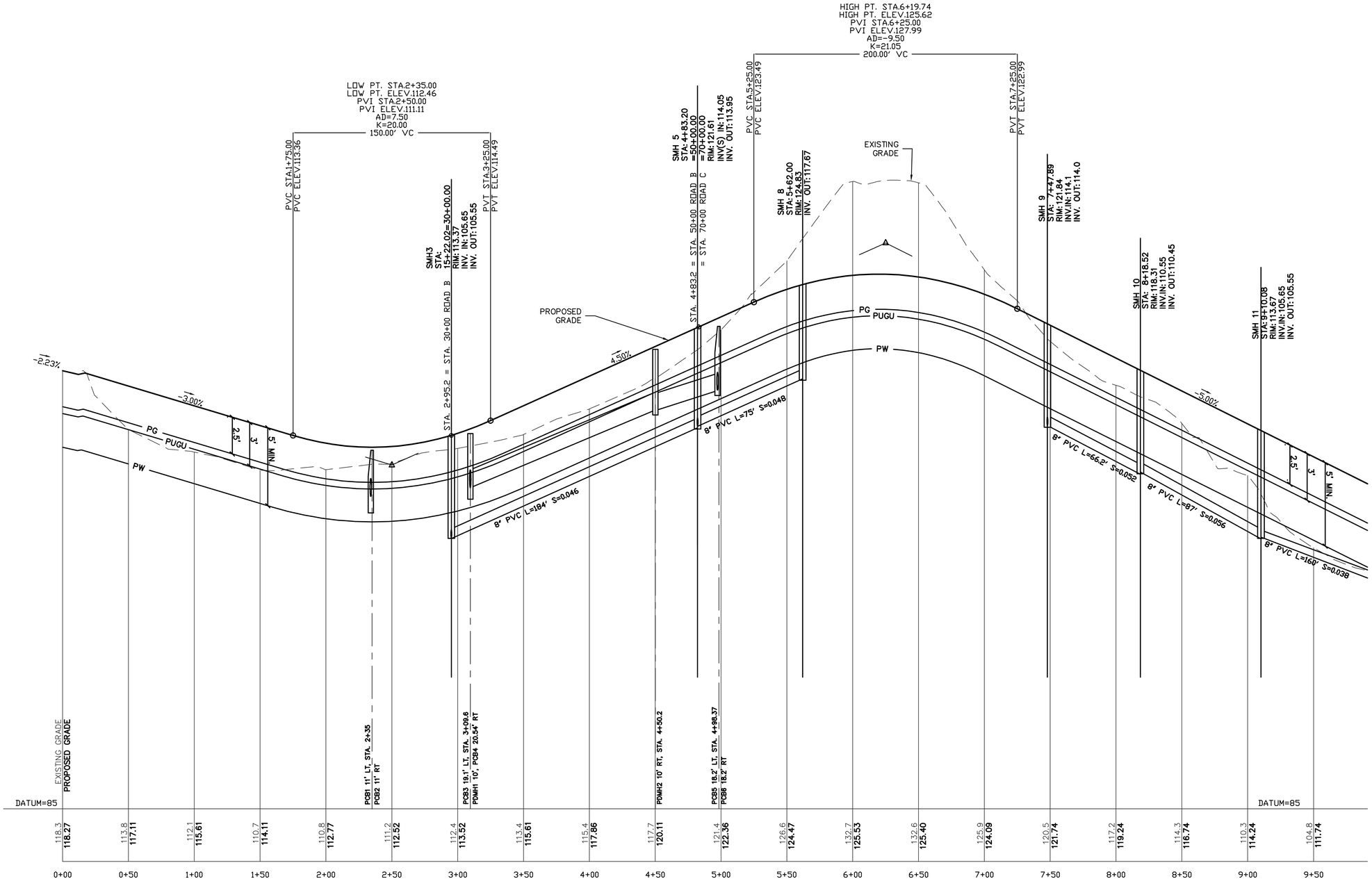
DATE: 8-28-20
SCALE: XX
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

GRADING, DRAINAGE & EROSION CONTROL PLAN - E

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

15



HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

WOODRUSH DRIVE PROFILE

NOTE
1. SEE GRADING & DRAINAGE PLANS FOR DRAINAGE STRUCTURE INFORMATION
2. FOR PROJECT NOTES SEE NOTE SHEET #4.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

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PLANNING FILE
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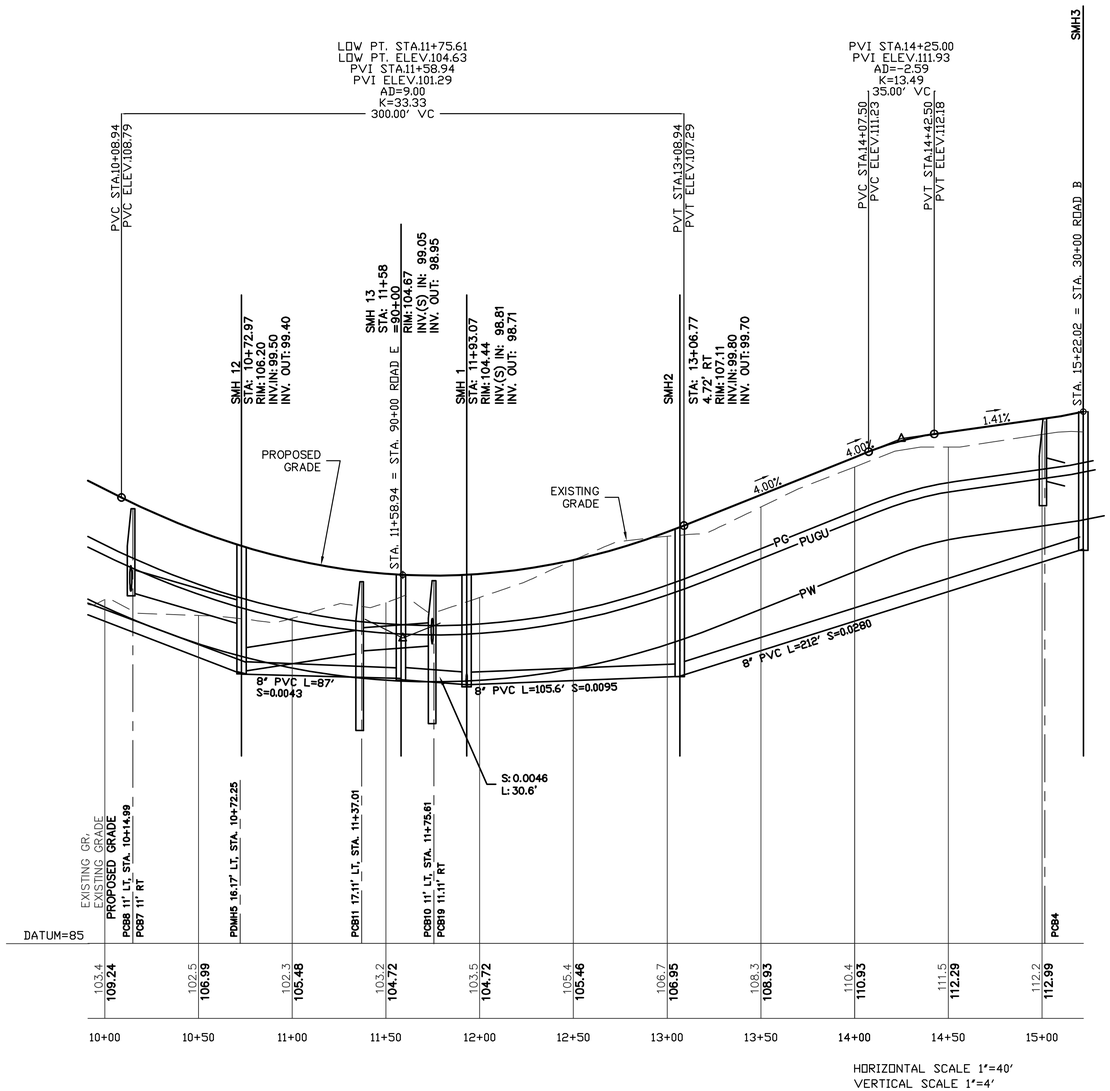
DATE: 8-28-20
SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

ROAD PROFILE

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

16



HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

WOODRUSH DRIVE PROFILE

NOTE
1. SEE GRADING & DRAINAGE PLANS FOR DRAINAGE STRUCTURE INFORMATION
2. FOR PROJECT NOTES SEE NOTE SHEET #4.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

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PLANNING FILE
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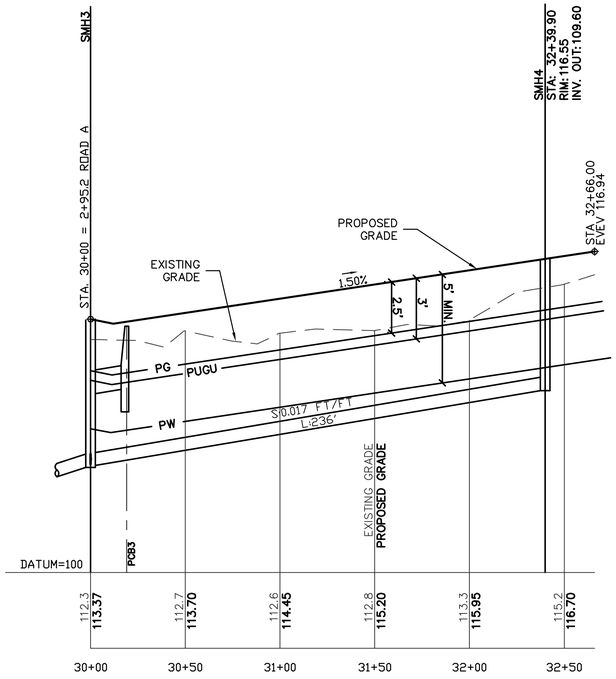
SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

ROAD PROFILE

PROJECT: *LEATHERS LANE*
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

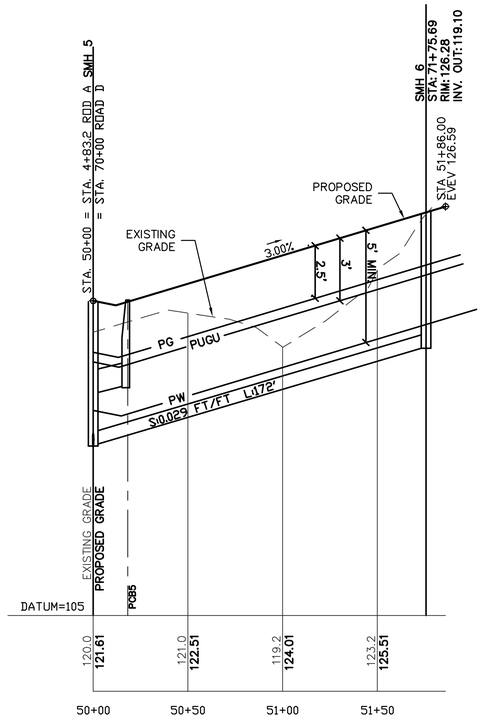
APPLICANT: *MICHAEL KHAVARI*
40 HARRISON AVENUE
PORTSMOUTH, NH

17



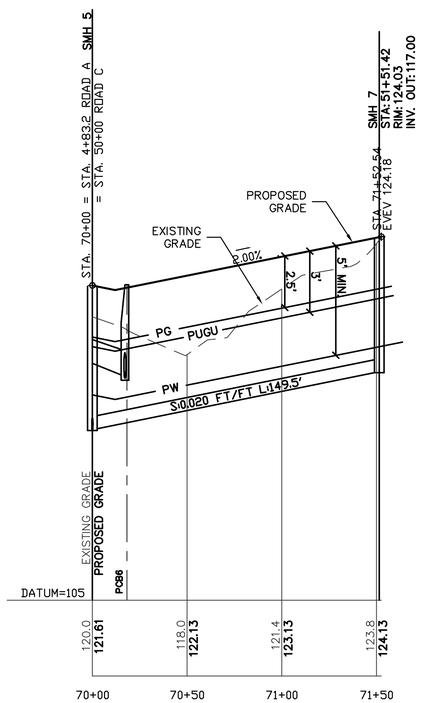
HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

LITTLE LEAF DRIVE



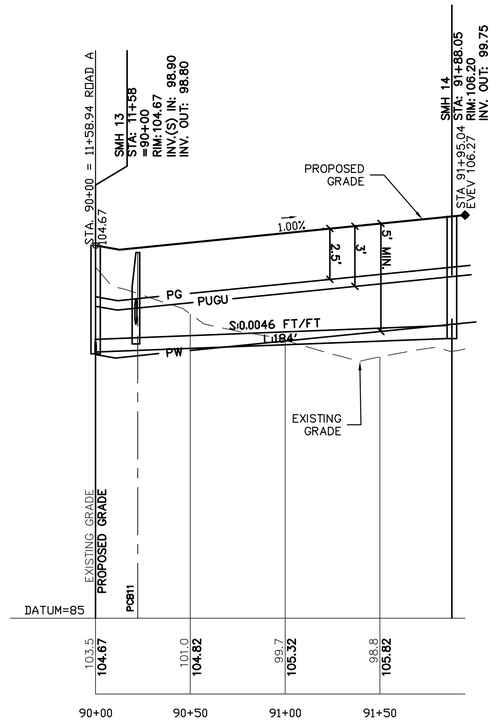
HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

TUPELO DRIVE



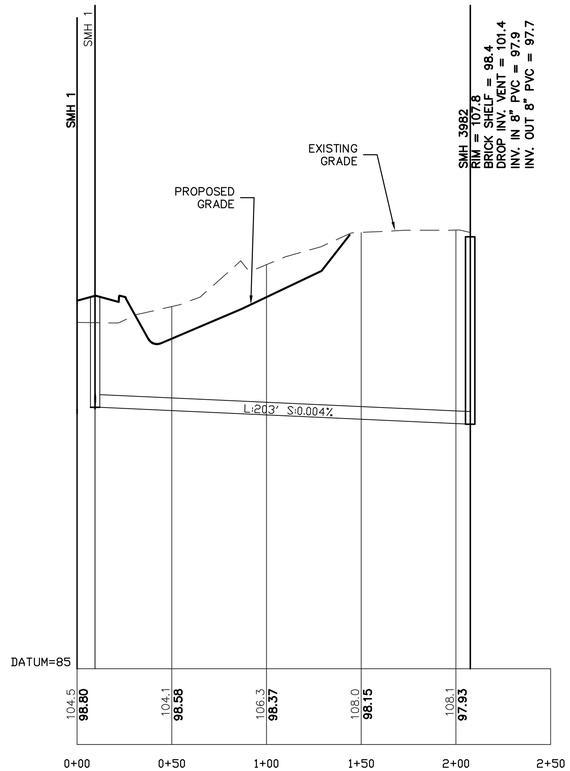
HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

SHAGBARK DRIVE



HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

WILDFLOWER DRIVE



HORIZONTAL SCALE=40
VERTICAL SCALE=4

CROSS COUNTRY SEWER PROFILE

NOTE
1. SEE GRADING & DRAINAGE PLANS FOR DRAINAGE STRUCTURE INFORMATION
2. FOR PROJECT NOTES SEE NOTE SHEET #4.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
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DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
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(603) 749-0443

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

ROAD PROFILES

18

PROPOSED 2" GAS MAIN

PROPOSED 8" PVC SEWER LINE

PROPOSED 8" PVC SEWER LINE

PROPOSED UNIT 5

PROPOSED UNIT 6

PROPOSED UNIT 7

PROPOSED UNIT 8

PROPOSED UNIT 26

PROPOSED UNIT 27

PROPOSED UNIT 28

PROPOSED UNIT 29

PROPOSED ELECTRICAL DIRECT BURY (TYP)

PROPOSED 6" PVC HOUSE SEWER SERVICE LINE (TYP)

SMH4

SMH3

SMH2

PROPOSED HYDRANT

PROPOSED UNIT 4

PROPOSED UNIT 3

PROPOSED UNIT 2

PROPOSED UNIT 1

PROPOSED HYDRANT

PROPOSED 8x8 TEE WITH GATE VALVE

PROPOSED 6" D.I. WATERLINE

PROPOSED 1/2" GAS LINE (TYP)

PROPOSED 1" POLY WATERLINE WITH GATE VALVE (TYP)

PROPOSED UNIT 40

SEWER CLEANOUT SHOWN ON SCRD 40-54 NOT FOUND

SMH (418)
RIM = 111.2
BRICK SHELF = 106.0
INV. IN 8" PVC = 105.5
INV. OUT 8" PVC = 105.3
NEXT SMH (101) 169'

SMH (101)
RIM = 110.1
BRICK SHELF = 105.1
INV. IN 8" PVC = 104.3
INV. OUT 8" PVC = 104.2
NEXT SMH (102) 287'

PROPOSED 8" D.I. WATERLINE

PROPOSED 8"x12" SADDLE WITH GATE VALVE

PROPOSED GAS GATE VALVE

SEWER FORCE MAIN 6" AC

12" DI WATER

GAS MAIN

GRID NORTH
GPS OBS: 06/19/2019

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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1	REVISED PER TRC COMMENTS	SJH	9-28-20

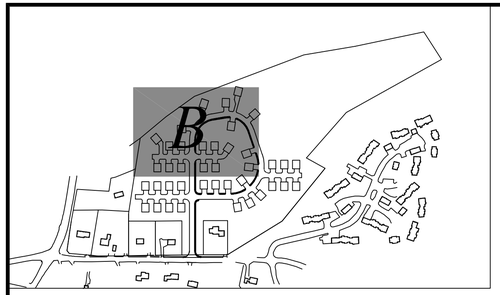
DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

UTILITY PLAN -A

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

19



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOTE:
1. FOR PROJECT NOTES SEE NOTE SHEET #4.
2. THE PROJECT PROPONENT WILL WORK WITH CITY POST CONSTRUCTION TO REPLACE ANY PLANTINGS AS NESESSARY TO MEET THE INTENT OF THE 15' NO CUT NO DISTURB BUFFER.

GRID NORTH
GPS OBS: 08/19/2019

PROPOSED UNIT 12
PROPOSED UNIT 13
PROPOSED UNIT 14
PROPOSED UNIT 15
PROPOSED UNIT 16
PROPOSED UNIT 17
PROPOSED UNIT 18
PROPOSED UNIT 19
PROPOSED UNIT 20
PROPOSED UNIT 21
PROPOSED UNIT 22
PROPOSED UNIT 23
PROPOSED UNIT 24
PROPOSED UNIT 25
PROPOSED UNIT 9
PROPOSED UNIT 10
PROPOSED UNIT 11
PROPOSED UNIT 30
PROPOSED UNIT 31

30' UTILITY EASEMENT

PROPOSED 2" GAS MAIN
PROPOSED 8" PVC SEWER LINE
PROPOSED 8" D.I. WATER LINE
PROPOSED 6" D.I. WATERLINE
PROPOSED HYDRANT
PROPOSED 8x6 TEE
PROPOSED 1/2" GAS LINE (TYP)
PROPOSED ELECTRICAL DIRECT BURY (TYP)
PROPOSED 6" PVC HOUSE SEWER SERVICE LINE (TYP)
PROPOSED 1" POLY WATERLINE WITH GATE VLAVE (TYP)
PROPOSED GATE VALVE (STA. 9+50)

SMH5
SMH6
SMH7
SMH8
SMH9
SMH10
SMH11

PW
PS
PG
PE

4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
51+00

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=20'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

UTILITY PLAN - B

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

20

PROPOSED 8"x6" TEE WITH GATE VALVE

PROPOSED UNIT 29

PROPOSED 6" D.I. WATERLINE

SMH11

PROPOSED HYDRANT

PROPOSED UNIT 31

PROPOSED UNIT 30

PROPOSED UNIT 28

SMH12

SMH13

PROPOSED 6" D.I. WATERLINE

PROPOSED UNIT 32

PROPOSED UNIT 33

PROPOSED 1/2" GAS LINE (TYP)

PROPOSED ELECTRICAL DIRECT BURY (TYP)

PROPOSED UNIT 34

PROPOSED 4" PVC HOUSE SEWER SERVICE LINE (TYP)

PROPOSED 1" POLY WATERLINE WITH GATE VLAVE (TYP)

PROPOSED HYDRANT

SMH14

PW PS PG PE

10+00 11+00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

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GPS OBS: 08/19/2019

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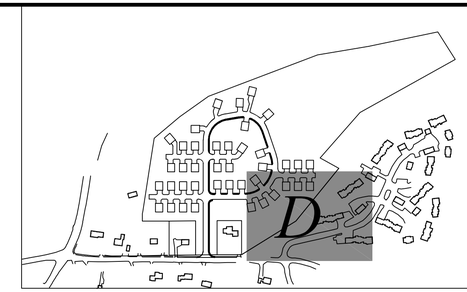
APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

UTILITY PLAN - C

21

PROPOSED UNIT 29
PROPOSED UNIT 37
PROPOSED UNIT 36
PROPOSED UNIT 35
PROPOSED UNIT 38
PROPOSED UNIT 39
PROPOSED UNIT 40
SMH1
SMH2
SMH13
SMH14
PROPOSED HYDRANT
PROPOSED 2" GAS MAIN
PROPOSED 8" PVC SEWER LINE
PROPOSED ELECTRICAL DIRECT BURY (TYP)
PROPOSED 1/2" GAS LINE (TYP)
PROPOSED 6" PVC HOUSE SEWER SERVICE LINE (TYP)
PROPOSED 1" POLY WATERLINE WITH GATE VALVE (TYP)
PROPOSED 8" PVC SEWER LINE
EXISTING SEWER
CORE FOR NEW SERVICE. INSTALL BOOT. RECONNECT MANHOLE INSERT
SMH 3982
RIM = 107.8
BRICK SHELF = 98.4
DROP INV. VENT = 101.4
INV. IN 8" PVC = 97.9
INV. OUT 8" PVC = 97.7
GRID NORTH
GPS OBS: 08/19/2019



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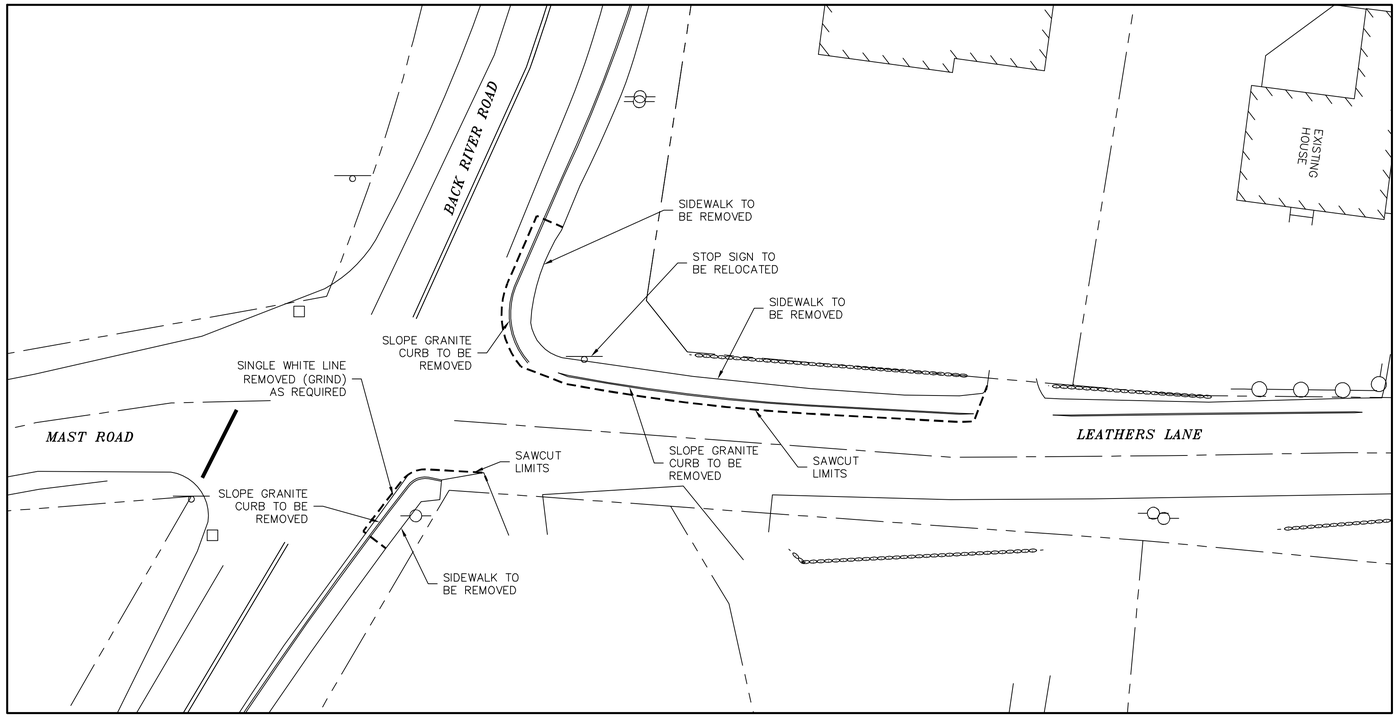
UTILITY PLAN – D

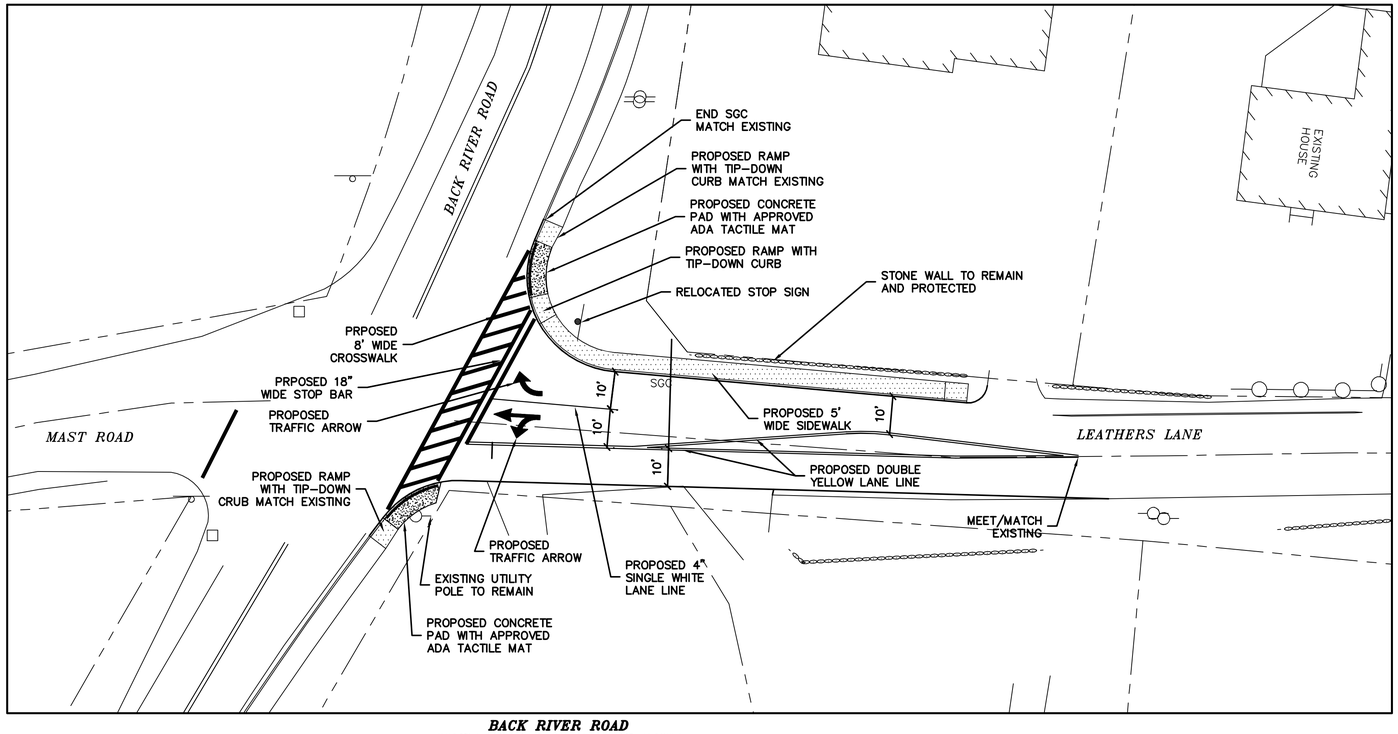
APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

22

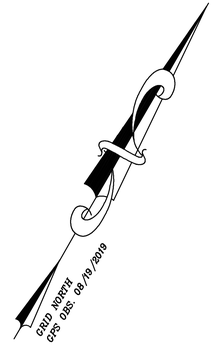


BACK RIVER ROAD
MAST ROAD & LEATHERS LANE
INTERSECTION DEMOLITION PLAN
SCALE: 1"=20'



BACK RIVER ROAD
MAST ROAD & LEATHERS LANE
INTERSECTION SITE PLAN
SCALE: 1"=20'

KEY PLAN
NOT TO SCALE



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SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

BACK RIVER ROAD INTERSECTION INPROVEMENTS

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

23

DESCRIPTION

THE INTENT OF THIS PLAN IS TO SHOW THE IMPROVEMENTS ASSOCIATED WITH THE CONSTRUCTION OF 2,300 LF OF ROADWAY, DRAINAGE IMPROVEMENTS FOR A 40 UNITS DETACHED CONDOMINIUM.

PROJECT NAME AND LOCATION

40 UNIT DETACHED CONDOMINIUM — LATITUDE N43° 10' 11"
LEATHERS LANE — LONGITUDE W70° 52' 18"
DOVER, NH

DISTURBED AREA

±359,851 square feet

NOTES:
1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZE.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL UNDERGROUND UTILITIES.
10. PLACE GRAVELS AND FINE GRADE.
11. STABILIZE ROADWAYS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
13. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
14. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 3.5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
15. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE OF ONE OF THE FOLLOWING HAS OCCURRED.
1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP–RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. GENERAL

1. Silt Fence

a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM–51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM–52	Extra Strength 50 lb/lin in (min)
Standard Strength 30 lb/lin in (min)		
Flow Rate	VTM–51	0.3 gal/sf/min (min)

* Requirements reduced by 50 percent after six (6) months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120 Degrees F.

b. The height of a silt fence shall not exceed thirty–six (36) inches.
c. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at support post, with a minimum six (6) inch overlap, and securely sealed.
d. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). When extra strength fabric is used without the wire support fence, post spacing shall not exceed 6 feet.
e. Posts for silt fences shall be 2–inch diameter wood with a minimum length of 5 feet.
f. Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.
g. A trench shall be excavated approximately four (4) inches wide and four (4) inches deep along the line of posts and upslope from the barrier.
h. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
i. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
j. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (i) applying.
k. The trench shall be backfilled and the soil compacted over the filter fabric.
l. Silt fences shall be removed when they have served their useful purpose, but not before the upslope areas has been permanently stabilized.

2. Sequence of Installation
Sediment barriers shall be installed prior to any soil disturbance of the contributing drainage area above them.

3. Maintenance

a. Check dams and silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam.
b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
c. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one third (1/3) the height of the barrier.
d. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

B. MULCHING

1. Timing
In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this.
a. Apply mulch prior to any storm event. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
b. Required Mulching within a specified time period. The time period can range from 14 to 21 days of inactivity on a area, the length of time varying with site conditions. Professional judgement shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

2. Application Rate
Mulch shall be applied at a rate of between 1.5 to 2 tons per acre, or 90 to 100 pounds per 1000 square feet.

3. Guidelines for Winter Mulch Application. When mulch is applied to provide protection over winter (past the growing season) it shall be at a rate of 6,000 pounds of hay or straw per acre. A tackifier may be added to the mulch.

4. Maintenance All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

5. Excelsior Matting Excelsior Matting shall be used in place of mulch on all slopes steeper than 3:1.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation
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.

2. 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.

3. Maintenance
Temporary seedings 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.).

D. PERMANENT SEEDING

1. Bedding – stones larger than 1 ½ ", trash, roots, and other debris interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 4" to prepare a seedbed and mix fertilizer into the soil.

2. Fertilizer – lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:
Agricultural Limestone @ 100 lbs. per 1,000 s.f.
10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (recommended)
Rate:

Type	LBS. per Acre	LBS. per 1,000 s.f.
Tall Fescue	20	0.45
Creeping Red Fescue	20	0.45
Birdsfoot Trefoil	8	0.20
Total	48	1.10

4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook.

Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt) etc.

5. Provide a minimum of 4 inches (5 inches loose) of topsoil to all areas to be seeded.

E. STORM DRAIN INLET PROTECTION

1. Straw/Hay Bale Inlet Structure

a. Bales shall be either wire bound or string tied with the bindings oriented around the sides rather than over and under the bales.
b. Bales shall be placed lengthwise in a single row surrounding the inlet, with the ends of adjacent bales pressed together.
c. The filter barrier shall be entrenched and backfilled. A trench shall be excavated around the inlet the width of bale to a minimum depth of four (4) inches. After the bales are staked, the excavated soil shall be backfilled and compacted against the filter barrier.
d. Each bale shall be securely anchored and held in place by at least two (2) stakes or rebars driven through the bale.
e. Loose straw/hay shall be wedged between bales to prevent water from entering between bales.
f. All structures should be inspected after every rainstorm and repairs made as necessary.
g. Sediment should be removed from the devices after the sediment has reached a maximum of one–third the depth of the trap.
h. Haybales should be removed and the area repaired as soon as the contributing drainage area to the inlet has been completely stabilized.

TIMING OF CONTROLS/MEASURES

As indicated in the sequence of Major Activities the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Areas where construction activity temporarily ceases for more than twenty one (21) days will be stabilized with a temporary seed and mulch within fourteen (14) days of the last disturbance. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established. All areas shall be stabilized within 72 hours of achieving finish grade.

WASTE DISPOSAL

A. WASTE MATERIALS
All waste materials will be collected and stored in securely lidded receptacles. All trash and construction debris from the site will be deposited in a dumpster. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedure for waste disposal by the superintendent.

B. HAZARDOUS WASTE
All hazardous waste materials will be disposed of in the manner specified by local or state regulation or by the manufacturer. Site personnel will be instructed in these practices by the superintendent.

C. SANITARY WASTE
All sanitary waste will be collected from the portable units a minimum of once per week by a licensed sanitary waste management contractor.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances during construction to stormwater runoff:

Good Housekeeping:

The following good housekeeping practices will be followed on site during the construction project:

- o An effort will be made to store only sufficient amounts of products to do the job.
- o All materials stored on site will be stored in a neat, orderly manner in their proper (original if possible) containers and, if possible, under a roof or other enclosure.
- o Manufacturer's recommendations for proper use and disposal will be followed.
- o The site superintendent will inspect daily to ensure proper use and disposal of materials.
- o Substances will not be mixed with one another unless recommended by the manufacturer.
- o Whenever possible all of a product will be used up before disposing of the container.

Hazardous Products:

The following practices will be used to reduce the risks associated with hazardous materials:

- o Products will be kept in their original containers unless they are not resealable.
- o Original labels and material safety data will be retained for important product information.
- o Surplus product that must be disposed of will be discarded according to the manufacturer's recommended methods of disposal.

B. PRODUCT SPECIFICATION PRACTICES
The following product specific practices will be followed on site:

Petroleum Products:

All on site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any asphalt based substances used on site will be applied according to the manufacturer's recommendations.

Fertilizers:

Fertilizers used will be applied only in the minimum amounts directed by the specifications. Once applied fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered shed or enclosed trailers. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid

Paints:
spills.
All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be disposed of properly according to manufacturer's instructions or state and local regulations.

Concrete Trucks:

Concrete trucks will discharge and wash out surplus concrete or drum wash water in a contained area on site.

C. SPILL CONTROL PRACTICES

In addition to good housekeeping and material management practices discussed in the previous section the following practices will be followed for spill prevention and cleanup:

- o Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- o Materials and equipment necessary for spill cleanup will be kept in the material storage area on site. Equipment and materials will 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.
- o All spills will be cleaned up immediately after discovery.
- o The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- o Spills of toxic or hazardous material will be reported to the appropriate state or local government agency, regardless of the size.
- o The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and how to cleanup the spill if it recurs. A description of the spill, its cause, and the cleanup measures will be included.
- o The site superintendent responsible for day–to–day site operations will be the spill prevention and cleanup coordinator.

The project proponent is required to manage construction to meet the requirements and intent of RSA 430:53 and AGR 3800 relative to controlling invasive species and controlling fugitive dust in accordance with ENV–A 1002.
AGR 3800 Prohibited Invasive Plant Species Rules

The rule, Agr 3800, states : "No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1, New Hampshire prohibited invasive species list". A complete copy of the rules can be accessed on the internet at http://agriculture.nh.gov/topics/plants_insects.htm.

Env–A 1002 FUGITIVE DUST: Precautions to Prevent, Abate, and Control Fugitive Dust.
(a) Any person engaged in any activity within the state that emits fugitive dust, other than those listed in Env–A 1002.02(b), shall take precautions throughout the duration of the activity in order to prevent, abate, and control the emission of fugitive dust.

(b) Precautions required by (a), above, shall include but not be limited to the following:

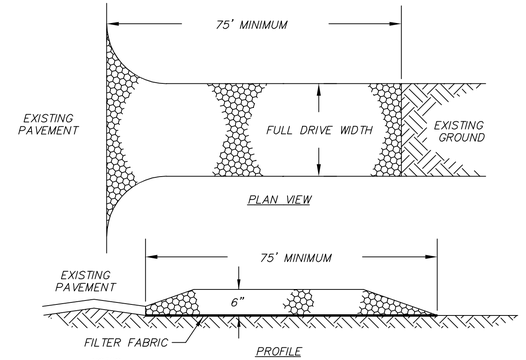
(1) The use of water or hydrophilic material on operations or surfaces, or both;

(2) The application of asphalt, water or hydrophilic material, or tarps or other such covers to material stockpiles;

(3) The use of hoods, fans, fabric filters, or other devices to enclose and vent areas where materials prone to producing fugitive dust are handled;

(4) The use of containment methods for sandblasting or similar operations; and

(5) The use of vacuums or other suction devices to collect airborne particulate matter.



NOTES:
1. SEE EROSION CONTROL NOTES BELOW FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.
2. TO BE INSTALLED AT EACH POINT OF EGRESS FROM THE WORK AREA.

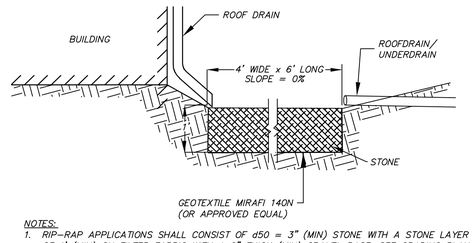
STABILIZED CONSTRUCTION ENTRANCE

1. SPECIFICATIONS
A. AGGREGATE SIZE: USE THREE (3) INCHES STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
B. AGGREGATE THICKNESS: NOT LESS THAN SIX (6) INCHES.
C. WIDTH TEN (10) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS.
D. LENGTH: AS REQUIRED, BUT NOT LESS THAN SEVENTY–FIVE (75) FEET. PIPING OF SURFACE WATER UNDER ENTRANCE SHALL BE PROVIDED AS REQUIRED.
E. GEOTEXTILE: TO BE PLACED OVER THE ENTIRE AREA TO BE COVERED WITH AGGREGATE.
F. CRITERIA FOR GEOTEXTILE: THE FABRICS SHALL BE TREVIA SPUNBOND 1135, MIRAFI 600X OR EQUAL.

2. MAINTENANCE
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:
1. RIP–RAP APPLICATIONS SHALL CONSIST OF d50 = 3" (MIN) STONE WITH A STONE LAYER THICKNESS OF 1' (MIN) ON FILTER FABRIC WITH A 6" THICK (MIN) GRAVEL BASE. SEE GRADING PLAN FOR APRON LOCATIONS.

RIP–RAP APRON

NOT TO SCALE

PER 153–10 F:
All site improvements which require blasting of land shall meet the following requirements prior to any blasting occurring.

1. The Applicant shall prepare a pre–blast survey of all structures within five (500) feet of the external boundaries of the proposed lot to be developed. This survey, along with a monitoring plan, shall be on file with the Dover Fire and Rescue. Upon recommendations of the Chief , the planning Board may require a pre–blast survey of all structures within one thousand (1000) feet.
2. The Applicant shall hold a neighborhood meeting to review the blasting plan and pre–blast survey, with representatives of the Fire and Rescue and the blasting company in attendance, prior to any on–site blasting. Abutters within one thousand (1000) feet of the external boundary of the project parcel shall be notified by certified mail (paid for by the applicant) of the meeting no less than ten (10) days prior to the meeting and no more than 15 days prior to the meeting. The notice shall state the time and date of the blasting and contain a map showing the blasting area, the 1,000–foot–radius area, and the 500–footradius area.
3. **Permit holders shall be in compliance with nfpa 495, explosive materials code, in addition to all other ordinances and codes set forth in the city of dover code, § 153–14a, stormwater management, erosion control and flood hazards, of this chapter and the city of dover fire prevention code, which specifically prohibits the overnight storage of explosives or blasting agents. Further, all storage magazines shall be locked in the open position at the end of the day's operation for easy inspection by city officials.**
4. **Blasting permits may be obtained by calling the Dover Fire and Rescue during normal business hours. The permits are only active for the dates and time specified on the permit.**
5. **Permit holders shall hold insurance against claims for damages for personal injury and property which may arise from performance of the work.**
6. **Hours of operation for the blasting shall be no earlier than 8:00 am and no later than 6:00 pm Monday through Friday, excluding federal holidays.**

MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES

The project proponent is responsible for the maintenance of all stormwater facilities during construction and the property owner is responsible after construction is complete.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. Catch basins & Stormwater treatment structures should be inspected on a monthly basis and/or after a major rainfall event to assure that debris or sediments do not reduce the effectiveness of the system.

WINTER CONSTRUCTION NOTES

1. All proposed post–development vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, 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 placement 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.
2. All slopes which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th shall be stabilized with stone or erosion control blankets.
3. After October 15th, incomplete road surfaces shall be protected with a minimum of 3–inches of crushed gravel per NHDOT item 403.3, or if construction is to continue through the winter season be cleared of any accumulated snow after each storm event.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19–74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10–20–20
1	REVISED PER TRC COMMENTS	SJH	9–28–20

DATE: 8–28–20
SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

EROSION CONTROL NOTES

24

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:

Blanding's turtle (state endangered)

- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land

Wood turtle (special concern)

- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land

Eastern box turtle (state endangered)

- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base

Spotted turtle (state threatened)

- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

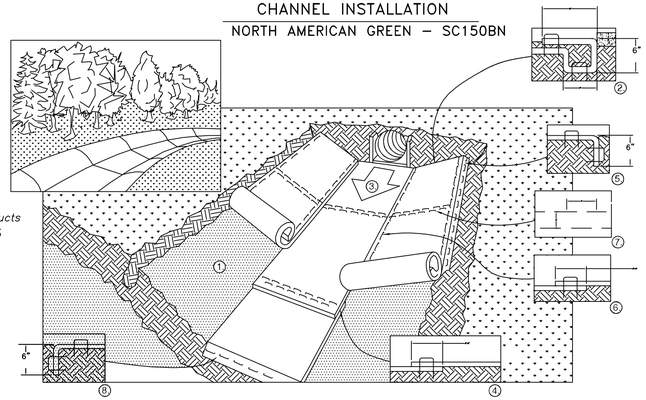
Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 *Please report promptly, noting specific location and date – Photographs strongly encouraged*

NOTES:

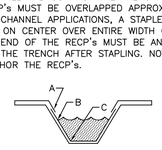
1. *ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.*
2. *THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED*
3. *THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE*
4. *IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271-1738 or JOSH MEGYESY AT 271-1125 FOR FURTHER INSTRUCTIONS.*

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



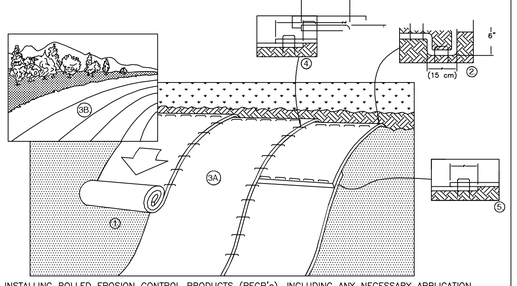
CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

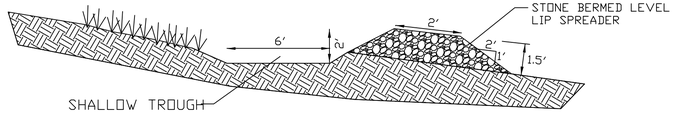
NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™ , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

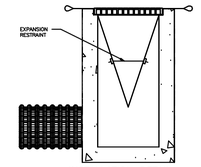
NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.

BERM STONE SIZE		
SIEVE DESIGNATION (METRIC)	SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
300 mm	12 in	100
150 mm	6 in	84-100
75 mm	3 in	68-83
25.4 mm	1 in	42-55
4.75 mm	No. 4	8-12



STONE BERMED LEVEL LIP SPREADER DETAIL

NOT TO SCALE



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

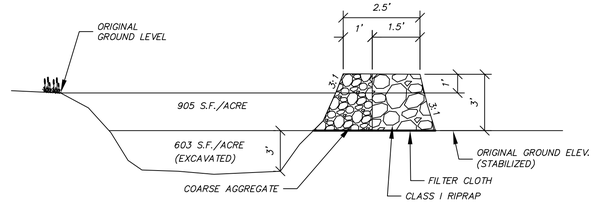
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®

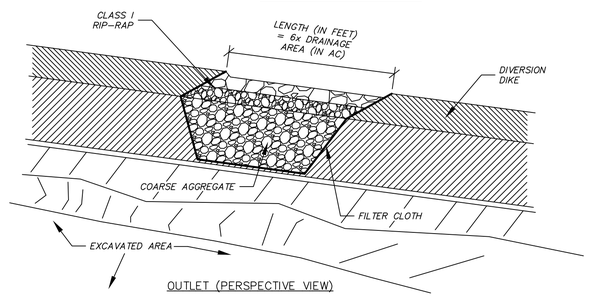
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)
DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

DETAIL OF INLET SEDIMENT CONTROL DEVICE

NOT TO SCALE



CROSS SECTION OF OUTLET

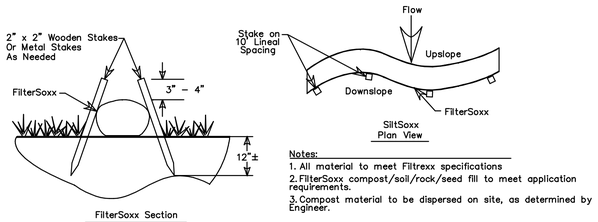


OUTLET (PERSPECTIVE VIEW)

NOTES:
1. COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
2. FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
3. CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
4. THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
5. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
6. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

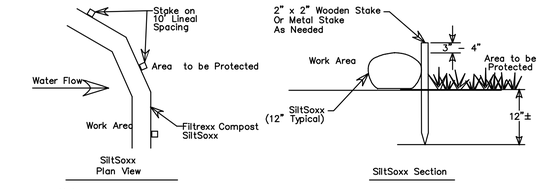
TEMPORARY SEDIMENT TRAP

NOT TO SCALE



Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details



Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SiltSoxx Details

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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CIVIL ENGINEERING
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PROJECT:
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40 UNIT
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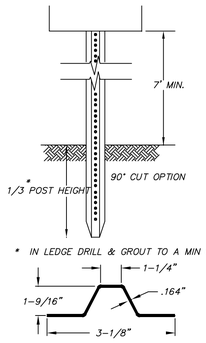


R1-1
30" x 30"

W14-2
30" x 30"

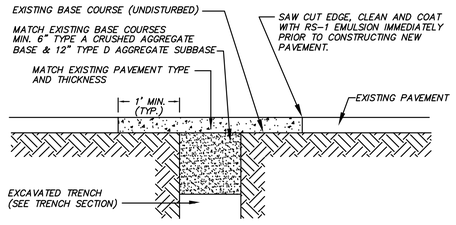
NOTE:
1. ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN

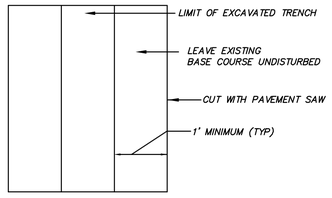
BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY.
ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

SIGN LEGEND & SIGN POST

NOT TO SCALE



SECTION



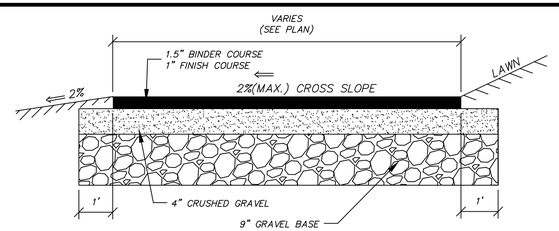
PLAN

ROADWAY TRENCH PATCH DETAIL

NOT TO SCALE

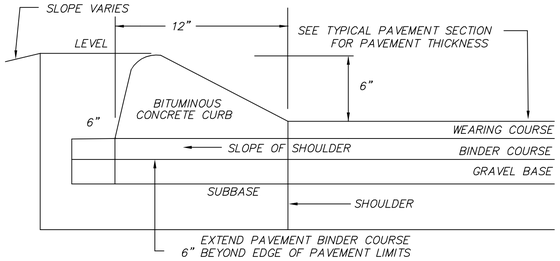
MAIL KIOSK DETAIL

NOT TO SCALE



BITUMINOUS CONCRETE WALK

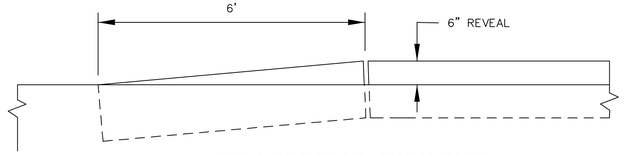
NOT TO SCALE



BITUMINOUS SLOPED CURB

NOT TO SCALE

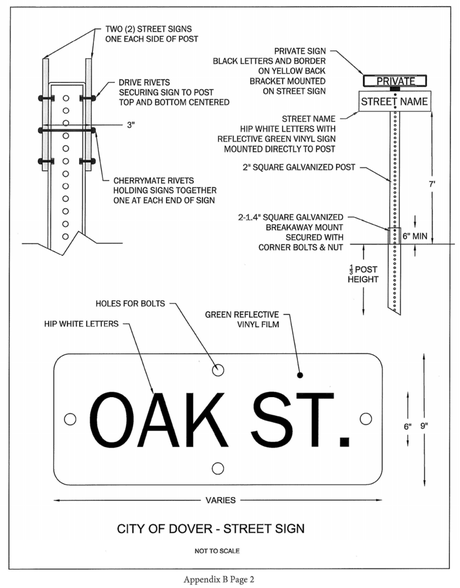
GRANITE CURB & MORTAR JOINTS
SLOPE LAST SECTION TO MEET EXISTING GROUND



SIMILAR TREATMENT BOTH SIDES OF OPENING

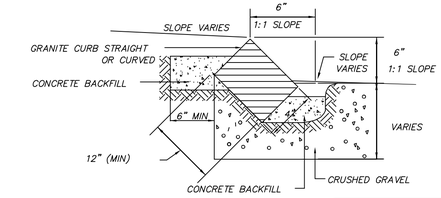
"TIP-DOWN" CURB DETAIL

NOT TO SCALE



CITY OF DOVER - STREET SIGN

NOT TO SCALE

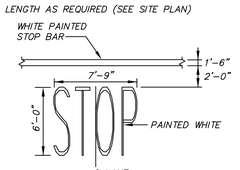


NOTES
1. ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
2. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
3. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
OVER 110'	8'

SLOPED GRANITE CURBING

NOT TO SCALE

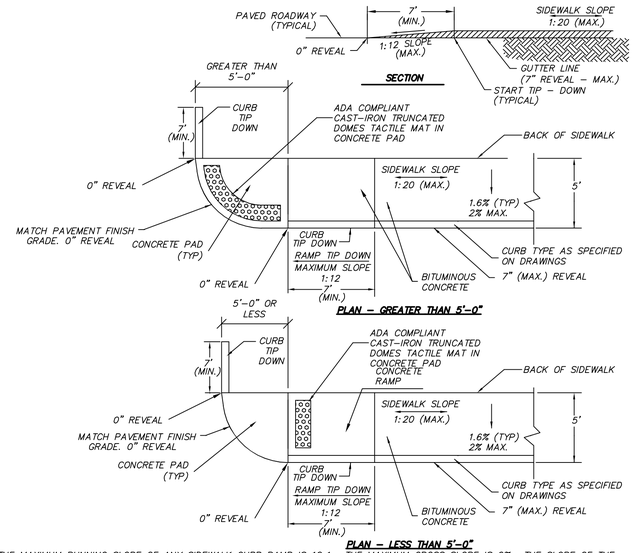


NOTE: PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS SHOWN ON THE PLANS. APPLY TWO COATS.

STOP BAR & LEGEND

PAVEMENT MARKINGS

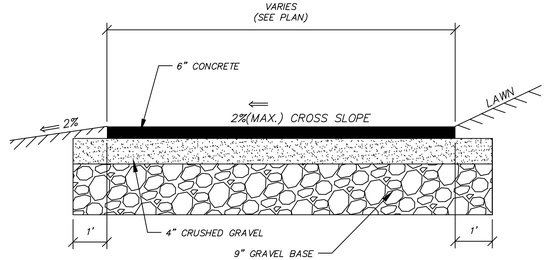
NOT TO SCALE



1. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1. THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 24" FROM THE ROADWAY CURBLINE.
3. INTERCEPT DRAINAGE ALONG THE CURB IN ADVANCE OF SIDEWALK CURB RAMP OF LANDINGS. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED IN OR AT THE BASE OF SIDEWALK CURB RAMPS, OR LANDINGS.
4. BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING EXCLUSIVE OF THE FLARED SIDES SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
5. THE SURFACE OF A PERPENDICULAR SIDEWALK CURB RAMP OR THE LANDING OF A PARALLEL SIDEWALK CURB RAMP SHALL CONTRAST VISUALLY WITH THE ADJOINING SIDEWALK SURFACE, EITHER ASPHALT/LIGHT-COLORED CONCRETE OR LIGHT-COLORED CONCRETE/DARK-STAINED CONCRETE. THE CONCRETE SURFACE SHALL BE SLIP RESISTANT.
6. INSTALL DETECTABLE WARNINGS TACTILE MAT (TRUNCATED DOMES) AT THE LOCATIONS SHOWN. DETECTABLE WARNINGS SHALL MEASURE 24" IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE SIDEWALK RAMP AND THE EDGE NEAREST THE CURBLINE SHALL BE LOCATED 6" - 8" FROM THE FACE OF CURBLINE.
7. PROVIDE DETECTABLE WARNING SURFACE ANYTIME THAT A CURB RAMP, BLENDED TRANSITION OR LANDING CONNECTS TO A STREET.
8. WHERE BOTH ENDS OF THE BOTTOM GRADE ARE LESS THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNING PANELS ON THE RAMP SURFACE AT THE BOTTOM OF THE RAMP. WHERE EITHER END OF THE BOTTOM GRADE IS GREATER THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNING AT THE BOTTOM OF THE LANDING.

SIDEWALK TIP DOWN AT CURBED RADIUS PAD

NOT TO SCALE



CONCRETE WALK

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

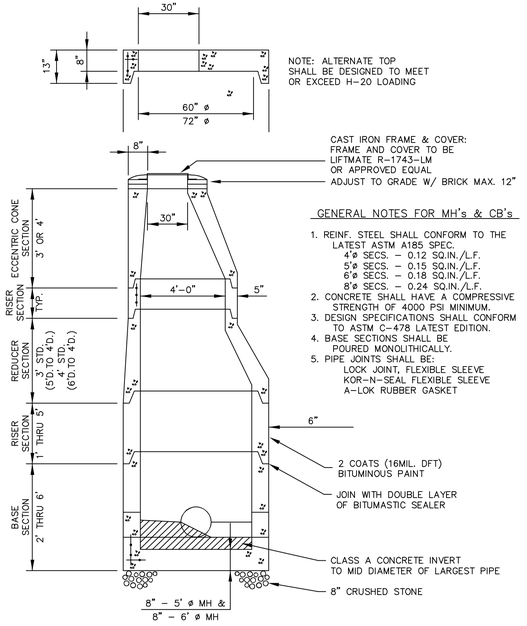
NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY: SJH
PROJECT NO: 19038
FILE: SITE.DWG

DETAILS SHEET

APPLICANT: MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT: LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

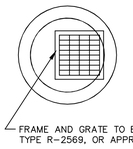


GENERAL NOTES FOR MH's & CB's

1. REINF. STEEL SHALL CONFORM TO THE LATEST ASTM A185 SPEC.
   4'ø SECS. – 0.12 SQ.IN./L.F.
   5'ø SECS. – 0.15 SQ.IN./L.F.
   6'ø SECS. – 0.18 SQ.IN./L.F.
   8'ø SECS. – 0.24 SQ.IN./L.F.
2. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI MINIMUM.
3. DESIGN SPECIFICATIONS SHALL CONFORM TO ASTM C-478 LATEST EDITION.
4. BASE SECTIONS SHALL BE POURED MONOLITHICALLY.
5. PIPE JOINTS SHALL BE:
   LOCK JOINT, FLEXIBLE SLEEVE
   KOR-N-SEAL FLEXIBLE SLEEVE
   A-LOK RUBBER GASKET

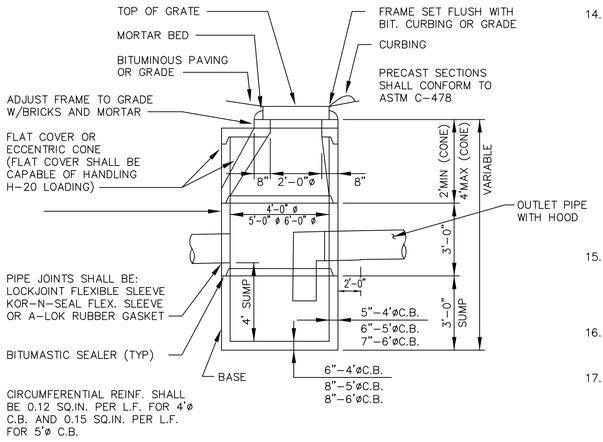
STANDARD 4 FT. DIA. MANHOLE

NOT TO SCALE



GRATE DETAIL

NOT TO SCALE



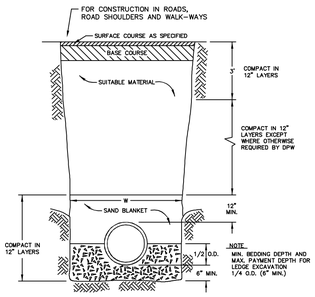
PRE-CAST REINFORCED CATCH BASIN

NOT TO SCALE

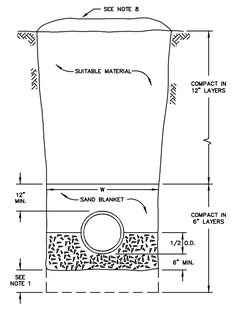
SPECIFICATIONS

1. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT), "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION"; HEREINAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS".
2. CATCH BASINS AND MANHOLES SHALL BE PRE-CAST REINFORCED CONCRETE DESIGNED BY AN ENGINEER REGISTERED IN NEW HAMPSHIRE, AND ABLE TO WITHSTAND LOADINGS OF 8 TONS (H20 LOADING).
3. MANHOLES SHALL HAVE CAST IRON FRAMES AND COVERS WITH 30" INSIDE DIAMETER OPENINGS. A 3-INCH (MINIMUM) LETTER "D" FOR DRAIN SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
4. CATCH BASINS AND MANHOLES SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK. MAXIMUM ADJUSTMENT TO GRADE SHALL BE 12 INCHES. FRAMES SHALL BE SET ON A FULL BED OF MORTAR, TRUE TO GRADE AND CONCENTRIC WITH THE MASONRY. ALL VOIDS BETWEEN THE TOP OF THE STRUCTURE AND THE BOTTOM FLANGE OF THE FRAME SHALL BE COMPLETELY FILLED TO MAKE A WATERTIGHT FIT. A RING OF MORTAR AT LEAST ONE INCH THICK AND PITCHED TO SHED WATER AWAY FROM THE FRAME, SHALL BE PLACED OVER AND AROUND THE OUTSIDE OF THE BOTTOM FLANGE. THE MORTAR SHALL EXTEND TO THE OUTER EDGE OF THE MASONRY ALL AROUND ITS CIRCUMFERENCE AND SHALL BE FINISHED SMOOTH. NO VISIBLE LEAKAGE WILL BE PERMITTED.
5. INVERT CHANNELS OF SEWER MANHOLES SHALL BE FORMED SMOOTHLY TO THE LARGEST PIPE RADIUS. CHANGES IN GRADE SHALL BE FORMED SMOOTHLY AND EVENLY. THE FLOOR OF THE STRUCTURE OUTSIDE THE CHANNELS SHALL BE SLOPED TOWARDS THE CHANNELS AT APPROXIMATELY 1/2 INCH PER FOOT. THE FLOOR AT THE CHANNEL SHALL MATCH THE CROWN OF THE LARGEST PIPE.
6. TRENCH CONSTRUCTION WILL CONFORM WITH SECTION 603.3.1 OF THE STANDARD SPECIFICATIONS (1974).
7. WOOD SHEETING OR A SUITABLE TRENCH BOX SHALL BE USED TO SUPPORT THE TRENCH AS NECESSARY. IF WOOD SHEETING IS USED, IT SHALL BE DRIVEN AT A DISTANCE OF 1 FOOT FROM THE OUTSIDE DIAMETER OF THE PIPE TO A DEPTH 6 INCHES BELOW THE INVERT OF THE PIPE. WOOD SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE, BUT NOT GREATER THAN 3 FEET BELOW THE FINISHED GRADE.
8. BEDDING SHALL CONFORM WITH SECTION 603.3.2 OF THE STANDARD SPECIFICATIONS (1974).
9. BACKFILL MATERIAL WILL CONFORM WITH SECTION 603.3.5 OF THE STANDARD SPECIFICATIONS (1974) AND, IN ADDITION, SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, FROZEN MATERIAL, ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. BACKFILL SHALL NOT BE PLACED ON FROZEN OR PREVIOUSLY FROZEN MATERIAL.
10. ALL BACKFILL AND BEDDING COMPACTION SHALL MEET THE REQUIREMENTS OF AASHTO 99 METHOD C. DENSITY SHALL BE 95 PERCENT. COMPACTION SHALL BE 6 INCH LIFTS FOR BEDDING AND BACKFILL TO A PLANE 1 FOOT ABOVE THE PIPE AND IN 12 INCH LIFTS THEREAFTER BY AN APPROVED MECHANICAL COMPACTOR.
11. SHOULD FROZEN MATERIAL BE ENCOUNTERED, IT SHALL NOT BE PLACED IN THE BACKFILL NOR SHALL BACKFILL BE PLACED UPON FROZEN MATERIAL. PREVIOUSLY FROZEN MATERIAL SHALL BE REMOVED AS REQUIRED BEFORE NEW BACKFILL IS PLACED.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO FRAMES AND GRATES DURING AND FROM THE TIME OF REMOVAL FROM THE EXISTING STRUCTURE TO AND DURING THE TIME OF RESETTING, AND SHALL REPLACE IN KIND ANY DAMAGED FRAMES OR GRATES AT NO ADDITIONAL COMPENSATION.
13. ALL TRENCHES WILL BE COVERED AND DEBRIS, INCLUDING ANY REJECTED MATERIALS, SHALL BE REMOVED DAILY. STRICT SAFETY PRECAUTIONS SHALL BE MAINTAINED AT ALL TIMES.
14. LOCATION OF UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE.
    A) THE CONTRACTOR SHALL, 48 HOURS PRIOR TO CONSTRUCTION, NOTIFY THE UTILITY COMPANIES AND HAVE ALL UTILITIES IN THE VICINITY OF THE CONSTRUCTION MARKED IN THE FIELD.
    B) AFTER THE UTILITIES HAVE BEEN LOCATED AND PRIOR TO CONSTRUCTION, THE CONTRACTOR WITH THE ENGINEER, SHALL LAYOUT THE PROPOSED DRAINAGE SYSTEM IN THE FIELD AND RECTIFY ANY UTILITY CONFLICTS WHICH MAY BE FOUND.
    C) ANY CONFLICTS WITH UTILITIES FOUND DURING CONSTRUCTION BY THE CONTRACTOR SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER AND THE UTILITY COMPANY AND PROPERLY RECTIFIED.
    D) THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF REPAIR FOR ANY UTILITIES DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY TO REPAIR ANY DAMAGES, HOWEVER, THE CONTRACTOR MAY MAKE APPROPRIATE REPAIRS WITH THE UTILITY COMPANY'S PERMISSION.
15. COMPLETE SHOP DRAWINGS FOR PIPE, MANHOLES, CATCH BASINS, FRAMES, GRATES AND COVERS SHALL BE SUBMITTED IN TRIPLICATE FOR APPROVAL BY THE ENGINEER PRIOR TO THE START OF CONSTRUCTION. EACH SHOP DRAWING SHALL BE CHECKED AND INITIALIZED BY THE CONTRACTOR TO INDICATE APPROVAL BEFORE IT IS SUBMITTED TO THE ENGINEER.
16. SHOP DRAWINGS FOR FLAT CONCRETE COVERS SHALL BE STAMPED PRIOR TO SUBMISSION FOR APPROVAL BY A NEW HAMPSHIRE REGISTERED PROFESSIONAL ENGINEER.
17. BRICK MASONRY FOR SETTING FRAMES AND BRICK AND MORTAR PLUGS SHALL CONFORM TO THE STANDARD SPECIFICATION SECTION 604.2.4.

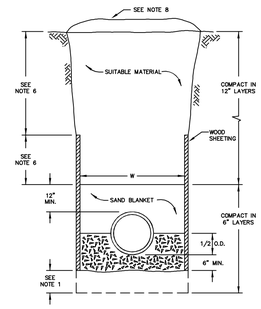
STANDARD TRENCH SECTION



LEDGE CONSTRUCTION



EARTH CONSTRUCTION



EARTH CONSTRUCTION WITH SHEETING

NOTES:

1.) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. SEE ALSO NOTE 7.

2.) BEDDING : SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90 – 100% PASSING	3/4 INCH SCREEN
20 – 55% PASSING	3/8 INCH SCREEN
0 – 10% PASSING	#4 SIEVE
0 – 5% PASSING	#8 SIEVE

– CRUSHED STONE 1/2 INCH – 1 1/2 INCH MAY BE USED INSTEAD OF SCREENED GRAVEL WHERE ALLOWED BY THE ENGINEER.

3.) SAND BLANKET : CLEAN SAND FREE FROM ORGANIC MATTER SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE.

4.) SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALK-WAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY, WILL BE PRESERVED.

5.) BASE COURSE : IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, (D.O.T.).

6.) WOOD SHEETING : IF REQUIRED. WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

7.) W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.

8.) FOR CROSS COUNTRY CONSTRUCTION , BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

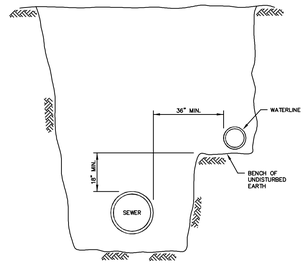
9.) CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000ø) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER : 5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE: 1 INCH

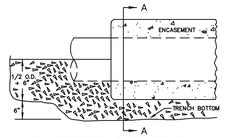
10.) NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION (NH DES) DESIGN STANDARDS REQUIRE 10 FT. SEPARATION. HOWEVER, SHOULD CONSTRUCTION OPERATIONS REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FT. HORIZONTAL FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICABLE TO RELOCATE THE SEWER, THE FOLLOWING METHODS OF PROTECTION MUST BE EMPLOYED.

A. IF THE WATERLINE CAN BE KEPT AT LEAST 18 INCHES ABOVE AND 3 FEET TO ONE SIDE OF THE SEWER, AS SHOWN AND SUPPORTED ON A BENCH OF ORIGINAL SOIL, NO OTHER PROTECTION IS REQUIRED.

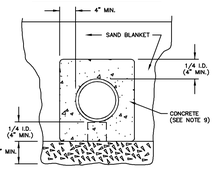
11.) IF FULL CASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.



WATER AND SEWER IN SAME TRENCH



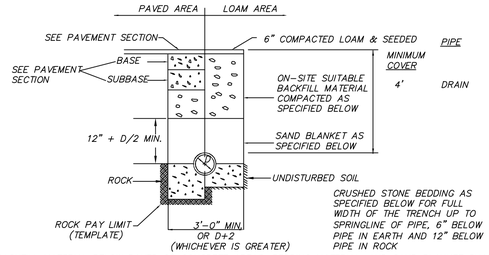
VIEW SHOWING TRENCH BOTTOM CHANGE AT ENCASEMENT



SECTION A-A

CONCRETE FULL ENCASEMENT

(SEE NOTE 11)



BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET & BEDDING

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15
(FOR WATER MAIN BEDDING)	

3/4" CRUSHED STONE BEDDING

SIEVE SIZE	% FINER BY WEIGHT
1"	100
3/4"	90 – 100
1/2"	20 – 50
3/8"	0 – 20
# 4	0 – 5

DRAINAGE TRENCH

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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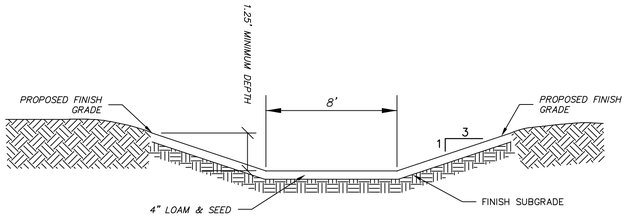
DETAIL SHEET

27



PRE TREATMENT SWALE

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.

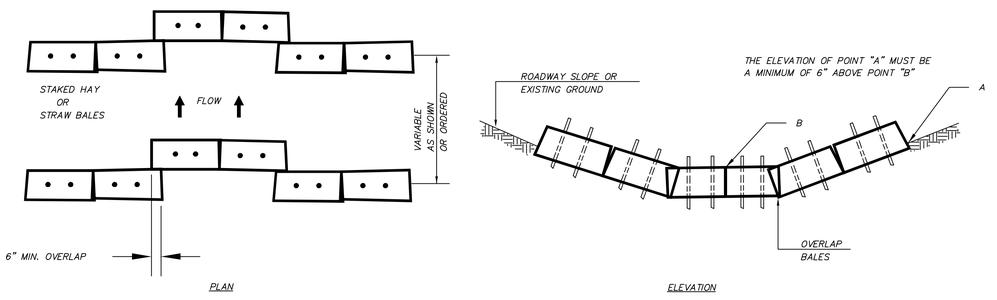
7. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

8. PERIODIC APPLICATIONS OF LIME AND FERTILIZER MAY BE NEEDED TO MAINTAIN VIGOROUS GROWTH.

PRE TREATMENT/GRASSED SWALE

NOT TO SCALE

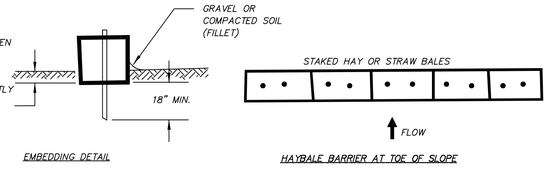
STRUCTURE	LENGTH (FT)	WIDTH	DEPTH	INV.IN	INV.OUT	SLOPE (FT/FT)
PTS1	75.0	8.0	1.25	99.0'	97.5'	0.020
1	50.0	4.0	1.5	101.0	100.5	0.010
2	25.0	5.0	1.0	97.5	96.0	0.060
3	60.0	6.0	1.0	92.75	92.0	0.0125



HAYBALE GRADE STABILIZATION STRUCTURE

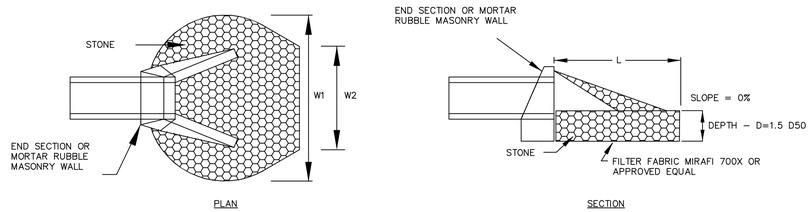
CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.

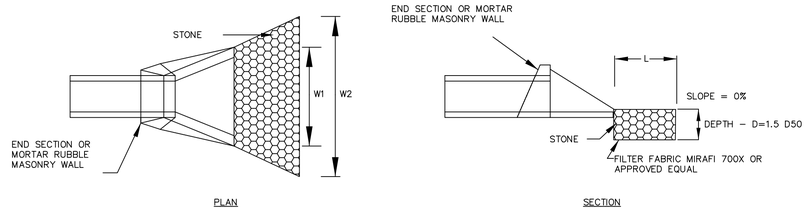


HAYBALE NOTES AND DETAILS

NOT TO SCALE



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO DEFINED CHANNEL



STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO FLAT AREA, NON DEFINED CHANNEL

MAINTENANCE

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

STONE GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100	1.5 TO 2.0 D50
85	1.3 TO 1.8 D50
50	1.0 TO 1.5 D50
15	0.3 TO 0.5 D50

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

RIP-RAP	OUTLET FROM	OUTLET TO	W1(ft)	W2(ft)	L(ft)	D50(in)	CHANNEL TYPE
1	PDMH4	IB1	16	4	23	6	DEFINED
2	PIB1	WP2	17	5	23	6	DEFINED
3	PWP2	SWALE	18	6	25	9	DEFINED
4	PDMH5	PTS1	20	8	23	6	DEFINED

RIP RAP OUTLET PROTECTION

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

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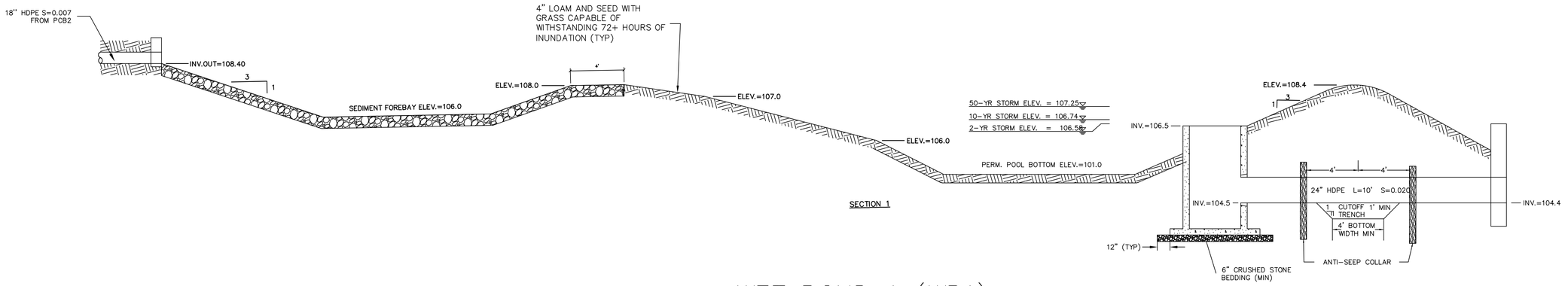
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

DETAIL SHEET

APPLICANT: MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT: LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

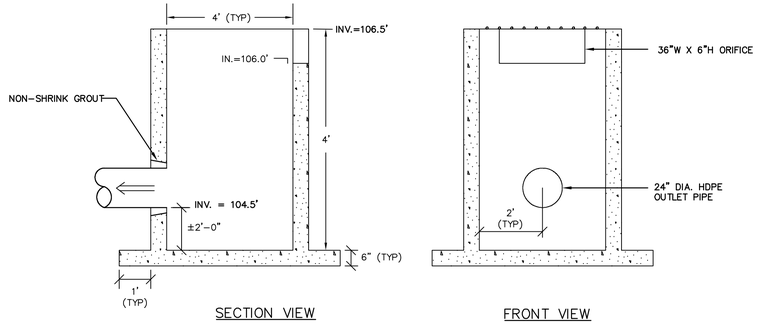
28



SECTION 1

WET POND 1 (WP1)

NOT TO SCALE



SECTION VIEW FRONT VIEW

NOTE:

1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.

OUTLET STRUCTURE WET POND 1 (OS-WP1) DETAIL

NOT TO SCALE

DETENTION POND CONSTRUCTION NOTES

DETENTION AREA EARTH EMBANKMENT:

1 SEE GRADING PLAN FOR BERM WIDTHS.
2 SIDE SLOPES – THREE HORIZONTAL TO ONE VERTICAL (3:1) OR UNLESS OTHERWISE NOTED.
3 FILL MATERIALS SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOD, ROOTS, FROZEN SOIL, STONES MORE THAN 6 INCHES IN DIAMETER (EXCEPT FOR ROCK FILLS), AND OTHER OBJECTIONABLE MATERIAL.
4 FILL MATERIALS SHALL BE A MIXTURE OF STONES (NOT EXCEEDING 6" IN DIAMETER) AND A FINE SANDY SILT MATERIAL.
5 THE SOIL USED FOR THE SEDIMENT FOREBAY BERM SHALL HAVE A MINIMUM PERCOLATION RATE OF 10 MINUTES AN INCH.
6 SELECTED BACKFILL MATERIAL SHALL BE PLACED AROUND STRUCTURES, PIPE CONDUITS, AND ANTISEEP COLLARS AT ABOUT THE SAME RATE ON ALL SIDES TO PREVENT DAMAGE FROM UNEQUAL LOADING.

DETENTION AREA BERM BASE PREPARATION:

1 THE BASE AREA SHALL BE CLEARED OF TREES, LOGS, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND RUBBISH. IF NEEDED TO ESTABLISH VEGETATION, THE TOPSOIL AND SOD SHALL BE STOCKPILED AND SPREAD ON THE COMPLETED BERM. THE BASE AREA SHALL BE THOROUGHLY SCARIFIED BEFORE PLACEMENT OF MATERIAL.
2 REMOVE ALL SOFT ORGANIC MATTER, PEAT, DEBRIS AND FOREIGN MATERIAL TO A DEPTH AS NEEDED (1' MIN) TO REACH AN UNYIELDING BASE OF VIRGIN SOIL.

EXECUTION:

1 FILL MATERIALS SHALL BE PLACED IN HORIZONTAL 12" (MAX.) LIFTS TO FULL WIDTHS AS SHOWN ON THE DESIGN PLAN.
2 FILL MATERIALS SHALL BE FRESHLY PLACED PRIOR TO COMPACTION.
3 ALL FILLS SHALL BE COMPACTED BY MECHANICAL VIBRATORY COMPACTION TO 95% PROCTOR DENSITY.
4 FILL SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS EXCEPT WHERE OPENINGS OR SECTIONALIZED FILLS ARE REQUIRED. IN THOSE CASES, THE SLOPE OF THE BONDING SURFACES BETWEEN THE EMBANKMENT IN PLACE AND THE EMBANKMENT TO BE PLACED SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL. PLACE THE MORE IMPERVIOUS SOIL (HIGHER PERCENTAGE PASSING THE #200 SIEVE) IN THE UPSTREAM TWO-THIRDS (2/3) OF THE BERM. THE MORE GRANULAR SOIL MATERIAL SHOULD BE PLACED IN THE REMAINING DOWNSTREAM ONE-THIRD PORTION OF THE BERM.
5 INSTALL ANTI-SEEP COLLARS CONCURRENTLY WITH FILL MATERIAL PLACEMENT.
6 INSTALL CUT-OFF TRENCH CONCURRENTLY WITH FILL MATERIAL PLACEMENT. THE CUT OFF TRENCH SHALL BE LOCATED AT OR SLIGHTLY UPSTREAM OF THE CENTER LINE OF THE BERM. IT SHALL EXTEND UP THE ABUTMENTS AS REQUIRED AND BE DEEP ENOUGH TO EXTEND INTO A RELATIVELY IMPERVIOUS LAYER.
7 THE CUTOFF TRENCH SHALL HAVE A BOTTOM WIDTH ADEQUATE TO ACCOMMODATE THE EQUIPMENT USED FOR EXCAVATION, BACKFILL AND COMPACTION OPERATIONS. CUTOFF TRENCH TO BE EXCAVATED AND BACKFILLED PRIOR TO PLACING PIPE.
8 CUTOFF TRENCH SIDE SLOPES SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL.

MOISTURE CONTROL

THE MOISTURE CONTENT OF THE FILL MATERIAL SHALL BE ADEQUATE FOR OBTAINING THE REQUIRED COMPACTION. MATERIAL THAT IS TOO WET SHALL BE DRIED TO MEET THIS REQUIREMENT, AND MATERIAL THAT IS TOO DRY SHALL HAVE WATER ADDED AND MIXED UNTIL THE REQUIREMENT IS MET.

COMPACTION

FILL ADJACENT TO STRUCTURES, PIPE CONDUITS, AND ANTI-SEEP COLLARS SHALL BE COMPACTED TO A DENSITY EQUIVALENT TO THAT OF THE SURROUNDING FILL BY MEANS OF HAND TAMPING OR MANUALLY DIRECTED POWER TAMPER OR PLATE VIBRATORS.

MAINTENANCE:

MAINTENANCE IS NECESSARY TO ENSURE THAT THE DETENTION BASINS WILL CONTINUE TO FUNCTION AS ORIGINALLY DESIGNED. THE "HOMEOWNERS ASSOCIATION" IS RESPONSIBLE FOR MAINTAINING THE STRUCTURES AND THE BASIN AREA.

1 EMBANKMENT – THE EMBANKMENT SHOULD BE INSPECTED ANNUALLY TO DETERMINE IF RODENT BURROWS, WET AREAS, OR EROSION OF THE FILL IS TAKING PLACE. IF SUCH ISSUES ARE NOTED THEY SHALL BE RECTIFIED AS SOON AS PRACTICAL.
2 VEGETATION – THE VEGETATED AREAS OF THE BERM SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH. LIME AND FERTILIZER SHOULD BE APPLIED AS NECESSARY AS DETERMINED BY SOIL TESTS. TREES SHOULD BE KEPT OFF THE BERM AREA.
3 INLETS AND OUTLETS – SHOULD BE INSPECTED ANNUALLY AND AFTER EVERY MAJOR STORM. ACCUMULATED DEBRIS AND SEDIMENT SHOULD BE REMOVED.
4 SEDIMENT – SEDIMENT SHOULD BE CONTINUALLY CHECKED IN THE BASIN. WHEN SEDIMENT ACCUMULATIONS REACH THE STRUCTURE INLET ELEVATION 101.5' THEN THE SEDIMENT SHOULD BE REMOVED AND PROPERLY DISPOSED OF.

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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NO.: P19-74A

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PROJECT:
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40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

APPLICANT:
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PORTSMOUTH, NH

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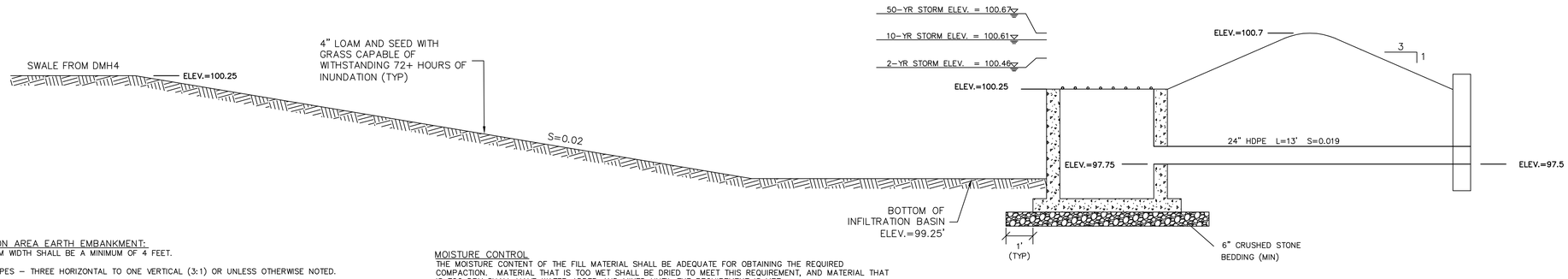


INFILTRATION AREA EARTH EMBANKMENT:

1. TOP BERM WIDTH SHALL BE A MINIMUM OF 4 FEET.

2. SIDE SLOPES – THREE HORIZONTAL TO ONE VERTICAL (3:1) OR UNLESS OTHERWISE NOTED.

3. GRAVEL FILL MATERIALS SHALL BE HARD DURABLE GRANULAR STOCK AND SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOD, ROOTS, FROZEN SOIL, STONES MORE THAN 6 INCHES IN DIAMETER (EXCEPT FOR ROCK FILLS), AND OTHER OBJECTIONABLE MATERIAL.

4. FILL MATERIALS SHALL BE A MIXTURE OF STONES (NOT EXCEEDING 6" IN DIAMETER) AND A FINE SANDY SILT MATERIAL.

5. THE SOIL USED FOR THE BERM SHALL HAVE A MINIMUM PERCOLATION RATE OF 10 MINUTES AN INCH.

6. SELECTED BACKFILL MATERIAL SHALL BE PLACED AROUND STRUCTURES AND PIPE CONDUITS AT ABOUT THE SAME RATE ON ALL SIDES TO PREVENT DAMAGE FROM UNEQUAL LOADING.

DETENTION AREA BERM BASE PREPARATION:

1. THE BASE AREA SHALL BE CLEARED OF TREES, LOGS, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND RUBBISH. IF NEEDED TO ESTABLISH VEGETATION, THE TOPSOIL AND SOD SHALL BE STOCKPILED AND SPREAD ON THE COMPLETED BERM.

2 REMOVE ALL SOFT ORGANIC MATTER, PEAT, DEBRIS AND FOREIGN MATERIAL TO A DEPTH AS NEEDED (1' MIN) TO REACH AN UNYIELDING BASE OF VIRGIN SOIL.

EXECUTION:

1. GRAVEL FILL SHALL BE PLACED IN HORIZONTAL 12" (MAX.) LIFTS TO FULL WIDTHS AS SHOWN ON THE DESIGN PLAN.

2. GRAVEL FILLS SHALL BE FRESHLY PLACED PRIOR TO COMPACTION.

3. ALL FILLS SHALL BE COMPACTED BY MECHANICAL VIBRATORY COMPACTION TO 95% PROCTOR DENSITY.

4. FILL SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS EXCEPT WHERE OPENINGS OR SECTIONALIZED FILLS ARE REQUIRED. IN THOSE CASES, THE SLOPE OF THE BONDING SURFACES BETWEEN THE EMBANKMENT IN PLACE AND THE EMBANKMENT TO BE PLACED SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL. PLACE THE MORE IMPERVIOUS SOIL (HIGHER PERCENTAGE PASSING THE #200 SIEVE) IN THE UPSTREAM TWO-THIRDS (2/3) OF THE BERM. THE MORE GRANULAR SOIL MATERIAL SHOULD BE PLACED IN THE REMAINING DOWNSTREAM ONE-THIRD PORTION OF THE BERM.

MOISTURE CONTROL

THE MOISTURE CONTENT OF THE FILL MATERIAL SHALL BE ADEQUATE FOR OBTAINING THE REQUIRED COMPACTION. MATERIAL THAT IS TOO WET SHALL BE DRIED TO MEET THIS REQUIREMENT, AND MATERIAL THAT IS TOO DRY SHALL HAVE WATER ADDED AND MIXED UNTIL THE REQUIREMENT IS MET.

COMPACTION

FILL ADJACENT TO STRUCTURES, PIPE CONDUITS SHALL BE COMPACTED TO A DENSITY EQUIVALENT TO THAT OF THE SURROUNDING FILL BY MEANS OF HAND TAMPING OR MANUALLY DIRECTED POWER TAMPER OR PLATE VIBRATORS.

MAINTENANCE

MAINTENANCE IS NECESSARY TO ENSURE THAT THE DETENTION BASIN WILL CONTINUE TO FUNCTION AS ORIGINALLY DESIGNED. THE OWNER IS RESPONSIBLE FOR MAINTAINING THE STRUCTURES AND THE BASIN AREA.

1. EMBANKMENT – THE EMBANKMENT SHOULD BE INSPECTED ANNUALLY TO DETERMINE IF RODENT BURROWS, WET AREAS, OR EROSION OF THE FILL IS TAKING PLACE. IF SUCH ISSUES ARE NOTED THEY SHALL BE RECTIFIED AS SOON AS PRACTICAL.

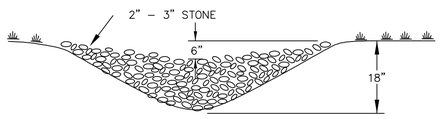
2. VEGETATION – THE VEGETATED AREAS OF THE BERM SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH. LIME AND FERTILIZER SHOULD BE APPLIED AS NECESSARY AS DETERMINED BY SOIL TESTS. TREES SHOULD BE KEPT OFF THE BERM AREA.

3. INLETS AND OUTLETS – SHOULD BE INSPECTED ANNUALLY AND AFTER EVERY MAJOR STORM. ACCUMULATED DEBRIS AND SEDIMENT SHOULD BE REMOVED.

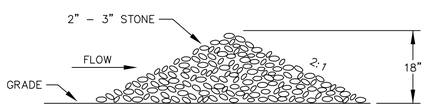
4. SEDIMENT – SEDIMENT SHOULD BE CONTINUALLY CHECKED IN THE BASIN. WHEN SEDIMENT ACCUMULATIONS REACH ELEVATION 99.5' THEN THE SEDIMENT SHOULD BE REMOVED AND PROPERLY DISPOSED OF.

INFILTRATION BASIN 1 (IB1)

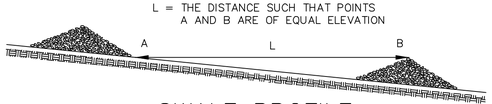
NOT TO SCALE



SWALE SECTION



SWALE PROFILE

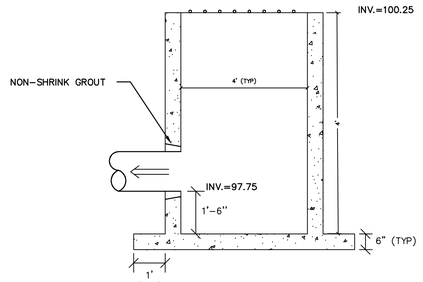


SWALE PROFILE

STONE GRADE STABILIZATION STRUCTURE DETAIL (CHECK DAMS)

NO SCALE

SOURCE: VIRGINIA SOIL AND WATER CONSERVATION COMMISSION



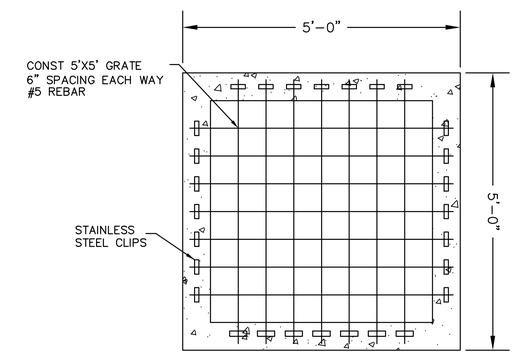
SECTION VIEW

NOTE:

1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.

OUTLET STRUCTURE INFILTRATION BASIN 1 (OS-IB1) DETAIL

NOT TO SCALE



GRATE

TYPICAL INLET TRASH RACK

NOT TO SCALE

NOTE:

1) OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.

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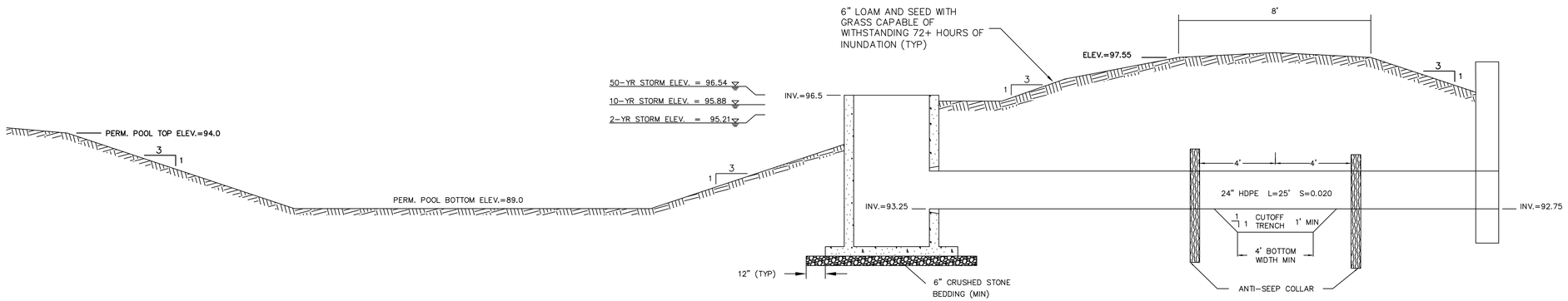
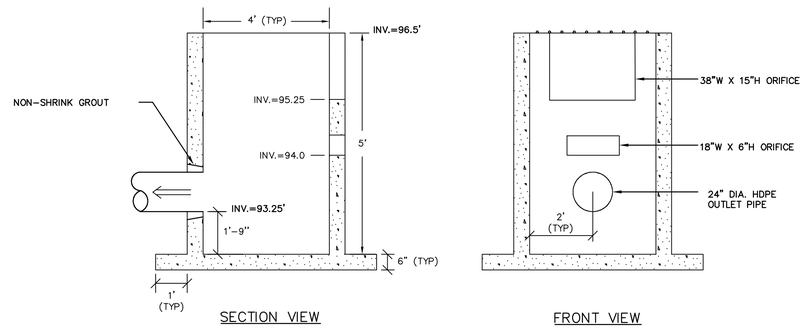


WET POND 2 (WP2)

NOT TO SCALE



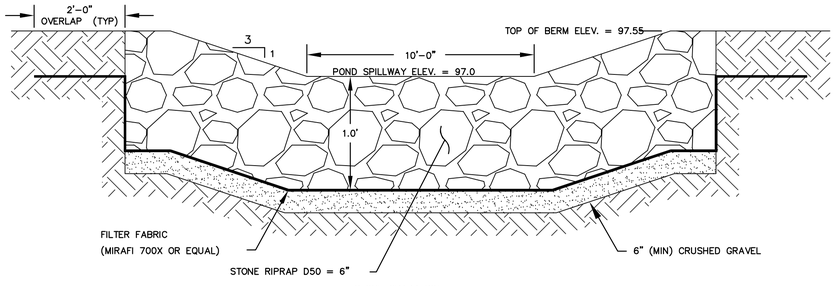
SECTION VIEW FRONT VIEW

NOTE:

1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.

OUTLET STRUCTURE WET POND 2 (OS-WP2) DETAIL

NOT TO SCALE



STONE GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100	1.5 TO 2.0 D50
85	1.3 TO 1.8 D50
50	1.0 TO 1.5 D50
15	0.3 TO 0.5 D50

WET POND 2 SPILLWAY (WP2)

NOT TO SCALE

DETENTION POND CONSTRUCTION NOTES

DETENTION AREA EARTH EMBANKMENT:
1 SEE GRADING PLAN FOR BERM WIDTHS.
2 SIDE SLOPES – THREE HORIZONTAL TO ONE VERTICAL (3:1) OR UNLESS OTHERWISE NOTED.
3 FILL MATERIALS SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOD, ROOTS, FROZEN SOIL, STONES MORE THAN 6 INCHES IN DIAMETER (EXCEPT FOR ROCK FILLS), AND OTHER OBJECTIONABLE MATERIAL.
4 FILL MATERIALS SHALL BE A MIXTURE OF STONES (NOT EXCEEDING 6" IN DIAMETER) AND A FINE SANDY SILT MATERIAL.
5 THE SOIL USED FOR THE SEDIMENT FOREBAY BERM SHALL HAVE A MINIMUM PERCOLATION RATE OF 10 MINUTES AN INCH.
6 SELECTED BACKFILL MATERIAL SHALL BE PLACED AROUND STRUCTURES, PIPE CONDUITS, AND ANTISEEP COLLARS AT ABOUT THE SAME RATE ON ALL SIDES TO PREVENT DAMAGE FROM UNEQUAL LOADING.

DETENTION AREA BERM BASE PREPARATION:
1 THE BASE AREA SHALL BE CLEARED OF TREES, LOGS, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND RUBBISH. IF NEEDED TO ESTABLISH VEGETATION, THE TOPSOIL AND SOD SHALL BE STOCKPILED AND SPREAD ON THE COMPLETED BERM. THE BASE AREA SHALL BE THOROUGHLY SCARIFIED BEFORE PLACEMENT OF MATERIAL.
2 REMOVE ALL SOFT ORGANIC MATTER, PEAT, DEBRIS AND FOREIGN MATERIAL TO A DEPTH AS NEEDED (1' MIN) TO REACH AN UNYIELDING BASE OF VIRGIN SOIL.

EXECUTION:
1 FILL MATERIALS SHALL BE PLACED IN HORIZONTAL 12" (MAX.) LIFTS TO FULL WIDTHS AS SHOWN ON THE DESIGN PLAN.
2 FILL MATERIALS SHALL BE FRESHLY PLACED PRIOR TO COMPACTION.
3 ALL FILLS SHALL BE COMPACTED BY MECHANICAL VIBRATORY COMPACTION TO 95% PROCTOR DENSITY.
4 FILL SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS EXCEPT WHERE OPENINGS OR SECTIONALIZED FILLS ARE REQUIRED. IN THOSE CASES, THE SLOPE OF THE BONDING SURFACES BETWEEN THE EMBANKMENT IN PLACE AND THE EMBANKMENT TO BE PLACED SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL. PLACE THE MORE IMPERVIOUS SOIL (HIGHER PERCENTAGE PASSING THE #200 SIEVE) IN THE UPSTREAM TWO-THIRDS (2/3) OF THE BERM. THE MORE GRANULAR SOIL MATERIAL SHOULD BE PLACED IN THE REMAINING DOWNSTREAM ONE-THIRD PORTION OF THE BERM.
5 INSTALL ANTI-SEEP COLLARS CONCURRENTLY WITH FILL MATERIAL PLACEMENT.
6 INSTALL CUT-OFF TRENCH CONCURRENTLY WITH FILL MATERIAL PLACEMENT. THE CUT OFF TRENCH SHALL BE LOCATED AT OR SLIGHTLY UPSTREAM OF THE CENTER LINE OF THE BERM. IT SHALL EXTEND UP THE ABUTMENTS AS REQUIRED AND BE DEEP ENOUGH TO EXTEND INTO A RELATIVELY IMPERVIOUS LAYER.
7 THE CUTOFF TRENCH SHALL HAVE A BOTTOM WIDTH ADEQUATE TO ACCOMMODATE THE EQUIPMENT USED FOR EXCAVATION, BACKFILL AND COMPACTION OPERATIONS. CUTOFF TRENCH TO BE EXCAVATED AND BACKFILLED PRIOR TO PLACING PIPE.
8 CUTOFF TRENCH SIDE SLOPES SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL.

MOISTURE CONTROL
THE MOISTURE CONTENT OF THE FILL MATERIAL SHALL BE ADEQUATE FOR OBTAINING THE REQUIRED COMPACTION. MATERIAL THAT IS TOO WET SHALL BE DRIED TO MEET THIS REQUIREMENT, AND MATERIAL THAT IS TOO DRY SHALL HAVE WATER ADDED AND MIXED UNTIL THE REQUIREMENT IS MET.

COMPACTION
FILL ADJACENT TO STRUCTURES, PIPE CONDUITS, AND ANTI-SEEP COLLARS SHALL BE COMPACTED TO A DENSITY EQUIVALENT TO THAT OF THE SURROUNDING FILL BY MEANS OF HAND TAMPING OR MANUALLY DIRECTED POWER TAMPER OR PLATE VIBRATORS.

MAINTENANCE:
MAINTENANCE IS NECESSARY TO ENSURE THAT THE DETENTION BASINS WILL CONTINUE TO FUNCTION AS ORIGINALLY DESIGNED. THE "HOMEOWNERS ASSOCIATION" IS RESPONSIBLE FOR MAINTAINING THE STRUCTURES AND THE BASIN AREA.

1 EMBANKMENT – THE EMBANKMENT SHOULD BE INSPECTED ANNUALLY TO DETERMINE IF RODENT BURROWS, WET AREAS, OR EROSION OF THE FILL IS TAKING PLACE. IF SUCH ISSUES ARE NOTED THEY SHALL BE RECTIFIED AS SOON AS PRACTICAL.
2 VEGETATION – THE VEGETATED AREAS OF THE BERM SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH. LIME AND FERTILIZER SHOULD BE APPLIED AS NECESSARY AS DETERMINED BY SOIL TESTS. TREES SHOULD BE KEPT OFF THE BERM AREA.
3 INLETS AND OUTLETS – SHOULD BE INSPECTED ANNUALLY AND AFTER EVERY MAJOR STORM. ACCUMULATED DEBRIS AND SEDIMENT SHOULD BE REMOVED.
4 SEDIMENT – SEDIMENT SHOULD BE CONTINUALLY CHECKED IN THE BASIN. WHEN SEDIMENT ACCUMULATIONS REACH THE STRUCTURE INLET ELEVATION 89.5' THEN THE SEDIMENT SHOULD BE REMOVED AND PROPERLY DISPOSED OF.

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DETAIL SHEET

APPLICANT:
MICHAEL KHAVARI
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PORTSMOUTH, NH

PROJECT:
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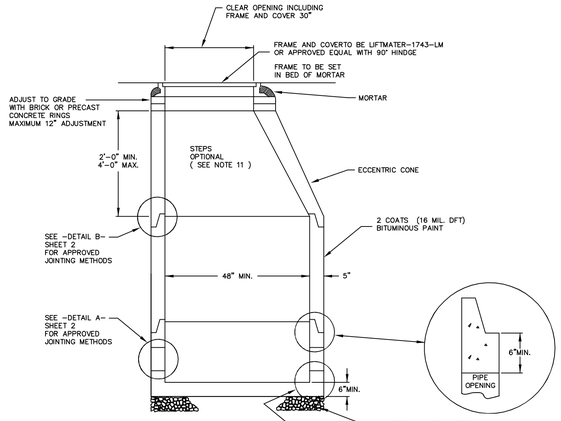
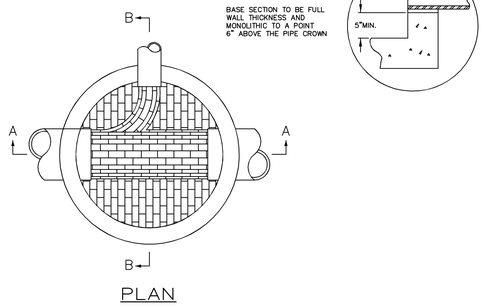


TYPICAL SECTION



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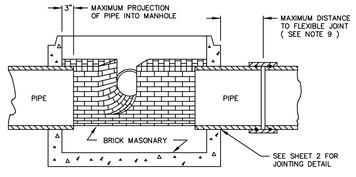
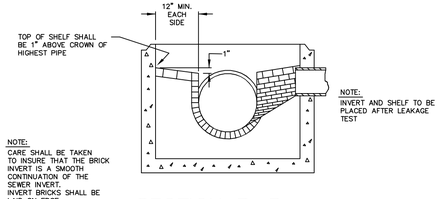


SECTION A—A



SECTION B—B

NOTES:

1.) IT IS THE INTENTION OF THE COMMISSION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE COMMISSION FOR THE INTENDED SERVICE SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT, IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2.) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED.

3.) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

4.) LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS.

5.) INVERTS AND SHELVES. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6.) 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) LETTER "S" FOR SEWER OR "D" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.

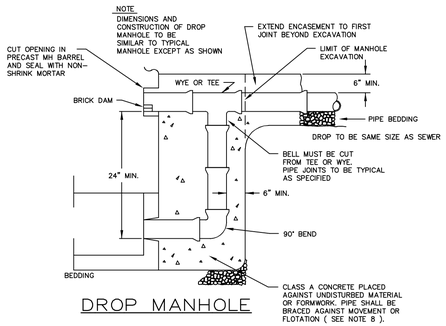
7.) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33
100% PASSING 1 INCH SCREEN 0-10% PASSING # 4 SIEVE
90-100% PASSING 3/4 INCH SCREEN 0- 5% PASSING # 8 SIEVE
20-55% PASSING 3/8 INCH SCREEN
WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1 1/2 INCH TO 1/2 INCH SHALL BE USED.

8.) CONCRETE: FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000#) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS:
CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE: 1 INCH

9.) FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP & CI PIPE - ALL SIZES - 48"
AC & VC PIPE - UP THROUGH 12" DIA -18"
AC & VC PIPE - LARGER THAN 12" DIA - 36"
DI PIPE - NONE REQUIRED
PVC (ASTM 3034) - UP THROUGH 15" DIA. - NONE REQUIRED
PVC (ASTM F 679) - LARGER THAN 15" DIA. - 48" - 60"
PVC (ASTM F 789) - ALL SIZES - 48" - 60"
ABS (ASTM D 2680) - ALL SIZES - SAME AS VC ABOVE

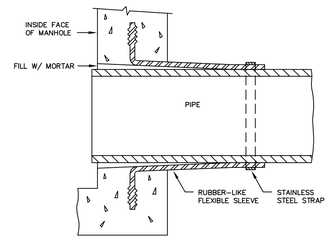
- UNDER SEVERE CONDITIONS WHEN DIFFERENTIAL SETTING CANNOT BE CONTROLLED WITHIN NORMAL LIMITS, VARIATIONS IN THE STUB LENGTH MAY BE NECESSARY. OTHER PLASTIC PIPES SHALL BE REVIEWED ON A CASE BY CASE BASIS.

10.) SHALLOW MANHOLE. IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

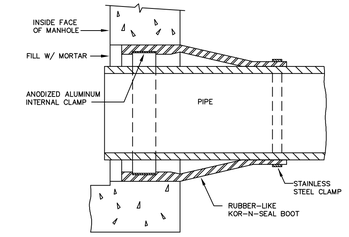


DROP MANHOLE

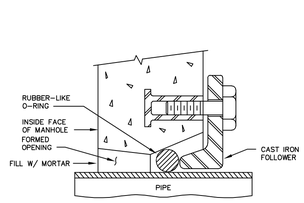
STANDARD MANHOLE SHEET 1



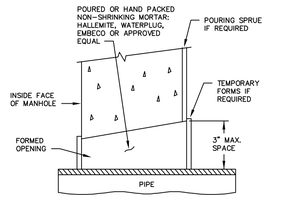
LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR EQUAL)



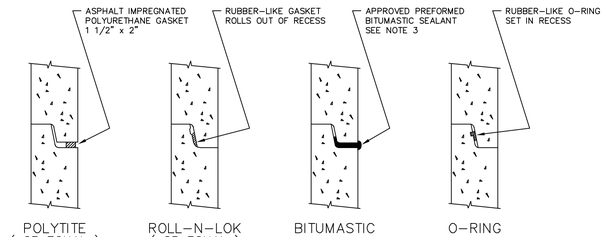
KOR - N - SEAL JOINT SLEEVE
(OR EQUAL)



RES-SEAL
(OR EQUAL)

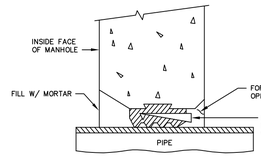


NON-SHRINKING MORTAR

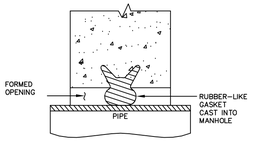


NOTE: ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

DETAIL - B



PRESS-WEDGE II
(OR EQUAL)



A - LOK
(OR EQUAL)

NOTE: ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS

DETAIL - A

NOTES:

1.) HORIZONTAL JOINTS
BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.

2.) PIPE TO MANHOLE JOINTS
SHALL BE ONLY AS APPROVED BY THE ENGINEER AND, IN GENERAL, SHALL BE AS FOLLOWS: ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES; CAST INTO THE WALL OR SECURED WITH STEEL CLAMPS; ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.

3.) FOR BITUMASTIC TYPE JOINTS
THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS:
RAM-NEK
KENT SEAL NO. 2
EZ

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DETAIL SHEET

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PROJECT:
LEATHERS LANE
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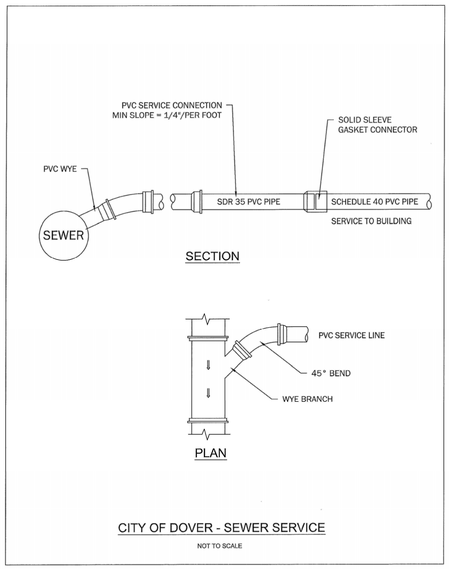
32



CITY OF DOVER - SEWER SERVICE

NOT TO SCALE

NOTES:

1.) MINIMUM SIZE PIPE FOR HOUSE SERVICE SHALL BE FOUR INCHES.

2.) PIPE AND JOINT MATERIALS:
- A) VITRIFIED CLAY PIPE
  - 1 – PIPE AND FITTINGS SHALL BE EXTRA STRENGTH CLAY PIPE CONFORMING TO THE REQUIREMENTS OF ASTM C–700
  - 2 – JOINTS SHALL BE MADE WITH OIL RESISTANT GASKET IN ACCORDANCE WITH ASTM C–425 TYPE III. MANUFACTURERS INSTRUCTIONS FOR INSTALLATION SHALL BE FOLLOWED.
- B) ASBESTOS–CEMENT–NON–PRESSURE SEWER PIPE
  - 1 – PIPE AND FITTINGS SHALL CONFORM TO ASTM TENTATIVE SPECIFICATIONS C 644 TYPE II.
  - 2 – JOINTS SHALL BE OF THE SLEEVE – COUPLING TYPE CONFORMING TO ASTM SPECIFICATIONS C 644 TYPE II. COMPRESSION RINGS SHALL BE OF OIL RESISTANT RUBBER TYPE OR ELASTOMERIC MATERIAL AND SHALL CONFORM TO ASTM SPECIFICATION D 1869. MANUFACTURERS INSTRUCTIONS FOR INSTALLATION SHALL BE FOLLOWED.
- C) CAST – IRON PIPE FITTINGS AND JOINTS
  - 1 – CAST IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE
    - A21 1 THICKNESS DESIGN OF CAST IRON PIPE.
    - A21 4 CEMENT MORTAR LINING FOR CAST IRON PIPE AND FITTINGS
    - A21 6 CAST IRON PIPE CENTRIFUGALLY CAST IN METAL MOLDS FOR WATER OR OTHER LIQUIDS.
    - A21 8 CAST IRON PIPE CENTRIFUGALLY CAST IN SAND LINED MOLDS FOR WATER OR OTHER LIQUIDS.
    - A21 10 CAST IRON FITTINGS, 2 INCHES THROUGH 48 INCHES FOR WATER AND OTHER LIQUIDS.
  - 2 – JOINTS SHALL BE OF THE MECHANICAL OR PUSH–ON TYPE JOINTS AND GASKETS SHALL CONFORM TO
    - A21 11 RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE AND FITTINGS.
- D) DUCTILE – IRON PIPE, FITTINGS AND JOINTS
  - 1 – DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE
    - A21 50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A–536 DUCTILE IRON CASTINGS.
    - A21 51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND–LINED MOLDS FOR WATER OR OTHER LIQUIDS.
  - 2 – JOINTS SHALL BE AS SPECIFIED IN C2 ABOVE, CAST IRON PIPE JOINTS.

3.) DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4.) JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER–TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTORS SHALL BE USED.

5.) TEES OR WYES WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE FOLLOWING MANUFACTURERS INSTRUCTIONS USING A BOLTED, CLAMPED, OR EPOXY – CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 15" DIAMETER. (DOES NOT APPLY TO INSTALLATIONS WHERE 'Ts' & 'Ys' ARE USED).

6.) PIPE INSTALLATION THE PIPE SHALL BE HANDLED, PLACED, AND JOINTED IN ACCORDANCE WITH THE INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE–FILL FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7.) TESTING THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS (PRIOR TO BACKFILLING):
- A) AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND, WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
- B) THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER, TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT.
- C) DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.

LEAKAGE OBSERVED IN ANY OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON–ACCEPTANCE AND THE PIPE SHALL BE DUG–UP IF NECESSARY AND RE–LAID SO AS TO ASSURE WATER TIGHTNESS.

8.) ILLEGAL CONNECTION NOTHING BUT SANITARY WASTE FLOW FROM HOUSE TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS OR SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.

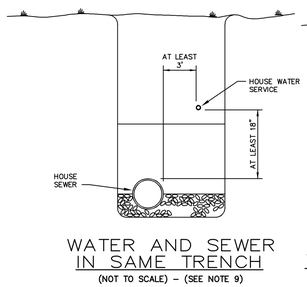
9.) HOUSE WATER SERVICE SHOULD NOT BE LAID IN THE SAME TRENCH AS SEWER SERVICE, BUT WHEN NECESSARY, SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE HOUSE SEWER AS SHOWN.

10.) BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33–67.
100% PASSING 1 INCH SCREEN 90–100% PASSING 3/4 INCH SCREEN
20–55% PASSING 3/8 INCH SCREEN 0– 10% PASSING #4 SIEVE
0– 5% PASSING #8 SIEVE
WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1 1/2 INCH TO 1/2 INCH SHALL BE USED.

11.) LOCATION THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

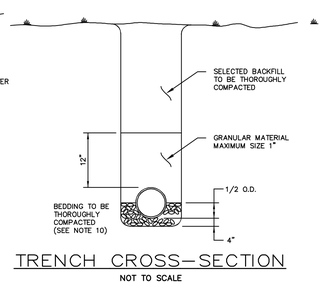
12.) CONCRETE CONCRETE SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS:
CEMENT – 6.0 BAGS / C.Y. WATER – 5.75 GALS. / BAG CEMENT
AGGREGATE – 1 1/2" MAX.

13.) CHIMNEYS IF VERTICAL DROP INTO SEWER IS GREATER THAN 4', A CHIMNEY SHALL BE CONSTRUCTED FOR THE HOUSE CONNECTION.



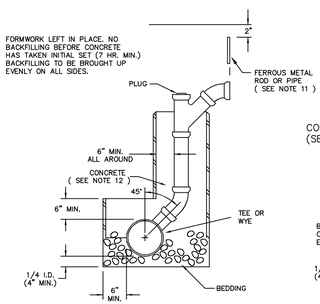
WATER AND SEWER IN SAME TRENCH

(NOT TO SCALE) – (SEE NOTE 9)



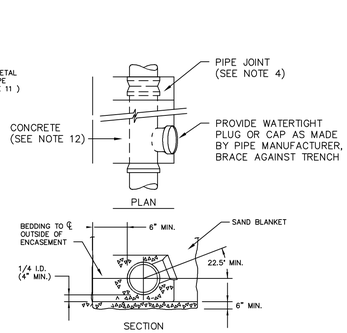
TRENCH CROSS–SECTION

NOT TO SCALE



CHIMNEY

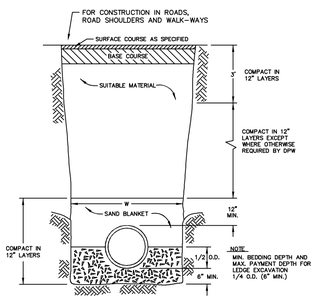
NOT TO SACLE (SEE NOTE 13)



CONCRETE FULL ENCASEMENT

NOT TO SCALE

STANDARD TRENCH SECTION



LEDGE CONSTRUCTION

NOTES:

1.) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. SEE ALSO NOTE 7.

2.) BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90 – 100% PASSING	3/4 INCH SCREEN
20 – 55% PASSING	3/8 INCH SCREEN
0 – 10% PASSING	#4 SIEVE
0 – 5% PASSING	#8 SIEVE

– CRUSHED STONE 1/2 INCH – 1 1/2 INCH MAY BE USED INSTEAD OF SCREENED GRAVEL WHERE ALLOWED BY THE ENGINEER.

3.) SAND BLANKET CLEAN SAND FREE FROM ORGANIC MATTER SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE.

4.) SUITABLE MATERIAL IN ROADS, ROAD SHOULDERS, WALK–WAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY, WILL BE PRESERVED.

5.) BASE COURSE, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, (D.O.T.).

6.) WOOD SHEETING, IF REQUIRED. WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID–DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

7.) W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.

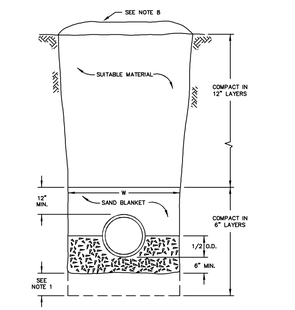
8.) FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

9.) CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000#) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATIONS AS FOLLOWS:
CEMENT: 6.0 BAGS PER CUBIC YARD
WATER : 5.75 GALLONS PER BAG CEMENT
MAXIMUM SIZE OF AGGREGATE: 1 INCH

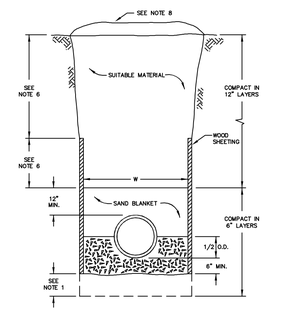
10.) NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION (NH DES) DESIGN STANDARDS REQUIRE 10 FT. SEPARATION. HOWEVER, SHOULD CONSTRUCTION OPERATIONS REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FT. HORIZONTAL FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICABLE TO RELOCATE THE SEWER, THE FOLLOWING METHODS OF PROTECTION MUST BE EMPLOYED.

A. IF THE WATERLINE CAN BE KEPT AT LEAST 18 INCHES ABOVE AND 3 FEET TO ONE SIDE OF THE SEWER, AS SHOWN AND SUPPORTED ON A BENCH OF ORIGINAL SOIL, NO OTHER PROTECTION IS REQUIRED.

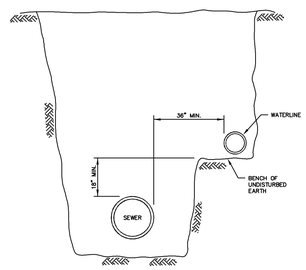
11.) IF FULL CASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.



EARTH CONSTRUCTION

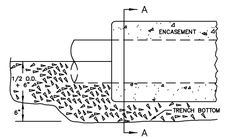


EARTH CONSTRUCTION WITH SHEETING

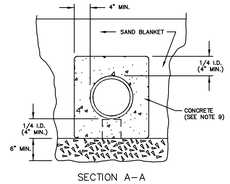


WATER AND SEWER IN SAME TRENCH

(SPECIAL CONDITIONS SEE NOTE 10)



VIEW SHOWING TRENCH BOTTOM CHANGE AT ENCASEMENT



SECTION A–A

CONCRETE FULL ENCASEMENT

(SEE NOTE 11)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19–74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10–20–20
1	REVISED PER TRC COMMENTS	SJH	9–28–20

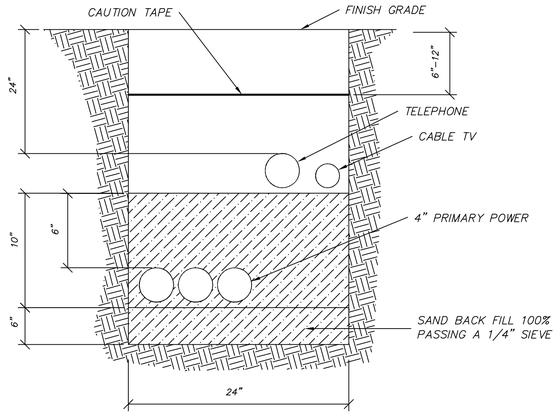
DATE: 8–28–20
SCALE: AS SHOWN
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

DETAIL SHEET

PROJECT: LEATHERS LANE 40 UNIT DETACHED CONDOMINIUM DOVER, NH

APPLICANT: MICHAEL KHAVARI 40 HARRISON AVENUE PORTSMOUTH, NH

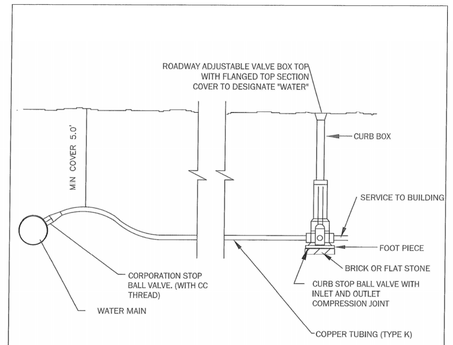
33



1. TELEPHONE CONDUIT SHALL BE 3" SCHEDULE 40 PVC, WITH STEEL SWEEPS AT RISER POLE, 90° BENDS AND AT BUILDING.
2. LEAVE PULL ROPE IN ALL CONDUITS FOR CABLE INSTALLATION.
3. FOR COMPLETE SPECIFICATIONS SEE "PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CONSTRUCTION SPECIFICATIONS FOR UNDERGROUND CONDUIT SYSTEMS".
4. CONTRACTOR SHOULD VERIFY THE NUMBER & SIZE OF CONDUIT WITH THE APPROPRIATE UTILITIES.

UTILITY TRENCH

NOT TO SCALE

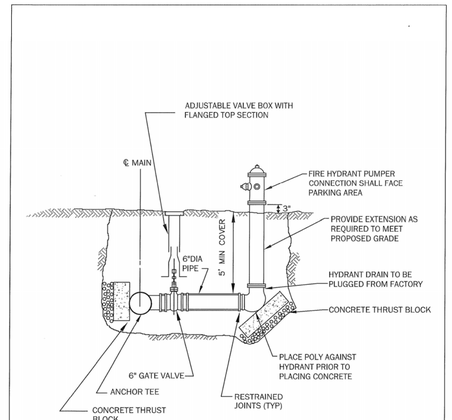


NOTE:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP. CONTRACTOR MAY FORGO WRAPPING PIPE IF THE DUCTILE IRON PIPE IS ZINC-COATED, TEES AND OTHER CONNECTIONS WILL STILL NEED TO BE WRAPPED.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE SDR 9 CTS (BLUE) PLASTIC POLYETHYLENE RATED FOR 250 psi.

CITY OF DOVER - WATER SERVICE CONNECTION

NOT TO SCALE

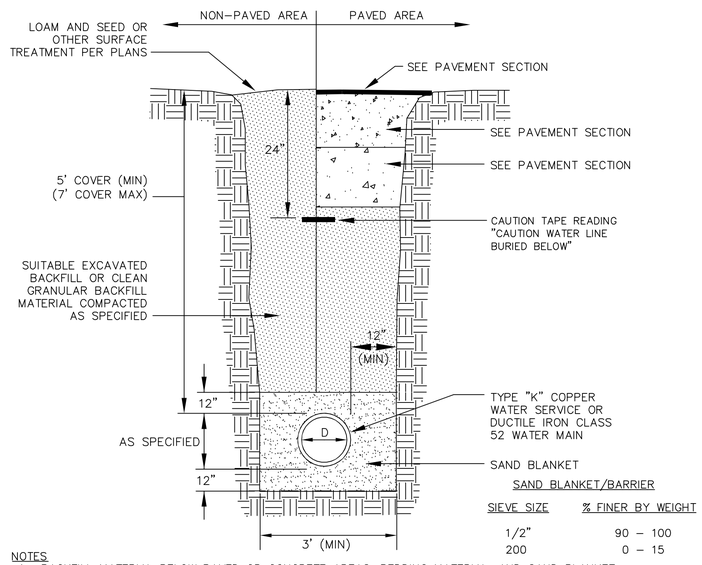


NOTES:

1. FIRE HYDRANT TO BE EDDY 2641.
2. HYDRANT TO BE PAINTED RED.
3. HYDRANT SHALL OPEN LEFT.

CITY OF DOVER - HYDRANT

NOT TO SCALE



SAND BLANKET/BARRIER

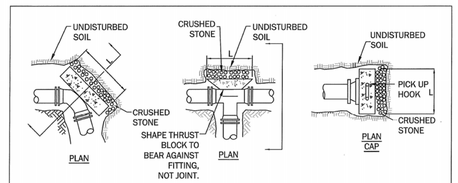
SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

WATER MAIN TRENCH

NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Tees, Caps, Plugs, & Tapping Sleeves	1.05	2.32	4.15	6.37	9.15	16.23
90 Degree Bends	1.48	3.29	5.86	9.01	12.93	22.96
45 Degree Bends	0.80	1.78	3.17	4.88	7.00	12.42
22-1/2 Degree Bends	0.41	0.91	1.62	2.49	3.57	6.33
11-1/4 Degree Bends	0.21	0.46	0.81	1.25	1.79	3.18
System Pressure: 100 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf						

THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 100 PSI. IF THE SYSTEM PRESSURE IS ABOVE 100 PSI, INCREASE THE NOTED AREAS PROPORTIONAL TO THE ACTUAL SYSTEM PRESSURE. FOR EXAMPLE, IF THE ACTUAL SYSTEM PRESSURE IS 160 PSI, MULTIPLY THE ABOVE VALUES BY 160%.

CITY OF DOVER - PRECAST CONCRETE THRUST BLOCK & ANCHOR

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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CIVIL ENGINEERING
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APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

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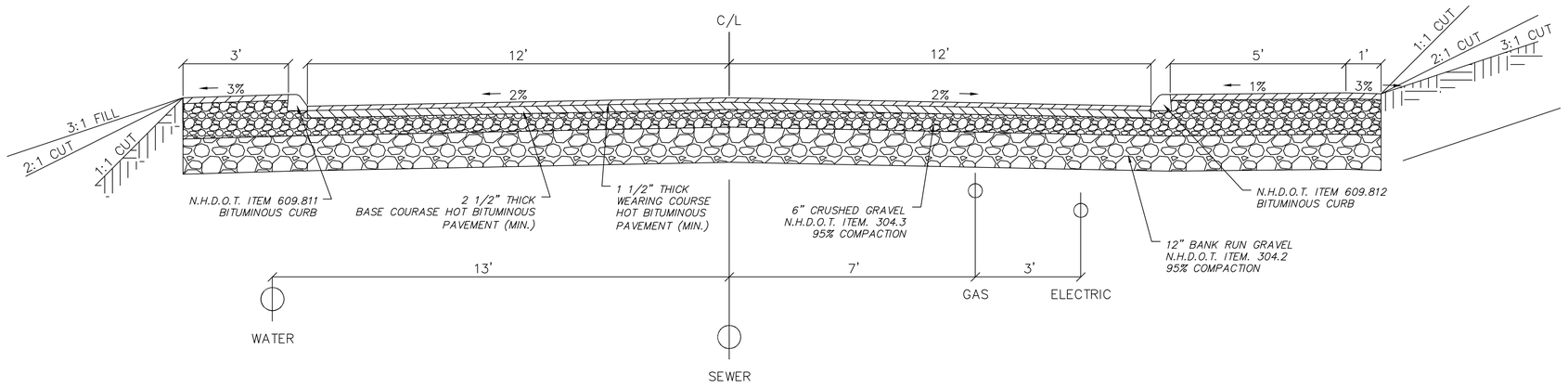
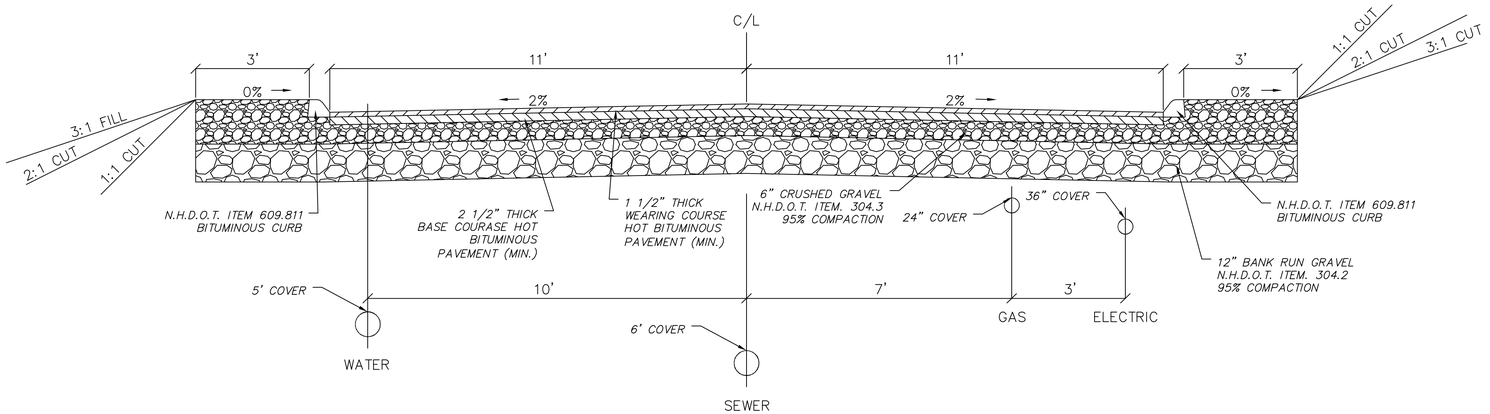


TYPICAL MAIN ROAD (ROAD A) CROSS SECTION

NOT TO SCALE



TYPICAL STUBBY ROADS (B, C, D, E) CROSS SECTION

NOT TO SCALE

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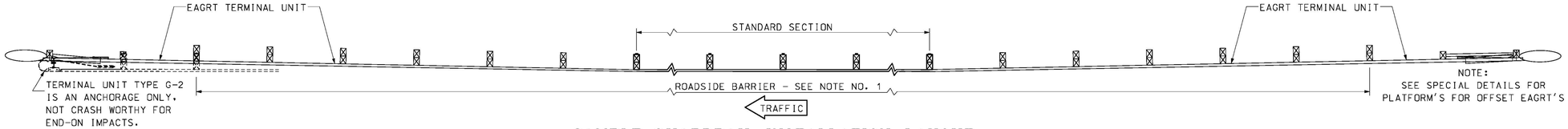
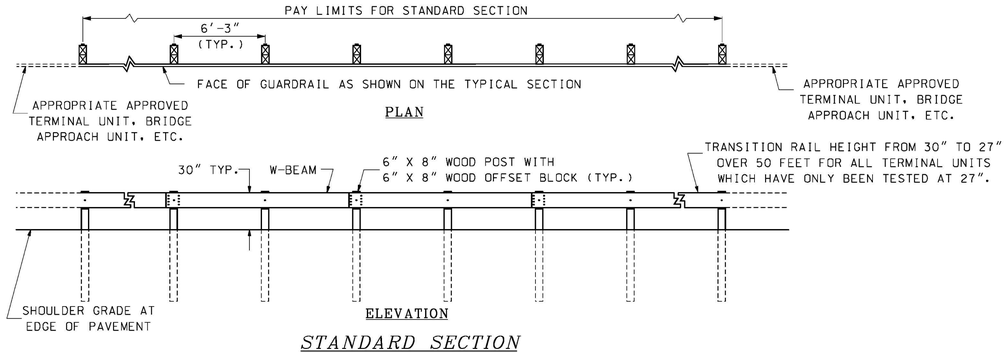
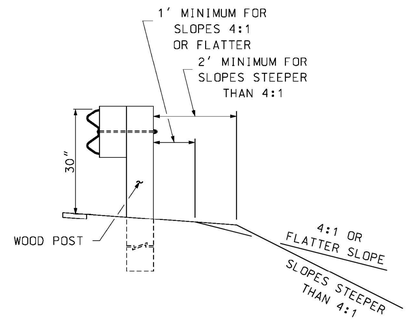


SAMPLE GUARDRAIL INSTALLATION LAYOUT

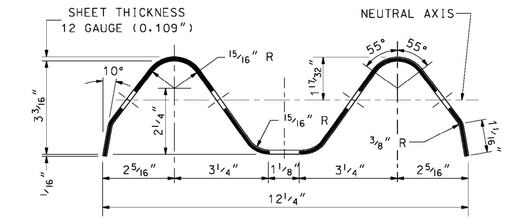


STANDARD SECTION

ITEM: 606.140 - BEAM GUARDRAIL (STANDARD SECTION-WOOD POSTS)
PAID: LINEAR FOOT
USE: REPAIR OF EXISTING STRONG WOOD POST W-BEAM RUNS.

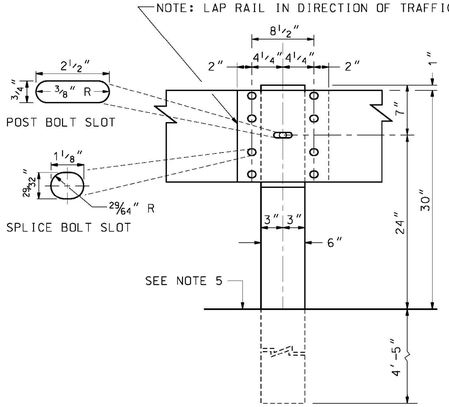


CLARIFICATION DETAIL FOR GENERAL NOTE 6



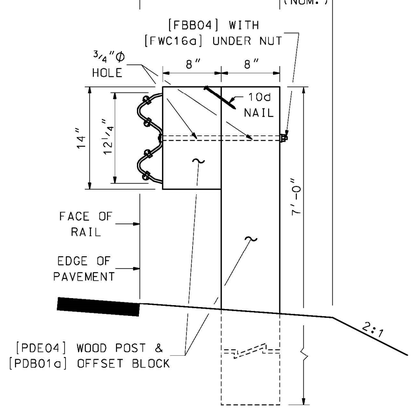
SECTION THRU RAIL ELEMENT

[4 SPACE W-BEAM GUARDRAIL DESIGNATED RWM04a (NOMINALLY 12'-6")]
[8 SPACE W-BEAM GUARDRAIL UNDESIGNATED AT THIS TIME (NOMINALLY 25'-0")]



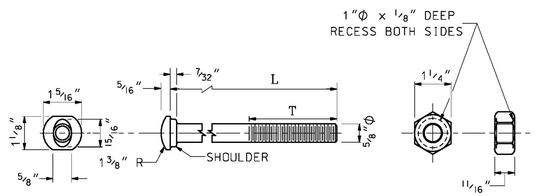
LINE POST ELEVATION VIEW AT BEAM SPLICE

(SHOWN WITHOUT FASTENERS)



TYPICAL SIDE VIEW

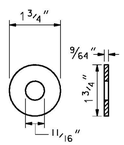
(SHOWN WITH FASTENERS)



DESIGNATOR	L	T	INTENDED USE
FBB01	1 1/4"	FULL LENGTH THREAD	RAIL SPLICE BOLTS
FBB03	10"	4" MIN. THREAD LENGTH	POST BOLT
FBB04	18"	4" MIN. THREAD LENGTH	POST BOLT (WOOD POSTS)

5/8" BUTTON HEAD BOLT AND RECESSED NUT

[FBB01-04]



WASHER

[FWC16a]

GENERAL NOTES

1. THE DEFINITION OF ROADSIDE BARRIER IS PER THE LATEST ADOPTED EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE. EXCLUDED FROM THIS IS THE GATING PORTION OF A GUARDRAIL TERMINAL UNIT OR CRASH CUSHION AS WELL AS THE ENTIRE G-2 TERMINAL UNIT.
2. ITEMS IN BRACKETS [ ] ARE *STANDARD ELEMENTS* DESCRIBED IN AASHTO'S "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE".
3. ONLY USE RECTANGULAR PLATE WASHERS [FWR03] WHERE SHOWN ON THE OTHER STANDARD SHEETS OR AS REQUIRED BY THE MANUFACTURERS FOR THEIR PROPRIETARY PRODUCTS.
4. USE 12'-6" LENGTH RAIL ELEMENTS IN RAIL CURVES OF LESS THAN 100' RADIUS.
5. ESTABLISH RAIL HEIGHT AS FOLLOWS:
   A) SET THE HEIGHT OF RAIL FROM THE EDGE OF THE PAVEMENT (EP) WHEN THE FACE OF RAIL IS AT THE EDGE OF PAVEMENT.
   B) SET THE HEIGHT OF RAIL FROM THE GROUND AT THE FACE OF RAIL WHEN:
      I) THE FACE OF RAIL IS OFFSET FROM THE EP AND THE CROSS SLOPE FROM THE EP TO THE FACE OF RAIL IS 10:1 OR FLATTER OR
      II) THE FACE OF RAIL IS AT THE BACK OF A CURBED SIDEWALK AND THE CURB IS AT THE EDGE OF PAVEMENT
   C) WHEN SITUATIONS OTHER THAN THOSE DESCRIBED IN A OR B ABOVE ARE ENCOUNTERED, EXTABLISH RAIL HEIGHT THROUGH AN ENGINEERING REVIEW TO ENSURE APPROPRIATE SYSTEM PERFORMANCE.
6. USE OF POSTS SHORTER THAN 7', BUT NOT LESS THAN 6'-0" LONG, IS ONLY ALLOWED UNDER THE FOLLOWING CONDITIONS:
   A) WHERE THERE IS A MINIMUM DISTATNCE OF 1' FROM THE BACK OF THE GUARDRAIL POST ALONG A 10:1 OR FLATTER SLOPE TO THE SLOPE BREAK OF A 4:1 OR FLATTER SLOPE OR
   B) WHERE THERE IS A MINIMUM DISTANCE OF 2' FROM THE BACK OF THE GUARDRAIL POST ALONG A 10:1 OR FLATTER SLOPE TO THE SLOPE BREAK OF A STEEPER THAN 4:1 STABLE SOIL OR STONE LINED SLOPE. THE TERM STABLE INCLUDES NOT SHOWING SIGNS OF SLOPE MOVEMENT (SUCH AS DEPRESSIONS. CRACKS PARALLEL TO THE ROADWAY, ETC.) OR ACTIVE EROSION.
7. THE FHWA HAS LISTED OFFSET BLOCKS ON THEIR WEBSITE THAT ARE ELIGIBLE FOR FEDERAL PARTICIPATION PER NCHRP 350 TEST LEVEL 3 CRITERIA. OTHERS MAY BE ADDED UNDER MASH AT TEST LEVEL 3 OR HIGHER IN THE FUTURE. SOME OF THESE OFFSET BLOCKS HAVE OR MAY HAVE DIMENSIONS THAT VARY MORE THAN WOULD BE CONSIDERED WITHIN THE NORMAL CONTEXT OF NOMINAL DIMENSIONS. IN ORDER TO USE ANY OFFSET BLOCKS THAT HAVE OTHER THAN THE NOMINAL DIMENSIONS AS SHOWN ON THE PLANS, THE FOLLOWING APPLIES:
   A) THE FACE OF RAIL SHALL REMAIN AT THE EDGE OF PAVEMENT OR AT THE INDICATED LOCATION AS SHOWN ON THE PLANS, AND
   B) THE DISTANCE FROM THE BACK OF THE POST TO THE BREAK IN THE SLOPE SHALL NOT BE LESS THAN WHAT IS SHOWN ON THE PLANS BUT IT MAY BE MORE.
   C) ALL OTHER REQUIREMENTS OF THE PERTINENT SPECIFICATIONS AND DETAILS REMAIN IN FORCE.

GUARDRAIL STANDARD

BEAM GUARDRAIL STANDARD SECTION-WOOD POSTS & HARDWARE DETAILS

STANDARD NO. GR-2A

REVISION DATE
07-13-2001
06-16-2010
08-19-2015

*.DGN FILE NAME: GR-2A

STANDARD PLANS

New Hampshire DOT Department of Transportation

STANDARD NO. GR-2A

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

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PROJECT: LEATHERS LANE 40 UNIT DETACHED CONDOMINIUM DOVER, NH

GRID NORTH
GPS OBS: 08/19/2019

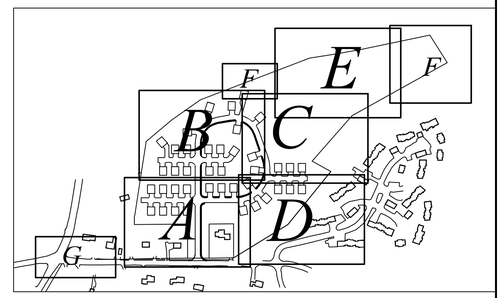
GAS MAIN

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	2	S3	SINGLE	GLEON-AF-01-LED-E1-SL3/ SSS4A25SFN1 (25' AFG)
	4	S4	SINGLE	GLEON-AF-01-LED-E1-SL4/ SSS4A25SFN1 (25' AFG)



KEY PLAN
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P19-74

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Dover, New Hampshire 03820
(603) 749-0443

NO.	REVISION	APP'D	DATE
2	REVISED PER TRC COMMENTS	SJH	10-20-20
1	REVISED PER TRC COMMENTS	SJH	9-28-20

DATE: 8-28-20
SCALE: 1"=80'
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

OVERALL LIGHTING PLAN

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

37

McGraw-Edison

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

SPECIFICATION FEATURES

Construction
Extruded aluminium driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation, 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

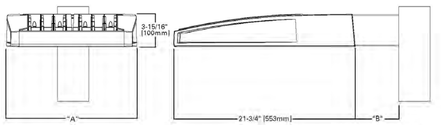
GLEON
GALLEON LED

1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology
CLICK TO LEARN

DIMENSIONS



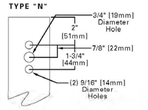
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2](Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



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Powering Business Worldwide

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DLC PREMIUM

CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

TD500020EN
January 17, 2019 2:38 PM

Steel Poles

SSS SQUARE
STRAIGHT STEEL

Catalog #		Type
Project		
Comments		Date
Prepared by		

FEATURES
- ASTM Grade steel base plate with ASTM A366 base cover
- Hand hole assembly 3" x 5" on 5° and 6° pole; and 2" x 4" on 4° pole
- 10'-39' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

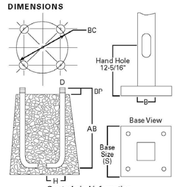
ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

Product Family	Shaft Size (Inches) [1]	Wall Thickness (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Arm Lengths (Feet)	Options (Add as Suffix)
SSS=Square Straight Steel	4=4" 5=5" 6=6"	A=0.120" B=0.188" X=0.250"	10=10' 15=15' 20=20' 25=25' 30=30' 35=35' 39=39'	S=Square Steel Base	F=Dark Bronze G=Galvanized Steel J=Summit White K=Carbon Bronze L=Dark Platinum R=Hartford Green S=Silver T=Graphite Metallic V=Grey W=White X=Custom Color Y=Black	2=2-3/8" O.D. Tenon (4" Long) 3=3-1/2" O.D. Tenon (5" Long) 4=4" O.D. Tenon (6" Long) 9=3" O.D. Tenon (4" Long) 6=2-3/8" O.D. Tenon (6" Long) 7=4" O.D. Tenon (10" Long) A=Type A Drilling C=Type C Drilling E=Type E Drilling F=Type F Drilling G=Type G Drilling J=Type J Drilling K=Type K Drilling M=Type M Drilling N=Type N Drilling R=Type R Drilling S=Standard Upsweep Arm Z=Type Z Drilling	1=Single 2=2 at 180° 3=Triple [4] 4=4 at 90° 5=2 at 50° X=None	X=None 2=2' 3=2.5' 4=4' 6=6' 8=8'	A=1/2" Tapped Hub [3] B=3/4" Tapped Hub [3] C=Convenience Outlet [4] E=GFCI Convenience Outlet [4] G=Ground Lug H=Additional Hand Hole [4] V=Vibration Dampener

NOTES: 1. All shaft sizes nominal. **2.** Square poles are 3 at 90°, round poles are 3 at 120°. **3.** Tapped Hub is located 5" below the pole top and on the same side of pole as hand hole, unless specified otherwise. **4.** Outlet is located 4" above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. **5.** Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

DIMENSIONS



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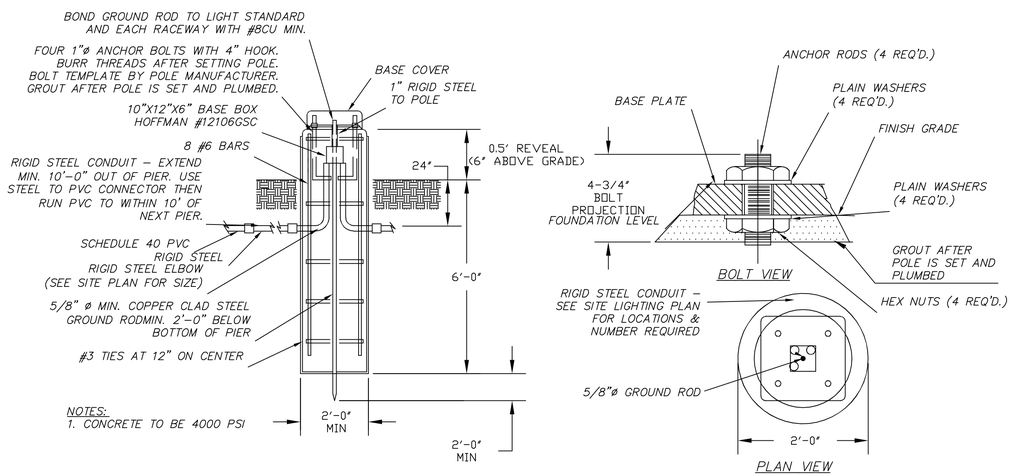
June 6, 2018 11:14 AM



LIGHT POLE BASE

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P19-74A

CIVILWORKS NEW ENGLAND
CIVIL ENGINEERING
181 Watson Road, P.O. Box 1166
Dover, New Hampshire 03820
(603) 749-0443

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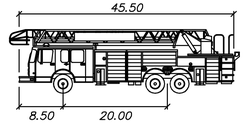
DRAWN BY: CAD
DESIGN BY: RSM
APPROVED BY:SJH
PROJECT NO:19038
FILE: SITE.DWG

LIGHTING DETAILS

APPLICANT:
MICHABL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

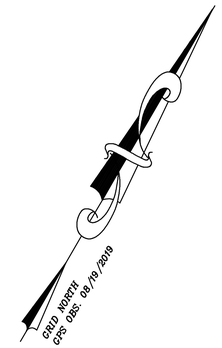
PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

38



Dover Idder — feet

Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

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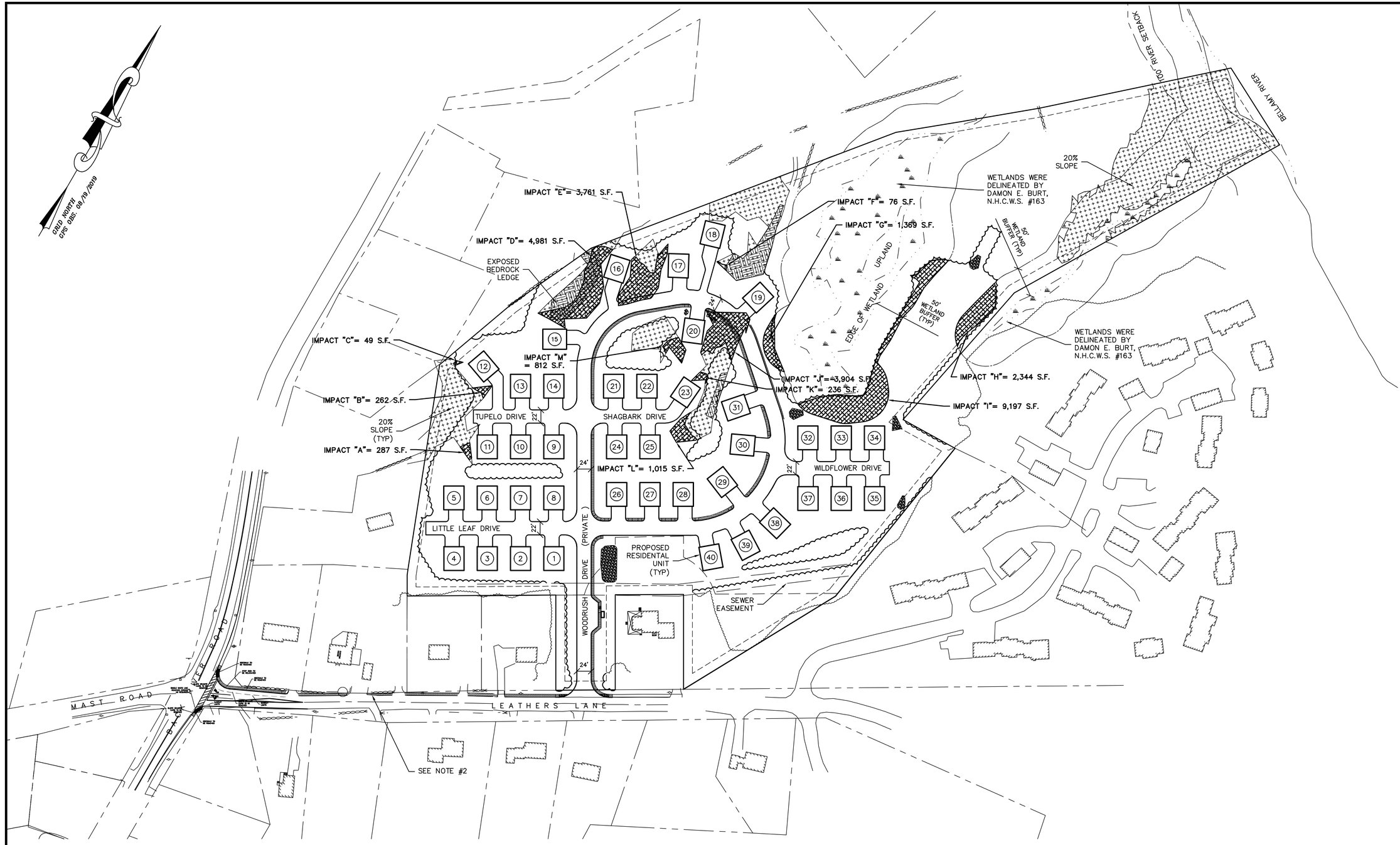
PROJECT NO:19038
FILE: SITE.DWG

DOVER LADDER TRUCK MOVEMENT PLAN

APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

39



CONSERVATION DISTRICT IMPACTS: (20% SLOPES)= 15,383S.F.
WETLAND BUFFER IMPACT = 12,910 S.F.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)

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PROJECT NO:19038
FILE: SITE.DWG

WETLAND BUFFER IMPACT PLAN

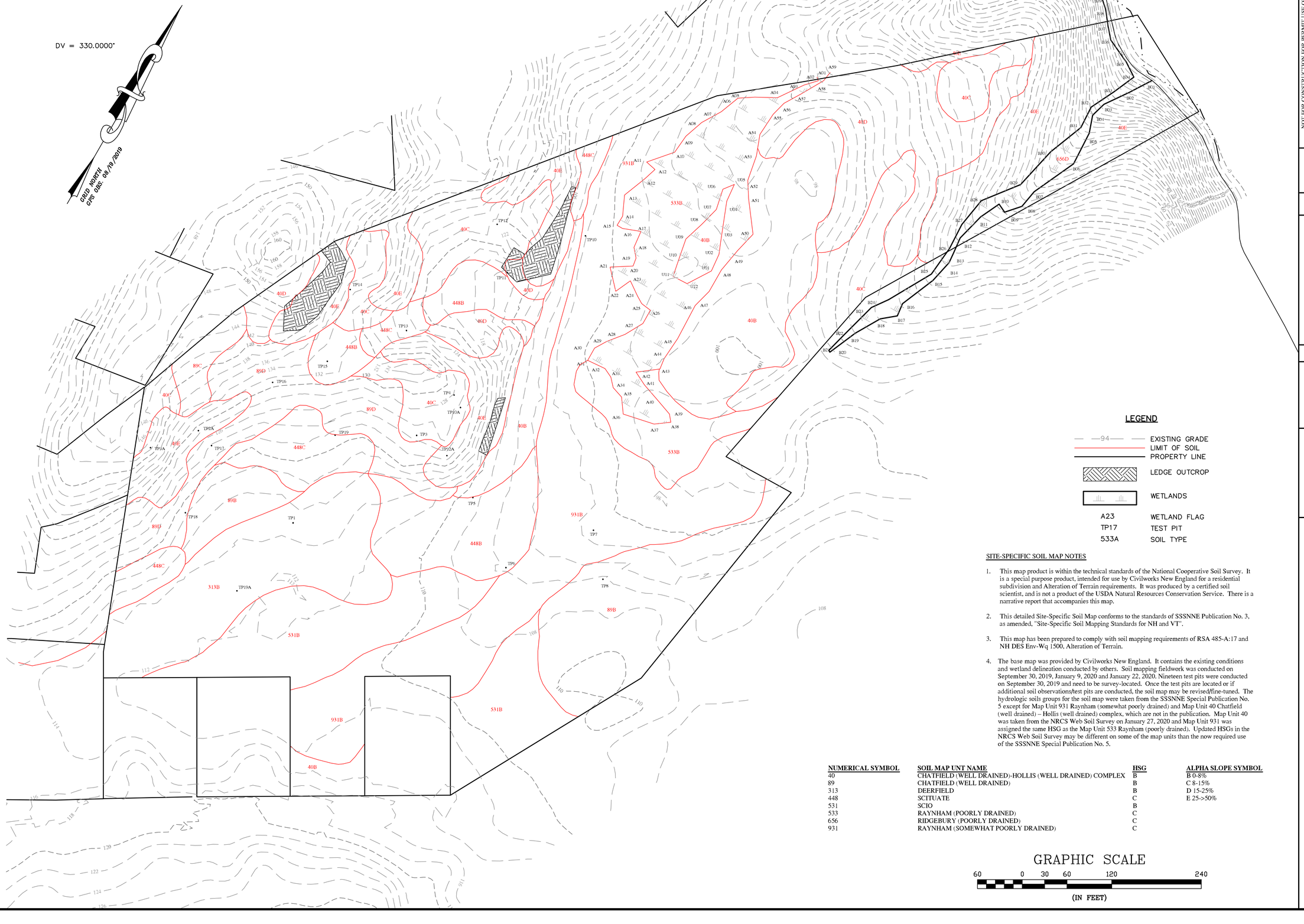
APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNIT
DETACHED CONDOMINIUM
DOVER, NH

40

DV = 330.0000'

GRID NORTH
GPS OBS: 06/19/2019



LEGEND

—94—	EXISTING GRADE
	LIMIT OF SOIL
	PROPERTY LINE
	LEDGE OUTCROP
	WETLANDS
A23	WETLAND FLAG
TP17	TEST PIT
533A	SOIL TYPE

SITE-SPECIFIC SOIL MAP NOTES

1. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for use by Civilworks New England for a residential subdivision and Alteration of Terrain requirements. It was produced by a certified soil scientist, and is not a product of the USDA Natural Resources Conservation Service. There is a narrative report that accompanies this map.

2. This detailed Site-Specific Soil Map conforms to the standards of SSSNNE Publication No. 3, as amended, "Site-Specific Soil Mapping Standards for NH and VT".

3. This map has been prepared to comply with soil mapping requirements of RSA 485-A:17 and NH DES Env-Wq 1500, Alteration of Terrain.

4. The base map was provided by Civilworks New England. It contains the existing conditions and wetland delineation conducted by others. Soil mapping fieldwork was conducted on September 30, 2019, January 9, 2020 and January 22, 2020. Nineteen test pits were conducted on September 30, 2019 and need to be survey-located. Once the test pits are located or if additional soil observations/test pits are conducted, the soil map may be revised/fine-tuned. The hydrologic soils groups for the soil map were taken from the SSSNNE Special Publication No. 5 except for Map Unit 931 Raynham (somewhat poorly drained) and Map Unit 40 Chatfield (well drained) – Hollis (well drained) complex, which are not in the publication. Map Unit 40 was taken from the NRCS Web Soil Survey on January 27, 2020 and Map Unit 931 was assigned the same HSG as the Map Unit 533 Raynham (poorly drained). Updated HSGs in the NRCS Web Soil Survey may be different on some of the map units than the now required use of the SSSNNE Special Publication No. 5.

NUMERICAL SYMBOL	SOIL MAP UNT NAME	HSG
40	CHATFIELD (WELL DRAINED)-HOLLIS (WELL DRAINED) COMPLEX	B
89	CHATFIELD (WELL DRAINED)	B
313	DEERFIELD	B
448	SCITUATE	C
531	SCIO	B
533	RAYNHAM (POORLY DRAINED)	C
656	RIDGEBURY (POORLY DRAINED)	C
931	RAYNHAM (SOMEWHAT POORLY DRAINED)	C

ALPHA SLOPE SYMBOL
B 0-8%
C 8-15%
D 15-25%
E 25->50%

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)

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SITE SPECIFIC SOILS MAP

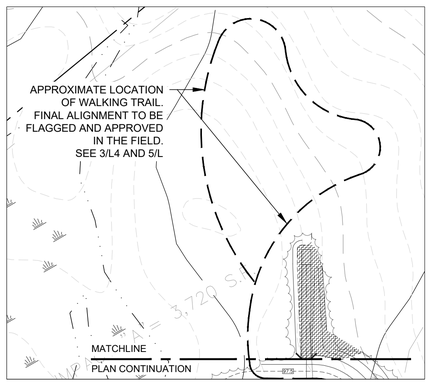
APPLICANT:
MICHAEL KHAVARI
40 HARRISON AVENUE
PORTSMOUTH, NH

PROJECT:
LEATHERS LANE
40 UNITS
DETACHED CONDOMINIUM
DOVER, NH

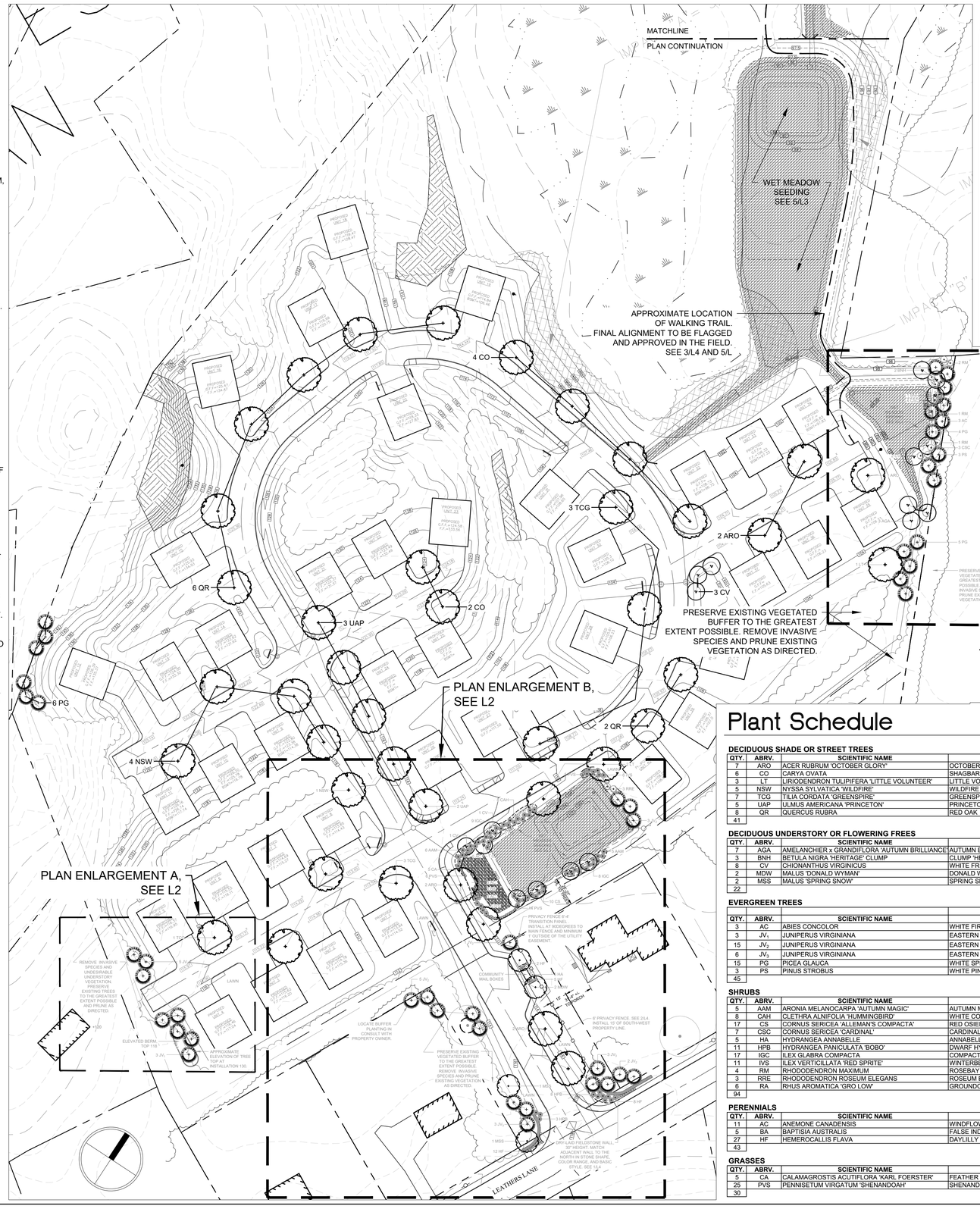
S-1

PLANTING NOTES:

1. PLEASE REVIEW AND BECOME FULLY ACQUAINTED WITH THESE NOTES, CONSTRUCTION DETAILS, AND THE PLANTING PLAN.
2. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING AND NEW UTILITY LINE LOCATIONS PRIOR TO PLANTING, AND SHALL REPORT ANY CONFLICT TO THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
3. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK" PUBLISHED BY THE AMERICAN SOCIETY OF NURSERY MEN, INC. LATEST EDITION.
4. THE CONTRACTOR SHALL STAKE THE LOCATION OF ALL THE PROPOSED PLANT MATERIAL FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. NO PLANTS SHALL BE PLANTED BEFORE THE ACCEPTANCE OF ROUGH GRADING. THE BASE OF THE FLARE OF THE TREE TRUNK SHALL BE EXPOSED, IF NECESSARY, AND PLACED 2" ABOVE FINISH GRADE.
5. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE PLANTS WITH EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER COLOR, LEAF COLOR, FRUIT COLOR, AND TIME OF BLOOM, AS APPROVED BY THE LANDSCAPE ARCHITECT.
6. EXISTING LOAM: STOCKPILING OF EXISTING LOAM IS SPECIFIED ELSEWHERE. REMOVE CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND OTHER FOREIGN MATERIALS.
7. ADDITIONAL LOAM: IF STOCKPILED LOAM QUANTITY IS INSUFFICIENT, PROVIDE LOAM, WHICH IS A "FINE SANDY LOAM", OR A "SANDY LOAM" DETERMINED BY MECHANICAL ANALYSIS AND BASED ON THE "U.S.D.A. CLASSIFICATION SYSTEM." IT SHALL BE OF UNIFORM COMPOSITION, WITHOUT ADMIXTURE OF SUBSOIL. LOAM SHALL HAVE AN ACIDITY RANGE OF PH 5.8 TO PH 7.0 AND SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 10% ORGANIC MATTER AS DETERMINED BY THE LOSS OF IGNITION OF OVEN-DRIED SAMPLES. PROVIDE LOAM WHICH IS FERTILE, FRIABLE, NATURAL LOAM FREE FROM SUBSOIL, CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND ANY FOREIGN MATERIALS.
8. PINE MULCH: PROVIDE PARTIALLY DECOMPOSED MINIMUM SIX MONTH AGED FINELY SHREDDED PINE BARK MULCH WITH DARK BROWN COLOR AND FREE OF WEEDS, EXCESSIVE FINE PARTICLES, STRINGY MATERIAL, AND CHUNKS OF WOOD THICKER THAN ¼". PROVIDE BARK MULCH APPROVED BY THE LANDSCAPE ARCHITECT. APPLY TACKIFIED MULCH TO ALL SEEDED AREAS.
9. ALL PLANTS SHALL BE PLUM VERTICALLY AFTER SETTLING.
10. ALL PLANT MATERIAL SHALL BE MULCHED AFTER PLANTING.
11. LESS OTHERWISE INDICATED, DICTATED BY CONDITIONS AT THE SITE, AND DIRECTED BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE, BACKFILL SHALL CONSIST OF UNAMENDED SOIL EXCAVATED FROM THE PLANTING PIT. BACKFILL IN 3-4" LAYERS AND CONSOLIDATE EACH LAYER WITH WATER TO ELIMINATE VOIDS AND ARE POCKETS BEFORE PLACING SUBSEQUENT LAYERS. CONTINUE UNTIL BACKFILL HAS REACHED FINISHED GRADE. WATER THOROUGHLY WHEN EXCAVATION IS BACK FILLED AND CONTINUE WATERING UNTIL SATURATED. IF EXISTING UNAMENDED SOIL IS NOT ACCEPTED, PROVIDE PLANTING SOIL MIXTURE CONSISTING OF 7 PARTS LOAM AND 1 PART HUMUS. MIX QUANTITY OF FERTILIZER AND SOIL AMENDMENTS AS RECOMMENDED BY SOIL ANALYSIS AND APPROVED BY THE LANDSCAPE ARCHITECT.
12. WATERING: FLOOD ALL PLANTS WITH WATER TWICE WITHIN THE FIRST 24 HOURS AFTER PLANTING.
13. LOAMING: LOOSEN SUBGRADE AND EXISTING LOAM AREAS BY DISCING OR ROTOTILLING TO MINIMUM DEPTH OF 6". REMOVE STONES GREATER THAN 2" AND ALL RUBBISH AND DEBRIS. PLACE LOAM IN TWO EQUAL LIFTS MIXING FIRST APPLICATION INTO LOOSENED SUBGRADE THEN PLACE SECOND LIFT TO BRING LOAM AFTER SETTLING AND COMPACTING TO THE LINES AND GRADES SHOWN IN THE CONTRACT DOCUMENTS, 6" DEEP MINIMUM. DO NOT HANDLE LOAM OR SUBSOIL IF IT IS WET OR FROZEN.
14. AFTER LOAM HAS BEEN SPREAD, IT SHALL BE CAREFULLY PREPARED BY SCARIFYING AND HAND RAKING. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, STUMPS, LITTER AND FOREIGN MATTER, AND STONES OVER ONE INCH IN DIAMETER SHALL BE REMOVED FROM THE LOAM. LOAM SHALL ALSO BE FREE OF SMALLER STONES IN EXCESSIVE QUANTITIES AS DETERMINED BY THE LANDSCAPE ARCHITECT.
15. FINE GRADING: SET SUFFICIENT GRADE STAKES FOR CHECKING THE FINISHED GRADES. STAKES MUST BE SET AT THE BOTTOM AND TOP OF SLOPES. GRADES SHALL BE ESTABLISHED THAT ARE ACCURATE TO 1/10TH OF A FOOT EITHER WAY. CONNECT CONTOURS AND SPOT ELEVATIONS WITH AN EVEN SLOPE. ALL GRADING WILL INSURE DRAINAGE AWAY FROM STRUCTURES.
16. FINE GRADE LAWN AREAS TO SMOOTH, FREE DRAINING, EVEN SURFACES WITH FINE TEXTURE. ROLL, RAKE AND DRAW LAWN AREAS TO FLATTEN RIDGES AND FILL DEPRESSIONS, EXCEPT AT SELECT AREAS SHOW ON THE DRAWINGS. CONTROL MOISTURE CONTENT TO MAINTAIN OPTIMUM CONDITIONS, BUT DO NOT CREATE A MUDDY CONDITION.
17. ROLLING - TYPICAL: ROLL THE ENTIRE AREA WITH A HAND ROLLER WEIGHTING NOT MORE THAN 100 POUNDS. DURING THE ROLLING, ALL DEPRESSIONS CAUSED BY SETTLEMENT OF ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM AND THE SURFACE SHALL BE REGARDED AND ROLLED UNTIL PRESENTING A SMOOTH AND EVEN FINISH TO THE REQUIRED GRADE OR TO THE SHAPES AND CONFIGURATIONS AS SHOWN ON THE DETAILS.
18. THE SILT FENCE SHALL BE LIMIT OF SEEDING UNLESS OTHERWISE INDICATED ON THE DRAWINGS. ALL AREAS DISTURBED OUTSIDE THE LIMIT OF WORK SHALL BE SEEDED AS INDICATED ON THE DRAWINGS.
19. IN CASE OF DISCREPANCIES BETWEEN THE QUANTITIES SHOWN ON THE PLANT SCHEDULE AND THE QUANTITIES SHOWN ON THE PLANTING PLAN, THE QUANTITIES ON THE PLANTING PLAN SHALL BE PROVIDED BY THE CONTRACTOR.



Plan Continuation



Legend

- DECIDUOUS SINGLE-STEMMED TREE PLANTING, SEE 1/L3
- DECIDUOUS MULTI-STEMMED TREE PLANTING, SEE 2/L3
- EVERGREEN TREE PLANTING, SEE 3/L3
- SHRUB PLANTING, SEE 7/L3
- PERENNIAL / ORNAMENTAL GRASS PLANTING, SEE 6/L3
- LOAM AND WET MEADOW / POND SEED MIX, SEE 5/L3
- LAWN — LOAM AND LAWN SEED MIX, SEE 4/L3
- TREE PROTECTION, SEE 4/L4

GENERAL NOTES:
1. SEE CIVIL DRAWINGS FOR INFORMATION NOT DEPICTED ON THE LANDSCAPE DRAWINGS.
2. PLANT LOCATIONS SHOWN ON THE PLANTING PLAN ARE SUBJECT TO FIELD MODIFICATION TO ACCOMMODATE EXISTING CONDITIONS. FIELD ADJUSTMENTS SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT.
3. SEE SHEET L3 FOR LANDSCAPE DETAILS.
4. CONTACT DIGSAFE PRIOR TO BEGINNING WORK.

Plant Schedule

DECIDUOUS SHADE OR STREET TREES

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
7	ARO	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3 1/2"-4" CAL.	B&B
6	CO	CARYA OVATA	SHAGBARK HICKORY	3 1/2"-4" CAL.	B&B
3	LT	LIRIODENDRON TULIPIFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIPTREE	3 1/2"-4" CAL.	B&B
5	NSW	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE TUPELO	2"-2 1/2" CAL.	B&B
7	TCG	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLE-LEAF LINDEN	3 1/2"-4" CAL.	B&B
5	UAP	ULMUS AMERICANA 'PRINCETON'	PRINCETON AMERICAN ELM	3 1/2"-4" CAL.	B&B
8	QR	QUERCUS RUBRA	RED OAK	3 1/2"-4" CAL.	B&B
41					

DECIDUOUS UNDERSTORY OR FLOWERING FREES

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
7	AGA	AMELANCHIER x GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10'	MULTI-STEM / B&B
3	BNH	BETULA NIGRA 'HERITAGE' CLUMP	CLUMP 'HERITAGE BIRCH	10'-12'	B&B
8	CV	CHIONANTHUS VIRGINICUS	WHITE FRINGETREE	8'-10' HT.	MULTI-STEMMED
2	MDW	MALUS 'DONALD WYMAN'	DONALD WYMAN CRABAPPLE	2"-2 1/2" CAL.	B&B
2	MSS	MALUS 'SPRING SNOW'	SPRING SNOW CRABAPPLE	2"-2 1/2" CAL.	B&B
22					

EVERGREEN TREES

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
3	AC	ABIES CONCOLOR	WHITE FIR	8'-10'	B&B
3	JV1	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	14'-16'	HEAVY, B&B
15	JV2	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	10'-12'	B&B
6	JV3	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	7'-8'	B&B
15	PG	PICEA GLAUCA	WHITE SPRUCE	8'-10'	B&B
3	PS	PINUS STROBUS	WHITE PINE	7'-8'	B&B
45					

SHRUBS

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
5	AAM	ARONIA MELANOCARPA 'AUTUMN MAGIC'	AUTUMN MAGIC CHOKEBERRY	4'-5'	B&B
8	CAH	CLETHRA ALNIFOLIA 'HUMMINGBIRD'	WHITE COMPACT SUMMERSWEET	18"-24"	CONTAINER
17	CS	CORNUS SERICEA 'ALLEMAN'S COMPACTA'	RED OSIER DOGWOOD	#3	CONTAINER
7	CSC	CORNUS SERICEA 'CARDINAL'	CARDINAL RED OSIER DOGWOOD	2 1/2'-3'	B&B
5	HA	HYDRANGEA ANNABELLE	ANNABELLE HYDRANGEA	#3	CONTAINER
11	HPB	HYDRANGEA PANICULATA 'BOBO'	DWARF HYDRANGEA	#3	CONTAINER
17	IGC	ILEX GLABRA COMPACTA	COMPACT INKBERRY	2 1/2'-3'	B&B
11	IVS	ILEX VERTICILLATA 'RED SPRITE'	WINTERBERRY	#3	CONTAINER
4	RM	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	3'-4'	B&B
3	RRE	RHODODENDRON ROSEUM ELEGANS	ROSEUM ELEGANS RHODODENDRON	2'-2 1/2'	B&B
6	RA	RHUS AROMATICA 'GRO LOW'	GROUNDCOVER SUMAC	#2	CONTAINER
94					

PERENNIALS

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
11	AC	ANEMONE CANADENSIS	WINDFLOWER	#1	CONTAINER
5	BA	BAPTISIA AUSTRALIS	FALSE INDIGO	#3	CONTAINER
27	HF	HEMEROCALLIS FLAVA	DAYLILLY	#1	CONTAINER
43					

GRASSES

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
5	CA	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#2	CONTAINER
25	PVS	PENNISETUM VIRGATUM 'SHENANDOAH'	SHENANDOAH FOUNTAIN GRASS	#1	CONTAINER
30					

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LEATHER LANE 40 UNIT CONDOMINIUM
TAX MAP I LOT 4A - DOVER, NEW HAMPSHIRE

MICHAEL KHAVARI
40 HARRISON AVENUE, PORTSMOUTH, NH 03801

SHEET TITLE
LANDSCAPE PLAN

REVISION LOG

REV#	DATE	DESCRIPTION
1	9/28/20	REVISED PER CITY TRC COMMENTS

PROJECT NO.	20024.0
DESIGN BY	J. HYLAND / J. MARTEL
DRAWN BY	J. HYLAND / J. MARTEL
CHECKED BY	J. HYLAND / J. MARTEL
DATE	AUGUST 28, 2020

SCALE
25' 0' 50' 100'
SCALE: 1"=50'-0"

SEAL
NEW HAMPSHIRE LICENSED LANDSCAPE ARCHITECT
JEFFREY R. HYLAND
026
STATE OF NEW HAMPSHIRE

L1

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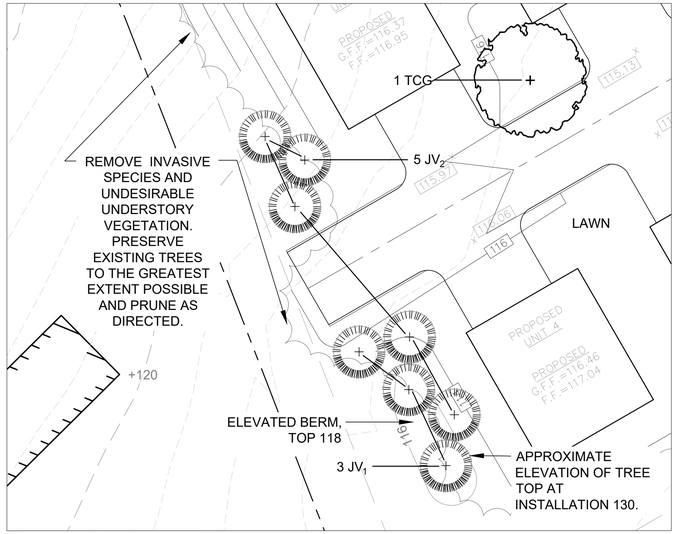
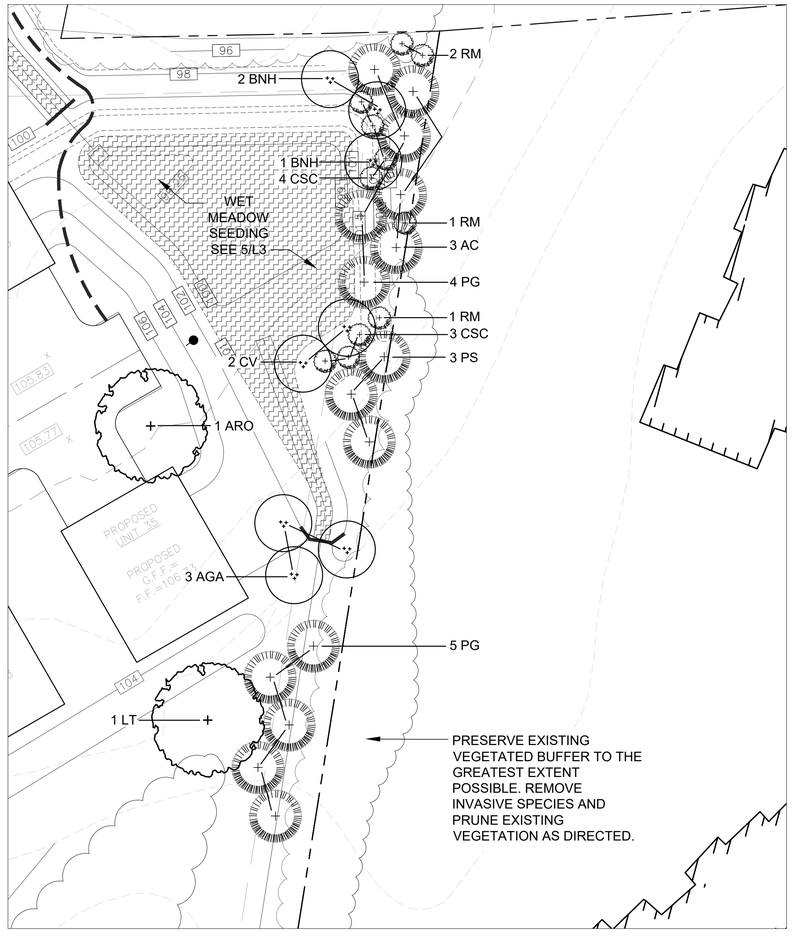
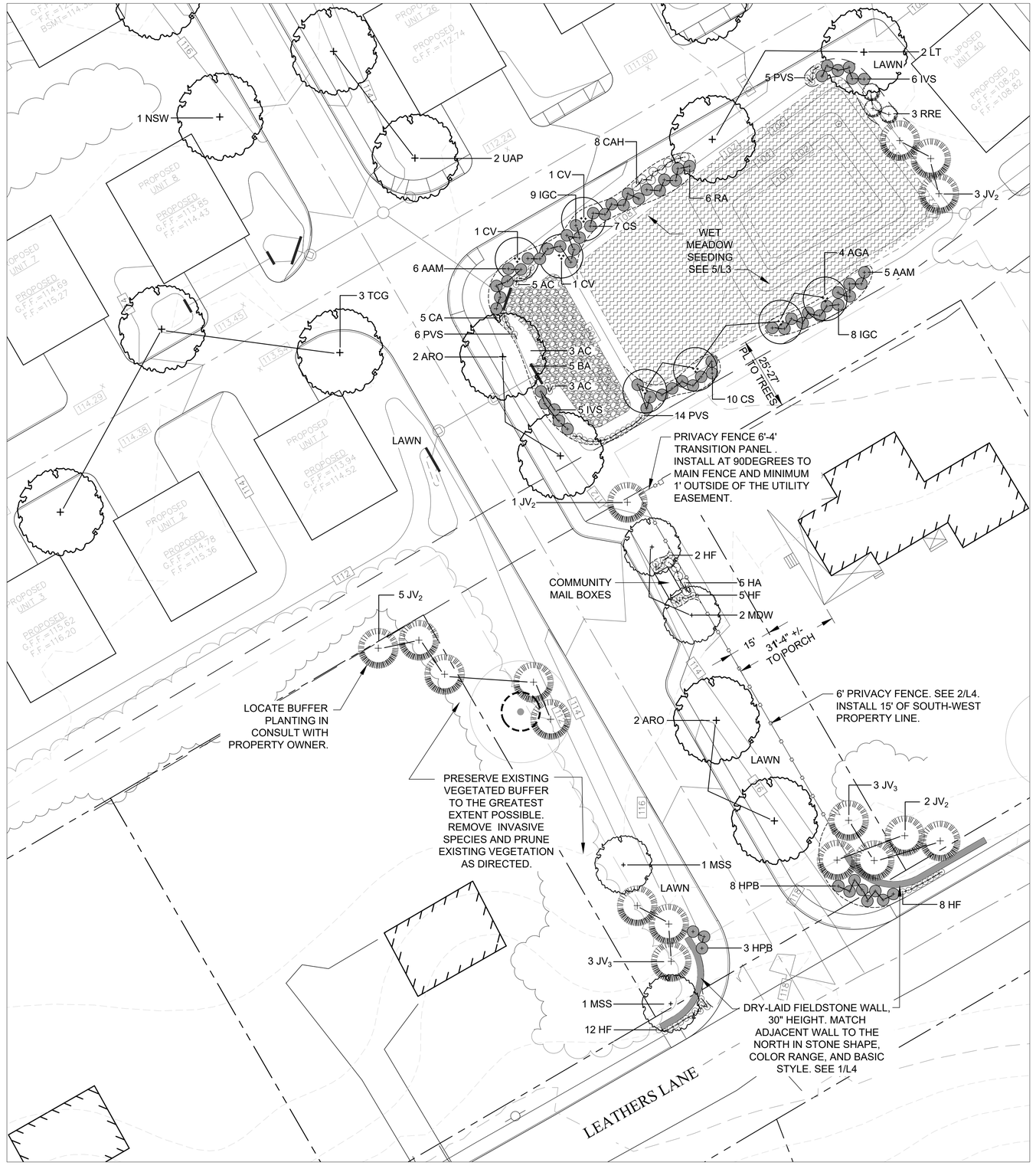


Plan Enlargement A



Plan Enlargement C



Plan Enlargement B

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LEATHER LANE 40 UNIT CONDOMINIUM
TAX MAP I LOT 4A - DOVER, NEW HAMPSHIRE

MICHAEL KHAVARI
40 HARRISON AVENUE, PORTSMOUTH, NH 03801

SHEET TITLE
PLAN ENLARGEMENTS

REVISION LOG

REV#	DATE	DESCRIPTION
1	9/28/20	REVISED PER CITY TRC COMMENTS

PROJECT NO.	20024.0
DESIGN BY	J. HYLAND / J. MARTEI
DRAWN BY	J. HYLAND / J. MARTEI
CHECKED BY	J. HYLAND / J. MARTEI
DATE	AUGUST 28, 2020

SCALE
10' 0' 20' 40'
SCALE: 1"=20'-0"

SEAL
JEFFREY R. HYLAND 026 LICENSED LANDSCAPE ARCHITECT STATE OF NEW HAMPSHIRE

L2

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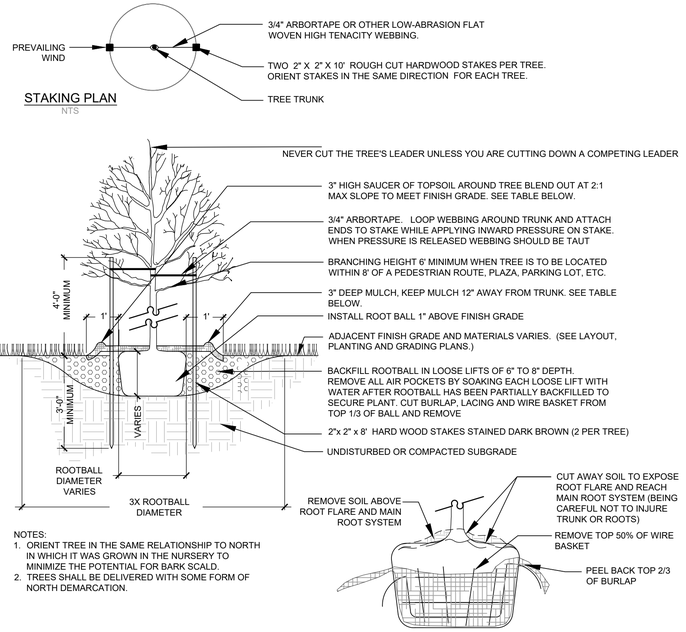

NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Deciduous Single-Stemmed Tree Planting

Not to Scale

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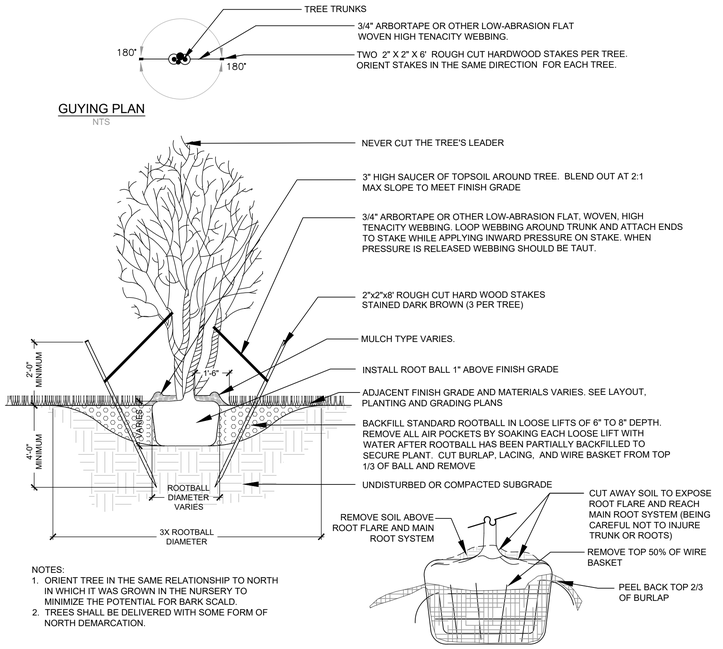
1 / L3



NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Deciduous Multi-Stemmed Tree Planting

Not to Scale

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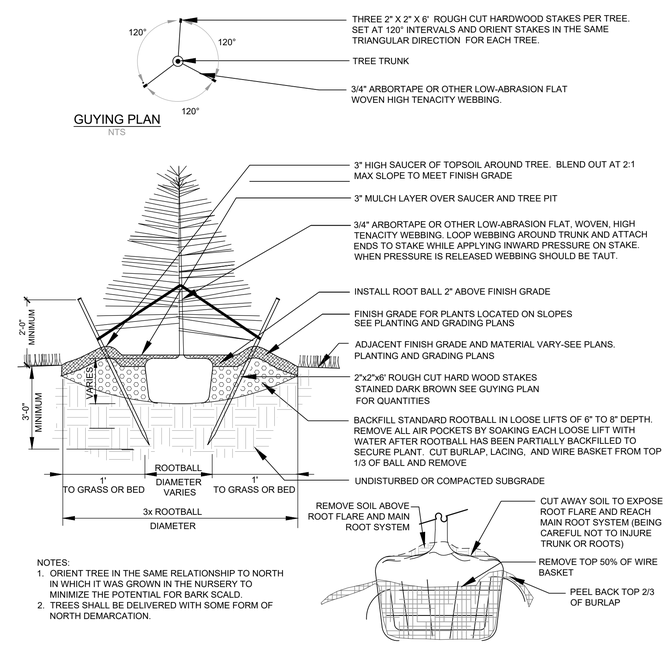
2 / L3



NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Evergreen Tree Planting

Not to Scale

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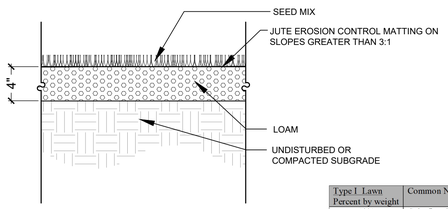
3 / L3



NOTE:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE LAWN SEED MIX PROPERLY PREPARE THE SEED BED.

Type I Lawn Percent by weight	Common Name	Scientific Name
40%	Celmfine, Rebel II or Tribute Tall Fescue	
15%	Palmer II Perennial Ryegrass	
10%	Jamestown Chewings Fescue	
10%	Reliant Hard Fescue	
10%	Birdsfoot Trefoil	*Arvenis* variety
5%	Switchgrass	
5%	White Clover	
5%	Redtop	*Streaker* variety

Apply at a rate of 265/lbs/acre

Loam and Lawn Seed Mix

Not to Scale

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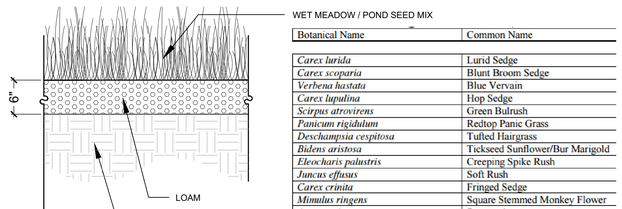

NOTE:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE WET MEADOW SEED MIX PROPERLY PREPARE THE SEED BED.
3. INSTALL JUTE MATTING ON POND SIDE SLOPES GREATER THAN 3:1.

Botanical Name	Common Name
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Verbena hastata	Blue Vervain
Carex lupulina	Hop Sedge
Scirpus atrovirens	Green Bulrush
Panicum rigidulum	Redtop Panic Grass
Deschampsia cespitosa	Tufted Hairgrass
Bidens aristosa	Tickseed Sunflower/Bur Marigold
Eleocharis palustris	Creeping Spike Rush
Juncus effusus	Soft Rush
Carex crinita	Fringed Sedge
Mimulus ringens	Square Stemmed Monkey Flower
Aster puniceus	Swamp Aster
Eupatorium perfoliatium	Boneset
Glyceria canadensis	Rattlesnake Grass
Asclepias incarnata	Swamp Milkweed
Helenium autumnale	Common Sneezeweed
Penthorum sedoides	Ditch Stonecrop

Apply at rate of 23lbs/acre. New England Wildflower Mix available at New England Wetland Plants, Ma: www.newp.com . Approved equal may be substituted.

Loam and Wet Meadow / Pond Seed Mix

Not to Scale

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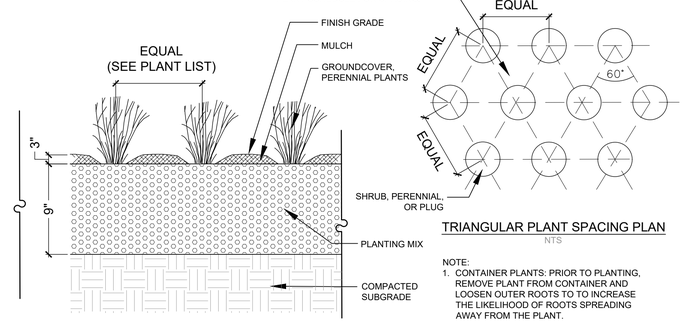

TRIANGULAR PLANT SPACING PLAN
NTS

NOTE:
1. CONTAINER PLANTS: PRIOR TO PLANTING, REMOVE PLANT FROM CONTAINER AND LOOSEN OUTER ROOTS TO TO INCREASE THE LIKELIHOOD OF ROOTS SPREADING AWAY FROM THE PLANT.

Perennial / Ornamental Grass Planting

Not to Scale

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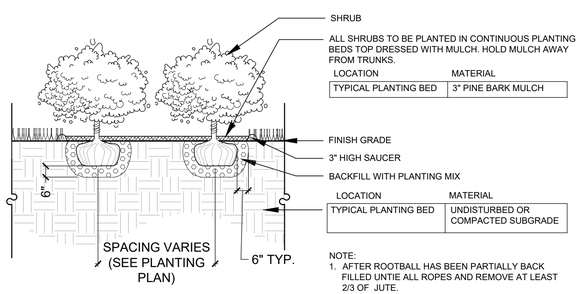

LOCATION	MATERIAL
TYPICAL PLANTING BED	3" PINE BARK MULCH

LOCATION	MATERIAL
TYPICAL PLANTING BED	UNDISTURBED OR COMPACTED SUBGRADE

NOTE:
1. AFTER ROOTBALL HAS BEEN PARTIALLY BACK FILLED UNTIE ALL ROPES AND REMOVE AT LEAST 2/3 OF JUTE.

Shrub Planting

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LEATHERS LANE 40 UNIT CONDOMINIUM
TAX MAP I LOT 4A - DOVER, NEW HAMPSHIRE

MICHAEL KHAVARI
40 HARRISON AVENUE, PORTSMOUTH, NH 03801

SHEET TITLE

LANDSCAPE DETAILS

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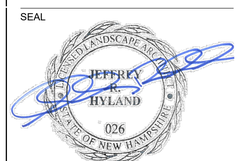
DATE	AUGUST 28, 2020
SCALE	AS NOTED

SEAL



L3

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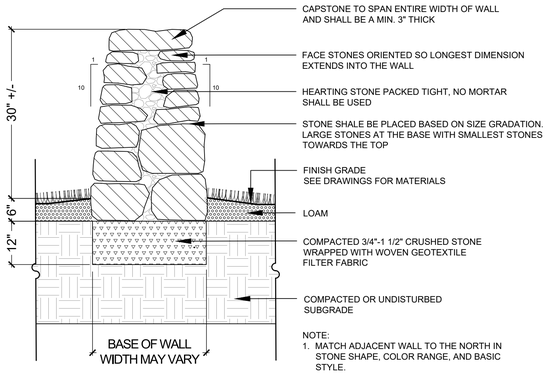

NOTE:
1. MATCH ADJACENT WALL TO THE NORTH IN STONE SHAPE, COLOR RANGE, AND BASIC STYLE.

Fieldstone Wall

Not to Scale

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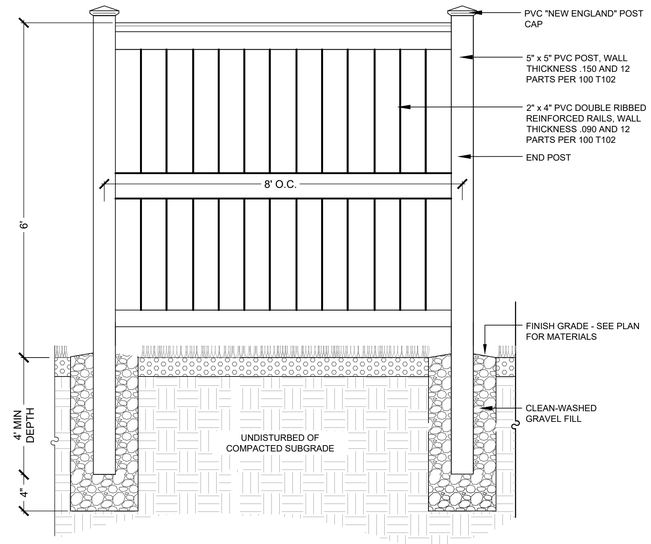
1 L4



Privacy Fence

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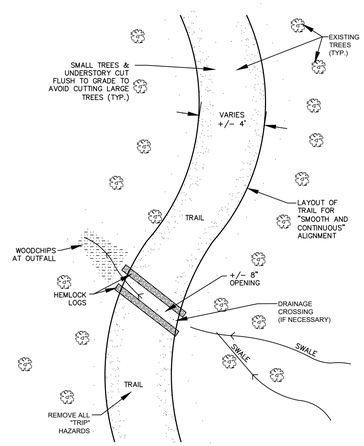
2 L4



Typical Trail Layout

Not to Scale

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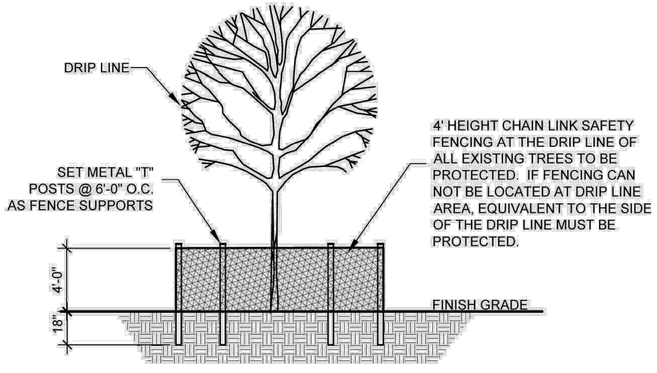
3 L4

NOTES:
1. FENCE TO BE MAINTAINED AND REPAIRED AS NEEDED DURING CONSTRUCTION.
2. NO CONSTRUCTION TRAFFIC, GRADING, STORAGE OR WASTE DISPOSAL ALLOWED WITHIN THE FENCED AREA AROUND TREES.



Tree Protection - Existing Tree to be Protected

Not to Scale

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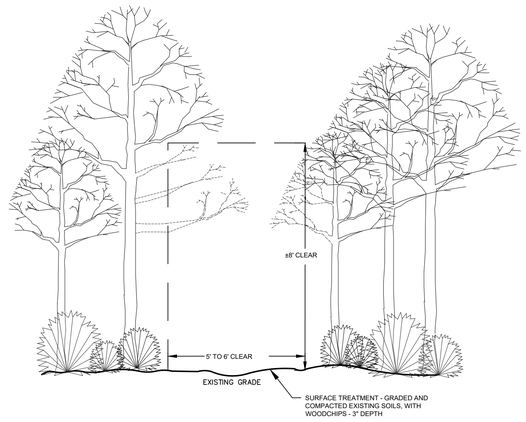
4 L4



TRAIL LAYOUT TO BE "FINE TUNED" IN THE FIELD TO AVOID CUTTING OF LARGE TREES, AND TO AVOID EXCESSIVE GRADING, CUTTING AND FILLING WHILE CONSTRUCTING TRAIL SURFACE.

Typical Trail Section

Not to Scale

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5 L4

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LEATHERS LANE 40 UNIT CONDOMINIUM
TAX MAP I LOT 4A - DOVER, NEW HAMPSHIRE

MICHAEL KHAVARI
40 HARRISON AVENUE, PORTSMOUTH, NH 03801

SHEET TITLE

LANDSCAPE DETAILS

REVISION LOG

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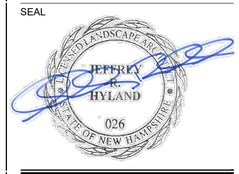
SEAL



L4

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View of development entrance from Leathers Lane, looking north

View from Davis Farm condos, looking west

TYPICAL FRONT STREET VIEW

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

415 939 8430
KHAVARI.COM

DRAFT CONCEPT PLAN

SUBDIVISION AT LEATHERS LANE

DOVER, NH 03820

ISSUE:

DRAFT CONCEPT PLAN SET	08.28.2020

CONCEPT PLAN
STREET VIEW

A1.00

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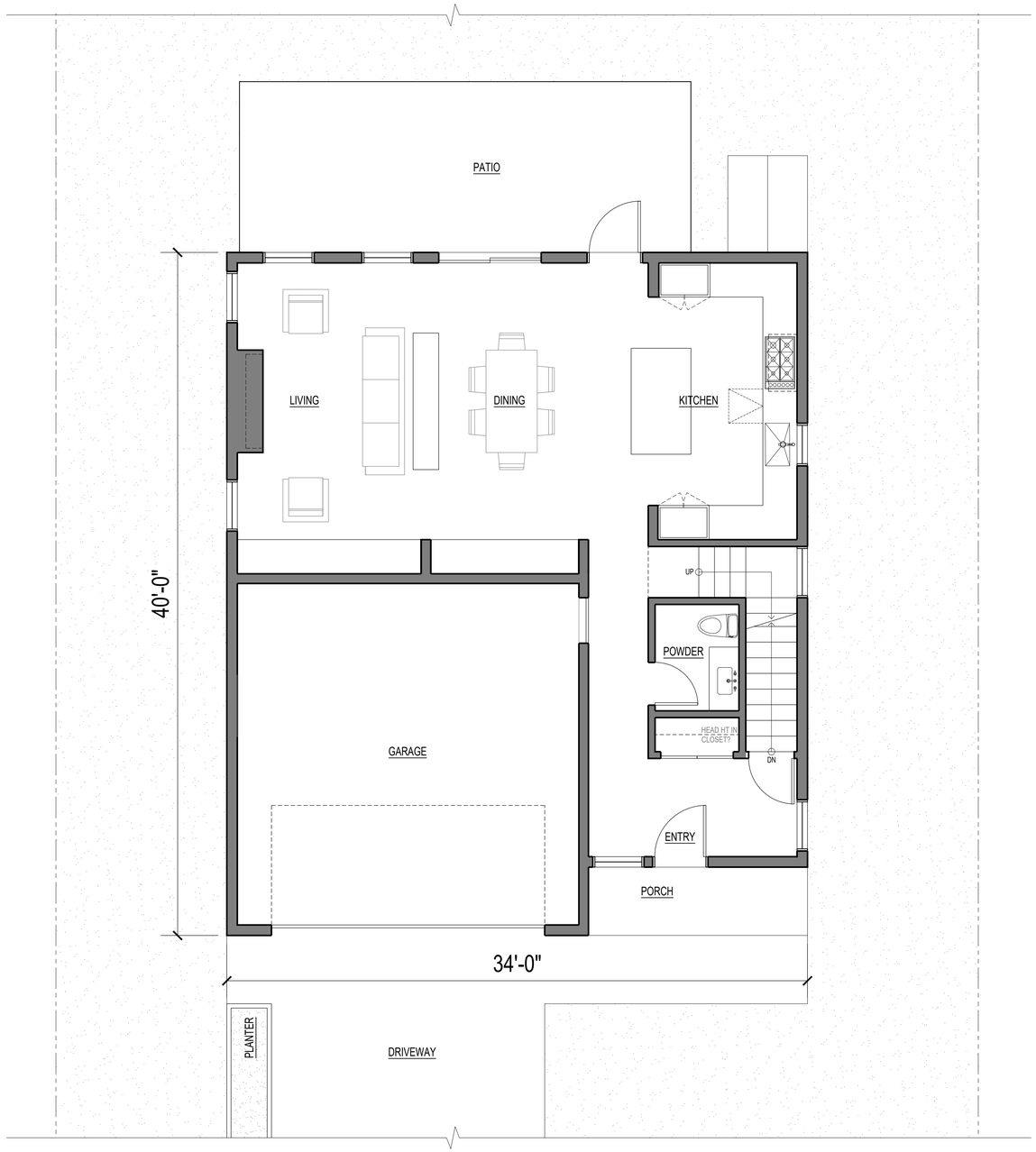
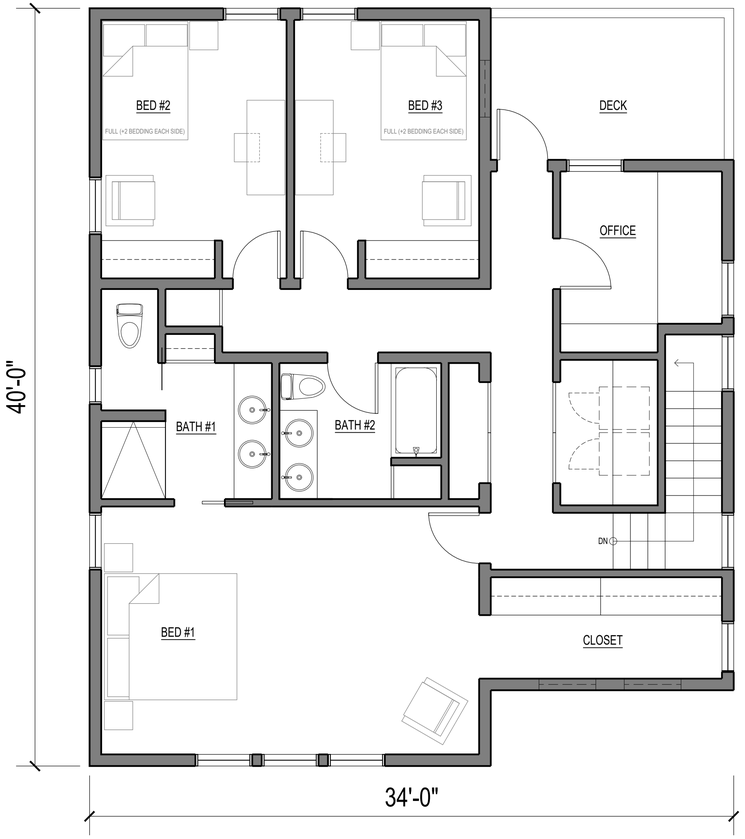


1 FIRST FLOOR
1/4" = 1'-0"



2 SECOND FLOOR
1/4" = 1'-0"

BUIDLING FOOTPRINT: 34' X 40'

AREA	
FIRST FLOOR:	882 SF
SECOND FLOOR:	1206 SF
TOTAL	2088 SF

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

415 939 8430
KHAVARI.COM

DRAFT CONCEPT PLAN

SUBDIVISION AT LEATHERS LANE
DOVER, NH 03820

ISSUE:

DRAFT CONCEPT PLAN SET	08.28.2020

CONCEPT PLAN
FIRST & SECOND FLOOR
(BASEMENT UNFINISHED)

A2.00

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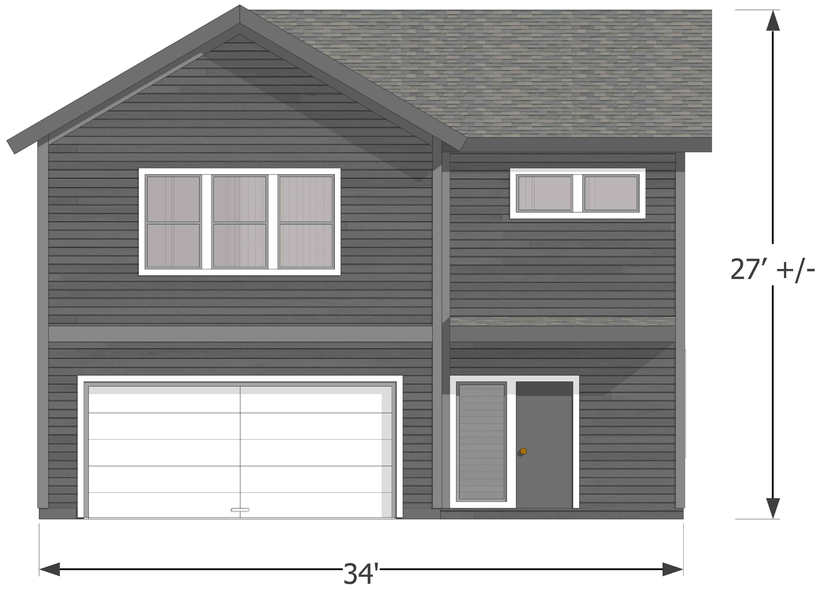
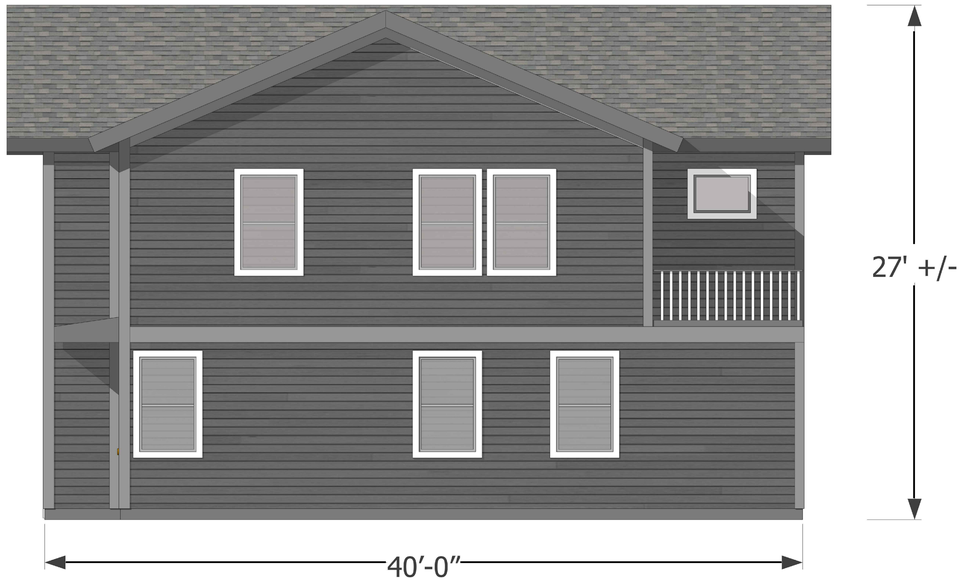
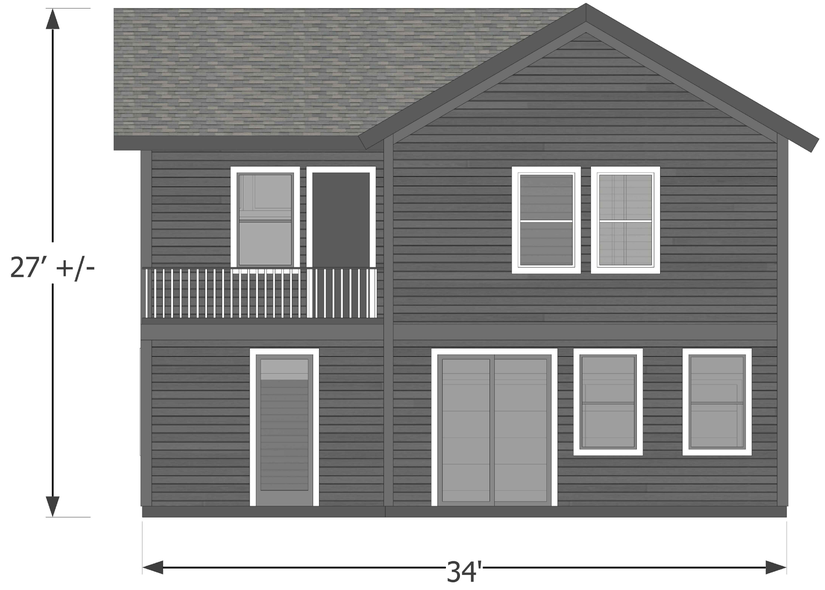


FRONT



RIGHT



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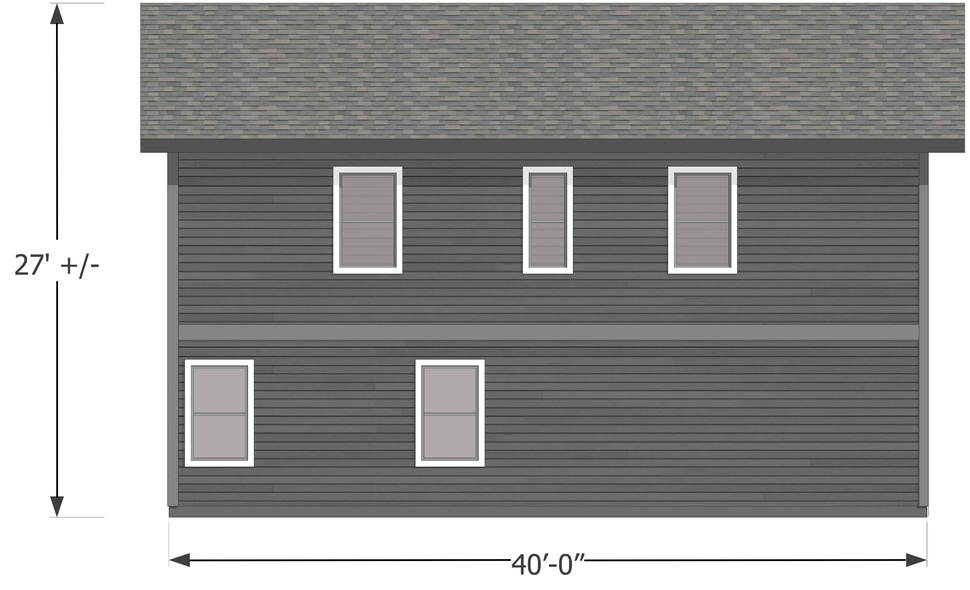

LEFT

0 2' 4' 8'

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

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

415 939 8430
KHAVARI.COM

DRAFT CONCEPT PLAN

SUBDIVISION AT LEATHERS LANE

DOVER, NH 03820

ISSUE:

DRAFT CONCEPT PLAN SET	08.28.2020

CONCEPT PLAN
TYPICAL ELEVATIONS

A3.00

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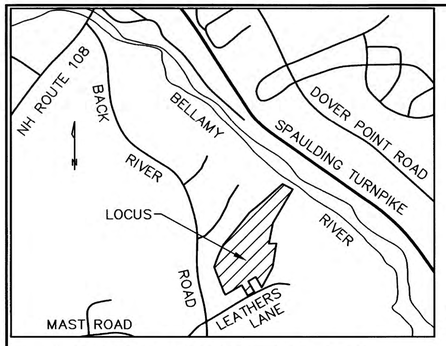

LOCATION PLAN

SCALE: 1" = 1,000'±

GRID NORTH
GPS OBS. 08/19/2019

[TIDAL] FLOOD - EBB

BELLAMY RIVER

250 FT. SHORELAND PROTECTION ZONE

HOUSE

82'±

5' SIDEWALK

22'

24'

123'±

127'±

63'±

121'±

127'±

MULTI UNIT CONDOMINIUM

GARAGE

KATIE LANE

LEATHERS LANE

NOTES:

1.) OWNER OF RECORD: KAREN A. TOWLE, TRUSTEE
JAMES B. AND KAREN A. TOWLE REVOCABLE TRUST
26 ANITA STREET
ROCHESTER, NEW HAMPSHIRE 03867
S.C.R.D. VOLUME 4630, PAGE 448

2.) ZONING DISTRICT: R-12

3.) PLAN INTENT: TO DEPICT THE CONCEPTUAL LAYOUT OF 45 NEW SINGLE-FAMILY UNITS. TWELVE SINGLE-FAMILY UNITS ARE PROPOSED TO BE PURCHASED PER DOVER, NH ZONING CHAPTER 170-27.2 (TDR). PURCHASED UNITS LIMITED TO MAX 1,400 S.F. GROSS FLOOR AREA EXCLUDING SPACES WHICH ARE NOT HEATED AND/OR COOLED.

4.) PARCEL AREA: 696,700 S.F.± / 16.00 Ac.±

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

93-	SUBDIVISION	
PROJECT NO	TYPE	FIELDBOOK & PAGES

PLAN APPROVED 01/28/2020

a Single Family Detached

1 sf parent 696700	minus enviro 141027		base lot size 555673 s.f
2 base lot size 555673	-15%	0.85	net area 472322.05 s.f.
3 net area 472322.05	percent wet 0<10%	7.1% 0.85	developable 401473.7425 s.f.
4 developable / min lot size 401473.7425		12000	base number 33 units

CONCEPTUAL TDR DEVELOPMENT PLAN

PREPARED FOR

MICHAEL KHAVARI

TAX MAP I, LOT No. 4A

LEATHERS LANE

CITY of DOVER

COUNTY of STRAFFORD

STATE of NEW HAMPSHIRE

DRAWN BY: RJM	FILE: C:> P\
SCALE: 1" = 50'	DATE: JANUARY 06, 2020

50 25 0 25 50 100 150 200

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911
SURVEYING – PLANNING – CONSULTING