City of Keene Planning Board

AGENDA

Monday, March 24, 2025 6:30 PM City Hall, 2nd Floor Council Chambers

A. AGENDA ITEMS

1) **Call to Order** – Roll Call

2) **Minutes of Previous Meeting** – February 24, 2025

3) **Final Vote on Conditional Approvals**

4) **Boundary Line Adjustment**

   a) **PB-2025-05 – Cedarcrest and Monadnock View Cemetery - BLA – 521 Park Ave & 91 Maple Ave** – Applicant ReVision Energy, on behalf of owners Cedarcrest and the City of Keene, proposes a lot line adjustment that would transfer ~1.7-ac of land from the ~46-ac parcel located at 521 Park Ave (TMP #227-027-000) to the ~5-ac parcel located at 91 Maple Ave (TMP #227-018-000). The Cedarcrest site is located in the Low Density District and the cemetery is located in the Conservation District.

5) **Public Hearings**

   a) **PB-2025-04 – Cedarcrest & Monadnock View Cemetery – Major Site Plan & Solar Energy System Conditional Use Permit – 521 Park Ave & 91 Maple Ave** – Applicant ReVision Energy, Inc. on behalf of owners Cedarcrest, Inc. and the City of Keene, proposes to install a medium-scale solar energy system on ~1.7-ac of undeveloped land located at 521 Park Ave (TMP #227-027-000) to provide power to the Cedarcrest facility located at 91 Maple Ave (TMP #227-018-000). The City property is ~46-ac in size and is located in the Conservation District, and the Cedarcrest property is ~5-ac in size and is located in the Low Density District.

   b) **PB-2024-20 – Earth Excavation Permit Major Amendment & Hillside Protection Conditional Use Permit – 21 & 57 Route 9** – Applicant Granite Engineering LLC, on behalf of owner G2 Holdings LLC, proposes to expand the existing gravel pit located at 21 & 57 Route 9 (TMP#s 215-007-000 & 215-008-000). A Hillside Protection CUP is requested for impacts to steep slopes. Waivers are requested from Section 25.3.1.D & Section 25.3.13 of the LDC related to the required 250' surface water resource setback and the 5-ac excavation area maximum. The parcels are a combined ~109.1-ac in size and are located in the Rural District.

6) **Master Plan Update** (KeeneMasterPlan.com)

7) **Staff Updates**

8) **New Business**

   a) Planning Board Updates on Administrative Approvals

9) **Upcoming Dates of Interest**
   - Joint Committee of the Planning Board and PLD – April 14th, 6:30 PM
   - Planning Board Steering Committee – April 8th, 12:00 PM
   - Planning Board Site Visit – April 23rd, 8:00 AM – To Be Confirmed
   - Planning Board Meeting – April 28th, 6:30 PM

10) MORE TIME ITEMS

a) Training on Site Development Standards – Snow Storage, Landscaping, & Screening

11) ADJOURNMENT

City of Keene
New Hampshire

PLANNING BOARD
MEETING MINUTES

Monday, February 24, 2025 **6:30 PM** **Council Chambers, City Hall**

Members Present:
Harold Farrington, Chair
Roberta Mastrogiovanni, Vice Chair
Mayor Jay V. Kahn
Sarah Vezzani
Armando Rangel
Ryan Clancy
Michael Hoefer, Alternate

Staff Present:
Paul Andrus, Community Development Director
Mari Brunner, Senior Planner
Evan Clements, Planner
Megan Fortson, Planner

Members Not Present:
Councilor Michael Remy
Kenneth Kost
Randyn Markelon, Alternate
Tammy Adams, Alternate
Stephon Mehu, Alternate

I) Call to Order

Chair Farrington called the meeting to order at 6:30 PM and a roll call was taken. Mr. Hoefer was invited to join the session as a voting member.

II) Minutes of Previous Meeting – January 27, 2025

A motion was made by Roberta Mastrogiovanni to approve the January 27 2025 meeting minutes. The motion was seconded by Mayor Jay Kahn was unanimously approved.

III) Final Vote on Conditional Approvals

Chair Farrington asked whether or not there were any applications tonight that are ready for a final vote.

Senior Planner, Mari Brunner, stated there is one application tonight that is ready for a final vote. The project is PB-2024-21 — 2-lot Subdivision — 141 Old Walpole Road. There were four conditions precedent, which include the following: Owner's signature appears on the plan;

Inspection of the lot monuments by the Public Works Director or their designee; Submittal of four full size paper copies and 2 mylar copies and a digital copy of the final plan set; Submittal of fees to cover the cost of recording. All of these conditions have been met.

A motion was made by Roberta Mastrogiovanni that the Planning Board issue final site plan approval for PB-2024-21. The motion was seconded by Mayor Kahn and carried on a unanimous vote.

IV) Advice & Comment

a) Cedarcrest/Monadnock View Cemetery Solar Array – 91 Maple Ave & 521 Park Ave – Prospective applicant Revision Energy seeks Planning Board advice and comment regarding the need for a visual buffer for the installation of a medium-scale solar energy system on approximately 1.6 acres of undeveloped land. The parcel is in the Conservation District.

Ms. Megan Ulin, Solar Project Developer with Revision Energy, addressed the board. She introduced Jimmy Nizzi, Director of Finance at Cedarcrest. Ms. Ulin stated as per the suggestion of staff, they are before the Board regarding a visual buffer for this project. She stated they have a site plan application, boundary line adjustment application and a solar CUP application that has been filed and hoped to be before the Board next month.

She stated they are before the Board today for feedback. This project came together out of a partnership with the City of Keene, in which they explored solar development on several different parcels of land. One of those parcels is located on the northwest corner of the cemetery, and Cedarcrest is a primary abutter and has entered into an agreement to purchase the electricity for that system. Ms. Ulin stated Cedarcrest would be able to connect directly to the utility meter and see a direct reduction of their electric load. The location of the solar array at this location has shifted slightly from the original concept and is now located in the very northwest corner. When considering this project against the solar CUP requirements, specifically the 16.2.5 visual buffer, they looked at it in the following manner:

View of the system shall be reasonably minimized from surrounding properties and public rights of way — This has been accomplished given its location, which would be a 44-acre cemetery lot once the boundary line adjustment is accomplished. It has limited view from the primary use in the cemetery. The City maintains landscaping at this location.
The City is the primary abutter to the system. On the northern side of the array is where the First Baptist Church is located. There are about 15 to 20 feet of existing wooded vegetation on the northern border, which is on Cedarcrest property. There is no visibility or any visual impact for the First Baptist Church property.

Ms. Ulin stated the boundaries in question are the southeast and southwest boundaries that abut the City use. On the southeast portion there is about 1.5 acres of land, which will be transferred with the boundary line adjustment. This area looks over the soil storage area for the cemetery along with some tall pine trees and the maintenance facility.

Ms. Ulin stated the origination of this request came from discussion with Deputy City Manager, Andy Bohannon, and with the Parks and Rec Department. The intent of the project was to transfer as little land as possible and minimize the impact on City lands. The request on the southwest portion of the property is to minimize screening, because the consensus was screening at this location could be detrimental to that area.

Ms. Ulin stated, as she reviews this item, she feels they have met Item A, "*cited the structure to minimize the view and minimize the visual impact."*
Item B was also largely met, but the applicant would like to obtain the Board's perception of the site plan, and whether or not Revision Energy needs to submit a formal waiver. Revision Energy also would like to know if there are any zoning implications. This concluded her presentation.

Mr. Clements stated this section is from the city's solar energy system conditional use permit, which is not in the Planning Board site development standards. It is in the zoning ordinance but is an additional layer of requirements. The general concept of providing some kind of visual buffer from a larger power generation structure is not out of the realm of common practice for the Board.

Mr. Clements stated what is different is that this is not a waivable section, and the only way to get relief from this would be a variance from the Zoning Board of Adjustment. However, this ordinance has given the Planning Board authority to decide what is adequate in regard to a visual buffer. The applicant this evening is looking for some initial feedback on the existing vegetation surrounding the proposed site, as well as the existing uses around the site.

Ms. Brunner stated the section of the code that is in question states as follows:
the visual impact of medium scale and large scale ground mounted solar energy systems, associated equipment and any extensive or imposing perimeter fencing on adjacent parcels and public right of rights of way shall be mitigated through the preservation of existing vegetation. And/or through the installation of a visual buffer approved by the Planning Board.
Ms. Brunner noted in this case, as the applicant has noted, there is existing vegetation on some sides but none on the southwest side. This is the section the applicant is looking to the Board to for guidance. The language calls for the installation of a visual buffer approved by the Planning Board. If the Board feels like something additional is needed, they would have to get a variance from the Zoning Board of Adjustment.

Ms. Vezzani referred to Mr. Bohannon's letter and noted he supports this project but indicates the area that does not have existing vegetation is the area that would cause more of a concern to have to maintain additional vegetation or take up more space. Ms. Ulin agreed and added this is the primary reason for this design.

Mr. Hoefer clarified the City-owned parcel is to the southwest and clarified if that area was to require screening it would be because of city use in the future. Ms. Ulin agreed this was City property.

Mayor Kahn asked if there was any fencing being proposed around this structure. Ms. Ulin stated a six-foot agricultural fence is being proposed. The Mayor asked where the community garden is

located. Ms. Ulin stated it is currently where the array is located and will be relocated to the southwest location of the array.

Chair Farrington stated the Board seems to be in support of this proposal without adding any more vegetative screening and Mr. Bohannon's letter seems to indicate that as well.

V) Public Hearings

a) SPR-593, Mod. 2 – Major Site Plan – Bank of America, 20 Central Square – Applicant Bank of America, on behalf of owner 20 Central Keene LLC, proposes to modify exterior lighting at the property located at 20 Central Square (TMP #568-063-000). Waivers are requested from Section 21.7.3.C, Section 21.7.3.F.1.a, Section 21.7.3.F.1.c, and Section 21.7.4.A.2 of the LDC regarding light trespass levels and lighting hours of operation. The site is 0.68-ac in size and is located in the Downtown Core District.

A. Board Determination of Completeness

Planner Megan Fortson stated the applicant has requested exemptions from submitting a grading plan, landscaping plan, elevations, and all technical reports. After reviewing each request, staff have made the preliminary determination that the requested exemptions would have no bearing on the merits of the application and recommend that the Board accept the application as complete.

A motion was made by Roberta Mastrogiovanni that the Planning Board accept SPR-593, Mod. 2 as complete. The motion was seconded by Mayor Kahn and was unanimously approved.

B. Public Hearing

Mr. Matthew Bombaci of Bohler Engineering addressed the Board and stated they have been retained by Bank of America for lighting projects, specifically for ones that are more in a downtown area. The program is to replace existing lighting, which is often not LED or energy efficient lighting with LED energy efficient lighting, along with security standards. Typically, this would involve lighting around 50 feet of an ATM and this is the distance recommended by the Engineering Illumination Society Guidelines.

Mr. Bombaci went on to say that there are currently two pole lights on the site that are about 30 feet tall. They have floodlight fixtures, which face out horizontally and are not dark skies compliant. The proposal is to replace each one of those with a new 20-foot pole, which is shorter to be compliant with zoning and dark skies compliant with a backlight shield and forward throwing light. He stated there are residences in this area, so they wanted to make sure the lighting is shielded, lowered and forward thrown to provide additional, uniform lighting. He stated they are also proposing two additional wall pack lights at the ATM locations to provide more lighting for the area. The canopy lighting itself would have strip lighting underneath the canopy and this would also be LED lighting. An additional new light fixture is also being added right above the ATM.

Mr. Bombaci noted there are four waivers being requested, largely based on the unique condition of the site.

The first waiver is from 21.7.3 C, which is 0.1 foot candles from the property line. He stated they are trying to respect the lighting along the property lines, but for parking associated with the bank, the applicant would exceed the lighting limit.

The second waiver is the hours of operation. Security lighting is one foot candle maximum for security lighting and the applicant is at 1.62. This waiver, again, is for the security concerns of the bank.

The third waiver indicates that 24-hour business light levels should be reduced by 50% between the hours at 10:00 AM and 6:00 PM. Mr. Bombaci stated when customers are using an ATM at 8:00 PM, the bank's concern is security and hence did not want to reduce the light level at night.

The fourth waiver is related to the uniformity ratio from section 21.7.4.8.2 and refers to a 5:1 uniformity ratio, to avoid light trespass towards abutters as much as possible. The parking area is included in the uniformity ratio. If that area is calculated into the minimum it does exceed that number, but if you take just the area around the ATM, the uniformity ratio is around 3:1. This concluded the applicant's presentation.

Ms. Vezzani asked, when talking about lighting for a 24-hour business, was there consideration to reduce the lighting at all; is it going to be brighter than it is now.
Mr. Bombaci stated he cannot speak specifically to how many lumens are thrown by the existing fixtures as they are old, but the lighting on the ground will certainly be brighter because the existing light fixtures are floodlighting and this light travels sideways and horizontally, not downward. They are trying to light where customers are but overall did not feel the lighting being proposed is going to be substantially more than what exists currently.

Staff comments were next. Ms. Fortson addressed the Board stated as Mr. Bombaci explained, the parcel is located at the northeastern corner of Central Square and it is abutted on all sides by commercial properties, which are a mix of uses. City Hall is located to the southwest, Keene affordable Housing to the north, along with B Bakes which is a mixed-use building with commercial on the 1st floor and apartments on the upper floors, peer support to the southwest and United Church of Christ to the west.

Ms. Fortson stated this property is located in the downtown core district and the proposal is to install a total of 12 new light fixtures. Ms. Fortson noted what staff is learning with the land development code is that the city's lighting standards are not as flexible for properties that are located in the downtown district.

She noted this site is paved from lot line to lot line, and for an entity like a bank to be able to comply with 0.1 foot candle requirement at the property line and a one foot candle lighting requirement at the right of way line, it can be difficult to comply with. This is resulting in the applicant having to come before the Planning Board to request waivers.

In regard to the determination of regional impact, Staff did not feel that this proposal had any potential for regional impact.

In terms of departmental comments, the only comment Planning Staff received was from code enforcement staff who noted that a building permit was required prior to this work being completed.

Ms. Fortson next reviewed sections of the lighting standards. The applicant is not proposing any flood lighting or up lighting, so they comply with that standard.

In regard to the general standard, one of them specifies that all proposed light fixtures must be full cut off, with no portion of the bulb visible. The cut sheets that were submitted comply with those regulations, so that standard has been met.

With reference to glare, the project narrative states that none of the light fixtures proposed to be installed are directed in a manner that will create glare on or off the property and that lights located near property lines will be equipped with backlight shields, which will prevent light from travelling to the upper floors of the apartment buildings. This standard appears to be met.

The light trespass standard allows for 0.1 foot candle of trespass at the property line and one foot candle at the right of way line. To determine whether or not to grant that waiver request, the Board will need to look at their three waiver criteria.

Ms. Fortson reviewed the waiver criteria:
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.*
2. *Specific circumstances relative to the site plan or conditions of the land and such site plan indicate that a waiver will properly carry out the spirit and intent of the regulations*.
3. *In granting a waiver, the Planning Board may require any mitigation that is reasonable and necessary to ensure that the spirit intent of the standard being waived will be preserved and to ensure that no increase in adverse impacts associated with granting this waiver will occur.*

The next standard is related to illumination. This standard requires that all light fixtures have a color-rendering index greater than 70 and a color temperature of 3500 Kelvin or less.
The light fixture cut sheets that were submitted comply with those standards. The standard has been met.

In regards to height of fixtures, a maximum of 20 feet is allowed in the downtown core district. That standard has been met by the applicant.

The next standard is related to the hours of operation. Between 10:00 PM and 6:00 AM, there are requirements to reduce lighting levels by 50%. Given the fact that this is going to be security lighting, the applicant is requesting a waiver from that standard.

Wiring — The applicant has confirmed that all wiring is going to be installed either underground or inside the building. That standard has been met.

The applicant is requesting a waiver from the requirement that states parking lots have to have an average illumination level of 3 1/2 foot candles or less. The applicant indicates they are meeting the standards to the best of their ability, while still meeting their security needs.

The other waiver request is for uniformity ratio, which is required to be 5:1 foot candles, and the proposal is above that average. They are requesting a waiver for security of the site.

The proposal does not involve lighting of any canopies and or walkways. Those two standards are not applicable.

Ms. Fortson reviewed the motion language.

Mayor Kahn referred to the waiver regarding hours of operation. He asked if the language should say to meet the "bank security standards." Ms. Fortson agreed.

Chair Farrington asked about light trespass onto the sidewalk on Washington Street. Mr. Bombaci stated they were below the 1.0 foot candles onto that street at the property line. Ms. Fortson stated she might have incorrectly stated that they were above the 1.0 foot candle at the right of way line but noted they were just above the 0.1 foot candle light trespass standard.

The Chair asked for public comment. With no comments from the public, the Chair closed the public hearing.

C. Board Discussion and Action

A motion was made by Roberta Mastrogiovanni that the Planning Board approve the waiver request from section, 21-7-3-C regarding light trespass. The motion was seconded by Michael Hoefer.

Mr. Clancy stated he was comfortable with this waiver, in that there are no abutters present to object. The Chair agreed but asked if individual apartments would get the notice or would it be just the owners. Ms. Brunner stated it would be just the owners, and it is up to the owners to let tenants know. She added there is, however, a notice that goes out in the Sentinel.

The motion to approve the waiver regarding light trespass carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board approve the waiver request from Section 21.7.3 F.1.A, which allows for average lighting levels over 1 foot candle. The motion was seconded by Sarah Vezzani and carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board approve the waiver request from Section 21.7.3.F.1.C that would be to allow for normal lighting levels during the 10:00 PM to 6:00 AM hours. The motion was seconded by Sarah Vezzani.

Ms. Vezzani stated she agrees with staff that this standard is outdated, and it is important to comply with security needs.

The motion to allow for normal lighting levels during the 10:00 PM to 6:00 AM hours and carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board approve the waiver request from Section 21.7.4.8.2 of the LDC regarding light trespass levels and lighting hours of operation, specifically regarding uniformity ratio. The motion was seconded by Armando Rangel.

The Mayor asked for clarification on this issue. Ms. Brunner explained the way uniformity ratio is calculated is by taking the average illumination and dividing it by the minimum. In this case, because the applicant was trying to get the light levels as low as possible at the property line that made the minimum smaller, which made the uniformity ratio higher because that is the number that you divide it by. In this instance, if you look at the main parking area around the ATMs, the uniformity ratio is actually 3.1, which exceeds the standard. It is just when you include the full parking area going up to the lot line that the uniformity ratio does not meet the standard because they are trying to meet a different one of city standards, which is to not have light levels across the property line.

The motion to approve the waiver regarding parking lot uniformity ratio carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board approve SPR-593, Modification #2 as shown on the plan set identified as "Bank of America, Exterior Lighting Program" prepared by GMR Facility Analysis & Engineering at varying scales with the following conditions prior to final approval and signature by the Planning Board Chair:

1. Owner's signature appears on the plan.

2. Submittal of five full-sized paper copies of the final plan set.

The motion was seconded by Sarah Vezzani

Ms. Vezzani stated this application does not have regional impact. She also stated she appreciates the applicant's letter, which explains each item and whether it meets the standard and was comfortable approving this application.

The Chair felt the applicant has met the spirit of the code and was comfortable approving this application.

The motion carried on a unanimous vote.

b) **PB-2025-01 – 2-lot Subdivision – Keene State College, 238-260 Main Street** – Applicant Huntley Survey & Design, PLLC, on behalf of owner the University System of New Hampshire, proposes a 2-lot subdivision of the ~0.96-ac parcel at 238-260 Main Street (TMP #590-101-000) into two lots ~0.48-ac and ~0.46-ac in size. The property is located in the Downtown Transition District.

A. Board Determination of Completeness

Planner Evan Clements stated the applicant has requested an exemption from submitting a traffic analysis, drainage report, soil analysis, and other technical reports and analyses. After reviewing each exemption request, staff have made the preliminary determination that granting the request would have no bearing on the merits of the application and recommend that the Board accept the application as complete

A motion was made by Roberta Mastrogiovanni that the Planning Board accept PB-2025-01 as complete. The motion was seconded by Michael Hoefer and was unanimously approved.

B. Public Hearing

Mr. Russ Huntley of Huntley Survey and Design addressed the Board on behalf of the University System of New Hampshire for their proposed 2-lot subdivision on Main Street and Proctor Court. On the north is the alumni building, in the center of the U is the Historical Center, and on the south is Proctor Court. He stated the proposal essentially is to be able to have each building have its own lot and its own parking. The entire parcel has been surveyed and pins have been placed. Mr. Huntley stated the lots meet all city requirements as far as zoning requirements, frontage-building setbacks but noted that the pavement setbacks will not be met with this new existing line.

Mr. Huntley further stated that there is a question about lot 1 meeting the impermeable surface standard. When this lot was constructed, it was constructed in 2010 with pervious pavement and has some under drains but wasn't sure if it was still working.

The second lot does meet the impermeable surface criteria.

He noted to the only area that would need an 8-foot setback to meet the city's zoning and land development code. However, the RSA does say that a government entity does not have to follow these rules, and although the applicant has tried to do the best they can, this standard is not going to be able to be met. Mr. Huntley stated staff have provided the applicant with some guidance on this issue. Staff recommend this and a note will be added to the plan to address this situation. It indicates if the lot is ever sold to a private entity, then that entity would have to do something to address the situation: removing parking spaces, adding some green space or applying for a variance. He felt a variance would be the best option. This concluded Mr. Huntley's presentation.

Mayor Kahn asked if there would be any objection if the two parties that own both sides of that property line agree that there is a benefit to the public to be able to have the traffic flow between the two lots. Mr. Huntley stated at this time that option would be a moot point unless the property is sold to a private entity.

Staff comments were next.

Mr. Clements addressed the Board and stated as Mr. Huntley explained the current configuration with the proposed addition of the new lot line, because both parcels will continue to be owned by the university system and they are protected under RSA 674:54 Governmental Land Uses. There is no violation of the zoning ordinance as proposed because of that RSA.
If the southern parcel were to be sold to a non-governmental user, before that entity could use the property or go through what is called a change of use process, they would have to come up with a solution to that problem. This new property owner would not be allowed to use the property until either the pavement is removed to satisfy the pavement setback requirement or a variance was received from the Zoning Board of Adjustment. A cross-access agreement could be established between the two property owners to maintain site flow if they so choose privately, but they would still need to resolve the discrepancy with the zoning ordinance.

Mr. Clements referred to the note that staff asked the applicant to add on the plan.
He indicated staff worked with the City Attorney's office on language:
This subdivision is of governmentally owned land and was therefore made pursuant to RSA 674:54, Governmental Land Uses. The subdivision creates potential nonconformities with section 4.6.2 Buildout of the Land Development Code in regard to the impervious surface maximum on Lot 1 and section 9.4.2 Dimensions & Siting, Table 9-2 of the Land Development Code in regard to the parking area pavement setback on Lots 1 & 2. Planning Board approval of this plat shall not be deemed to cure any non-conformity with existing local land use ordinances. Any future use of either lot that is not governmental use will be subject to these provisions and may necessitate correction of the nonconformities or variances from the Zoning Board of Adjustment."

Mr. Clements stated this is a very straightforward two-lot subdivision. All basic dimensional requirements for lot area, frontage have been met. Staff do not feel this application meets the threshold for regional impact. The character for the land of subdivision standards does not apply because this is an existing built up area with no future development proposed at this time. The land was suitable for development, and it has been developed. This proposal is not scattered or premature because it is already developed. There are no notable existing features to preserve because it has already been developed. The applicant has proposed monumentation, which meets the city standards and will be verified by Public Works Staff as part of a condition of final approval.

He went on to say that the subject parcels are not in any special flood hazard area. This standard is not applicable.
Fire Protection and Water Supply – This standard has been met as this site is located in the downtown urban compact. There are fire hydrants located nearby.
Utilities are hooked up to city water and sewer.

Mr. Clements reviewed the conditions of approval.

Mr. Clancy clarified this site does not have permeable surfaces. Mr. Clements stated the applicant submitted a calculation and with the subdivision, lot 2 meets the requirement but lot 1 does not.

The Chairman asked for public comment.

Mr. Rick Swanson of Historical Society of Cheshire County addressed the Board and asked if the property is sold, whether that would impact the parking spaces for the Historical Society. The Chair noted the Historical Society has three rows, which won't be impacted, but the parking area behind the Historical Society's spaces belongs to Keene State College. Depending on what the future use is, those parking spaces could be impacted. Mr. Swanson asked whether the Board could approve a future configuration to the parking in an event, a non-government entity should purchase this property. Chair Farrington stated, as staff had explained, a hypothetical variance cannot be applied for while the property is in governmental use.

Mr. Clements referred to the existing parking area for the Historical Society. Keene State would have to create 8 feet on their side of the lot and would need to remove that impervious surface to meet the set back at that location. He noted the parking spaces that will not be affected by this application. The only area of concern is the small drive aisle.

Mr. Swanson asked about the area adjacent to Proctor House. Mr. Clements stated that lot line already exists and would be considered an existing condition. He explained the only thing not being cured by this application tonight is new conditions being created by adding a new lot line. All the deviations from the pavement set back requirement existing today are allowed to remain as legal non-conforming. Mr. Swanson asked whether there was anything that restricts the building envelope of either of those two lots. Mr. Clements stated this property is in the downtown transition and is form-based, so the building envelope would be subject to build-to lines as well as some traditional building set back. Ms. Brunner noted for downtown transition, the interior side set back is 10 feet for a building line, rear set back of 15 feet, corner side set back of 10 feet and front set back of 15 feet. Hence, a building would have to be within those setback areas.

Mr. Swanson asked whether construction of the property has any impact on the Historical Society. Mr. Clements stated if someone purchased Proctor House and wanted to demolish the property, they would have go through a major site plan review process before the Planning Board. Chair Farrington added this would also include any construction planning and the impact that would cause to abutters.

Mr. Clancy asked whether the Historical Society has a right of way to the rear of the property. Mr. Huntley stated there is a 14-foot right of way at Proctor Court.

With no further comment, the Chair closed the public hearing.

C. Board Discussion and Action

A motion was made by that the Planning Board approve PB-2025-01 as shown on the plan set identified as "Two Lot Subdivision" prepared by Huntley Survey & Design, PLLC at a scale of 1 inch = 20 feet, dated August 20, 2024 and last revised February 11, 2025 with the following conditions:

1. Prior to final approval and signature by the Planning Board Chair, the following conditions precedent shall be met:

A. Owner's signature appears on the plan.

B. Inspection of lot monuments by the Public Works Director or their designee following their installation or the submittal of a security in an amount deemed satisfactory to the Public Works Director to ensure that the monuments will be set.

C. Submittal of four (4) full sized paper copies, two (2) mylar copies, and a digital copy of the final plan set.

D. Submittal of a check in the amount of $51.00 made out to the City of Keene to cover recording fees.

The motion was seconded by Sarah Vezzani

Ms. Vezzani stated there is no potential for regional impact from this application. She felt the draft language proposed by staff makes sense for any future sale.

Chair Farrington stated he likes the collaboration Keene State is showing with the city on this project.

The motion was unanimously approved.

c) PB-2025-02 – Cottage Court Conditional Use Permit – 36 Elliot Street – Applicant Sampson Architects, on behalf of owner the Scott Richards Revocable Trust of 2023, proposes the conversion of an existing single-family home into a duplex on the property at 36 Elliot Street (TMP #214-021-000). The parcel is ~0.10-ac in size and is located in the Residential Preservation District.

A. Board Determination of Completeness

Planner Megan Fortson stated the applicant has requested exemptions from submitting a grading plan, landscaping plan, lighting plan, elevations, and all technical reports. After reviewing each request, staff have made the preliminary determination that granting the requested exemptions would have no bearing on the merits of the application and recommend that the Board accept the application as complete.

A motion was made by Roberta Mastrogiovanni that the Planning Board accept PB-2025-01 as complete. The motion was seconded by Sarah Vezzani and was unanimously approved.

B. Public Hearing

Tim Sampson of Sampson Architects addressed the Board and stated he was before the Board representing The Scott Richards Revocable Trust for a conditional use permit for 36 Elliott Street. He stated it was a straightforward project. He stated this property in 2008 was permitted as a studio, construction completed in 2009. At that time, the inspector and the designer added

the kitchen without proper documentation filed with the city. There was paperwork signed that it would not be used as a dwelling unit and to his knowledge it has not been

Mr. Sampson stated what they are seeking to do is take an existing dwelling unit, not recognized by the city, and make it an official dwelling unit for the property owner to use. He stated the application meets all requirements for a CUP Cottage Court. There will be no construction or changes to the site, which is the reason for the requested exemptions from any documentation.

The only internal construction that would be required is what would be addressed through the building permit process, based on the fact that building codes have changed in the last 15 years since construction was completed. This concluded Mr. Sampson's comments.

Staff comments were next.

Ms. Fortson stated this subject parcel is about 4,300 square feet in size. The site itself is located between Wheelock School on Adams Street and Main Street. This property is located in the Residential Preservation District and unlike the other cottage court conditional use permit applications that have come before the Board for conversion of existing buildings into a higher number of units, this lot in residential preservation has no density requirement. Ms. Fortson explained in the residential preservation district, the only way to have more units is through the cottage court process. Hence, this is the reason that this application is before the Board today.

Ms. Fortson next reviewed how this application complies with the Cottage Court standards. Site plan review is not required because it is less than five units. There is no regional impact.

With reference to departmental comments on the application. Planning staff received comments from both code enforcement and the fire department, noting that this project is going to need to go through a formal building permit process to make sure that all work that was done related to electrical, building and life safety issues have been completed up to code. If there is anything that needs to be addressed internally with any of those items, those would be addressed as part of the building permit review process; planning Staff will be included in that process.

In regards to the specific review of the standards for cottage core applications, specifically development types allowed, the proposal is for the creation of a second unit in a building currently used as a single family home on a single lot. This standard appears to be met.

There are certain dimensional standards that are required as part of the CUP application. In this specific case, the property does not comply with the 20-foot rear set back or the 10-foot side set back that is required in the residential preservation district. However, these are all existing conditions. The applicant is not proposing to alter them in any way – hence, this is not applicable and the standard is met because they are not proposing any changes.

Ms. Fortson stated the new unit, which is going to be constructed towards the back of the building, is an existing dwelling with two floor units; they occupy both first and second floors. The applicant is proposing two parking spaces. The cottage court requirement allows either one per unit or one per bedroom. By proposing two, this standard is being met.

In terms of building separation, again, the proposal does not involve the construction of multiple buildings. This standard is applicable. However, the application will need to go through a building permit and life safety review process following the conditional approval by the Planning Board.

As for driveways, the existing driveway shown is almost 14.5 feet wide. This standard is not applicable, because they are not proposing any changes to the driveway.

There are no internal roads proposed as part of the application.

The standard related to screening is not applicable as the 1 3/4 story height of this building and design is very similar to adjacent properties in the area.

Architectural guidelines are not applicable given the fact that there are no changes proposed to the exterior.

Ms. Fortson noted this property is surrounded by single-family homes on all sides with the exception of two, two-family home across the street.

This concluded staff comments.

The Chair asked for public comment, and with no comment from the public, the Chair closed the public hearing.

C. Board Discussion and Action

A motion was made by Roberta Mastrogiovanni that the Planning Board approve PB-2025-02 as shown on the plan identified as "Cottage Court Application, 36 Elliot St, Keene, NH 03431" prepared by Sampson Architects at varying scales on January 15, 2025 and last revised on February 12, 2025 with the following conditions prior to final approval and signature by the Planning Board Chair:

1. Owner's signature appears on the plan.

2. Submittal of five full-sized paper copies of the final plan

The motion was seconded by Sarah Vezzani.

Mayor Kahn stated, while there are some anomalies to the property, what is significant from the site review is that this property fits into the neighborhood in terms of density.

Mr. Hoefer felt this application feels different to the intention of a cottage court application and asked whether Cottage Court was the best option for this project. Ms. Fortson explained most of the applications the Board has seen are for two units going to three units within the existing building envelope and they had to come before the Planning Board because they did not have the required square footage on their property. Going through the cottage court process removes the density requirements. She added the City has an ordinance, which was just passed that removes the density requirement altogether, so these types of projects would not have to come to the Planning Board anymore. These multi-family uses will be allowed by right in the districts where they are allowed through the regular zoning ordinance.

In this case, the only way to have a second unit on a property in residential preservation is either through the cottage court process or by creating an accessory dwelling unit. In this case, Ms. Fortson stated she assumes the property owner's reason for going through the cottage court process is because they want two rentable units, with an accessory dwelling unit, the property owner has to occupy one of the units. They would be able to rent one instead of two.

Ms. Vezzani stated this application does not have the potential for regional impact. She felt it would be nice to have both units brought up to code.

The motion made by Roberta Mastrogiovanni carried on a unanimous vote.

d) <u>PB-2025-03 – Major Site Plan – Douglas Company Facility, 0 Black Brook Road</u> – Applicant Fieldstone Land Consultants PLLC, on behalf of owner Douglas Company Inc., proposes the construction of a ~98,323-sf office and warehouse building on two parcels at 0 Black Brook Rd (TMP#s 221-023-000 & 221-024-00). Waivers are requested from Section 20.14.1, Section 20.14.2, Section 20.14.3.D, and Section 23.5.4.9 of the LDC related to architectural and visual appearance, parking in front of the building, and driveway width. The parcel is ~5.33-ac in size and is located in the Corporate Park District.

A. <u>Board Determination of Completeness</u>

Planner Evan Clements stated the applicant has requested exemptions from submitting a historic evaluation and traffic analysis. After reviewing each request, staff have made the determination that the requested exemptions would have no bearing on the merits of the application and recommend that the Board accept the application as complete.

A motion was made by Roberta Mastrogiovanni that the Planning Board accept PB-2025-03 as complete. The motion was seconded by Mayor Kahn and was unanimously approved.

B. <u>Public Hearing</u>

Mr. John Noonan from Fieldstone Land Consultants addressed the Board on behalf of the Douglas Company and introduced Scott Clark owner of Douglas Company. Mr. Noonan stated the proposal is for a warehouse facility on Blackbrook Road. The applicant is looking to merge two lots to create approximately 12.5 acres of land as a single unit and construct a warehouse facility consisting of two phases.

Phase one would be the middle section. Mr. Noonan referred to a plan of the building, which is proposed at approximately 57,000 square feet in size, build out of approximately 97,000 square feet in size. The first phase of the building would be for warehousing with a loading dock. Douglas Company would keep their business on Krif Road. They are looking to keep that building, construct phase one and utilize the warehouse at Blackbrook Road. Phase two would come approximately five years following the construction of phase one to build out to the full plan. The second phase would have space for more warehousing as well as an office area. At that point, they would move out of their Krif Road location into this facility.

Mr. Noonan stated there would be an access point off the cul-de-sac at the end of Blackbrook Road mostly for tractor-trailer trucks and fire access. He noted a second entrance for office personnel and smaller vehicles. There is a 25-foot drive aisle around the building. Parking lot in the front and a parking lot in the rear. Both parking lots have ADA access and are curbed with sidewalks.

Mr. Noonan stated this property is in the 100 hundred year flood plain and there is also the floodway which is further down following the river. He stated one of the largest things for designing the site is to offset and mitigate for floodplain compensation. He stated they are proposing a berm and the design is to offset the fill in the floodplain with an excavation to compensate for that same volume. Vertical granite curbs are being proposed with asphalt sidewalks. The asphalt sidewalks would be temporary. When phase two is constructed the asphalt sidewalks will be replaced with concrete sidewalks and during phase two everything will be brought up to finished elevation. Parking and pavement access will be constructed as part of phase one.

Mr. Noonan went on to say that they have submitted a grading and drainage plan. This will be reviewed by DES Alteration of Terrain and is designed to meet the state standards. The overall site impact is more than 100,000 square feet, thus requiring an alteration of terrain permit. He noted the flood compensation area drains down to the southwest corner, following the river. He noted they will be connecting to the city owned detention basin and a grass treatments swale and the remainder will be taken care of between two subsurface chamber systems.

Mr. Noonan next referred to the utility plan. The site has municipal water and sewer. There are stubs that were installed when they built Blackbrook Road in anticipation for corporate park. There is a two-inch water supply line for domestic use and a six-inch ductile iron water line for fire use. This is being extended with the six inch fire line and at the direction of the Fire Chief, a second hydrant on the site has been installed. He noted to where a transformer is located next to Blackbrook Road and the applicant would be connecting to that for electricity. Propane tanks will be located parallel with the existing propane tanks that service the Janos property.

He referred next to sheet that showed the sewer profile. Mr. Noonan stated as part of their connection to sewer, they would also need to obtain sewer connection permit from the City of Keene and submit to DES for a state sewer connection permit. It will ultimately run to a pump station that is owned by the City of Keene. The site is slightly lower in elevation. There will be a small pump station that comes out of the applicant's building. This will still drain by gravity into the city infrastructure.

Lighting Plan – There will be a combination of wall packs, wall mounted lights and pole mounted lights in the parking lots with LED full cut off fixtures. There are 3000-Kelvin temperature rating and more than 80 for CRI for the color-rendering index to meet the city standards for lighting.

Landscaping Plan – Mr. Noonan stated a plan has submitted to show that the plan meets the standards. Landscaping is mostly for screening parking spaces. Along the berm that is located between the parking lot and the flood plain line, there will be shrubs planted. Trees will be planted along the edges of the parking lot. The three maple trees at the rear of the site will be alignment with the existing trees that are on the Janus property. No trees are being removed as part of this site plan. In the floodplain.

Compensation basins would contain pollinator friendly seed mix; mix of wildflowers friendly to bees and pollinating species. There will also be some Weeping Willow trees. These were recommendations by the Conservation Commission for another project in town, which had a floodplain compensation basin to provide landscaping and improve what would otherwise be a large "wet hole" on someone's property.

Mr. Noonan noted to a turning exhibit for tractor-trailer traffic as well as a turning exhibit for Keene ladder trucks. Ultimately, tractor trailer turning motions out of the parking lot and making U-turn is what drives the width of the driveway; 31 feet at the property line and 51 feet on the radius at the edge of pavement. Mr. Noonan stated this is the reason for asking for an exemption on that pavement width.

Mr. Noonan showed the Board a video of the proposed building.

Mr. Noonan next addressed three waivers the applicant was requesting. Two of the waivers are for the architectural design of the building. Waiver one - to grant a waiver from section 21.14.1.B - Massing and Scale - where the LDC allows a building over 150 feet in length or more to not be divided into multiple modules. Based on the design for a warehouse building, the architect has a design to stack the windows to break up the façade. The office and loading side of building will be stepped in and out.

The second waiver is from Section 21.14.2A for visual interest of the Land Development Code to allow for uniform appearance of the building. Mr. Noonan explained the office end of the building would have a change of colors plus the large tower area would have windows that break it up. The remainder of the building would have a difference in colors between the gray and cream and split concrete block on the bottom four feet

The third waiver request is form Section 21.14.3D - Site design and relationship to the surrounding community of the Land Development Code to allow for off street parking to be located in the front of the building where parking is normally required to be located to the sides in the rear of the building. Mr. Noonan stated ultimately this parking lot in the front, right along Blackbrook Road. The parking lots are going to be located on each end of the building to push everything back because of the unique feature of the site following the river. The floodplain compensation needed to be located along the river. The site design is driven by that floodplain. This concluded Mr. Noonan's presentation.

Mayor Kahn asked whether the material that is going to clad the majority of the building would look like metal. Mr. Noonan stated it would be a metal insulated panel in cream and gray color, with the bottom of the building consisting of split block to mimic stone as the foundation.

The Mayor asked about the amount of cubic yards that would be used for fill and compensatory, storage. Mr. Noonan stated the total fill for the floodplain would be 6,362 yards and are cutting 7,034 yards ending up with an excess flood compensation of 671 yards.

Staff comments were next.

Mr. Clements addressed the Board. He stated staff does not believe this project has regional impact. As Mr. Noonan stated, with reference to drainage, the project has been evaluated against local regulations and will also be subject to the Alteration of Terrain Permit.
The applicant's stormwater report states that the proposed system will reduce precondition, flow rate, and volume of storm water on the property - that standard has been met.

Sedimentation and Erosion Control - The plan proposes the installation of temporary erosion control measures as needed around the site and around Blackbrook and those include silt fence,

check dams, erosion matting, a stabilized construction entrance and other best management practices – this standard appears to be met.

Snow Storage and Removal - The site has been designed for snow storage areas around the perimeter of the parking and drive aisles and they do not conflict with the proposed drainage systems - this standard appears to be met.

Landscaping – Plan includes the installation of 12 trees, 57 shrubs and a mix of perennial flowers in the parking landscape area islands. Flowers include day lilies, hostas and purple coneflower. The shrubs are going to be rhododendrons, dogwoods and winterberries, and the trees are red maple and hawthorn trees, as well as weeping willows in the flood compensation area. Over 3,476 square feet of parking area landscaping is proposed when they are only required to provide 217 square feet. Mr. Clements stated the applicant, however, is requesting an alternative landscaping plan as allowed per Section 9.4.5.B5 of the land development code. This is related to parking lot designs and large parking lots of 50 spaces or greater are supposed to be designed to minimize the practice of large, unbroken areas of pavement.

Due to the industrial nature of the proposed site to allow for more ease of travel around the site itself, the applicant is requesting their proposed orientation, as articulated in the site plan, which does not quite meet the standards. However, the Board will need to decide if the alternative landscaping plan is appropriate for the proposed use of the site.

Screening – The proposed dumpster area will have a dumpster enclosure that meets the standards. At this time the HVAC system for the warehouse and the office have not yet been designed. However, the applicant notes that those mechanicals will be set back at least 10 feet from the edge of the roofline, as required by city standards, and will be screened to comply. At this point the standard has been met.

Mr. Clements went on to say as Mr. Noonan stated all proposed lighting, including the lighting levels along the property line, are within the city standards and the standard has been met.

Water and Sewer - The DES Sewer connection permit as well as all required improvements on site tie into those existing water and sewer lines at BlackRock Road. The city engineer has worked with the applicant extensively to get those details to a point where they are comfortable with the proposal – this standard has been met.

Access and Traffic Management - The applicant has stated in their narrative that all site access will come from Black Book Road and this includes the creation of a new street access point as well as the utilization of the existing access on the adjacent property. A 25 foot wide, two-way drive aisle is proposed to connect with parking areas, loading docks and the public right of way. Truck turning exhibits have proven the geometry of the proposed circulation is sufficient for both the applicant's needs with tractor-trailers and emergency service vehicles.

Mr. Clements further stated that the project includes pedestrian pathways around the building for both phases. Temporary pedestrian connections for the parking areas for phase one will be removed during construction for Phase 2. A bike rack is proposed to be installed near the entrance of the office building which is part of phase two. A mix of curbing is proposed to protect those pedestrian walk area landscaping and the building from vehicles rolling forward accidentally.

The proposed use is required to supply 57 parking spaces. The plan proposes 74 parking spaces, including three accessible spaces and two van spaces. Parking areas are located on the western side and eastern side of the property. The applicant had requested an exemption from submitting a traffic analysis and provided ITE trip generation estimates. The manual estimates 77.7 trips per workday and approximately 42 trips per each peak hour, which is under the threshold for a full traffic study. The applicant states in their narrative that the Black Brook Corporate Park was designed to accommodate traffic associated with larger scale business uses, such as the existing users and this proposed use. Douglas Company was able to provide some real life practical estimates of their current traffic generation, and they noted they are seeing about five trucks per day and around 25 trucks per week in and out of their current site on Krif Road. In tandem with the city engineer, this standard appears to be met.

Mr. Clements referred to the waiver from Section 23 for pavement in excess of 25 feet at the property line. The Land Development Code allows the Board to approve that deviation without a formal waiver as long as the geometry necessitates that increased width. He explained that the geometric analysis is the truck-turning plan. Mr. Clements stated he had a chance to discuss this issue with the city engineer who believes that based on the truck-turning plan, that additional footage is necessary. He stated if the Board is comfortable they would be approving that waiver with this application.

Filling an Excavation – Mr. Clements stated as Mr. Noonan explained, they are going to be using most of the material they cut for flood compensation. However, Blackbrook Road is just adjacent to Wyman Road, which connects directly to Route 12. Any large vehicle traffic to and from the site will move swiftly to larger roadways without generating significant impact to the surrounding area – this standard appears to be met.

Surface Waters Wetlands – There are surface waters and wetlands on the site as described by Mr. Noonan which will not be impacted directly. Part of the flood compensation will include some work within the wetland buffers themselves. However, flood compensation is a permitted use within the wetland buffer, so no conditional use permit is needed for that - this standard is met.

Hazardous and Toxic Materials - The applicant states in their narrative that the proposed use does not utilize hazardous or toxic materials - this standard is met.

Noise - The applicant states in their narrative that the noise generated by the use will be similar to surrounding businesses. The site is located in an area suitable for the intended use and will not conflict with other properties - this standard is met.

Architecture and Visual Appearance – Mr. Clements stated Mr. Noonan did a good job explaining architecture and visual appearance and their intent to meet the standard with their design. Most of these standards were written to encourage a pedestrian articulation of buildings and site development. He noted however, Blackbrook Road is not a high pedestrian traffic destination. Hence, staff believes the applicant has tried to meet the intent of the regulations where possible but understanding that the nature of the development require certain deviations from strict conformity – this is the reason for the three waiver requests.

Mr. Clements next reviewed the conditions of approval as outlined in the staff report. He stated the last condition is unique to this application and explained in the land development code there is a standard criteria for active and substantial development. After final approval, an applicant

has two years to achieve active and substantial development, there is a provision for extensions; three extensions, each with a higher test of necessity for that additional 180-day extension. He stated the Planning Board also has the authority to create customized, active and substantial development for projects that need that flexibility. This project is one of them. He noted the applicant has decided to make Keene their long term home and staff is very excited to retain the Douglas Company within the city and for them to have an opportunity to find a piece of property that they can build out and grow into. Staff is recommending that in order to support them achieve active and substantial development for phase two shall be five years and shall commence on the date of the issuance of the certificate of occupancy for phase one. This gives them five years from finishing phase one as well as those three extensions if needed down the line.

Chair Farrington asked whether the alternate landscape plan needs to be approved as a separate condition. Mr. Clements suggested discussing the item and acknowledging this isn't a strict adherence to the zoning ordinance, but the Planning Board has the authority from the zoning ordinance to approve an alternate design if they saw fit as long as it meets the overall intent of Section 9.4. The Chair asked about the width of the parking – Mr. Clements stated it does not need to be addressed separately but he wanted to bring it up as part of the application.

Mr. Clancy referred to erosion control measures and asked if they were going to need to remain for the duration of phase two. Mr. Clements stated all earth work associated with the flood compensation, drive aisles and the parking lot will be phase one. The major portion of the disturbance will be phase one. The intent for phase two would be to come in complete the foundation work and expand the building. However, the Alteration of Terrain Permit will still be active and the applicant will have to make sure all these things are still in place when disturbing the site

Mr. Hoefer asked whether the waiver requests were just for phase one. Mr. Clements stated it would be for both phases. Tonight the Board will be approving the plan for the entire finished building. If things change between phase one and two the applicant might have to amend their site plan

Mr. Clancy asked what active and substantial development means for the city. Ms. Brunner explained this is basically a time frame whereby a project needs to start construction. The State RSA's allow each local community to define this for themselves and set a time-frame for themselves if they so choose. In Keene, *active in substantial development of an approved project shall be completed within two years, starting the day following the Board's decision to approve the application. Plans approved in phases shall be subject to a determination of active and substantial development for the current phase*. Ms. Brunner used the Froling application as an example where the Board had the flexibility to set the timeline for the future phases of the project. Mr. Clancy asked whether five years from certificate of occupancy is sufficient time for the applicant. Mr. Clements stated this is an issue staff has worked with the applicant on.

Mayor Kahn stated he wanted the issue of alternative landscaping reflected in the minutes that it has been presented and looks adequate and that there is no further need for clarifying that landscaping plan as qualifying to meet the Board standards.

The Chair asked for public comment next. With no public comment, the Chair closed the public hearing.

C. Board Discussion and Action

A motion was made by Roberta Mastrogiovanni that the Planning Board grant a waiver from Section 21.14.1.B – Massing and Scale of the Land Development Code to allow building of 150 feet in length or more to have facades that are not divided into multiple modules. The motion was seconded by Sarah Vezzani.

Ms. Vezzani felt this building fits in well with the corporate park area. The Chair agreed.

The motion to grant a waiver from Section 21.14.1.B carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board grant a waiver from Section 21.14.2.A - Visual Interest of the Land Development Code to allow for a uniform appearance of the building. The motion was seconded by Sarah Vezzani.

Ms. Vezzani felt the vertical windows would be nice for those working in the warehouse and they also help break up the large façade

The motion to grant a waiver from Section 21.14.2.A carried on a unanimous vote.

A motion was made by Roberta Mastrogiovanni that the Planning Board grant a waiver from Section 21.14.3.D - Site Design and Relationship To Surrounding Community of the Land Development Code to allow for off street parking to be located in front of the building where parking is normally required to be located on the sides and rear of buildings. The motion was seconded by Sarah Vezzani and was unanimously approved.

A motion was made by Roberta Mastrogiovanni approve PB-2025-03 as shown on the plan identified as "Douglas Company, Inc. Warehouse Facility" prepared by Fieldstone Land Consultants at a scale of 1 in. = 50 ft. dated January 17, 2025 and last revised February 10, 2025 and the architectural elevations prepared by BTH Architects at a scale of 1/16 in. = 1 ft. dated January 15, 2025 with the following conditions:

1. Prior to final approval and signature by the Planning Board Chair, the following conditions precedent shall be met:

A. The owner's signature shall appear on the plan.

B. Submittal of security for landscaping, sedimentation and erosion control and "as built" plans in a form and amount acceptable to the City Engineer.

C. The Alteration of Terrain Permit number shall appear on the plan set.

D. Submittal of five full-size paper copies and one digital copy of the final plan.

2. Subsequent to final approval and signature by the Planning Board Chair, the following conditions shall be met:

A. Prior to the commencement of site work, the Community Development Department shall be notified when all erosion control measures are installed and the Community Development Director, or their designee, shall inspect the erosion control measures to ensure compliance with this site plan and all City of Keene regulations.

B. The timeline to achieve Active and Substantial Development for Phase 2 shall be five years and shall commence on the date of issuance of a Certificate of Occupancy for Phase 1.

The motion was seconded by Mayor Kahn.

Ms. Vezzani stated this application does not have the potential for regional impact. She stated she appreciates the applicant desire to continue to stay in Keene as well as the effort put into this detailed plan to construct in a flood plain.

Mayor Kahn stated today's presentation not only shows the applicant's commitment to the city and felt it would enhance the look of Blackbrook Park as well.

Mr. Clancy stated he was happy with the driveway plan as presented. He felt the landscape plan fits in well with the parking lots being broken into two. He added he is happy with the overall plan.

The Chair stated he was happy with the project and the effort Mr. Noonan has put into the application. He also commended Mr. Clark for his commitment to the city.

The motion carried on a unanimous vote.

6) Earth Excavation Permit – Determination of Application Completeness:

a) **PB-2024-20 – Earth Excavation Permit Major Amendment & Hillside Protection Conditional Use Permit – 21 & 57 Route 9** – Applicant Granite Engineering LLC, on behalf of owner G2 Holdings LLC, proposes to expand the existing gravel pit located at 21 & 57 Route 9 (TMP#s 215-007-000 & 215-008-000). A Hillside Protection CUP is requested for impacts to steep slopes. Waivers are requested from Section 25.3.1.D & Section 25.3.13 of the LDC related to the required 250' surface water resource setback and the 5-ac excavation area maximum. The parcels are a combined ~109.1-ac in size and are located in the Rural District.

Ms. Brunner stated staff has included a memo in the Board packet (starts on page 98) to provide some context and overview of this item. Also included is a memo is review from the third party , Field Stone Consultant who has been hired on Board's behalf to review the materials. The applicant is also here tonight in case there are any questions from the Board.

The Chair noted the consultant has recommended completeness.

A motion was made by Roberta Mastrogiovanni that the Planning Board accept PB-2024-20 as complete. The motion was seconded by Sarah Vezzani and was unanimously approved.

Ms. Brunner stated the vote tonight is just about completeness but it is up to the Board as to whether they want to hear from the applicant or the public.

The Chair invited the public to address the Board.

Mr. Jim Hanley of 67 Tyler Lane address the Board. He stated his property is on the southern boundary which abuts the quarry. He stated during the winter he noticed one of the streams had been flagged for wetland analysis. One stream is on his property and one traverses his property. Mr. Hanley stated he would like to see copies of these wetland reports. He stated there is also a road of historic significance and prior to development, he felt this road needs to be researched. He also asked for geological surveys completed on this property. He also referred to vibration he felt in his home.

Mr. Hanley stated he has a pond at the rear of his property; .10th of an acre, 1,800 feet from the property line and added that this pond has been abnormally low. He stated he would also like a seismic monitor to monitor the vibration from his property. Mr. Hanley stated he has concerns about this work being planned.

Ms. Fortson addressed the Board and stated at the January meeting the Board decided this was a development of regional impact. As part of that process, per state statute, staff notified Southwest Regional Planning Commission as well as the Town of Sullivan. She stated the Earth Excavation Standards require that this Board vote on completeness of this application. After which timed a public hearing would be set for the next Planning Board meeting. Ms. Fortson stated it was acceptable for the Board to take public comment tonight but all that the Board is considering tonight is whether or not the application has met the necessary criteria for submittal items. Ms. Fortson stated she has been reviewing the application with both the consultant and the applicant. The consultant feels, as outlined in their memo on page 100 that all necessary items have been submitted to accept this application has complete. This does not indicate that the materials comply or don't comply, it just indicates that the necessary material have been received.

Ms. Vezzani asked staff to explain the next steps for the public's benefit. Ms. Brunner stated if the Board votes to accept this application as complete tonight, per the regulations outlined in the Land Development Code, it would next go to the Keene Conservation Commission at their next meeting on March 17th where they will be conducting a site visit. The timing of that has to be confirmed, but it is likely at 4:00 PM and then the Conservation Commission meeting is at 5:00 PM. Mr. Hanley asked whether he would be notified of this meeting. Ms. Brunner stated the agenda would be online a week before the meeting but if Mr. Hanley signs up at keenenh.gov for email updates he would be notified. Mr. Hanley asked how he gets access to the various reports completed for this site. Ms. Fortson stated she would be happy to reach out to Mr. Hanley.

The Chair asked whether Southwest Regional Planning Commission or the Town of Sullivan has responded to the city. Ms. Brunner stated the Southwest Regional Planning Commission is planning on submitting a memo with their comments, once the public hearing date is set but no formal correspondence has been received from the Town of Sullivan yet.

The Chair closed the public hearing.

Ms. Vezzani and Mr. Clancy stated they were comfortable voting for completeness.

The Board voted unanimously to accept PB-2024-20 as complete.

7) Master Plan Update (https://keenemasterplan.com/)

Ms. Brunner stated the task forces that were formed for each of the six pillars for the community vision have already had their first round of meetings in January. Some of them have met a second time. They are ready to draft list of goals for each pillar, and then moving forward they will be drafting strategies. There have also been a lot of youth engagement that has been happening. Mr. Clements and Ms. Fortson attended an architecture class at Keene State College recently and got some great feedback and that has been documented. The new Community Development Director and the Planning Technician will be attending the High School - Mayors Youth Summit to get some input some high school students. Staff will also be presenting to the 8th graders at Keene Middle School - environmental unit and will be talking to them about the environmental impacts, transportation, land use, solid waste management, and energy. They will be building this into their unit and send staff feedback.

This input is coming in later than was planned, the committee will be releasing the prioritization survey in about 3-4 weeks to the larger community which will be used to build out an implementation plan.

The next step after that is to develop a draft future land use map which will be shared with the wider community using online story maps.

The future summit is scheduled for Tuesday, June 3rd at 5:00 PM at Heberton Hall where the draft plan will be unveiled.

Ms. Vezzani stated someone in the community had suggested flyers with QR codes that lead to the website that has the six pillars. Ms. Brunner stated staff could put another round of those flyers.

8) Staff Updates

Ms. Brunner introduced Paul Andrus, the new Community Development Director. Mr. Andrus stated this is his second meeting and is impressed with the preparation planning staff come with to each meeting. He stated he and his family are glad to be back in the northeast.

9) New Business

None

10) Upcoming Dates of Interest

- Joint Committee of the Planning Board and PLD – March 10th, 6:30 PM
- Planning Board Steering Committee – March 11th, 12:00 PM
- Planning Board Site Visit – March 19th, 8:00 AM – To Be Confirmed – The Chair state they have not had a quorum for site visits and encouraged Board members to let staff know of times that would work for everyone.
- Planning Board Meeting – March 24th, 6:30 PM

11) More Time Items

a) Training on Site Development Standards – Snow Storage, Landscaping, & Screening

12) <u>Adjournment</u>

There being no further business, Chair Farrington adjourned the meeting at 9:33 PM.

Respectfully submitted by,
Krishni Pahl, Minute Taker

Reviewed and edited by,
Emily Duseau, Planning Technician

CITY OF KEENE
NEW HAMPSHIRE

MEMORANDUM

TO: Planning Board

FROM: Community Development Staff

DATE: March 14, 2025

SUBJECT: Agenda Item A.3 - Final Vote on Conditional Approvals

Recommendation:

To grant final approval for any projects that have met all their "conditions precedent to final approval."

Background:

This is a standing agenda item in response to the "George Stergiou v. City of Dover" opinion issued by the NH Supreme Court on July 21, 2022. As a matter of practice, the Planning Board issues a final vote on all conditionally approved projects after the "conditions precedent to final approval" have been met. This final vote will be the final approval and will start the 30-day appeal clock.

As of the date of this packet, the following application is ready for final approval:

1. **PB-2025-02 – Cottage Court CUP – 36 Elliot Street**

If any projects meet their conditions precedent between date of this packet and the meeting, they will be identified and discussed during this agenda item.

All Planning Board actions, including final approvals, are posted on the City of Keene website the day after the meeting at KeeneNH.gov/planning-board.

PB-2025-04 – MAJOR SITE PLAN & SOLAR ENERGY SYSTEM CUP – CEDARCREST & MONADNOCK VIEW CEMETERY – 91 MAPLE AVE & 521 PARK AVE

Requests:

Applicant ReVision Energy, Inc. on behalf of owners Cedarcrest, Inc. and the City of Keene, proposes to install a medium-scale solar energy system on ~1.7-ac of undeveloped land located at 521 Park Ave (TMP #227-027-000) to provide power to the Cedarcrest facility located at 91 Maple Ave (TMP #227-018-000). The City property is ~46-ac in size and is located in the Conservation District, and the Cedarcrest property is ~5-ac in size and is located in the Low Density District.

Background:

The Cedarcrest site is located in west central Keene directly to the south of NH Route 12. The parcel is ~5-ac in size and is located at 91 Maple Ave (TMP #227-018-000) in the Low Density District. The site is already developed with a main building that is ~29,431-sf in size, a few outbuildings, a series of walkways, and an existing parking lot. The primary frontage and access to the site is from Maple Ave to the northwest as shown in Figure 1.

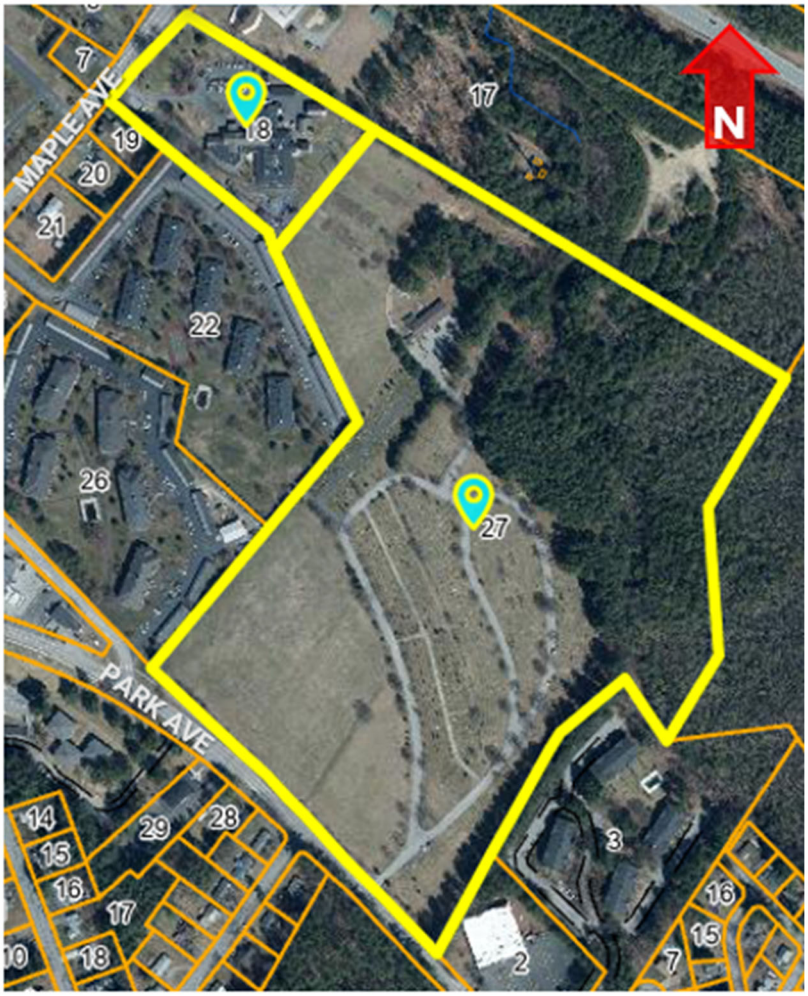


Figure 1. Aerial imagery from 2020 of the Cedarcrest site at 91 Maple Ave and the City's Monadnock View Cemetery parcel at 521 Park Ave.

The initial site plan for the property was approved in 1990 as part of the Major Site Plan, SPR-720. In 2001, the Planning Board approved another Major Site Plan, SPR-905, for the construction of a ~10,630-sf addition and associated site modifications. Subsequent modifications to this site plan included the addition of a walking path, the construction of a covered carport, the creation of additional parking spaces, the installation of an additional parking lot light fixture, and the construction of a covered outdoor pavilion.

The applicant proposes to construct a 333.2 kW DC, 230 kW AC fixed-tilt ground-mounted solar array that will consist of 560 individual solar panels. The array is proposed to be constructed on ~1.7-ac of undeveloped land transferred to Cedarcrest from the City of Keene through a Boundary

Line Adjustment, PB-2025-05. Following the BLA, the Cedarcrest property will become split-zoned with the main site located in the Low Density District and the newly acquired ~1.7-ac portion of the parcel located in the Conservation District. A Variance to allow for the primary use of the ~1.7-ac portion of the parcel as a medium-scale solar energy system was granted by the Zoning Board of Adjustment (ZBA) at their meeting on March 3, 2025. Figure 2 shows the area of land to be transferred to Cedarcrest from the City owned Monadnock View Cemetery parcel at 521 Park Ave.

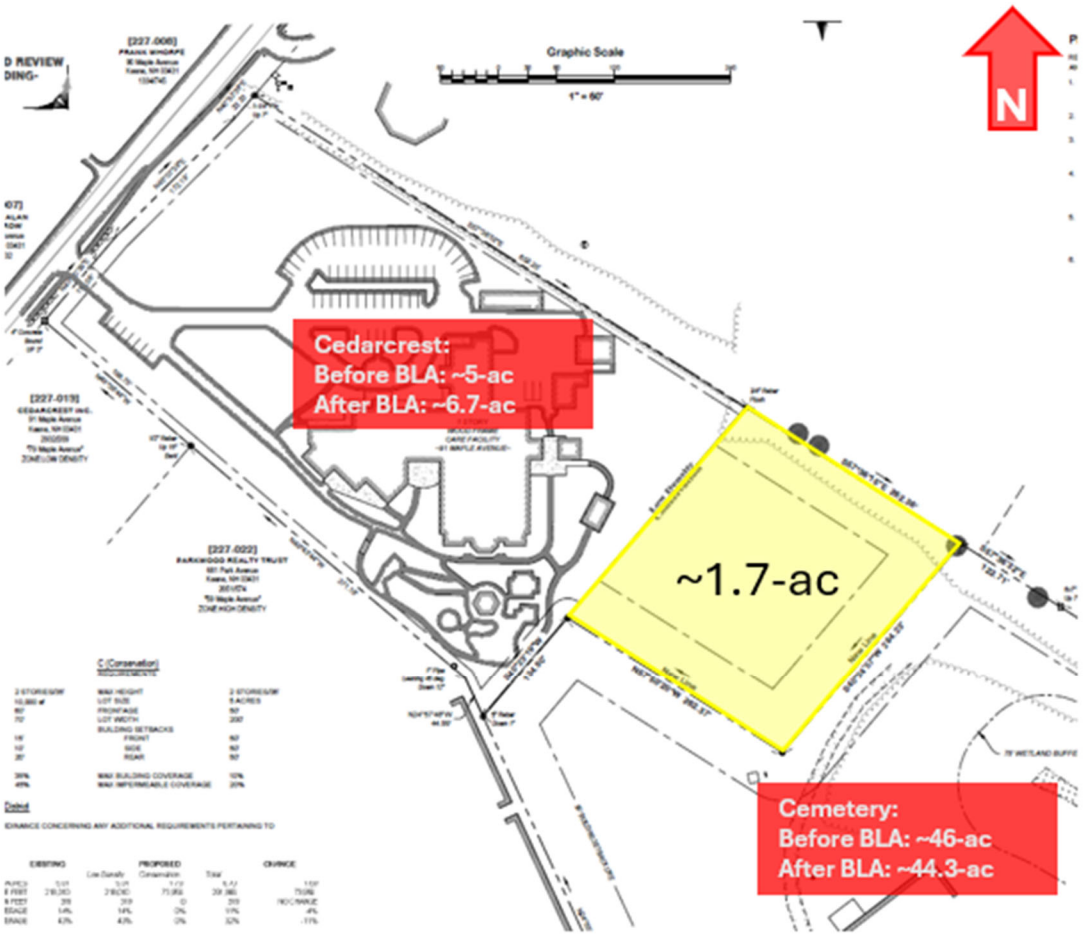


Figure 2. A snippet of the proposed BLA plan showing the area and amount of land to be transferred between the two parcels.

The installation of this array is the result of a long-term partnership between the City of Keene & ReVision Energy with the goal of installing solar developments on City-owned land to help achieve the City's goal of transitioning to 100% clean renewable electricity by 2030. Cedarcrest became involved in this project when they entered into a power purchase agreement for the electricity produced from the array, which the project narrative states will directly offset ~67% of Cedarcrest's electricity usage with onsite renewable energy. Given the size and scale of the proposed solar array, this project requires review for compliance with both the Solar Energy System Conditional Use Permit (CUP) standards as well as the Site Development Standards.

It should be noted that part of the negotiation between Cedarcrest, ReVision Energy, and the City of Keene will involve the relocation of the existing community gardens, which are currently located in an area where a portion of the array will be installed; however, none of this work is being proposed, reviewed, or approved as part of this application process.

Determination of Regional Impact:

After reviewing the application, staff have made a preliminary evaluation that the proposed site plan & CUP do not appear to have the potential for "regional impact" as defined in RSA 36:55. The Board will need to make a final determination as to whether the proposal, if approved, could have the potential for regional impact.

Completeness:

The applicant has requested exemptions from submitting a plan showing grading/limits of clearing, a lighting plan, a decommissioning plan, traffic analysis, soil analysis, historic evaluation, screening analysis, and architectural and visual appearance analysis. After reviewing each request, Planning Staff have made the preliminary determination that granting the requested exemptions would have no bearing on the merits of the application and recommend that the Board accept the application as "complete."

Department Comments:

1. **Police.** The six foot agricultural fence shown the plans will prove insufficient to protect the site from trespassers.
2. **Code Enforcement.** A building permit will be required for the solar energy system. There are no issues related to the floodplain.

APPLICATION ANALYSIS: *The following is a review of the Solar Energy System CUP regulations and Planning Board Site Development Standards outlined under Sections 16 & 21 of the LDC.*

SECTION 16.2.1 – SITING: This section of the code states that the solar footprint of an array cannot exceed 20 contiguous acres. The definition of *"solar footprint"* can be found in Section 29 of the LDC and is included below.

> *"**Solar Footprint** - The footprint of a ground-mounted solar energy system that is calculated by drawing a perimeter around the outermost panels of the system and any equipment necessary for the functioning of the solar energy system, such as transformers and inverters. The footprint does not include any visual buffer or perimeter fencing. Transmission lines (or portions thereof) required to connect the system to a utility or consumer outside the system's perimeter shall not be included in calculating the footprint."*

The proposed conditions plan on Sheet C2.0 of the plan set, which can also be seen in Figure 3, indicates that the solar footprint of the array will be ~0.76-ac (~33,074-sf) in size, which makes this a medium-scale solar array as defined under Section 8.3.7.B.1 of the LDC. This standard appears to be met.

SECTION 16.2.2 – HEIGHT: This standard states that ground-mounted solar energy systems cannot exceed 15'-tall at their highest point. The submitted elevations show that at its highest point, the solar array will be ~12.5'-tall. This standard appears to be met.

SECTION 16.2.3 – SETBACKS: This section of the code states that ground-mounted solar energy systems must be set back at least 50' from all exterior property lines and existing public rights-of-way. Sheet C2.0 of the plan set shows that the proposed array will be set back almost exactly 50' from the northern, eastern, and southern property lines. Planning Staff recommend that the Board include a subsequent condition of approval related to the flagging of this setback line by a surveyor licensed in the State of NH and the completion of an inspection by Community Development Staff prior to the issuance of a building permit and the commencement of site work to ensure that it will be properly maintained. This standard appears to be met.

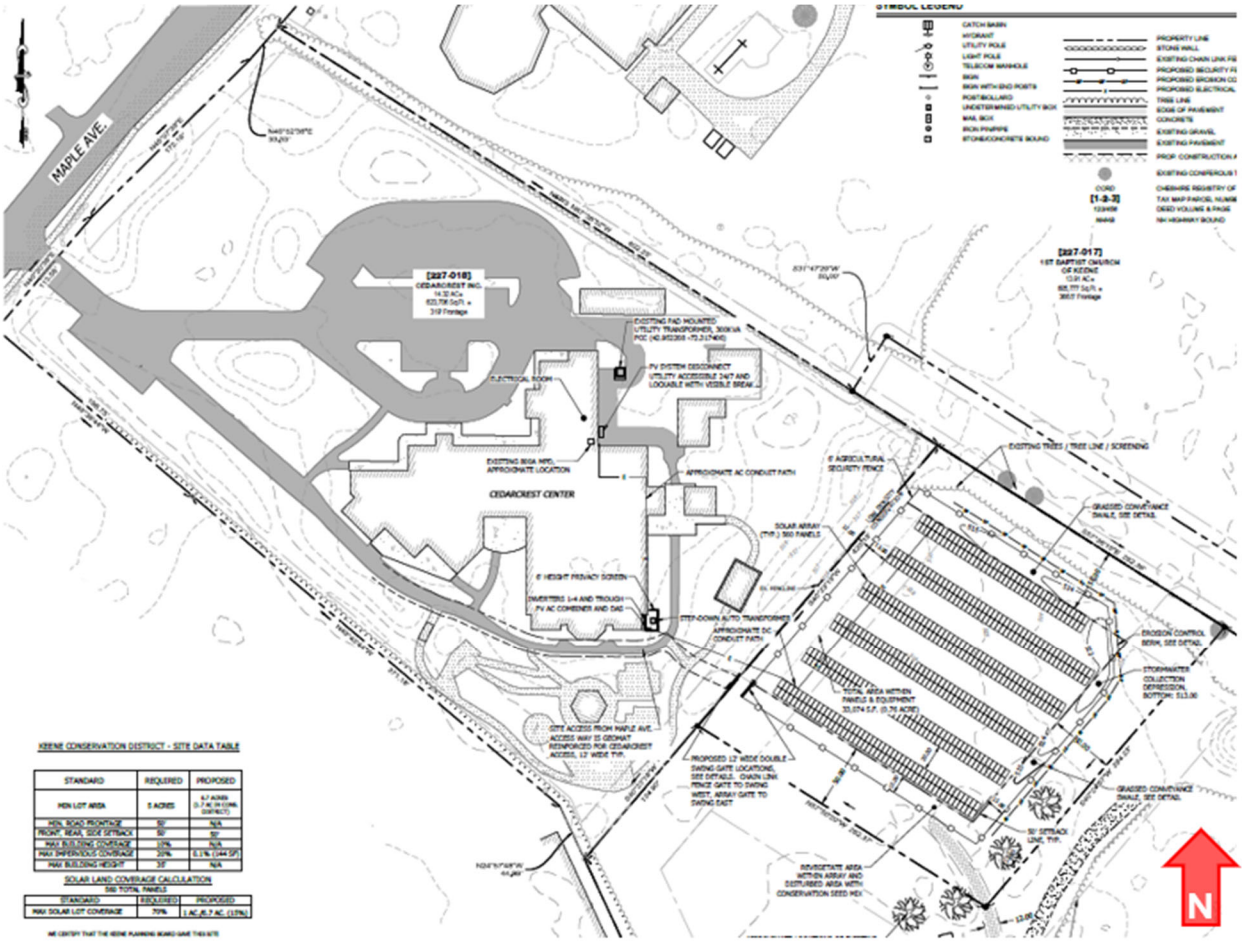


Figure 3. A snippet of the proposed conditions plan showing the proposed location and extent of the solar array on the Cedarcrest site.

SECTION 16.2.4 – LOT COVERAGE: This section of the code states that solar land coverage of an array cannot exceed 70% of the lot area upon which it is installed. The definition of *"solar land coverage"* from Section 29 of the LDC is included below.

> *"**Solar Land Coverage** - The land area that encompasses all components of the solar energy system including but not limited to mounting equipment, panels and ancillary components of the system. This definition does not include access aisles/roads or fencing and is not to be interpreted as a measurement of impervious surface as it may be defined in this LDC."*

The proposed conditions plan includes a table at the lower left-hand corner showing the proposed solar land coverage calculation for this project, which is 15% (1-ac of solar coverage per 6.7-ac of total lot area). This standard appears to be met.

SECTION 16.2.5 – VISUAL BUFFER: This section of the code states that medium- and large-scale solar energy systems shall be sited in a manner that minimizes the visibility of the array from surrounding properties and public rights-of-way. This section of the code goes on to state that either existing vegetation shall be maintained or new vegetation shall be installed to help minimize the visual impacts of the proposed array, but that this visual buffer can be approved at the discretion of the Planning Board. The project narrative and proposed conditions plan both show that the applicant is proposing to maintain the existing wooded vegetation to the south, east, and north of the proposed array to serve as a visual buffer.

At their meeting on February 24, 2025, the Planning Board gave the applicant preliminary feedback regarding the proposed use of existing vegetation on adjacent parcels as screening for the array. The general consensus amongst Board members seemed to be that the existing landscaping around the area where the array is proposed to be installed would be sufficient to serve as the only screening for the array. During the deliberation for this project, the Board will need to make a final determination as to whether or not this proposed method of screening will be sufficient to meet the intent of this standard.

SECTION 16.2.6 – ENVIRONMENTAL: This section of the code states that the clearing of existing trees and vegetation shall be limited to what is necessary for the installation and operation of the solar array. Additionally, this section of the code states that the distance between rows of solar panels should be at least the width of a single solar panel. The submitted narrative states that the proposed array location is a flat field without trees and that the panel rows will be spaced 20' apart, which is greater than the 12'-width of the proposed solar panels. The narrative also states that disturbed areas will be revegetated with a conservation grass mix suited to solar array installations in NH. Planning Staff recommend that the Board include a precedent condition of approval related to the submittal of a security to cover the cost of this seed mix. This standard appears to be met.

SECTION 16.2.7 – NOISE & GLARE: This section of the code states that solar energy systems shall be designed and sited to minimize any potential impacts of glint and glare on adjacent properties and roadways and that inverters shall be fully enclosed. The applicant has submitted a glare analysis, which is included as an attachment to this staff report. The report states that due to the proposed location and orientation of the array, in conjunction with the fact that the applicant is proposing to install solar panels with an anti-reflective coating, there should not be any issues with glare onto adjacent properties or roadways. Additionally, Sheet C2.0 of the plan set shows that the inverter for the array is proposed to be installed at the southeastern corner of the Cedarcrest building and enclosed by a 6'-tall privacy fence. This standard appears to be met.

SECTION 16.2.8 – SECURITY: This section of the code states that security fencing can have a maximum height of 8' and that on-site lighting can only be installed for security and safety purposes. The Police Department comments included earlier in this staff report state that the 6' agricultural fence proposed to be installed around the perimeter of the array will be insufficient to protect the equipment from trespassers. In the project narrative, the applicant stated that this is the standard fencing product used by ReVision Energy to protect other similarly sized solar energy systems. The Board will need to make a final determination as to whether or not the proposed fencing will be sufficient to satisfy the requirements of this section of the code.

SECTION 16.2.9 – UTILITY INTERCONNECTION: This section of the code states that all on-site power and communication lines within the solar footprint of the ground-mounted solar energy

system shall be buried underground unless other constraints prevent this from being done. The project narrative states that the conduits and electrical will be run to Cedarcrest's facility through a 115'-long underground trench that will be dug and that the inverters will be mounted at the southeastern corner of the building. This standard appears to be met.

SECTION 16.3 – DECOMMISSIONING & SITE RESTORATION: This section of the code outlines the requirements for decommissioning a large-scale solar energy system. Given that this proposal involves the construction of a medium-scale solar energy system, this standard is not applicable.

SECTION 21.2 - DRAINAGE: During his initial review of the application materials, the City Engineer expressed concern over the stormwater narrative's conclusion that the proposed construction of the array would not alter the existing drainage patterns on the site. In response to this, the applicant submitted a full stormwater report and updated the proposed conditions plan to include grassed conveyance swales and a stormwater collection basin along the northern and eastern boundaries of the array to handle stormwater runoff. At the time of this staff report, Planning Staff were waiting to see if the City Engineer had any further comments or questions on the updated materials that were submitted. Planning Staff can provide an update to the Board during the staff presentation at the Planning Board meeting.

SECTION 21.3 - SEDIMENT & EROSION CONTROL: The proposed conditions plan shows that the applicant proposes to install an erosion control berm along the northern and eastern portions of the array during construction to minimize any potential transfer of sediment onto adjacent areas. As part of his comments on the application, the City Engineer recommended that silt fencing be provided in addition to the proposed erosion berm for the protection of adjacent wetlands to the east of the solar array. In their response to staff comments, the applicant stated that the wetlands are over 200' away from the project site and double erosion control would only be required by NH DES in a situation in which they were 50' or less from the project area. The applicant went on to state that the site is already flat, there is minimal soil disturbance proposed as part of this project, and there will be no grading taking place during construction.

At the time of this staff report, Planning Staff were waiting to hear back from the City Engineer to see if he had any further comments or questions. The Board may wish to ask the applicant for additional information about the proposed sediment and erosion control measures. Planning Staff recommend that the Board include conditions of approval related to the submittal of a security to cover the cost of sediment and erosion control measures as well as the installation and inspection of said stormwater management measures prior to the commencement of site work.

SECTION 21.4 - SNOW STORAGE & REMOVAL: The project narrative states that Cedarcrest currently clears and maintains the site access and has adequate space for snow storage and removal. Snow is not proposed to be removed from within the array area. This standard appears to be met.

SECTION 21.5 - LANDSCAPING: The applicant proposes to install a conservation grass mix in all disturbed areas following the completion of the solar array. As stated previously in this staff report, Planning Staff recommend that the Board include a condition of approval related to the submittal of a security to cover the cost of site stabilization utilizing the proposed seed mix. This standard appears to be met.

SECTION 21.6 - SCREENING: The project narrative states that the solar array will be sufficiently screened due to its location at the rear of both the Cedarcrest and Monadnock View Cemetery sites as well as the presence of existing vegetation to the northeast, east, and southeast of the array. The narrative goes on to state that all new supplementary mechanical equipment needed to support the operation of the array will be wall-mounted at the southeastern corner of the existing Cedarcrest building and will be screened from view by a 6'-tall white vinyl privacy fence. As stated previously, the Board will need to make a final determination as to whether or not the proposed screening plan complies with this section of the LDC.

SECTION 21.7 - LIGHTING: This project narrative states that this proposal does not involve the installation of any new lighting. This standard is not applicable.

SECTION 21.8 - SEWER & WATER: While the Cedarcrest site does have access to both water and sewer utilities as part of this application, there are no changes proposed to either of these items. This standard is not applicable.

SECTION 21.9 - TRAFFIC & ACCESS MANAGEMENT: The proposed conditions plan shows that access to the project area during construction will be provided via the Monadnock View Cemetery parcel using an existing gravel path that will be improved in coordination with the Parks & Recreation and Public Works Departments to use as a temporary construction entrance. The plan set shows the location of the construction access road at the southeastern corner of the solar array and indicates that all disturbed areas will be stabilized using the same conservation seed mix following the completion of construction.

While Andy Bohannon, Deputy City Manager, has submitted a letter of support for this application on behalf of the City of Keene, Planning Staff recommend that the Board include a precedent condition of approval in the motion for this application related to the submittal of written documentation of the City's approval for the use of the cemetery parcel for temporary site access during construction.

The project narrative states that permanent access to the site will be provided using an existing travel aisle adjacent to the southern property boundary on the Cedarcrest site. The narrative states that the array will only need to be accessed ~3-4 times per year for reactive and scheduled maintenance purposes. The proposed conditions plan shows that the travel aisle narrows into a 12'-wide pathway with reinforced geomat on either side, which the applicant states will provide sufficient vehicular access to the rear of the site when needed. This standard appears to be met.

SECTION 21.10 - FILLING & EXCAVATION: The project narrative states that there will be minimal excavation as part of this project and will be limited to digging a 115'-long trench between the proposed solar array location and its connection point on the Cedarcrest building. This standard is not applicable.

SECTION 21.11 - SURFACE WATERS & WETLANDS: The project narrative states that there will not be any impacts to surface waters or wetlands. This standard is not applicable.

SECTION 21.12 - HAZARDOUS & TOXIC MATERIALS: The project narrative states that there will not be any hazardous or toxic materials involved with this project. This standard is not applicable.

SECTION 21.13 - NOISE: The project narrative states that the only two sources of sound will be the solar inverter and transformer. The narrative states that these pieces of equipment will produce a minimal amount of sound and will only be active during the day when the solar array is in operation. This standard appears to be met.

SECTION 21.14 - ARCHITECTURE & VISUAL APPEARANCE: This proposal does not involve anything related to architecture and visual appearance. This standard is not applicable.

Recommended Motion:

If the Board is inclined to approve this request, the following motion is recommended:

"Approve PB-2025-04 as shown on the plan set identified as "Cedarcrest Inc.; Solar Site Development" prepared by Horizons Engineering at varying scales in February 2025 and last revised in March 2025 with the following conditions:

1. ***Prior to final approval and signature of the plans by the Planning Board Chair, the following conditions precedent shall be met:***
    a. ***Owners' signatures appear on the title page and proposed conditions plans.***
    b. ***Submittal of five (5) full sized paper copies and a digital copy of the final plans.***
    c. ***Submittal of a security in a form and amount acceptable to the Community Development Director and City Engineer to cover the cost of sediment and erosion control measures and site stabilization.***
    d. ***Submittal of a full sized copy of the recorded BLA plat showing the updated lot configuration.***
2. ***Subsequent to final approval and signature of the plans by the Planning Board Chair, the following conditions shall be met:***
    a. ***Prior to the issuance of a building permit, the submittal of documentation demonstrating that the City of Keene has granted Cedarcrest the right to use the Monadnock View Cemetery for temporary site access during construction.***
    b. ***Prior to the issuance of a building permit, the required 50' setback line shall be pinned by a surveyor licensed in the State of NH and prior to the commencement of site work, verified by the Community Development Director, or their designee."***

City of Keene, NH

Planning Board
Boundary Line Adjustment (BLA) Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: Cedarcrest Solar Array & BLA	**NUMBER OF PARCELS AFFECTED:** 2
PROJECT ADDRESS(ES): 91 Maple Ave, 521 Park Ave	

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER #1	PROPERTY OWNER #2
NAME/COMPANY: Cedarcrest, Inc.	**NAME/COMPANY:** City of Keene
MAILING ADDRESS: 91 Maple Ave, Keene, NH 03431	**MAILING ADDRESS:** 3 Washington St. Keene, NH 03431
PHONE: (603) 757-7540	**PHONE:** 603-357-9804
EMAIL: jhayston@cedarcrestcenter.org	**EMAIL:** eferland@ci.keene.nh.us
SIGNATURE: Please see attached authorization	**SIGNATURE:** Elizabeth Ferland
PRINTED NAME: Jay Hayston	**PRINTED NAME:** Elizabeth Ferland

APPLICANT / AUTHORIZED AGENT	FOR OFFICE USE ONLY:	
NAME/COMPANY: ReVision Energy, Inc.	**TAX MAP PARCEL #(s):** ___-___-___-___-___	
MAILING ADDRESS: 7A Commercial Dr. Brentwood, NH 03833	___-___-___-___-___	
PHONE: 603-583-4361	___-___-___-___-___	
EMAIL: mulin@revisionenergy.com	**PARCEL SIZE:**	**DATE STAMP:**
SIGNATURE: Megan Ulin	**ZONING:**	
PRINTED NAME: Megan Ulin	**PROJECT #:**	

Agent Authorization

To whom it may concern,

Cedarcrest Inc. hereby authorizes ReVision Energy and Horizons Engineering to act as Agent(s) for the limited purpose of applying for and obtaining any local, state or federal permits that may be required for the installation of a photovoltaic solar system at 91 Maple Ave, Keene, NH 03431 (Parcel ID: 227-018-000). This includes but is not limited to anticipated zoning variances, boundary line adjustment, solar CUP, and building and electric permit applications.

Agent contact information:

Megan Ulin
Solar Project Developer
ReVision Energy
(603) 583-4361
mulin@revisionenergy.com

Ryan Hudock, PE
Civil Engineer
Horizons Engineering
(603) 877-0116 ext. 9972
rhudock@horizonsengineering.com

Signature _____

Print Name Jay Hayston

Title President and CEO

Date 1/30/2025

III. Site Development Standards for Boundary Line Adjustment (Article 20)

1. 20.2.1 Lots

(a) The proposed boundary line adjustment will transfer 1.698 acres of land in the Conservation District from the City of Keene Parcel 227-027-000 to Cedarcrest Parcel 227-018-000. The proposed lot meets the dimensional requirements of the ordinance. The area of both adjusted lots will remain greater than 5 acres (the Cedarcrest parcel would increase from 5.01 acres to 6.7 acres, and the City parcel would decrease from 46 acres to 44.3 acres). Both lots will meet the minimum required lot width of 200ft at the building line, and allow the proposed development to meet the required 50' building setbacks. The BLA will not impact the minimum road frontage for either parcel.

(b) The proposed BLA does not impact the existing road frontage for either parcel.

(c) N/A – the BLA is not proposed on a discontinued road.

2. 20.2.2 Character of Land for Subdivision

The land proposed for boundary line adjustment is a flat field, suitable for development. It is absent of hazardous conditions (excessive slope, poor drainage, etc…) that would pose a danger to health and safety for building development.

3. 20.2.3 Scattered or Premature Development

The proposed boundary line adjustment does not promote scattered or premature development. The solar development is proposed directly adjacent to the existing facility that will benefit from the electricity produced. The proposed solar array does not make use of or further burden Town services (schools, water, traffic etc…).

4. 20.2.4 Preservation of Existing Features

The land proposed for boundary line adjustment is a flat field, and there are no significant landscape alterations proposed as part of the development plan. The proposed development does not require grading or significant tree clearing, and will not impact any unique scenic points, steep slopes, stone walls, or historic landmarks, or any of the Primary and Secondary Conservation Areas as identified in Section 20.3.4.

5. 20.2.5 Monumentation

5/8" aluminum capped rebar will be set at all new corners.

6. 20.2.6 Special Flood Hazard Areas

N/A - the land in question is not within a Special Flood Hazard Area as shown on the Flood Insurance Rate Maps.

7. 20.2.7 Fire Protection & Water Supply

A dedicated water supply for fire protection is not required for a medium scale solar array per this land development code. Cedarcrest's existing facility is already served by adequate fire protection and water supply. Knox Padlocks will be provided at the array gates to provide access for the Fire Department in the event of an emergency.

8. 20.2.8 Utilities

N/A – the proposed development will not be serviced by City water or sewer. All electrical connections shall be provided for by the project.

March 6, 2025

City of Keene
Planning Board
3 Washinton St.
Keene, NH 03431

RE: Exemption Request (Section 26.10.5.B.2)

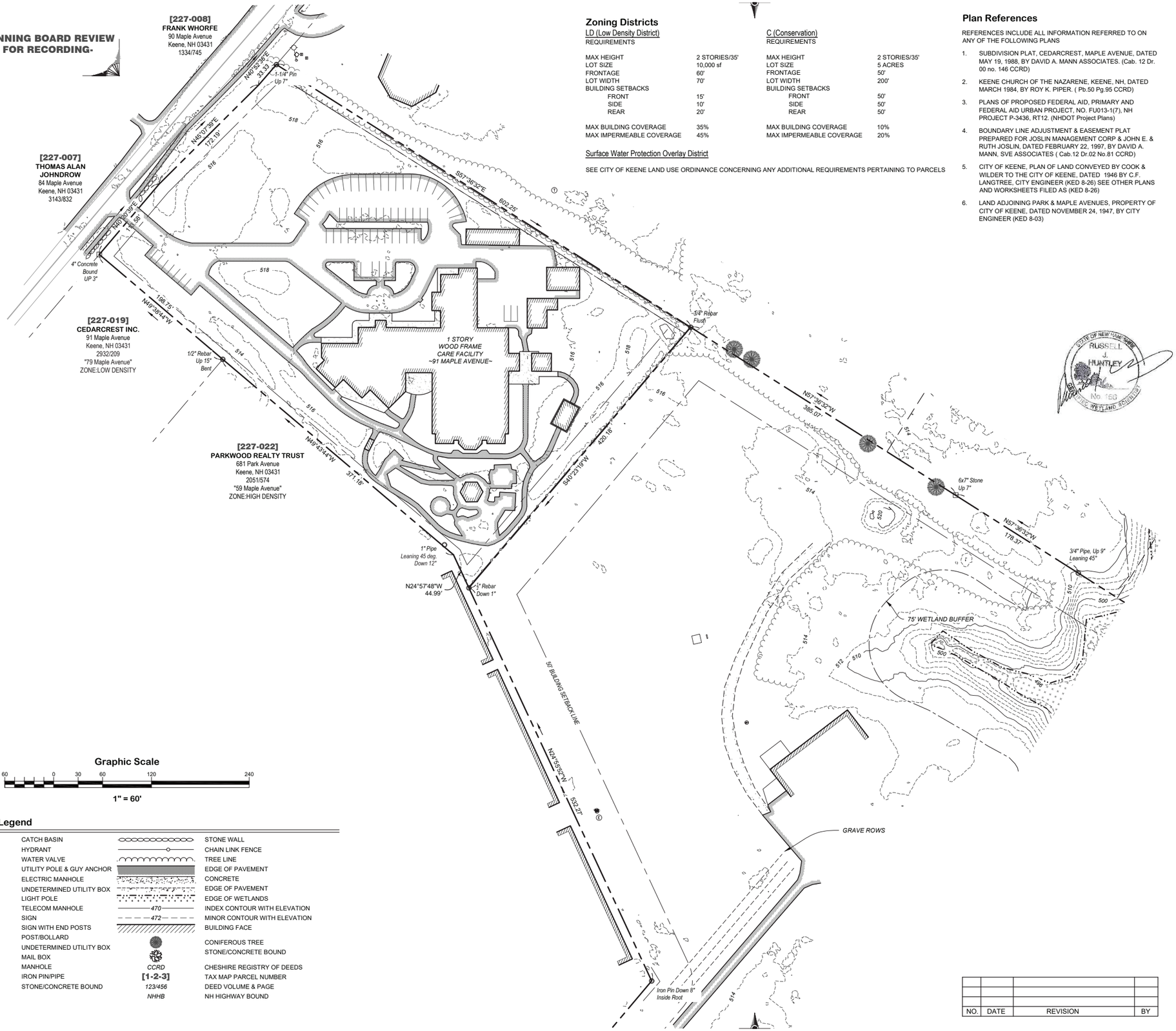
Dear Chair Farrington,

We respectfully request an exemption from the requirement to show the metes and bounds of all parcels on our proposed boundary plan in accordance with Section 26.10.5.B.2 of the City's Land Development Code (LDC). The justification for this exemption is the relative scale of the City of Keene parcel, which comprises 46 acres, where only 1.7 acres are affected by the proposed boundary line adjustment. The metes and bounds in proximity to the affected acreage are provided on the plan as submitted.

Thank you for your consideration.
Sincerely,

Megan Ulin
ReVision Energy
603-583-4361
mulin@revisionenergy.com

FOR PLANNING BOARD REVIEW
-NOT FOR RECORDING-



Zoning Districts

LD (Low Density District)

REQUIREMENTS	
MAX HEIGHT	2 STORIES/35'
LOT SIZE	10,000 sf
FRONTAGE	60'
LOT WIDTH	70'
BUILDING SETBACKS	
FRONT	15'
SIDE	10'
REAR	20'
MAX BUILDING COVERAGE	35%
MAX IMPERMEABLE COVERAGE	45%

C (Conservation)

REQUIREMENTS	
MAX HEIGHT	2 STORIES/35'
LOT SIZE	5 ACRES
FRONTAGE	50'
LOT WIDTH	200'
BUILDING SETBACKS	
FRONT	50'
SIDE	50'
REAR	50'
MAX BUILDING COVERAGE	10%
MAX IMPERMEABLE COVERAGE	20%

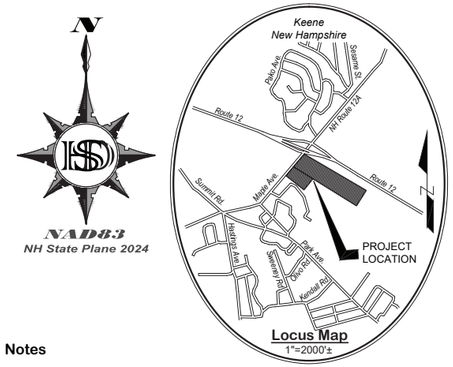
Surface Water Protection Overlay District

SEE CITY OF KEENE LAND USE ORDINANCE CONCERNING ANY ADDITIONAL REQUIREMENTS PERTAINING TO PARCELS

Plan References

REFERENCES INCLUDE ALL INFORMATION REFERRED TO ON ANY OF THE FOLLOWING PLANS

1. SUBDIVISION PLAT, CEDARCREST, MAPLE AVENUE, DATED MAY 19, 1988, BY DAVID A. MANN ASSOCIATES. (Cab. 12 Dr. 00 no. 146 CCRD)
2. KEENE CHURCH OF THE NAZARENE, KEENE, NH, DATED MARCH 1984, BY ROY K. PIPER. (Pb.50 Pg.95 CCRD)
3. PLANS OF PROPOSED FEDERAL AID, PRIMARY AND FEDERAL AID URBAN PROJECT, NO. FU013-1(7), NH PROJECT P-3436, RT12. (NHDOT Project Plans)
4. BOUNDARY LINE ADJUSTMENT & EASEMENT PLAT PREPARED FOR JOSLIN MANAGEMENT CORP & JOHN E. & RUTH JOSLIN, DATED FEBRUARY 22, 1997, BY DAVID A. MANN, SVE ASSOCIATES (Cab.12 Dr.02 No.81 CCRD)
5. CITY OF KEENE, PLAN OF LAND CONVEYED BY COOK & WILDER TO THE CITY OF KEENE, DATED 1946 BY C.F. LANGTREE, CITY ENGINEER (KED 8-26) SEE OTHER PLANS AND WORKSHEETS FILED AS (KED 8-26)
6. LAND ADJOINING PARK & MAPLE AVENUES, PROPERTY OF CITY OF KEENE, DATED NOVEMBER 24, 1947, BY CITY ENGINEER (KED 8-03)



Notes

1. NORTH SHOWN ON THIS PLAN IS REFERENCED TO NAD83 NH STATE PLANE GRID, BASED ON A STATIC GPS SURVEY PERFORMED IN NOVEMBER 2024 USING AN iG3S GNSS RECEIVER.
2. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE CALCULATED FROM DEEDS, RECORD PLANS & PHYSICAL EVIDENCE FOUND DURING THE FIELD SURVEY.
3. TOPOGRAPHY SHOWN ON THIS PLAN WAS DEVELOPED FROM POINT CLOUD DATA (CONNECTICUT RIVER WATERSHED - PUBLISHED IN 2015) OBTAINED FROM http://lidar.unh.edu/map.) THE VERTICAL DATUM IS NAVD88. CONTOUR INTERVAL IS TWO (2) FEET.
4. OWNERS RECORD AT THE KEENE ASSESSOR'S OFFICE:
   - [227-018] CEDARCREST INCORPORATED, 91 MAPLE AVENUE, KEENE, NH 03431
   - [227-027] CITY OF KEENE, 3 WASHINGTON STREET, KEENE, NH 03431
5. ANY UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES SHOWN HAVE BEEN PLOTTED FROM FIELD SURVEY OF SURFACE LOCATIONS AND DATA OBTAINED FROM PREVIOUS MAPS AND RECORDS. THEIR EXISTENCE AND LOCATIONS MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES THE EXISTENCE OF WHICH WERE NOT KNOWN OR INVESTIGATED AT THE TIME OF SURVEY. THE SIZE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG-SAFE PRIOR TO ANY CONSTRUCTION.
6. JURISDICTIONAL WETLANDS WERE DELINEATED BY HUNTLEY SURVEY & DESIGN DURING THE MONTH OF OCTOBER, 2024 USING THE THREE PARAMETER APPROACH DESCRIBED IN TECHNICAL MANUAL Y-87-1, THE CORPS OF ENGINEERS 1987 WETLAND DELINEATION MANUAL AND SUPPLEMENTED BY THE JANUARY 2012, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION U.S. ARMY CORPS OF ENGINEERS, V.2. PORTIONS OF THE WETLANDS OUTSIDE THE LIMITS OF THE PROJECT SITE ARE SHOWN FROM VISUAL INSPECTION AND TOPOGRAPHY AND ARE MEANT TO INDICATE CONNECTIVITY ONLY.
6. THE PARCELS)SHOWN ARE LOCATED IN ZONE X AND ARE NOT WITHIN A SPECIAL FLOOD HAZARD AREA. SEE FEMA PANEL 33005C0254E EFFECTIVELY DATED 05/23/2006.
7. MONADNOCK VIEW CEMETERY PARCEL ONLY SURVEYED ON LINES AND IN AREA AFFECTED BY ADJUSTMENT.

Surveyor's Certification

PURSUANT TO RSA 676: 18 III AND RSA 672: 14, I CERTIFY THAT THIS SURVEY AND PLAT WERE PRODUCED BY ME OR THOSE UNDER MY DIRECT SUPERVISION FROM A TOTAL STATION AND DATA COLLECTOR TRAVERSE WITH A POSITION TOLERANCE THAT MEETS OR EXCEEDS NH LAN 500 AND THE ALLOWABLE RELATIVE POSITIONAL ACCURACY REQUIRED BY THE STATE OF NEW HAMPSHIRE IN TABLE 500.1, "ACCURACY MEASUREMENTS, LOCAL ACCURACY OF CONTROL SUPPORTING THE SURVEY," AND IS BASED ON INFORMATION RECORDED AT THE CHESHIRE COUNTY REGISTRY OF DEEDS AS REFERENCED HEREON, INFORMATION PROVIDED BY THE CLIENT AND PHYSICAL EVIDENCE FOUND.

Graphic Scale

60 0 30 60 120 240

1" = 60'

Symbol Legend

CATCH BASIN		STONE WALL	
HYDRANT		CHAIN LINK FENCE	
WATER VALVE		TREE LINE	
UTILITY POLE & GUY ANCHOR		EDGE OF PAVEMENT	
ELECTRIC MANHOLE		CONCRETE	
UNDETERMINED UTILITY BOX		EDGE OF PAVEMENT	
LIGHT POLE		EDGE OF WETLANDS	
TELECOM MANHOLE	470	INDEX CONTOUR WITH ELEVATION	
SIGN	472	MINOR CONTOUR WITH ELEVATION	
SIGN WITH END POSTS		BUILDING FACE	
POST/BOLLARD		CONIFEROUS TREE	
UNDETERMINED UTILITY BOX		STONE/CONCRETE BOUND	
MAIL BOX			
MANHOLE	CCRD	CHESHIRE REGISTRY OF DEEDS	
IRON PIN/PIPE	[1-2-3]	TAX MAP PARCEL NUMBER	
STONE/CONCRETE BOUND	123/456	DEED VOLUME & PAGE	
	NHHB	NH HIGHWAY BOUND	

NO.	DATE	REVISION	BY

EXISTING CONDITIONS

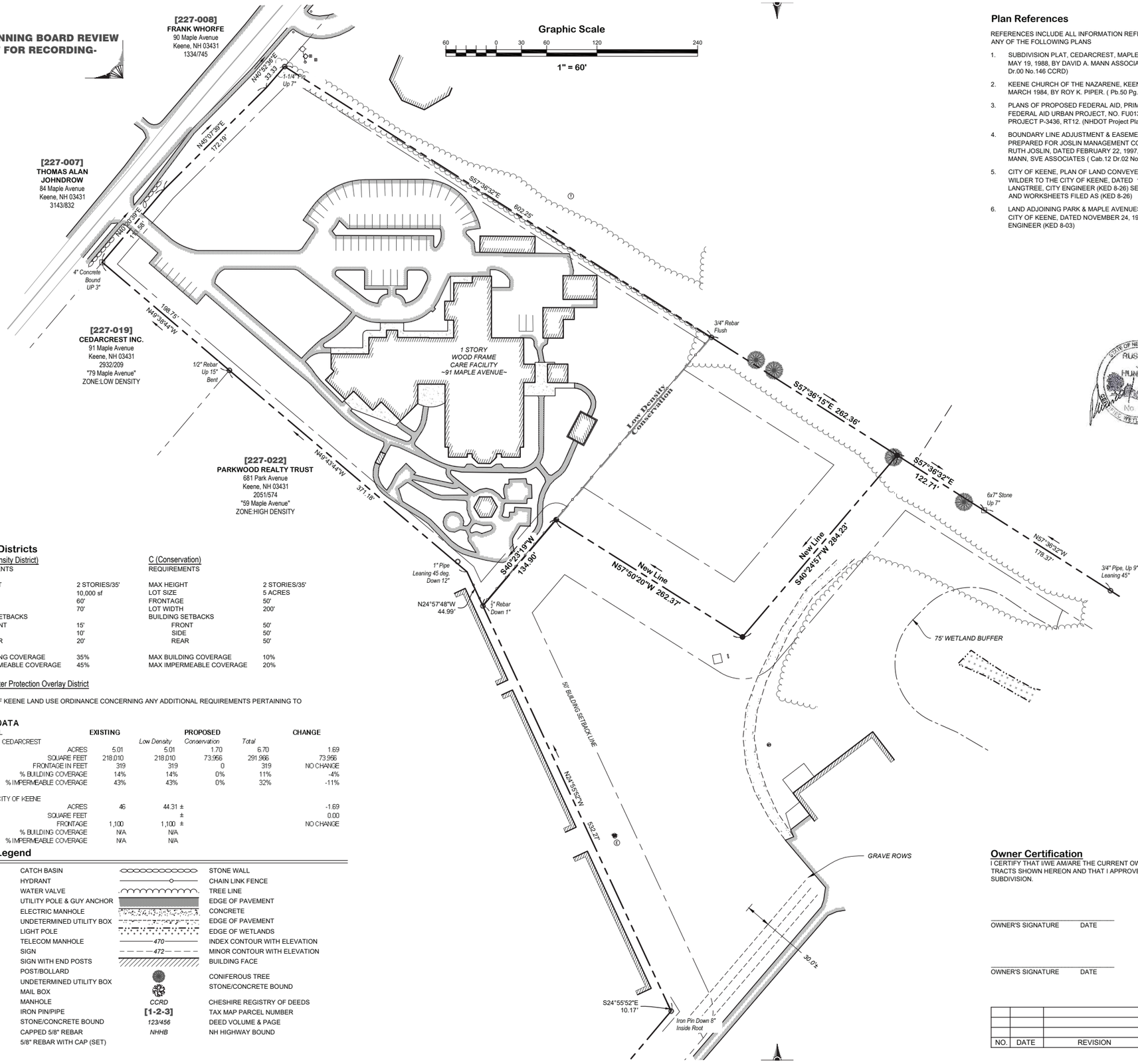
LANDS OF
Cedarcrest Inc.
located at
Tax Map 227 Lot 18
91 Maple Avenue, Keene, Cheshire County, New Hampshire
Book 2449, Page 439

AND PORTIONS OF LANDS OF
City of Keene
located at
Tax Map 227 Lot 27
3 Washington Street, Keene, Cheshire County, New Hampshire
Book 524 , Pages 289 & 298

Surveyed 11/2024 **Plan prepared 3/06/2025**
Project No. H25-010 **Cad File No. H25-010 BLADJ.dwg**

Huntley Survey & Design, PLLC
NH & VT Land Surveying, Wetlands & NH Septic System Design
659 West Road, Temple, NH 03084 (603) 924-1669 www.huntleysurvey.com

FOR PLANNING BOARD REVIEW
-NOT FOR RECORDING-



Zoning Districts

LD (Low Density District) REQUIREMENTS		C (Conservation) REQUIREMENTS	
MAX HEIGHT	2 STORIES/35'	MAX HEIGHT	2 STORIES/35'
LOT SIZE	10,000 sf	LOT SIZE	5 ACRES
FRONTAGE	60'	FRONTAGE	50'
LOT WIDTH	70'	LOT WIDTH	200'
BUILDING SETBACKS		BUILDING SETBACKS	
FRONT	15'	FRONT	50'
SIDE	10'	SIDE	50'
REAR	20'	REAR	50'
MAX BUILDING COVERAGE	35%	MAX BUILDING COVERAGE	10%
MAX IMPERMEABLE COVERAGE	45%	MAX IMPERMEABLE COVERAGE	20%

Surface Water Protection Overlay District

SEE CITY OF KEENE LAND USE ORDINANCE CONCERNING ANY ADDITIONAL REQUIREMENTS PERTAINING TO PARCELS

PARCEL DATA

PARCEL	EXISTING	PROPOSED			CHANGE
[227-018] CEDARCREST		Low Density	Conservation	Total	
ACRES	5.01	5.01	1.70	6.70	1.69
SQUARE FEET	218,010	218,010	73,956	291,966	73,956
FRONTAGE IN FEET	319	319	0	319	NO CHANGE
% BUILDING COVERAGE	14%	14%	0%	11%	-4%
% IMPERMEABLE COVERAGE	43%	43%	0%	32%	-11%
[227-027] CITY OF KEENE					
ACRES	46	44.31 ±			-1.69
SQUARE FEET		±			0.00
FRONTAGE	1,100	1,100 ±			NO CHANGE
% BUILDING COVERAGE	N/A	N/A			
% IMPERMEABLE COVERAGE	N/A	N/A			

Symbol Legend

	CATCH BASIN		STONE WALL
	HYDRANT		CHAIN LINK FENCE
	WATER VALVE		TREE LINE
	UTILITY POLE & GUY ANCHOR		EDGE OF PAVEMENT
E	ELECTRIC MANHOLE		CONCRETE
U	UNDETERMINED UTILITY BOX		EDGE OF PAVEMENT
	LIGHT POLE		EDGE OF WETLANDS
T	TELECOM MANHOLE	470	INDEX CONTOUR WITH ELEVATION
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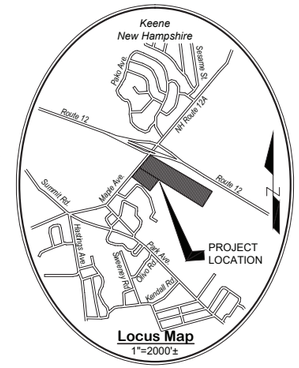
U	UNDETERMINED UTILITY BOX		STONE/CONCRETE BOUND
	MAIL BOX	CCRD	CHESHIRE REGISTRY OF DEEDS
M	MANHOLE	[1-2-3]	TAX MAP PARCEL NUMBER
	IRON PIN/PIPE	123/456	DEED VOLUME & PAGE
	STONE/CONCRETE BOUND	NHHB	NH HIGHWAY BOUND
CRB	CAPPED 5/8" REBAR		
	5/8" REBAR WITH CAP (SET)		

Plan References

REFERENCES INCLUDE ALL INFORMATION REFERRED TO ON ANY OF THE FOLLOWING PLANS

1. SUBDIVISION PLAT, CEDARCREST, MAPLE AVENUE, DATED MAY 19, 1988, BY DAVID A. MANN ASSOCIATES. (Cab. 12 Dr.00 No.146 CCRD)
2. KEENE CHURCH OF THE NAZARENE, KEENE, NH, DATED MARCH 1984, BY ROY K. PIPER. (Pb.50 Pg.95 CCRD)
3. PLANS OF PROPOSED FEDERAL AID, PRIMARY AND FEDERAL AID URBAN PROJECT, NO. FU013-1(7), NH PROJECT P-3436, RT12. (NHDOT Project Plans)
4. BOUNDARY LINE ADJUSTMENT & EASEMENT PLAT PREPARED FOR JOSLIN MANAGEMENT CORP & JOHN E. & RUTH JOSLIN, DATED FEBRUARY 22, 1997, BY DAVID A. MANN, SVE ASSOCIATES (Cab.12 Dr.02 No.81 CCRD)
5. CITY OF KEENE, PLAN OF LAND CONVEYED BY COOK & WILDER TO THE CITY OF KEENE, DATED 1946 BY C.F. LANGTREE, CITY ENGINEER (KED 8-26) SEE OTHER PLANS AND WORKSHEETS FILED AS (KED 8-26)
6. LAND ADJOINING PARK & MAPLE AVENUES, PROPERTY OF CITY OF KEENE, DATED NOVEMBER 24, 1947, BY CITY ENGINEER (KED 8-03)

NAD83
NH State Plane 2024



Notes

1. NORTH SHOWN ON THIS PLAN IS REFERENCED TO NAD83 NH STATE PLANE GRID, BASED ON A STATIC GPS SURVEY PERFORMED IN NOVEMBER 2024 USING AN iG3S GNSS RECEIVER.
2. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE CALCULATED FROM DEEDS, RECORD PLANS & PHYSICAL EVIDENCE FOUND DURING THE FIELD SURVEY.
3. OWNERS RECORD AT THE KEENE ASSESSOR'S OFFICE:
   - [227-018] CEDARCREST INCORPORATED, 91 MAPLE AVENUE, KEENE, NH 03431
   - [227-017] 1ST BAPTIST CHURCH OF KEENE, 105 MAPLE AVENUE, KEENE, NH 03431
   - [227-027] CITY OF KEENE, 3 WASHINGTON STREET, KEENE, NH 03431
4. ANY UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES SHOWN HAVE BEEN PLOTTED FROM FIELD SURVEY OF SURFACE LOCATIONS AND DATA OBTAINED FROM PREVIOUS MAPS AND RECORDS. THEIR EXISTENCE AND LOCATIONS MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES THE EXISTENCE OF WHICH WERE NOT KNOWN OR INVESTIGATED AT THE TIME OF SURVEY. THE SIZE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG-SAFE PRIOR TO ANY CONSTRUCTION.
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6. THE PARCELS)SHOWN ARE LOCATED IN ZONE X AND ARE NOT WITHIN A SPECIAL FLOOD HAZARD AREA. SEE FEMA PANEL 33005C0254E EFFECTIVELY DATED 05/23/2006.
7. PARCEL 227-017 IS SUBJECT TO AN EASEMENT TO NH #1 RURAL CELLULAR INC. SEE BOOK 3276 PAGE 569.
8. PARCEL 227-017 IS SUBJECT TO CURRENT USE TAXATION.
9. MONADNOCK VIEW CEMETERY PARCEL ONLY SURVEYED ON LINES AND IN AREA AFFECTED BY ADJUSTMENT.

STATE OF NEW HAMPSHIRE RUSSELL J. HUNTLEY No. 760 LICENSED LAND SURVEYOR

Owner Certification

I CERTIFY THAT I/WE AM/ARE THE CURRENT OWNER(S) OF THE TRACTS SHOWN HEREON AND THAT I APPROVE OF THE SUBDIVISION.

OWNER'S SIGNATURE DATE

OWNER'S SIGNATURE DATE

NO.	DATE	REVISION	BY

Surveyor's Certification

PURSUANT TO RSA 676: 18 III AND RSA 672: 14, I CERTIFY THAT THIS SURVEY AND PLAT WERE PRODUCED BY ME OR THOSE UNDER MY DIRECT SUPERVISION FROM A TOTAL STATION AND DATA COLLECTOR TRAVERSE WITH A POSITION TOLERANCE THAT MEETS OR EXCEEDS NH LAN 500 AND THE ALLOWABLE RELATIVE POSITIONAL ACCURACY REQUIRED BY THE STATE OF NEW HAMPSHIRE IN TABLE 500.1, "ACCURACY MEASUREMENTS, LOCAL ACCURACY OF CONTROL SUPPORTING THE SURVEY," AND IS BASED ON INFORMATION RECORDED AT THE CHESHIRE COUNTY REGISTRY OF DEEDS AS REFERENCED HEREON, INFORMATION PROVIDED BY THE CLIENT AND PHYSICAL EVIDENCE FOUND.

STATE OF NEW HAMPSHIRE No. 877 RUSSELL J. HUNTLEY LICENSED LAND SURVEYOR

APPROVED BY THE KEENE PLANNING BOARD

BY_____CHAIRMAN
AND_____SECRETARY
ON_____.

Boundary Line Adjustment

BETWEEN LANDS OF
Cedarcrest Inc.
located at
Tax Map 227 Lot 18
91 Maple Avenue, Keene, Cheshire County, New Hampshire
Book 2449, Page 439

AND PORTIONS OF LANDS OF
City of Keene
located at
Tax Map 227 Lot 27
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Surveyed 11/2024 Plan prepared 3/06/2025
Project No. H25-010 Cad File No. H25-010 BLADJ.dwg

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PB-2025-04 – MAJOR SITE PLAN & SOLAR ENERGY SYSTEM CUP – CEDARCREST & MONADNOCK VIEW CEMETERY – 91 MAPLE AVE & 521 PARK AVE

Requests:

Applicant ReVision Energy, Inc. on behalf of owners Cedarcrest, Inc. and the City of Keene, proposes to install a medium-scale solar energy system on ~1.7-ac of undeveloped land located at 521 Park Ave (TMP #227-027-000) to provide power to the Cedarcrest facility located at 91 Maple Ave (TMP #227-018-000). The City property is ~46-ac in size and is located in the Conservation District, and the Cedarcrest property is ~5-ac in size and is located in the Low Density District.

Background:

The Cedarcrest site is located in west central Keene directly to the south of NH Route 12. The parcel is ~5-ac in size and is located at 91 Maple Ave (TMP #227-018-000) in the Low Density District. The site is already developed with a main building that is ~29,431-sf in size, a few outbuildings, a series of walkways, and an existing parking lot. The primary frontage and access to the site is from Maple Ave to the northwest as shown in Figure 1.

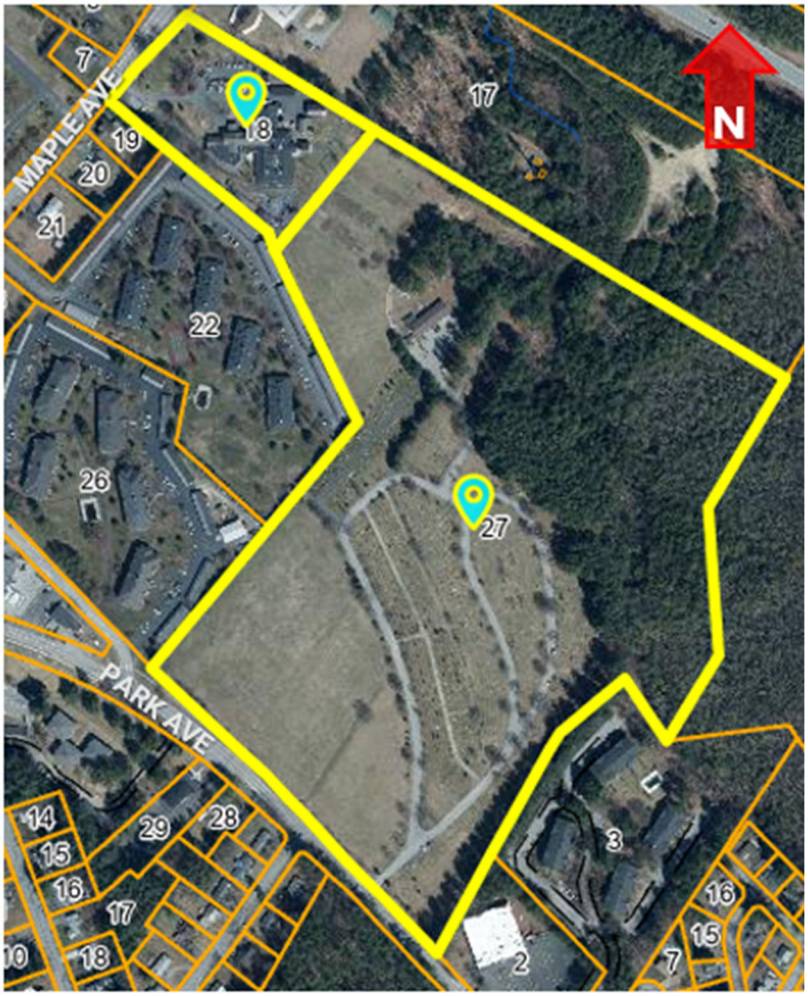


Figure 1. Aerial imagery from 2020 of the Cedarcrest site at 91 Maple Ave and the City's Monadnock View Cemetery parcel at 521 Park Ave.

The initial site plan for the property was approved in 1990 as part of the Major Site Plan, SPR-720. In 2001, the Planning Board approved another Major Site Plan, SPR-905, for the construction of a ~10,630-sf addition and associated site modifications. Subsequent modifications to this site plan included the addition of a walking path, the construction of a covered carport, the creation of additional parking spaces, the installation of an additional parking lot light fixture, and the construction of a covered outdoor pavilion.

The applicant proposes to construct a 333.2 kW DC, 230 kW AC fixed-tilt ground-mounted solar array that will consist of 560 individual solar panels. The array is proposed to be constructed on ~1.7-ac of undeveloped land transferred to Cedarcrest from the City of Keene through a Boundary

Line Adjustment, PB-2025-05. Following the BLA, the Cedarcrest property will become split-zoned with the main site located in the Low Density District and the newly acquired ~1.7-ac portion of the parcel located in the Conservation District. A Variance to allow for the primary use of the ~1.7-ac portion of the parcel as a medium-scale solar energy system was granted by the Zoning Board of Adjustment (ZBA) at their meeting on March 3, 2025. Figure 2 shows the area of land to be transferred to Cedarcrest from the City owned Monadnock View Cemetery parcel at 521 Park Ave.

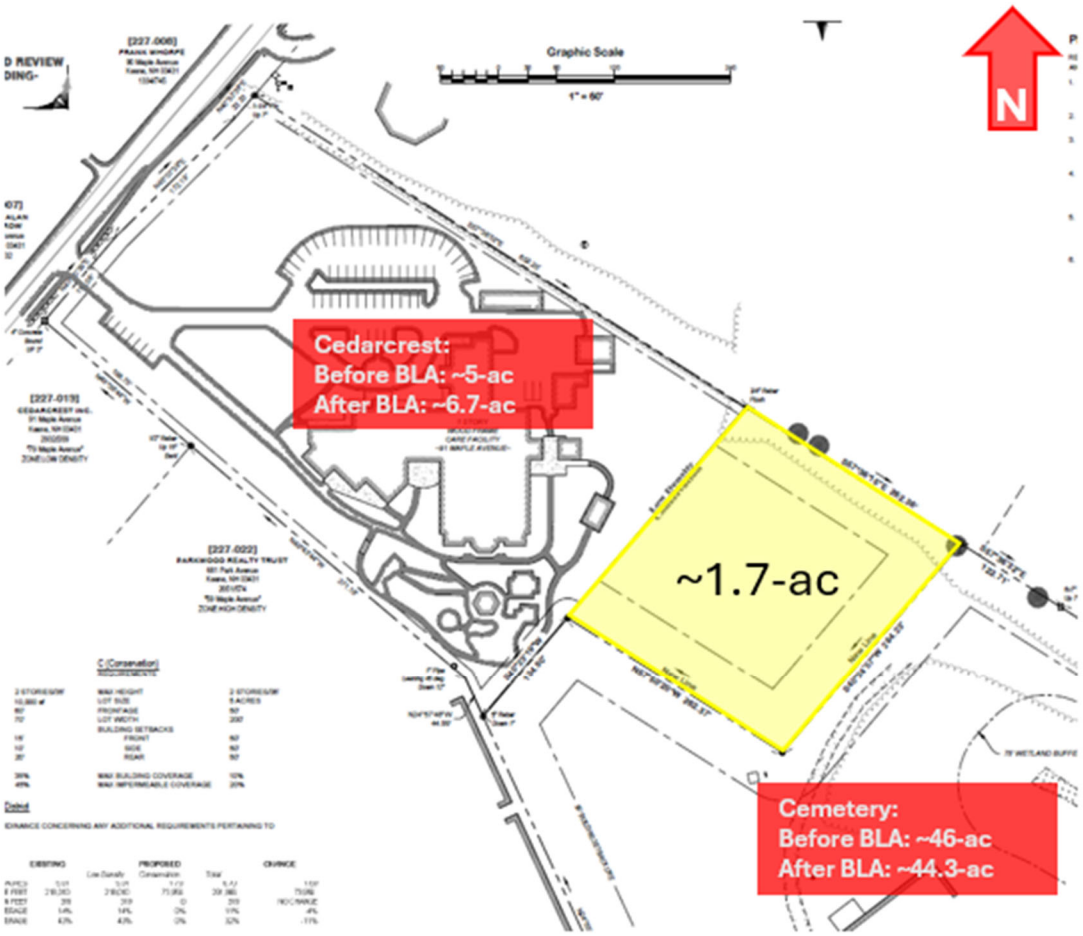


Figure 2. A snippet of the proposed BLA plan showing the area and amount of land to be transferred between the two parcels.

The installation of this array is the result of a long-term partnership between the City of Keene & ReVision Energy with the goal of installing solar developments on City-owned land to help achieve the City's goal of transitioning to 100% clean renewable electricity by 2030. Cedarcrest became involved in this project when they entered into a power purchase agreement for the electricity produced from the array, which the project narrative states will directly offset ~67% of Cedarcrest's electricity usage with onsite renewable energy. Given the size and scale of the proposed solar array, this project requires review for compliance with both the Solar Energy System Conditional Use Permit (CUP) standards as well as the Site Development Standards.

It should be noted that part of the negotiation between Cedarcrest, ReVision Energy, and the City of Keene will involve the relocation of the existing community gardens, which are currently located in an area where a portion of the array will be installed; however, none of this work is being proposed, reviewed, or approved as part of this application process.

Determination of Regional Impact:

After reviewing the application, staff have made a preliminary evaluation that the proposed site plan & CUP do not appear to have the potential for "regional impact" as defined in RSA 36:55. The Board will need to make a final determination as to whether the proposal, if approved, could have the potential for regional impact.

Completeness:

The applicant has requested exemptions from submitting a plan showing grading/limits of clearing, a lighting plan, a decommissioning plan, traffic analysis, soil analysis, historic evaluation, screening analysis, and architectural and visual appearance analysis. After reviewing each request, Planning Staff have made the preliminary determination that granting the requested exemptions would have no bearing on the merits of the application and recommend that the Board accept the application as "complete."

Department Comments:

1. **Police.** The six foot agricultural fence shown the plans will prove insufficient to protect the site from trespassers.
2. **Code Enforcement.** A building permit will be required for the solar energy system. There are no issues related to the floodplain.

APPLICATION ANALYSIS: *The following is a review of the Solar Energy System CUP regulations and Planning Board Site Development Standards outlined under Sections 16 & 21 of the LDC.*

SECTION 16.2.1 – SITING: This section of the code states that the solar footprint of an array cannot exceed 20 contiguous acres. The definition of *"solar footprint"* can be found in Section 29 of the LDC and is included below.

> *"**Solar Footprint** - The footprint of a ground-mounted solar energy system that is calculated by drawing a perimeter around the outermost panels of the system and any equipment necessary for the functioning of the solar energy system, such as transformers and inverters. The footprint does not include any visual buffer or perimeter fencing. Transmission lines (or portions thereof) required to connect the system to a utility or consumer outside the system's perimeter shall not be included in calculating the footprint."*

The proposed conditions plan on Sheet C2.0 of the plan set, which can also be seen in Figure 3, indicates that the solar footprint of the array will be ~0.76-ac (~33,074-sf) in size, which makes this a medium-scale solar array as defined under Section 8.3.7.B.1 of the LDC. This standard appears to be met.

SECTION 16.2.2 – HEIGHT: This standard states that ground-mounted solar energy systems cannot exceed 15'-tall at their highest point. The submitted elevations show that at its highest point, the solar array will be ~12.5'-tall. This standard appears to be met.

SECTION 16.2.3 – SETBACKS: This section of the code states that ground-mounted solar energy systems must be set back at least 50' from all exterior property lines and existing public rights-of-way. Sheet C2.0 of the plan set shows that the proposed array will be set back almost exactly 50' from the northern, eastern, and southern property lines. Planning Staff recommend that the Board include a subsequent condition of approval related to the flagging of this setback line by a surveyor licensed in the State of NH and the completion of an inspection by Community Development Staff prior to the issuance of a building permit and the commencement of site work to ensure that it will be properly maintained. This standard appears to be met.

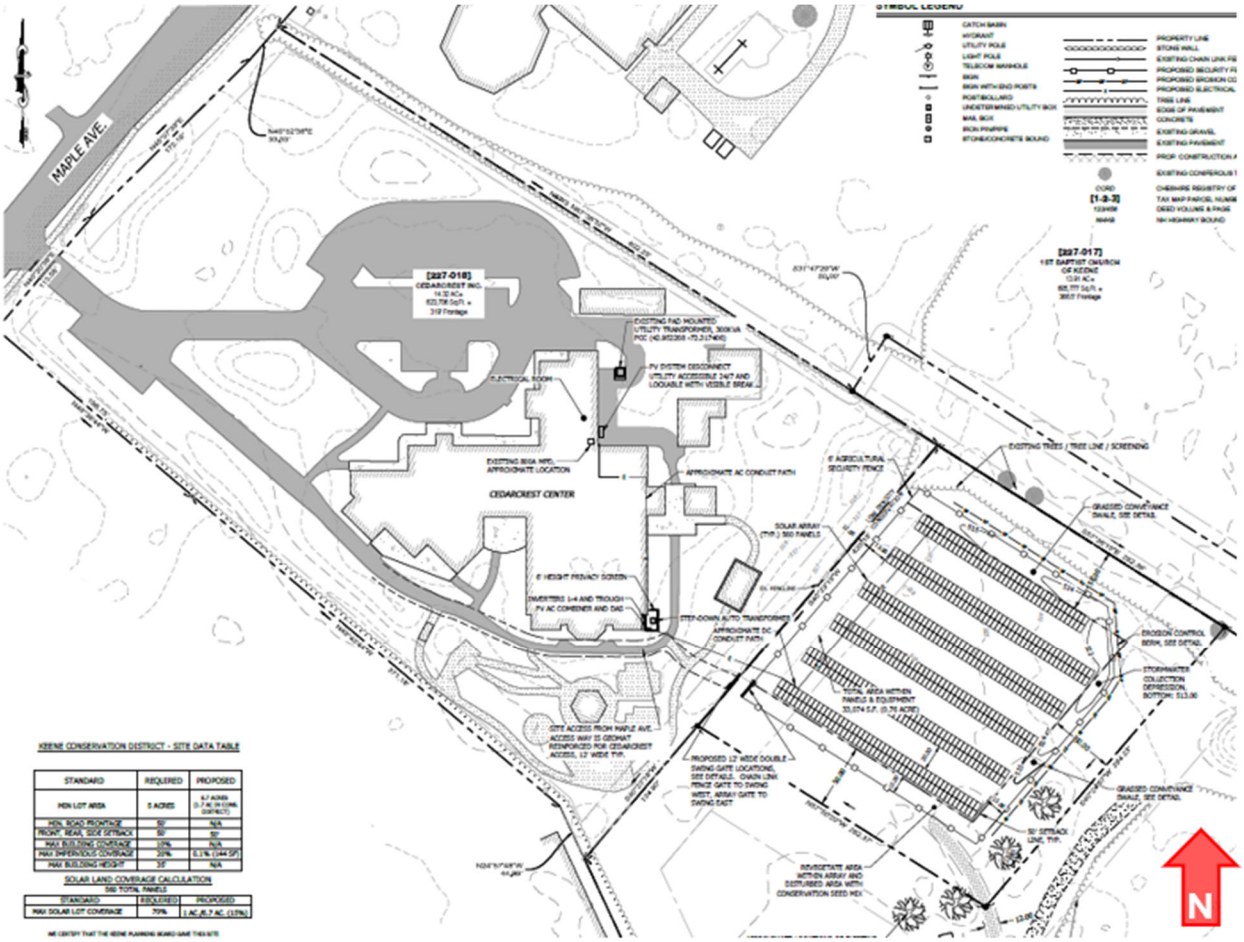


Figure 3. A snippet of the proposed conditions plan showing the proposed location and extent of the solar array on the Cedarcrest site.

SECTION 16.2.4 – LOT COVERAGE: This section of the code states that solar land coverage of an array cannot exceed 70% of the lot area upon which it is installed. The definition of *"solar land coverage"* from Section 29 of the LDC is included below.

> *"**Solar Land Coverage** - The land area that encompasses all components of the solar energy system including but not limited to mounting equipment, panels and ancillary components of the system. This definition does not include access aisles/roads or fencing and is not to be interpreted as a measurement of impervious surface as it may be defined in this LDC."*

The proposed conditions plan includes a table at the lower left-hand corner showing the proposed solar land coverage calculation for this project, which is 15% (1-ac of solar coverage per 6.7-ac of total lot area). This standard appears to be met.

SECTION 16.2.5 – VISUAL BUFFER: This section of the code states that medium- and large-scale solar energy systems shall be sited in a manner that minimizes the visibility of the array from surrounding properties and public rights-of-way. This section of the code goes on to state that either existing vegetation shall be maintained or new vegetation shall be installed to help minimize the visual impacts of the proposed array, but that this visual buffer can be approved at the discretion of the Planning Board. The project narrative and proposed conditions plan both show that the applicant is proposing to maintain the existing wooded vegetation to the south, east, and north of the proposed array to serve as a visual buffer.

At their meeting on February 24, 2025, the Planning Board gave the applicant preliminary feedback regarding the proposed use of existing vegetation on adjacent parcels as screening for the array. The general consensus amongst Board members seemed to be that the existing landscaping around the area where the array is proposed to be installed would be sufficient to serve as the only screening for the array. During the deliberation for this project, the Board will need to make a final determination as to whether or not this proposed method of screening will be sufficient to meet the intent of this standard.

SECTION 16.2.6 – ENVIRONMENTAL: This section of the code states that the clearing of existing trees and vegetation shall be limited to what is necessary for the installation and operation of the solar array. Additionally, this section of the code states that the distance between rows of solar panels should be at least the width of a single solar panel. The submitted narrative states that the proposed array location is a flat field without trees and that the panel rows will be spaced 20' apart, which is greater than the 12'-width of the proposed solar panels. The narrative also states that disturbed areas will be revegetated with a conservation grass mix suited to solar array installations in NH. Planning Staff recommend that the Board include a precedent condition of approval related to the submittal of a security to cover the cost of this seed mix. This standard appears to be met.

SECTION 16.2.7 – NOISE & GLARE: This section of the code states that solar energy systems shall be designed and sited to minimize any potential impacts of glint and glare on adjacent properties and roadways and that inverters shall be fully enclosed. The applicant has submitted a glare analysis, which is included as an attachment to this staff report. The report states that due to the proposed location and orientation of the array, in conjunction with the fact that the applicant is proposing to install solar panels with an anti-reflective coating, there should not be any issues with glare onto adjacent properties or roadways. Additionally, Sheet C2.0 of the plan set shows that the inverter for the array is proposed to be installed at the southeastern corner of the Cedarcrest building and enclosed by a 6'-tall privacy fence. This standard appears to be met.

SECTION 16.2.8 – SECURITY: This section of the code states that security fencing can have a maximum height of 8' and that on-site lighting can only be installed for security and safety purposes. The Police Department comments included earlier in this staff report state that the 6' agricultural fence proposed to be installed around the perimeter of the array will be insufficient to protect the equipment from trespassers. In the project narrative, the applicant stated that this is the standard fencing product used by ReVision Energy to protect other similarly sized solar energy systems. The Board will need to make a final determination as to whether or not the proposed fencing will be sufficient to satisfy the requirements of this section of the code.

SECTION 16.2.9 – UTILITY INTERCONNECTION: This section of the code states that all on-site power and communication lines within the solar footprint of the ground-mounted solar energy

system shall be buried underground unless other constraints prevent this from being done. The project narrative states that the conduits and electrical will be run to Cedarcrest's facility through a 115'-long underground trench that will be dug and that the inverters will be mounted at the southeastern corner of the building. This standard appears to be met.

SECTION 16.3 – DECOMMISSIONING & SITE RESTORATION: This section of the code outlines the requirements for decommissioning a large-scale solar energy system. Given that this proposal involves the construction of a medium-scale solar energy system, this standard is not applicable.

SECTION 21.2 - DRAINAGE: During his initial review of the application materials, the City Engineer expressed concern over the stormwater narrative's conclusion that the proposed construction of the array would not alter the existing drainage patterns on the site. In response to this, the applicant submitted a full stormwater report and updated the proposed conditions plan to include grassed conveyance swales and a stormwater collection basin along the northern and eastern boundaries of the array to handle stormwater runoff. At the time of this staff report, Planning Staff were waiting to see if the City Engineer had any further comments or questions on the updated materials that were submitted. Planning Staff can provide an update to the Board during the staff presentation at the Planning Board meeting.

SECTION 21.3 - SEDIMENT & EROSION CONTROL: The proposed conditions plan shows that the applicant proposes to install an erosion control berm along the northern and eastern portions of the array during construction to minimize any potential transfer of sediment onto adjacent areas. As part of his comments on the application, the City Engineer recommended that silt fencing be provided in addition to the proposed erosion berm for the protection of adjacent wetlands to the east of the solar array. In their response to staff comments, the applicant stated that the wetlands are over 200' away from the project site and double erosion control would only be required by NH DES in a situation in which they were 50' or less from the project area. The applicant went on to state that the site is already flat, there is minimal soil disturbance proposed as part of this project, and there will be no grading taking place during construction.

At the time of this staff report, Planning Staff were waiting to hear back from the City Engineer to see if he had any further comments or questions. The Board may wish to ask the applicant for additional information about the proposed sediment and erosion control measures. Planning Staff recommend that the Board include conditions of approval related to the submittal of a security to cover the cost of sediment and erosion control measures as well as the installation and inspection of said stormwater management measures prior to the commencement of site work.

SECTION 21.4 - SNOW STORAGE & REMOVAL: The project narrative states that Cedarcrest currently clears and maintains the site access and has adequate space for snow storage and removal. Snow is not proposed to be removed from within the array area. This standard appears to be met.

SECTION 21.5 - LANDSCAPING: The applicant proposes to install a conservation grass mix in all disturbed areas following the completion of the solar array. As stated previously in this staff report, Planning Staff recommend that the Board include a condition of approval related to the submittal of a security to cover the cost of site stabilization utilizing the proposed seed mix. This standard appears to be met.

SECTION 21.6 - SCREENING: The project narrative states that the solar array will be sufficiently screened due to its location at the rear of both the Cedarcrest and Monadnock View Cemetery sites as well as the presence of existing vegetation to the northeast, east, and southeast of the array. The narrative goes on to state that all new supplementary mechanical equipment needed to support the operation of the array will be wall-mounted at the southeastern corner of the existing Cedarcrest building and will be screened from view by a 6'-tall white vinyl privacy fence. As stated previously, the Board will need to make a final determination as to whether or not the proposed screening plan complies with this section of the LDC.

SECTION 21.7 - LIGHTING: This project narrative states that this proposal does not involve the installation of any new lighting. This standard is not applicable.

SECTION 21.8 - SEWER & WATER: While the Cedarcrest site does have access to both water and sewer utilities as part of this application, there are no changes proposed to either of these items. This standard is not applicable.

SECTION 21.9 - TRAFFIC & ACCESS MANAGEMENT: The proposed conditions plan shows that access to the project area during construction will be provided via the Monadnock View Cemetery parcel using an existing gravel path that will be improved in coordination with the Parks & Recreation and Public Works Departments to use as a temporary construction entrance. The plan set shows the location of the construction access road at the southeastern corner of the solar array and indicates that all disturbed areas will be stabilized using the same conservation seed mix following the completion of construction.

While Andy Bohannon, Deputy City Manager, has submitted a letter of support for this application on behalf of the City of Keene, Planning Staff recommend that the Board include a precedent condition of approval in the motion for this application related to the submittal of written documentation of the City's approval for the use of the cemetery parcel for temporary site access during construction.

The project narrative states that permanent access to the site will be provided using an existing travel aisle adjacent to the southern property boundary on the Cedarcrest site. The narrative states that the array will only need to be accessed ~3-4 times per year for reactive and scheduled maintenance purposes. The proposed conditions plan shows that the travel aisle narrows into a 12'-wide pathway with reinforced geomat on either side, which the applicant states will provide sufficient vehicular access to the rear of the site when needed. This standard appears to be met.

SECTION 21.10 - FILLING & EXCAVATION: The project narrative states that there will be minimal excavation as part of this project and will be limited to digging a 115'-long trench between the proposed solar array location and its connection point on the Cedarcrest building. This standard is not applicable.

SECTION 21.11 - SURFACE WATERS & WETLANDS: The project narrative states that there will not be any impacts to surface waters or wetlands. This standard is not applicable.

SECTION 21.12 - HAZARDOUS & TOXIC MATERIALS: The project narrative states that there will not be any hazardous or toxic materials involved with this project. This standard is not applicable.

SECTION 21.13 - NOISE: The project narrative states that the only two sources of sound will be the solar inverter and transformer. The narrative states that these pieces of equipment will produce a minimal amount of sound and will only be active during the day when the solar array is in operation. This standard appears to be met.

SECTION 21.14 - ARCHITECTURE & VISUAL APPEARANCE: This proposal does not involve anything related to architecture and visual appearance. This standard is not applicable.

Recommended Motion:

If the Board is inclined to approve this request, the following motion is recommended:

"Approve PB-2025-04 as shown on the plan set identified as "Cedarcrest Inc.; Solar Site Development" prepared by Horizons Engineering at varying scales in February 2025 and last revised in March 2025 with the following conditions:

1. ***Prior to final approval and signature of the plans by the Planning Board Chair, the following conditions precedent shall be met:***
    a. ***Owners' signatures appear on the title page and proposed conditions plans.***
    b. ***Submittal of five (5) full sized paper copies and a digital copy of the final plans.***
    c. ***Submittal of a security in a form and amount acceptable to the Community Development Director and City Engineer to cover the cost of sediment and erosion control measures and site stabilization.***
    d. ***Submittal of a full sized copy of the recorded BLA plat showing the updated lot configuration.***
2. ***Subsequent to final approval and signature of the plans by the Planning Board Chair, the following conditions shall be met:***
    a. ***Prior to the issuance of a building permit, the submittal of documentation demonstrating that the City of Keene has granted Cedarcrest the right to use the Monadnock View Cemetery for temporary site access during construction.***
    b. ***Prior to the issuance of a building permit, the required 50' setback line shall be pinned by a surveyor licensed in the State of NH and prior to the commencement of site work, verified by the Community Development Director, or their designee."***

City of Keene, NH

Solar Energy System Conditional Use Permit (CUP) Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

GENERAL PROJECT INFORMATION:

PROJECT NAME:	PROJECT ADDRESS(ES):
Cedarcrest Solar Array	91 Maple Ave, 521 Park Ave

SOLAR ENERGY SYSTEM SPECIFICATIONS:

*(The terms below are defined in **Article 16.2** & **Article 29** of the **Land Development Code**.)*

SOLAR FOOTPRINT (IN ACRES): .74	TILT: 35
SOLAR LAND COVERAGE (IN ACRES): .74	AZIMUTH: 212
HEIGHT OF SOLAR ENERGY SYSTEM (IN FEET): 13	

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER #1	owner #2 ~~APPLICANT~~
NAME/COMPANY: Cedarcrest, Inc.	NAME/COMPANY: City of Keene
MAILING ADDRESS: 91 Maple Ave, Keene, NH 03431	MAILING ADDRESS: 3 Washington St, Keene, NH 03431
PHONE: (603) 757-7540	PHONE: 603-357-9804
EMAIL: jhayston@cedarcrestcenter.org	EMAIL: eferland@keenenh.gov
SIGNATURE: See attached authorization	SIGNATURE: Elizabeth Ferland
PRINTED NAME: Jay Hayston	PRINTED NAME: Elizabeth Ferland

AUTHORIZED AGENT *(if different than Owner/Applicant)*	FOR OFFICE USE ONLY:
NAME/COMPANY: ReVision Energy, Inc.	TAX MAP PARCEL #(s): 227-018-000-000-000 = 15 ac 227-027-000-000-000 = 246 ac
MAILING ADDRESS: 7A Commercial Dr. Brentwood, NH 03833	
PHONE: 603-583-4361	PARCEL SIZE: see above
EMAIL: mulin@revisionenergy.com	ZONING DISTRICT: Low Density & Conservation
SIGNATURE: Megan Ulin	PROJECT #: AP-2025-04
PRINTED NAME: Megan Ulin	DATE STAMP: RECEIVED MAR 12 2025 By

City of Keene, NH
Site Plan Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: Cedarcrest Solar Array & BLA

PROJECT ADDRESS(ES): 91 Maple Ave, 521 Park Ave

TYPE OF APPLICATION BEING SUBMITTED:
- ☒ MAJOR PROJECT APPLICATION
- ☐ MINOR PROJECT APPLICATION

EXISTING OR PREVIOUS USE: Cemetery	**PROPOSED USE:** Medium-Scale Solar Energy System
GROSS FLOOR AREA OF NEW CONSTRUCTION (in square feet): 32,292	**GROSS FLOOR AREA OF EXISTING BUILDINGS/STRUCTURES** (in square feet): 0
AREA OF PROPOSED NEW IMPERVIOUS SURFACES (in square feet): 20.46	**TOTAL AREA OF LAND DISTURBANCE** (in square feet): 32,292

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER #1	owner #2 ~~APPLICANT~~
NAME/COMPANY: Cedarcrest, Inc.	**NAME/COMPANY:** City of Keene
MAILING ADDRESS: 91 Maple Ave, Keene, NH 03431	**MAILING ADDRESS:** 3 Washington St, Keene, NH 03431
PHONE: (603) 757-7540	**PHONE:** 603-357-9804
EMAIL: jhayston@cedarcrestcenter.org	**EMAIL:** eferland@keenenh.gov
SIGNATURE: See attached authorization	**SIGNATURE:** see solar CUP application for signature
PRINTED NAME: Jay Hayston	**PRINTED NAME:** Elizabeth Ferland

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:
NAME/COMPANY: ReVision Energy, Inc.	**TAX MAP PARCEL #(s):** 227-018-000-000-000 = 25-ac; 227-027-000-000-000 = 246-ac
MAILING ADDRESS: 7A Commercial Dr. Brentwood, NH 03833	
PHONE: 603-583-4361	**PARCEL SIZE:** see above
EMAIL: mulin@revisionenergy.com	**ZONING DISTRICT:** Low Density & Conservation
SIGNATURE: Megan Ulin	**PROJECT #:** SP-2025-04
PRINTED NAME: Megan Ulin	**DATE STAMP:** RECEIVED MAR 12 2025 By

Agent Authorization

To whom it may concern,

Cedarcrest Inc. hereby authorizes ReVision Energy and Horizons Engineering to act as Agent(s) for the limited purpose of applying for and obtaining any local, state or federal permits that may be required for the installation of a photovoltaic solar system at 91 Maple Ave, Keene, NH 03431 (Parcel ID: 227-018-000). This includes but is not limited to anticipated zoning variances, boundary line adjustment, solar CUP, and building and electric permit applications.

Agent contact information:

Megan Ulin
Solar Project Developer
ReVision Energy
(603) 583-4361
mulin@revisionenergy.com

Ryan Hudock, PE
Civil Engineer
Horizons Engineering
(603) 877-0116 ext. 9972
rhudock@horizonsengineering.com

Signature _____

Print Name Jay Hayston

Title President and CEO

Date 1/30/2025

I. Project Description

February 11, 2025

City of Keene
Planning Board
3 Washington St.
Keene, NH 03431

Boundary Line Adjustment, Major Site Plan Review & Solar Conditional Use
Medium Scale Solar Energy System
91 Maple Ave, Keene, NH

On behalf of Cedarcrest, Inc., ReVision Energy is pleased to provide the City of Keene Planning Board with the below narrative description of its medium-scale solar energy system and associated boundary line adjustment. This development plan is being submitted for review under the standards of the City of Keene Land Development Code for a boundary line adjustment, major development and solar conditional use in the Conservation District.

The proposed location for the solar energy system is an undeveloped portion of land, currently part of the Monadnock View Cemetery (Parcel ID: 227-027-000), and that directly abuts Cedarcrest's facility at 91 Maple Ave (Parcel ID: 227-018-000). Cedarcrest expects to purchase the land on which the solar energy system will be installed from the City of Keene via this proposed boundary line adjustment. The City Manager has been authorized by City Council to execute an agreement for the land sale (January 2nd Council Meeting), and the application for a use variance, which is required for Medium Scale Solar in the Conservation District, has been simultaneously submitted to the Zoning Board.

To flesh out the project background – for several years ReVision Energy has been working in partnership with the City of Keene to install solar developments on City-owned land to help achieve the City's goal of transitioning to 100% clean renewable electricity. This goal also included the desire to provide opportunities for local non-profit organizations to participate in local community solar farms as system owners and energy offtakers, though they may lack sufficient land on which to develop and install the necessary systems. In 2023, the City identified a portion of Monadnock View Cemetery that was unsuitable for burials as a preferred site for an investor-owned ground-mounted solar energy system, and ReVision began project development.

Since that time, Cedarcrest has entered into a power purchase agreement for the electricity produced from the proposed array, which will directly offset around 67% of Cedarcrest's electricity usage with onsite renewable energy. Under this PPA model an investor will own and operate the array at Cedarcrest's facility and sell the power to Cedarcrest at a reduced rate, with options for Cedarcrest to buy out the system in future years. Due to the proximity of the array to Cedarcrest's facility, and the ability to connect directly to their electricity meter, Cedarcrest and the City of Keene have determined that a land purchase via a boundary line adjustment would be the most mutually beneficial path forward to facilitate the solar energy system at this site.

The proposed boundary line adjustment would transfer 1.698 acres from the 46-acre City of Keene parcel, to Cedarcrest (see proposed boundary plan). The Cedarcrest parcel would increase from 5.01 acres to 6.7 acres, and the City parcel would decrease from 46 acres to 44.3

acres. The access points to each parcel would remain as existing. Cedarcrest's access is via 91 Maple Ave, and the City's access via 521 Park Ave. Discussion of the remaining site development and subdivision standards are found in the balance of the narrative.

The proposed solar development is a 333.2 kW DC, 230kW AC fixed-tilt, ground mounted solar array that will produce approximately 364,900 kilowatt-hours of clean, renewable energy each year. The primary components of a ground mounted solar array are earth screws, which are driven into the earth to serve as foundations, aluminum racking fastened to the screws, and solar panels affixed to the racking. The rows of panels will be oriented at 212 degrees southwest to optimize site location and minimize shading, and will have a tilt angle of 35 degrees. At their peak, the panels stand approximately 13 ft above grade. The rows of panels will be electrically connected via underground conduit and wire. The inverters, transformers, and AC electrical equipment are proposed to be located on the southeast Cedarcrest building as shown on the site plan. A 6-ft agricultural fence is proposed around the perimeter of the array to secure the site and to meet NEC requirements. This fence can have warning signage applied (see representatives photos for example) due to it's proximity to public lands, although it is not a code requirement.

For construction, we aim to have all approvals in place to commence work at the site in spring and summer 2025. We expect construction will take 3-4 months. During construction, we anticipate 2-15 workers on site during regular work hours depending on project stage. Construction waste is minimal and will be collected and removed from site as it is generated. Once completed, the system will require an anticipated 2-4 service visits annually for preventative and reactive maintenance. The bulk of the system's oversight will be performed remotely via internet-based production monitoring software to ensure the system is producing power as-designed and constructed. Vegetation management will be performed by Cedarcrest as the landowner.

Solar photovoltaic equipment is durable, built to withstand New England's harsh wind, rain, and snow. The aluminum racking specifications take into consideration the region's snow and wind loading requirements. When installed properly, solar arrays are expected to last 40+ years and provide low-cost energy with minimal ongoing operational and maintenance support.

From a visual standpoint, the bulk of the glare produced is directed upwards and is minimal; a glare statement and written analysis is appended to this submission. The equipment generates virtually no noise while generating electricity. The proposed array location is located within a concealed area with no existing structures or residences directly abutting the development. The array will not be visible to traffic on Maple Ave or Park Ave, given its positioning on the lot, and the surrounding natural vegetation. Given the minimally intrusive characteristics of this solar photovoltaic array, and the larger environmental benefit solar provides, we hope this project will be a welcome addition to the City of Keene.

IV. Site Development Standards for Major Site Plan Review and Solar CUP (Article 21)

1. 21.2 Drainage & Stormwater Management

The proposed development is located on a flat, grassed area. The rows of panels are spaced at 20' apart and will be re-vegetated post construction between the panel rows. Due to the low slope and revegetation, stormwater is expected to sheet flow and not to result in the increased volume or velocity of stormwater runoff. A drainage report stamped by a NH engineer is attached.

2. 21.3 Sedimentation & Erosion Control

The proposed development is located on a flat site, will minimize disturbance of natural soil cover and will utilize best practices for erosion control. A grindings berm will be installed for erosion control as shown on the site plan and as needed. Any site disturbance will be revegetated with a conservation grass mix.

3. 21.4 Snow Storage & Removal

The applicant currently clears and maintains the site access and has adequate existing space for snow storage and removal. Snow will not be removed within the array area.

4. 21.5 Landscaping

Landscaping proposed includes the revegetation of the disturbed project area with a conservation grass mix. Because no significant landscaping is proposed as part of the solar development, and the existing vegetation and revegetation details are shown on the site plan, an exemption is requested from the requirement for a landscape plan.

5. 21.6 Screening

In accordance with 21.6.D Solar Energy Systems, the project has been sited in a manner to reasonably and substantially minimize the view from surrounding properties. The system is not visible from any public rights of way. The project enjoys this limited visibility due to its placement at the very rear corner of the site. To the north of the project, mature woods along the property line screen the project from abutting properties. To the south, the project will be screened from the Parkwood Apartments by a substantial buffer of mature trees and shrubs and by a row of enclosed carport structures that are located along the property line. The primary abutter to the system is the City of Keene, and the visual impact of the proposed solar energy system on the Cemetery will be minimal given existing vegetation and the array's location at the very rear corner of the 46-acre cemetery lot. It is located behind the maintenance building, beyond a stand of mature trees, and is out of site from most grave sites. City staff has submitted a letter in support of this location, and the decision not to propose further screening measures which would be costly for Cedarcrest to install and maintain and would not provide significant benefit

to the overall Cemetery parcel. The exterior AC equipment (inverters, transformer) on the south east corner of the Cedarcrest building will be screened with a white vinyl privacy fence.

6. 21.7 Lighting

N/A – no onsite lighting is proposed as part of the solar development.

7. 21.8 Sewer & Water

N/A - the proposed solar development does not impact or make use of sewer or water services.

8. 21.9 Traffic & Access Management

The proposed development will not generate an increase in traffic during its operational life and does not propose any new driveways from public roads. Once installed the solar array will require only 2-4 visits per year for preventative and reactive maintenance. The array will be easily accessible via the proposed site access and existing facility parking. The existing travel aisle around Cedarcrest's facility will be used to access the array. While the paved aisle tapers as it continues around the building, a minimum of 12ft is available for access (see site plan), and the sides of the paved aisle are reinforced with geomat so it is appropriate for occasional travel. This aisle provides a fire lane, has been used for construction activities on Cedarcrest lands in the past, and is regularly accessed for snow plowing.

9. 21.10 Filling & Excavation

The project proposes no major filling and excavation. The only proposed excavation is that which is incidental to the lawful construction of a solar array. There will be a short trench run of approximately 115' from the proposed solar development to Cedarcrest's facility. This excavation will not impact any floodplains or wetlands, does not result in 50 more trucks of earth entering or leaving the site, and does not reach the threshold of requiring permitting under Article 25.

10. 21.11 Surface Waters & Wetlands

The proposed development will not impact surface waters and wetlands.

11. 21.12 Hazardous & Toxic Materials

N/A – The proposed development does not involve the receiving, handling, storing, or processing of any hazardous or toxic substances.

12. 21.13 Noise

Fixed tilt solar arrays contain no moving parts, and only two components that produce sound: the solar inverter used to convert DC solar electricity to AC electricity compatible with the facility, and a transformer used to convert the voltage used by the solar inverter to the voltage

used by the facility and electric utility. Because the array operates only during daylight hours when the sun is shining, the equipment does not produce noise during nighttime hours. The inverters are rated to produce less than 60dBA at 1 meter of distance, and the National Electrical Manufacturers Association issues guidelines for dry-type transformers allowing sound levels from 40-64 dBA for transformers from 0-1000 kVa. These pieces of equipment have been sited to minimize noise impacts. They are proposed to be located on the southeast exterior corner of the Cedarcrest facility and are over 50ft from any property line. As such, the solar equipment poses no barrier to complying with Table 18-1: Sound Level Limits of 60 dBA at the property line during daylight hours.

V. Solar Energy System Conditional Use Permit Criteria (Article 16)

1. 16.1 Applicability

The proposed development is a medium-scale solar energy system located in the Conservation District and therefore requires a conditional use permit issued by the Planning Board.

2. 16.2.1 Siting

A) This criteria applies only to large-scale solar energy systems, however the project parcel meets the criteria anyways and will be greater than five acres (approximately 6.7 acres with the proposed boundary line adjustment).
B) The solar footprint is under 1 acre and therefore meets the criteria to not exceed 20 contiguous acres.

3. 16.2.2 Height

The proposed development is a fixed tilt ground mounted solar array that is 12.445’ tall at its highest point (see elevation drawings) and therefore meets the requirement not to exceed 15’ as measured from the ground to the highest point of the system.

4. 16.2.3 Setbacks

A minimum setback distance of 50’ has been provided for the proposed development from all exterior property lines. The proposed development does not abut any public rights of way.

5. 16.2.4 Lot Coverage

The solar land coverage was calculated to include all ground mounted components of the solar energy system, including panels and transformer, but excluding access aisles, roads and fencing. The solar land coverage is equal to 15% and does not exceed 70%.

6. 16.2.5 Visual Buffer

A) The project has been sited to reasonably minimize the view of the system from surrounding properties and public rights of way. It is located at the very rear northwest corner of the Monadnock View Cemetery lot where there is very limited visibility from adjacent parcels or public rights-of-way .
B) The visual impact of the solar energy system is mitigated through the preservation of existing vegetation. To the North, it is buffered by the existing woods line. To the east, it is buffered by ornamental trees (SE corner of array), and pine trees behind the Cemetery Maintenance Building. To the South, mature pines and carports buffer the array from the Parkwood Apartments. This existing vegetation is represented on the site plan. The City has submitted a letter in support of the array placement and the ability of

the existing vegetation to provide a suitable visual buffer. The inverters and transformer are screened via a 6' white vinyl privacy fence, consistent with other screening fences on Cedarcrest's property.

C) N/A – no new landscaping is proposed for the creation of a visual buffer.

7. 16.2.6 Environmental

A) No tree clearing is proposed. The array location is a flat, cleared field and gardens.
B) The solar panel rows are spaced 20ft apart, more than meeting the requirement to exceed the width of a single panel collector row, which is approximately 12 ft. The area underneath and between the solar array rows will be revegetated with a conservation grass mix suited to solar array installations in New Hampshire, and that will allow for the growth of vegetation and capture of rainfall.

8. 16.2.7 Noise & Glare

A) The solar energy system is located in the very northwest corner of the Cemetery property. The modules have an anti-reflective surface, designed to absorb incoming light, and reflect as little as 2%. The system is not within view of any public roadways and is shielded from adjacent properties by trees.
B) The inverters are building mounted on the southern corner of Cedarcrest's facility. They are enclosed by a white vinyl privacy fence. Furthermore, they are separated from neighboring properties by more than 50 ft and meet the Site Development Standards for noise.

9. 16.2.8 Security

A) The proposed 6 ft. agricultural perimeter fencing meets the height requirement (maximum height of 8 ft.) specified by the Land Development Code. This is ReVision's standard fencing product used to protect similarly sized solar energy systems across our portfolio of completed work.
B) N/A, no onsite lighting is required for this medium-scale solar energy system.

10. 16.2.9 Utility Interconnection

All of the interrow conduit within the array and the electrical run back to Cedarcrest's facility will be trenched and buried underground, therefore meeting this review criteria. There are no communication lines to bury within the array as the inverters are building mounted on Cedarcrest's facility.

11. 16.3 Decommissioning & Site Restoration

The owner of this medium-scale solar energy system will be responsible for decommissioning the system at its end of life. The foundations and solar equipment can be removed and decommissioned when the system is retired. The commercial lifespan of solar energy systems is 25 years but they are projected to last 40+ year. Equipment can be brought to facilities equipped to recycle material associated with photovoltaic systems upon removal from site. The

b. In conjunction with the previous comment, access to the site is shown through City owned property, but no temporary or permanent easements are proposed for construction or for future access for inspection, maintenance, and infrastructure replacement.

> Temporary construction access will be through City owned property, as addressed in response to Planning & Zoning Staff comment #8, and proof of permission will be provided to Board. Future access for inspection maintenance and infrastructure replacement will be via the existing travel aisle on 91 Maple Ave.

c. The plans propose improvements within the limits of existing City irrigation infrastructure. Please add notes to the plans specifying the coordination, removal, salvage, and delivery of the existing irrigation system spigots for their future reuse by the Parks & Recreation Department.

> ReVision will coordinate with the Parks & Recreation Department to intercept the rise pole and cap irrigation lines on City Land. Riser posts and spigot fittings on Cedarcrest Lands will be removed and cut, and salvaged for re-use. Underground lines will be left in place and will not be salvaged. These notes have been added to C2.0 Site Plan Notes #8.

d. The maximum spacing of the Danger Signs that are proposed on the fence must be specified on the plans in conformance with OSHA requirements.

> There are no OSHA requirements regulating Danger Signage for solar arrays. We propose two signs per side of the array for a total of 8 signs, at a spacing of ~ 100ft. apart.

e. The plans specify two 12’ wide double swing gates, a detail should be provided for these improvements, and it should be confirmed that the two gates can operate right next to each other as shown on the plans.

> Details for the two 12’ wide double swing gates have been added to Sheet C3.0 of the planset. Each gate leaf is 6’ wide. The gates have room to operate when both opened in the same direction, or when opened away from each other in opposite directions.

f. The Drainage Report indicates that the proposed improvements do not alter the existing drainage from the site, but this is incorrect. The proposed conditions create a concentrated stormwater flow as stormwater runs off the proposed solar arrays in lieu of the existing sheet flow stormwater condition from the site. Measures should be reviewed, designed and provided to ensure that the stormwater runoff from the solar arrays does not create erosion on the adjacent cemetery property.

> Much of the area to be sited with solar panels is essentially flat with slopes under 1%. The northeast section of array does have slopes as shown on the

project is not a large-scale solar energy system and is exempt from providing a formal decommissioning plan per the Land Development Code.

12. 16.4 Conditional Use Permit

Application materials have been submitted as specified in the LDC (see CUP Application checklist).

CITY OF KEENE
NEW HAMPSHIRE

February 13, 2025

City of Keene – Planning Board
3 Washington Street
Keene, NH 03431
Attention: Evan Clements, Planner

RE: Cedarcrest Inc. Solar Project – Revision Energy
91 Maple Avenue – parcel ID 227-018-000

Dear Chair Farrington,

This letter is to serve as a letter of support for the requested site plan for the installation of a medium-scale solar energy system on approximately 1.6 acres of undeveloped land in the Conservation District located in Monadnock View Cemetery. The City Manager has been authorized by City Council to execute an agreement for the land sale, and the project is consistent with the efforts of the Comprehensive Master Plan and Energy and Climate Committee's renewable energy initiatives.

This project has been in development for several years after the City began working with Revision Energy to identify parcels within the City that could support medium to large scale projects. Monadnock View Cemetery presented a prime opportunity to not only meet that need but provide support to a local non-profit organization as an energy offtaker. As the project developed, the City determined that a relocation of the project and land purchase would provide the best path forward for everyone involved in the project. Cedarcrest operates as a specialized pediatric medical facility and school which has limited space to provide solar, and with this proposal, it meets our community goals to be provide more sustainable energy and reduce our carbon footprint by 2030.

The City supports the request for this site plan, without installation of additional visual buffer, due to the nature of the location. Currently located in the northwest corner of Monadnock View Cemetery, the parcel is not in view of the public way and is buffered to the south by large pines and carports from Parkwood Apartments. To the north is a vegetated buffer along the property line of the First Baptist Church. To the east is the cemetery operations building and row of trees buffering Section N of the cemetery. The remaining open 1.5-acre field will be converted into new community garden plots supported by the Parks and Recreation Department.

The solar location provides continued passive use, no different than the current use as garden plots, and will allow the City to redevelop and create a stronger community garden program. This project provides a win-win for the community in many ways, and we hope that you find the spirit of this site plan in alignment with our current zoning practices and the Comprehensive Master Plan and the Active and Passive Recreation Master Plan.

Sincerely,

Andy Bohannon, CPRP
Deputy City Manager

CITY OF KEENE
NEW HAMPSHIRE

NOTICE OF DECISION

ZONING BOARD OF ADJUSTMENT

CASE NUMBER:	ZBA-2025-01
Property Address:	91 Maple Ave
Zone:	Conservation District
Owner:	Cedarcrest, Inc.
Petitioner:	Megan Ulin
Date of Decision:	March 3, 2025

Notification of Decision:

ZBA-2025-01: Petitioner, Cedarcrest Inc., represented by Megan Ulin, from ReVision Energy, requested a variance for property located at 91 Maple Ave., Tax Map #227-018-000. This property is in the Conservation District and is owned by Cedarcrest Inc. The Petitioner requested a variance to permit the installation of a medium scale solar energy system in the Conservation District per Article 7.3.5 and Table 8-1of the Zoning Regulations.

This request was **APPROVED 4-0** according to the Variance Findings of Fact listed below and as further specified in the minutes of the meeting.

Criteria 1. Granting the variance would not be contrary to the public interest:

The board voted 4-0 and found that the proposed use would be in the public interest by meeting the community energy goals.

Criteria 2. If the variance were granted, the spirit of the ordinance would be observed:

The board voted 4-0 and found that the proposed use would not impact surrounding uses or the essential character of the neighborhood and poses no threat to public health, safety or welfare.

Criteria 3. Granting the variance would do substantial justice:

The board voted 4-0 and found that denying the proposed use would be a significant loss to the Applicant without a gain to the public.

Criteria 4. If the variance were granted, the values of the surrounding properties would not be diminished:

The board voted 4-0 and found that the proposed use would not diminish the surrounding property values, nor would the proposed use create any noise or glare.

Criteria 5. Unnecessary Hardship: A. Owing to special conditions of the property that distinguish it from other properties in the area, denial of the variance would result in unnecessary hardship. i. No fair and substantial relationship exists between the general public purposes of the ordinance provision and the specific application of that provision to the property. ii. The proposed use is a reasonable one. B. Explain how, if the criteria in subparagraph (A) are not established, an unnecessary hardship will be deemed to exist if an only if, owing to special conditions of the property that distinguish it from other properties in the area, the property cannot be reasonably used in strict conformance with the ordinance, and a variance is therefore necessary to enable a reasonable use of it.

The board voted 4-0 and found that the lot is unique with the underground utilities and maintained field, which is unusual for a conservation lot and the proposed use is a reasonable one.

Conditions:

NOTE:

1. Contact the Community Development Department and the Fire Prevention Officer for any applicable permits that may be needed.
2. Pursuant to New Hampshire RSA Chapter 674:33, all Board approvals shall be valid if acted upon within 2 years from the date of final approval.

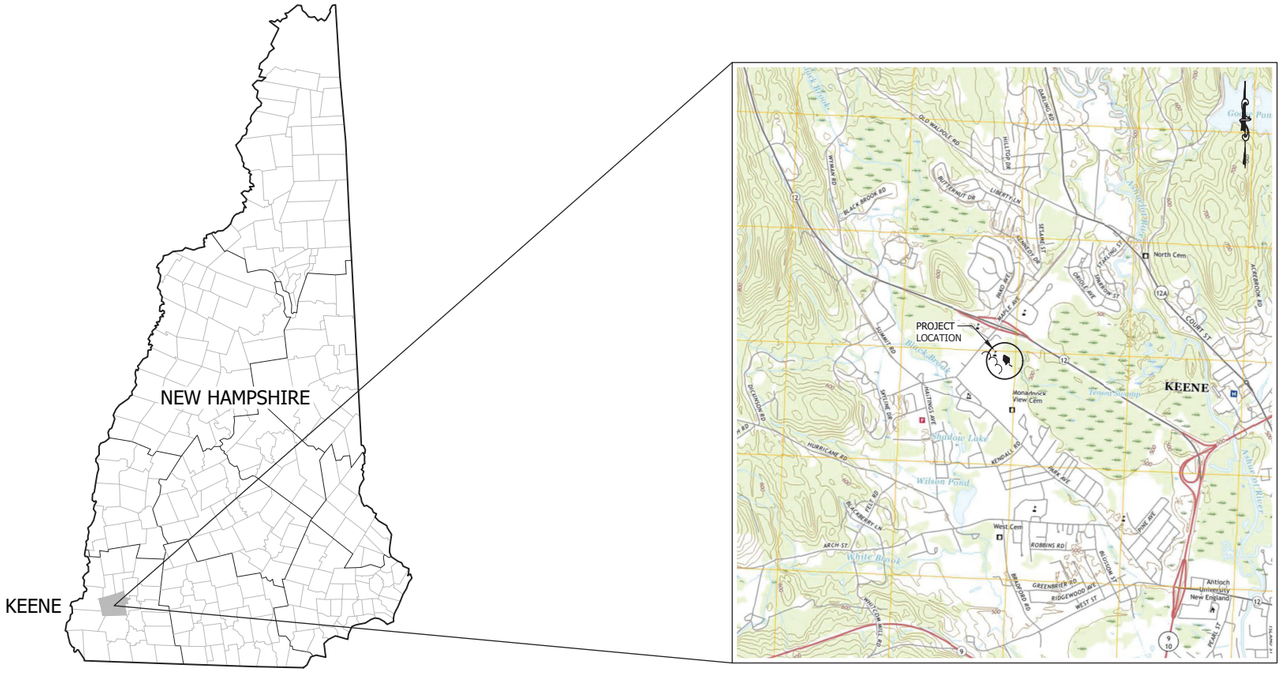
Richard Clough, Chair

Any person directly affected has a right to appeal this Decision. The necessary first step, before any appeal may be taken to the courts, is to apply to the Board of Adjustment for a rehearing. The Motion for Rehearing must be filed not later than 30 days after the first date following the referenced Date of Decision. The Motion must fully set forth every ground upon which it is claimed that the decision is unlawful or unreasonable. See New Hampshire RSA Chapter 677, et seq.

cc: Planning Technician
City Appraiser
City Attorney
File Copy

CEDARCREST INC.
SOLAR SITE DEVELOPMENT

KEENE, NEW HAMPSHIRE
FEBRUARY 2025 (REV. MARCH 2025)



LOCATION PLAN
SCALE: 1" = 2000'

APPLCANT:
CEDARCREST, INC.

AGENT:
REVISION ENERGY
7 COMMERCIAL DRIVE
BRENTWOOD, NH 03833
(603) 583-4361

ENGINEER:
horizons Engineering
34 SCHOOL STREET
LITTLETON, NH 03561
(603) 444-4111

SURVEYOR:
HUNTLEY SURVEY & DESIGN, PLLC
659 WEST ROAD
TEMPLE, NH 03084
(603) 924-1669

SHEET INDEX

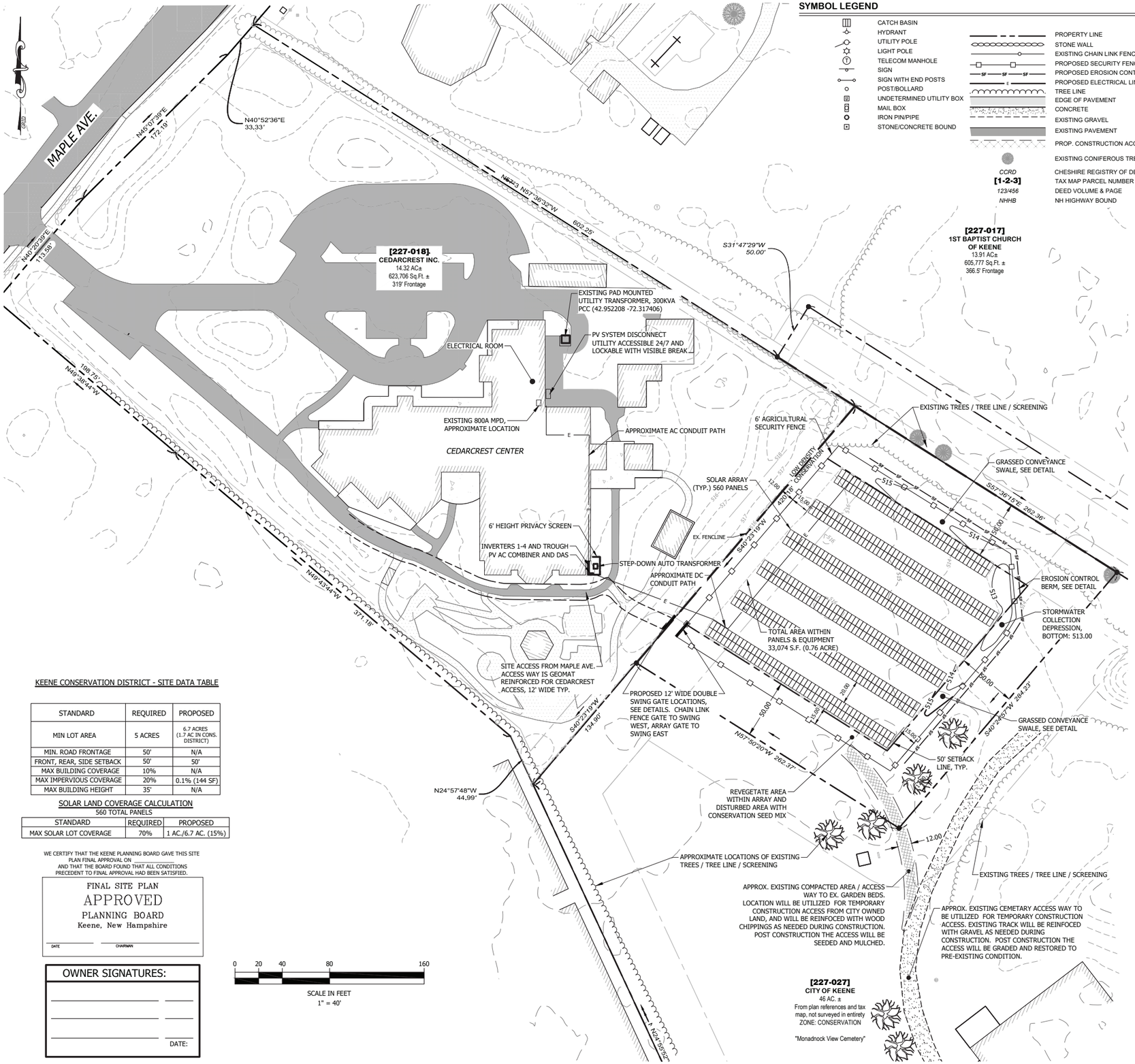
PERMIT NOTES

IT IS THE OWNERS RESPONSIBILITY TO INSURE ALL PERMITS ARE IN PLACE PRIOR TO CONSTRUCTION.

THIS PROJECT SHALL COMPLY WITH ALL CONDITIONS OF ALL PERMITS FOR THE PROJECT. COPIES OF THESE PERMITS MAY BE REQUESTED FROM THE HORIZONS ENGINEERING OFFICE IN NEW LONDON, NH. PERMITS LISTED BELOW ARE REPRESENTATIVE OF PROJECT PERMITTING COLLECTED BY HORIZONS ENGINEERING. ALL REQUIRED PERMITS SHALL BE COLLECTED AND VERIFIED BY THE GENERAL CONTRACTOR.

CITY OF KEENE	
SITE PLAN REVIEW	PENDING

DATE OF PRINT
MARCH 07 2025
HORIZONS ENGINEERING



SYMBOL LEGEND

- CATCH BASIN
- HYDRANT
- UTILITY POLE
- LIGHT POLE
- TELECOM MANHOLE
- SIGN
- SIGN WITH END POSTS
- POST/BOLLARD
- UNDETERMINED UTILITY BOX
- MAIL BOX
- IRON PIN/PIPE
- STONE/CONCRETE BOUND
- PROPERTY LINE
- STONE WALL
- EXISTING CHAIN LINK FENCE
- PROPOSED SECURITY FENCE
- PROPOSED EROSION CONTROLS
- PROPOSED ELECTRICAL LINE
- TREE LINE
- EDGE OF PAVEMENT
- CONCRETE
- EXISTING GRAVEL
- EXISTING PAVEMENT
- PROP. CONSTRUCTION ACCESS
- EXISTING CONIFEROUS TREE
- CCRD — CHESHIRE REGISTRY OF DEEDS
- [1-2-3] — TAX MAP PARCEL NUMBER
- 123/456 — DEED VOLUME & PAGE
- NHHB — NH HIGHWAY BOUND

KEENE CONSERVATION DISTRICT - SITE DATA TABLE

STANDARD	REQUIRED	PROPOSED
MIN LOT AREA	5 ACRES	6.7 ACRES (1.7 AC IN CONS. DISTRICT)
MIN. ROAD FRONTAGE	50'	N/A
FRONT, REAR, SIDE SETBACK	50'	50'
MAX BUILDING COVERAGE	10%	N/A
MAX IMPERVIOUS COVERAGE	20%	0.1% (144 SF)
MAX BUILDING HEIGHT	35'	N/A

SOLAR LAND COVERAGE CALCULATION

560 TOTAL PANELS

STANDARD	REQUIRED	PROPOSED
MAX SOLAR LOT COVERAGE	70%	1 AC./6.7 AC. (15%)

WE CERTIFY THAT THE KEENE PLANNING BOARD GAVE THIS SITE PLAN FINAL APPROVAL ON AND THAT THE BOARD FOUND THAT ALL CONDITIONS PRECEDENT TO FINAL APPROVAL HAD BEEN SATISFIED.

FINAL SITE PLAN
APPROVED
PLANNING BOARD
Keene, New Hampshire

DATE CHAIRMAN

OWNER SIGNATURES:

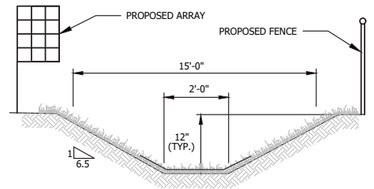
DATE:

SITE PLAN NOTES

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS.
2. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
3. ALL WORK SHALL BE PERFORMED WITHIN THE PROPERTY OF, AND EASEMENTS SECURED BY, THE OWNER.
4. BASE MAP INFORMATION INCLUDING BOUNDARY AND TOPOGRAPHY ON THIS PLAN IS FROM PLANS PREPARED BY HUNTLEY SURVEY & DESIGN, TITLED " EXISTING CONDITIONS" AND "BOUNDARY LINE ADJUSTMENT", BOTH DATED FEBRUARY 2, 2025.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DATA COLLECTION AND PREPARATION OF RECORD DRAWINGS.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONTROLLING EROSION IN ALL AREAS DISTURBED BY HIS ACTIONS. COSTS FOR REQUIRED EROSION CONTROL, REGARDLESS OF WHETHER OR NOT SUCH MEASURES ARE SHOWN ON THE ENGINEERING DRAWINGS, SHALL BE BORNE BY HIM.
7. THE CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION OF EXISTING UTILITIES AND SHALL REPAIR ANY DAMAGE AS QUICKLY AS POSSIBLE AT HIS OWN EXPENSE. ALL UTILITIES ENCOUNTERED SHALL BE LOCATED BY DEPTH AND TIES AND SHOWN BY THE CONTRACTOR ON HIS "AS BUILT" DRAWINGS. HAND EXCAVATION SHALL BE DONE WHEREVER UNDERGROUND UTILITIES ARE ANTICIPATED. THE CONTRACTOR SHALL CONTACT DIG SAFE AND THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION IN ORDER TO VERIFY EXISTING CONDITIONS AND UTILITY LOCATIONS.
8. CONTRACTOR TO COORDINATE WITH PARKS AND RECREATION DEPARTMENT TO INTEREPT RISER POLE AND CAP IRRIGATION LINES ON CITY LAND. RISER POSTS AND SPIGOT FITTINGS ON CEDARCREST LANDS WILL BE REMOVED/CUT AND SALVAGED FOR RE-USE. UNDERGROUND LINES TO BE LEFT IN PLACE.
8. IMPERVIOUS AREAS WERE CALCULATED FROM SOLAR FOUNDATIONS (GROUND SCREWS) AND THE EQUIPMENT PAD AREA.

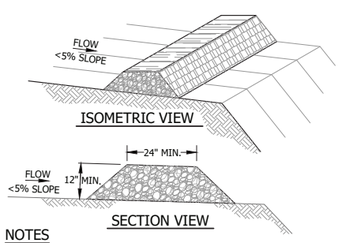
CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE, SEE DETAIL.
2. INSTALL PERIMETER EROSION CONTROL MEASURES AT LOCATIONS SHOWN ON THE PLANS AND AS NEEDED.
3. PROCEED WITH WORK, INSTALLING ARRAY, RUNOFF SWALES, ELECTRIC EQUIPMENT, AND FENCING, LIMITING THE DURATION OF DISTURBANCE. ANY MINOR POTENTIAL GROUND DISTURBANCES ARE ANTICIPATED TO BE CAUSED BY VEHICLE ACCESS MOVEMENTS PERFORMING THE INSTALLATION OF THE PANELS AND FENCING. THE MAXIMUM LENGTH OF TIME THAT DISTURBED EARTH MAY BE LEFT UNSTABILIZED IS 45 DAYS.
4. REMOVE CONSTRUCTION ENTRANCE MATERIALS. BEGIN SEEDING AND MULCHING AREAS DISTURBED BY INSTALLATION EQUIPMENT. ALL DISTURBED AREAS SHALL BE STABILIZED WITH APPROVED METHODS WITHIN 72 HOURS.
5. INSPECT ALL EROSION CONTROL MEASURES ON A DAILY BASIS AND AFTER EVERY 0.5 INCHES OF PRECIPITATION. MAINTAIN AND REPAIR ALL MEASURES NO LONGER INSTALLED CORRECTLY.
6. PLACE TOPSOIL, SEED AND MULCH.
7. MONITOR THE SITE AND MAINTAIN STRUCTURES AS NEEDED UNTIL FULL VEGETATION IS ESTABLISHED.



1' DEEP GRASS LINED DITCH DETAIL

NOT TO SCALE



NOTES

1. PERVIOUS BERMS SHALL NOT BE USED IN AREAS ON CONCENTRATED STORMWATER FLOW.
2. THE BERM SHALL BE INSTALLED TO FOLLOW THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE.
3. THE MATERIAL MIX FOR THE BERM SHALL HAVE AN ORGANIC PORTION BETWEEN 25% AND 65%, DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT.
4. WOOD CHIPS, BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS THE ORGANIC MATERIAL.
5. THE MIX SHALL NOT CONTAIN SILTS, CLAYS OR FINE SANDS.
6. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 100% PASSING A 3" SCREEN, 90%-100% PASSING A 1" SCREEN, 70% TO 100% PASSING A 0.75" SCREEN, AND 30% TO 75% PASSING A 0.25" SCREEN.
7. THE MIX SHALL HAVE A pH BETWEEN 5.0 AND 8.0.

EROSION CONTROL MIX (ECM) BERM

NOT NOT SCALE

DATE OF PRINT
MARCH 07, 2025
HORIZONS ENGINEERING

NO.	DATE	REVISION DESCRIPTION	ENG	DWG
1	3/7/25	CITY COMMENTS FROM PLANNING BOARD MEETING	RH	AG

SURVEYED BY:	HEI
ENGINEERED BY:	RJH
DRAWN BY:	DMW
CHECKED BY:	RJH/WTD

STATE OF NEW HAMPSHIRE - RYAN HUDOCK No.17777 - LICENSED PROFESSIONAL ENGINEER

horizons Engineering

REVISION ENERGY
SOLAR SITE DEVELOPMENT
KEENE, NEW HAMPSHIRE

SITE & LANDSCAPING PLAN

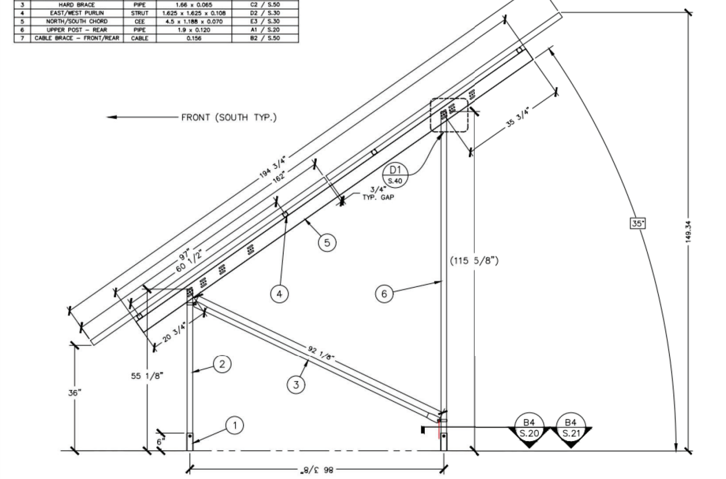
ISSUED FOR:
REVIEW

PROJECT #:	240705
DATE:	FEBRUARY 2025

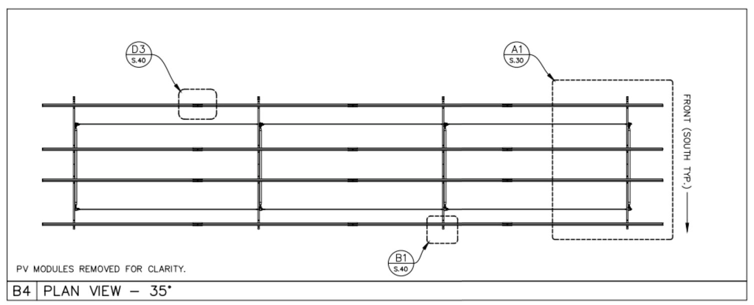
SHEET C2.0

Z:\proj_2024\240705 - ReVision, Monadnock View - Keene, NH\Internal\Civil\Concepts\240705 CONCEPT 01 RFMI.dwg, SITE, 3/7/2025 11:00:52 AM, AndrewGodfrey

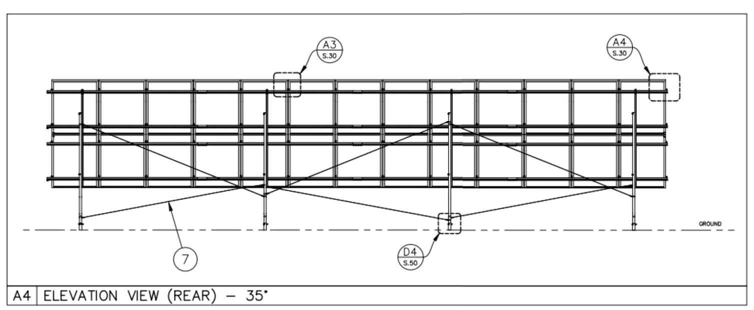
PARTS LIST				
ITEM	DESCRIPTION	SHAPE	DIMENSIONS (IN.)	DETAIL
1	FOUNDATION	PIPE	VARIES, SEE SHEETS	C1/S.20 OR E1/S21
2	UPPER POST – FRONT	PIPE	1.9 x 0.120	B1 / S.20
3	HARD BRACE	PIPE	1.66 x 0.065	C2 / S.50
4	EAST/WEST PURLIN	STRUT	1.625 x 1.625 x 0.108	D2 / S.30
5	NORTH/SOUTH CHORD	CEE	4.5 x 1.188 x 0.070	E3 / S.30
6	UPPER POST – REAR	PIPE	1.9 x 0.120	A1 / S.20
7	CABLE BRACE – FRONT/REAR	CABLE	0.156	B2 / S.50



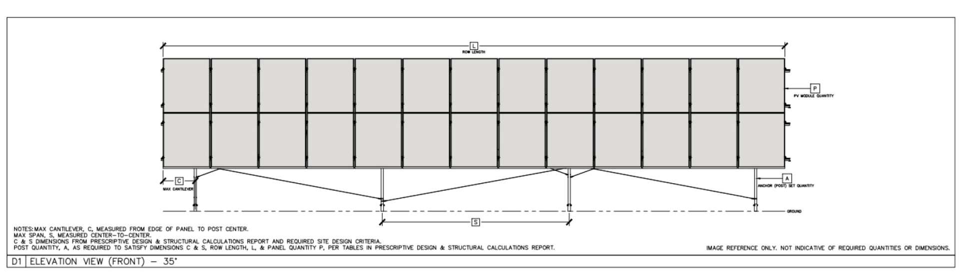
NOTES: PV MODULE & MODULE RELATED DIMENSIONS THIS DETAIL ARE MAX ALLOWABLE. SEE STATE LETTER FOR FURTHER INFORMATION. ADDITIONAL DIMENSIONS ARE NOMINAL FROM LEVEL GROUND. SEE NOTES SHEET FOR TOLERANCES.



B4 PLAN VIEW – 35°



A4 ELEVATION VIEW (REAR) – 35°

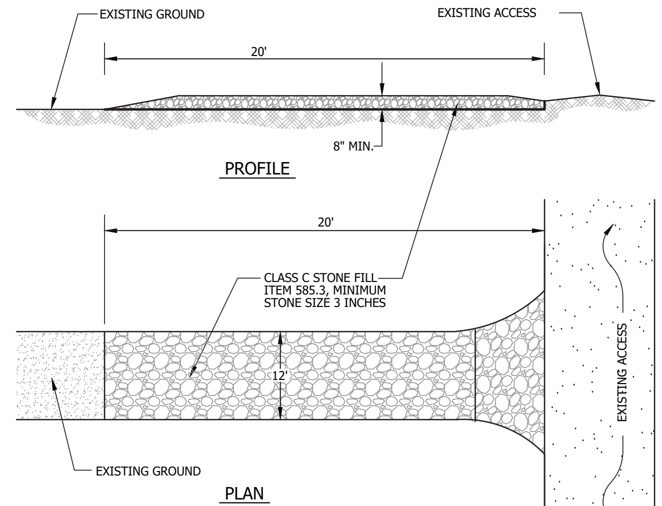


D1 ELEVATION VIEW (FRONT) – 35°

NOTE: FOR DETAIL REFERENCES AND SCALE SEE APA STRUCTURAL, MECHANICAL & ELECTRICAL PLANS

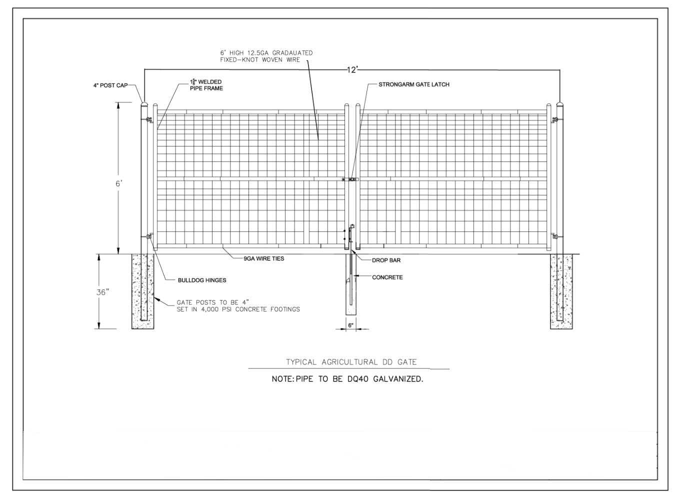
SOLAR PANEL DETAILS

NOT TO SCALE



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

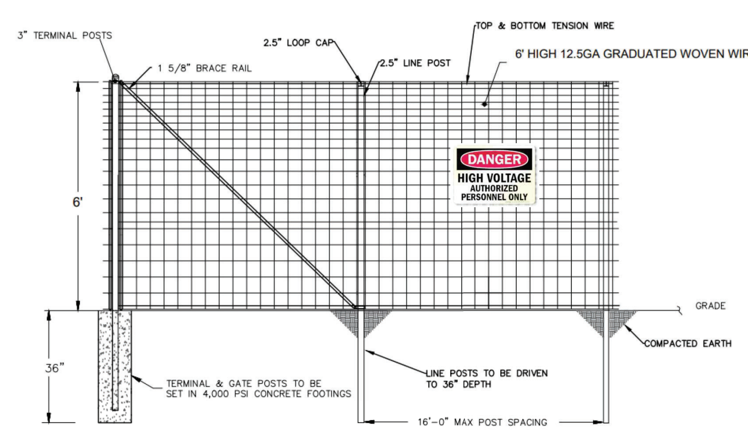


AGRICULTURAL FENCE GATE

NOT TO SCALE

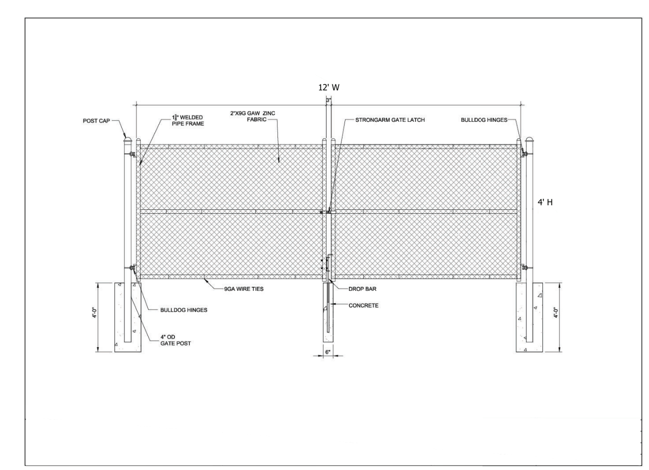
DANGER SIGN ON FENCE

TWO (2) DANGER SIGNS TO BE PLACED ON EACH SIDE OF FENCE ON SITE FOR A TOTAL OF EIGHT (8) SIGNS



TYPICAL AGRICULTURAL FENCE

NOTES:
1. TERMINAL & GATE POSTS TO RECEIVE ANGLE BRACE
2. TOP & BOTTOM TENSION WIRE SECURED WITH HOG RINGS



TYPICAL CHAIN LINK FENCE GATE

NOT TO SCALE

EROSION CONTROL GENERAL NOTES

A. KEEP SITE MODIFICATION TO A MINIMUM

1. CONSIDER FITTING THE BUILDINGS AND STREETS TO THE NATURAL TOPOGRAPHY. THIS REDUCES THE NEED FOR CUTS AND FILLS. AVOID EXTENSIVE GRADING THAT WOULD ALTER DRAINAGE PATTERNS OR CREATE VERY STEEP SLOPES.
2. EXPOSE AREAS OF BARE SOIL TO EROSIVE ELEMENTS FOR THE SHORTEST TIME POSSIBLE.
3. SAVE AND PROTECT DESIRABLE EXISTING VEGETATION WHERE POSSIBLE. ERECT BARRIERS TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.
4. LIMIT THE GRADES OF SLOPES SO VEGETATION CAN BE EASILY ESTABLISHED AND MAINTAINED.
5. AVOID SUBSTANTIAL INCREASE IN RUNOFF LEAVING THE SITE.

B. MINIMIZE POLLUTION OF WATER DURING CONSTRUCTION ACTIVITIES

1. STOCKPILE TOPSOIL REMOVED FROM CONSTRUCTION AREA AND SPREAD OVER ANY DISTURBED AREAS PRIOR TO REVEGETATION. TOPSOIL STOCKPILES MUST BE PROTECTED FROM EROSION.
2. PROTECT BARE SOIL AREAS EXPOSED BY GRADING ACTIVITIES WITH TEMPORARY VEGETATION OR MULCHES.
3. USE SEDIMENT BASINS TO TRAP DEBRIS AND SEDIMENT WHICH WILL PREVENT THESE MATERIALS FROM MOVING OFF SITE.
4. USE DIVERSIONS TO DIRECT WATER AROUND THE CONSTRUCTION AREA AND AWAY FROM EROSION PRONE AREAS TO POINTS OF SAFE DISPOSAL.
5. USE TEMPORARY CULVERTS OR BRIDGES WHEN CROSSING STREAMS WITH EQUIPMENT.
6. PLACE CONSTRUCTION FACILITIES, MATERIALS, AND EQUIPMENT STORAGE AND MAINTENANCE AREAS AWAY FROM DRAINAGE WAYS.

C. PROTECT AREA AFTER CONSTRUCTION.

1. ESTABLISH GRASS OR OTHER SUITABLE VEGETATION ON ALL DISTURBED AREAS. SELECT SPECIES ADAPTED TO THE SITE CONDITIONS AND THE FUTURE USE OF THE AREA. FINAL GRADES SHALL BE SEEDED WITHIN 72 HOURS. STABILIZATION SHALL BE DEFINED AS 85% VEGETATIVE COVER.
2. MAINTAIN VEGETATED AREAS USING PROPER VEGETATIVE 'BEST MANAGEMENT PRACTICES' DURING THE CONSTRUCTION PERIOD.
3. MAINTAIN NEEDED STRUCTURAL 'BEST MANAGEMENT PRACTICES' AND REMOVE SEDIMENT FROM DETENTION PONDS AND SEDIMENT BASINS AS NEEDED.
4. DETERMINE RESPONSIBILITY FOR LONG TERM MAINTENANCE OF PERMANENT 'BEST MANAGEMENT PRACTICES'.
5. IF CONSTRUCTION IS ANTICIPATED DURING WINTER MONTHS, REFER TO 'COLD WEATHER SITE STABILIZATION REQUIREMENTS'.

D. INVASIVE SPECIES AND FUGITIVE DUST

1. THE PROJECT SHALL NOT CONTRIBUTE TO THE SPREAD OF INVASIVE SPECIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EVALUATE WORK AREAS FOR THE PRESENCE OF INVASIVE SPECIES, AND IF FOUND SHALL TAKE NECESSARY MEASURES TO PREVENT THEIR SPREAD IN ACCORDANCE WITH RSA 430:51-57 AND AGR 3800. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT THE INTRODUCTION OF INVASIVE SPECIES BY INSPECTING AND CLEANING ALL EQUIPMENT ARRIVING ON SITE.
2. FUGITIVE DUST SHALL BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000.

SEEDING RECOMMENDATIONS

1. GRADING AND SHAPING

A. SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

2. SEEDBED PREPARATION

A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.

B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE AMENDED WITH ORGANIC MATTER AND TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME THOROUGHLY INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

3. ESTABLISHING VEGETATION

A. LIME AND FERTILIZER SHOULD BE APPLIED 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, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ. FT.
-NITROGEN (N), 50 LBS., PER ACRE OR 1.1 LBS. PER 1,000 SQ. FT.
-PHOSPHATE (P_2O_5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.
-POTASH (K_20), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.

(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10).

B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING, AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.

C. SEEDING GUIDE:

USE	SEEDING MIXTURE (SEE 3D)	SOIL TYPE: DROUGHTY	WELL DRAINED	MOD. WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILL-WAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR

D. SEEDING RATES: SOLAR FARM CONSERVATION SEED MIX

MIXTURE	POUNDS PER 1,000 SQ. FT.
A CREEPING RED FESCUE B HARD FESCUE, 'STURGEON' C HARD FESCUE, 'SWORD II' D CHEWINGS FESCUE E KENTUCKY BLUEGRASS, 'NAVY' F KENTUCKY BLUEGRASS, 'WILDHORSE' G WHITE CLOVER, DUTCH	4

E. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO SEPTEMBER 15. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.

F. TEMPORARY SEEDING RATES:

SPECIES	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.	REMARKS
WINTER RYE	112	2.5	BEST FOR FALL SEEDING. SEED FROM AUGUST TO SEPTEMBER 5TH FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	80	2.0	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15TH FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40	1.0	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE NOT IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. COVER SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	30	0.7	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1ST AND JUNE 1ST AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

4. MULCH

A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.

B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING.

5. MAINTENANCE TO ESTABLISH A STAND

A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.

B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ON SITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.

C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

DATE OF PRINT
MARCH 07 2025
HORIZONS ENGINEERING

NO.	DATE	REVISION DESCRIPTION	ENG	DWG
1	3/7/25	CITY COMMENTS FROM PLANNING BOARD MEETING	RH	AG

SURVEYED BY:	HEI
ENGINEERED BY:	RJH
DRAWN BY:	DMW
CHECKED BY:	RJH/WTD

STATE OF NEW HAMPSHIRE – RYAN HUDOCK No.17777 LICENSED PROFESSIONAL ENGINEER

horizons Engineering

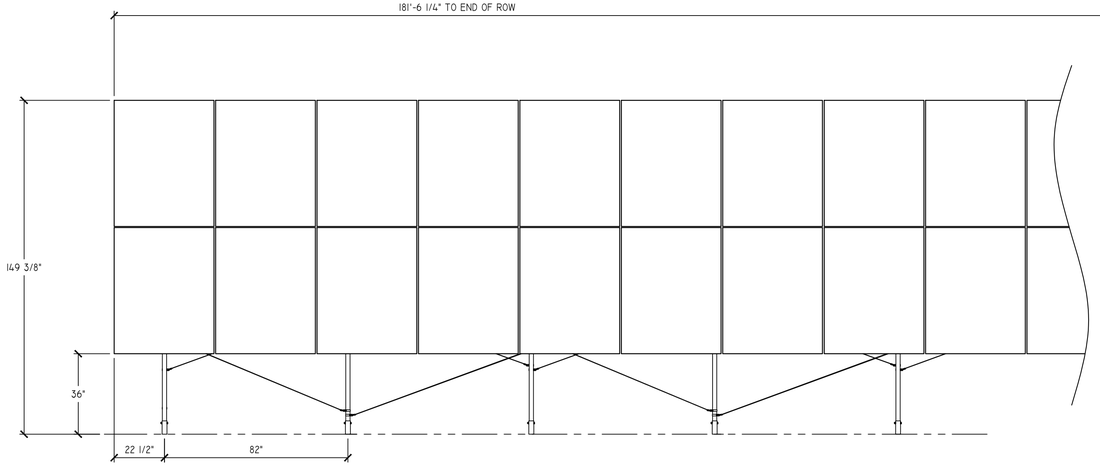
REVISION ENERGY
SOLAR SITE DEVELOPMENT
KEENE, NEW HAMPSHIRE

EROSION CONTROL & CONSTRUCTION DETAILS

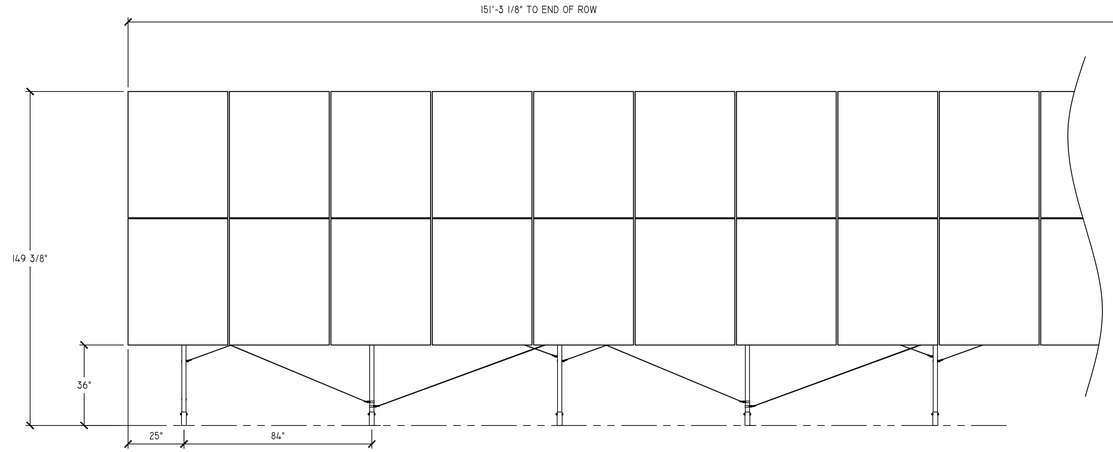
ISSUED FOR:
REVIEW

PROJECT #:	240705
DATE:	FEBRUARY 2025

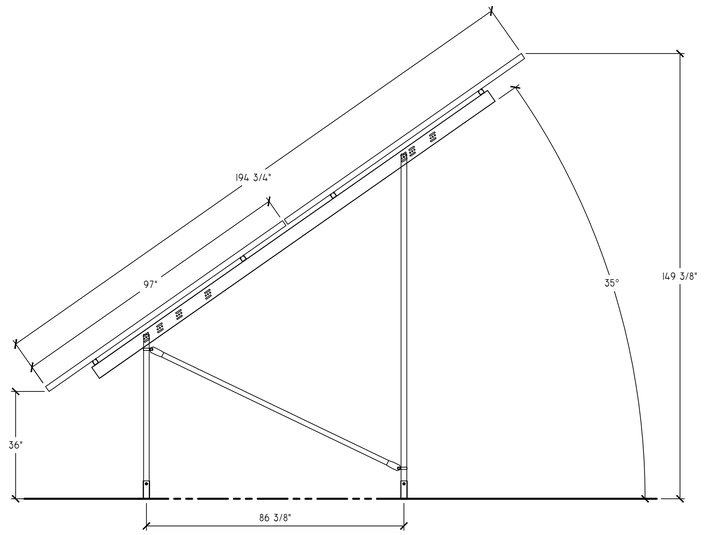
SHEET C3.0



A
3/8" = 1'-0"
ROW 1-5 RACKING



B
3/8" = 1'-0"
ROW 6 RACKING



C
1/2" = 1'-0"
RACKING SIDE PROFILE

NOTE:
- FILES ADAPTED FROM:
APA.STR - RRD23US-004 - REVA - UNSTAMPED - A

REVISION ENERGY
7 COMMERCIAL DRIVE
BRENTWOOD, NH 03833
(603) 658-0185

CLIENT:
CEDARCREST CENTER FOR CHILDREN WITH DISABILITIES

PROJECT ADDRESS:
91 MAPLE AVENUE
KEENE, NH 03431

SYSTEM TYPE:
GROUND MOUNT PHOTOVOLTAIC ARRAY

FOR CONSTRUCTION

REV	BY	DATE	STATUS
000	SFC	3/14/2025	ISSUED FOR PERMITTING

DESIGNED BY: SFC
PRINT SIZE: 24" X 36"
SCALE: SEE DETAIL
DATE: MARCH 14, 2025

DWG TITLE
RACKING DETAILS

DWG NUMBER
E301

Site Photos: 91 Maple Avenue (Parcel ID: 227-018-000)

Photo 1: Taken from the West lower corner the proposed array, and looking Northeast at the array location. View of existing vegetative buffer towards the North.

Photo 2: Taken from the West upper corner of the proposed array, looking East towards the existing tree-line and Cemetery Maintenance Shed.

Site Photos: 91 Maple Avenue (Parcel ID: 227-018-000)

Photo 3: Taken from East corner of the array, looking Southwest to Cedarcrest and 91 Maple Ave.

Photo 4: Center of array location, looking South to buffer along Parkwood Apartments and carports.

Site Photos: 91 Maple Avenue (Parcel ID: 227-018-000)

Photo 5: Proposed Inverter and Transformer Location

Aerial image with solar overlay

Representative Photos

Example Photo of Solar Panel front view with APA racking system

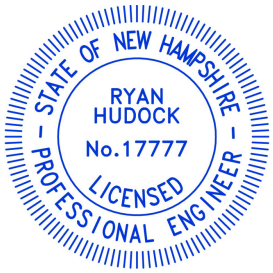
Example Photo of 6' agricultural security fence

Example vinyl privacy screen for exterior AC equipment

STORMWATER NARRATIVE

for

Cedarcrest Inc. Array – ReVision Energy
91 Maple Avenue, Keene, NH
Site Plan Review



Project Description

The subject site is located on 1.70 acres of land to be parceled off the City of Keene Tax Map 227, Lot 27, known as the Monadnock View Cemetery. For construction activities, the plot will be accessed from this property. Maintenance and future access of the site will be from the Cedarcrest Center on 91 Maple Avenue. The footprint of the proposed solar array and equipment areas have a total disturbance area of 32,292 square feet as defined by the City of Keene.

Existing Site Conditions

The subject parcel is bordered to the west by bordered on the west by the Cedarcrest Center and to the south and east by the Monadnock View Cemetery. The area in its exiting state is open and grassed, or in use as recreational garden beds. In the area of the proposed array slopes of the land are gentle, ranging from 1% to 3% that slope to the east. The soils on-site are "Hydrologic Group A" according to Web Soil Survey.

Proposed Site Conditions

The project does not propose grading as part of the solar installation, with the array proposed to be staked to the existing topography within the open area of the site. As part of site construction, it is not anticipated that significant disturbance of land will occur, but erosion control measures will be provided downgradient of the site. Portions of the site will be compacted in areas used for installation equipment, and the finished site will be loamed and seeded per the latest recommendations of conservation and erosion control mix shown on the submitted Site Plan set.

No stormwater management measures will be required or provided on-site. By definition of the NHDES guidance on solar installations (Env-Wq 1511.06), if the project was to qualify for the Alteration of Terrain permit the solar panels would not be considered impervious area based on the land cover, soil type, and slope of the existing land. No permanent access way is proposed and thus no impervious areas will be created. The conductive soils and gentle slopes will assist the ground infiltration of storm runoff from the solar panels. There is not anticipated to be a change to drainage patterns in vicinity of the proposed site.

Glare Analysis

Conditional Use Permit - Medium Scale Solar Energy System
Prepared by ReVision Energy for Cedarcrest, Inc. 91 Maple Ave, Keene, NH

Background:

Solar modules are intended to capture as much light as possible for conversion into electricity, so reflect much less light than many other common materials. For this reason, modern module glass utilizes an anti-reflective coating that reduces reflection to as little as 2% (Sandia 2013).

Glint and glare are typically not concerns for residential buildings surrounding fixed tilt solar photovoltaic installations because the sun's height in the sky causes reflections to pass over residential size structures (SolarPro 2015).

Pilots and airports are more likely to be at risk of solar glint and glare, so the FAA issued interim guidance in 2013 requiring that solar PV facilities located at federally obligated airports be approved by the FAA. These guidelines require that no potential for glint or glare exist in the Air Traffic Control Tower, and there be low or no potential along any final approach path (2 miles from 50' above the landing threshold). These provisions do not apply to installations that are off-airport or at non-obligated airports (SEIA/Sandia 2013).

Project Site:

Cedarcrest's solar project is sited at the rear corner of the lot and is buffered from view by existing vegetation on most sides. The only nearby residential structures are the Parkwood Apartments, which are located to the south of the array, but are buffered by an existing row of carports and dense, tall pine trees along the property lines that are of a height sufficient to fully screen the view of the apartment buildings from the array location. No roadways are visible from the project location.

The modules used on this installation are manufactured by Q CELLS, and have an anti-reflective surface. The manufacturer publishes a statement addressing glare and angle of incidence (attached) and shows that solar panels are less reflective than other normally occurring features in the environment including window glass or standing water.

Due to these factors, the potential for the solar array to introduce a significant source of glare onto abutting structures during the course of the day and year is negligible.

Sources:

Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules | State, Local, and Tribal Governments | NREL

https://www.seia.org/sites/default/files/Final FAA Sandia Webinar Slides.pdf

http://solarprofessional.com/articles/design-installation/evaluating-glare-from-roof-mounted-pv-arrays#.W0N5r9JKiUk

Q.PEAK DUO XL-G11S SERIES

590 - 605 Wp | 156 Cells
21.7 % Maximum Module Efficiency

MODEL Q.PEAK DUO XL-G11S.3 / BFG

Bifacial energy yield gain of up to 21%

Bifacial Q.ANTUM solar cells make efficient use of light shining on the module rear-side for radically improved LCOE.

Low electricity generation costs

Q.ANTUM DUO technology with optimized module layout to boost module power and improve LCOE.

A reliable investment

Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[1].

Enduring high performance

Long-term yield security with Anti LID and Anti PID Technology[2], Hot-Spot Protect.

Frame for versatile mounting options

High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (3750 Pa)[3].

Innovative all-weather technology

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

[1] See data sheet on rear for further information.
[2] APT test conditions according to IEC / TS 62804-1:2015 method B (–1500 V, 168 h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[3] See Installation Manual for instructions

The ideal solution for:

Ground-mounted solar power plants

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FAST. FLEXIBLE. ENGINEERED. READY.

STANDARD SPECIFICATIONS

Engineering: APA Drawings can be PE stamped for all 50 States and territories
Grounding: Materials included
Foundation: Helical, Ground Screw or Geoballast
Tilt Angles: 20°, 25°, 30° or 35°
Racking Coating: Galvanized; G90
Foundation Coating: Varies
Wind Loading: Up to 140mph
Snow Loading: Up to 100psf
Mounting Orientation: 2-High in Portrait
Warranty: 25 Years

CONCRETE FREE FOUNDATIONS

Our proprietary shallow helical, ground screw, and geoballast foundations allow us to be extremely versatile, managing all soil conditions while providing a stable foundation at a cost effective price. The helical and ground screw foundations can be installed using a skid loader and auger attachment, eliminating the need for specialized equipment. All of our foundations eliminate the need for concrete and allow installers to begin building the racking as soon as the foundation is installed, which drastically reduces installation times.

PRE-ENGINEERED KIT

The **Ready Rack Kit**™ is specifically designed for small scale solar installations. All required components are included with the system, as well as approved engineering documentation. Just pick your site's parameters and go. The hardware design is a simple configuration that allows contractors to install the system lightning fast. The Ready Rack Kit is customizable in two module increments and adapts to virtually any module size. No need to go out and source additional materials, such as schedule 40 pipe - our racking includes all hardware needed, from foundations to module clamps, and everything in-between.

Ready Rack is a division of APA Solar, a leading provider of large commercial and utility scale solar racking systems.

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419.267.5280 // READYRACK@APASOLAR.COM

50/60 kW, 1000 Vdc String Inverters for North America

The CPS 50/60 kW three-phase string inverters are designed for ground mount, rooftop and carport applications. The units are high performance, advanced, and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges, and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The CPS 50/60KTL products ship with either the Standard wire box or the Rapid Shutdown wire box, each fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown wire box enables PVRSS certified module-level rapid shutdown when used with APS RSD-S-PLC/RSD-D products. The CPS FlexOM Gateway enables monitoring, controls, and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- NEC 2017/2020 PVRSS certified for rapid shutdown
- 55 & 66 kVA rating allows max rated active power @ ±0.91 PF
- Selectable max. AC apparent power of 50/55 kVA and 60/66 kVA
- NEC compliant and UL listed arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 3 MPPTs with 5 inputs each for maximum flexibility
- NEMA Type 4X outdoor rated enclosure
- UL 1741-SA certified to CA Rule 21, including SA8 - SA18
- UL 1741-SB and IEEE 1547-2018 certified
- Separable wire-box design for fast service
- Standard 10-year warranty with extensions up to 20 years

50/60KTL Standard Wire Box

50/60KTL Rapid Shutdown Wire Box

This device complies with part 15 of the FCC Rules

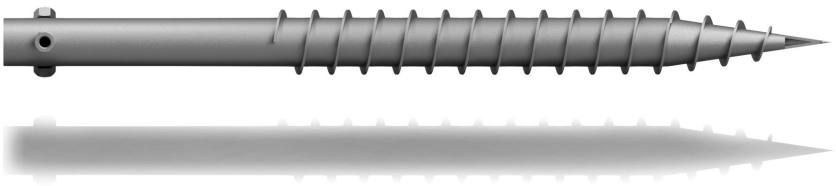
Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

ROCKY SOIL CONDITIONS

Our ground screws are designed for sites with rock. The forged tip helps lead the screw straight and plumb. The threads of the screw bite and hold firmly into the soil without getting caught on rocks and cobble. The heavy walled tube and welded connections allow massive amounts of torque and downward pressure to be applied, helping the screw to advance in even the toughest soils.

SIMPLE INSTALL

Several types of equipment can be used to install ground screws. Skid loaders or mini excavators with an auger attachment are among the most common installation equipment. Many drilling contractors can use a simple adapter to drive ground screws without buying new equipment. Most pile driving rigs can be converted to rotary heads with little effort.



GROUND SCREW FOUNDATION

Our ground screws are manufactured for even the most challenging solar sites. We use heavy walled tubing for the main shaft of the screw. The tips of the screw are forged, making them extremely hard, helping them to penetrate into or pass by underground obstructions. The threads are welded with a patented automated welding process to provide a consistent and strong weld along the entire length of the thread. Ground screws come with a durable hot dipped galvanized coating that will protect them from long term corrosion.

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City of Keene, NH

Earth Excavation Permit Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: G2 Holdings, LLC	**TYPE OF APPLICATION BEING SUBMITTED:** ☐ EARTH EXCAVATION PERMIT ■ MAJOR AMENDMENT ☐ MINOR AMENDMENT ☐ PERMIT RENEWAL
PROJECT ADDRESS(ES): 57 Route 9	

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER	APPLICANT
NAME/COMPANY: G2 Holdings, LLC	**NAME/COMPANY:** G2 Holdings, LLC
MAILING ADDRESS: 250 North Street, Jaffrey, NH 03452	**MAILING ADDRESS:** 250 North Street, Jaffrey, NH 03452
PHONE: 603-325-8457	**PHONE:** 603-325-8457
EMAIL: cody@mygordonservices.com	**EMAIL:** cody@mygordonservices.com
SIGNATURE:	**SIGNATURE:**
PRINTED NAME: Cody Gordon	**PRINTED NAME:** Cody Gordon

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:	
NAME/COMPANY: Granite Engineering, LLC	**TAX MAP PARCEL #(s):** ___-___-___-___-___ ___-___-___-___-___	
MAILING ADDRESS: 150 Dow Street, Suite 421, Manchester, NH 03101		
PHONE: 603-518-8030	**PARCEL SIZE:**	**DATE STAMP:**
EMAIL: jdaigneault@graniteeng.com	**ZONING DISTRICT:**	
SIGNATURE:		
PRINTED NAME: Justin Daigneault	**PROJECT #:**	

City of Keene, NH

Hillside Protection Conditional Use Permit (CUP) Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: GRAVEL AND EARTH REMOVAL PLAN, G2 HOLDINGS, LLC	**AREA OF PRECAUTIONARY SLOPES TO BE IMPACTED:** *(in square feet)* Lot 7 = 202,015 SF
PROJECT ADDRESS(ES): 57 ROUTE 9, TAX MAP 215, LOTS 7 & 8	

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER	APPLICANT
NAME/COMPANY: G2 Holdings, LLC	**NAME/COMPANY:** G2 Holdings, LLC
MAILING ADDRESS: 250 North Street, Jaffrey, NH 03452	**MAILING ADDRESS:** 250 North Street, Jaffrey, NH 03452
PHONE: 603-325-8457	**PHONE:** 603-325-8457
EMAIL: cody@mygordonservices.com	**EMAIL:** cody@mygordonservices.com
SIGNATURE:	**SIGNATURE:**
PRINTED NAME: Cody Gordan	**PRINTED NAME:** Cody Gordan

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:	
NAME/COMPANY: Granite Engineering, LLC	**TAX MAP PARCEL #(s):** ___-___-___-___-___ ___-___-___-___-___	
MAILING ADDRESS: 150 Dow Street, Suite 421, Manchester, NH 03101		
PHONE: 603-518-8030	**PARCEL SIZE:**	**DATE STAMP:**
EMAIL: jdaigneault@graniteeng.com	**ZONING DISTRICT:**	
SIGNATURE:		
PRINTED NAME: Justin Daigneault	**PROJECT #:**	

Narrative

As part of the application for the City of Keene Earth Excavation Permit, the following are narrative descriptions detailing how each development standard outlined in Article 25.19.4.B, of the Land Development Code has been addressed:

1. **The location, boundaries, and zoning district**
   The applicant and the property owner, G2 Holdings LLC, propose expansion at the existing Route 9 gravel pit located on Tax Map 215, lot 7. The expansion is proposed on Map 215; Lots 7 & 8 in the City of Keene and extends into the town of Sullivan on Map 5, lots 46 and 46-1. The lots within the City of Keene are situated in the Rural 'R' zoning district. Access to the existing operation is off NH Route 9. The proposed expansion will utilize the same access roadway.

2. **Types of materials to be excavated and means**
   Bedrock will be the primary material excavated from the site. Eight overburden wells were drilled within the perimeter of the proposed excavation and determined that bedrock was shallow, less than 5' in most cases. 6 bedrock wells were then drilled within the perimeter to measure groundwater. Processing of the excavated materials (crushing, screening, sorting, and stockpiling) to create marketable construction materials will occur onsite. The construction material and equipment storage area will be relocated depending on the progress of the gravel operation. Said area will start at the upper limits of current excavation and systematically relocate as excavation progresses. Excavation activities are proposed between the hours of 7:00 am and 5:00 pm, Monday through Friday. The sale and loading of stockpiled materials are anticipated to occur from 8:00 am to 1:00 pm on Saturdays; however, no other excavation activities are expected on this day. No excavation activities, including the sale of stockpiled materials, are proposed on Sundays, or legal holidays, except when prior written consent to temporarily operate during other hours is provided by the community development department due to a local or regional emergency.

3. **Project duration and phasing**
   Based on discussion with the City on March 4, 2024, the project is proposed to be permitted in its entirety. The project will be broken out into eight (8) permit periods. Six months prior to a period being completed, the applicant will submit to the Planning Board for an amendment for the next phase.

   Each period is based on a maximum "open area" of 5 acres. The breakout is a recommendation to the contractor and does not necessarily reflect the order in which the project will be completed. Phase 1 consisted of the original gravel pit that was previously permitted 2022, exceeded the 5-acre maximum, and received a waiver approval by the City of Keene Planning Board on August 22, 2022. Each period

as part of Phase 2 will expand upon that area and be reclaimed as it's exhausted. The estimated project timeline will exceed five years and is estimated at 13 years. The applicant must submit to the Department of Environmental Services and the city of Keene a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit. Below is an anticipated breakout for each:

- Permit Period 1 – 4.99 AC, Volume – 358,800 CY January 2025 – May 2027
- Permit Period 2 – 4.10 AC, Volume – 271,000 CY June 2027 – March 2029
- Permit Period 3 – 2.14 AC, Volume – 16,450 CY April 2029 – May 2029
- Permit Period 4 – 0.39 AC, Volume – 939 CY (Sullivan) June 2029 – July 2029
- Permit Period 5 – 4.08 AC, Volume – 366,530 CY August 2029 – January 2031
- Permit Period 6 – 3.82 AC, Volume – 262,692 CY Feb. 2031 – November 2032
- Permit Period 7 – 4.06 AC, Volume – 306,210 CY (Sullivan) Dec. 2032 – December 2034
- Permit Period 8 – 7.62 AC, Volume – 496,500 CY January 2035 – April 2038

Phasing notes:

A. Sheet Existing Conditions plan reflects the current conditions of the earth excavation materials and processing area. The area will be used for material stockpiling, storage, rock crushing, cleaning, and processing for the project's entirety. There is a large sedimentation area in the western portion of the site that stormwater drains to and infiltrates. This area is also used to provide water for material processing and dust control devices. It will also provide infiltration from associated excavation areas during the excavation process.

B. Period 1, located directly north of this area is where excavation will begin. Access will be off the existing gravel haul road located in the lower eastern portion of the site. As excavation begins, the contractor will excavate a sediment area in the southern portion of the pit area. This sediment area will be used to hold any stormwater runoff associated with the current pit phase. As the excavation footprint increases, so will the size and depth of the sediment retention area. The floor of the pit will slope to the south to the sediment pond located within the pit's floor. The sediment basin will be required to be dredged after accumulative sediment has reduced its ability to adequately infiltrate any stormwater it captures. In the event the pond does not have the ability to infiltrate, it will act as a sediment retention pond, and an outlet structure will be located within the floor of the pond. The stormwater will be held and released at a slow rate, and directed to the existing sediment retention pond to the south. Once Period 1 has been excavated to final grade, all limits of disturbance within the pit

will be reclaimed by being loamed and seeded. Sediment shall be removed from the retention pond prior to loaming and seeding.

C. The proposed haul road and associated culverts will be constructed connecting phase 1 and 2 along with erosion control measures including stone lined ditches, check dams, silt fence, and erosion control blankets.
D. Period 2 construction will commence like the procedures outlined for Period 1. A sediment retention pond will be constructed in the southern portion of the pit. As the pit is excavated, the floor will be sloped to capture runoff and detain it in the pond. If it becomes apparent that this pond is not able to infiltrate stormwater, then an outlet device will be installed and directed to the now completed and reclaimed sediment area in the previous phase.
E. Once period 2 has been completed to finish grade, the area is to be reclaimed. Sediment shall be removed from the retention pond prior to loaming and seeding. The haul road that runs east to west and connects period 2 to the proposed haul road running north to south) will also be reclaimed. The 15" and 24" culverts, along with the ditch that was constructed along the west side of the existing haul road up to the start of period 3 must remain.
F. Period 3 and 4 include the construction of the haul road that accesses the northern portion of the site that extends into the town of Sullivan, periods 5,6, and 7. Erosion control devices and culverts are to be installed.
G. Period 5 involves construction of a sediment retention pond in the southern portion of the pit. As the pit is excavated, the floor will be sloped to capture runoff and detain it in the pond. If it becomes apparent that this pond is not able to infiltrate stormwater, then an outlet device will be installed and directed to the now completed and reclaimed sediment area in period 2. Once period 5 has been completed to finish grade, the area is to be reclaimed. An access through period 5 to access period 6 will remain open for truck movements to the haul road constructed in periods 3 and 4.
H. Period 6 will be a continuation of Period 5. The pit floor will be sloped to the south, and temporary sediment basins will be used to control and minimize sediment transport from the excavation site to the reclaimed area of Period 5. Once Period 6 has been completed to finish grade, the area is to be reclaimed. An access through period 6 to access period 7 will remain open for truck movements to the haul road constructed in periods 3 and 4.
I. Period 7 will be a continuation of Period 6. The pit floor will be sloped to the south, and temporary sediment basins will be used to control and minimize sediment transport from the excavation site to the reclaimed area of Period 6. Once Period 7 has been completed to finish grade, the entire excavation area is to be reclaimed.
J. The haul road will be reclaimed. Associated ditches and culverts are to remain, however the gravel portion of the road will be loamed and seeded.

K. Period 8 is the final phase of the project. As the pit floor is excavated, the existing sediment area will remain and be used for control of stormwater. As the pit floor approaches the proposed final grade, the infiltration pond will be constructed, loamed and seeded. Stormwater directed to this pond will be captured in sediment traps and slowly released to this area while construction continues. Once final grades have been completed, all areas are to be reclaimed. The infiltration area will remain in place. The access road will be loamed and seeded.

4. **The number of Acres impacted**
   The work area in the City of Keene is 26.75 Acres

5. **Volume of earth material to be removed**
   Total volume removed is approximately 1,771,972 cubic yards at a rate of 102,000 cubic yards of material per year.

6. **Description of maximum breadth, depth, and slope**
   - Permit Period 1 – Average Breadth = 250’ Depth = 66’ +/- Slope = 1:2
   - Permit Period 2 – Average Breadth = 180’ Depth = 70’ +/- Slope = 1:2
   - Permit Period 5 – Average Breadth = 350’ Depth = 60’ +/- Slope = 1:2
   - Permit Period 6 – Average Breadth = 435’ Depth = 80’ +/- Slope = 1:2
   - Permit Period 7 – Average Breadth = 290’ Depth = 80’ +/- Slope = 1:2 (Sullivan)
   - Permit Period 8 – Average Breadth = 375’ Depth = 32’ +/- Slope = 2:1

7. **Location and Access and perimeter visual barriers**
   Access to the existing operation is off NH Route 9. The proposed expansion will utilize the same access roadway and maintain the same visual barriers that were permitted during the previous phase of development. A NHDOT driveway permit was approved for this location and access has already been constructed. No glare or odor impacts are expected from the proposed gravel pit use. The project is remotely located, separated primarily from abutters with woodlands. The gravel pit observes the appropriate setbacks from property lines. The nearest property lines of parcels not owned by the applicant are as follows:
   - North: 830 feet
   - South: 300 feet
   - East: 2,260 feet
   - West: 455 feet

8. **Elevation of estimated highest annual average groundwater table.**
   Eight overburden wells were performed within the excavation area and the water table was not found in these locations. Six bedrock monitoring wells were drilled within the proposed footprint of the excavation a minimum of 50’ below the proposed pit bottom, and water was not found in those wells. Four test pits were dug within the

perimeter of the excavation area and the estimated seasonal high water table was found in two of the pits, at 20" and 32", with ledge directly below within five to six feet. The ESHWT observed in the test pits is interpreted to be the result of a very low residence time groundwater. The overburden is relatively thin across most of the site. As rain falls or snow melts, the water infiltrates into the ground. Due to the relatively high hydraulic conductivity of the sand and gravel overburden the groundwater doesn't stick around long. It moves downgradient to a discharge point, i.e. seep, creek, Otter Brook, and generally presents itself as surface water discharge. Additionally, some of this water is taken up through evapotranspiration.

9. **Proposed methods of disposal of boulders, stumps, vegetation, and other debris**
Except for the exposed rock ledge face, all areas that have been affected by the excavation or otherwise stripped of vegetation shall be spread with topsoil or stripping, if any, but in any case, covered by soil capable of sustaining vegetation, and shall be planted with seedlings or grass suitable to prevent erosion. Areas visible from a public way, from which trees have been removed, shall be replanted with tree seedlings, set out in accordance with acceptable horticultural practices. Earth and vegetative debris resulting from the excavation shall be removed or otherwise lawfully disposed of. All slopes, except for exposed ledge, shall be graded to natural repose for the type of soil of which they are composed to control erosion or at a ratio of horizontal to vertical proposed by the owner and approved by the regulator. Changes of slope shall not be abrupt but shall blend with the surrounding terrain. Stumps, vegetation, and leaf debris will be stored, ground, and processed into mulch for use in perimeter erosion control measures as needed, or surface composted on site for use in enriching loam for site reclamation.

10. **Proposed methods for controlling stormwater, drainage, erosion, and sedimentation**
The elimination of any standing bodies of water created in the excavation project that may constitute a hazard to health and safety; and the topography of the land shall be left so that water draining from the site leaves the property at the original, natural drainage points and in the natural proportions of flow. For excavation projects that require a permit from the Department of Environmental Services pursuant to RSA 485-a:17, the provisions of that statute, and rules adopted under it, shall supersede this paragraph as to areas of excavation sites covered thereby. The excavator shall file a copy of permits issued under RSA 485-a:17 with the regulator. During construction, grading of pit floors will slope to the pit face, and stormwater will be directed to within the pit footprint, collected, retained, and infiltrated on-site. The surface water is collected, settled, and allowed for use in material processing, dust control, and rock cleaning. The proposed operation will be self-contained to retain all stormwater and prevent any potential erosion on site, within the limits of disturbance. Drainage shall be maintained so as to prevent the accumulation of free-standing water for prolonged periods. Excavation practices that result in continued siltation of surface waters or any degradation of water quality of any public or private

water supplies are prohibited. Construction shall proceed such that there is no runoff from the excavation area leaving the site at any time.

Large sediment retention areas have been designed within the floor of each pit area. The intent of these is to capture runoff, and sediment, associated with the excavation and contain it within the pit floor. As the pit expands, so too will the sediment retention areas. These retention areas hold back the stormwater and allow it to exit thru a small culvert, and slowly discharge to an existing infiltration area within the current material storage, processing, and equipment area at the southerly end of the project. This area will be enlarged during the initial phase to eventually capture and infiltrate construction periods 1-7. During the final phase of the project, period 8, a large infiltration area will be excavated. The floor of this pond will be set above the estimated seasonal high water table. Stormwater will collect in this pond and eventually infiltrate into the ground. The sediment areas and infiltration areas have been sized to capture, contain, and infiltrate the 50-year, 24 hour rain event.

A stormwater analysis has been provided to include these calculations, along with culvert and stone rip rap calculations.

11. Means to avoid and/or mitigate adverse impacts caused by dust, noise, and traffic

The site shall operate in a manner that prevents fugitive dust emissions pursuant to New Hampshire Code of Administrative rules env-a 1002, fugitive dust. Dust control practices are outlined in the stormwater pollution prevention plans (SWPPP). Dust control activities and devices shall be incorporated into the excavation operation, on the site, and on the access driveway, in a manner that minimizes the generation of airborne dust or transportation of dust or mud off the site onto the adjacent roadways. Visual monitoring of airborne dust shall be done on an ongoing basis. Dust control measures such as applying water to access driveways and other areas within the excavation perimeter, washing dirt from truck tires, or other measures as may be deemed necessary, shall be employed to minimize the generation of airborne dust, and/or the transportation of dirt/mud off the site onto adjacent roadways. Dust control will be accomplished using a truck-mounted water tank and spray system as needed. Inspection of access driveway stabilized construction entrances and other erosion control measures, designed to eliminate the deposit of dust or mud onto public streets, shall be conducted on a weekly basis to ensure proper functioning. The maintenance of these entrances shall be performed as necessary and any dirt or mud deposited on public streets shall be removed. The applicant shall maintain a log documenting dust control activities, inspection and maintenance of dust and dirt control structures and devices and cleanup of dirt deposited on roadways leading from the site. The construction SWPPP shall be used for instructions of how to inspect and maintain erosion and sediment control practices.

Traffic: This project, while expanding on the previously permitted gravel pit, does not anticipate an increase in trucks operating at the site. An onsite speed limit of 15 mph has been established via signage. A stop sign has been added at the exit from the site, onto Route 9. As noted in the previous permit application by TFMoran, Inc. we note the following: *As established in the TFMoran Traffic Memorandum submitted to the City of Keene on 2/18/2022, the proposed excavation is located on a State Highway, operations are not expected to negatively impact traffic conditions – 40 trucks per day represents less than a 1% increase compared to the 2019 AADT of 9,707 vehicles*.

12. **Precautions to be taken by the applicant to protect the safety and welfare of the persons on site**

The access is gated to secure the site during after business hours. Signage is posted to include speed limit reductions, hard hat requirements, and personal safety equipment requirements for specified areas. All equipment is inspected daily and forms completed regarding backup alarms, brakes, tires, mirrors, etc. The crushing equipment has safety cables and buttons for emergency stopping procedures, guards on all pulleys, belts, etc. The shed contains an emergency first aid kit, fire extinguishers, body board, eye wash station, and MSDS sheets.

Stock pile areas have berms for safety. Proposed ledge face will be inspected daily, material will be used to create berms at the bottom, this will deter people from entering or getting within close proximity to the pit face. The property boundary will have signage stating private property, active blasting, do not enter. All stumps and brush will be put on the boundary of each phase to keep people outside of work areas. Once the pit area has been completely excavated and reclaimed, fencing will be installed along the top of all slopes greater than 2:1.

The work will be conducted by trained personnel, in accordance with OSHA and MSHA worksite safety standards. All staff is MSHA and first-aid certified. MSHA inspects the site annually for compliance.

13. **The proposed methods for handling, transporting, and disposing of fuel and/or chemicals on site**

No fuels, lubricants, or other toxic or polluting materials shall be stored on-site unless in compliance with state laws or rules pertaining to such materials. Spill protection equipment will be stored on site for immediate response to any potential spills. Any spillage shall be immediately rectified and disposed of in accordance with all local, state, and federal standards. All spills of greater than five (5) gallons will be reported to the Keene Fire Department and to NHDES.

14. **The means by which earth materials are proposed to be transported from the excavation site, and the proposed load limits and number of vehicle trips per day**

Trucks utilized for transport of material will consist of tri-axles, 10-wheelers, and tractor-trailer dump trucks. The anticipated maximum number of vehicle trips per day based on the current pit operations is 40-60 trips per day.

15. Extent of blasting and the name and classification of any explosives

Based on the data from the 6 bedrock monitoring wells, blasting will be used for most of the excavation on the site. Blasting operations will be conducted by a well-versed contractor. The applicant shall identify drinking water wells located within 1/2 mile of the proposed blasting activities. Develop a groundwater quality sampling program to monitor for nitrate either in the drinking water supply wells or in other wells that are representative of the drinking water supply wells in the area. The plan must include pre and post-blast water quality monitoring and be approved by The City of Keene and NHDES prior to initiating blasting. The groundwater sample program must be implemented once approved by The City of Keene and NHDES. All activities related to blasting shall follow best management practices (bmps) to prevent contamination of groundwater including preparing, reviewing and following an approved blasting plan; proper drilling, explosive handling, and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and handling and storage of blasted rock.

Waivers

The applicant requests the following waivers in accordance with Article 26.19.13:

1. **Which Requirement:**
   Article 25.3.1.D – Surface Water Resource Setback – The excavation perimeter shall be set back at least 250 feet, and the access driveway shall be set back at least 150 feet from any surface water resource.

   Please refer to the attached exhibit entitled "Surface Water Resources Setback Plan" for a graphic of this encroachment.

   Why the waiver is needed:
   There is an existing wetland 75' to the west of the excavation perimeter. To the east, there is another forested wetland 150' feet away. These two wetlands at their closest proximity area approximately 800' apart. The 250' setbacks from the two wetlands prohibits a significant amount of excavation material directly to the north of the gravel pit. The City of Keene Planning Board previously approved reduction in the surface water setback to 75' on August 22, 2022 in this area. The applicant is requesting further excavation to the north of the site, while maintaining the previously approved 75' setback. The surface water resource impacted would be around the small, isolated wetland to the west of the gravel operation. The existing wooded vegetation around the wetland will remain. This wetland is not connected to another surface water as it's an isolated wetland roughly 0.35 acres in size. This is considered a low value water resource due to its size and lack of connectivity to adjacent surface waters. This wetland forms a natural channel with steep slopes on both sides, captures runoff from adjacent areas and eventually dissipates. The runoff infiltrates into the soils, thus the wetland terminates prior to entering any drainage along NH Route 9. Due to the excess slopes and the entire eastern edge of this wetland currently being excavated as part of the permitted pit activity, this resource setback has limited, if any use, as a wildlife corridor. Please refer to the attached Wetland Functional Assessment report that was performed by EcoSystems Land Planning, which documents this wetland ranked low on most wetland functions and values criteria.

   Alternative Standard:
   The alternative to the proposed would result in significantly less excavation to the north. There is an naturally wooded earthen berm approximately 8 to 16 feet high between the wetland and the pit excavation. After the project has been reclaimed, this berm height would increase to over 35 feet high on its exaction height.

   Not in Violation:

The granting of this waiver will not be in violation with NH RSA 155:E because the state regulation does not establish buffers for forested wetlands under 5 acres in size. This wetland is 0.35 acres. Granting of this waiver/exemption shall not cause violations to the intent of the City of Keene's Article 25. This waiver was previously approved by the Planning Board during the previous project phase.

Adverse Impacts:
Reduction in the setback will not have adverse impacts because both wetlands have natural wooded buffers and forested berms between them and the gravel excavation. Most of the wetland associated with the setback reduction is higher in elevation than the pit excavation.

Purpose and Intent:
The purpose of this regulation is to protect the buffers associated with wetlands. The 250' buffer for this wetland has been altered in a previous approval by the Board. The berm associated with the wetland remains and acts as its true buffer. The further explanation of the 250' wetland buffer but not closer than 75' is consistent with the purpose and intent of Article 25. The waiver was previously approved in this location by the Planning Board. The buffer will be reclaimed upon the conclusion of the gravel operation.

Not Unduly Injurious:
Granting this waiver will not be unduly injurious to public or environmental welfare because 75-foot wooded buffers will remain along the excavation perimeter. Wetlands will be further protected as the earth excavation is happening below the existing grade eliminating surface runoff of the gravel excavation into the wetland.

Unique Site Characteristics :
This area is unique in having only 800 feet between existing wetlands located east and west of the excavation area. The remaining wetlands on the site are separated by enough distance that the 250 setback can be maintained. This is the only area on the property seeking a waiver from the setback.

2. **Which Requirement:**
Article 25.3.13 – (Maximum Excavation Area) – The total of any unclaimed, inactive and active excavation areas shall not exceed 5-acres at any time.

Why the waiver is needed:
For a gravel pit to function properly, a significant amount of area is needed for material storage processing, equipment, vehicle movement, temporary stockpiles of rock for processing, etc. The applicant was not able to fully excavate all the material that was proposed in the previous approval without having an additional material and processing area somewhere else off-site. The area that is currently open to allow for material storage and processing is 6.8 acres. A waiver was previously approved by

the Planning Board for this project for an area of 7 acres. The applicant is requesting that this 6.8-acre area remain open, while material is being excavated from each period moving forward. Once the material has been removed from each phase, those areas will be reclaimed before moving on to the next phase. Given the 8 periods proposed, with period 2 being 4.99 acres, this would require a maximum area open during a given period of 12 acres.

Alternative Standard:
The alternative to the proposal would prohibit any additional earth excavation on-site. It would require hauling material to another site that can store and process this material. Trucking costs to haul the material to be stored and processed would increase truck traffic on state roads. Hauling materials would drive the cost of the product up and would result in a net increase in cost to the consumer.

Not in Violation:
The granting of this waiver will not be in violation of NH RSA 155:E. Temporary erosion control measures are to be maintained on-site during the time this area is active. Stormwater has been detained within this area via a sediment retention area. Most of this area is gravel surface, including the pit access road of NH Route 9, as well as the material handling and processing area. New Hampshire Department of Environment Service (NHDES) defines stable areas to include compacted graveled areas. During the construction of each phase, temporary erosion control measures will be in place, and during pit excavation, stormwater flows will be contained within the pit area.

Adverse Impacts:
Approving this 12-acre open area would not have adverse impacts. The BMP's onsite are designed to handle the flows and the sediment retention areas will ensure stormwater remains on-site. The 7-acre landing area is considered "stabile" by NHDES definition which has minimal erosion potential.

Purpose and Intent:
This proposal is consistent with the intent of Article 25 as it relates to stormwater and erosion control best management practices.

Not Unduly Injurious:
Granting this variance will not be unduly injurious to the public or environmental welfare. A majority of this area is considered stable by the state of NH, and the necessary erosion control measures and grading practices have been used to ensure stormwater management is maintained.

Unique Site Characteristics :
As previously mentioned, the area that was permitted during the previous planning board approval did not take into account an area on-site to store and process the material associated with the pit excavation. Given there are eight periods and over 31

acres of disturbance within the City of Keene and Town of Sullivan combined, the overall scale of this project makes it unique.

Sincerely,

Justin Daigneault
Project Manager

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

February 3, 2025

City of Keene
Community Development Department – Planning and Zoning
3 Washington Street
Keene, New Hampshire 03431

RE: **G2 Holdings, LLC**
Tax Map 215 Lots 7 & 8
21 & **57 Route 9, Keene, NH**
GE Project No. 2302011

Dear Ms. Fortson,

We are in receipt of a staff report dated January 3, 2025, relative to the review of the Earth Excavation Permit and Hillside Conditional Use Permit applications, PB-2024-20, for the G2 Holdings, LLC project located at 21 & 57 Route 9. In addition to responses to your comments, please find the following material in support of the referenced project:

- Response to consultant review letter dated January 9th, 2025
- 3 Copies of the revised Earth Excavation Application
- 3 Copies of the revised Project Narrative
- 3 Copies of the revised waiver request
- 3 copies of the Wetland Functional Assessment
- 3 Copies of the Stormwater Report
- 3 Copies of the Stormwater Pollution Prevention Plan (SWPPP)
- 3 Copies of the revised plans (22" x 34")

In response to the comments made by the City, we offer the following explanations and/or responses:

Planning Staff Comments:

1. Consultant Review of Application: Per Section 26.19.7.A of the Land Development Code (LDC), *"Upon receipt of a completed Earth Excavation Permit application, the Planning Board shall retain a consultant, at the expense of the applicant, for the purpose of reviewing the application for completeness and compliance with NH RSA 155-E and the Earth Excavation Regulations in Article 24 of this LDC. This consultant shall review all aspects of the submittal."*

a. The City has already hired a third party consultant, Chad Branon of Fieldstone Land Consultants, to perform a review of the submittal materials in accordance with the standard stated above.
b. Funds in the existing escrow account will be used to cover the cost of the consultant's review of the application and invoices will be forwarded to the property owner and their authorized agent as they are received by City Staff. Additional payment to cover the cost of the consultant's review of this application may be requested, if/when the funds in the existing escrow account are exhausted.
c. Please be aware that the Earth Excavation Permit application will not be forwarded to the Planning Board for a determination of completeness until the Consultant's recommendations have been shared with staff.

2. Conservation Commission: Please be aware that, upon a finding by the Planning Board on application completeness, the application will be forwarded to the City of Keene Conservation Commission for review and comment. The Conservation Commission generally meets the third Monday of each month at 4:30 pm.

3. Posted Notice Requirement: Please be aware that, per Section 26.14.6 of the LDC, "An applicant for any conditional use permit shall, not less than 10 calendar days prior to the date of the public hearing on the application, post a sign obtained from the Community Development Department providing notice of the use applied for and the date and time of the public hearing, in a location on the premises visible to the public. This sign shall be removed by the applicant no later than 10 calendar days after completion of the public hearing and returned to the Community Development Department."

    a. Please pick up a sign from the Community Development Department and post on the site a minimum of 10 calendar days prior to the scheduled public hearing. This sign will need to be returned to the Community Development Department after the public hearing.

4. Application Type: Please update the application to specify that the application submitted is for a Major Amendment and not a new Earth Excavation Permit application as is currently indicated.

    A revised application has been provided.

5. Waiver Request: Please update the waiver requested from Section 25.3.1.D of the LDC to include information about how the value of the delineated wetlands to the west of the existing excavation area was determined.

The waiver request has been revised to include the functions and values of a wetland report prepared by a certified wetland scientist.

6. Plan Set: Please make the following modifications to the submitted plan set:

    a. Update the Overview Plan on Sheet 1 of the plan set to include a note related to the property owner needing to return to the Planning Board for a Major Amendment 6-months prior to the commencement of work on the next permit period area.

    The following note has been added to the Overview Plan: "An Earth Excavation Permit Renewal application shall be submitted to the City of Keene Community Development Department at least 6-months prior to the expiration of the approved permit period in accordance with Sec. 26.19.12 of the Land Development Code."

    b. Update Sheet 1 of the plan set to include notes addressing the notice requirements for blasting, groundwater monitoring, and the annual noise monitoring protocol.

    The following note has been added to the Overview Plan:
    "Refer to the details sheet "best management practices for blasting". The groundwater monitoring procedures are found in the 2024 hydrogeological investigation report and the 2024 acid mine drainage potential report. Refer to "noise impact control and monitoring notes" found on the impact control and monitoring plans."

    c. Have the certified wetlands scientist stamp the Overview plan on Sheet 1 of the plan set.

    A certified wetland stamp has been added to the Overview plan on sheet 1 of the plan set.

7. Rock Crushing Plant: Please submit information about the "rock-crushing plant" referred to under Note #8 in the "Operation Notes" section on Sheet 1 of the plan set.

    More information regarding the rock-crushing plant has been added to Operation Note#8 on sheet 1.

8. Conditions of Approval: Please be aware that the following items may be included as conditions of approval in the recommended motion in the staff report for this application:

a. The submittal of an additional security for landscaping, sedimentation and erosion control, as-built plans, and restoration, if deemed necessary by the Community Development Director, or their designee, and the City Engineer.

If deemed necessary, additional security for the above mentioned items will be provided as part of final approval.

b. Blasting permits will need to be obtained by the Keene Fire Department throughout the life of the gravel pit's operation.

Blasting permits will be obtained by the Keene Fire Department prior to any blasting activities.

Engineering Staff Comments:

1. Plan sheet 1 of 19, General Note#20 specifies that 'no excavation will be performed within 75' of the wetlands or 300' from an abutting property. Vegetation shall be maintained or provided within the peripheral areas previously listed.' It is not clear what area(s) are being referenced and what (if any) plantings are proposed. A landscaping plan should be provided, reviewed and approved in conjunction with this note/requirement.

   This note has been revised for clarity. No plantings are proposed. All areas disturbed will be reclaimed with loam and seed.

2. Plan sheet 1 of 19, General Note#26 specifies that 'the estimated project time frame will exceed five years and is subject to change…' This project schedule is insufficiently detailed and should establish requirement deadlines for either completing and/or resubmitting and providing an update and request for extension for the completion of the project in conformance with the City of Keene Land Use Ordinances.

   General Note#26 on sheet 1 has been updated to provide more detail on the project schedule and requirement deadlines and is now referenced as note #25. Operation Note #25 has been added and includes the following: "An Earth Excavation Permit Renewal application shall be submitted to the City of Keene Community Development Department at least 6-months prior to the expiration of the approved permit period in accordance with Sec. 26.19.12 of the Land Development Code."

3. Plan sheet 1 of 19, General Note#23 specifies that 'plowed snow from the operations shall be maintained on site within the contained area' The snow stockpile areas and associated maintenance should be specified on the plans for clarity.

Snow Storage areas and Deicing Notes have been shown on the Impact Control & Monitoring Plan.

4. Plan sheet 1 of 19, Operation Note #9 specifies that 'No fuels, lubricants or other toxic or polluting materials shall be stored on site…' Specify on the plans the proposed fueling areas and allowances for fueling on site.

   Both the Excavation, Drainage, & Erosion Control, and the Impact Control & Monitoring Plan show areas where proposed fueling will be stored on site.

5. Plan sheet 3 of 19 shows wells within 1-mile of the proposed site. Is the intent to notify and monitor/test these wells in conjunction with a blasting permit for the proposed improvements? The intent is not clear.

   The intent is to monitor and test these wells in conjunction with future blasting permits for the proposed improvements. This plan was provided as per the Earth Excavation Application Requirements.

6. The plans specify 'provide dust control on an as needed basis'; please provide additional details and requirements for dust control that will be used/permittable as part of the site improvements.

   Refer to the Dust Control and Monitoring Notes found on the Impact Control & Monitoring Plan. The Stormwater Pollution Prevention Plans (SWPPP) have also been included.

7. Temporary turnarounds in conformance with City of Keene turnaround requirements should be provided for emergency vehicle response while the project is progressing prior to turnaround areas being constructed. We defer to the Keene Fire Department for their determination on the necessary spacing and frequency of turnarounds.

   Turnaround areas with the gravel operation have been shown on the Excavation, Drainage & Erosion Control Plans. The Phasing notes have included these areas to remain until the completion of Period 7.

8. The project proposes 10 acres of phasing but only 5 acres are allowed to be disturbed at a time prior to restoration and vegetation established as specified in NHDES AoT Land Use Regulations. This requirement should be clarified and specified on the plans.

   See General Note #19 on the Overview Plan regarding areas of disturbance.

9. The plans specify a 4' tall fence but the detail specifies a 3'-6" chain-link fence, this discrepancy should be corrected. Additionally, the fence is proposed at the up-hill side of slopes greater than 1:1 but is also recommended for downhill slopes of 2:1 or greater.

   The fence detail has been revised to show a 4' tall fence. The detail has been revised to include additional fencing to the downhill slopes of 2:1 or greater.

10. The ditched rip rap, culverts, flared end section and drain headwalls shown in the Excavation Drainage & Erosion Control Plans should also be shown on the Impact Control and Monitoring plans for consistency and clarity.

    The ditched rip rap, culverts, flared end section and drain headwalls have been shown on the Impact Control and Monitoring plans.

11. The headwall details show half of a mortar and rubble stone and half a precast concrete headwall detail. For clarity, a pre-cast concrete headwall is preferred and recommended in lieu of a mortar and rubble rock headwall.

    The detail has been revised to only reflect a precast concrete headwall.

12. It is recommended that a rip rap ditch inlet be provided for inlet HW#4 to minimize culvert clogging from silt accumulation.

    This culvert has been eliminated.

13. It is recommended that a minimum 15-inch open culverts be utilized (pending supporting sizing calculations) in lieu of 12-inch to minimize clogging during construction.

    All 12" diameter driveway culverts have been changed to 15" diameter.

14. Based on the proposed elevations, it appears that there is insufficient cover over the culvert from HW#5A, a depth of cover equal to or greater than the manufacturer depth of cover is recommended.

    Culvert elevations have been adjusted to provide adequate cover.

15. The proposed silt fence on plan sheet 5 of 19 should extend north into Sullivan to the north of the proposed limit of work in lieu of ending where the silt fence currently terminates on the plans, due north of the Keene/Sullivan municipal line.

The silt fence located on the right side of the proposed haul road has been extended approximately 50' to the extent of the fill. Beyond that, the haul road is in a cut section.

16. Hours of operation are specified on the plans that include loading times on Saturday from 8 AM to 1 PM and weekdays from 7 AM to 5 AM. These times should be reviewed by NHDOT for them to confirm that additional restrictions aren't required.

    There is not a proposed change to the current hours of operation that are currently in place for the approved pit excavation, which received an NHDOT Driveway Permit.

17. Plan sheets 14 and 15 of 19 provides a cost estimate for loam and seed. However, current NHDOT average unit prices for loam are closer to $85/CY installed in lieu of the submitted $50/CY. The cost estimates also fail to consider items like mobilization, escalation, contingency, record drawings, fencing, erosion controls, etc.

    The loam unit prices have been revised to show $85 /CY installed.

18. No drainage report was provided with the application. A drainage report and associated calculations are required to confirm the sizing of the proposed rip rap, ditches, culverts and rip rap outlets are sufficiently sized to convey and prevent erosion from the 25-year storm event.

    A drainage report and associated calculations have been provided to confirm the drainage features and structures are sufficiently sized to convey and prevent erosion from the 25-year storm event.

We trust the noted plan revisions and/or explanations will adequately address the conditions listed above. Should you have any further questions or comments, please do not hesitate to contact this office.

Best Regards,

Justin Daigneault
Project Manager

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

February 3, 2025

City of Keene
Community Development Department – Planning and Zoning
3 Washington Street
Keene, New Hampshire 03431

RE: G2 Holdings, LLC
Tax Map 215 Lots 7 & 8
21 & 57 Route 9, Keene, NH
GE Project No. 2302011

Dear Ms. Fortson,

We are in receipt of a consultant review report, dated January 9, 2025, relative to the completeness review of the Earth Excavation Permit application, PB-2024-20, for the G2 Holdings, LLC project located at 21 & 57 Route 9. In response to the comments made by Fieldstone Land Consultants, PLLC, we offer the following explanations and/or responses:

Section 26.19.4 Earth Excavation Submittal Requirements - Completeness Review:

1. Section 26.19.4.B.8: The elevation of the estimated highest annual average groundwater for overburden is not detailed within the narrative. The bedrock wells did not observe water but test pits and other soils information represents that there will be excavations below the seasonal highwater table.

   Note 8 of the narrative has been revised to include the overburden wells and test pits performed within the excavation area. Section 4.1 of the Hydrogeological Investigation Report outlines that groundwater was not found at these locations. Section 5 of the Hydrogeological Investigation Report details the 8 bedrock wells, and that of the 8 wells installed, only two encountered groundwater, and these wells are located outside the excavation footprint.

2. Section 26.19.4.B.10: The submission does not detail appropriately the proposed methods for controlling stormwater, drainage, erosion, and sedimentation during the excavation project. The submission did not include a stormwater management report, did not provide calculations for sizing of drainage or erosion. The narrative and the grading on the plans appear to create ponding in work zones and it is unclear how these areas will be dewatered or managed. A dewatering plan should be submitted for review. Surface water quality should also be considered.

Large sediment retention areas have been designed within the floor of each pit area. The intent of these is to capture runoff, and sediment, associated with the excavation and contain it within the pit floor. As the pit expands, so too will the sediment retention areas. These retention areas hold back the stormwater and allow it to exit through a small culvert, and slowly discharge to an existing infiltration area within the current material storage, processing, and equipment area at the southerly end of the project. This area will be enlarged during the initial phase to eventually capture and infiltrate construction periods 1-7. During the final phase of the project, period 8, a large infiltration area will be excavated. The floor of this pond will be set above the estimated seasonal high water table. Stormwater will collect in this pond and eventually infiltrate into the ground. The sediment areas and infiltration areas have been sized to capture, contain, and infiltrate the 50-year, 24-hour rain event. A stormwater analysis has been provided to include these calculations, along with culvert and stone rip rap calculations.

Refer to section 8.0 of the Hydrogeological Investigation Report for proposed groundwater quality monitoring procedures. Refer to section 6.0 of the 2024 Acid Mine Drainage Potential Report for proposed water quality monitoring procedures.

3. Section 26.19.4.B.11: The means by which the project will avoid and/or mitigate adverse impacts caused by dust and noise appear to be missing please clarify.

   A Stormwater Pollution Prevention Plan (SWPPP) has been included to outline procedures dealing with dust. See noise impact control notes and dust control and monitoring notes found on the Impact Control and Monitoring Plan.

4. Section 26.19.4.B.12: The narrative should touch on how the project will secure slopes to protect the safety and welfare of persons on the site.

   Narrative note 12 has been revised to address safety concerns on the site.

5. Section 26.19.4.B.13: The narrative does not adequately address fueling of construction equipment on-site. Typically, these types of projects have a Spill Prevention, Control and Countermeasure (SPCC) plan. We would recommend that this be prepared for this project. The narrative and plans reference that many of these details are addressed in the Stormwater Pollution Prevention Plans so please provide this document for review too.

Notes have been added to the Excavation, Drainage & Erosion Control Plan. Fueling will consist of two- 560 gallon fuel tanks, true north steel, STI F-941 fireguard double-wall above ground storage tank. This tank will comply with ENV-WQ 1510.08, and EPA Mine Safety and Health Administration (MSHA) regulations. This tank will comply with all UL 142 standards, including NFPA 30, NFPA 30A, NFPA 31, NFPA 37, NFPA 1, and the International Fire Code. This fueling tank will not need to meet EPA Requirements for a Spill Prevention, Control, and Countermeasure (SPCC) Regulations, however above ground fuel tank containment has been provided that meets EPA 40 CFR 264.175 requirements and a detail has been provided to the planset. An above ground fuel tank containment detail has been included. A Stormwater Pollution Prevention Plan (SWPPP) has also been included.

6. Section 26.19.4.D.2: The phasing plans need to meet the detail and note requirements outlined in this section. It is difficult to decipher what improvements are required for each phase. The phasing plans should detail what needs to be completed in each phase and it might be beneficial for the plans to show the how phases will transition by showing two phases in each view.

   Phasing notes have been included on the Excavation, Drainage & Erosion Control Plan, and a more detailed description of the phasing sequence has been included in the narrative. An additional sheet has been added to the site plans to more clearly depict the sequencing of work.

7. Section 26.19.4.D.3: The context map does not show the excavation perimeter or abutter names and parcel numbers. This information is detailed on other plans so we believe the intent of this regulation is met.

   The Contex map provided showed the excavation perimeter and the direct abutter names and addresses.

8. Section 26.19.4.D.4: The existing conditions plans provided with the submission package do not detail all of the items required in this section of the Land Development Code. The existing conditions of Phase 1 is not detailed. The plans show the proposed design details for Phase 1. For this project Phase 1 should be detailed with as-built conditions to ensure this phase was completed per plan and to verify that stormwater, erosion and sedimentation controls are in place, per plan and functioning appropriately. Existing condition details missing include but are not limited to the detailing of access into the site, barriers, drainage, grading, natural features, surface waters, rock outcroppings, vegetative cover, tree lines, utilities, edges of pavement, gravel limits, stonewalls, cellar holes, structures, etc.. The plan should detail how it was

created. Is this plan based on an on-site topographic survey or is it relying on available LIDAR data?

An updated existing conditions plan has been included to show the current conditions of the existing, previously permitted pit area, in which this project will start.

9. Section 26.19.4.D.5: The excavation site maps do not address all of the design criteria outlined in this section. The plans do not depict processing areas, details of processing to be done on-site (screening, washing, crushing, etc.) stockpile areas and types of materials, fuel storage or fueling areas, equipment storage and maintenance areas, traffic controls for the site entrance and exits and location of dust control structures, devices and processes.

   Fuel storing areas, processing areas and stockpile areas are shown on The Impact Control & Monitoring Plan, dust control notes and fueling notes are also shown on these plans. A Stormwater Pollution Prevention Plan (SWPPP) has been included. There is no traffic controls proposed for the site entrance other than what currently exist. This project proposes to use the existing NHDOT permitted entrance previously constructed.

10. Section 26.19.4.D.6: The submission package does not address all of the criteria outlined under this section. The submission package does not verify that stormwater volumes and velocities are being maintained. A stormwater management report should be provided to detail how stormwater management will be handled. The narrative states that the project will be self-contained but the materials on-site don't seem to support this. The site will require more management for dewatering to ensure work zones are not flooding. Surface water quality is also a concern with the current design and a stormwater management report will help address these concerns as well as ensuring that culverts and erosion control measures are sized appropriately.

    See response to item #2.

11. Section 26.19.4.D.8: The reclamation plans state that bedrock is excluded in one of the notes. The City would like to see all exposed bedrock areas reclaimed as this the intent of this section is to restore the site to pre-excavation conditions.

    Narrative note 9 and general note 12A on the overview plan has been revised to include that the only areas to remain unclaimed are the vertical ledge pit face. It should be noted that section 25.4.2 states the following: "At the time of reclamation, all lands that are no longer being used for excavation

activities, including excavation areas, processing areas, stockpiling areas, and stormwater management areas, except for exposed ledge, shall be reclaimed."

12. Section 26.19.4.E.5: The submission did not include an Analysis of Important Habitat as required. Since the Natural Heritage Database showed a wood turtle within the project boundaries part a. under this section requires an inventory for vegetation and wildlife by a forest ecologist, wildlife biologist or qualified professional.

    The NHB's database has been searched for records of rare species and exemplary natural communities. There were no records of endangered or threatened species. The Wood Turtle (Glyptemys insculpta) was a species to be of special concern. Although not a recommendation for species of special concern, incorporation of NHFG recommendations have been addressed. Based upon review by NH Fish and Game, Patrick Fitzgibbons recommended Wildlife Protection notes for Species of Special Concern to be included on the plan set. These notes have been added. This correspondence has been included along with the project narrative that was provided for their review.

We trust the noted plan revisions and/or explanations will adequately address the conditions listed above. Should you have any further questions or comments, please do not hesitate to contact this office.

Best Regards,

Justin Daigneault
Project Manager

Photo #1

Existing Site Entrance from NH Route 9, Looking East
December 12, 2024

Photo #2

Existing Access Road from NH Route 9, Looking North
December 12, 2024

150 Dow Street, Tower 2, Suite 421, Manchester, NH 03101
(603) 518-8030 ● www.GraniteEng.com

Photo #3

Existing Woodland Buffer from NH Route 9, Looking West
December 12, 2024

Photo #4

Existing Material and Processing Area, Looking North
December 12, 2024

Photo #5

Existing Material and Processing Area, Looking West
December 12, 2024

Photo #6

Looking at Current Gravel Operation
August 3, 2024

Photo #7

Looking Uphill at Period 1 from Current Landing Area Previously Permitted
August 3, 2024

Photo #8

Current Landing Area – 2023 (Area Since Stabilized)
August 3, 2024

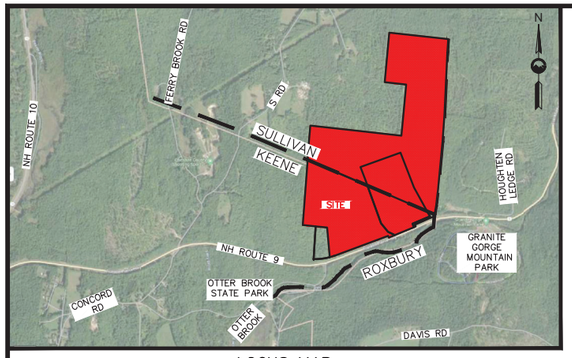
Photo #9

Looking at Existing Logging Road
August 3, 2024

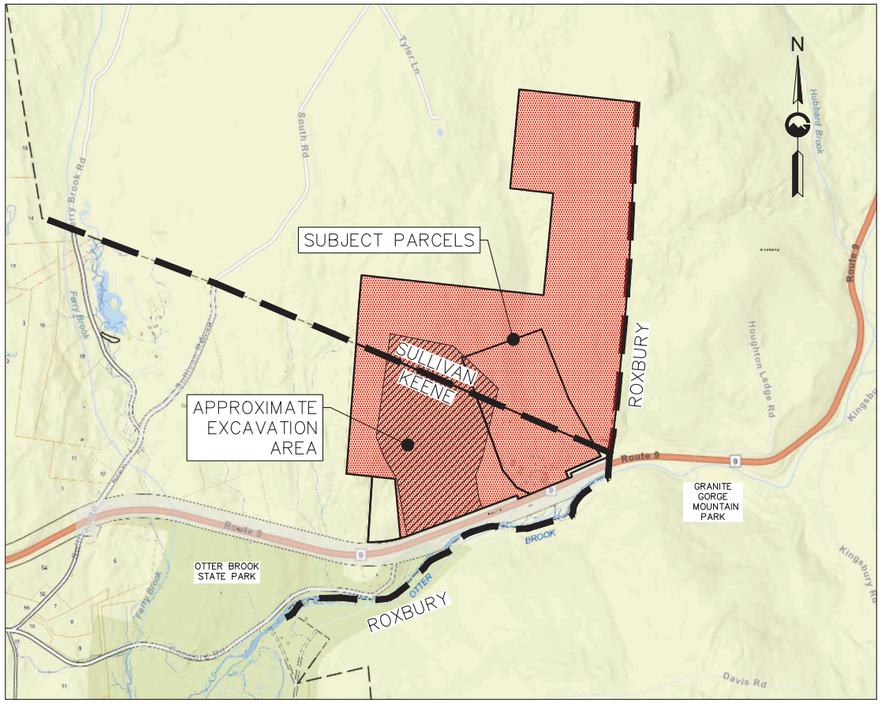
GRAVEL AND EARTH REMOVAL PLAN

G2 HOLDINGS, LLC

KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE, NEW HAMPSHIRE
CHESHIRE COUNTY



LOCUS MAP
SCALE: ±1"=2,000'



LOCATION PLAN
SCALE: 1"=1,000'

OWNER & APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452
PHONE 603-325-8457

CIVIL ENGINEER:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, STE 421
MANCHESTER, NH 03101
(603) 518-8030

WETLAND SCIENTIST:
ECOSYSTEMS LAND PLANNING
36 DUNKLEE STREET
CONCORD, NH 03301
(603) 224-6244

SURVEYOR:
SMITH & POSPESIL LAND SURVEYING, PLLC
240 QUEBEC ROAD
LYMAN, NH 03585
(603) 838-6494

SOIL SCIENTIST:
HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC.
P.O. BOX 356
EPSOM, NH 03234
(603) 583-1745

HYDROGEOLOGIST:
FRONTIER GEOSERVICES, LLC.
127 OLD WARNER ROAD
BRADFORD, NH 03221
(603) 748-37155

SHEET NO.	TABLE OF CONTENTS

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

N

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE PROPOSED EXPANSION OF AN EXISTING GRAVEL AND EARTH REMOVAL OPERATION FOR G2 HOLDINGS, LLC ON CITY OF KEENE TAX MAP 215, LOTS 7 AND 8, AND INCLUDING TAX MAP 5, LOTS 46 AND 46–1 IN THE TOWN OF SULLIVAN.
2. CURRENT USE OF THE PROPERTY IS FOR GRAVEL AND EARTH REMOVALS.
3. AREA OF SUBJECT PARCEL (CITY OF KEENE) = 101.27 ACRES.
4. OWNERS OF RECORD:
   G2 HOLDINGS, LLC
   250 NORTH STREET
   JAFFREY, NH 03452
5. THE SUBJECT PARCEL IS LOCATED WITHIN THE CITY OF KEENE R (RURAL) ZONING DISTRICT AND SUBJECT TO THE FOLLOWING DIMENSIONAL REGULATIONS:

	REQUIRED	EXISTING LOT 7	EXISTING LOT 8
MIN. LOT AREA	2 AC	76.89 AC	24.38 AC
MIN. LOT FRONTAGE	50 FT	1,716.9 FT	545 FT
MIN. FRONT YARD	50 FT	N/A	70 FT
MIN. SIDE YARD	50 FT	N/A	132 FT
MIN. REAR YARD	50 FT	N/A	408 FT
EXCAVATION SETBACK	300 FT	322 FT	N/A

6. BASE SURVEY INFORMATION INCLUDING BOUNDARY, EXISTING FEATURES, AND TOPOGRAPHY SHOWN ON THIS PLAN ARE TAKEN FROM PLAN REFERENCES AND FIELD SURVEY BY SMITH & POSPESIL LAND SURVEYING COMPANY, PLLC IN OCTOBER 2022 AND MAY OF 2023.
7. TOPOGRAPHIC INFORMATION SHOWN WITHIN THE AREA OF DISTURBANCE IS TAKEN FROM FIELD SURVEY BY SMITH & POSPESIL LAND SURVEYING COMPANY, PLLC IN OCTOBER 2022 AND MAY OF 2023.
8. HORIZONTAL DATUM IS ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD83 (2011).
9. VERTICAL DATUM IS NAVD 88.
10. EXCAVATION SITE, DESIGNED BY TFM WAIVERS APPROVED BY THE KEENE PLANNING BOARD OF ADJUSTMENTS ON AUGUST 22, 2022:
    - 24.3.1.A. (200' PUBLIC ROW SETBACK) – GRANTED
    - 24.3.1.C. (150' ACCESS DRIVEWAY SETBACK) – GRANTED
    - 24.3.1.E. (SURFACE WATER RESOURCE SETBACKS) – GRANTED
    - 24.3.4 (GROUNDWATER QUANTITY BASELINE MEASUREMENTS) – GRANTED
    - 24.3.5 (GROUNDWATER QUALITY BASELINE MEASUREMENTS – GRANTED
    - 24.3.13 (MAXIMUM EXCAVATION AREA) – GRANTED
11. EXCAVATION SITE, DESIGNED BY TFM CONDITIONAL USE PERMIT APPROVED BY THE KEENE PLANNING BOARD OF ADJUSTMENTS ON AUGUST 22, 2022 – KEENE HILLSIDE PROTECTION
12. ZBA SPECIAL EXCEPTION FOR GRAVEL PIT USE – GRANTED 8/22/2022
13. THE FOLLOWING ARE REQUESTED FROM THE CITY OF KEENE PLANNING BOARD:
    - 25.3.1.D. (SURFACE WATER RESOURCE SETBACKS) – WAIVER REQUIRED
    - 25.3.13 (MAXIMUM EXCAVATION AREA) – WAIVER REQUIRED
14. THE PROJECT REQUIRES THE FOLLOWING STATE, FEDERAL, AND LOCAL PERMITS:

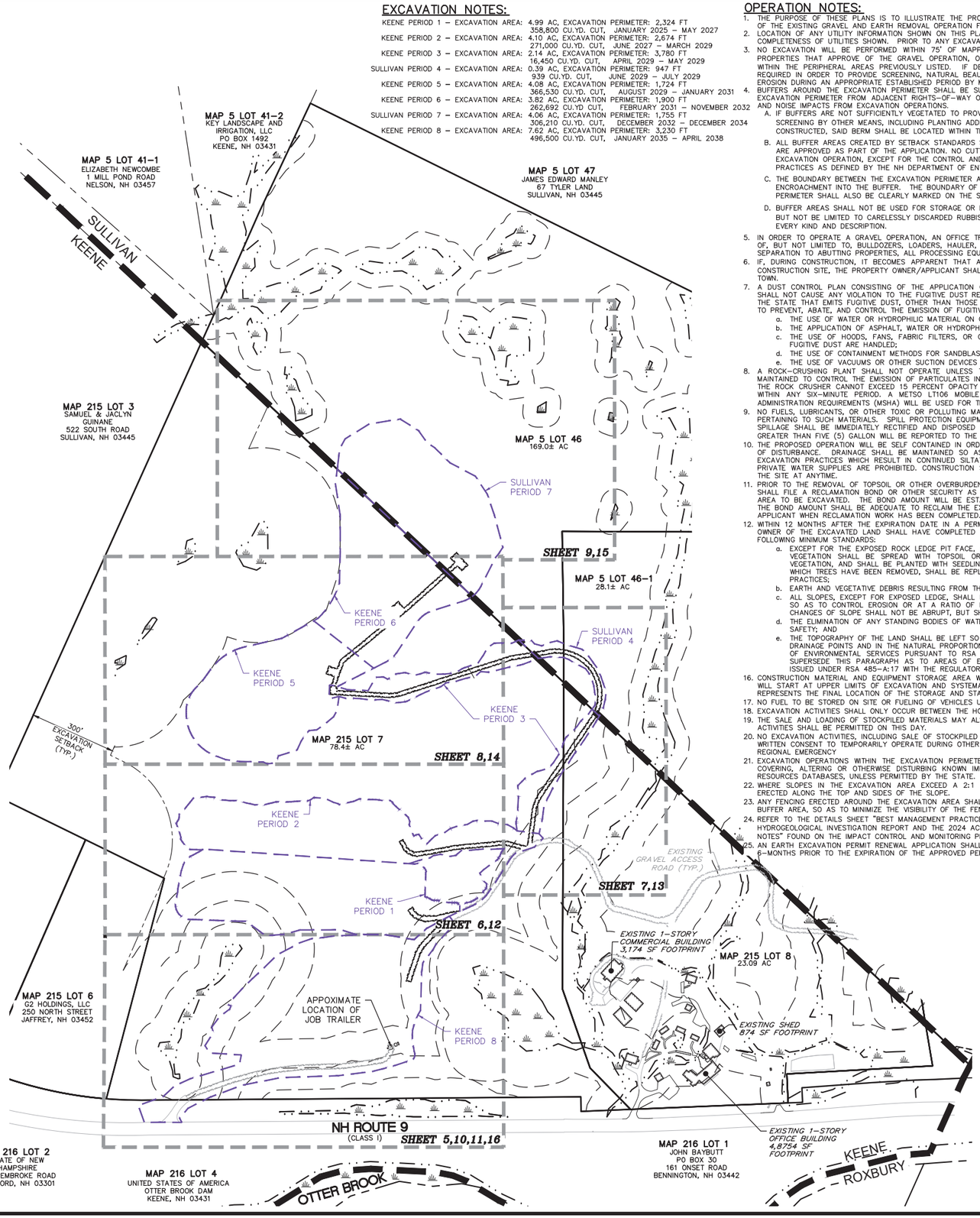
PERMIT	STATUS	PERMIT NO.
NHDES AOT	PENDING	
KEENE HILLSIDE PROTECTION – CONDITIONAL USE PERMIT	PENDING	
KEENE EARTH EXCAVATION	PENDING	

15. WETLAND MAPPING PERFORMED BY JOHN ST. JOHN OF ECOSYSTEMS LAND PLANNING IN OCTOBER–NOVEMBER 2023.
16. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR CHESHIRE COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33005C0165E, EFFECTIVE DATE 05/23/2006 INDICATES THAT NO PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA.
17. LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
18. THIS PROJECT DISTURBS IN EXCESS OF 1–ACRE OF LAND. THEREFORE, WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (APPLICANT) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.
19. AREAS OF DISTURBANCE SHALL NOT EXCEED 5 ACRES AT A TIME. IN ORDER FOR AREAS TO BE EXCLUDED OF THIS 5 ACRE MAXIMUM, THEY MUST BE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
20. THE APPROXIMATE AMOUNT OF MATERIAL PROPOSED TO BE EXCAVATED WITHIN THE CITY OF KEENE IS 1,771,972± CUBIC YARDS AND FOR THE TOTAL PROJECT IS 2,079,121± CUBIC YARDS.
21. NO EXCAVATION WILL BE PERFORMED WITHIN 75' OF MAPPED WETLANDS, 300' OF ABUTTING PROPERTIES.
22. IN ORDER TO OPERATE A GRAVEL OPERATION, GRAVEL EQUIPMENT WILL BE STORED ON SITE. THIS EQUIPMENT WILL CONSIST OF, BUT NOT LIMITED TO, BULLDOZERS, LOADERS, HAULER, EXCAVATORS, WATER TRUCKS, AND PROCESSORS. IN ORDER TO PROVIDE THE FURTHEST SEPARATION TO ABUTTING PROPERTIES, ALL PROCESSING EQUIPMENT WILL BE CENTRALLY LOCATED.
23. A COPY OF THE APPROVED GRAVEL AND EARTH REMOVAL PLAN SHALL BE ON SITE AT ALL TIMES.
24. PLOWED SNOW FROM THE OPERATION SHALL BE MAINTAINED AND ON SITE WITHIN THE CONTAINED AREA.
25. TRUCKS UTILIZED FOR TRANSPORT OF MATERIAL WILL CONSIST OF TRI–AXLES, 10–WHEELERS, AND TRACTOR TRAILER DUMP TRUCKS. THE ANTICIPATED MAXIMUM NUMBER OF VEHICLE TRIPS PER DAY BASED ON CURRENT PIT OPERATIONS IS 60 TRIPS PER DAY.
26. THE ESTIMATED PROJECT TIME FRAME WILL EXCEED FIVE YEARS. THE ANTICIPATED SCHEDULE IS EXPECTED TO START IN JANUARY 2025 AND LAST UNTIL APRIL 2038. THE APPLICANT MUST SUBMIT TO THE DEPARTMENT OF ENVIRONMENTAL SERVICES AND TO THE CITY OF KEENE A WRITTEN UPDATE OF THE PROJECT AND REVISED PLANS DOCUMENTING THE PROJECT STATUS EVERY FIVE YEARS FROM THE DATE OF THE ALTERATION OF TERRAIN PERMIT.

STATE OF NEW HAMPSHIRE
JOHN J. ST. JOHN
No. 221
CERTIFIED WETLAND SCIENTIST

EXCAVATION NOTES:

KEENE PERIOD 1 – EXCAVATION AREA:	4.99 AC, EXCAVATION PERIMETER: 2,324 FT	
	358,800 CU.YD. CUT,	JANUARY 2025 – MAY 2027
KEENE PERIOD 2 – EXCAVATION AREA:	4.10 AC, EXCAVATION PERIMETER: 2,674 FT	
	271,000 CU.YD. CUT,	JUNE 2027 – MARCH 2029
KEENE PERIOD 3 – EXCAVATION AREA:	2.14 AC, EXCAVATION PERIMETER: 3,780 FT	
	16,450 CU.YD. CUT,	APRIL 2029 – MAY 2029
SULLIVAN PERIOD 4 – EXCAVATION AREA:	0.39 AC, EXCAVATION PERIMETER: 947 FT	
	939 CU.YD. CUT,	JUNE 2029 – JULY 2029
KEENE PERIOD 5 – EXCAVATION AREA:	4.08 AC, EXCAVATION PERIMETER: 1,724 FT	
	366,530 CU.YD. CUT,	AUGUST 2029 – JANUARY 2031
KEENE PERIOD 6 – EXCAVATION AREA:	3.82 AC, EXCAVATION PERIMETER: 1,900 FT	
	262,692 CU.YD CUT,	FEBRUARY 2031 – NOVEMBER 2032
SULLIVAN PERIOD 7 – EXCAVATION AREA:	4.06 AC, EXCAVATION PERIMETER: 1,755 FT	
	306,210 CU.YD. CUT,	DECEMBER 2032 – DECEMBER 2034
KEENE PERIOD 8 – EXCAVATION AREA:	7.62 AC, EXCAVATION PERIMETER: 3,230 FT	
	496,500 CU.YD. CUT,	JANUARY 2035 – APRIL 2038



OPERATION NOTES:

1. THE PURPOSE OF THESE PLANS IS TO ILLUSTRATE THE PROPOSED GRADING, EROSION CONTROL, AND RECLAMATION ASSOCIATED WITH THE EXPANSION OF THE EXISTING GRAVEL AND EARTH REMOVAL OPERATION FOR G2 HOLDNGS, LLC.
2. LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
3. NO EXCAVATION WILL BE PERFORMED WITHIN 75' OF MAPPED WETLANDS, 300' OF ABUTTING PROPERTIES THAT DISAPPROVE, 300' FROM ABUTTING PROPERTIES THAT APPROVE OF THE GRAVEL OPERATION, OR 150' FROM ANY EXISTING DWELLINGS. VEGETATION SHALL BE MAINTAINED OR PROVIDED WITHIN THE PERIPHERAL AREAS PREVIOUSLY LISTED. IF DEEMED NECESSARY BY THE PLANNING BOARD, SUITABLE TREES AND/OR SHRUBS MAY BE REQUIRED IN ORDER TO PROVIDE SCREENING, NATURAL BEAUTY AND TO AID IN EROSION CONTROL. SUCH PLANTED AREAS SHALL BE PROTECTED FROM EROSION DURING AN APPROPRIATE ESTABLISHED PERIOD BY MULCH AND STRUCTURAL EROSION CONTROL DEVICES.
4. BUFFERS AROUND THE EXCAVATION PERIMETER SHALL BE SUFFICIENTLY VEGETATED TO PROVIDE FULL, OPAQUE, AND YEAR–ROUND SCREENING OF THE EXCAVATION PERIMETER FROM ADJACENT RIGHTS–OF–WAY OR ABUTTING PROPERTIES. THE INTENT OF THIS STANDARD IS TO AVOID ADVERSE VISUAL AND NOISE IMPACTS FROM EXCAVATION OPERATIONS.
   A. IF BUFFERS ARE NOT SUFFICIENTLY VEGETATED TO PROVIDE ADEQUATE VISUAL AND NOISE SCREENING, THE APPLICANT SHALL PROVIDE ADEQUATE SCREENING BY OTHER MEANS, INCLUDING PLANTING ADDITIONAL VEGETATION AND/OR CONSTRUCTING A BERM. TO THE EXTENT THAT A BERM IS CONSTRUCTED, SAID BERM SHALL BE LOCATED WITHIN THE EXCAVATION PERIMETER.
   B. ALL BUFFER AREAS CREATED BY SETBACK STANDARDS SHALL REMAIN IN A NATURAL VEGETATED CONDITION, EXCEPT WHEN ADDITIONAL PLANTINGS ARE APPROVED AS PART OF THE APPLICATION. NO CUTTING OR REMOVAL OF LIVING VEGETATION SHALL BE PERMITTED OVER THE LIFE OF THE EXCAVATION OPERATION, EXCEPT FOR THE CONTROL AND MANAGEMENT OF NON–NATIVE AND INVASIVE SPECIES FOLLOWING BEST MANAGEMENT PRACTICES AS DEFINED BY THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
   C. THE BOUNDARY BETWEEN THE EXCAVATION PERIMETER AND THE BUFFER AREAS SHALL BE CLEARLY MARKED ON THE SITE TO AVOID ENCROACHMENT INTO THE BUFFER. THE BOUNDARY OF APPROVED SETBACKS FROM SURFACE WATER RESOURCES WITHIN THE EXCAVATION PERIMETER SHALL ALSO BE CLEARLY MARKED ON THE SITE TO AVOID ENCROACHMENT.
   D. BUFFER AREAS SHALL NOT BE USED FOR STORAGE OR DISPOSAL OF STUMPS, BOULDERS, EARTH MATERIALS, AND/OR OTHER DEBRIS INCLUDING, BUT NOT BE LIMITED TO CARELESSLY DISCARDED RUBBISH, REFUSE, TRASH, GARBAGE, DEAD ANIMALS AND/OR OTHER DISCARDED MATERIALS OF EVERY KIND AND DESCRIPTION.
5. IN ORDER TO OPERATE A GRAVEL OPERATION, AN OFFICE TRAILER AND GRAVEL EQUIPMENT WILL BE STORED ON SITE. THIS EQUIPMENT WILL CONSIST OF, BUT NOT LIMITED TO, BULLDOZERS, LOADERS, HAULER, EXCAVATORS, WATER TRUCKS, AND PROCESSORS. IN ORDER TO PROVIDE THE FURTHEST SEPARATION TO ABUTTING PROPERTIES, ALL PROCESSING EQUIPMENT WILL BE CENTRALLY LOCATED.
6. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE, THE PROPERTY OWNER/APPLICANT SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
7. A DUST CONTROL PLAN CONSISTING OF THE APPLICATION OF WATER ON AN AS NEEDED BASIS WILL BE EMPLOYED. SUCH EXCAVATION ACTIVITIES SHALL NOT CAUSE ANY VIOLATION TO THE FUGITIVE DUST REQUIREMENTS ESTABLISHED IN ENV–A 1002. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE THAT EMITS FUGITIVE DUST, OTHER THAN THOSE LISTED SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST. PRECAUTIONS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   a. THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   b. THE APPLICATION OF ASPHALT, WATER OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   c. THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   d. THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   e. THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.
8. A ROCK–CRUSHING PLANT SHALL NOT OPERATE UNLESS THE PLANT IS EQUIPPED WITH AN EMISSION CONTROL SYSTEM THAT IS OPERATED AND MAINTAINED TO CONTROL THE EMISSION OF PARTICULATES IN COMPLIANCE WITH EPA 40 CFR 60, SUBPART OOO AND ENV–A 2800. VISIBLE DUST FROM THE ROCK CRUSHER CANNOT EXCEED 15 PERCENT OPACITY WHILE CERTAIN TRANSFER POINTS OF THE SYSTEM CANNOT EXCEED 10 PERCENT OPACITY WITHIN ANY SIX–MINUTE PERIOD. A METSO LT106 MOBILE CRUSHER MEETING CURRENT U.S. DEPARTMENT OF LABOR MINE SAFETY AND HEALTH ADMINISTRATION REQUIREMENTS (MSHA) WILL BE USED FOR THESE ACTIVITIES.
9. NO FUELS, LUBRICANTS, OR OTHER TOXIC OR POLLUTING MATERIALS SHALL BE STORED ON–SITE UNLESS IN COMPLIANCE WITH STATE LAWS OR RULES PERTAINING TO SUCH MATERIALS. SPILL PROTECTION EQUIPMENT WILL BE STORED ON SITE FOR IMMEDIATE RESPONSE TO ANY POTENTIAL SPILLS. ANY SPILLAGE SHALL BE IMMEDIATELY RECTIFIED AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL STANDARDS. ALL SPILLS OF GREATER THAN FIVE (5) GALLON WILL BE REPORTED TO THE KEENE FIRE DEPARTMENT AND TO NHDES.
10. THE PROPOSED OPERATION WILL BE SELF CONTAINED IN ORDER TO RETAIN ALL STORMWATER AND ANY POTENTIAL EROSION ON SITE, WITHIN THE LIMITS OF DISTURBANCE. DRAINAGE SHALL BE MAINTAINED SO AS TO PREVENT THE ACCUMULATION OF FREE–STANDING WATER FOR PROLONGED PERIODS. EXCAVATION PRACTICES WHICH RESULT IN CONTINUED SILTATION OF SURFACE WATERS OR ANY DEGRADATION OF WATER QUALITY OF ANY PUBLIC OR PRIVATE WATER SUPPLIES ARE PROHIBITED. CONSTRUCTION SHALL PROCEED SUCH THAT THERE IS NO RUNOFF FROM THE EXCAVATION AREA LEAVING THE SITE AT ANYTIME.
11. PRIOR TO THE REMOVAL OF TOPSOIL OR OTHER OVERBURDEN MATERIAL FROM ANY LAND AREA THAT HAS NOT YET BEEN EXCAVATED, THE EXCAVATOR SHALL FILE A RECLAMATION BOND OR OTHER SECURITY AS PRESCRIBED BY THE REGULATOR, SUFFICIENT TO SECURE THE RECLAMATION OF THE LAND AREA TO BE EXCAVATED. THE BOND AMOUNT WILL BE ESTABLISHED BY THE CITY OF KEENE PLANNING BOARD TO COVER RECLAMATION OF THE SITE. THE BOND AMOUNT SHALL BE ADEQUATE TO RECLAIM THE EXCAVATION SITE IN ACCORDANCE WITH RSA 155–E:5. THE BOND WILL BE RETURNED TO THE APPLICANT WHEN RECLAMATION WORK HAS BEEN COMPLETED.
12. WITHIN 12 MONTHS AFTER THE EXPIRATION DATE IN A PERMIT ISSUED OR OF THE COMPLETION OF ANY EXCAVATION, WHICHEVER OCCURS FIRST, THE OWNER OF THE EXCAVATED LAND SHALL HAVE COMPLETED THE RECLAMATION OF THE AREAS AFFECTED BY THE EXCAVATION TO MEET EACH OF THE FOLLOWING MINIMUM STANDARDS:
   a. EXCEPT FOR THE EXPOSED ROCK LEDGE PIT FACE, ALL AREAS WHICH HAVE BEEN AFFECTED BY THE EXCAVATION OR OTHERWISE STRIPPED OF VEGETATION SHALL BE SPREAD WITH TOPSOIL OR STRIPPINGS, IF ANY, BUT IN ANY CASE COVERED BY SOIL CAPABLE OF SUSTAINING VEGETATION, AND SHALL BE PLANTED WITH SEEDLINGS OR GRASS SUITABLE TO PREVENT EROSION. AREAS VISIBLE FROM A PUBLIC WAY, FROM WHICH TREES HAVE BEEN REMOVED, SHALL BE REPLANTED WITH TREE SEEDLINGS, SET OUT IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES;
   b. ALL GROUND VEGETATIVE DEBRIS RESULTING FROM THE EXCAVATION SHALL BE REMOVED OR OTHERWISE LAWFULLY DISPOSED OF;
   c. ALL SLOPES, EXCEPT FOR EXPOSED LEDGE, SHALL BE GRADED TO NATURAL REPOSE FOR THE TYPE OF SOIL OF WHICH THEY ARE COMPOSED SO AS TO CONTROL EROSION OR AT A RATIO OF HORIZONTAL TO VERTICAL PROPOSED BY THE OWNER AND APPROVED BY THE REGULATOR. CHANGES OF SLOPE SHALL NOT BE ABRUPT, BUT SHALL BLEND WITH THE SURROUNDING TERRAIN;
   d. THE ELIMINATION OF ANY STANDING BODIES OF WATER CREATED IN THE EXCAVATION PROJECT AS MAY CONSTITUTE A HAZARD TO HEALTH AND SAFETY; AND
   e. THE TOPOGRAPHY OF THE LAND SHALL BE LEFT SO THAT WATER DRAINING FROM THE SITE LEAVES THE PROPERTY AT THE ORIGINAL, NATURAL DRAINAGE POINTS AND IN THE NATURAL PROPORTIONS OF FLOW. FOR EXCAVATION PROJECTS WHICH REQUIRE A PERMIT FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES PURSUANT TO RSA 485–A:17, THE PROVISIONS OF THAT STATUTE, AND RULES ADOPTED UNDER IT, SHALL SUPERSEDE THIS PARAGRAPH AS TO AREAS OF EXCAVATION SITES COVERED THEREBY. THE EXCAVATOR SHALL FILE A COPY OF PERMITS ISSUED UNDER RSA 485–A:17 WITH THE REGULATOR.
16. CONSTRUCTION MATERIAL AND EQUIPMENT STORAGE AREA WILL RELOCATE DEPENDING UPON THE PROGRESS OF THE GRAVEL OPERATION. SAID AREA WILL START AT UPPER LIMITS OF EXCAVATION AND SYSTEMATICALLY RELOCATE AS EXCAVATION PROGRESSES. THE AREA ILLUSTRATED ON THIS PLAN REPRESENTS THE FINAL LOCATION OF THE STORAGE AND STAGING AREA.
17. NO FUEL TO BE STORED ON SITE OR FUELING OF VEHICLES UNLESS A SOURCE CONTROL PLAN IS SUBMITTED TO NHDES AOT.
18. EXCAVATION ACTIVITIES SHALL ONLY OCCUR BETWEEN THE HOURS OF 7:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY.
19. THE SALE AND LOADING OF STOCKPILED MATERIALS MAY ALSO OCCUR FROM 8:00 AM TO 1:00 PM ON SATURDAYS; HOWEVER, NO OTHER EXCAVATION ACTIVITIES SHALL BE PERMITTED ON THIS DAY.
20. NO EXCAVATION ACTIVITIES, INCLUDING SALE OF STOCKPILED MATERIALS, SHALL BE PERMITTED ON SUNDAYS, OR LEGAL HOLIDAYS, EXCEPT WHEN PRIOR WRITTEN CONSENT TO TEMPORARILY OPERATE DURING OTHER HOURS IS PROVIDED BY THE COMMUNITY DEVELOPMENT DEPARTMENT DUE TO A LOCAL OR REGIONAL EMERGENCY
21. EXCAVATION OPERATIONS WITHIN THE EXCAVATION PERIMETER AND THE ACCESS DRIVEWAY SHALL BE LOCATED AND DESIGNED TO AVOID REMOVING, COVERING, ALTERING OR OTHERWISE DISTURBING KNOWN IMPORTANT ARCHEOLOGICAL SITES AS MAY BE LISTED IN THE NH DIVISION OF HISTORICAL RESOURCES DATABASES, UNLESS PERMITTED BY THE STATE.
22. WHERE SLOPES IN THE EXCAVATION AREA EXCEED A 2:1 SLOPE, A FENCE OR OTHER SUITABLE BARRICADE AT LEAST 4–FT IN HEIGHT SHALL BE ERECTED ALONG THE TOP AND SIDES OF THE SLOPE.
23. ANY FENCING ERECTED AROUND THE EXCAVATION AREA SHALL BE PLACED ALONG THE OUTSIDE EDGE OF THE ACTIVE WORK AREA BUT NOT WITHIN THE BUFFER AREA, SO AS TO MINIMIZE THE VISIBILITY OF THE FENCE FROM ABUTTING PROPERTIES AND PUBLIC RIGHTS–OF–WAYS.
24. REFER TO THE DETAILS SHEET "BEST MANAGEMENT PRACTICES FOR BLASTING". THE GROUNDWATER MONITORING PROCEDURES ARE FOUND IN THE 2024 HYDROGEOLOGICAL INVESTIGATION REPORT AND THE 2024 ACID MINE DRAINAGE POTENTIAL REPORT. REFER TO "NOISE IMPACT CONTROL AND MONITORING NOTES" FOUND ON THE IMPACT CONTROL AND MONITORING PLANS.
25. AN EARTH EXCAVATION PERMIT RENEWAL APPLICATION SHALL BE SUBMITTED TO THE CITY OF KEENE COMMUNITY DEVELOPMENT DEPARTMENT AT LEAST 6–MONTHS PRIOR TO THE EXPIRATION OF THE APPROVED PERMIT PERIOD IN ACCORDANCE WITH SEC. 26.19.12 OF THE LAND DEVELOPMENT CODE.

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PERIOD LINE
- SHEETS
- TOWN LINE

GRAPHIC SCALE
200 0 100 200 400 800
(IN FEET) 1 inch = 200 ft.

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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
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150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. GOLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

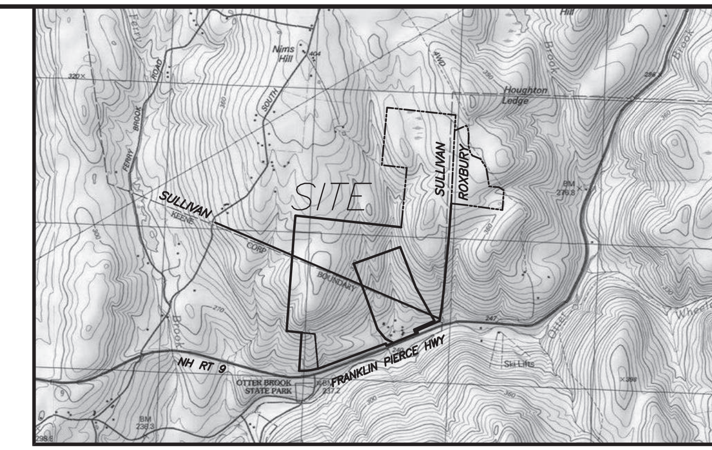
LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
OVERVIEW PLAN

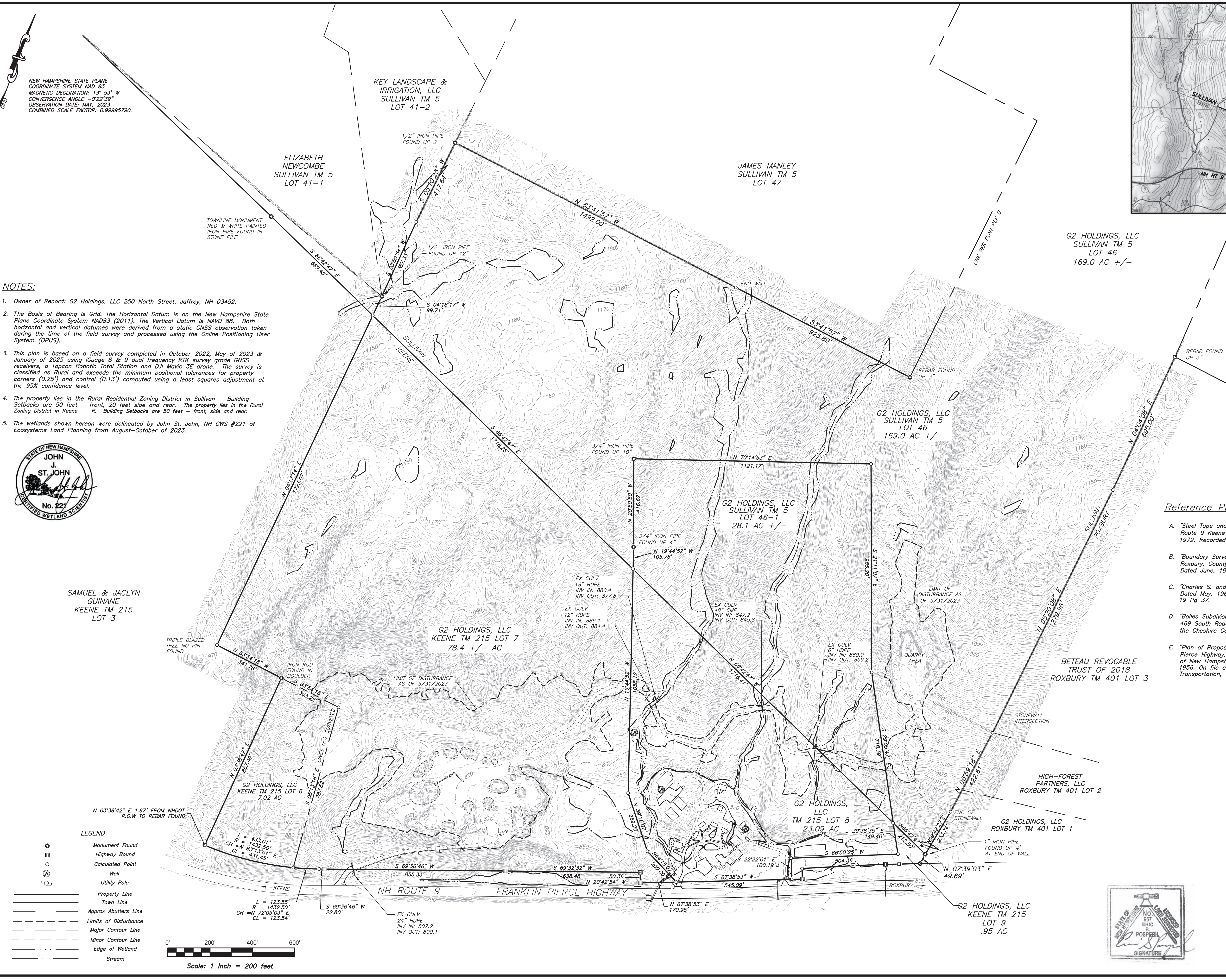
PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=200'
SHEET:	1 OF 22	

P:\23\23020111\dwg\Production Plans\23020111-SITE.dwg, 1/30/2025 3:33:55 PM, DWG To PDF.pc3, 1:1



LOCATION MAP

1 inch = 2000 feet



NOTES:

1. Owner of Record: G2 Holdings, LLC 250 North Street, Jaffrey, NH 03452.
2. The Basis of Bearing is Grid. The Horizontal Datum is on the New Hampshire State Plane Coordinate System NAD83 (2011). The Vertical Datum is NAVD 88. Both horizontal and vertical datumes were derived from a static GNSS observation taken during the time of the field survey and processed using the Online Positioning User System (OPUS).
3. This plan is based on a field survey completed in October 2022, May of 2023 & January of 2025 using IGuage 8 & 9 dual frequency RTK survey grade GNSS receivers, a Topcon Robotic Total Station and DJI Mavic 3E drone. The survey is classified as Rural and exceeds the minimum positional tolerances for property corners (0.25') and control (0.13') computed using a least squares adjustment at the 95% confidence level.
4. The property lies in the Rural Residential Zoning District in Sullivan – Building Setbacks are 50 feet – front, 20 feet side and rear. The property lies in the Rural Zoning District in Keene – R. Building Setbacks are 50 feet – front, side and rear.
5. The wetlands shown hereon were delineated by John St. John, NH CWS #221 of Ecosystems Land Planning from August–October of 2023.

STATE OF NEW HAMPSHIRE JOHN J. ST. JOHN No. 221 CERTIFIED WETLAND SCIENTIST

Reference Plans:

A. "Steel Tape and Compass Survey of 3 Lot Subdivision for Wayne W. & Elaine Sargent, Route 9 Keene and Sullivan, NH", By Herbert E. Russell, RLS #21. Dated August, 1979. Recorded at Cheshire County Registry of Deeds Cabniet 2 Pg 94 Roll #305.

B. "Boundary Survey: Land of Seafield Pines Hospital Corporation, Keene, Sullivan & Roxbury, County of Cheshire, State of New Hampshire" By C.T. Male Associates, P. C. Dated June, 1989. Job No. 88–05837. Not Recorded.

C. "Charles S. and John W. Towns, "Nims" Woodlot, Keene, Nh" By William P. House, Dated May, 1965. Recorded at the Cheshire Country Registry of Deeds Plan Book 19 Pg 37.

D. "Bolles Subdivision, 3 Lot Subdivision & Boundary Line Adjustment Map 5 Lot 42, 469 South Road, Sullivan, NH" By Cardinal Surveying & Land Planning. Recorded at the Cheshire County Registry of Deeds Plans #21048, 21049 and 21087.

E. "Plan of Proposed T.L.R. Project No. 14201, NH Project No P–2962–C, Franklin Pierce Highway, City of Keene and Town of Roxbury, County of Cheshire.", By State of New Hampshire Department of Public Works and Highways. Dated November 16, 1956. On file and available on–line with the New Hampshire Department of Transportation, Right of Way Bureau.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 957 ERIC S. POSPESIL SIGNATURE

A SURVEY OF LAND FOR

G2 HOLDINGS, LLC

TAX MAP 5 LOTS 46 & 46–1
VOLUME 3079 PAGE 283
IN THE TOWN OF
SULLIVAN, NEW HAMPSHIRE
AND
TAX MAP 215 LOTS 6,7,8 & 9
VOLUME 3079 PAGE 283 &
VOLUME 3199 PAGE 1197
IN THE CITY OF
KEENE, NEW HAMPSHIRE

SMITH & POSPESIL
LAND SURVEYING COMPANY, PLLC
240 QUEBEC ROAD, LYMAN, N.H. 03585

JUNE 19, 2023
REVISED JULY 16, 2024
& JANUARY 27, 2025

NEW HAMPSHIRE STATE PLANE
COORDINATE SYSTEM NAD 83
MAGNETIC DECLINATION: 13° 53' W
CONVERGENCE ANGLE: -0°22'39"
OBSERVATION DATE: MAY, 2023
COMBINED SCALE FACTOR: 0.99995790.

LIMIT OF DISTURBANCE
AS OF 5/31/2023

G2 HOLDINGS, LLC
KEENE TM 215 LOT 7
78.4 +/- AC

LINES NOT SURVEYED

S 05°13'18" E
787.52'

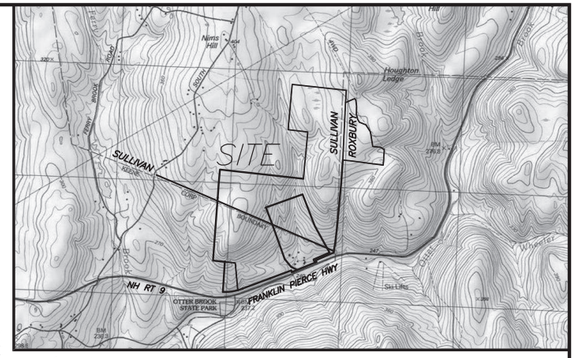
G2 HOLDINGS, LLC
KEENE TM 215 LOT 6
7.02 AC

CHIPSTONE
1 1/2" STONE
3/4" STONE
STOCKPILES
RIP RAP
RIP RAP
SAND
PROCESSING EQUIPMENT
CRUSHING PILE
NO TRESPASS
LOAM
LOAM
STOCKPILES
LOAM
BERM
3/4" STONE
CONCRETE
ROUGH LOAM
1 1/2" GRAVEL
FUEL STORAGE
TEMP. OFFICE
GATE
GAURDRAIL
SIGN 10 MPH
S 69°36'46" W
22.80'
L = 123.55'
R = 1432.50'
CH =N 72°05'03" E
CL = 123.54'
BUSINESS SIGN
S 69°36'46" W
855.33'
S 69°32'32" W
638.48'
PAVED ENTRANCE
EX. CULV
24" HDPE
INV IN: 807.2
INV OUT: 800.1
NH ROUTE 9
FRANKLIN PIERCE HIGHWAY

LEGEND

- Monument Found
- Highway Bound
- Calculated Point
- Utility Pole
- Property Line
- Limits of Disturbance
- Stockpile
- Major Contour Line
- Minor Contour Line
- Edge of Wetland
- Stream

0' 50' 100' 150'
Scale: 1 inch = 50 feet



LOCATION MAP
1 inch = 2000 feet

Reference Plans:

A. "Steel Tape and Compass Survey of 3 Lot Subdivision for Wayne W. & Elaine Sargent, Route 9 Keene and Sullivan, NH", By Herbert E. Russell, RLS #21. Dated August, 1979. Recorded at Cheshire County Registry of Deeds Cabniet 2 Pg 94 Roll #305.

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3. This plan is based on an updated field survey completed in January of 2025 using 10uuage dual frequency RTK survey grade GNSS receivers, and a DJI Mavic 3E Drone. The survey is classified as Rural and exceeds the minimum positional tolerances for property corners (0.25') and control (0.13') computed using a least squares adjustment at the 95% confidence level.
4. The property lies in the Rural Residential Zoning District in Sullivan – Building Setbacks are 50 feet – front, 20 feet side and rear. The property lies in the Rural Zoning District in Keene – R. Building Setbacks are 50 feet – front, side and rear.
5. The wetlands shown hereon were delineated by John St. John, NH CWS #221 of Ecosystems Land Planning from August-October of 2023.
6. The purpose of this plan sheet is to show the current conditions of Phase I excavation as of January 22, 2025.

STATE OF NEW HAMPSHIRE
JOHN J. ST. JOHN
No. 221
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
LICENSED LAND SURVEYOR
No. 967
ERIC S. POSPESIL
SIGNATURE

EXISTING CONDITIONS PHASE I PIT

G2 HOLDINGS, LLC

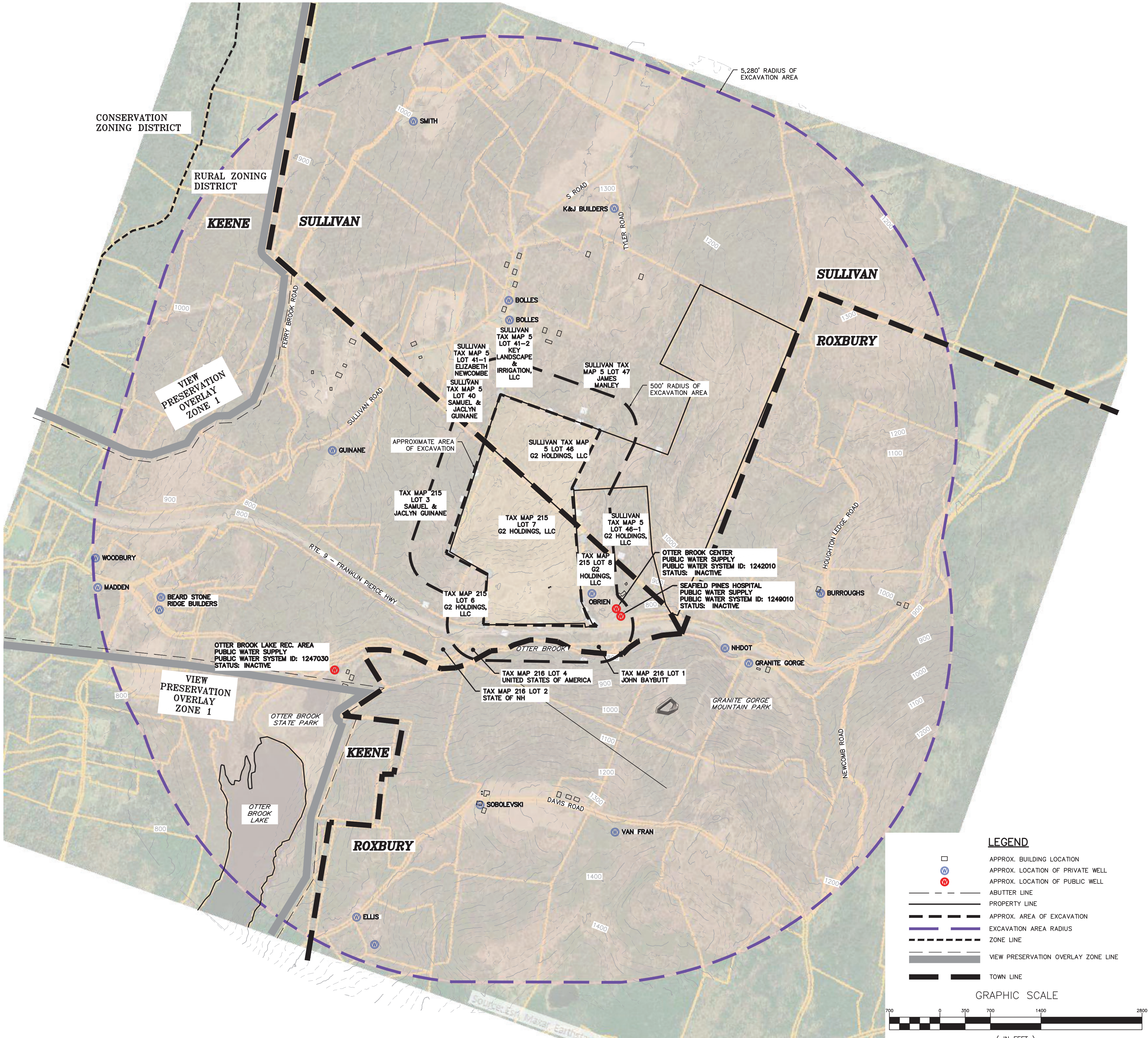
TAX MAP 215 LOTS 6&7
VOLUME 3079 PAGE 283 &
VOLUME 3199 PAGE 1197
IN THE CITY OF
KEENE, NEW HAMPSHIRE

SMITH & POSPESIL
LAND SURVEYING COMPANY, PLLC
240 QUEBEC ROAD, LYMAN, N.H. 03585

JUNE 19, 2023
REVISED JULY 16, 2024
& JANUARY 27, 2025

GENERAL NOTES:

1. 500' AND 5,280 (1 MILE) RADII OF THE EXCAVATION AREA ARE SHOWN.
2. THE APPROXIMATE LOCATION OF THE 25-FT CONTOURS ARE SHOWN WITHIN A 1 MILE RADIUS OF THE EXCAVATION SITE. THE TOPOGRAPHICAL INFORMATION SHOWN IS FROM NH GRANIT.
3. THE APPROXIMATE LOCATION OF ALL BUILDINGS ARE SHOWN. THIS INFORMATION IS FROM NH GRANIT AND KEENE TAX MAP INFORMATION.
4. THE APPROXIMATE LOCATION OF NH ROUTE 9 IS SHOWN. THIS INFORMATION IS FROM NH GRANIT.
5. THE APPROXIMATE LOCATION OF ALL PROPERTY LINES ARE SHOWN IN KEENE, ROXBURY AND SULLIVAN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM NH GRANIT.
6. THE ZONE LINE ALONG THE TOWN LINES ARE SHOWN. THE ENTIRETY OF THE 1-MILE RADIUS IS WITHIN THE RURAL ZONE.
7. THE LOCATION AND ASSOCIATED INFORMATION FOR ALL PUBLIC WATER SUPPLIES ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION WAS OBTAINED THROUGH NHDES ONESTOP DATA RESEARCH.
8. THERE ARE NO WELLHEAD PROTECTION AREAS WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM A DATA CHECK USING NHDES ONESTOP DATA SEARCH.
9. THERE ARE NO KNOWN FUTURE MUNICIPAL WATER SUPPLY SITES WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE.
10. ALL SURFACE WATERS ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM NH GRANIT AND NHDES ONESTOP DATA RESEARCH.
11. THE APPROXIMATE LOCATIONS OF ALL PUBLICLY RECORDED PRIVATE WELLS ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM KEENE GIS AND NHDES ONE-STOP DATA RESEARCH.
12. ALL OTHER PRIVATE WELL ESTIMATION IS AN APPROXIMATION.



LEGEND

- APPROX. BUILDING LOCATION
- APPROX. LOCATION OF PRIVATE WELL
- APPROX. LOCATION OF PUBLIC WELL
- ABUTTER LINE
- PROPERTY LINE
- APPROX. AREA OF EXCAVATION
- EXCAVATION AREA RADIUS
- ZONE LINE
- VIEW PRESERVATION OVERLAY ZONE LINE
- TOWN LINE

GRAPHIC SCALE

700 0 350 700 1400 2800

(IN FEET)
1 inch = 700 ft.

DIG SAFE
UTILITIES UNDERGROUND DAMAGE PREVENTION SYSTEM CALL TOLL FREE 811

GRANITE ENGINEERING civil engineering land planning municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

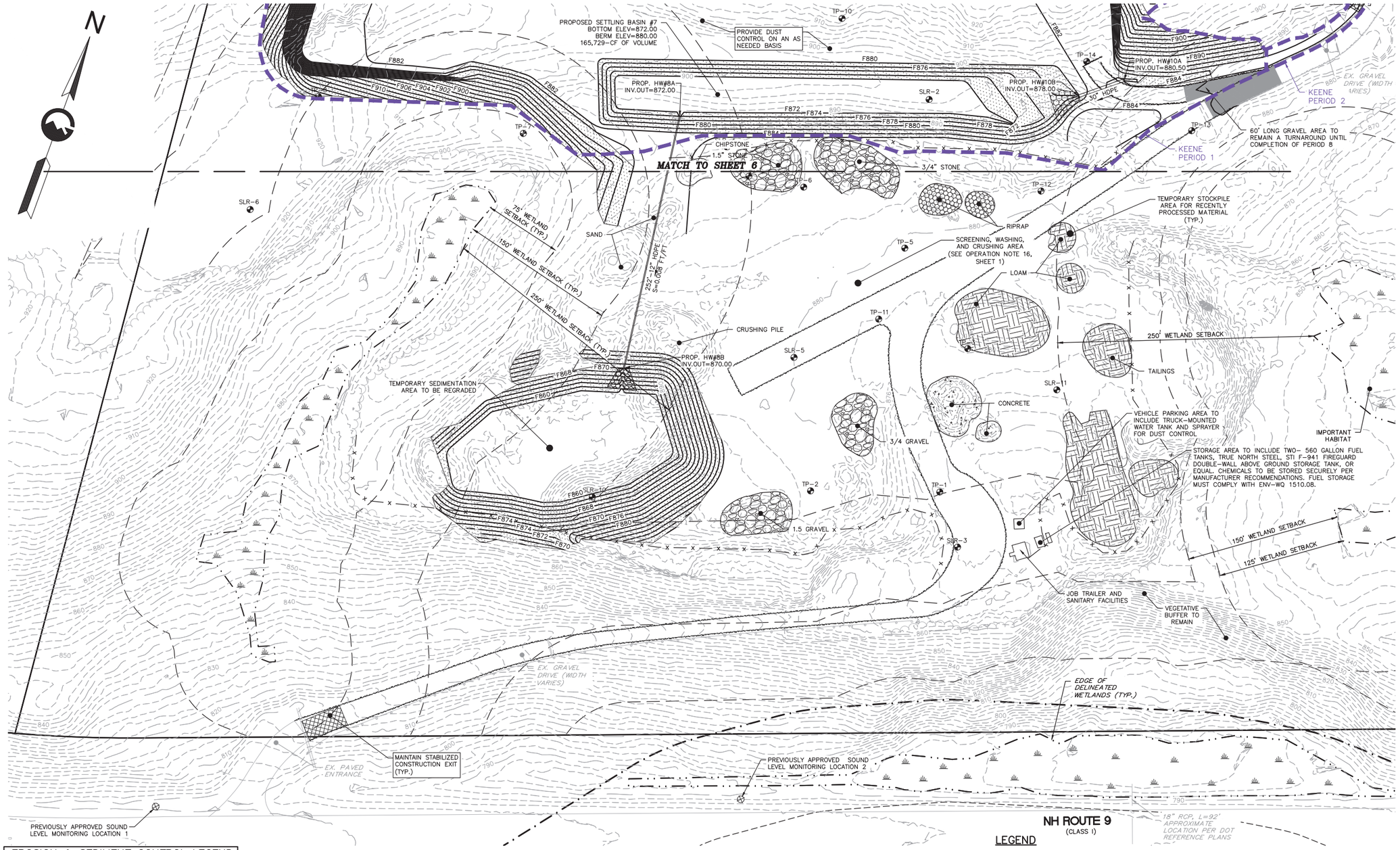
STAMP:
STATE OF NEW HAMPSHIRE BRENTON J. COLE No. 14744 2/3/25 LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
CONTEXT PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=700'



EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

PHASING NOTES:

1. INSTALL NECESSARY EROSION CONTROL MEASURES, I.E. SILT FENCE.
2. COMPLETE EXCAVATION OF TEMPORARY SEDIMENTATION AREA.
3. LOAM AND SEED TEMPORARY SEDIMENTATION AREA.
4. BEGIN EXCAVATION IN PERIOD 1. CONSTRUCT TEMPORARY SEDIMENT BASIN AS NEEDED AND DIRECT DISCHARGE TO TEMPORARY SEDIMENT AREA.
5. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

DIG SAFE
811
DIAL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
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OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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STAMP:
STATE OF NEW HAMPSHIRE
BRENTON
COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET:	5 OF 22	

122

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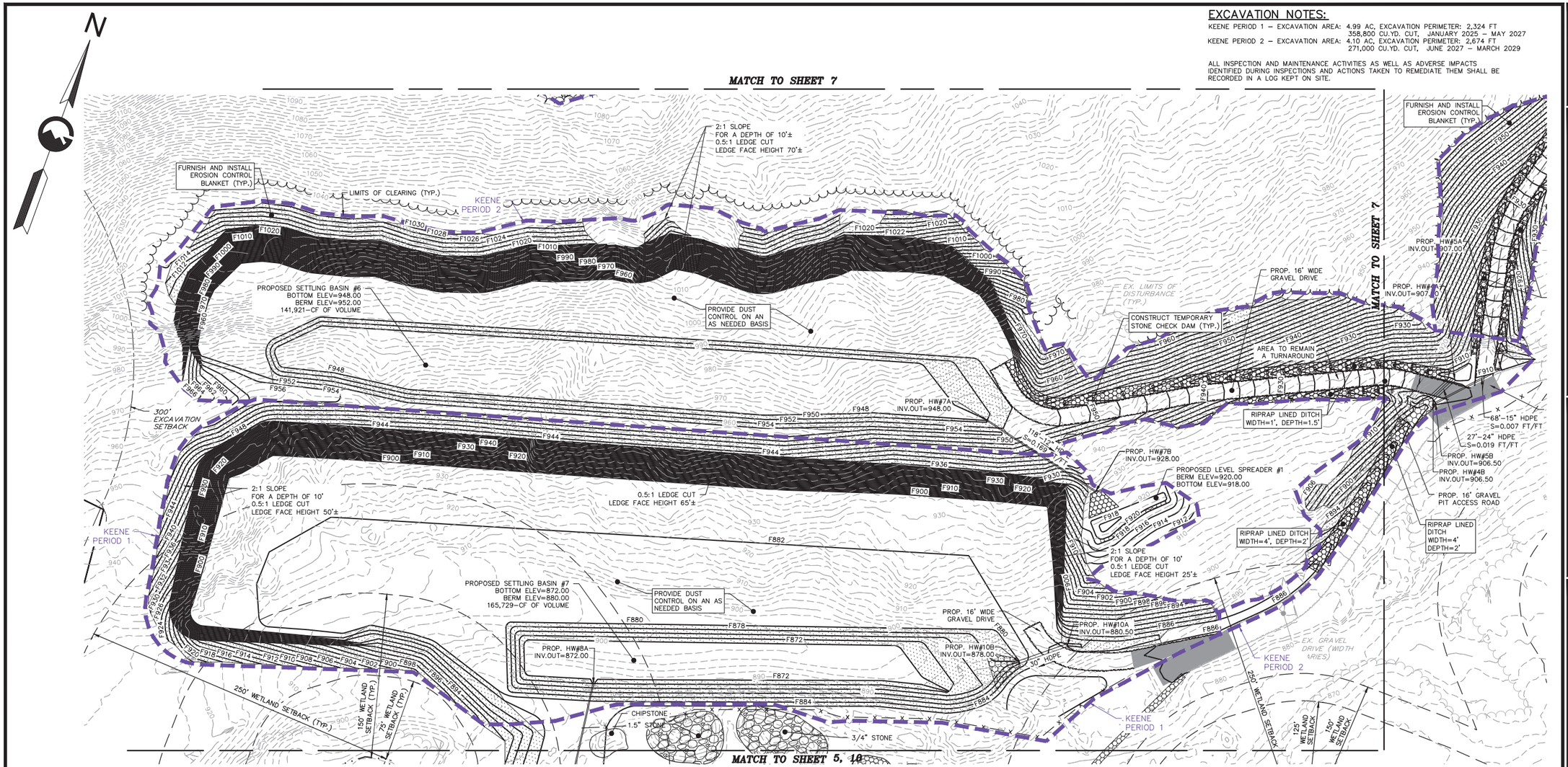
EXCAVATION NOTES:

KEENE PERIOD 1 – EXCAVATION AREA: 4.99 AC, EXCAVATION PERIMETER: 2,324 FT
358,800 CU.YD. CUT, JANUARY 2025 – MAY 2027
KEENE PERIOD 2 – EXCAVATION AREA: 4.10 AC, EXCAVATION PERIMETER: 2,674 FT
271,000 CU.YD. CUT, JUNE 2027 – MARCH 2029

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.



PHASING NOTES:

1. CONTINUE EXCAVATION IN PERIOD 1. AS PIT FLOOR IS LOWERED, EXCAVATE SEDIMENT BASIN AS REQUIRED. INSTALL OUTLET CULVERT.
2. ONCE PERIOD 1 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED.RECLAIM ACCESS TO THE PIT.
3. BEGIN CONSTRUCTION OF PERIOD 2, STARTING WITH THE ACCESS. INSTALL ALL EROSION CONTROL DEVICES.CONSTRUCT DITCH ALONG WEST SIDE OF EXISTING ACCESS ROAD. INSTALL CULVERTS AT THE INTERSECTION WITH THE NEW ACCESS ROAD RUNNING TO THE NORTH.
4. AS PIT AREA IN PERIOD IS EXCAVATED, PITCH SLOPE TO THE SOUTH OF THE AREA AND BEGIN EXCAVATION OF THE SEDIMENT RETENTION AREA. DIRECT DISHARGE FROM THE SEDIMENT DOWN THE EASTERN SIDE OF RECLAIMED PHASE 1. AS THE SEDIMENT AREA IS LOWERED, INSTALL OUTLET CULVERT, AND DIRECT TO THE EXISTING SLOPE TO THE EAST OF PERIOD 1.
5. ONCE PERIOD 2 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED. RECLAIM ACCESS TO THE PIT TO INTERSECTION OF NEW ACCESS RUNNING TO THE NORTH.
6. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE CITY OF KEENE SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
17. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED ON SLOPES WITH A RATIO GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

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- ABUTTER LINE
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- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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civil engineering
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municipal services

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CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET: 6 OF 22	123	

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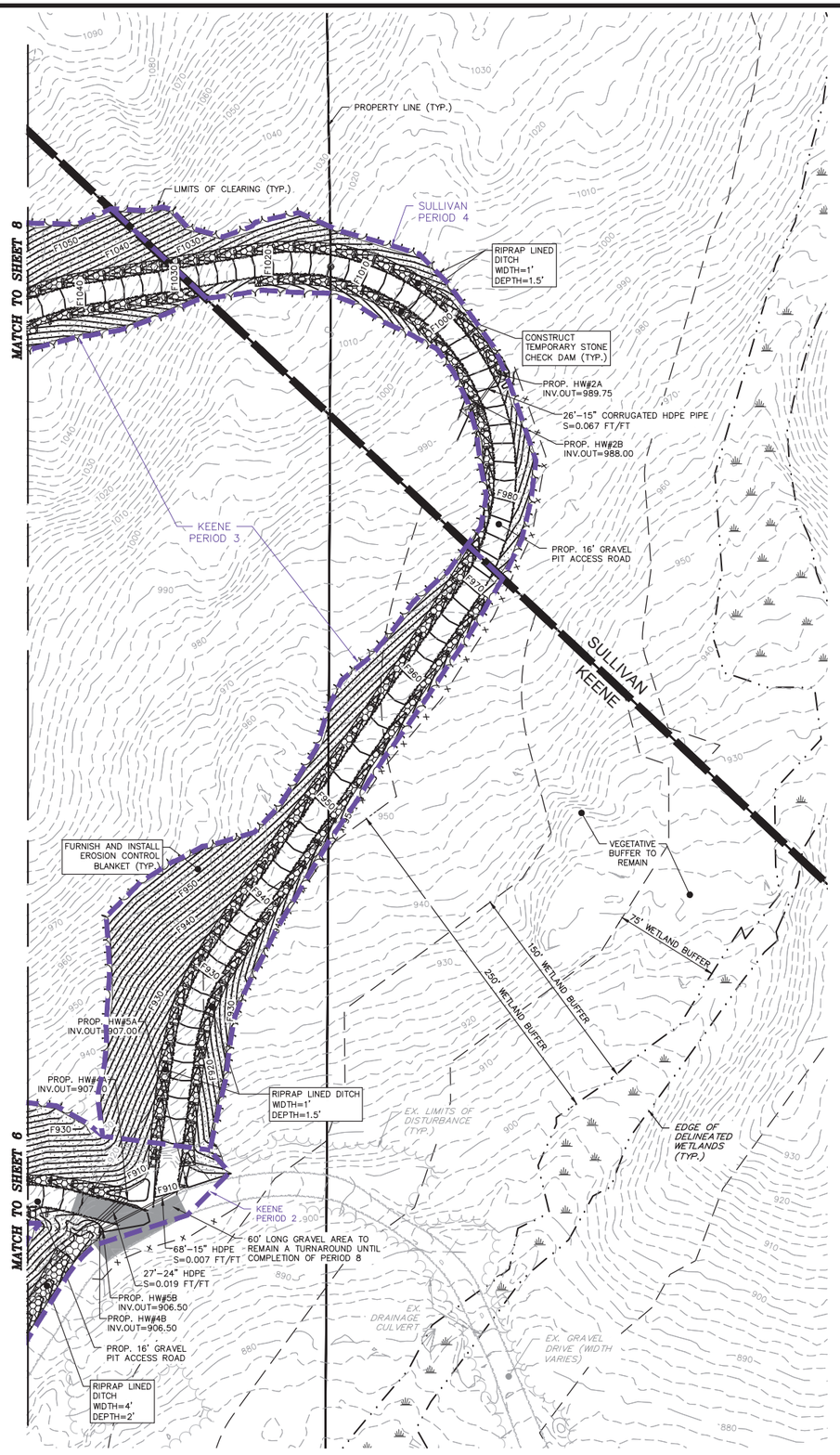
PHASING NOTES:

1. INSTALL ALL NECESSARY EROSION CONTROL ITEMS, I.E. SILT FENCE, STONE CHECK DAMS.
2. CONSTRUCT PIT ACCESS IN ITS ENTIRETY TO THE START OF PERIOD 5.
3. INSTALL ALL CULVERTS, RIP RAP CULVERT OUTLETS, AND DITCH PROTECTION.
4. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.



SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

EXCAVATION NOTES:

KEENE PERIOD 3 – EXCAVATION AREA: 2.14 AC, EXCAVATION PERIMETER: 3,780 FT
16,450 CU.YD. CUT, APRIL 2029 – MAY 2029
SULLIVAN PERIOD 4 – EXCAVATION AREA: 0.39 AC, EXCAVATION PERIMETER: 947 FT
939 CU.YD. CUT, JUNE 2029 – JULY 2029

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

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UTILITIES UNDERGROUND

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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STAMP:
STATE OF NEW HAMPSHIRE
BRENTON S COLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET: 7 OF 22		

124

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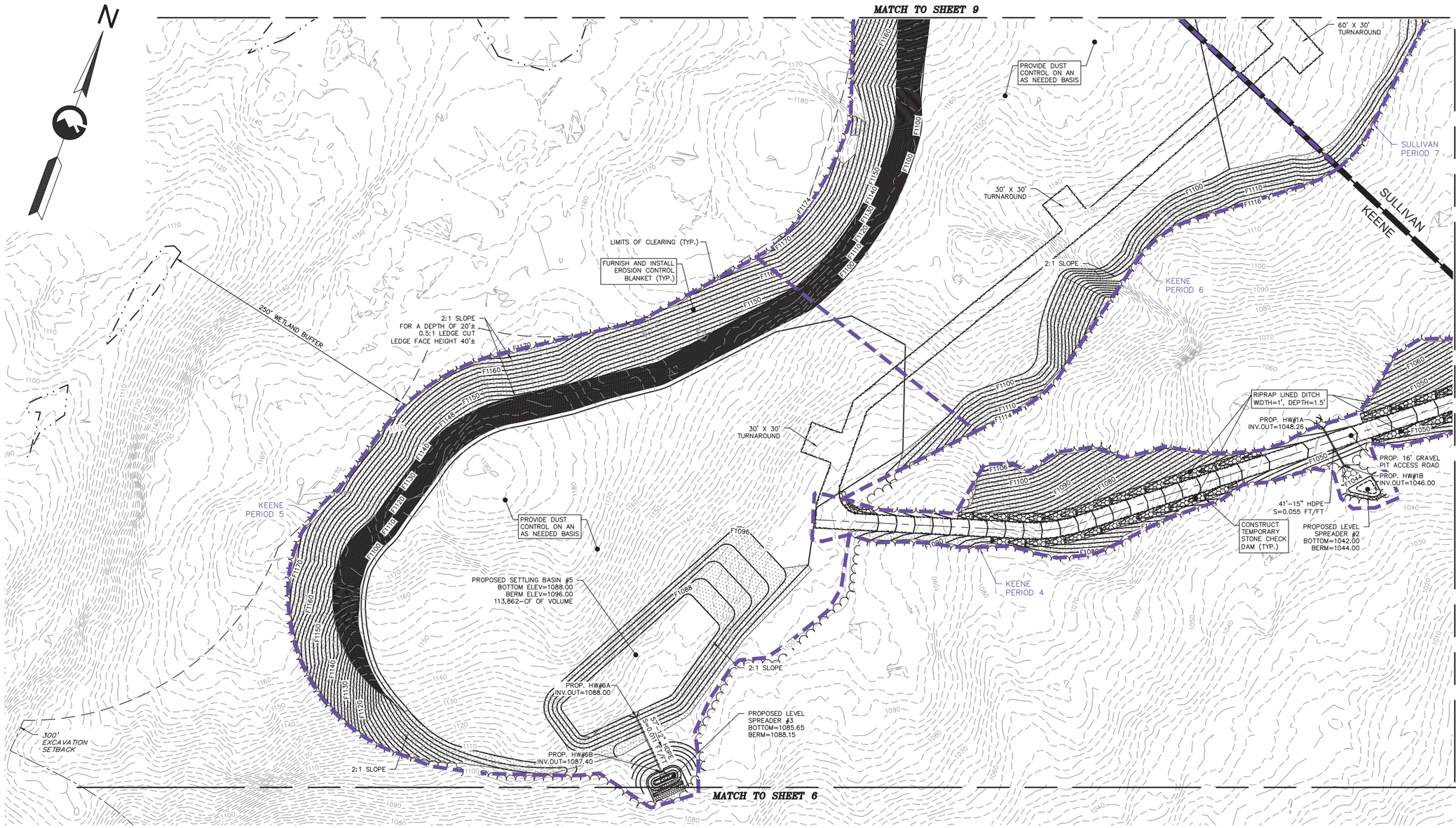

PHASING NOTES:

1. INSTALL NECESSARY EROSION CONTROL MEASURES, I.E. SILT FENCE.
2. BEGIN EXCAVATION IN PERIOD 5. CONSTRUCT TEMPORARY SEDIMENT BASIN AS NEEDED AND DIRECT DISCHARGE TO TEMPORARY SEDIMENT AREA.
3. SLOPE PIT TO RUN TO THE SOUTH TO THE SEDIMENT AREA. AS EXCAVATION PROCEDES, LOWER SEDIMENT AREA AS NEEDED.
4. ONCE PERIOD 5 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA, LEAVING TRUCK AND EQUIPMENT ACCESS TO PERIOD 6. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED.
5. INSTALL EROSION CONTROL MEASURES FOR PERIOD 6.
6. BEGIN EXCAVATION IN PERIOD 6. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED. DO NOT DISCHARGE SEDIMENT TO RECLAIMED AREA PERIOD 5.
7. ONCE PERIOD 6 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA, LEAVING TRUCK AND EQUIPMENT ACCESS TO PERIOD 7.
8. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

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EXCAVATION NOTES:

KEENE PERIOD 5 – EXCAVATION AREA: 4.08 AC, EXCAVATION PERIMETER: 1,724 FT
366,530 CU.YD. CUT, AUGUST 2029 – JANUARY 2031

KEENE PERIOD 6 – EXCAVATION AREA: 3.82 AC, EXCAVATION PERIMETER: 1,900 FT
262,692 CU.YD CUT, FEBRUARY 2031 – NOVEMBER 2032

SULLIVAN PERIOD 7 – EXCAVATION AREA: 4.06 AC, EXCAVATION PERIMETER: 1,755 FT
306,210 CU.YD. CUT, DECEMBER 2032 – DECEMBER 2034

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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STAMP:
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BRENTON S. COLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET: 8 OF 22		

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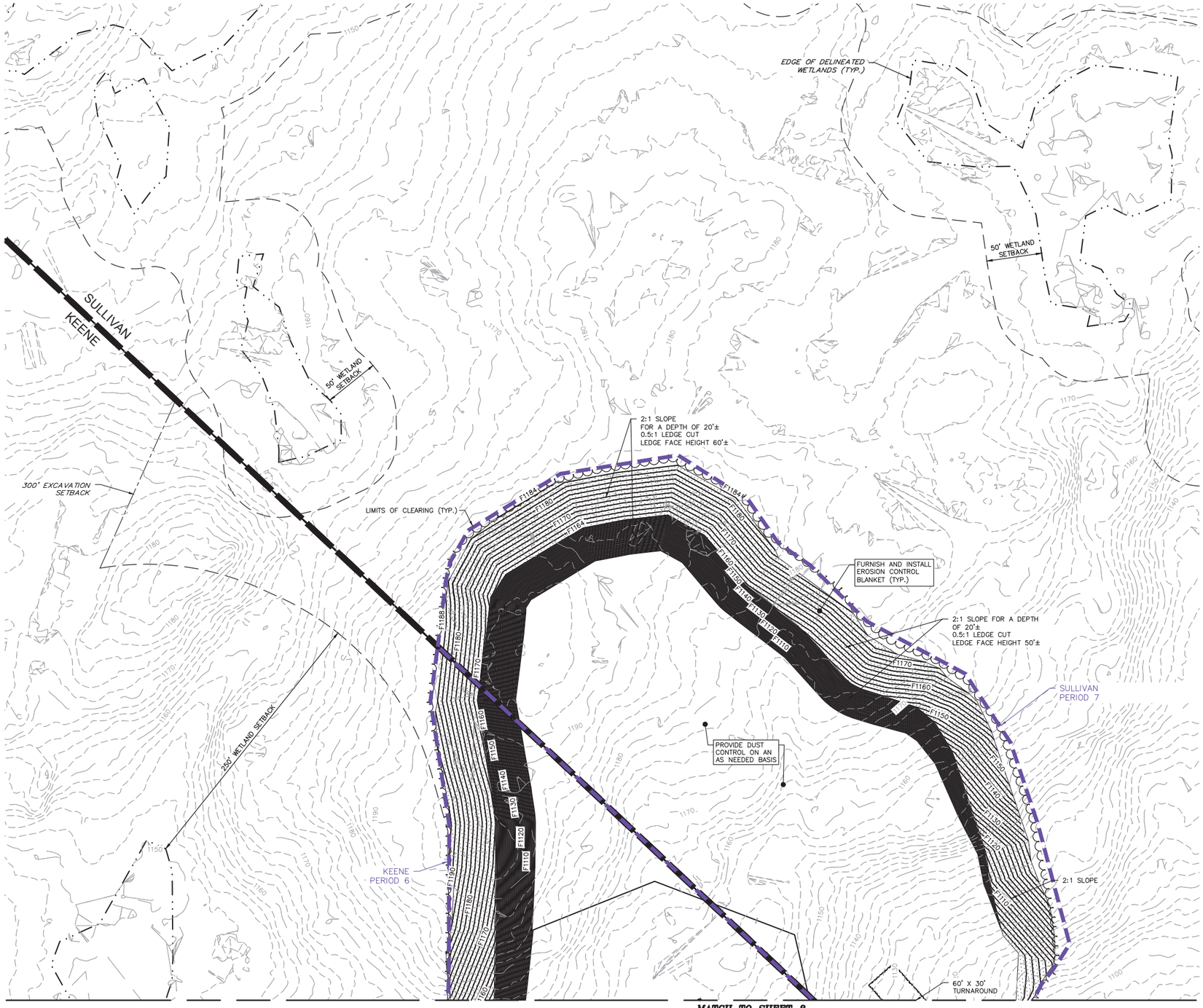

PHASING NOTES:

1. INSTALL EROSION CONTROL MEASURES FOR PERIOD 7.
2. BEGIN EXCAVATION IN PERIOD 7. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED. DO NOT DISCHARGE SEDIMENT TO RECLAIMED AREA PERIOD 6.
3. ONCE PERIOD 7 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. RECLAIM GRAVEL SURFACE OF ENTIRE HAUL ROAD.
4. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

EXCAVATION NOTES:

KEENE PERIOD 6 – EXCAVATION AREA: 3.82 AC, EXCAVATION PERIMETER: 1,900 FT
262,692 CU.YD CUT, FEBRUARY 2031 – NOVEMBER 2032

SULLIVAN PERIOD 7 – EXCAVATION AREA: 4.06 AC, EXCAVATION PERIMETER: 1,755 FT
306,210 CU.YD CUT, DECEMBER 2032 – DECEMBER 2034

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
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- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
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- PROP. GRADE LINE
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EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
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(IN FEET)
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BRENTON S. COLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET: 9 OF 22	126	

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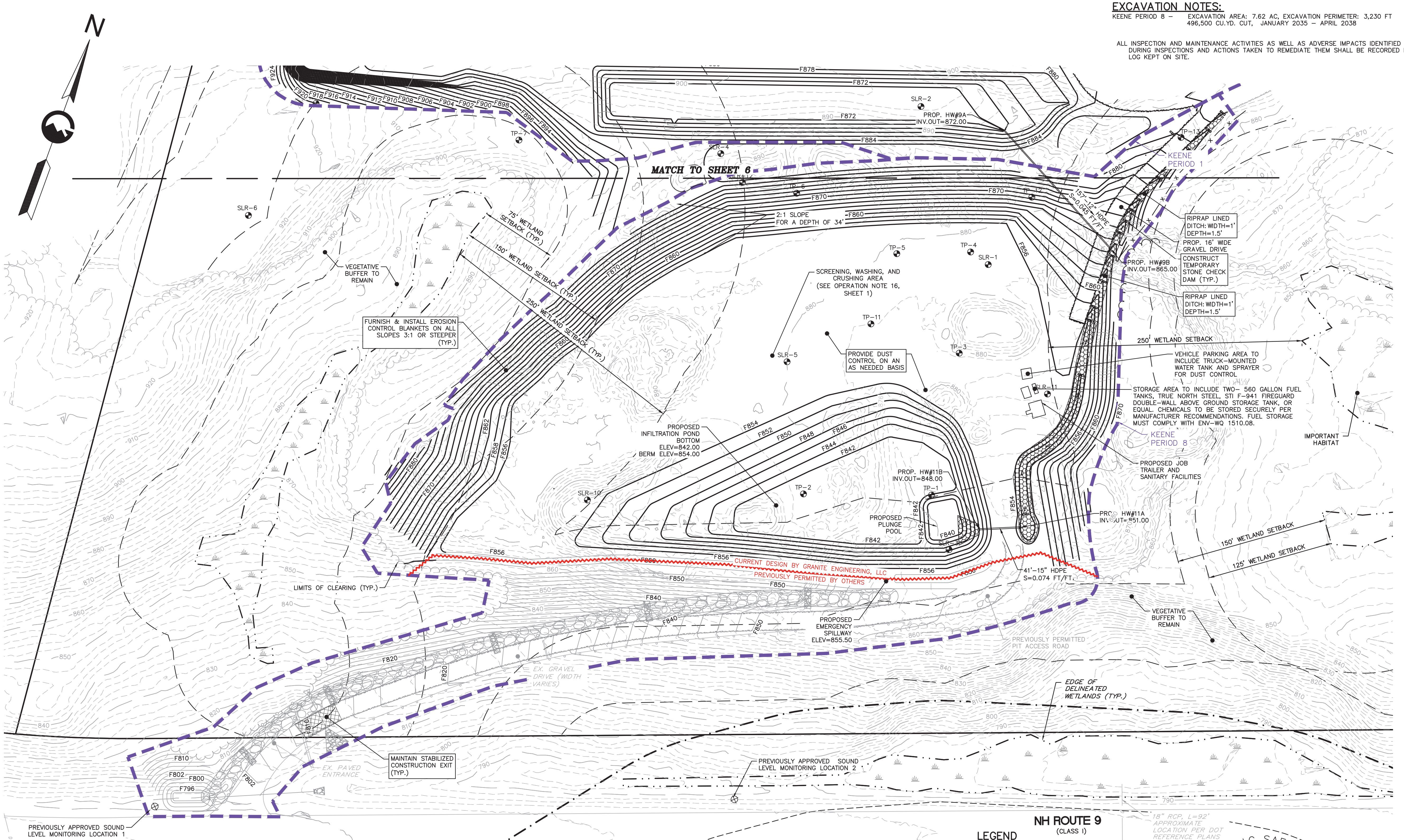
EXCAVATION NOTES:

KEENE PERIOD 8 – EXCAVATION AREA: 7.62 AC, EXCAVATION PERIMETER: 3,230 FT 496,500 CU.YD. CUT, JANUARY 2035 – APRIL 2038

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.



PHASING NOTES:

1. INSTALL EROSION CONTROL MEASURES FOR PERIOD 8.
2. BEGIN EXCAVATION IN PERIOD 8. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED.
3. AS PIT FLOOR IS LOWERED, EXCAVATE AND DIRECT STORMWATER TO THE FINAL SEDIMENT RETENTION AREA.
4. AS THE PIT FLOOR IS LOWERED, THE GRADE OF THE MAIN ACCESS ROAD OFF ROUTE 9 WILL NEED TO BE AJUSTYED TO CURRENT PIT FLOOR ELEVATIONS.
5. PLUG EXISTING 12" OUTLET PIPE THAT WAS INSTALLED IN THE SEDIMENT RETENTION AREA CONSTRUCTED IN PHASE 1. PLUG INLET WITH FLOWABLE FILL.
6. CONSTRUCT 12" OUTLET CULVERT AND HW#9A AND HW#9B AS SHOWN ON THIS SHEET.
7. CONSTRUCT ACCESS WITH STONE LINED DITCHES. DIRECT RUNOFF TO PROPOSED SEDIMENT AREA AS SHOWN ON THIS PLAN. TO KEEP ACCESS TO THE PIT OPEN, INSTALL A CULVERT TO DIRECT STORMWATER RUNOFF TO THE SEDIMENT RETENTION AREA.
8. ONCE PERIOD 8 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. RECLAIM GRAVEL SURFACE OF ACCESS ROAD. REMOVE TEMPORARY EROSION CONTROL MEASURES.

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

LEGEND

- ABUTTER LINE
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- EX. MINOR CONTOUR
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- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

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GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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BRENTON J. COLE
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2/3/25
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LOCATION:
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SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

SHEET: 10 OF 22

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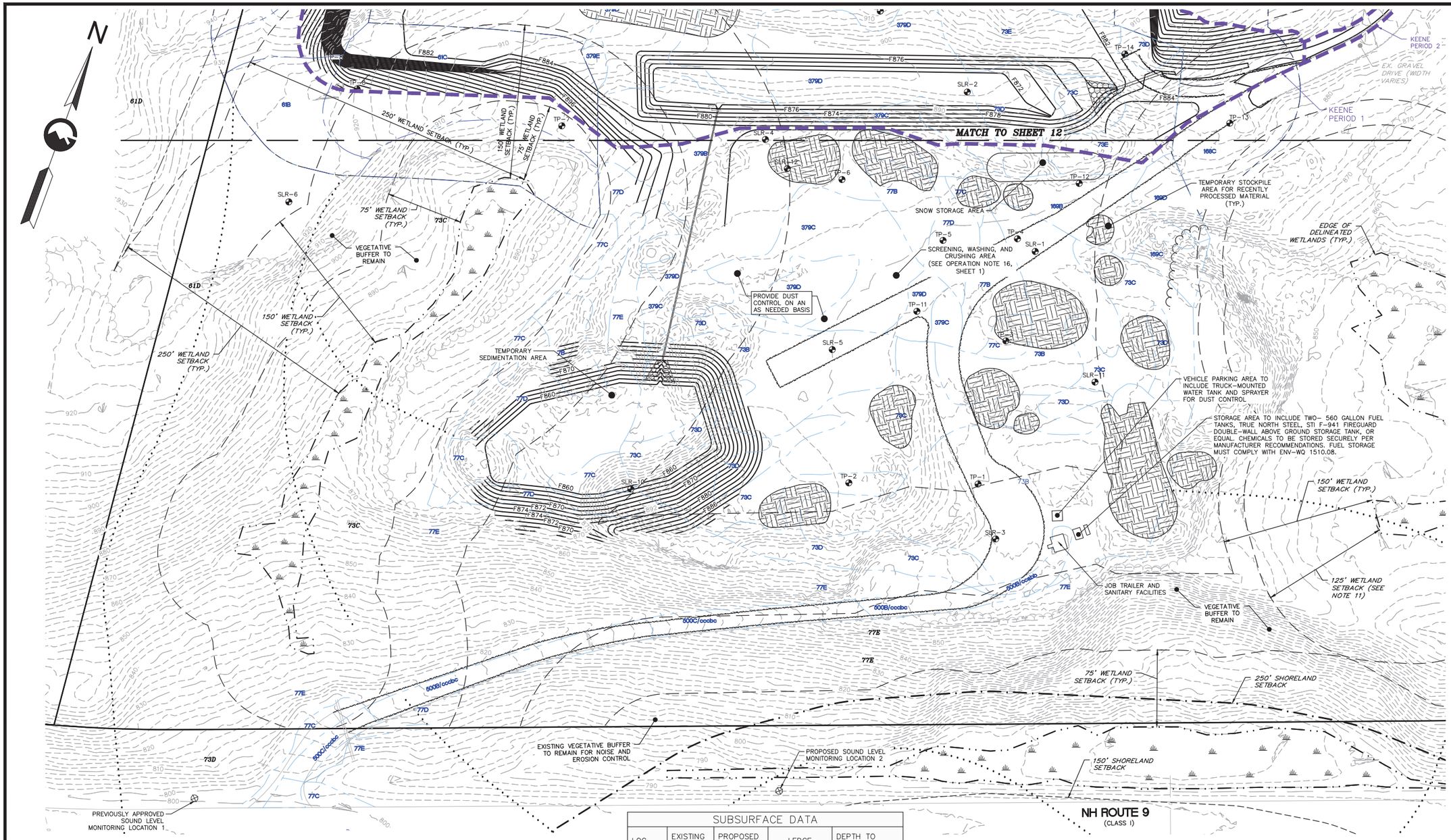

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSKI)

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C
169B	SUNAPEE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
169C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
169D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

SUBSURFACE DATA

LOG	EXISTING GROUND	PROPOSED GRADE	LEDGE	DEPTH TO GROUNDWATER
T-1	881	854.5	NONE TO 867.0	---
T-2	878	854.5	NONE TO 863.0	---
TP-3	872	855.5	NONE TO 858.0	---
TP-4	874.5	870	NONE TO 859.5	---
TP-5	882	876	NONE TO 869.0	---
TP-6	887	887	NONE to 873.0	---
TP-7	893	893	881'	---
TP-8	916	916	913	---
TP-9	927	927	918	---
TP-10	910	910	904.5	---
TP-11	881	865	867	---
TP-12	875	875	867	---
TP-13	882	882	876	---
TP-14	903	903	897	---
TP-15	942	942	936	---
TP-16	980	980	975	---
SLR-1	874	865	NONE TO 853.5	---
SLR-2	894	894	889	---
SLR-3	867	852	NONE TO 842	---
SLR-4	888	888	873	---
SLR-5	890	886	862	---
SLR-6	920	920	910	---
SLR-10	884	854	NONE TO 829.0	42.9
SLR-11	871.5	855	NONE TO 795.5	NONE TO 45.2
SLR-12	888.5	888.5	877.5	1.5

SUBSURFACE DATA FROM TEST PIT, BORING, AND WELL INSTALLATION LOGS CONTAINED IN THE LIMITED GEOHYDROLOGIC INVESTIGATION BY SLR INTERNATIONAL CORPORATION, DATED MARCH 25, 2022.

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(IN FEET)
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LEGEND

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- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- SOILS SURVEYED BY THOMAS SOKOLOSKI
- SOILS SURVEYED BY LUKE HURLEY
- NRCS SOILS
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PERIOD LINE
- TOWN LINE

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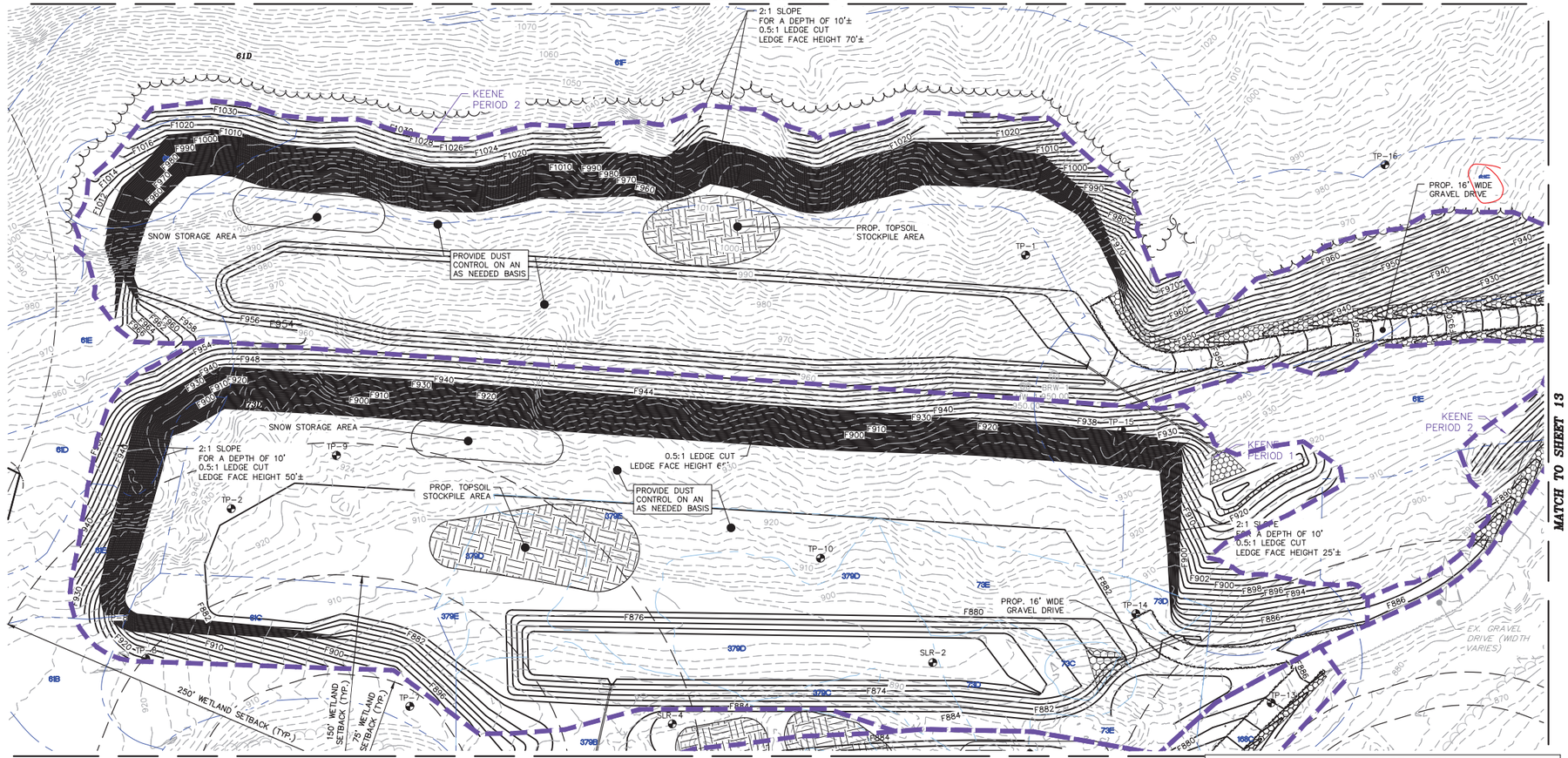
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET:	11 OF 22	

MATCH TO SHEET 14



NOISE IMPACT CONTROL AND MONITORING NOTES:

1. NOISE LEVELS GENERATED FROM EXCAVATION ACTIVITIES SHALL NOT EXCEED THE BACKGROUND AMBIENT 'A' WEIGHTED SOUND PRESSURE LEVEL EXCEEDED 90% OF THE TIME DURING THE SOUND LEVEL SAMPLING PERIOD, (HEREINAFTER 'DB(A) L(90)') BY MORE THAN 10 DB(A) AND IN ANY EVENT SHALL NOT EXCEED 55 DB(A) HEREINAFTER 'L(MAX)').
2. MONITORING DEVICES. ALL SOUND LEVEL MONITORING DEVICES SHALL MEET AMERICAN NATIONAL STANDARDS INSTITUTE S 1.4 TYPE 1 OR 2 STANDARDS, WITH THE DEVICE SET TO "FAST" RESPONSE. MONITORING DEVICES SHALL BE PROPERLY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER. MONITORING DEVICES SHALL INCLUDE DATA RECORDING CAPABILITIES THAT ENABLE CONTINUOUS DOCUMENTATION OF SOUND LEVELS DURING THE OPERATING DAY.
3. MONITORING LOCATIONS. SOUND LEVELS SHALL BE MONITORED FROM AT LEAST 2 LOCATIONS AS DETERMINED BY THE COMMUNITY DEVELOPMENT DIRECTOR, OR THEIR DESIGNEE, WITH THE ADVICE OF OTHER CITY STAFF AND THE PLANNING BOARD'S CONSULTANT.
   A. IF A MONITORING LOCATION IS SELECTED AT A POINT BEYOND THE PROPERTY BOUNDARY, WRITTEN PERMISSION TO USE THAT LOCATION FOR MONITORING SHALL BE OBTAINED FROM THE PROPERTY OWNER OF THE MONITORING SITE.
   B. AS NOISE-GENERATING EQUIPMENT IS RELOCATED WITHIN THE APPROVED EXCAVATION PERIMETER, NEW MONITORING LOCATIONS MAY BE SELECTED TO HELP ENSURE CONTINUED COMPLIANCE WITH THE NOISE STANDARD.
   C. THE EXCAVATION OPERATOR SHALL MAINTAIN A LOG OF ALL MONITORING ACTIVITIES INDICATING THE DATE, TIME PERIOD AND LOCATION OF THE RECORDED MEASUREMENTS; THE OPERATIONS BEING PERFORMED ON THE SITE AT THE TIME OF MONITORING; THE WEATHER CONDITIONS AT THE TIME OF THE MEASUREMENT, INCLUDING TEMPERATURE, WIND DIRECTION, WIND SPEED, CLOUD COVER AND PRECIPITATION; AND THE RESULTS OF THE MONITORING, INCLUDING A GRAPH OF THE CONTINUOUS MONITORING RECORD, THE CALCULATED 'A' WEIGHTED SOUND PRESSURE LEVEL EXCEEDED 90% OF THE MEASUREMENT TIME (HEREINAFTER 'DB(A) L(90)') AND THE CALCULATED MAXIMUM DB(A) SOUND LEVEL (HEREINAFTER 'L(MAX)').
4. AMBIENT SOUND LEVELS: THE BACKGROUND AMBIENT SOUND LEVELS SHALL BE MEASURED PRIOR TO THE COMMENCEMENT OF THE INITIAL OPERATION.
   A. THE BACKGROUND SOUND LEVELS SHALL BE MEASURED ON THE DB(A) SCALE, BY RECORDING CONTINUOUS MEASUREMENTS DURING PROPOSED OPERATING HOURS OVER 5 CONSECUTIVE BUSINESS DAYS PRIOR TO THE COMMENCEMENT OF SITE PREPARATION ACTIVITIES, AND CALCULATING THE DB(A) L(90) FOR THE ENTIRE MONITORING PERIOD. SUCH MEASUREMENTS SHALL BE PERFORMED BY A CONSULTANT HIRED BY THE PLANNING BOARD AT THE APPLICANT'S EXPENSE.
   B. THE APPLICANT/OPERATOR MAY REQUEST THAT THE BACKGROUND SOUND LEVEL BE RE-MEASURED. SUCH RE-MEASUREMENT SHALL BE DONE AT A TIME SELECTED BY THE COMMUNITY DEVELOPMENT DIRECTOR IN CONSULTATION WITH THE APPLICANT AND A CONSULTANT HIRED BY THE PLANNING BOARD TO PERFORM THE MEASUREMENT AT THE APPLICANT'S EXPENSE.
5. ONGOING MONITORING: THE APPLICANT SHALL MONITOR AT THE SELECTED MONITORING LOCATIONS THE SOUND LEVELS GENERATED BY THE OPERATION, AS FOLLOWS.
   A. ON AN ANNUAL BASIS, AT A TIME SELECTED BY THE COMMUNITY DEVELOPMENT DIRECTOR, IN CONSULTATION WITH THE APPLICANT, SOUND LEVELS SHALL BE MONITORED AND RECORDED CONTINUOUSLY DURING OPERATING HOURS FOR A PERIOD OF NOT LESS THAN 20 CONSECUTIVE OPERATING DAYS. MONITORING SHALL BE MADE USING THE DB(A) SCALE AND THE DB(A) L(90) DURING THE OPERATING HOURS FOR EACH DAY AND THE L(MAX) SOUND LEVEL THROUGHOUT EACH DAY SHALL BE CALCULATED AND ENTERED INTO A NOISE MONITORING LOG MAINTAINED BY THE APPLICANT.
   B. AT ANY TIME WHEN NEW OR ADDITIONAL NOISE GENERATING EQUIPMENT IS PLACED INTO OPERATION FOLLOWING THE INITIAL 20-DAY MONITORING PERIOD, OR WHEN NOISE GENERATING EQUIPMENT IS RELOCATED WITHIN THE APPROVED EXCAVATION PERIMETER, SOUND LEVELS SHALL ALSO BE MONITORED CONTINUOUSLY AND RECORDED DURING OPERATING HOURS FOR A PERIOD OF NOT LESS THAN 5 CONSECUTIVE OPERATING DAYS. THE DB(A) L(90) DURING THE OPERATING HOURS FOR EACH DAY AND THE L(MAX) SOUND LEVEL THROUGHOUT EACH DAY SHALL BE CALCULATED AND ENTERED INTO A NOISE MONITORING LOG MAINTAINED BY THE APPLICANT.
   C. WHEN NEW OR ADDITIONAL NOISE GENERATING EQUIPMENT OR ACTIVITIES INCLUDING BUT NOT LIMITED TO DRILLING OR BLASTING ACTIVITIES WERE NOT MEASURED DURING THE INITIAL 20-DAY MONITORING PERIOD AND ARE TO BE USED ONLY FOR SHORT DURATIONS RANGING FROM A PERIOD OF HOURS TO SEVERAL DAYS, NOT EXCEEDING 5 OPERATING DAYS, SOUND LEVELS SHALL BE MONITORED AND RECORDED CONTINUOUSLY FOR THE DURATION OF THE ACTIVITIES.
   D. IN THE EVENT THAT THE MEASUREMENTS EXCEED THE NOISE STANDARDS IN THIS ARTICLE, THE APPLICANT SHALL BRING THE OPERATION INTO COMPLIANCE BY REDUCING THE NUMBER OF SOUND SOURCES CONTRIBUTING TO THE SOUND LEVEL, BY RELOCATING EQUIPMENT ON THE SITE, BY ADDING NOISE ATTENUATING STRUCTURES AROUND OR ATTACHMENTS TO THE EQUIPMENT, OR BY TAKING WHATEVER OTHER ACTIONS MAY BE NECESSARY TO BRING THE OPERATION INTO COMPLIANCE.
      a) ANY CORRECTIVE ACTION TAKEN SHALL BE CLEARLY DESCRIBED IN THE NOISE MONITORING LOG ALONG WITH A RECORD OF THE NOISE LEVEL MEASUREMENTS BEFORE AND AFTER SAID CORRECTION.
      b) ADDITIONAL NOISE LEVELS SHALL BE MONITORED FOR NO LESS THAN 5 CONSECUTIVE DAYS AFTER THE CORRECTIVE ACTION IS TAKEN.
6. COMPLAINTS REGARDING THE LEVEL OF NOISE GENERATED FROM EXCAVATION OPERATIONS SHALL BE RESOLVED PER THE PROCEDURES OUTLINED IN 24.3.15.E OF THE CITY OF KEENE LAND DEVELOPMENT CODE.

HAZARDOUS AND TOXIC SPILL RESPONSE NOTES:

1. SPILL CONTROL PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
2. THE CHEMICALS EMPLOYED ON-SITE WILL VARY THROUGHOUT THE EXCAVATION PROCESS, PRIMARILY CONSISTING OF PETROLEUM-BASED OILS, LUBRICANTS, AND GASOLINE-BASED FUELS. THESE SUBSTANCES MUST BE STORED SECURELY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND MUST BE ACCOMPANIED BY MATERIAL SAFETY DATA SHEETS AND SPILL RESPONSE MATERIALS.
3. STRICT PRECAUTIONS MUST BE TAKEN DURING ON-SITE FUELING OPERATIONS TO PREVENT SPILLS AND OVERFILLING.

DUST CONTROL & MONITORING NOTES:

1. THE SITE SHALL OPERATE IN A MANNER THAT PREVENTS FUGITIVE DUST EMISSIONS PUSUANT TO NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES ENV-A 1002, FUGITIVE DUST.
2. DUST CONTROL PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
3. DUST CONTROL ACTIVITIES AND DEVICES SHALL BE INCORPORATED INTO THE EXCAVATION OPERATION, ON THE SITE AND ON THE ACCESS DRIVEWAY, IN A MANNER THAT MINIMIZES GENERATION OF AIRBORNE DUST OR TRANSPORTATION OF DUST OR MUD OFF THE SITE ONTO THE ADJACENT ROADWAYS.
   A. VISUAL MONITORING OF AIRBORNE DUST SHALL BE DONE ON AN ONGOING BASIS.
   B. DUST CONTROL MEASURES SUCH AS APPLYING WATER TO ACCESS DRIVEWAYS AND OTHER AREAS WITHIN THE EXCAVATION PERIMETER, WASHING DIRT FROM TRUCK TIRES, OR OTHER MEASURES AS MAY BE DEEMED NECESSARY, SHALL BE EMPLOYED TO MINIMIZE THE GENERATION OF AIRBORNE DUST, AND/OR THE TRANSPORTATION OF DIRT/MUD OFF THE SITE ONTO ADJACENT ROADWAYS.
   C. DUST CONTROL WILL BE ACCOMPLSHED USING A TRUCK-MOUNTED WATER TANK AND SPRAY SYSTEM AS NEEDED.
   D. INSPECTION OF ACCESS DRIVEWAY STABILIZED CONSTRUCTION ENTRANCES AND OTHER EROSION CONTROL MEASURES, DESIGNED TO ELIMINATE THE DEPOSIT OF DUST OR MUD ONTO PUBLIC STREETS, SHALL BE CONDUCTED ON A WEEKLY BASIS TO ENSURE PROPER FUNCTIONING. MAINTENANCE OF THESE ENTRANCES SHALL BE PERFORMED AS NECESSARY AND ANY DIRT OR MUD DEPOSITED ON PUBLIC STREETS SHALL BE REMOVED.
   E. THE APPLICANT SHALL MAINTAIN A LOG DOCUMENTING DUST CONTROL ACTIVITIES, INSPECTION AND MAINTENANCE OF DUST AND DIRT CONTROL STRUCTURES AND DEVICES, AND CLEAN UP OF DIRT DEPOSITED ON ROADWAYS LEADING FROM THE SITE. THE OPERATION AND MAINTENANCE MANUAL, LOCATED WITHIN THE STORMWATER MANAGEMENT REPORT, SHALL BE USED FOR INSTURCTIONS OF HOW TO INSPECT AND MAINTAIN EROSION AND SEDIMENT CONTROL PRACTICES.

FUELING NOTES:

1. FUELING AND MAINTENANCE OF EQUIPMENT OR VEHICLE PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
2. FUELS AND REGULATED SUBSTANCES WILL BE STORED IN A SEALED AND CLEARED LABELED CONTAINER WITHIN THE ENCLOSED CHEMICAL STORAGE AREA.
3. THE ENCLOSED CHEMICAL STORAGE AREA WILL BE STABLE, LEVEL AND IMPERVIOUS.
4. SECONDARY CONTAINMENT WILL BE PROVIDED FOR FUELING ACTIVITIES ON SITE.
5. MOBILE FUELING WILL BE USED DURING EXCAVATION ACTIVITIES.
6. ALL FUELING AND STORAGE OF FUELS ON SITE WILL COMPLY WITH STATE AND FEDERAL REQUIREMENTS.
7. EMPLOYEES WHO PARTAKE IN FUELING ACTIVITIES SHALL BE TRAINED ON SPILL PREVENTION AND CONTROL.
8. ANY SPILL THAT IS: 25 GALLONS OR MORE, NOT IMMEDIATELY CONTAINED, REMOVED WITHIN 24-HRS, A POTENTIAL SURFACE WATER OR GROUNDWATER IMPACT, SHALL BE REPORTED TO NHDES AT (603) 271-3899 OR STATE POLICE AT (603) 223-4381.
9. CONTAMINATED SOILS OR MATERIALS SHALL BE STORED AND DISPOSED OF IN ACCORDANCE WITH ALL STATE AND FEDERAL REQUIREMENTS. CONTACT NHDES HAZARDOUS WASTE MANAGEMENT BUREAU'S COMPLIANCE SECTION AT (603) 271-2942 FOR INFORMATION REGARDING HAZARDOUS MATERIALS.
10. THE CHEMICAL STORAGE AREA SHALL BE KEPT LOCKED WHEN NOT IN USE.
11. ALL FUELING RELATED ACTIVITIES SHALL BE AT LEAST 50' AWAY FROM ANY CATCH BASIN OR SURFACE WATER.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 4 FOR EROSION CONTROL NOTES (TYP.)

SUBSURFACE DATA

LOG	EXISTING GROUND	PROPOSED GRADE	LEDGE	DEPTH TO GROUNDWATER
T-1	881	854.5	NONE TO 867.0	---
T-2	878	854.5	NONE TO 863.0	---
TP-3	872	855.5	NONE TO 858.0	---
TP-4	874.5	870	NONE TO 859.5	---
TP-5	882	876	NONE TO 869.0	---
TP-6	887	887	NONE to 873.0	---
TP-7	893	893	881'	---
TP-8	916	916	913	---
TP-9	927	927	918	---
TP-10	910	910	904.5	---
TP-11	881	865	867	---
TP-12	875	875	867	---
TP-13	882	882	876	---
TP-14	903	903	897	---
TP-15	942	942	936	---
TP-16	980	980	975	---
SLR-1	874	865	NONE TO 853.5	---
SLR-2	894	894	889	---
SLR-3	867	852	NONE TO 842	---
SLR-4	888	888	873	---
SLR-5	890	886	862	---
SLR-6	920	920	910	---
SLR-10	884	854	NONE TO 829.0	42.9
SLR-11	871.5	855	NONE TO 795.5	NONE TO 45.2
SLR-12	888.5	888.5	877.5	1.5

SUBSURFACE DATA FROM TEST PIT, BORING, AND WELL INSTALLATION LOGS CONTAINED IN THE LIMITED GEOHYDROLOGIC INVESTIGATION BY SLR INTERNATIONAL CORPORATION, DATED MARCH 25, 2022.

DEICING NOTES:

A. RECORDS FOR TRACKING THE USE OF SALT AND OTHER DEICERS FOR EACH STORM EVENT SHALL BE MAINTAINED UNTIL ALL AREAS HAVE BEEN RECLAIMED. THE DEICING APPLICATION RATE GUIDELINES SHALL FOLLOW THE RECOMMENDATIONS IN THE NH STORMWATER MANUAL: VOLUME 2, LATEST EDITION.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- SOILS SURVEYED BY THOMAS SOKOLOSKI
- SOILS SURVEYED BY LUKE HURLEY
- NRCS SOILS
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PERIOD LINE
- TOWN LINE

DIG SAFE
811
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DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

NRCS SOILS LEGEND

22	COLTON GRAVELLY SANDY LOAM, RATED A
60	TUNBRIDGE-BERKSHIRE COMPLEX, RATED C
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77	MARLOW FINE SANDY LOAM, VERY STONY, RATED C
161	LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX, RATED D
169	SUNAPEE FINE SANDY LOAM, RATED C

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HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTIST OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

HYDROLOGIC SSSM SYM.	SSS MAP NAME	HISS SYM.	SOIL GRP
168	SUNAPEE	321	B
61	TURNBRIDGE LYMAN ROCK OUTCROP	224/227	C
92	LYMAN	224	D

SLOPE PERIOD:
0-8% B 8-15% C 15-25% D 25%+ E

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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STATE OF NEW HAMPSHIRE
BRENTON
COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

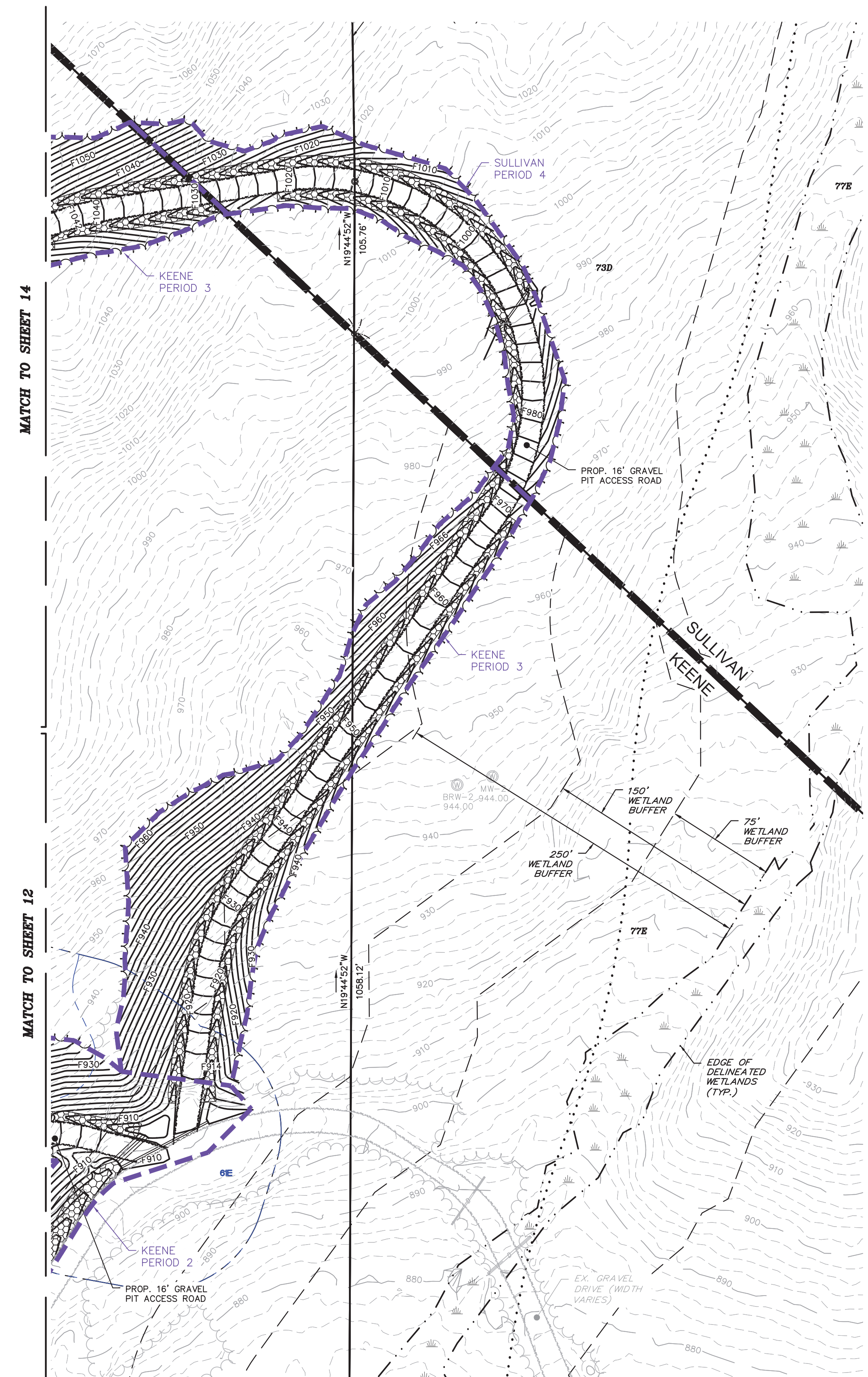
STATE OF NEW HAMPSHIRE
LUKE
R.
SHURLEY
NO. 095M
7/5
CERTIFIED SOIL SCIENTIST

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No. 23-0201-1 | DATE: FEBRUARY 3, 2025 | SCALE: HORIZ. 1"=50'
SHEET: 12 OF 22



SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
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- NRCS SOILS
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PERIOD LINE
- TOWN LINE

NRCS SOILS LEGEND

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SLOPE PERIOD:
0-8% B 8-15% C 15-25% D 25%+ E

STATE OF NEW HAMPSHIRE LUKE D. HURLEY No. 095 CERTIFIED SOIL SCIENTIST

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GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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No.	DATE	REVISIONS COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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603.518.8030
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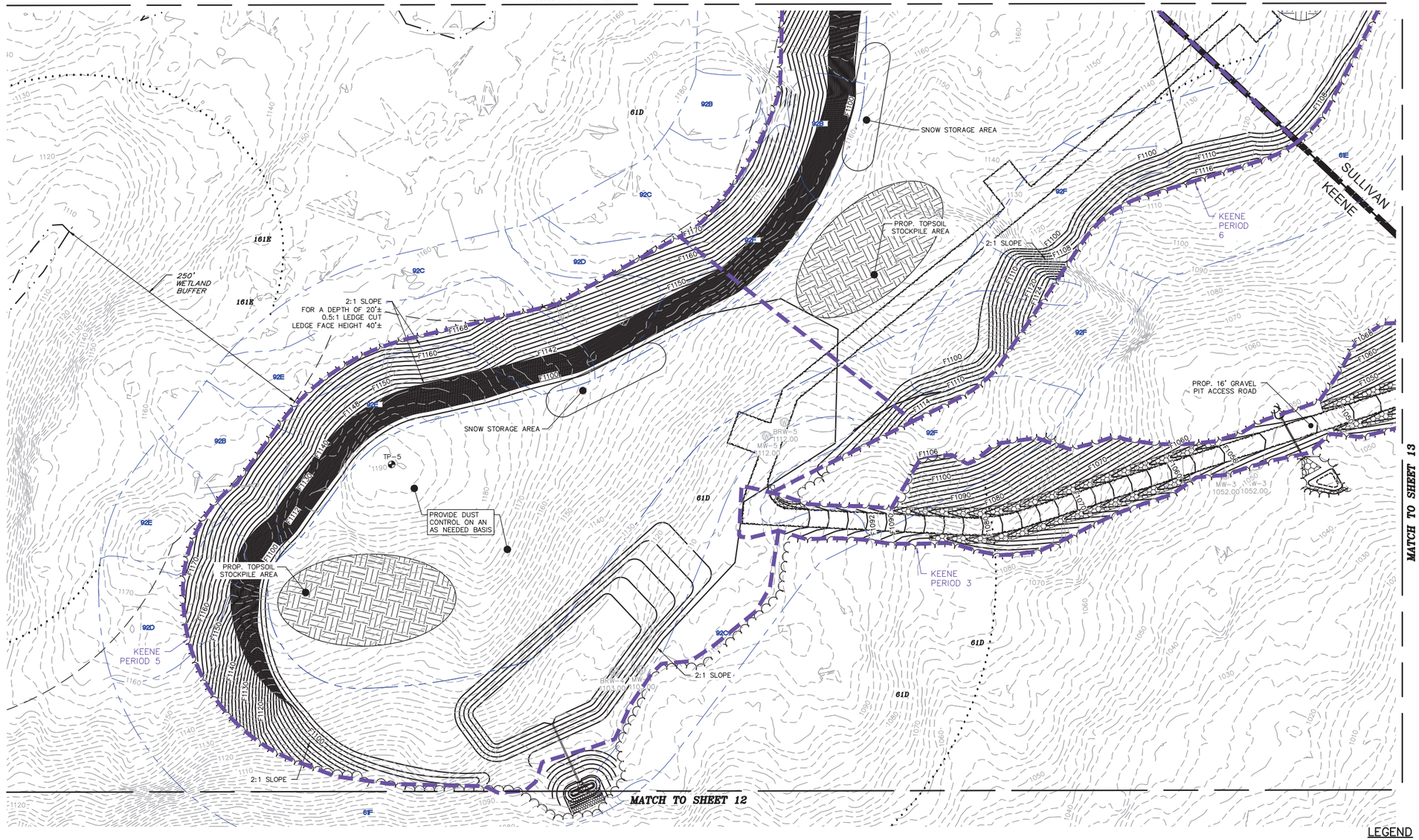
STAMP:
STATE OF NEW HAMPSHIRE BRENTON J COLE No. 14744 2/3/25 LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=50'
SHEET: 13 OF 22		



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STATE OF NEW HAMPSHIRE
LUKE D. HURLEY
No. 095M
7/15
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NRCS SOILS LEGEND

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SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

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131

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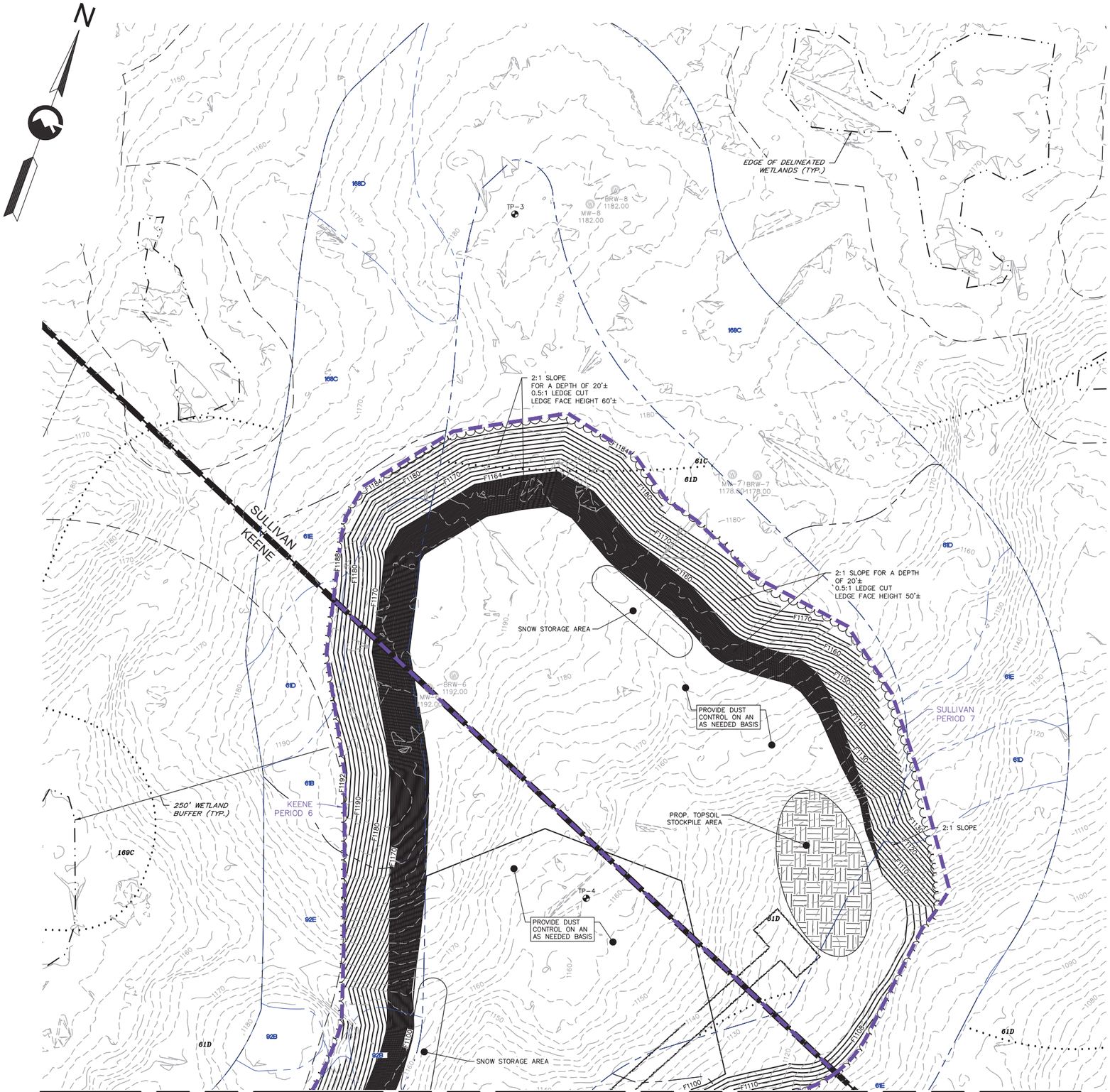

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THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 15, 2024, AND WAS PREPARED BY LUKE HURLEY, CSS #095M, HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE #10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTIST OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

HYDROLOGIC SSSM SYM.	SSS MAP NAME	HISS SYM.	SOIL GRP.
168	SUNAPEE	321	B
61	TURNBRIDGE LYMAN ROCK OUTCROP	224/227	C
92	LYMAN	224	D

SLOPE PERIOD:
0-8% B 8-15% C 15-25% D 25%+ E

STATE OF NEW HAMPSHIRE
LUKE D SHURTLEY
No. 095
CERTIFIED SOIL SCIENTIST

NRCS SOILS LEGEND

22	COLTON GRAVELLY SANDY LOAM, RATED A
60	TUNBRIDGE-BERKSHIRE COMPLEX, RATED C
61	TUNBRIDGE-LYMAN-ROCK OUTCROP COMPLEX, RATED C
73	BERKSHIRE FINE SANDY LOAM, RATED B
77	MARLOW FINE SANDY LOAM, VERY STONY, RATED C
161	LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX, RATED D
169	SUNAPEE FINE SANDY LOAM, RATED C

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
RI-MA-NH-VT-MA
UTILITIES UNDERGROUND

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
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- PROPOSED EDGE OF GRAVEL
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- WETLAND BUFFER
- SOILS SURVEYED BY THOMAS SOKOLOSKI
- SOILS SURVEYED BY LUKE HURLEY
- NRCS SOILS
- EX./PROP. TREELINE
- PROP. GRADE LINE
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- EX. MINOR CONTOUR
- PERIOD LINE
- TOWN LINE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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land planning
municipal services

REVISIONS

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1	12/20/24	PROJECT SUBMITTAL	JD
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OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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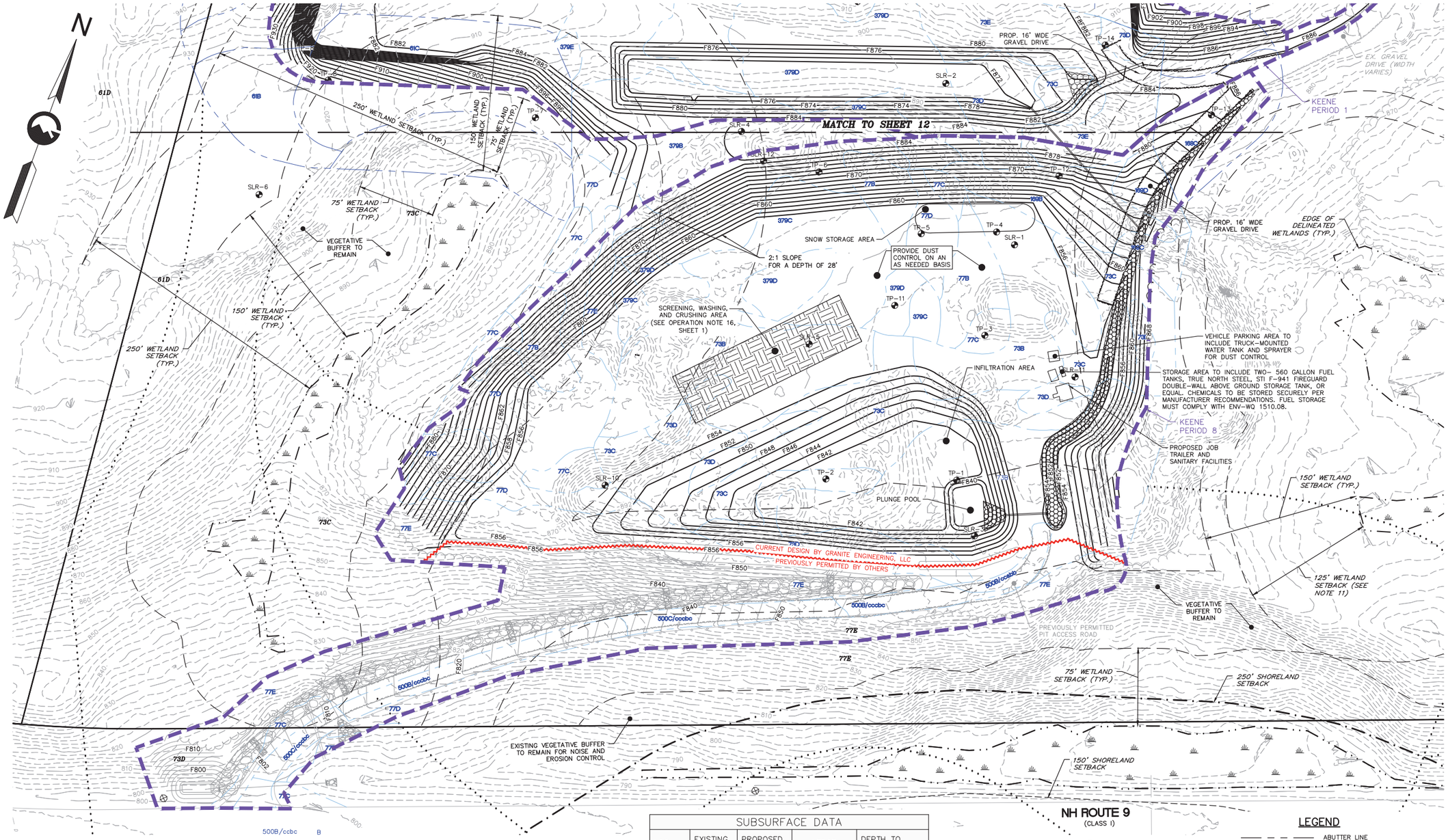
STAMP:
STATE OF NEW HAMPSHIRE
BRENTON S. COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'
SHEET: 15 OF 22		



SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSKI)

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C
159B	SUNAPEE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
159C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
159D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 8–15% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

SUBSURFACE DATA

LOG	EXISTING GROUND	PROPOSED GRADE	LEDGE	DEPTH TO GROUNDWATER
T-1	881	854.5	NONE TO 867.0	---
T-2	878	854.5	NONE TO 863.0	---
TP-3	872	855.5	NONE TO 858.0	---
TP-4	874.5	870	NONE TO 859.5	---
TP-5	882	876	NONE TO 869.0	---
TP-6	887	887	NONE to 873.0	---
TP-7	893	893	881'	---
TP-8	916	916	913	---
TP-9	927	927	918	---
TP-10	910	910	904.5	---
TP-11	881	865	867	---
TP-12	875	875	867	---
TP-13	882	882	876	---
TP-14	903	903	897	---
TP-15	942	942	936	---
TP-16	980	980	975	---
SLR-1	874	865	NONE TO 853.5	---
SLR-2	894	894	889	---
SLR-3	867	852	NONE TO 842	---
SLR-4	888	888	873	---
SLR-5	890	886	862	---
SLR-6	920	920	910	---
SLR-10	884	854	NONE TO 829.0	42.9
SLR-11	871.5	855	NONE TO 795.5	NONE TO 45.2
SLR-12	888.5	888.5	877.5	1.5

SUBSURFACE DATA FROM TEST PIT, BORING, AND WELL INSTALLATION LOGS CONTAINED IN THE LIMITED GEOHYDROLOGIC INVESTIGATION BY SLR INTERNATIONAL CORPORATION, DATED MARCH 25, 2022.

NH ROUTE 9
(CLASS I)

DIG SAFE
811
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DAMAGE PREVENTION SYSTEM
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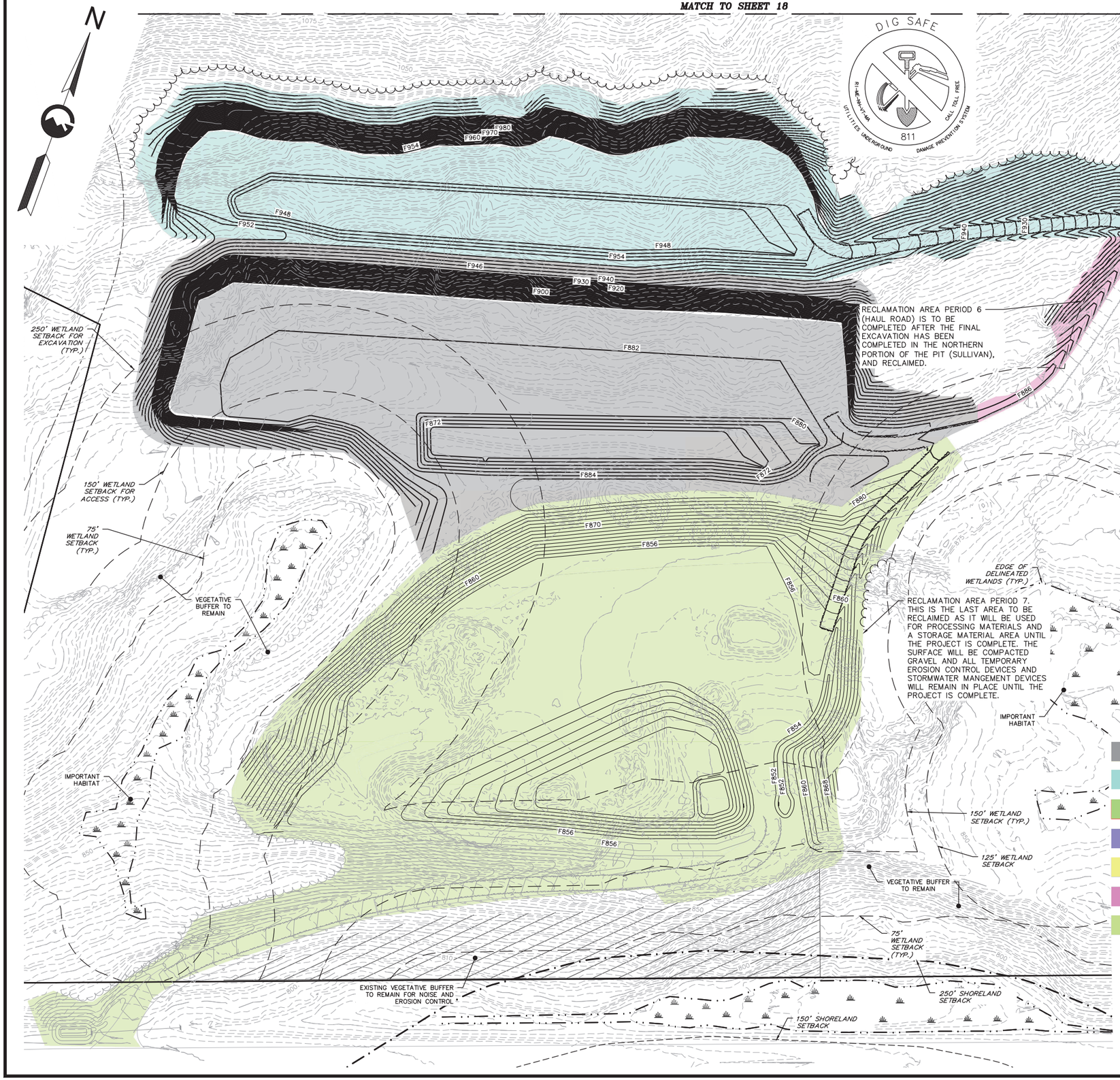
SHEET: 16 OF 22		

133

P:\23\23020111\dwg\Production Plans\23020111-KC&M PLAN.dwg, KC&M PLAN 15, 2/3/2025 8:10:56 AM, jastrid, DWG To PDF.pc3, ANSI full bleed D (34.00 x 22.00 Inches), 1:1

MATCH TO SHEET 18



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6. G2 HOLDINGS WILL PROVIDE THE PLANNING BOARD WITH A COPY OF ITS REGULAR PROGRESS REPORT TO NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
7. VIOLATION OF ANY CONDITION OF THIS PERMIT MAY RESULT IN REVOCATION OF THE PERMIT BY THE REGULATOR.

RECLAMATION NOTES:

1. ANY EXCAVATED AREA OF 5 CONTIGUOUS ACRES OR MORE, WHICH IS DEPLETED OF COMMERCIAL EARTH MATERIALS, EXCLUDING BEDROCK, OR ANY EXCAVATION FROM WHICH EARTH MATERIALS OF SUFFICIENT WEIGHT OR VOLUME TO BE COMMERCIALLY USEFUL HAVE NOT BEEN REMOVED FOR A 2-YEAR PERIOD, SHALL BE RECLAIMED IN ACCORDANCE WITH RSA 155-E:5, WITHIN 12 MONTHS FOLLOWING SUCH DEPLETION OR 2-YEAR NON-USE, REGARDLESS OF WHETHER OTHER EXCAVATION IS OCCURRING ON ADJACENT LAND IN CONTIGUOUS OWNERSHIP. EACH OPERATOR, OTHER THAN THE OPERATOR OF STATIONARY MANUFACTURING PLANTS WHICH ARE EXEMPT FROM PERMIT REQUIREMENTS PURSUANT TO RSA 155-E:2, III, SHALL PREPARE AND SUBMIT FOR THE REGULATOR'S RECORD A RECLAMATION PLAN FOR THE AFFECTED LAND, INCLUDING A TIMETABLE FOR RECLAMATION OF THE DEPLETED AREAS WITHIN THE RECLAMATION SITE.
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COLOR LEGEND:

RECLAMATION AREA PERIOD 1 (195,375 SF) (2,420 CY)
LOAM - $85/CY = $205,700 / SEED $50/LB APP RATE 32 LBS/ACRE
$1,600/ACRE x 4.49 = $7,177. TOTAL COST = $212,877

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LBS/ACRE $1,600/ACRE x 3.46 = $5,528. TOTAL COST = $163,628

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LBS/ACRE $1,600/ACRE x 3.43 = $5,492. TOTAL COST = $162,742

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GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

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GORDON SERVICES KEENE

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RECLAMATION PLAN

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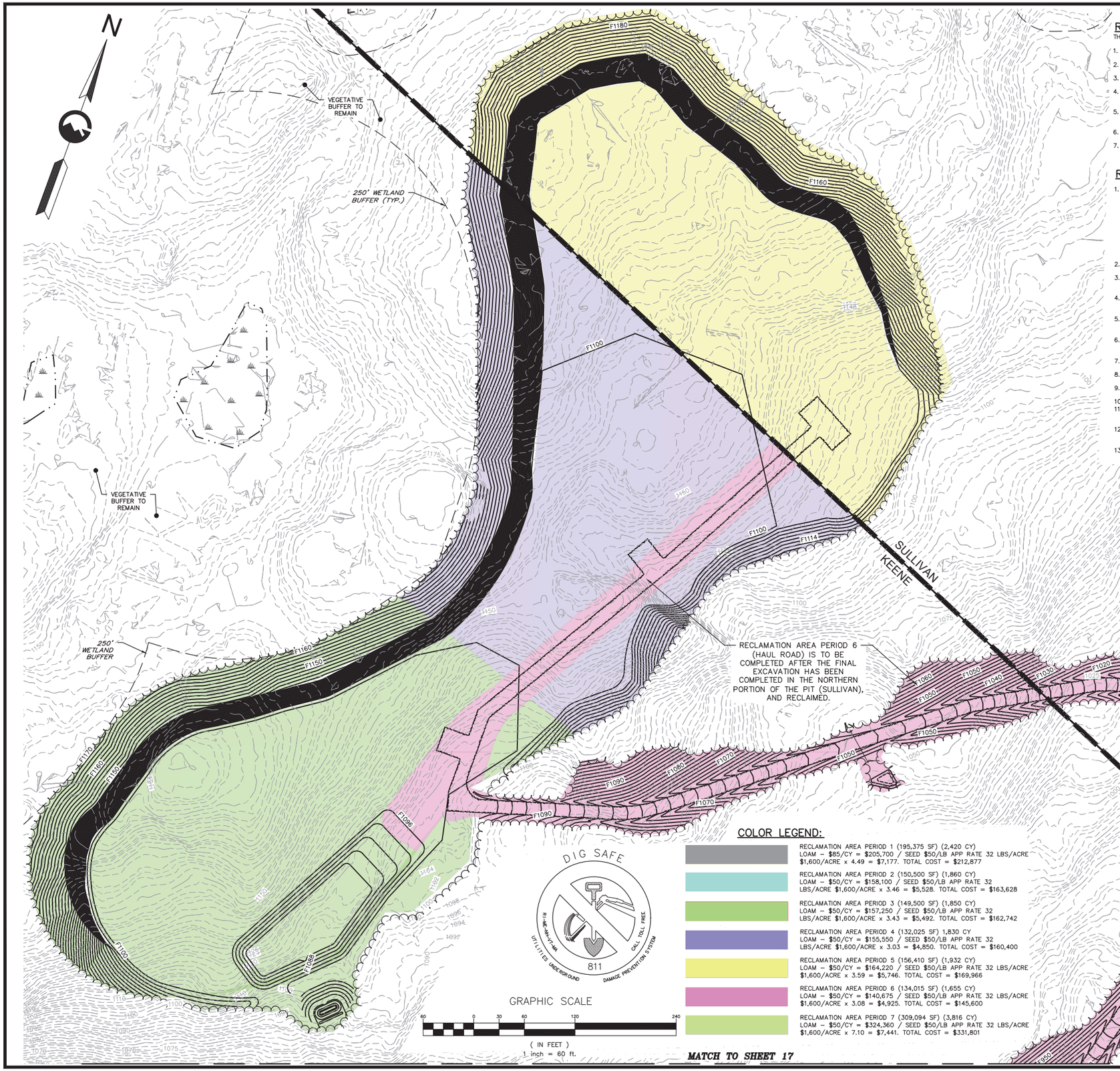
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=60'
SHEET: 17 OF 22		



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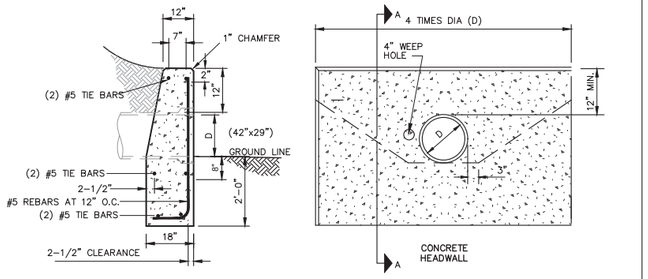
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=60'
SHEET: 18 OF 22		



SECTION A–A
CONCRETE HEADWALL

FRONT ELEVATION

CLASS B CONCRETE – SCHEDULE FOR REINFORCED CONCRETE

PIPE DIAMETER	12"	15"	18"	24"	30"	36"	42"	48"	54"	60"
NUMBER	4	4	4	4	4	4	4	4	4	4
LENGTH OF BARS	3'-0"	3'-0"	3'-0"	3'-0"	4'-0"	4'-0"	5'-0"	5'-0"	6'-0"	6'-0"

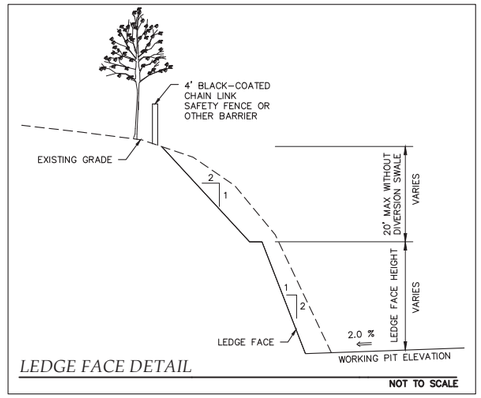
CLASS B CONCRETE – SCHEDULE FOR REINFORCED CONCRETE

PIPE DIAMETER	12"	15"	18"	24"	30"	36"	42"	48"	54"	60"
CONCRETE QUANTITY (YDS)	1.0	1.3	1.8	2.7	3.5	4.9	6.4	8.0	10.0	12.3

NOTES:
1. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST NHDOT SPECIFICATIONS.
2. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM.

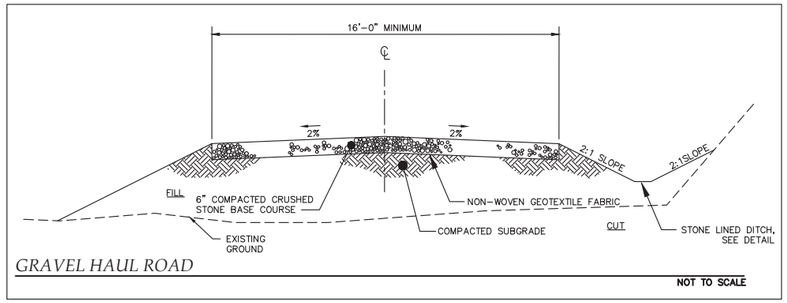
TYPICAL CONCRETE HEADWALL DETAIL

NOT TO SCALE



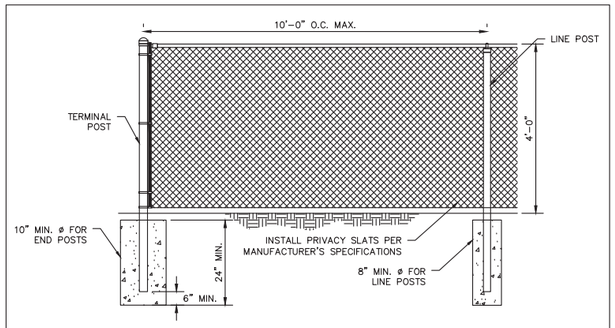
LEDGE FACE DETAIL

NOT TO SCALE



GRAVEL HAUL ROAD

NOT TO SCALE



CHAIN LINK FENCE DETAIL

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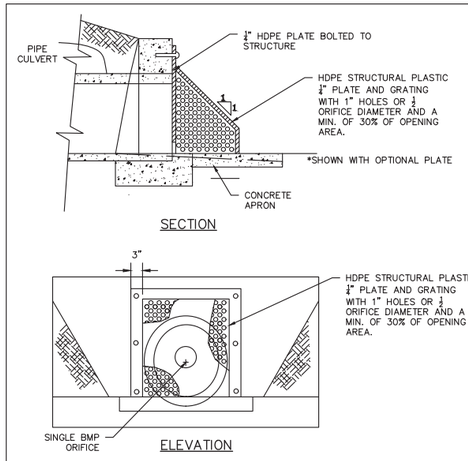
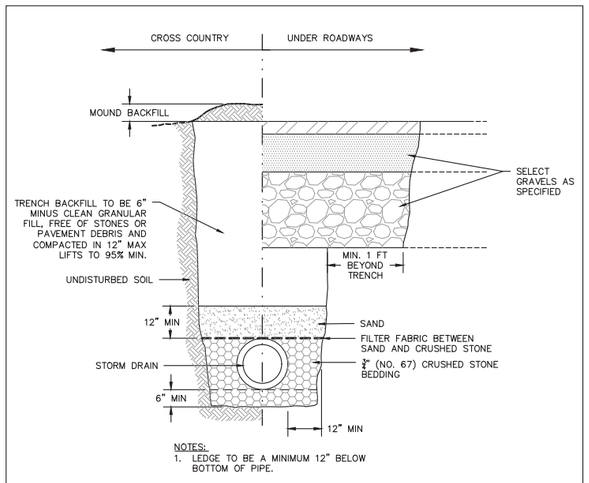


TRASH RACK DETAIL

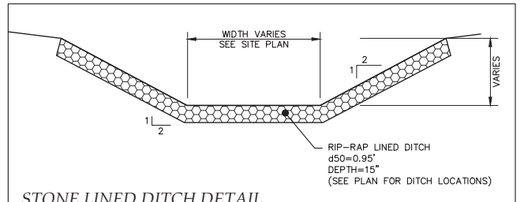
NOT TO SCALE



NOTES:
1. LEDGE TO BE A MINIMUM 12" BELOW BOTTOM OF PIPE.

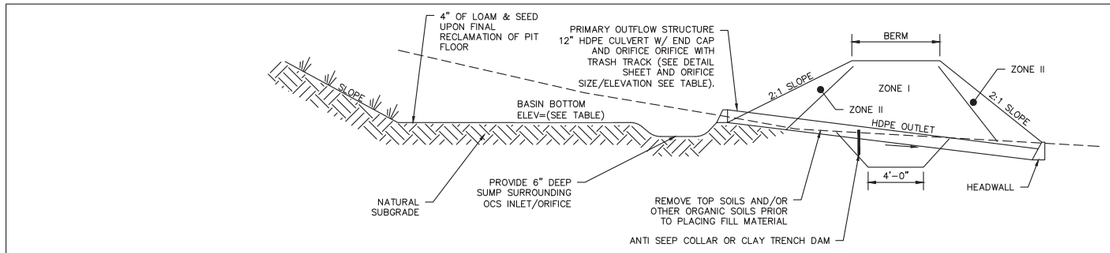
STORM DRAIN TRENCH DETAIL

NOT TO SCALE



STONE LINED DITCH DETAIL

NOT TO SCALE



NOTES:
1. CONTRACTOR TO NOTIFY DIG–SAFE 72 HOURS PRIOR TO START OF CONSTRUCTION
2. CLEAR AND CUT THE AREA TO THE NECESSARY EXTENT. CONTRACTOR TO PROPERLY DISPOSE OF ALL DEBRIS.
3. ALL SILTATION AND TEMPORARY EROSION CONTROLS MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS PRIOR TO GRUBBING OF CLEARED AREAS.
4. CONTRACTOR TO COMPLETE GRUBBING AND PROPERLY DISPOSE OF ALL DEBRIS. STOCKPILE ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL IN UPLAND AREAS. ALL STOCKPILES TO BE SEEDED AND, IF NECESSARY, SURROUNDED WITH HAY BALES TO PREVENT LOSSES DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY FOR CONSTRUCTION ACTIVITIES. ALL CROSSINGS TO BE PROTECTED BY HAY BALE BARRIERS TO PREVENT EROSION.
6. CONSTRUCT CUT–OFF TRENCH (PART OF ZONE I).
7. CONSTRUCT OUTLET AND OVERFLOW STRUCTURE, CULVERT, ANTI SEEP COLLARS, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS AND DETAILS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS OF DISTURBANCE BY CONSTRUCTION. TOPSOIL MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ALL DELETERIOUS MATERIAL. TOPSOIL SHALL BE A MINIMUM OF 4–INCHES OF COMPACTED THICKNESS. UPON PLACEMENT ON TOPSOIL, FINISHED AREAS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ALL PROBLEM AREAS UNTIL GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR AND REPLACE TEMPORARY EROSION CONTROL MEASURES AS NECESSARY UNTIL THE WHOLE CONSTRUCTION ARE HAS BEEN STABILIZED (MINIMUM ONE WINTER).
12. REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES AFTER STABILIZATION.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE THEY ARE PERFORMED IN SUCH WAYS AS TO NOT ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL, STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I:
WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6–INCH SIZE STONES AND GRADATION AS INDICATED BELOW. PLACE IN MAX. 12–INCH THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557. SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION REMOVE ORGANIC SOILS.

SIEVE SIZE	% BY WEIGHT PASSING
6–INCH	100
NO. 4	50–100
NO. 40	30–70
NO. 200	20–40

ZONE II:
DRAINAGE LAYER: PLACE IN MAX. 12–INCH THICK LIFTS TO 95% OF MAX DRY DENSITY IN ACCORDANCE WITH ASTM D1557

SIEVE SIZE	% BY WEIGHT PASSING
1–INCH	100
NO. 4	70–100
NO. 200	0–12 (IN SAND PORTION ONLY)

OUTLET CONTROL STRUCTURE ELEVATIONS

POND ID	BASIN BOTTOM	ORIFICE SIZE	ORIFICE ELEVATION	OUTLET PIPE SIZE	OUTLET PIPE ELEVATION
SF5	1088.00	6"	1088.00	12"	1088.00
SF6	948.00	6"	948.00	12"	948.00
SF7	872.00	10"	872.00	12"	872.00
SF1	866.00	N/A	N/A	N/A	N/A
SF8	842.00	N/A	N/A	N/A	N/A

SEDIMENT RETENTION POND DETAIL

NOT TO SCALE

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land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

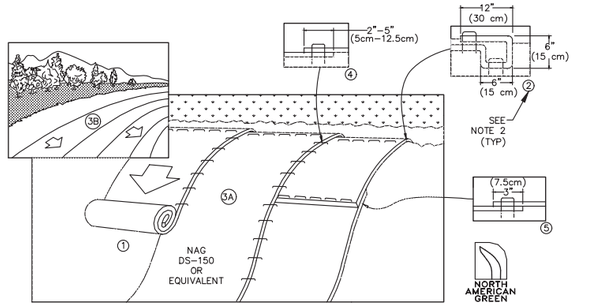
STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23–0201–1	FEBRURARY 3, 2025	AS SHOWN
SHEET:	19 OF 22	

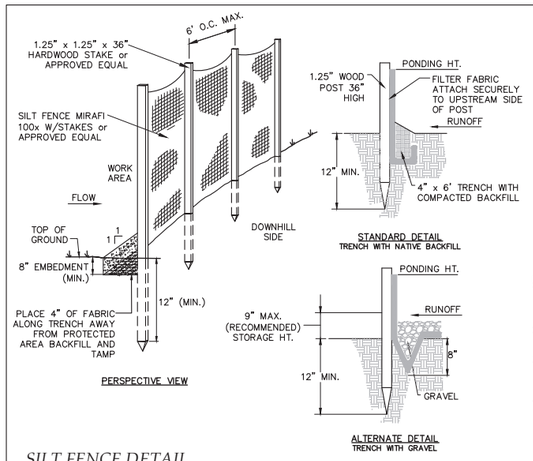


NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN or (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/ STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"–5" (5cm–12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH. NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
6. THERE SHALL BE NO PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

EROSION CONTROL BLANKET DETAIL

NOT TO SCALE



NOTES:

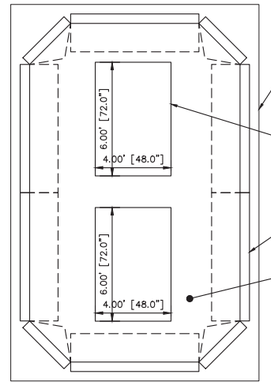
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL

NOT TO SCALE

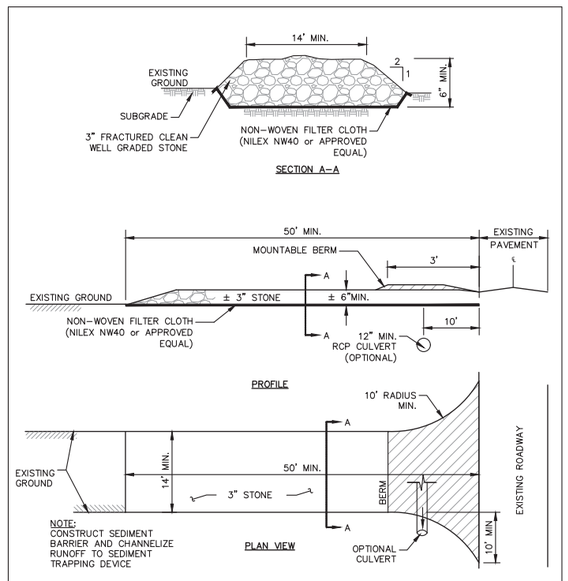


NOTES:

1. PROPOSED 1,000 GALLON DIESEL FUEL TANK REQUIRES MINIMUM 1,232 GALLON CONTAINMENT VOLUME.
2. CONFIGURATION SHOWN IN DETAIL PROVIDES 2,116 GALLONS, NOT EXCLUDING FUEL TANK AND SUPPORTS.
3. CONTAINMENT WALL SYSTEM MAY CHANGE WITH THE APPROVAL OF THE DESIGN ENGINEER.

ABOVE GROUND FUEL TANK CONTAINMENT DETAIL

NOT TO SCALE



NOTES:

1. PLACE TEMPORARY STONE CHECK DAM (D_{50} = 2" MIN) TO THE LINES, GRADES AND LOCATIONS AS SHOWN ON THE APPROVED PLAN OR AS FIELD DIRECTED BY THE ENGINEER.
2. STONE SIZE TO BE INCREASED TO D_{50} = 4" WHEN GRADES EXCEED 8% OR VELOCITIES EXCEED 6.0 FPS.
3. SET SPACING OF STONE CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH EROSION STONE (D_{50} = 4" MIN) OR LINER (NAG DS–150) AS NEEDED OR DIRECTED BY THE ENGINEER.
5. REMOVE STONE CHECK DAM WHEN NO LONGER NEEDED. AFTER BARRIER IS REMOVED, STABILIZE WITH VEGETATION.
6. REMOVE ALL SEDIMENT, REGRADE/VEGETATE AS NECESSARY OR AS FIELD DIRECTED BY THE ENGINEER.

GRADATION:

% FINER BY WEIGHT	
STONE SIZE	D_{50} = 2"
0.5"	0–15%
1"	15–30%
1.5"	30–50%
2"	50–90%
3"	100%

STONE CHECK DAM DETAIL

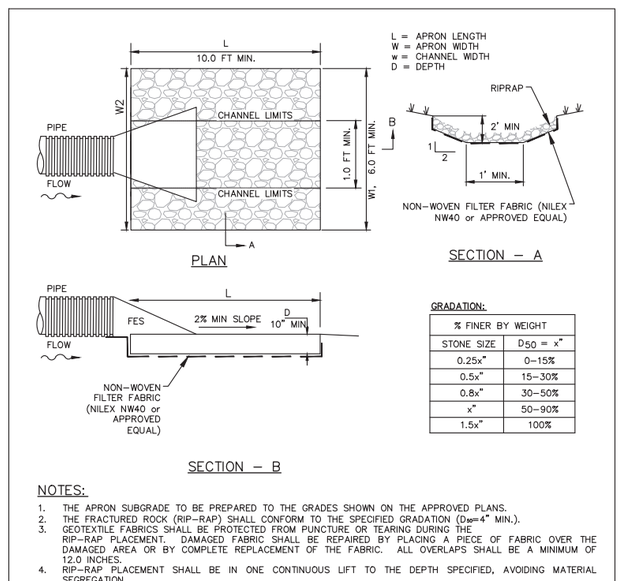
NOT TO SCALE

NOTES:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT–OF–WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY . WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE



GRADATION:

% FINER BY WEIGHT	
STONE SIZE	D_{50} = x"
0.25x"	0–15%
0.5x"	15–30%
0.8x"	30–50%
x"	50–90%
1.5x"	100%

NOTES:

1. THE APRON SUBGRADE TO BE PREPARED TO THE GRADES SHOWN ON THE APPROVED PLANS.
2. THE FRACTURED ROCK (RIP–RAP) SHALL CONFORM TO THE SPECIFIED GRADATION (D_{50}=4" MIN.).
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE RIP–RAP PLACEMENT. DAMAGED FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS SHALL BE A MINIMUM OF 12.0 INCHES.
4. RIP–RAP PLACEMENT SHALL BE IN ONE CONTINUOUS LIFT TO THE DEPTH SPECIFIED, AVOIDING MATERIAL SEGREGATION.

MAINTENANCE

THE APRON SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT (≥ 3"). IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE VEGETATED CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE PERIODICALLY INSPECTED FOR DEGRADATION. IF DEGRADATION HAS OCCURRED, REPAIR IMMEDIATELY. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS AND SEDIMENT THAT COULD IMPAIR UPSTREAM CHANNEL CHARACTERISTICS. ALL DEBRIS OR SEDIMENT SHOULD BE REMOVED OFF SITE and DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LAWS.

STRUCTURE	LENGTH	W1	W2	D50	DEPTH
HW#1B	13'	17'	4'	4"	10"
HW#2B	16'	20'	4'	6"	15"
HW#3B & HW#4B	30'	36'	6'	12"	30"
HW#5B	9'	13'	4'	4"	10"
HW#6B	12'	6'	2'	4"	10"
HW#7B	7'	9'	2'	4"	10"
HW#8B	10'	13'	3'	4"	10"
HW#10B	27'	35'	8'	12"	30"
HW#11B (FINAL)	11'	15'	4'	4"	10"

OUTLET PROTECTION DETAIL

NOT TO SCALE

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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23–0201–1	FEBRUARY 3, 2025	AS SHOWN
SHEET: 20 OF 22		

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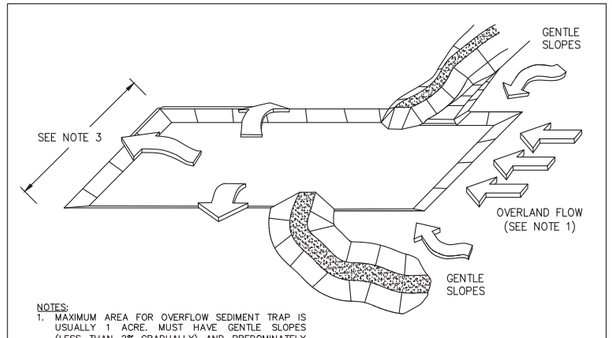


IF MORE THAN 5000 CUBIC YARDS ARE BLASTED:
IDENTIFY DRINKING WATER WELLS LOCATED WITHIN 1/2 MILE OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLE PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.

ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.

(1) LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
  (a) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
  (b) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON□SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF SITE DISPOSAL.
  (c) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF–SITE DISPOSAL.
  (d) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
  (e) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
  (f) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
(2) EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
  (a) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
  (b) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
(3) PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
(4) MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
  (a) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
  (b) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
(5) SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
  (a) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE
    1. STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
    2. SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
    3. LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
    4. INSPECT STORAGE AREAS WEEKLY.
    5. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
    6. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
    7. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED
  (a) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
    1. EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
    2. PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
    3. HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
    4. USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
    5. PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
  (a) THE TRAINING OF ON□SITE EMPLOYEES AND THE ON□SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
  (b) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES [NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6: "BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT" OR ITS SUCCESSOR DOCUMENT.]

BEST MANAGEMENT PRACTICES FOR BLASTING

1. CONTACT DIG SAFE AT LEAST 72 HOURS BEFORE ANY EXCAVATION WORK.
2. CUT AND CLEAR TREES AND BRUSH WITHIN LIMITS OF CLEARING SHOWN ON PLAN.
3. INSTALL ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES PRIOR PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS. THE STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
4. REMOVE STUMPS FROM THE SITE FOR SITE GRADING TO COMMENCE. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR UNLESS A STUMP DUMP IS NOTED ON THE PLAN. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTION ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED BY PERIMETER CONTROLS TO PREVENT EROSION.
5. THIS PROJECT IS TO BE MANAGED IN A MANOR THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
6. ALL PERMANENT EROSION CONTROL MEASURES AND DETENTION FACILITIES SHOULD BE INSTALLED PRIOR TO GRADING FOR PROJECT.
7. COMMENCE EARTHWORK OPERATIONS.
8. ALL DRAINAGE SYSTEMS AND OTHER UTILITIES SHOULD BE CONSTRUCTED FROM LOW GRADE TO HIGH GRADE. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF PERIMETER CONTROLS UNTIL THE SITE HAS BECOME FULLY STABILIZED.
9. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
10. ALL STORMWATER FLOWS SHALL NOT BE DIRECTED TO THE STORMWATER MEASURES UNTIL ALL CONTRIBUTING AREAS HAVE BEEN DEEMED STABLE. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
11. COMPLETE GRADING ACTIVITIES AND WHEN COMPLETE, BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE THE SPECIFIED THICKNESS.
12. FINE GRADE ALL TURF AREAS AND COMPLETE PERMANENT SEEDING AND LANDSCAPING BY HYDROSEEDING WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
13. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE ESTABLISHED THEMSELVES.

CONSTRUCTION SEQUENCE

1. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
2. THIS PROJECT IS TO BE MANAGED IN A MANOR THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE TOWN OF MILFORD SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV–A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. EARTHWORK SHALL BE LIMITED TO THE AREAS WITHIN THE LIMITS OF CLEARING AS SHOWN ON THE PLAN. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS.
17. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
18. PERIMETER CONTROLS MUST BE INSTALLED PRIOR TO EARTHWORK.
19. EROSION CONTROL MEASURES USED SHALL BE INSPECTED AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. ALL DEFICIENCIES SHALL BE FIXED IN ORDER TO KEEP OPERATION EFFECTIVE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
20. ALL STORMWATER PRACTICES AND DRAINAGE SWALES ARE TO BE INSTALLED PRIOR TO ROUGH GRADING OF THE SITE. THEY SHOULD BE FULLY STABILIZED PRIOR TO RECEIVING STORMWATER. PERIODIC INSPECTION AND MAINTENANCE TO MAINTAIN DESIGN INTENT IS REQUIRED.
21. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE THE REQUIRED AMOUNT OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
22. IF DURING CONSTRUCTION A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
23. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
23. ALL DUST SHALL BE CONTROLLED BY THE USE OF WATER IN ACCORDANCE WITH ENV–A 1000.
24. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
25. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" ON ALL 3:1 SLOPES OR GREATER.
26. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS.
27. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS.

EROSION CONTROL NOTES

NOTES:
1. MAXIMUM AREA FOR OVERFLOW SEDIMENT TRAP IS USUALLY 1 ACRE. MUST HAVE GENTLE SLOPES (LESS THAN 2% GRADUALLY) AND PREDOMINATELY OVERLAND SHEET FLOW.
2. MAXIMUM PERMANENT WET DEPTH IS 2 FEET. OVERFLOW SEDIMENT TRAPS MAY NOT BE EFFECTIVE FOR HIGH GROUNDWATER TABLE AND INFLOWS.
3. USE THE MOST PERMEABLE SEDIMENT CONTROL IN LABELED AREA SO AS TO MAXIMIZE TRAVEL TIME AND SETTLING OF SEDIMENT.

SEDIMENT TRAP DETAIL

NOT TO SCALE

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 BE DONE OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES 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 APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

WINTER CONSTRUCTION NOTES

1. ALL AREAS TO BE SEEDED SHALL BE PREPARED TO PROVIDE A REASONABLY FIRM BUT FRIABLE SEED BED.
2. SLOPED AREAS SHALL NOT BE LEFT TOO SMOOTH; THE SURFACE SHALL BE LEFT IN A RUFFLED CONDITION SUCH AS MAY BE PRODUCED BY THE USE OF TRACKED VEHICLES RUN UP AND DOWN THE SLOPES. SMOOTH, COMPACTED SLOPES, SUCH AS FROM BLADING, WHICH MIGHT ALLOW THE FREE FLOW OF WATER DOWN THEM SHALL BE DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE–RAKED, OR HAND–WORKED TO GIVE THE EFFECT OF MINIATURE TERRACES, PARTICULARLY IN SILTY OR CLAYEY SOILS. THE SLOPES SHALL BE LEFT SMOOTH ENOUGH TO ENABLE MOWING.
3. LAWN AREAS, SUCH AS WHERE LOAM HAS BEEN SPREAD, SHALL BE PREPARED FOR SEEDING. THE LOAM SHALL BE SPREAD UPON THE PREVIOUSLY PREPARED SUBGRADE SURFACE TO THE DEPTH OF 4" ± 1/2" UNLESS OTHERWISE SPECIFIED AND SHALL BE RAKED CAREFULLY TO REMOVE ALL OBJECTIONABLE MATERIALS. LOAM SHALL BE SPREAD IN SUCH A MANNER AS TO ESTABLISH A LOOSE, FRIABLE SEEDBED. IN ORDER TO MAINTAIN A CONSISTENT GRADE, LOAM PLACED ADJACENT TO LAWNS OR WHERE DIRECTED SHALL BE COMPACTED WITH A ROLLER WEIGHING APPROXIMATELY 100 POUNDS PER FOOT OF ROLLER WIDTH. ALL DEPRESSIONS EXPOSED DURING THE ROLLING PROCEDURE SHALL BE FILLED WITH ADDITIONAL LOAM, AND ROLLED.
4. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE OF VIABLE PARTS OF PROHIBITED INVASIVE PLANTS LISTED IN TABLE 3800.1 OF PART AGR 3800. LOAM SHALL BE GENERALLY FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN 2" IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.6. LOAM SHALL CONTAIN A MINIMUM OF 3 PERCENT AND A MAXIMUM OF 10 PERCENT OF ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. NOT MORE THAN 65 PERCENT SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D 1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE NO. 4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
5. ALL AREAS TO BE SEEDED SHALL MEET THE SPECIFIED GRADES AND SHALL BE FREE OF GROWTH AND DEBRIS.
6. CARE SHALL BE TAKEN TO PREVENT THE FORMATION OF LOW PLACES AND POCKETS WHERE WATER WILL STAND.
7. WHERE RYEGRASS HAS BEEN PLANTED FOR TEMPORARY EROSION CONTROL AND HAS NOT BEEN ELIMINATED PRIOR TO THE COMPLETION OF THE WORK, SUCH AREAS SHALL BE DISC–HARROWED AT LEAST 3" DEEP AND SEEDED WITH PERMANENT GRASSES TO PREVENT THE RYEGRASS FROM RESEEDING AND BECOMING COMPETITIVE WITH AND RETARDING DEVELOPMENT OF THE PERMANENT COVER.
8. FERTILIZER SHALL BE UNIFORMLY APPLIED. THE RATE OF APPLICATION SHALL BE A RATE OF 2.0 POUNDS OF NITROGEN PER 1,000 SQUARE FEET. NOT LESS THAN THREE MONTHS SHALL ELAPSE BETWEEN THE INITIAL FERTILIZATION AND THE REFERTILIZATION. NO REFERTILIZATION WILL BE ALLOWED BETWEEN NOVEMBER 1, OR WHEN THE GROUND HAS FROZEN, AND THE FOLLOWING APRIL 1, OR BETWEEN JUNE 1 AND THE FOLLOWING SEPTEMBER 1. REFERTILIZATION WILL BE ALLOWED BETWEEN AUGUST 15 AND 31 ONLY WHEN IT IS DETERMINED THAT THE PERMANENT GRASSES HAVE DEVELOPED WELL AND FEW WEEDS HAVE APPEARED, AND SUCH REFERTILIZATION WILL NOT TEND TO PROMOTE THE GROWTH OF NOXIOUS WEEDS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND CARING FOR SEEDED AREAS UNTIL ACCEPTANCE OF THE WORK. CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE ANY DAMAGE TO SEEDED AREAS CAUSED BY PEDESTRIAN OR VEHICULAR TRAFFIC OR OTHER CAUSES.
10. THE SEEDED AREAS SHALL BE CAREFULLY AND SUITABLY WATERED AS NECESSARY TO PRODUCE A SATISFACTORY GROWTH.
11. AREAS SEEDED WITH PARK SEED SHALL BE MOWED WHENEVER NECESSARY TO KEEP THE GROWTH BETWEEN 3 AND 6" IN ORDER TO ALLOW LIGHT TO PENETRATE TO THE SHORTER, SLOWER GROWING SPECIES IN THE MIXTURE.
12. AREAS SEEDED WITH SLOPE SEED MAY BE ORDERED MOWED WHENEVER THE CONTRACT EXTENDS INTO A SECOND GROWING SEASON. WEEDS GROWING IN AREAS SEEDED WITH THE SLOPE SEED SHALL BE CUT BACK TO PREVENT THEM FROM DOMINATING THE DESIRED GRASS PLANTS
13. SELECT ONE OF THE GRASS/LEGUME MIXES BASED ON THE PERCENT WEIGHT PASSING A NO. 200 SIEVE AS OUTLINED ABOVE. MIX 2 IS RECOMMENDED IF SUPPRESSION OF WOODY GROWTH IS DESIRED AND THERE ARE MORE THAN 15 PERCENT FINES. THE STANDARD CONSERVATION MIXES AVAILABLE FROM LOCAL SEED SUPPLIERS ARE NOT RECOMMENDED ON DROUGHTY SITES. THESE MIXES USUALLY PROVIDE A GREEN COVER VERY QUICKLY, BUT THE PLANT SPECIES BEGIN TO DIE IN 2–4 YEARS ON STERILE AND DROUGHTY SITES.
14. FOR MIX 1, IN LIEU OF A SOIL TEST, LIME AT THE RATE OF 1 TON/ACRE (50 LBS/1,000 SQ FT). FERTILIZE WITH 500 LBS/ACRE (11 LBS/1,000 SQ FT) OF 10–20–20 OR EQUIVALENT. INCORPORATE LIME, FERTILIZER, AND SEED USING RAKES IF SEEDING IS DONE BY HAND. IT IS STRONGLY RECOMMENDED TO USE A BULLDOZER TO "TRACK" THE SITE AFTER SEEDING. TRACKING WILL INCORPORATE THE LIME, FERTILIZER, AND SEED TO PROMOTE SEED GERMINATION. FOR MIXES 2 & 3, IN LIEU OF A SOIL TEST, LIME AT THE RATE OF 2 TONS/ACRE (90 LBS/1,000 SQ FT). FERTILIZE WITH 500 LBS/ACRE (11 LBS/1,000 SQ FT) OF 10–20–20 OR EQUIVALENT. THE SEED NEEDS TO BE INCORPORATED TO ENSURE SUCCESS AND TO SHORTEN ESTABLISHMENT TIME. THIS IS ESPECIALLY TRUE OF MIXES 1 AND 2, AND IS MOST CRITICAL FOR THE LARGE SEEDED LEGUMES IN MIX 2. ON THE FLATTER SLOPES, USE A BULLDOZER TO "TRACK IN" THE SEED.
15. WHEN MULCHING FOR MIX 1, WEED FREE MULCH, CLEAN STRAW IS RECOMMENDED. MULCH AT THE MAXIMUM RATE OF 500–700 LBS/ACRE. HIGHER MULCHING RATES AND MULCH WITH WEED SEED CONTENT WILL INHIBIT SEEDING SUCCESS SIGNIFICANTLY. IF THE EROSION HAZARD IS LOW AND THE SEED IS INCORPORATED, MULCHING IS NOT NECESSARY FOR SEEDING SUCCESS. DO NOT APPLY MULCH PRIOR TO TRACKING WITH A BULLDOZER. WHEN MULCHING FOR MIXES 2 & 3, MULCH WITH WEED FREE HAY OR STRAW AND MULCH AT THE RATE OF 2–3 TONS/ACRE FOR MIX 2 AND 12 TONS/ACRE FOR MIX 3. THE HIGHER MULCHING RATE IS RECOMMENDED WHERE SEED INCORPORATION IS DIFFICULT. THIS IS ESPECIALLY CRITICAL FOR MIX 2.
16. WHEN SEEDING LARGE AREAS AND/OR STEEP SLOPES APPLY LIME, SEED, AND FERTILIZER WITH A HYDROSEEDER AND, DEPENDING ON THE CONSISTENCY OF THE SOIL MATERIAL, STEEPNESS OF SLOPE, AND SEED MIXTURE USED: (A) PRESS THE SEED INTO THE SOIL BY TRACKING WITH A BULLDOZER, OR (B) COVER THE SEED BY WALKING BACK AND FORTH OVER STEEP LOOSE SANDY SLOPES, OR (C) APPLY MULCH AND A TACKIFIER TO HOLD THE MULCH IN PLACE. WHEN SEEDING FLAT TO GENTLY SLOPING AREAS (2:1 SLOPES MAXIMUM) APPLY LIME, SEED AND FERTILIZER USING FARM TYPE SPREADERS AND TRACK THE SITE WITH A BULLDOZER OR APPLY MULCH.
17. PRIMARY SEEDING DATES BEGIN AS SOON AS THE SNOW MELTS IN THE SPRING AND ENDS MAY 15. THE IMPORTANCE OF EARLY SEEDING CANNOT BE OVEREMPHASIZED. THIS IS ESPECIALLY TRUE FOR MIX 1. DEPENDING ON WEATHER CONDITIONS, SUBSTANTIAL FAILURE CAN BE EXPECTED IF SEEDING IS DONE LATER. LATE SUMMER AND EARLY FALL SEEDLINGS ARE NOT RECOMMENDED FOR MIZES 1 AND 2. IF LATE SEEDINGS OF MIXES 1 AND 2 ARE NECESSARY, THEY SHOULD BE DONE AFTER OCTOBER 20 TO PREVENT FALL GERMINATION AND SUBSEQUENT WINTERKILL. MIX 3 CAN ALSO BE SEEDED FROM AUGUST 15 TO SEPTEMBER 1 WITH CONVENTIONAL SEEDING.
18. THE PLANT SPECIES IN MIXES 1 AND 2 GERMINATE AND GROW SLOWLY. COMPLETE COVER MAY NOT OCCUR FOR 2–4 YEARS. HOWEVER, A WELL–ESTABLISHED STAND WILL ENDURE FOR YEARS. FOLLOW–UP SEEDING MAY BE NEEDED TO ESTABLISH VEGETATION ON THE MORE DIFFICULT PARTS OF SOME SITES. THE NEED TO DO FOLLOW–UP SEEDING CAN BE DETERMINED THE YEAR AFTER THE INITIAL PLANTING.

MIX 1 (WARM SEASON GRASSES)	
KIND OF SEED	POUNDS/ACRE
SWITCHGRASS TRAILBLAZER	6
BIG BLUESTEM NIAGARA	4
LITTLE BLUESTEM	2
SAND LOVEGRASS	4

MIX 2 (LEGUMES AND COOL SEASON GRASSES)	
KIND OF SEED	POUNDS/ACRE
FLATPEA	10
PERENNIAL PEA	2
CROWN VETCH	10
TALL FESCUE	10

MIX 3 (COOL SEASON GRASSES AND LEGUMES)	
KIND OF SEED	POUNDS/ACRE
TALL FESCUE	20
REDTOP	2
BIRDSFOOT TREFOIL	8

TURF ESTABLISHMENT SPECIFICATIONS

1. SECONDARY CONTAINMENT EQUIPMENT USED DURING MOBILE FUELING SHOULD BE SIZED TO CONTAIN THE MOST LIKELY VOLUME OF FUEL TO BE SPILLED DURING A FUEL TRANSFER.
2. PORTABLE CONTAINMENT EQUIPMENT SHOULD BE POSITIONED TO CATCH ANY FUEL SPILLS DUE TO OVERFILLING THE EQUIPMENT AND ANY OTHER SPILLS THAT MAY OCCUR AT OR NEAR THE FUEL FILLER PORT TO THAT EQUIPMENT. THE SELECTION OF CONTAINMENT EQUIPMENT AND ITS POSITIONING AND USE SHOULD TAKE INTO ACCOUNT ALL OF THE DRIP POINTS ASSOCIATED WITH THE FUEL FILLING PORT AND THE HOSE FROM THE FUEL DELIVERY TRUCK.
3. PERSONNEL MUST ATTEND TO THE FUELING PROCESS TO ENSURE THAT ANY SPILLS WILL BE OF LIMITED VOLUME.
4. SECONDARY CONTAINMENT FOR OUTDOOR STORAGE AREAS (FOR FUEL OR OTHER REGULATED SUBSTANCES) MUST BE COVERED WITH A ROOF, PLASTIC SHEETING, OR WATERPROOF TARPAULINS TO KEEP CONTAINERS DRY, EXCEPT WHEN MATERIALS ARE BEING ADDED OR REMOVED. THE AREA MUST BE KEPT FREE OF RAIN, SNOW, AND ICE TO ENSURE SUFFICIENT CONTAINMENT VOLUME REMAINS TO CONTAIN A RELEASE FROM THE LARGEST STORAGE TANK. FOR RELATIVELY SMALL STORAGE AREAS, SPILL CONTAINMENT PALLETS AND COVERS ARE COMMERCIALLY AVAILABLE.
5. IF ANY OF THE FOLLOWING OCCURS, THE SPILL MUST BE IMMEDIATELY REPORTED TO THE NHDES AT (603) 271–3899 OR STATE POLICE AT (603) 223–4381 AFTER 4 P.M. ON WEEKDAYS OR ON WEEKENDS:
   A. THE SPILL IS 25 GALLONS OR MORE.
   B. THE SPILL IS NOT CONTAINED IMMEDIATELY.
   C. THE SPILL AND CONTAMINATION ARE NOT COMPLETELY REMOVED WITHIN 24 HOURS.
   D. THERE IS IMPACT OR POTENTIAL IMPACT TO GROUNDWATER OR SURFACE WATER.

MOBILE FUELING NOTES

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

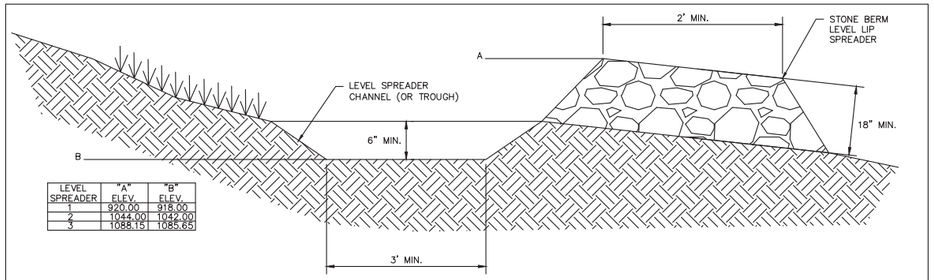
STAMP:
BRENTON J COLE
No. 14744
2/3/25

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23–0201–1	FEBRURARY 3, 2025	AS SHOWN
SHEET: 21 OF 22		



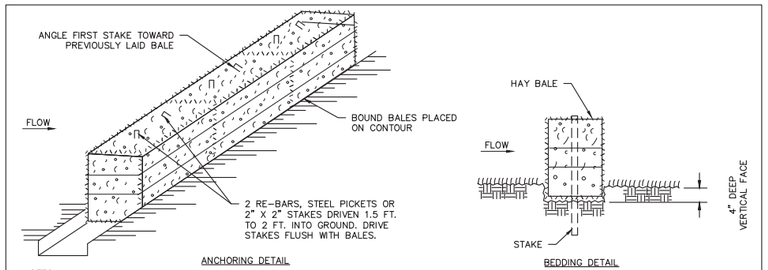
LEVEL SPREADER	"A" ELEV.	"B" ELEV.
1	920.00	918.00
2	1044.00	1042.00
3	1088.15	1085.65

CONSTRUCTION NOTES:
1. IT IS CRITICAL TO INSTALL LEVEL SPREADERS AT A ZERO PERCENT GRADE ALONG THE LENGTH OF THE DISCHARGE LIP. FLOW MUST DISCHARGE UNIFORMLY ALONG THE LENGTH OF THE SPREADER.
2. CARE MUST BE EXERCISED IN SITING THE SPREADER, SO THAT IT DISCHARGES ONTO A GENTLY SLOPING GRADE, WHERE RUNOFF EXITING THE SPREADER WILL NOT RE-CONCENTRATE AND CAUSE EROSION. A SLOPE THAT IS CONCAVE IN SHAPE (SUCH AS A SHALLOW SWALE) IS NOT SUITABLE FOR RECEIVING DISCHARGE FROM A LEVEL SPREADER. SUITABLE SLOPES ARE PLANAR OR CONVEX IN SHAPE, SO THAT FLOW WILL CONTINUE AS DISPERSED SHEET FLOW ACROSS THE SITE.
3. IT IS ESSENTIAL TO STABILIZE THE OUTLET LIP OF THE SPREADER, AND TO DISCHARGE ONTO A WELL STABILIZED RECEIVING AREA (PREFERABLY UNDISTURBED VEGETATION) TO PREVENT EROSION.

MAINTENANCE NOTES:
1. INSPECT AT LEAST ONCE ANNUALLY FOR ACCUMULATION OF SEDIMENT AND DEBRIS AND FOR SIGNS OF EROSION WITHIN APPROACH CHANNEL, SPREADER CHANNEL OR DOWN-SLOPE OF THE SPREADER.
2. REMOVE DEBRIS WHENEVER OBSERVED DURING INSPECTION.
3. REMOVE SEDIMENT WHEN ACCUMULATION EXCEEDS 25% OF SPREADER CHANNEL DEPTH.
4. MOW AS REQUIRED BY LANDSCAPING DESIGN. AT A MINIMUM, MOW ANNUALLY TO CONTROL WOODY VEGETATION WITHIN THE SPREADER.
5. SNOW SHOULD NOT BE STORED WITHIN OR DOWN-SLOPE OF THE LEVEL SPREADER OR ITS APPROACH CHANNEL.
6. REPAIR ANY EROSION AND RE-GRADE OR REPLACE STONE BERM MATERIAL, AS WARRANTED BY INSPECTION.
7. RECONSTRUCT THE SPREADER IF DOWN-SLOPE CHANNELIZATION INDICATES THAT THE SPREADER IS NOT LEVEL OR THAT DISCHARGE HAS BECOME CONCENTRATED AND CORRECTIONS CANNOT BE MADE THROUGH MINOR RE-GRADING.

LEVEL SPREADER DETAIL

NOT TO SCALE



NOTES:
1. BALES SHALL BE PLACED AT THE TOP OF SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4", AND PLACED SO THAT BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR 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.

HAY BALE BARRIER DETAIL

NOT TO SCALE

Wood Turtle

(New Hampshire Species of Special Concern)

Turtles may be attracted to disturbed ground during nesting season (**May 15th – June 30th**) Turtles are most active from **April 15th - October 15th** - maintain silt fences during this time.

Identifying traits
- Neck and forelimbs are orange.
- Characterized by its highly sculpted shell with each large scute taking on an irregular pyramidal shape.
- Adults can be 5-8 inches long.

Habitat Use
- wooded areas near streams
- uplands surrounding streams

NOTE: It is illegal to remove a wood turtle from the wild

Please report sightings to NH Fish & Game at RAARP@wildlife.nh.gov or at 603-271-2461
Photo documentation, location and date/time of observation is helpful.

State laws pertaining to this species

RSA 207:1, FIS 804.02, Fis 1401.03 (a)

RARE TURTLE FLYERS

NOT TO SCALE

PROTECTED SPECIES INFORMATION:

WOOD TURTLE (GLYPTEMYS INSCULPTA)

NH CONSERVATION STATUS: SPECIES OF SPECIAL CONCERN, WILDLIFE ACTION PLAN SPECIES IN GREATEST NEED OF CONSERVATION. LEGALLY PROTECTED IN NEW HAMPSHIRE: POSSESSION, SALE, IMPORT, AND TAKE (HARM, HARASS, INJURING, KILLING) IS ILLEGAL.

STATE RANK STATUS: VULNERABLE TO EXTIRPATION AND EXTINCTION.

DISTRIBUTION: THROUGHOUT NH EXCEPT REGIONS OF HIGH ELEVATION.

DESCRIPTION: A 5-8 INCH TURTLE CHARACTERIZED BY ITS HIGHLY SCULPTED SHELL WHERE EACH LARGE SCUTE TAKES AN IRREGULAR PYRAMIDAL SHAPE. THE NECK AND FORELIMBS ARE ORANGE.

COMMONLY CONFUSED SPECIES: JUVENILE SNAPPING TURTLES.

HABITAT: FOUND IN SLOW-MOVING STREAMS AND CHANNELS WITH SANDY BOTTOMS. EXTENSIVE USE OF TERRESTRIAL HABITATS DURING SUMMER, INCLUDING FLOODPLAINS, MEADOWS, WOODLANDS, FIELDS, AS WELL AS WETLANDS.

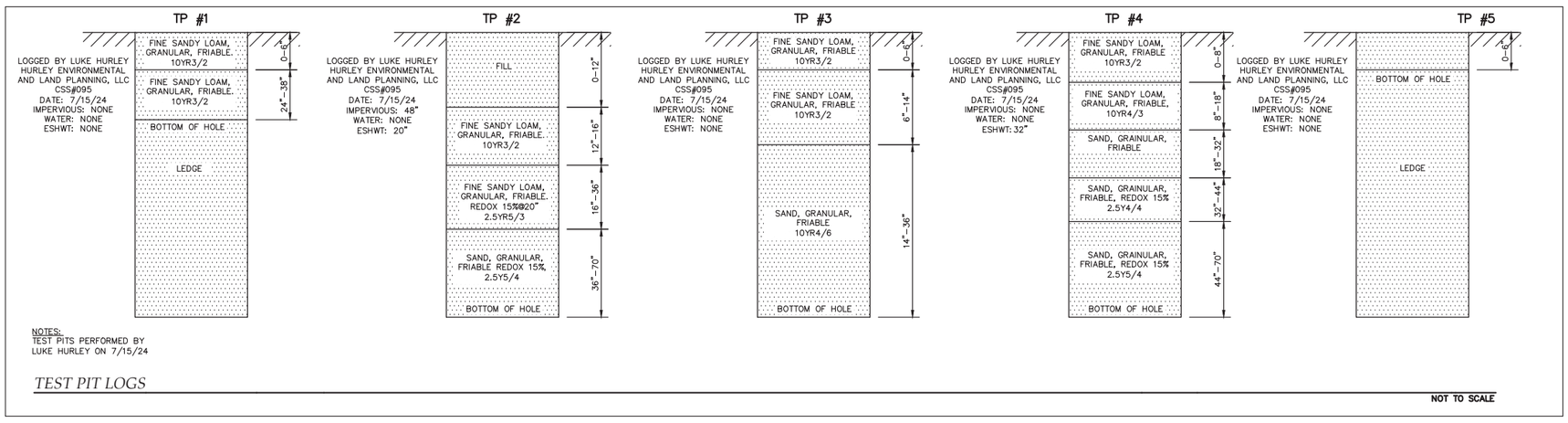
LIFE HISTORY: LAY 4-12 EGGS IN SHALLOW DEPRESSIONS IN SANDY, WELL-DRAINED SOILS. NEST SITES ARE USUALLY NEAR STREAMS BUT MAY ALSO BE IN CLEARINGS, AGRICULTURAL FIELDS, OR OTHER DISTURBED AREAS. HIBERNATE IN SLOW-MOVING STREAMS AND RIVERS UNDER RIVERBANKS, ROOT MASSES, OR WOODY DEBRIS.

CONSERVATION THREATS: ROAD MORTALITY, HABITAT LOSS AND FRAGMENTATION, STREAM ALTERATION, HUMAN COLLECTION, AND INCREASED ABUNDANCE OF SUBSIDIZED PREDATORS.

SOURCE: NEW HAMPSHIRE FISH AND GAME DEPARTMENT © HTTPS://WILDLIFE.STATE.NH.US/WILDLIFE/PROFILES/WOOD-TURTLE.HTML

WILDLIFE PROTECTION NOTES:

- ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB22-1680, NHB21-0316, KEENE SAND AND GRAVEL, WILDLIFE SPECIES OBSERVATION.
- PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
- IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04.
- THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.



NOTES:
TEST PITS PERFORMED BY LUKE HURLEY ON 7/15/24

TEST PIT LOGS

NOT TO SCALE

No.	DATE	REVISIONS COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering
land planning
municipal services

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. BOLE
No. 14744
2/3/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	AS SHOWN
SHEET: 22 OF 22		

P:\23\2302011\dwg\Production Plans\2302011-DETAILS.dwg, DETAILS 4, 1/30/2025 6:00:00 PM, justind, DWG To PDF.pc3, ANSI full bleed D (34.00 x 22.00 Inches), 1:1

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Jeffrey Merritt, Granite Engineering, LLC
150 Dow Street Suite 421
Manchester, NH 03101
jmerritt@graniteeng.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 02/06/2024 (valid until 02/06/2025)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: MUNICIPAL POR - Keene, Sullivan, NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Minor, USEPA - Stormwater Pollution Prevention

NHB ID: NHB24-0314

Town: Keene and Sullivan
Location: Route 9

Project Description: This project proposes the expansion of the existing gravel operations taking place on Keene Tax Map 215 Lot 7 along Route 9. The gravel operations will expand into Sullivan Tax Map 5 Lot 46 and consist of 8 phases. Existing stream crossings along the access road that connects Keene lots 7 and 8, and Sullivan lots 46 and 46-1 will be repaired and permitted. Stream crossing work will only take place on the northern portion of Keene Map 215 Lot 8.
This project is associated with 2 previously submitted NHBs, NHB#23-2849 and NHB#22-3432.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: No comments at this time.

NHFG Comments: Please refer to NHFG consultation requirements below.

NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://www.wildlife.nh.gov/wildlife-and-habitat/nongame-and-endangered-species/environmental-review. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line**.

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.
Contact NH Fish & Game at (603) 271-0467 with questions.

NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project.
Please see the map and detailed information about the record(s) on the following pages.

Vertebrate species	State[1]	Federal	Notes
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[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 20 or more years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.
However, many areas have never been surveyed, or have only been surveyed for certain species.
NHB recommends surveys to determine what species/natural communities are present onsite.

GORDON SERVICES – KEENE PIT
2024 ACID MINE DRAINAGE POTENTIAL REPORT

57 Route 9, Keene, New Hampshire
City of Keene Tax Map 215 Block 7
Town of Sullivan Tax Map 583 Lot 46 & 46-1

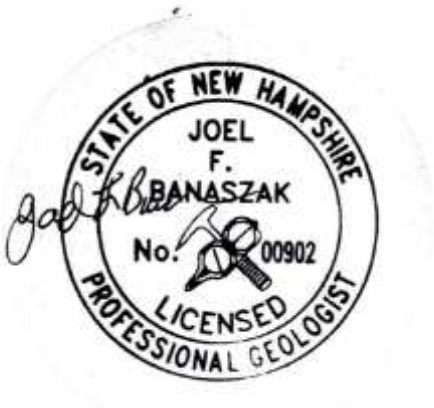
Prepared For:

Gordon Services
250 North Street
Jaffrey, New Hampshire 03452

Prepared By:

FRONTIER GEOSERVICES
127 OLD WARNER ROAD
BRADFORD, NEW HAMPSHIRE 03221

Joel Banaszak, P.G.
(603) 748-3715
Jbanaszak@frontiergeoservices.com



December 18, 2024
Frontier Project No. 2024012

1.0 INTRODUCTION

Frontier Geoservices, LLC. (Frontier) has completed a acid mine drainage potential investigation at the property located at 57 Route 9, in the City of Keene, Cheshire County, New Hampshire The parcels comprising the Site are identified by the City of Keene's Assessor's office on Tax Map 215 as Block 7 (102.7-acres) and the Town of Sullivan, New Hampshire, Assessor's office on Tax Map 5 Lot 46 (172-acres) and 46-1 (25.82-acres.) The Site is currently owned by G2 Holdings, LLC. of 250 North Street, Jaffrey, New Hampshire. Please refer to **Figure 1** for a **Site Location Map**.

Currently, the Site operates as a gravel and earth removal operation for Gordon Services. The current operations are permitted to only encompass one area, Phase 1, of the Site. Gordon Services wishes to expand their current operations to include additional excavation in Period 8 and new excavations in Periods 1 – 7. Please refer to **Figure 2** for a **Site Plan**.

Applicants proposing Earth Excavation are required to provide the information requested in The City of Keene's Article 25 Earth Excavation Regulation. This report provides the information requested in the City of Keene's Article 25.3.6 Toxic or Acid Forming Materials. Investigation activities included the sampling of materials from eight (8) bedrock monitoring wells.

2.0 SITE GEOLOGICAL SETTING

Based on review of the *Bedrock Geologic Map of New Hampshire*, 1997, bedrock in the vicinity of the target property is classified as the Silurian-aged Rangeley Formation which is rusty weathering schist, and gray quartz-biotite, muscovite-plagioclase schist that contain local calc-silicate layers. It also has rare quartz-rich layers that appear sandy. A **Bedrock Geologic Map** is included in **Appendix A**.

3.0 OCTOBER 2024 BEDROCK MONITORING WELL INSTALLATION AND SAMPLING

Bedrock groundwater monitoring wells were installed at eight (8) locations on October 17 and 18, 2024. Monitoring wells were installed using a 3-inch diameter air hammer to a depth that was greater than or equal to 50-feet below the proposed pit elevation at the respective location. Lithology, water content and fracture occurrence were logged for each bedrock well while drilling. Samples were collected from the drill cuttings at each location for laboratory analysis of acid mine drainage potential which included acid base accounting and shake-flask extraction. Laboratory analysis was performed by SGS Canada, Inc. of Lakefield, Ontario.

Pleaser refer to **Figure 2** for a **Monitoring Well Location Map**.

3.1 Bedrock Well Installation

BRW-1

Monitoring well BRW-1 was installed in the on the boundary between proposed Period 1 and 2 adjacent to MW-1. Bedrock was encountered at a depth of 3.3-feet bgs. The bedrock well was installed as an open borehole to a depth of 54-feet bgs. The ground elevation at this location is 950-feet AMSL. The bottom of the borehole is at an elevation of 896-feet AMSL. The proposed pit floor elevation at this location is 950-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-2

Monitoring well BRW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Bedrock was encountered at a depth of 12.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 62-feet bgs. The ground elevation at this location is 944-feet AMSL. The bottom of the borehole is at an elevation of 882-feet AMSL. The proposed pit floor elevation at this location is 940-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-3

Monitoring well BRW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Bedrock was encountered at a depth of 14.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 51-feet bgs. The ground elevation at this location is 1,052-feet AMSL. The bottom of the borehole is at an elevation of 1,001-feet AMSL. The proposed pit floor elevation at this location is 1050-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-4

Monitoring well BRW-4 was installed in the southeastern portion of Period 5. Bedrock was encountered at a depth of 5.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,103-feet AMSL. The bottom of the borehole is at an elevation of 962-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-5

Monitoring well BRW-5 was installed in the northeastern portion of Period 5. Bedrock was encountered at a depth of 3.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,112-feet AMSL. The bottom of the borehole is at an elevation of 971-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-6

Monitoring well BRW-6 was installed in the northwestern portion of Period 6. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 142-feet bgs. The ground elevation at this location is 1,192-feet AMSL. The bottom of the borehole is at an elevation of 1,050-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-7

Monitoring well BRW-7 was installed upgradient of the central portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.9-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,178-feet AMSL. The bottom of the borehole is at an elevation of 1,037-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 70-feet to the south of BRW-7 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 5.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.96-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 5.0-feet bgs.

BRW-8

Monitoring well BRW-8 was installed upgradient of the northern portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,182-feet AMSL. The bottom of the borehole is at an elevation of 1,041-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 125-feet to the southwest of BRW-8 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 9.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.84-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 9.0-feet bgs.

Below is a table summarizing the bedrock elevations, depths, and proposed pit floor elevations.

Well	Ground Elevation (ft AMSL)	Bedrock Depth (feet)	Depth/Bottom Elevation (feet/ ft AMSL)	Proposed Pit Floor Elevation (ft AMSL)
BRW-1	950	3	54/896	950
BRW-2	944	12	62/882	940
BRW-3	1052	14	51/1,001	1,050
BRW-4	1,103	3	81/1,022	1,098
BRW-5	1,164	3	141/1,023	1,098
BRW-6	1,162	1	122/1,040	1,098
BRW-7	1,178	1.9	141/1,037	1,098*
BRW-8	1,180	1	1,039	1,098*

*Well is located outside of the project area. The pit floor elevation that is noted is the proposed elevation of the nearest excavation.

Please refer to **Appendix B** for **Bedrock Boring and Monitoring Well Construction Logs.**

3.0 ACID MINE DRAINAGE POTENTIAL OVEVIEW

Acid Mine Drainage (AMD) occurs when water reacts with sulfur bearing minerals creating sulfuric acid. The acidic water can contain high concentrations of metals dissolved from the rock including arsenic, copper, iron, manganese, nickel and lead depending upon the parent-bedrock.

A variety of chemical reactions can contribute to AMD, however oxidation of pyrite (FeS_2) is the common driver for contributing to acid mine drainage. The chemical equation for this process is:

$$2\ FeS_2 + 7\ O_2 + 2\ H_2O \rightarrow 2\ Fe^{2+} + 4\ SO_4^{2-} + 4\ H^+$$

Oxidation of the pyrite solubilizes ferrous iron which then oxidizes to ferric iron. The chemical equation for this process is:

$$4\ Fe^{2+} + O_2 + 4\ H^+ \rightarrow 4\ Fe^{3+} + 2\ H_2O$$

Ferric cations produced in the above reaction have the potential to oxidize additional pyrite which is reduced into ferrous ions. The chemical equation for this process is:

$$FeS_2 + 14\ Fe^{3+} + 8\ H_2O \rightarrow 15\ Fe^{2+} + 2\ SO_4^{2-} + 16\ H^+$$

The overall result of the chemical reactions is the release of H^+. This lowers the pH of the water and retains the solubility of ferric ion.

Additionally, low pH waters at mining sites can contain high levels of toxic metals specifically arsenic, copper, iron, manganese, nickel and lead. The potential for the existence of these metals is dependent upon the consistency of the parent-bedrock.

To predict the potential for acid mine drainage at a Site, bedrock samples are laboratory analyzed for their acid producing potential and metals content.

4.0 ACID PRODUCING POTENTIAL ANALYSIS

Acid based accounting (ABA) is a widely used method in predicting the potential for acid mine drainage. ABA analysis measures the reactive sulfur in a sample to determine the Maximum Potential Acidity (MPA) and the content of reactive carbonate to determine the Neutralizing Potential (NP). The MPA of a sample is calculated by multiplying the percent mass of SO_4 in a sample by a constant of 31.25. This constant is derived from the understanding that it requires 31.25 metric tons of $CaCO_3$ to neutralize 1,000 metric tons of rock containing 1% sulfur. The NP of a sample is calculated by multiplying the percent mass of $CaCO_3$ by a constant of 83.34 to convert the $CaCO_3$ percent mass into units of kg CaCO3/ton. The ratio of the NP/MPA predicts the potential for the sample to produce acid mine drainage. Research conducted by diPretoro and Rauch (1988) demonstrated that NP/MPA ratios of <2.4 typically resulted in acid mine drainage and ratios of >2.4 resulted in alkaline discharge.

4.1 ACID BASED ACCOUNTING RESULTS

BRW-1

The percent mass of SO_4 in the sample collected from BRW-1 was calculated to be 27.3% and the percent mass of $CaCO_3$ was calculated to be 11.99%. The calculated MPA of the sample was 8.53 kg SO_4/ton. The calculated NP of the sample was 9.95 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 1.17. Based on these results this location has the potential to produce acid mine drainage.

BRW-2

The percent mass of SO_4 in the sample collected from BRW-2 was calculated to be 29.1% and the percent mass of $CaCO_3$ was calculated to be 9.11%. The calculated MPA of the sample was 9.11 kg SO_4/ton. The calculated NP of the sample was 2.56 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.28. Based on these results this location has the potential to produce acid mine drainage.

BRW-3

The percent mass of SO_4 in the sample collected from BRW-3 was calculated to be 31.4% and the percent mass of $CaCO_3$ was calculated to be 3.0%. The calculated MPA of the sample was 9.81 kg SO_4/ton. The calculated NP of the sample was 2.49 kg $CaCO_3$/ton. The ratio of NP/MPA was

calculated to be 0.25. Based on these results this location has the potential to produce acid mine drainage.

BRW-4

The percent mass of SO_4 in the sample collected from BRW-4 was calculated to be 36.1% and the percent mass of $CaCO_3$ was calculated to be 8.7%. The calculated MPA of the sample was 11.27 kg SO_4/ton. The calculated NP of the sample was 7.25 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.64. Based on these results this location has the potential to produce acid mine drainage.

BRW-5

The percent mass of SO_4 in the sample collected from BRW-5 was calculated to be 9.1% and the percent mass of $CaCO_3$ was calculated to be 48.0%. The calculated MPA of the sample was 2.83 kg SO_4/ton. The calculated NP of the sample was 40.02 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 14.12. Based on these results this location does not have the potential to produce acid mine drainage.

BRW-6

The percent mass of SO_4 in the sample collected from BRW-6 was calculated to be 39.0% and the percent mass of $CaCO_3$ was calculated to be 10.0%. The calculated MPA of the sample was 12.18 kg SO_4/ton. The calculated NP of the sample was 8.33 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.68. Based on these results this location has the potential to produce acid mine drainage.

BRW-7

The percent mass of SO_4 in the sample collected from BRW-7 was calculated to be 56.4% and the percent mass of $CaCO_3$ was calculated to be 0.08%. The calculated MPA of the sample was 17.63 kg SO_4/ton. The calculated NP of the sample was 0.67 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.04. Based on these results this location has the potential to produce acid mine drainage.

It should be noted that this location is outside of the proposed project area.

BRW-8

The percent mass of SO_4 in the sample collected from BRW-8 was calculated to be 66.1% and the percent mass of $CaCO_3$ was calculated to be 1.1%. The calculated MPA of the sample was 20.67 kg SO_4/ton. The calculated NP of the sample was 0.92 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.04. Based on these results this location has the potential to produce acid mine drainage.

It should be noted that this location is outside of the proposed project area.

Please refer to **Appendix C** for **Tabulated Summary of Acid Based Accounting Results**.

5.0 BEDROCK METALS CONCENTRATION ANALYSIS

The shake flask extraction laboratory method is a commonly used analysis to determine the potential for metals to leach from a bedrock sample. In this method the sample is saturated in water or a weak acid and shook to dissolve the metals into solution. The solution is then analyzed to determine the

concentrations of dissolved metals. This method is used to predict the potential how much of a particular metal may be released under acid mine drainage conditions. For this report metals including; arsenic, copper, iron, manganese, nickel and lead were found to be the primary potential contaminants associated with AMD.

5.1 Shake Flask Extraction Results

BRW-1
The sample collected from BRW-1 had reported concentrations of arsenic at 1.4 µg/g, copper at 69 µg/g, iron at 61,000 µg/g, manganese at 510 µg/g, nickel at 54 µg/g and lead at 20 µg/g.

BRW-2
The sample collected from BRW-2 had reported concentrations of arsenic at 1.0 µg/g, copper at 67 µg/g, iron at 62,000 µg/g, manganese at 850 µg/g, nickel at 57 µg/g and lead at 18 µg/g.

BRW-3
The sample collected from BRW-3 had reported concentrations of arsenic at 1.2 µg/g, copper at 77 µg/g, iron at 65,000 µg/g, manganese at 730 µg/g, nickel at 56 µg/g and lead at 17 µg/g.

BRW-4
The sample collected from BRW-4 had reported concentrations of arsenic at 1.4 µg/g, copper at 63 µg/g, iron at 62,000 µg/g, manganese at 710 µg/g, nickel at 56 µg/g and lead at 19 µg/g.

BRW-5
The sample collected from BRW-5 had reported concentrations of arsenic at 0.6 µg/g, copper at 6.6 µg/g, iron at 7,700 µg/g, manganese at 210 µg/g, nickel at 8.9 µg/g and lead at 45 µg/g.

BRW-6
The sample collected from BRW-6 had reported concentrations of arsenic at 1.2 µg/g, copper at 59 µg/g, iron at 59,000 µg/g, manganese at 560 µg/g, nickel at 53 µg/g and lead at 24 µg/g.

BRW-7
The sample collected from BRW-7 had reported concentrations of arsenic at 1.3 µg/g, copper at 64 µg/g, iron at 60,000 µg/g, manganese at 570 µg/g, nickel at 63 µg/g and lead at 22 µg/g.

It should be noted that this location is outside of the proposed project area.

BRW-8
The sample collected from BRW-8 had reported concentrations of arsenic at 1.5 µg/g, copper at 40 µg/g, iron at 33,000 µg/g, manganese at 330 µg/g, nickel at 19 µg/g and lead at 26 µg/g.

It should be noted that this location is outside of the proposed project area.

Please refer to **Appendix D** for **Tabulated Summary of Shake Flask Extraction Results.**

6.0 PROPOSED WATER QUALITY MONITORING

Due to the potential for water at the Site to be affected by acid mine drainage it is proposed that wells SRL-10, SRL-12, BRW-7 and BRW-8 be monitored on a bi-annual basis in the months of April and October. Additionally, samples will be collected from surface water infiltration features constructed throughout the project. All surface water being conveyed from the proposed excavation is to be directed into a surface water infiltration basin. The construction and placement of surface water infiltration features will be iterative based on project progression. Currently there is one surface water infiltration feature located in the western area of Period 8. As new infiltration features are constructed at the Site they will be added to the sampling program. Field parameters including pH, specific conductance, oxidation reduction potential, dissolved oxygen and turbidity and laboratory analysis of dissolved and total metals including; arsenic, copper, iron, manganese, nickel and lead will be performed at each sampling location. Baseline, pre-excavation monitoring will consist of the collection of two (2) rounds of samples collected a minimum of 14 calendar days apart. Results will be reviewed in comparison to the New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality Standards (AGQS). All results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

Please refer to **Figure 3** for a **Proposed Water Quality Monitoring Location Map**.

7.0 REFERENCES

1. [Acid Mine Drainage https://www.westech-inc.com/solutions/mining-and-minerals/acid-mine-drainage]

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3. *Johnson, D. Barrie; Hallberg, Kevin B. (1 February 2005). "Acid mine drainage remediation options: a review". Science of the Total Environment. Bioremediation of Acid Mine Drainage: The Wheal Jane Mine Wetlands Project. 338 (1): 3–14. Bibcode:205ScTEn.338….3J. doi:10.1016/j.scitotenv.2004.09.002. ISSN 0048-9697. PMID 15680622. S2CID 24245069*

GORDON SERVICES – KEENE PIT
2024 HYDROGEOLOGIC INVESTIGATION REPORT

57 Route 9, Keene, New Hampshire
City of Keene Tax Map 215 Block 7
Town of Sullivan Tax Map 583 Lot 46 & 46-1

Prepared For:

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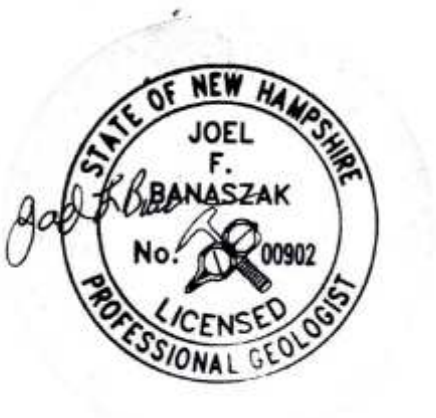
December 18, 2024
Frontier Project No. 2024012



1.0 INTRODUCTION

Frontier Geoservices, LLC. (Frontier) has completed a hydrogeological investigation at the property located at 57 Route 9, in the City of Keene, Cheshire County, New Hampshire The parcels comprising the Site are identified by the City of Keene's Assessor's office on Tax Map 215 as Block 7 (102.7-acres) and the Town of Sullivan, New Hampshire, Assessor's office on Tax Map 5 Lot 46 (172-acres) and 46-1 (25.82-acres. The Site is currently owned by G2 Holdings, LLC. of 250 North Street, Jaffrey, New Hampshire. Please refer to **Figure 1** for a **Site Location Map**.

Currently, the Site operates as a gravel and earth removal operation for Gordon Services. The current operations are permitted to only encompass one area, Period 8, of the Site. Gordon Services wishes to expand their current operations to include additional excavation in Period 8 and new excavations in Periods 1 – 7. Please refer to **Figure 2** for a **Site Plan/Monitoring Well Location Map**.

Applicants proposing Earth Excavation are required to provide the information requested in The City of Keene's Article 25 Earth Excavation Regulation. This report provides the information required to fulfill The City of Keene's Article 25.3.4 Groundwater Quantity. Site activities included the installation of eight (8) overburden monitoring wells and eight (8) bedrock monitoring wells. Monitoring groundwater elevations in the wells was conducted over a minimum of a 2-week period. Additional information was provided through a Limited Hydrogeologic Investigation Report completed by SLR International Corporation of Bedford, New Hampshire, dated March 25, 2022.

It should be noted that based on the results of this investigation and the previous, dewatering of the proposed excavation is not required.

2.0 SITE SETTING

The Site consists of a total of 300.52 acres of undeveloped land. The Site has a central latitude of 42°58'27.03" north and longitude of 72°13'34.66" west. The Site currently operates as a gravel and earth removal operation for Gordon Services. As previously mentioned, the Site currently only operates within the limits of Period 8 as shown on the Site Plan.

2.1 Description of Structures, Roads and other Improvements

The Site is accessed from the northern side of Route 9 in Keene, New Hampshire via a gravel driveway. The gravel driveway directs traffic to the east and west when entering the pit area. Prior to entering the pit area there is a fueling area, storage shed, and porta-potty located to the east. The current pit area has an elevation of 880-ft above mean sea level (AMSL). Earth removal and processing equipment is staged on the pit floor. Surface water drainage is currently directed to an infiltration basin located on the western side of the current Period 8 excavation. The proposed project area is accessed via former logging roads which were recently cleared.

2.2 Current Use of Adjoining Properties

South of the Site is New Hampshire State Route 9. To the east of the Site is a property which consists of various buildings which are occasionally used by the Habitat for Humanity. This property is also owned by G2 Holdings, LLC. There are no other developed properties located to the east of the Site. Several residential properties exist approximately 1,000-feet northwest of the northern property boundary. There are no developed parcels abutting to the east of the Site.

2.3 Site Physical Setting

The target property is depicted on the Marlborough, New Hampshire United States Geological Survey (USGS) 7.5 Minute Topographic Map dated 2018 at approximately 42°58'27.03" north and 72°13'34.66" west with a current pit floor elevations of 880-feet above the North American Datum (NAD) of 1983.

Based on review of the *Bedrock Geologic Map of New Hampshire*, 1997, bedrock in the vicinity of the target property is classified as the Silurian-aged Rangeley Formation which is a rusty weathering schist, gray quartz-biotite and muscovite-plagioclase schist that contain local calc-silicate layers. It also has rare quartz-rich layers that appear sandy. A **Bedrock Geologic Map** is included in **Appendix A**.

According to the United States Department of Agriculture's Natural Resource Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx), soil beneath the target property consists of eight (8) soil types; the Colton gravelly sandy loam, 8 to 15 percent slopes, the Turnbridge-Berkshire complex, 15 to 25 percent slopes, very stony, the Turnbridge-Lyman-rock outcrop complex 8 to 15 percent slopes, the Turnbridge-Lyman-rock outcrop complex 15 to 25 percent slopes, the Turnbridge-Lyman-rock outcrop complex 25 to 60 percent slopes, the Berkshire fine sandy loam 15 to 25 percent slopes, the Marlow fine sandy loam 25 to 50 percent slopes, the Sunapee fine sandy loam 8 to 15 percent slopes. The soils identified at the Site are described as being excessively drained to well drained and having a depth to water of greater than 80-inches. Soil types at the Site are depicted in the **NRCS Soil Map** included in **Appendix A** which includes the **NRCS Soil Descriptions.**

The target property is located on the National Flood Insurance Program Flood Insurance Rate Map (FIRM) – Map Number 33005C0280E, effective May 23, 2006. The **FIRM Image** was available in the Federal Emergency Management Agency (FEMA) online database and was reviewed as part of this assessment and is included in **Appendix A**. The map depicts the Site in an area of Minimal Flood Hazard.

3.0 PREVIOUS HYDROGEOLOGIC INVESTIGATIONS

As previously mentioned, SLR International of Bedford, New Hampshire completed a Limited Hydrogeologic Investigation Report dated March 25, 2022. The investigation documented the completion of sixteen (16) test pits (TP-1 through TP-16), six (6) soil borings (SRL-1 through SLR-6) and the installation of three (3) groundwater monitoring wells (SRL-10 through SRL-12).

The test pits were excavated to depths ranging from a maximum of 15.5-feet below ground surface (bgs) at TP-4 to a minimum of 3-feet bgs at TP-8. Probable bedrock was encountered in test pits TP-7, TP-8, TP-9 and TP-10. The primary purpose of the test pits was to collect samples for gradation analyses performed in accordance with ASTM D442/D1140. Materials encountered in test pits TP-1, TP-2, TP-3, TP-5, TP-6, TP-7, TP9, TP-10, TP-13 and TP-14 were classified as glacial till. Materials encountered in test pits TP-4 and TP-12 were classified as glacial outwash. Samples were not collected from test pits TP-8, TP-11, TP-15 and TP-16. None of the test pits encountered saturated groundwater conditions.

Soil borings SRL-1 through SRL-6 were advanced to depths ranging from a maximum of 28-feet bgs at SRL-5 to a minimum of 2-feet bgs at SRL-2. Probable bedrock was encountered in soil borings

SRL-1, SRL-2, SRL-4, SRL-5 and SRL-6. The primary purpose of the soil borings was to collect samples for gradation analyses performed in accordance with ASTM D6913. Materials encountered in soil boring SRL-1 were classified as glacial till. Materials encountered in soil borings in soil borings SRL-4 and SRL-6 were classified as glacial outwash. SRL-5 materials had a combined consistency of glacial till and glacial outwash. Samples were not collected from SRL-2 and SRL-3. None of the soil borings encountered saturated groundwater conditions. SRL-6 did have "wet" materials at the bottom of the soil boring at 10-feet bgs. However, it should be noted that this boring was completed outside of the proposed project area.

Monitoring well SRL-10 was installed in the southwest corner of Period 8 to a depth of 55-feet bgs in overburden materials. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 55-feet bgs. A water level of 42.9-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-10. More recently, a water level of 52.85-feet bgs was recorded on December 12, 2024.

Monitoring well SRL-11 was installed in the eastern section of the Period 8 area to a depth of 45.2-feet bgs in overburden materials. The advanced prior to the installation of the monitoring well was advanced to a depth of 76-feet bgs. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 45.2-feet bgs. Groundwater was not encountered in the soil boring or observed during the March 22, 2022 gauging event. This well has since been destroyed.

Monitoring well SRL-12 was installed in bedrock in the north-central section of the Period 8 to a depth of 39.5-feet bgs. Bedrock was encountered at a depth of 11-feet bgs. The screened interval of the well was from 4.5-feet to 39.5-feet bgs. It should be noted that this well is cross-screened between the overburden and bedrock materials. A water bearing fracture was reportedly encountered at 28-feet bgs. A water level of 1.5-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-12. More recently, a water level of 7.5-feet bgs was recorded on December 12, 2024.

Please refer to **Appendix B** for a copy of the **SLR International Limited Hydrogeologic Investigation Report**.

4.0 JULY 2024 OVERBURDEN MONITORING WELL INSTALLATION

A total of eight (8) overburden locations were investigated for the potential of installation of a groundwater monitoring well on July 22 and 23, 2024. Prior to installation of a monitoring well a soil boring was conducted to refusal depth. Soils retrieved from the boring were logged for their lithologic and water content and also screened for volatile organic compounds (VOCs) using a MiniRae 3000 photo-ionization detector (PID). Monitoring wells were installed by advancing 4-inch diameter steel casing at the boring location. The casing was then "washed" using clean water. 2-inch diameter poly-vinyl chloride (PVC) screen and riser of varying lengths were used in construction of the wells. The annulus surrounding the screen portion of the monitoring wells was filled using clean silica sand to a level of 1-foot above the screen/riser interface. Bentonite chips were emplaced around the riser to a depth of 1-foot bgs and the remaining portion of the borehole was filled with native materials.

Please refer to **Figure 2** for a **Monitoring Well Location Map**.

4.1 Overburden Monitoring Well Installations

MW-1

Monitoring well MW-1 was installed in the on the boundary between proposed Period 1 and 2. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3.3-feet bgs. A monitoring well was installed to a depth of 3.3-feet bgs and constructed using approximately 2-feet of PVC screen and 1.5-feet of solid riser. Groundwater was not encountered at this location.

MW-2

Monitoring well MW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 12.0-feet bgs. A monitoring well was installed to a depth of 12.0' bgs and constructed using approximately 10-feet of PVC screen and 2-feet of solid riser. Groundwater was not encountered at this location.

MW-3

Monitoring well MW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel with occasional cobbles. Bedrock was encountered at a depth of 14.2-feet bgs. A monitoring well was installed to a depth of 14.2-feet bgs and constructed using approximately 10-feet of PVC screen and 5-feet of solid riser. Groundwater was not encountered at this location.

MW-4

Monitoring well MW-4 was installed in the southeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3-feet bgs. A monitoring well was installed to a depth of 3-feet bgs and constructed using approximately 2-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-5

Monitoring well MW-5 was installed in the northeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 5-feet bgs. A monitoring well was installed to a depth of 5-feet bgs and constructed using approximately 4-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-6

Monitoring well MW-6 was installed in the northwestern portion of Period 6. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 0.9-feet bgs. A monitoring well was not installed at this location.

MW-7

Monitoring well MW-7 was installed upgradient of the central portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.9-feet bgs. A monitoring well was not installed at this location.

MW-8

Monitoring well MW-8 was installed upgradient of the northern portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.0-feet bgs. A monitoring well was not installed at this location.

Please refer to **Appendix C** for **Overburden Boring and Monitoring Well Construction Logs**.

4.1 Overburden Monitoring Well Groundwater Levels

Groundwater levels were measured on July 23, 2024, August 5, 2024 and October 17, 2024. Groundwater was not observed in any of the overburden groundwater monitoring wells.

5.0 OCTOBER 2024 BEDROCK MONITORING WELL INSTALLATION

Bedrock groundwater monitoring wells were installed at eight (8) locations on October 17 and 18, 2024. Monitoring wells were installed using a 3-inch diameter air hammer to a depth that was greater than or equal to 50-feet below the proposed pit elevation at the respective location. Lithology, water content and fracture occurrence were logged for each bedrock well. Samples were collected from the drill cuttings at each location for laboratory analysis of acid mine drainage potential which included acid base accounting and shake flask extraction. The results from the acid mine drainage potential analyses are included in a separate report titled "Gordon Services – Keene – Acid Mine Drainage Potential Report", dated December 18, 2024.

Please refer to **Figure 2** for a **Monitoring Well Location Map**.

5.1 Bedrock Well Installation

BRW-1
Monitoring well BRW-1 was installed in the on the boundary between proposed Period 1 and 2 adjacent to MW-1. Bedrock was encountered at a depth of 3.3-feet bgs. The bedrock well was installed as an open borehole to a depth of 54-feet bgs. The ground elevation at this location is 950-feet AMSL. The bottom of the borehole is at an elevation of 896-feet AMSL. The proposed pit floor elevation at this location is 950-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-2
Monitoring well BRW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Bedrock was encountered at a depth of 12.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 62-feet bgs. The ground elevation at this location is 944-feet AMSL. The bottom of the borehole is at an elevation of 882-feet AMSL. The proposed pit floor elevation at this location is 940-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-3
Monitoring well BRW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Bedrock was encountered at a depth of 14.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 51-feet bgs. The ground elevation at this location is 1,052-feet AMSL. The bottom of the borehole is at an elevation of 1,001-feet AMSL. The proposed pit floor elevation at this location is 1050-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-4
Monitoring well BRW-4 was installed in the southeastern portion of Period 5. Bedrock was encountered at a depth of 5.0-feet bgs. The bedrock well was installed as an open borehole to a depth

of 141-feet bgs. The ground elevation at this location is 1,103-feet AMSL. The bottom of the borehole is at an elevation of 962-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-5

Monitoring well BRW-5 was installed in the northeastern portion of Period 5. Bedrock was encountered at a depth of 3.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,112-feet AMSL. The bottom of the borehole is at an elevation of 971-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-6

Monitoring well BRW-6 was installed in the northwestern portion of Period 6. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 142-feet bgs. The ground elevation at this location is 1,192-feet AMSL. The bottom of the borehole is at an elevation of 1,050-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-7

Monitoring well BRW-7 was installed upgradient of the central portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.9-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,178-feet AMSL. The bottom of the borehole is at an elevation of 1,037-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 70-feet to the south of BRW-7 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 5.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.96-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 5.0-feet bgs.

BRW-8

Monitoring well BRW-8 was installed upgradient of the northern portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,182-feet AMSL. The bottom of the borehole is at an elevation of 1,041-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 125-feet to the southwest of BRW-8 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 9.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.84-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 9.0-feet bgs.

Below is a table summarizing the bedrock elevations, depths, groundwater levels and proposed pit floor elevations.

Well	Ground Elevation (ft AMSL)	Bedrock Depth (feet)	Depth/Bottom Elevation (feet/ ft AMSL)	Proposed Pit Floor Elevation (ft AMSL)	Groundwater Elevation (ft AMSL)
BRW-1	950	3	54/896	950	DRY
BRW-2	944	12	62/882	940	DRY
BRW-3	1052	14	51/1,001	1,050	DRY
BRW-4	1,103	3	81/1,022	1,098	DRY
BRW-5	1,112	3	141/971	1,098	DRY
BRW-6	1,192	1	142/1,050	1,098	DRY
BRW-7	1,178	1.9	141/1,037	1,098*	1,177.04
BRW-8	1,182	1	141/1,041	1,098*	1,179.16

*Well is located outside of project area. The pit floor elevation that is noted is the proposed elevation of the nearest excavation.

Please refer to **Appendix D** for **Bedrock Boring and Monitoring Well Construction Logs.**

5.1 Bedrock Monitoring Well Groundwater Levels

Groundwater levels were measured on October 18, 2024, November 1, 2024 and November 8, 2024. All bedrock wells were found to be dry with the exception of wells BRW-7 and BRW-8. Water levels recorded at those locations during each sampling event were all less than 1-foot below ground surface.

6.0 HYDROGEOLOGICAL CONCEPTUAL MODEL

A hydrogeologic conceptual model has been developed based on the previous hydrogeologic investigation report and results from the installation and monitoring of the eight (8) overburden monitoring wells and eight (8) bedrock wells installed for the proposed project.

None of the overburden monitoring wells installed for this project had any observable groundwater. Previously installed overburden monitoring well SRL-10, located in Period 8 of the project area most recently had a groundwater elevation of 831.85 ft AMSL. An elevation of 841.8 ft AMSL.

It is interpreted that recharge to the overburden aquifer is limited at the Site due to the relatively steep topography. Much of the atmospheric water which falls on the Site either runs off as surface water drainage or taken up through plant water uptake (transpiration). Furthermore, the materials encountered in the soil borings advanced prior to the installation of the overburden monitoring wells consisted primarily of a sand and gravel assortment. These materials are generally of very high hydraulic conductivity, suggesting that they have a high capacity to transmit water. Water which does infiltrate into the subsurface has a low residence time due to the steep topography and sloping bedrock interface. Water which may infiltrate into the overburden materials is transported relatively quickly to a base elevation for overburden groundwater which is interpreted to be demonstrated by the water levels observed in SRL-10.

Bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock which does not have any pore space. Fractures or groundwater bearing zones were not encountered at monitoring wells BRW-1 through BRW-6. A water bearing fracture was encountered during the previous hydrogeologic investigation at SRL-12 at a depth of 28-feet bgs, elevation 862-feet AMSL. The proposed grading in Period 1 does not encounter this elevation. The proposed grading from Period 1 to Period 8 located to the south maintains a separation of approximately 150-feet from the fracture. Water levels observed in SRL-12 are suspect to interference between overburden groundwater and bedrock groundwater due to the cross-screening of the overburden/bedrock interface. However, the proposed grading of the project does not call for excavation into the area of SRL-12 and therefore groundwater is unlikely to be encountered in Period 1.

Bedrock monitoring wells BRW-7 and BRW-8 encountered fractures at shallow depth of 5-feet and 9-feet respectively. These fractures yielded less than 5 gallons per minute. These wells are in an area where the topography slopes to the north, as opposed to the rest of the Site which slopes to the south. It is interpreted that groundwater flow from these wells is to the north, towards the adjacent wetlands.

7.0 PROPOSED WATER LEVEL MONITORING

Based on the results of the previous hydrogeologic investigation and the most recent it is proposed that groundwater level monitoring be conducted monthly at the Site in accordance with the City of Keene's Article 25.3.4C, although no groundwater dewatering is proposed at the Site. Overburden groundwater level monitoring is to be conducted at Site wells including; SRL-10, SRL-12, MW-2 and MW-4. Bedrock groundwater level monitoring is proposed to be conducted SRL-12, BRW-7 and BRW-8. Surface water levels are proposed to be collected from the six (6) wetland areas located adjacent to the project area. Additionally, precipitation data will be collected from a central location at the Site.

Please refer to **Figure 3** for a **Proposed Water Level Monitoring Location Map**.

Water levels will be reviewed in comparison to the precipitation data and noted for anomalous readings which do not align with the conceptual hydrogeologic model of the Site. Results from water level monitoring will be forwarded to the City of Keene on an annual basis in January of each calendar year. If anomalous groundwater levels are encountered the City of Keene will be notified with 24-hours and groundwater level monitoring of all domestic wells within ½-mile of the Site will be initiated. If water quantity disruptions have been observed in a domestic water supply well with 1/2-mile of the Site as a result of excavation activities, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an unaffected area.

8.0 PROPOSED SITE GROUNDWATER QUALITY MONITORING

Due to the potential for groundwater at the Site to be affected by blasting activities, it is proposed that wells SRL-10, SRL-12, BRW-7 and BRW-8 be monitored on a bi-annual basis in the months of April and October for field parameters including; pH, specific conductance, oxidation reduction potential, dissolved oxygen and turbidity and laboratory analysis of volatile organic compounds and nitrate. Baseline, pre-excavation monitoring will consist of the collection of two (2) rounds of samples collected a minimum of 14 calendar days apart. Results will be reviewed in comparison to the New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality

Standards (AGQS). All results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

9.0 PROPOSED OFF-SITE GROUNDWATER QUALITY MONITORING

In accordance with Article 25.3.5 all landowners with ½ -mile of the Site will be offered groundwater quality monitoring. Notification will be made to all landowners via United States Postal Service Certified Mail. The notification will include a description of the requirement to offer sampling and analysis of the landowner's domestic drinking water supply well and an option to decline the offer. It should be noted that landowners may opt in or opt out for sampling at any time during the term of the permit.

Baseline, pre-excavation monitoring of participating landowner wells will consist of the collection of two (2) rounds of drinking water samples collected a minimum of 14 calendar days apart. The samples will be analyzed for volatile organic compounds and nitrate. Sample results will be provided to the landowner via standard United State Postal Service mailing. Additionally, baseline results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

On-going, post-excavation monitoring of participating landowner wells will consist of the collection of drinking water samples on a bi-annual basis during the term of the permit and 2 years following the cease of operations at the Site and reclamation. Results will be forwarded to landowners and the City of Keene Community Development Department similarly as noted above.

Drinking water results will be compared to the NHDES AGQS. If adverse impacts are noted, the applicant will immediately be notified to cease bedrock excavation. Additionally, NHDES and the City of Keene will be notified. If monitoring indicates that the excavation activities caused the identified contamination, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an area that has not been impacted by contamination.

10.0 PROPOSED GROUNDWATER OCCURRENCE MONITORING

As previously mentioned, bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock. The blast hole driller shall maintain a log of all boreholes at the Site and note the location of the borehole, depth of the borehole and any fractures or water bearing zones encountered. If a fracture or water bearing zone is encountered in a borehole no blasting shall occur at that location.

STORMWATER MANAGEMENT REPORT

GRANITE ENGINEERING

civil engineering ● land planning ● municipal services

GORDON SERVICES - KEENE

Keene: Map 215; Lots 7 & 8
Sullivan: Map 5; Lots 46 & 46-1
57 Route 9
Keene & Sullivan, New Hampshire
January 22, 2025

PREPARED FOR:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

PREPARED BY:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030

GE Project No. 23-0201-1

I. INTRODUCTION

A. Project Description

The subject properties propose the expansion of an existing gravel and earth removal operation for G2 Holdings, LLC. The properties are located at 57 Route 9 in Keene and Sullivan, New Hampshire. The majority of the site is located within the Keene R (Rural) Zoning District. A proposed gravel road will be constructed to access various points on the site. Stormwater runoff will be managed through a series of sediment basins that connect to an existing infiltration pond.

B. Existing Site Conditions

Keene Tax Map 215 Lot 7 is approximately 78.4 acres in area. Keene Tax Map 215 Lot 8 is approximately 23.1 acres in area. Sullivan Tax Map 5 Lot 46 is approximately 169.0 acres in area. Tax map 5 Lot 46-1 is approximately 28.1 acres in area. The total area of all four subject properties is therefore 298.6 acres in area. The property is currently developed with a gravel removal operation. There are wetlands on the properties to the north and east. There is an existing, previously permitted, stormwater basin located to the south of the property, closest to Route 9.

According to the Site Specific Soil Survey, the predominant onsite soil types are Sunapee, Tunbridge Lyman Rock Outcrop, and Lyman.

Please refer to sections three (3) and eight (8) of this stormwater report for project specific NRCS soils and SSSS report information.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

The purpose of this analysis was to determine if the proposed sediment ponds could capture, detail, and release the stormwater flows through small, controlled, outlet pipes to both the existing infiltration area located currently on-site, as well as the proposed infiltration area to be completed during the final phase of the project (Period 8).

In accordance with generally accepted engineering practice, the 50-year frequency storm has been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater–treatment provisions and all drainage facilities have been designed to be fully functional during a 50-year return frequency storm.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the "best management practice", in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Post-Development Drainage Conditions

In order to evaluate the impact of the proposed development, one (1) Point of Analysis (POA) was analyzed to demonstrate that the peak rates of runoff would not increase from the site improvements.

The primary POA, Link A, is located at the outlet of the existing stormwater basin, toward the southern end of the property, closest to Route 9.

Stormwater from these areas is managed by multiple sediment basins/detention ponds around each work area. These detention ponds are represented in the HydroCAD model and are denoted as SF 5, SF6, SF7, and SF8. The intent of the grading of the pit areas, as well as the haul roads, was to keep the stormwater self contained, with no runoff during a 50-year, 24-hour storm event. The proposed infiltration area was designed to use exfiltration though the native soils as its only means of outlet. Infiltration rates for the infiltration ponds were calculated by the default method as set forth in Env-Wq 1054.14. The practice is located in an area identified in the

Soil Series Survey as Berkshire, Fine Sandy Loam Soils. Using Ksat values for New Hampshire Soils, Soil Scientists of Northern New England, Special Publications No. 5, September 2009, the lowest value associated with Berkshire soils is 0.6 inches per hour. Using a safety factor of 2, the infiltration rate utilized in the drainage analysis is 0.3 inches per hour.

Test pit data performed by TF Moran was used to determine the floor elevation of the pond, keeping it above the estimated seasonal high water table.

The results of the drainage analysis determined that the stormwater was infiltrated in its entirety during a 50-year, 24-hour storm event. This was done through capturing stormwater in large sediment basins with small, controlled outlet devices to release stormwater in a controlled manner and by directing stormwater to the infiltration area.

For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

All of these ponds provide adequate storage to offset the peak rates of runoff for the design storms. The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate for the specific storm frequency is presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1).

C. Summary:

TABLE 1: PEAK RUNOFF (ENV-WQ 1507.06)

Site Post Development (Peak Discharge Rate in cfs)		
Description	**50-Year**	
24-hr Rainfall	5.86"	
	Post - Interim	Post - Final
A	0.00	0.00

TABLE 2: PEAK STORMWATER POND ELEVATION

Site Post Development (Peak Pond Elevation)		
Description	**50-Year**	
	Post - Interim	Final
Stormwater Basin Berm Elevation	874.00	854.00
Peak 50-Year Storm Elevation	873.69	852.63

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

Temporary erosion and sediment control measures are indicated on the design plans, construction details, general notes and within the drainage report. Although not integral with this stormwater report, due to the size of the proposed development both temporary and permanent erosion control measures will also be specified within the project's Stormwater Pollution Prevention Plan (SWPPP). All erosion control measures specified are designed to reduce or eliminate potential soil migration and water quality degradation, both during and after the construction period.

The following temporary erosion control measures will be implemented;

- Silt Fence and/or Silt Logs
- Erosion Control Blankets on slopes 3:1 and steeper
- Riprap Aprons & Spillway Stabilization
- Turf Establishment - Hydroseeding with mulch and tackifiers
- Stone Check Dams
- Temporary Sediment Basins

These temporary erosion control measures are also discussed in the projects. Operation and Maintenance plan contained in the appendices of this report.

In addition to the above-listed erosion control measures, references are made throughout the project documents to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction for additional measures, as necessary.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

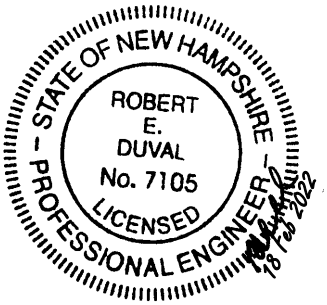
Similar to temporary erosion control measures, all permanent erosion control measures are indicated on the design plans, construction details, general notes, drainage report, SWPPP and O & M project documents.

The following permanent erosion control measures will be implemented;

- Stone-lined ditches
- Inlet & Outlet Protection - Riprap Stabilization
- Stormwater Basins with multi-stage outlets
- Turf Establishment - Hydroseeding with mulch and tackifiers

Each of the above-mentioned permanent erosion control measures are designed in a project-specific manner within both state and local regulatory compliance standards.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists



TRAFFIC MEMORANDUM

Date: February 18, 2022

To: City of Keene
3 Washington Street
Keene, NH 03431

From: Robert Duval, PE

Re: Proposed Gravel Pit
Route 9, Keene, NH
TFM Project No. 82549-00

INTRODUCTION

TFMoran has prepared this traffic memo on behalf of G2 Holdings, LLC to describe trip generation and the existing roadway network associated with a proposed gravel pit in Keene, NH. The site (Map 215 Lot 7) is located within the Rural Zoning District on the north side of Franklin Pierce Highway (NH 9).

The parcel currently has a gravel access drive into a small clearing. G2 Holdings, LLC is currently using the clearing as a laydown area for their landscape and sitework business. The remaining site consists of woods, steep slopes, and wetlands.

PROPOSAL

G2 Holdings, LLC is proposing to construct and operate a 10 +/- acre gravel pit located on The initial phase of the operation will be approximately 5 acres. The gravel driveway will be widened and brush trimmed as necessary to accommodate two-way traffic with adequate sight distance in both directions to support the operation.

DESCRIPTION OF ROADWAYS AND INTERSECTIONS

Franklin Pierce Highway (NH 9)

- Classification. Franklin Pierce Highway is a State-maintained principal arterial that provides east-west travel across the state from Vermont to Maine.
- Lane widths and usage. In the project vicinity, the roadway provides one 12' travel lane in each direction, with 7-8' paved shoulders.
- Pedestrian facilities. There are no sidewalks in the study area.
- Signage and markings. The posted speed limit is 55 mph. Adjacent to the existing driveway is an intersection warning sign. The road has white shoulder markings on both sides. An

eastbound passing zone begins about 300' to the west and extends about 600' east of the driveway, followed by a two-way passing zone.

- Lighting. No roadway lighting is provided in the study area.
- Sight Distance: The existing driveway is located on a straight segment of Franklin Pierce Highway with a gentle curve right approximately 250' west of the site and remains straight approximately 2,000' to the east. The alignment is relatively flat and provides sufficient sight distance in both directions.
- Road conditions. The roadway has moderate grade change, open drainage, and normal crown. The pavement is in good condition with minimal to no cracking, little or no ruts, soft spots, potholes, or other structural defects evident.
- There are minimal other developments in the area. Adjacent uses and driveways consist of:
    - Approximately 350' to the west on the opposite side of the road is the entrance to Otter Brook Beach State Park. No other driveways are present until Sullivan Road, approximately 4,350' from the existing site driveway.
    - Approximately 2100' to the east is a driveway to small commercial home/office development. Another 1500' east of the office development is the entrance to Granite Gorge Ski Area.
- There are no other intersections in the study area.

TRIP GENERATION

Trip generation was calculated based on the applicant's anticipated pit operation schedule. Site operations will be 7am-5pm Monday through Friday, with Saturday operations 7am-12pm. The site will be occupied by 3 employees. All employees will arrive prior to AM peak hours (7-9am) and leave during PM peak hours (4-6pm).

Trucking operations are expected at 40 trucks per day or less, with arrivals on average at fifteen minute intervals. While one truck is arriving, the previous will be leaving. The last load out will typically leave around 330pm (1130am on Saturday). Employees will leave after site cleanup and equipment shutdown.

Employee & Truck Schedule

Time	Employee In	Employee Out	Truck In	Truck Out	Total Trips
Before 7 AM	3				3
7 AM – 8 AM			4	3	7
8 AM – 9:AM			4	4	8
9 AM – 10 AM			4	4	8
10 AM – 11 AM			4	4	8
11 AM – 12 PM			4	4	8
12 PM – 1 PM			4	4	8
1 PM – 2 PM			4	4	8
2 PM – 3 PM			4	4	8
3 PM – 4 PM			2	3	5
After 4 PM		3			3

Total Peak Hour Trips (Adjacent Street)	Trips In	Trips Out	Total Trips
Weekday AM (7-9am)	4	4	8
Weekday PM (4-6pm)	0	3	3
SAT (11am-1pm)	2	3	5

CONCLUSION

Based on the minimal scale of operations described above, traffic impacts associated with the project will be negligible. The traffic from this development will add 8 trips or less during all peak hours. Total weekday trips are expected to be on the order of 80 to 90 trips per day (40 - 50 on a Saturday). Most of these trips occur outside peak travel times.

The AADT of NH 9 in 2019 was 9,707 vehicles. Thus the percentage increase is less than 1%, with typically 15 minutes between successive arrivals and departures. The roadway alignment and wide shoulders will facilitate safe access and egress from the site.

We therefore find the traffic associated with this proposal can be safely accommodated by the adjacent roadway without need for improvements. Please let me know if you have any questions in regard to these items.

TFMORAN, INC.

Robert Duval, PE
Chief Engineer

EcoSystems
LAND PLANNING

Wetland Functional Assessment

WETLAND AREA 1

G2 HOLDINGS, LLC

Map 215, Lot 7

KEENE, NH

John St. John, CWS

Prepared for: Granite Engineering, LLC

1.0 INTRODUCTION

1.1 ROLES AND RESPONSIBILITIES

Ecosystems Land Planning was commissioned by Granite Engineering to provide this Functions and Values Assessment of Wetland Area 1, to support a request of a waiver to Article 25.3.1.D – Surface Water Resource Setback. Wetland boundaries were originally delineated by Chris Danforth, CWS # 077, in August of 2022, and confirmed on-site by John St. John CWS #222 in July of 2024. This work is based upon information gathered in August of 2024 and in January of 2025.

1.2 TERMS

Wetland functions and values refer to the roles and importance of a wetland, determined by its characteristics and surrounding watershed. Functions are inherent to the wetland ecosystem, while values are based on its significance to society.

2.0 ASSESSMENT PROCEDURES

The "The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach" by the US Army Corps of Engineers New England District in September 1999, referred to here as "The Highway Method," was used to assess wetland functions and values of Wetland Area 1, on the above referenced parcel. This method uses qualitative characteristics to determine if a wetland is suitable for specific functions and values. A set list of considerations from The Highway Methodology guided the evaluation process.

Functions and values are designated as "Suitable" if they exhibit some of the qualifying characteristics listed in the method. However, a wetland may be deemed "Not Suitable" the if wetland shows only a few or weak qualifiers of the function or value.

Functions and values are designated as "Principal" if they are crucial to a wetland ecosystem or hold special societal value. The decision on principal functions or values was made using professional judgment without numerical weightings, rankings, or averaging to avoid bias. The Highway Method evaluates 13 of the 14 functions and values required to be assessed by New Hampshire State Law RSA 482A:2. The considerations for assessing each potential function or value are detailed in an excerpt from the "The Highway Methodology Workbook Supplement".

For determinations regarding "Ecological Integrity", as required by RSA 482-A:2, XI:, the "Method for Inventorying and Evaluating Freshwater Wetlands In New Hampshire" (NH Method) was used. See www.nhmethod.org. for additional details.

Please note: the NH Method establishes numerical values only. And, does not ascribe terms such as "Suitable" or "Principle" to wetland functions and values.

2.1 GENERAL SITE DESCRIPTION

Soils and Hydrology

Most of the surrounding area consists of upland soils such as Berkshire and Dixfield Fine Sand Loams. These soils are well-drained, with slopes between 0-25%.

Wetland Area 1 has shallow, poorly drained soils which range from 0-15% slopes. Wetland Hydrology is derived from hillslope seepage at the northern end of the valley. Soils are generally saturated due to a restrictive layer near the surface. Surface water and saturation generally decreases from north to south, infiltrating deep underground, causing conditions to revert to upland before reaching the access road to the south.

Plant Community

The primary tree species in the wetland area consist of eastern Hemlock, Red Maple, and Beech. The shrub/sapling layer includes Red Maple, Eastern Hemlock, and Beech. The dominant herbaceous vegetation consists of Sensitive Fern in most areas, with a small patch of Cattail in the northernmost area.

2.2 FUNCTIONS AND VALUES ASSESSMENT

Overall, this wetland got low scores in most of the wetland functions and values criteria. As a small, isolated hill side seepage wetland, that is located at the bottom of a steep ravine, that is partially surrounded by a berm, that is to be expected. The surrounding land use and altered topology further reduces the value of this wetland to wildlife as habitat and restricts human access.

The highest scores for this wetland were associated with Groundwater Recharge and Ecological Integrity. These scores are due primarily due to the lack of encroachment and despoliation within the wetland boundary.

This wetland also exhibits weak characteristics normally attributed for the function of “Sediment Trapping”. However, the existing contours of the land greatly (intentionally) restricts surface water flow into this wetland. And the high permeability of surrounding area all but eliminates the possibility this wetland would receive sediment laden surface water necessary for this function to occur.

Detailed characteristics and analysis of this wetland relative to the 14 functions and values listed in RSA 482:A are detailed in the Functions and Values Assessment Form, below.