

**The Commonwealth of Massachusetts**  
**TOWN OF LENOX**

Filing fee is due with the petition. If hearing expenses exceed this amount the Zoning Board of Appeals will bill the petitioner.

The undersigned hereby petitions the Town of Lenox Zoning Board of Appeals for:

Comprehensive

☒ A ~~Special~~ Permit for exception under the provisions of Section N/A of the Town of Lenox Zoning By-Law, MGL c. 40B

☐ A Variance from the following provisions of Section \_\_\_\_\_ of the Town of Lenox Zoning By-Law.

To permit the following use or activity (describe proposed use or activity):

multifamily housing - please see attached narrative/project description

For premises:

Owner of Record Forty Acres and a Mule, LLC

Address 17 Glenoe Road

Map and Parcel Tax Parcel 22-27-0

Zoned as C-3A

Deed Reference Book 4122

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*(This information is available from the Assessor's Office or townoflenox.com in the Property Assessments-Online Database section.)*

Petitioner



Rebecca Schofield

*(Your signature here also acknowledges that you agree to pay all hearing expenses relative to this petition.)*

Address (Mailing Address) 50 Milk St, Fl 16, Boston, MA 02110

Telephone Number 617-955-6712

Email address rschofield@pennrose.com

Date 10/31/2023

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## **Town of Lenox Zoning Board of Appeals**

### **Comprehensive Permit Application**

Applicant: Pennrose, LLC  
Property: 238 Pittsfield Road, Lenox, MA (21.2± acres)

#### Project Description/Narrative

The Applicant is seeking a Comprehensive Permit in accordance with M.G.L. Chapter 40B to develop 21.2± acres of the land at 238 Pittsfield Road ["Property"] into sixty-eight (68) units of affordable rental housing with waivers as authorized and necessary to enable the development to be constructed.

The new residential community will consist of ten (10) residential buildings containing a mix of twenty-three (23) one-bedroom apartments, thirty-eight (38) two-bedroom apartments, and seven (7) three-bedroom apartments (a total of 120 bedrooms). The residential buildings will be three-story structures with a mix of up to nine (9) units each.

A minimum of 25% of the apartments will be deed restricted affordable at 80% of the Area Medium Income ["AMI"], and the Applicant will enter into the required Affordable Housing Restriction ensuring that the apartments will remain affordable as rentals as required by DHCD and to provide ongoing monitoring of affordability. If possible given the financing for the development, the Applicant hopes to deed restrict 50/68 apartments at 80% of AMI and 18/68 apartments at 120% of AMI.

There will be a centralized, community building with space for resident use (events, meetings, and community programming), as well as offices for on-site management and resident services staff. This building will include space for maintenance equipment and staff and a required pump room. On-site amenities will include bicycle racks, walking paths, an outdoor recreational area, as well as indoor and outdoor social/leisure areas.

There will be a total of ninety-nine (99) on-site parking spaces (equivalent to 1.5 spaces per unit) for the use of residents and visitors. Per a request from the Fire Department, all buildings will have an access point for public safety that is not greater than thirty-five (35) feet from the building entrance.

The Property will be created as a new lot to be divided from the main property and will access Pittsfield Road (aka Veterans Memorial Highway aka Route 7/20) from a new curb cut as shown on the submitted plans. The Board of Appeals will review and approve the site plan review and subdivision plan as part of the Comprehensive Permit process.



The residential community will be connected to the public sewer system. The site design incorporates natural Low Impact Development (LID) practices such as vegetated swales, bioretention areas planted with native plantings, and underground recharge chambers. The stormwater management plan is designed in accordance with the MA Stormwater Management Policy and applicable local criteria.

All outer perimeters of the Property will remain in their natural, wooded state, with the exception of required site drainage, all as shown on the submitted plans. Approximately nineteen percent (19%) of the new parcel will be disturbed as part of construction with more than eighty percent (80%) remaining open space. The landscape design objective for the proposed development will be to enhance the built environment through the preservation of a sustainable landscape and building design that is integrated into its natural surroundings. Significant analysis and effort have been made to preserve trees and vegetation around existing natural features as much as feasible. The overall design will emphasize the use of low maintenance, native plantings as necessary to complement the existing mature forest and create privacy for the resident community.

The Applicant will provide on-site management and maintenance Monday-Friday 8:00 a.m. – 5:00 p.m., and there will be year-round 24/7 contact person information for any public safety and maintenance issues. As long-term owners and managers, Pennrose is experienced and committed to being responsive to residents' needs and effective stewards of the new development. The Applicant has submitted a Transportation Impact Assessment (TIA) as part of this Application. The TIA finds that "The additional traffic generated by the proposed project will result in an incremental increase in peak period traffic volumes on Pittsfield Road that will have a very small impact on traffic operations. In general, the expected increase in peak period demand at the study area intersections will be within the daily traffic variation and will not be perceptible to drivers."

The Applicant has worked closely with the Town of Lenox in connection with the proposal. The proposal is in keeping with the goals of the 2017 Housing Production Plan, and the 2021 Master Plan. Letters of Support from the Lenox Affordable Housing Trust, Land Use Department, Fire Department, Police Department, and Department of Public Works have been submitted. A Site Approval Letter was issued by the MA Department of Housing and Community Development (DHCD) on April 12, 2023, DHCD approved the proposal under the Low-Income Housing Tax Credit program. The addition of these sixty-eight (68) rental units will raise Lenox's percentage of year-round affordable housing on the MA Subsidized Housing Inventory from 9.5% to 12.5% (accounting for the 65 units in development at Brushwood Farm), thereby exceeding the 10% goal established by the Commonwealth of Massachusetts.

The Applicant respectfully submits that the proposal is consistent with local needs and will not have a material, detrimental effect on the character of the neighborhood or the Town; to the contrary, the proposed affordable rental housing development will have a significant beneficial effect on both future residents and the Town of Lenox as a whole.

**SUMMARY OF CONFORMITY WITH  
APPLICABLE ZONING BYLAW REQUIREMENTS**  
**0 PITTSFIELD ROAD, MAP 22, LOT 27, LENOX, MA**

The following is a summary of the applicable Lenox Zoning Bylaw requirements and the proposed conformance under this Special Permit.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
3.5.1	Purpose	It is the intent of this section that no individual, corporation or any business entity, regardless of the form chosen, shall occupy any building structure or premises or change the use thereof or the construction or alteration to the exterior of any structure in the C-1A or C-3A zones without first complying with the provisions of site plan review. In considering a site plan, the Zoning Board of Appeals (ZBA) shall assure that all structures and uses are developed in a manner which considers community needs, including protection of abutting properties and visual amenities, convenience and safety of vehicular and pedestrian movement within the site and in relation to adjacent areas, adequacy of methods of disposal for wastes and surface water drainage and protection of environmental features on the site and in adjacent area.	Acknowledged. All Site Plan Review submission requirements have been met.
3.5.2	Project Requiring Site Plan Review	Notwithstanding anything contained in the Bylaw to the contrary, no building permit for the construction, exterior alteration, or relocation, occupancy or change in use of any building, structure or premises in the C-1A or C-3A zones shall be issued, nor shall an occupancy certificate Lenox Zoning Bylaw - SECTION 3 - Page 9 for any change of use of a building, structure, or premise be issued, without site plan review and approval by the ZBA.	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
3.5.3	Waiver	If the ZBA determines upon review at a regularly posted meeting that there is no substantive change in use and the proposed use is not more detrimental than its present or immediate prior use and that the external enlargement, if applicable, is less than 2,000 square feet, the Board may waive any or all of the requirements of site plan review.	Acknowledged.
3.5.4	Action by the ZBA	<p>The Board of Appeals may approve a site plan subject to conditions, modifications and restrictions as the Board may deem necessary; and any construction, reconstruction, alteration or addition shall be carried out only in conformity with such conditions, modifications or restrictions and in conformity with the application and site plan. The Board of Appeals may condition its approval under Section 3.3.3 as follows:</p> <ol style="list-style-type: none"> <li>1. in the case of multi-family dwellings, by requiring the provision of up to 25 percent (25%) of the total housing units for persons of low or moderate income pursuant to G.L. Ch. 40B and regulations promulgated thereunder;</li> <li>2. for any development requiring a special permit under these provisions, provision of certain vegetated open space, protection for solar access, natural contours and existing vegetation, or limitations on use or hours of operation of such developments; and</li> <li>3. The improvement of road or utility facilities and on off-site to accommodate increased demand likely to be generated by the proposal.</li> </ol>	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
3.5.5	Contents of Site Plan	(See Town of Lenox Zoning Bylaw 2021 § 3.5.5 for list of Site Plan requirements.)	All Site Plan requirements have been met (See attached Site Plan set).
3.5.6	Waiver of Submittal Requirements	The ZBA shall have the right to waive any of the items set forth in Section 3.5.5 under unique site conditions or request any additional data it should need to render its decision. A majority vote of the ZBA would be required to waive any of the site plan items.	Acknowledged.
3.5.7	Procedure	(See Town of Lenox Zoning Bylaw 2021 § 3.5.7 for list of Site Plan review procedure requirements.)	All submission procedures requirements have been met.
3.5.8	Rules and Regulations	The Board may after a public hearing adopt and periodically amend or add rules and regulations relating to the procedures and administration of this section and shall file a copy of said rules with the Town Clerk.	Acknowledged.
3.5.9	Standards for Review	In reviewing site plans, the Board shall consider the following:	
		1. Protection of the abutting properties and community to minimize any detrimental use of the site.	Acknowledged.
		2. Convenience and safety of vehicular and pedestrian movement within the site and the relationship to adjoining ways and properties.	Acknowledged.
		3. Adequacy of the methods of disposal of sewage and refuse and the drainage of surface and subsurface water.	Acknowledged.
		4. Adequate means of protecting wetlands, watersheds, aquifers, and well areas.	Acknowledged.
		5. Provisions for off-street loading and unloading of vehicles incidental to the normal operation of the establishment, parking, lighting and internal traffic control.	Acknowledged.
		6. Provision of open space consistent with Town Open Space	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		Plan Concepts.	
		7. The natural landscape shall be preserved in its existing state insofar as practicable, by minimizing tree cutting, and soil removal or filling of the site. Any grade changes shall be in keeping with the general appearance of neighboring developed areas.	Acknowledged.
		8. Location and design shall not cause avoidable damage to wildlife habitats or corridors, or to any plant species listed as endangered, threatened or of special concern by the Massachusetts Natural Heritage Program, or to any tree exceeding 24 inches trunk diameter four and a half (4 ½) feet above grade. Applicants must submit documentation to the SPGA of having consulted with the Conservation Commission and the MA NHP regarding these considerations, and that the proposed site either contains no such habitats or materials or that all feasible efforts to avoid, minimize or compensate for damage have been reflected in the proposal.	Acknowledged.
		9. The layout of design features, such as vegetative buffers, within developments which will integrate into the existing landscape.	Acknowledged.
		10. Consistency of the proposed development with the Town Master Plan Concepts.	Acknowledged.
		11. Compliance with the provision of Massachusetts General Laws, Chapter 40A and 41A, the rules and regulations of state and federal agencies and the Bylaw of the Town of Lenox.	Acknowledged.
3.5.10	Sewer and Water Capacity	Each development proposal shall demonstrate that it will not adversely affect the existing loads on the public water and public sewer systems of the Town. The	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		<p>Department of Public Works or its agent shall serve to determine the existing load on the public water and public sewer systems of the Town. In the event that the Applicant is unable to demonstrate that there will be no adverse effect or if the Board should find there will be an adverse impact, the Board may require the Applicant to redesign the development proposal to minimize such impact and may require the Applicant to proceed with development in phases as specified by the Board. The Board may specifically require a development density less than that otherwise permitted under this Bylaw. In the alternative, the Applicant may offer to fund any required capital improvements deemed necessary by the Board to handle the increased water and sewer demands of the proposed development and the Board may require bonding in an amount sufficient to provide adequate security to the Town for the completion of said capital improvements. Any such capital improvements will be subject to the approval and continuing review of the Board of Public Works.</p>	
3.5.11	Stormwater Management	<p>All development shall be designed so that resulting stormwater conditions resemble, as nearly as possible, preexisting conditions of volume, velocity, quality and location of runoff.</p>	Acknowledged.
3.5.12	Erosion Control	<p>Any area of bare earth exposed through nonagricultural building development must be permanently stabilized through replanting, paving, or other means of eliminating wind or water erosion. Such stabilization must be completed prior to building occupancy, or a performance bond</p>	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		must be posted in an amount sufficient to assure completion of such work. All construction must comply with the following:	
		1. Stripping of vegetation, regarding or other development shall be done in a way which will minimize soil erosion.	Acknowledged.
		2. Whenever practical, natural vegetation shall be retained, protected and supplemented.	Acknowledged.
		3. The disturbed area shall be kept to a minimum.	Acknowledged.
		4. Where necessary, temporary vegetation and/or mulching shall be used to protect areas exposed during development.	Acknowledged.
		5. Sediment basins (debris basins, desilting basins or silt traps) shall be installed and maintained where necessary to remove from runoff water any sediment from land undergoing development.	Acknowledged.
		6. The angle of graded slopes and fills shall be no greater than the angle which can be retained by vegetative cover or alternative proposed erosion control devices or structures. In any event, slopes left exposed must immediately be planted or otherwise provided with permanent ground cover or other means sufficient to retain erosion.	Acknowledged.
		7. The development plan or land disturbing activity shall be fitted to the topography and soils so as to create the least erosion potential.	Acknowledged.
3.5.13	Design Standards	1. Any proposed landscape development or alteration should be compatible with the character and appearance of the surrounding area and the proposed project. Landscape and streetscape elements should provide continuity and definition to the street, pedestrian areas and surrounding landscape.	Acknowledged.

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		2. The design should give attention to the placement of storage, waste or mechanical equipment so as to screen it from view. Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures, and similar accessory areas and structures shall be subject to setbacks, screen plantings or other screening methods described in this section and in Section 7.1.15 to hide their existence and cause them to blend in with the existing or contemplated environment and the surrounding properties.	Acknowledged.
		3. The proposed materials and colors must be compatible with the character of the Town and the intent of the design standards. With respect to Lenox's unique architectural heritage, removal or alteration of historic, traditional or significant uses, structures, or architectural elements shall be minimized insofar as practicable, whether these exist on the site or on adjacent properties.	Acknowledged.
		4. Where feasible, fire escapes, window mounted air conditioners or other mechanical features should not be located on facades which front major streets, or face residential districts.	Acknowledged.
		5. Architectural details including but not limited to additions, signage, awnings, lighting, pedestrian furniture, planting and paving, shall be compatible with the architecture of the principal building and site landscaping with regards to scale, materials, color, and texture.	Acknowledged.



<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		6. Buildings and structures shall be designed and arranged so as to relate to open space in a manner compatible with adjacent lots.	Acknowledged.
		7. New development shall be compatible with existing natural and developed environment within the surrounding visual area. New buildings, additions or alterations shall be related to their surroundings with respect to:	Acknowledged.
		a. Street façade. All buildings should present high quality and architecturally related front facades to streets.	Acknowledged.
		b. Buildings on corner lots. If one street is more heavily used, then the facade of a new or renovated building facing that street may be more highly articulated and/or detailed than the facade which faces the side street.	Acknowledged.
		c. Renovations to historic buildings. Historic buildings should be renovated so as to retain historic features with original storefront elements and façade detailing.	Acknowledged.
		d. Roof Slopes. Heights of new buildings erected on sites without an existing building shall approximate those of adjacent buildings where feasible. Diverse roof heights are encouraged, however, should be complementary to the surrounding developed environment.	Acknowledged.
3.5.14	Lapse	Site plan approval shall lapse after one year from the grant thereof if a substantial use thereof has not sooner commenced except for good cause. Such approval may, for good cause, be extended in writing by the Board upon the written request of the applicant.	Acknowledged
3.5.15	Appeal	Any decision of the Board pursuant to this Section shall be appealed in	Acknowledged

<b>3.5 Site Plan Approval in the C-1A and C-3A Zones</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		accordance with G.L. c. 40A, s. 17 to a court of competent jurisdiction.	

<b>6.1 General Requirements (Dimensional Requirements)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
6.1.1	Table of Dimensional Requirements	<u>Requirements for C-3A District:</u> <ul style="list-style-type: none"> <li>• Minimum Lot Area: 3 acres</li> <li>• Minimum Lot Frontage: 300 feet</li> <li>• Minimum Lot Width at Building Setback Line: 300 feet</li> <li>• Street Line Minimum Setback: 75 feet</li> <li>• Lot Line Minimum Setback: 30 feet</li> <li>• District Boundary Line Minimum Setback: 50 feet</li> <li>• Sign Setback: 35 feet</li> <li>• Parking Area Setback: 30 feet</li> <li>• Maximum Building Height: 35 feet</li> <li>• Maximum Building Coverage: 20%</li> </ul>	Project meets all requirements
6.1.2	Computation	The land and yard areas required for any new building or use shall not include any land or area required by any other building or use to fulfill these zoning requirements.	Acknowledged
		Land within the lines of a street on which a lot abuts shall not be counted as part of such lot for the purpose of meeting the area requirements of this Bylaw even though the fee to such land may be in the owners of abutting lots.	Acknowledged
6.1.3	Multiple Buildings	If more than one building (other than a one-, two-, or three-car garage, a tool shed, a greenhouse or a cabana) is lawfully placed on any lot in single or common ownership, the distance between the nearest parts of such buildings shall be not less than 20 feet.	Requirement Met
6.1.4	Land Divided by Town Line	When a lot is situated in part in the Town of Lenox and in part in the adjacent municipality, the provisions of this Bylaw shall be	Not Applicable

<b>6.1 General Requirements (Dimensional Requirements)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		applied to the portion of such lot in Lenox in the same manner as if the entire lot were situated in Lenox.	
6.1.5	Frontage Required	No buildings or structures except those of an accessory nature shall be constructed except on a lot fronting on a street.	Acknowledged
6.1.6	Lots Abutting Multiple Streets	On lots abutting streets on more than one side, the building front setback requirements shall apply to each of the abutting streets. However, a dwelling need not be set back more than the average of the setbacks of the dwellings on the abutting lots on either side. If a vacant lot exists on one side it shall be considered as a dwelling setback the depth of the required front setback. No fence shall be constructed so as to obstruct intersection view within front setbacks at street intersections.	Not Applicable
6.1.7	District Boundary Lines	Where district boundary lines separate residential districts from commercial districts and industrial districts, setback areas shall be planted with screening to protect the residential districts.	District Boundary Line is located 470+/- feet from proposed development and fully screened
6.1.8	Maximum Height/Number of Stories Restrictions	Maximum building or structure height restrictions shall not apply to chimneys, water towers, skylights and other necessary features appurtenant to buildings which are usually carried above roofs and are not used for human occupancy. The Board of Appeals may allow greater height and more stories when permitting Planned Unit Office, Great Estates, Gateway Mixed Use Developments, and uses located in the Commercial Zone. In no instance shall height, not including exemptions as stated in Section 6.1.1, exceed 50 feet and the number of stories exceed four (4).	<p>Waiver Requested</p> <p><u>Clubhouse</u> - #1 = 25.6'</p> <p><u>Type A</u> - #3 = 38.6' #5 = 40.7' #9 = 40.7'</p> <p><u>Type B</u> - #4 = 39.7' #6 = 39.9' #8 = 37.8'</p> <p><u>Type C</u> - #10 = 42.1' #11 = 43.3'</p> <p><u>Type D</u> - #2 = 38.2' #7 = 37.2'</p>

<b>6.1 General Requirements (Dimensional Requirements)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
6.1.9	Stairways	Stairways leading to any floor or story above the first floor story shall be located within the walls of the building whenever practicable; otherwise, stairways and fire escapes shall be located on the rear wall in preference to either side wall. In no instance shall a stairway or fire escape be located on any wall fronting on a street.	Acknowledged
6.1.10	Lot Sizes in the C District	In view of small and irregular lot sizes in the C District, applications for a new building will be accepted for consideration based on areas no less than current lot sizes. Fireproof walls on one side to the lot line are permissible if there is at least 15' setback on the other side of the building.	Not Applicable
6.1.11	Lots in the C-3A District	The street line building or structure setback in C-3A may be reduced to a minimum of thirty-five (35) feet by a Special Permit from the Board of Appeals pursuant to Section 6.3 of this Bylaw if the Board determines that the proposed plan will significantly enhance the aesthetics of the property.	Not Requested
6.1.12	Fencing	Fences in side and rear yards are not to exceed six (6) feet in height. Fences in the street line setback are not to exceed four (4) feet in height and be not more than fifty (50) percent solid, and be finished on the good side which is to face the abutting property. (Revised in accordance with the Attorney General Approval dated July 23, 2008.)	Acknowledged
6.1.13	Screening	Plant materials used for screening must be at least three feet in height at the time of planting, must be of a type that may be expected to form a year-round dense screen and must reach a height in maturity of at least five feet.	Acknowledged

<b>6.1 General Requirements (Dimensional Requirements)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		Any existing growth of trees and shrubs may be used for screening if in the judgment of the Board of Appeals, or if the use is by right, the Building Commissioner, such growth provides equivalent screening.	Acknowledged
		Masonry walls or wooden or fabricated fences used for screening must be from five to six feet in height, at least 50 percent solid, and designed in an attractive manner to obscure any view.	Acknowledged
6.1.14	Temporary Structures	Temporary structures such as construction trailers and tents that are for commercial use and are at least one-hundred twenty (120) square feet in size and will be occupied by more than ten (10) people may be issued a temporary permit by the Building Commissioner if the Building Commissioner determines that such uses shall be reasonably required or customary. Such permit shall be for a period of not more than a year with renewal for successive period of not more than one additional year with permission of the Building Commissioner.	Acknowledged

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.1.1	General	No building or structure shall be erected or enlarged unless the off-street parking and loading space requirements are provided as specified in this section.	Waiver Requested
7.1.2	Location	Required off-street parking facilities or loading bays shall be provided on the same lot as the principal use they are designed to serve, except as may be provided elsewhere in this Bylaw.	Acknowledged

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.1.3	Parking Space Dimensions	Each required car space shall be not less than 9 feet in width and 20 feet in length exclusive of drives and maneuvering space and the total area of any parking facility for more than 5 cars shall average at least 300 square feet per car exclusive of driveways.	Acknowledged
7.1.4	Multiple Uses	Unless otherwise set forth herein, where one building is used for more than one use, parking requirements shall be computed for each use.	Acknowledged
7.1.5	Required Spaces	2 spaces per dwelling unit.	Waiver Requested
7.1.6	Shared Parking	To the extent feasible, parking areas shall be shared with adjacent uses.	Not Applicable
7.1.7	Reduction of Parking Requirements	Any minimum parking requirements may be modified by a Special Permit from the Board of Appeals upon determination that specific circumstances render a lesser provision adequate for all parking needs.	Modification Requested
7.1.8	Parking Design Standards	A minimum of 80% of the required parking area shall be located to the side or rear of the structure. No parking shall be permitted within the required front setback of any building.	Waiver Requested
		All off-street parking areas with a capacity in excess of 35 spaces shall be paved.	Acknowledged
		All off-street parking areas with a capacity of 35 spaces or fewer shall be paved unless covered with a surfacing material meeting the following specifications: Face course min. 8" thick type B gravel; Layers to be 4" lifts max. Sub-based rolled and suitable to DPW Superintendent. Areas unsuitable to be excavated and replaced with road stone and re-rolled.	Acknowledged – All parking is proposed to be paved.
		Parking facilities for more than 35 cars which will be used only from June 1 to October 31 need not be	Not Applicable

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		paved if a grass cover satisfactory to the Superintendent of Public Works is used on top of the required gravel base.	
		Parking spaces accompanying uses by right in residential districts shall be exempt from the above surfacing requirements.	Acknowledged
		<p>In C-3A and C-1A Districts, the minimum dimensions for off-street parking spaces, exclusive of drives and maneuvering spaces, shall be as follows:</p> <p>Regular Space:</p> <ul style="list-style-type: none"> <li>• 8.5 feet Equivalent 90° Width</li> <li>• 19 feet Minimum Equivalent 90° Depth</li> <li>• 7.5 feet Vertical Clearance</li> <li>• 60° Angle of Parking</li> <li>• 22 feet Aisle Width</li> </ul> <p>Handicapped Space:</p> <ul style="list-style-type: none"> <li>• 12 feet Equivalent 90° Width</li> <li>• 20 feet Minimum Equivalent 90° Depth</li> <li>• 7.5 feet Vertical Clearance</li> <li>• 60° Angle of Parking</li> <li>• 22 feet Aisle Width</li> </ul>	Requirement Met
		Off-street parking facilities shall have maneuvering areas and appropriate means of vehicular access to a street and shall be so designed as not to constitute a nuisance, hazard, or unreasonable impediment to traffic.	Acknowledged
		Curb cuts on town ways shall comply with the Zoning Bylaw standards.	Acknowledged
7.1.9	Driveways	The minimum traveled width for a one-way driveway shall be 12 feet. The minimum traveled width for a two-way driveway shall be 24 feet.	Waiver Requested – 22' wide road with 1' Cape Cod mountable curb (total of 24')
		No curb cut shall be located closer than 25 feet to a street or road intersection or within 15 feet of a crosswalk.	Acknowledged

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.1.10	Layout	No on-grade open parking space shall be located within 10 feet of that portion of a building wall containing windows or rooms at basement or 1st story levels habitable/occupied by people. However, on-grade open parking spaces serving 1, 2, or 3 family dwellings may be located within five (5) feet of that portion of such building wall.	Waiver Requested
		No on-grade open parking space or driveway shall be located within 30 feet of any side or rear property line.	Requirement Met
		The area between the required parking setback line and the building or lot line shall be landscaped and maintained in accordance with the requirements of the Bylaw.	Waiver Requested
		In a C-3A district, no part of any parking facility or internal roadway shall be located within 30 feet of a residential district or of an open space district, a park or public recreation area or within 50 feet of the right-of-way of Route 7/20.	Requirement Met
		All roads, streets, sidewalks and other public rights-of-way and all landscaped areas shall be protected from vehicular overhang by wheel bumpers, curbs or other suitable method.	Acknowledged
		Off-Street parking facilities shall be marked so as to indicate clearly the space to be occupied by each vehicle, in accordance with the dimensions specified, and including directional arrows and traffic signs as necessary for traffic control. Such markings shall be maintained so as to be plainly visible.	Acknowledged



<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.1.11	Drainage, Surfacing & Maintenance	All sections of off-street parking facilities which are paved according to the requirements of this subsection shall be graded, surfaced and maintained to the satisfaction of the Town DPW to the extent necessary to prevent nuisance of dust, erosion, or excessive water flow onto any public way or lot.	Acknowledged
7.1.12	Maintenance	Off-street parking areas shall be kept plowed, clean and free from rubbish and debris. All fences, barriers, walls, landscaping and lighting shall be maintained and kept repaired or replaced with facilities satisfying the requirements of this Section.	Acknowledged
7.1.13	Snow Storage	Parking areas shall have a designated area(s) to place snow.	Acknowledged
7.1.14	Lighting	Off-street parking facilities which are used at night shall be provided with adequate lighting installed and maintained in such a manner so as not to reflect or cause glare on abutting or facing residential premises nor cause reflection or glare which adversely affects safe vision of operators of vehicles moving on nearby streets.	Acknowledged
7.1.15	Screening	A strip at least 5 feet in width of densely planted shrubs or trees which are at least 3 feet high at the time of planting and are of a type that may be expected to form within three years after the time of planting a continuous, unbroken, year-round visual screen.	Waiver Requested
		For rear and side yards only, a wall, barrier, or fence of uniform appearance. Such wall, barrier, or fence may be opaque or perforated provided that not more than 50% of the face is open. The wall, barrier or fence shall be at least 4 feet and not more than 6 feet in height.	Waiver Requested

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		The screening as required shall be located so as not to obstruct vehicle sight distances, entrances and exits. Such screening shall not be higher than 2 feet within 30 feet of an intersection or 10 feet of a driveway.	Not Applicable
		Every effort shall be made to retain existing trees. Removal of any tree exceeding 6 inch caliper to accommodate construction of a parking facility is discouraged.	Site is designed to fit into the topography and retain trees
		Screening shall be continuously maintained so as to effectively serve the purpose for which it is intended. No advertising devices of any kind shall be allowed on or in screening.	Acknowledged
		Screening shall be continuous except for required access.	Acknowledged
7.1.16	Landscaping	At least 15% of the interior area of the parking facility shall be landscaped.	Waiver Requested
		Each planting area shall be at least 25 square feet in area and have no dimensions less than 5 feet.	Acknowledged
		Each planting area shall contain at least one tree and the facility as a whole shall contain at least one tree for every ten parking spaces.	Acknowledged
		Trees used to satisfy parking lot landscaping requirements shall be a minimum of 3 inch caliper at planting and shall be suitable for location in parking lots.	Acknowledged
		The trees required for the landscaping of on-site parking areas should be tolerant of environmental conditions, able to screen parking areas by virtue of their size, form, density of foliage and spread, and easy to maintain.	Acknowledged
		Existing healthy trees shall be preserved wherever possible.	Acknowledged
		Trees shall be protected by bollards, high curbs or other barriers sufficient to prevent damage.	Acknowledged

<b>7.1 Off-Street Parking &amp; Loading Requirements</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		Extensive unbroken paved areas in large on-grade open parking facilities shall not be permitted. In parking lots containing 35 or more spaces, a row shall contain no more than 15 contiguous parking spaces without a densely planted landscaped buffer of at least the dimensions of one space.	Acknowledged
		No regular certificate of occupancy shall be issued unless an inspection by the Building Commissioner establishes that the landscaping meets the requirements provided herein.	Acknowledged
7.1.17	Bicycles	Bicycle parking spaces shall be located near the entrance of the use being served and within view of pedestrian traffic, if possible, and shall be sufficiently secure to reasonably reduce the likelihood of bicycle theft.	Acknowledged
7.1.18	Loading Space	Each loading space shall be not less than 10 feet in width and 35 feet in length exclusive of drives and maneuvering space, and all required spaces, drives and maneuvering areas shall be located entirely on the lot with direct access to the building to be served. Each space shall have a minimum clear height, including access to it from the street of fourteen (14) feet.	Not Applicable
7.1.19	Loading Standards	Facilities shall be so sized and arranged so that no vehicles need back onto or off of a public way, or be parked on a public way while loading, unloading or waiting in queue. In addition loading facilities shall be located so as to not interfere with internal traffic circulation.	Not Applicable

<b>7.2 Signs</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.2.5	Signs in Residential Districts	One non-illuminated sign which displays the street number, name of the occupant or the premises or both, not exceeding 3 square feet in area, or not more than two signs, not exceeding 2 square feet in area each. Such sign may be attached to a building or may be on a rod or post not more than 4 feet high and not less than 3 feet from any lot line.	Acknowledged
7.2.6	Signs in Commercial and Industrial Districts	Signs shall relate to the premises on which they are located and shall only identify the occupancy of such premises or advertise the articles or services available within such premises. Illuminated signs are permitted.  C-3A District: 1 per occupancy; 36 sq. ft. in size; On building, 12" maximum projection  C-3A District: 1 per lot; 36 sq. ft. in size; Free-standing, 35 ft. setback	Acknowledged
7.2.7	Entrance and Exit Signs in Commercial and Industrial Districts	C-3A – 8" x 24"	Acknowledged
7.2.8	Other Signs Permitted in Commercial and Industrial Districts	Each occupant in a Commercial or Industrial District is permitted one sign affixed parallel to the exterior face of the building fronting upon a public street and also one sign affixed parallel to the exterior face of the building fronting upon a parking lot if there is an entrance from the parking lot leading to the occupant's premises. Multiple occupants having a common entrance are restricted to group listings on a single sign.	Acknowledged
7.2.9	Free-standing Signs	In C-1A and C-3A and Industrial Districts where a free-standing sign is permitted, the top edge of any such free-standing sign shall not be higher than 20 feet vertical	Acknowledged

7.2 Signs			
Section	Description	Requirement	Proposed/Comment/Waiver Request
		measure above the average level of the ground between the supports of each sign. Any such free-standing sign may not be nearer to lot lines than setbacks given in Table 7.2.6. Maximum dimension for a free-standing sign in any direction is 16 feet.	

7.3 Lighting			
Section	Description	Requirement	Proposed/Comment/Waiver Request
7.3.1	Sign Lighting	Sign lighting shall be continuous, not intermittent nor flashing, nor changing.	Acknowledged
		Sign illumination is permitted only between 7am and 11pm.	Acknowledged
		The preferred type of lighting for signs is direct illumination from a shielded light source. Any illumination provided for signs shall be white only. Internally-lit signs with opaque backgrounds and glowing translucent letters may be permitted. Individual solid metal letters with internal lighting tubes that back-light the wall in a “halo” effect may also be allowed.	Acknowledged
7.3.2	Outdoor Lighting	Any private outdoor lighting fixture shall be shielded at the source so as not to produce a strong direct light beyond the property boundaries. The light level at the lot line shall not exceed 0.2 foot-candles, measured at ground level.	Acknowledged
		No private outdoor light shall be located higher than 25 feet.	Acknowledged

<b>7.4 Drainage &amp; Erosion Control</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.4.1	Applicability	Any use requiring a special permit or variance which permits the construction of more than ten (10) new dwelling units, which is located on 25 acres or more of land and/or results in more than 20,000 square feet of ground floor area and paved parking area.	Acknowledged
7.4.2	Submittals	A plan of the tract and adjacent and downstream areas showing proposed drainage facilities together with a statement showing the impact of storm water runoff on adjacent downstream surface water bodies and flood plains.	Acknowledged
		A plan for control of erosion and sedimentation both temporary and permanent measure prepared by a professional engineer.	Acknowledged
		A plan map showing property lines, wetlands, stream courses, water bodies, location of areas to be stripped of vegetation, location of areas to be re-graded, the contour data including existing and proposed grades.	Acknowledged
		A schedule of operations, to show the sequence and timing of major improvement phases such as clearing, grading, paving, installation of drainage features, and the like.	Acknowledged
		Seeding, sodding, or re-vegetation plans and specifications for all unprotected or un-vegetated areas.	Acknowledged
		A map showing the location, design and timing of structural sediment-control measures, such as diversions, waterways, grade stabilization structures, debris basins, and the like.	Acknowledged
		The calculations used in designing erosion-control structures.	Acknowledged

<b>7.4 Drainage &amp; Erosion Control</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		A description of procedures to be followed to maintain sediment-control measures, including the manner in which sediment removed from control structures will be disposed of.	Acknowledged
7.4.3	Standards	Performance standards shall conform to those described in the "Guidelines for Soil and Water Conservation in Urbanizing Areas of Massachusetts".	Acknowledged
		Make adequate provisions for the provision of surface water; catch basins, and culverts shall be in conformance with DPW specifications at intervals of not more than 400 feet, at low points and sags in roadway, and near the corners of the roadway at intersecting streets.	Acknowledged
		Carry away by pipe or open ditch any spring or surface water that may exist either previous to or as a result of the development.	Acknowledged
		A culvert or other drainage facility shall be large enough to accommodate potential runoff from its entire upstream drainage area.	Acknowledged
		Design and size of the facility based on anticipated runoff from a "25 year frequency" storm under conditions of total potential development permitted by the zoning bylaw in the watershed. Soil Conservation Service Modified Soil Cover Complex Method will be used to determine runoff.	Acknowledged
		Study the effect of the existing downstream drainage facilities outside the area of development.	Acknowledged

<b>7.4 Drainage &amp; Erosion Control</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
7.4.4	Security	A completion bond or covenant shall be required for improvements in the proposed development. A bond shall be sufficient to cover the costs of accomplishing the erosion and sedimentation control measures.	Acknowledged

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
9.8.1	Purpose	To promote the general public welfare, including but not limited to ensuring an economically integrated and diverse community by maintaining and increasing the supply of affordable and accessible housing in the Town of Lenox. This purpose includes:	Acknowledged
		Ensuring that new residential development generates affordable housing as defined in Section 9.8.2.	Acknowledged
		Ensuring that affordable housing created under this section remains affordable over the long term, with the majority of such housing remaining affordable in perpetuity, except as may be otherwise required under state or deferral programs.	Acknowledged
		Maintaining a full mix of housing types while providing affordable housing opportunities in Lenox.	Acknowledged
		To the extent allowed by law, ensuring that preference for new affordable housing is given to eligible persons who live or work in Lenox.	Acknowledged
9.8.2	Definitions	"Affordable to persons or families qualifying as low income" shall mean affordable to households or persons earning less than 50% of the median income under the	Acknowledged



9.8 Residential Inclusionary Development (Special Residential Regulations)													
Section	Description	Requirement	Proposed/Comment/Waiver Request										
		applicable guidelines of the Commonwealth's Department of Housing and Community Development.											
		"Affordable to persons or families qualifying as moderate income" shall mean affordable to households or persons earning more than 50% but less than 80% of the median income under the applicable guidelines of the Commonwealth's Department of Housing and Community Development.	Acknowledged										
		“Affordable units” shall mean any combination of dwelling units restricted in perpetuity as affordable to persons or families qualifying as low or moderate income.	Acknowledged										
9.8.3	Applicability	All residential development requiring a Special Permit and resulting in additional new dwelling units shall provide affordable housing units at the following minimum rates:	Acknowledged										
		<table><tr><td>Total Development Unit Count</td><td>Required Affordable Unit Provision</td></tr><tr><td>1-15 units</td><td>None*</td></tr><tr><td>16-20 units</td><td>Minimum one (1) dwelling unit</td></tr><tr><td>21-30 units</td><td>Minimum two (2) dwelling units</td></tr><tr><td>31 units and up</td><td>Minimum 10% of total unit count**</td></tr></table>		Total Development Unit Count	Required Affordable Unit Provision	1-15 units	None*	16-20 units	Minimum one (1) dwelling unit	21-30 units	Minimum two (2) dwelling units	31 units and up	Minimum 10% of total unit count**
		Total Development Unit Count		Required Affordable Unit Provision									
		1-15 units		None*									
		16-20 units		Minimum one (1) dwelling unit									
		21-30 units		Minimum two (2) dwelling units									
		31 units and up		Minimum 10% of total unit count**									
* While provision of affordable units is not required for developments containing 1 -15 units under this section, the Bylaw encourages affordability and provides for incentives. See Section 9.8.6.2.a.													
** For developments of 31 or more units, calculation of the number of affordable units shall, if the required percent of the total results in a fraction, be rounded up to the next whole													

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		number where the fractional portion is equal to 0.5 or greater, and shall be rounded down to the next whole number where the fractional portion is less than 0.5.	
9.8.4	Special Permit Authority	The development of any project set forth in Section 9.8.3 (above) shall require the grant of a Special Permit from the Zoning Board of Appeals (ZBA). The Special Permit shall conform to the requirements of this bylaw and to Massachusetts General Laws Chapter 40A, and to regulations which the ZBA may adopt for carrying out its requirements hereunder.	Acknowledged
9.8.5	Minimum Requirements for Inclusionary Development	Buffer Areas. A buffer area of 50 feet shall be provided at the perimeter of the property where it abuts residentially zoned or occupied properties, except for driveways necessary for access and egress to and from the site. No vegetation in this buffer area will be disturbed, destroyed or removed, except for normal maintenance. The ZBA may reduce the buffer requirement to no less than 25 feet (i) where the land abutting the site is the subject of a permanent restriction for conservation or recreation or (ii) where the land abutting the site is held by the Town for conservation or recreation purposes; unless the ZBA determines that a smaller buffer will suffice to accomplish the objectives set forth herein.	Acknowledged
		Each inclusionary development shall provide, at the applicant's choice, one of the following:  a. Construct or rehabilitate affordable units comparable in appearance and setting to the rest of the development or	Acknowledged

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		<p>neighborhood.</p> <p>b. A cash payment equivalent to the value of structures, land and appropriate on-site and off-site improvements, be made to the Town of Lenox Housing Trust Fund. The cash payment shall be equal to the total cost of construction for each low or moderate income dwelling unit. The conditions of payment shall be determined through the Special Permit process.</p> <p>c. As a condition for granting of a Special Permit, all affordable housing units shall be subject to an affordable housing restriction and a regulatory agreement in the form acceptable to the ZBA. The affordable restriction shall be approved as to form by legal counsel to the Zoning Board of Appeals and a right of first refusal upon the transfer of such restricted units shall be granted to the Town or its designee for a period of not less than 120 days after notice thereof. The regulatory agreement shall be consistent with any applicable guidelines issued by the Department of Housing and Community Development and shall ensure that affordable units can be counted toward the Lenox Subsidized Housing Inventory. The special permit shall not take effect until the restriction, the regulatory agreement and the special permit are recorded at the Registry of Deeds and a copy is provided to the ZBA and the Building Commissioner.</p>	
9.8.6	Dimensional Requirements	Design Process. Each development plan shall follow the design process outlined below. When the	Acknowledged

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		<p>development plan is submitted, applicants shall be prepared to demonstrate to the Zoning Board of Appeals that this process was considered in determining the layout of the proposed inclusionary development.</p> <p>a. Understanding the Site. The first step is to inventory existing site features, taking care to identify sensitive and noteworthy natural, scenic and cultural resources on the site, and to determine the connection of these important features to each other.</p> <p>b. Evaluating Site Context. The second step is to evaluate the site in its larger context by identifying physical (e.g., stream corridors, wetlands), transportation (e.g., road and bicycle networks), and cultural (e.g., recreational opportunities) connections to surrounding land uses and activities.</p> <p>c. Location of Development Areas. The third step is to locate building sites, streets, parking areas, paths and other built features of the development. The design should include a delineation of private yards, public streets and other areas, and shared amenities, so as to reflect an integrated community, with emphasis on consistency with the Town's historical development patterns as well as any exiting historical architectural and landscape features.</p>	
		The applicant shall prepare a plan showing the Basic Maximum Number of dwelling units allowed in the residential zoning district.	Waiver Requested

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		<p>The Basic Maximum Number shall not exceed the number of units which could reasonably be expected to be developed upon the site under a conventional as of right residential plan in full conformance with all zoning, subdivision regulations, health regulations, wetlands regulations and other applicable federal, state and local requirements (hereinafter, the Yield Plan). The proponent shall have the burden of proof with regard to the design and engineering specifications for such Yield Plan.</p> <p>The ZBA may award a density bonus to increase the number of dwelling units beyond the Basic Maximum Number as follows:</p> <p>a. For projects with a Yield Plan of 15 or fewer units the ZBA has the discretion to award a density bonus of two market rate units for each affordable unit provided.</p> <p>b. For projects with a Yield Plan of 16 or greater units the ZBA has the discretion to award the addition of two market rate units for each affordable unit provided as part of compliance with Section 9.8.3.</p>	
		The street line and lot line setbacks, minimum lot size and minimum frontage of the proposed inclusionary development will be determined through the Special Permit process as outlined in Section 9.8.6.1. At least 50% of the lot line setback shall be maintained.	Acknowledged.
9.8.7	Types of Buildings	The inclusionary development may consist of any combination of single-family, two-family and multifamily residential structures. A multifamily structure shall not contain more than four (4) dwelling	Waiver Requested for buildings with up to 9 units

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		units. The architecture of all multifamily buildings shall be residential in character, particularly providing gabled roofs, predominantly wood siding, an articulated footprint and varied facades.	
9.8.8	Roads	The principal roadway(s) serving the site shall be designed to conform with the standards of the Town where the roadway is or may be ultimately intended for dedication and acceptance by the Town. Private ways shall be adequate for the intended use and vehicular traffic and shall be maintained by an association of unit owners or by the Applicant.	Acknowledged
9.8.9	Parking	Each dwelling unit shall be served by two (2) off-street parking spaces. Parking spaces in front of garages may count in this computation.	Waiver Requested
9.8.10	Stormwater Management	Stormwater management shall be consistent with the requirements for subdivisions set forth in the Rules and Regulations of the Planning Board.	Acknowledged
9.8.11	Decision	The ZBA may approve, approve with conditions, or deny an application for an Inclusionary Development after determining whether the Inclusionary Development promotes the purposes of Section 9.8.1.	Acknowledged
9.8.12	Relation to Other Requirements	The submittals and permits of this section shall be in addition to any other requirements of the Subdivision Control Law or any other provisions of this Zoning Bylaw.	Acknowledged
9.8.13	Maximum Incomes and Selling Prices: Initial Sale	To ensure that only eligible households purchase affordable housing units, the purchaser of an affordable unit shall be required to submit copies of the last three years federal and state income tax returns and certify, in writing and prior to transfer of title, to the developer of	Acknowledged

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		the housing units or his/her agent, and within thirty (30) days following transfer of title, to the local housing trust, housing authority or other agency as established by the town, that his/her or their family's annual income level does not exceed the maximum level as established by the Commonwealth's Department of Housing and Community Development, and as may be revised from time to time.	
		The maximum housing cost of affordable units created under this bylaw is established by the Commonwealth's Department of Housing and Community Development, Local Initiative Program.	Acknowledged
9.8.14	Reservation of Affordability; Restrictions on Resale	<p>Each affordable unit created in accordance with this bylaw shall have limitations governing its resale through the use of a regulatory agreement (Section 9.8.5.2.c). The purpose of these limitations is to preserve the long-term affordability of the unit and to ensure its continued availability for affordable income households. The resale controls shall be established through a restriction on the property and shall be in force in perpetuity.</p> <p>a. Resale price. Sales beyond the initial sale to a qualified affordable income purchaser shall include the initial discount rate between the sale price and the sale price and the unit's appraised value at the time of resale. The percentage shall be recorded as part of the restriction on the property noted in Section 9.8.14.1, above.</p> <p>b. Right of first refusal to purchase. The purchaser of an affordable</p>	Acknowledged

<b>9.8 Residential Inclusionary Development (Special Residential Regulations)</b>			
<b>Section</b>	<b>Description</b>	<b>Requirement</b>	<b>Proposed/Comment/Waiver Request</b>
		<p>housing unit developed as a result of this bylaw shall agree to execute a deed rider prepared by the town, consistent with model riders prepared by Department of Housing and Community Development, granting, among other things, the municipality's right of first refusal to purchase the property in the event that a subsequent qualified purchaser cannot be located.</p> <p>c. The ZBA shall require, as a condition for Special Permit under this bylaw, that the applicant comply with the mandatory set-asides and accompanying restrictions on affordability, including execution of the deed rider noted in Section 9.8.14.1.b, above. The Building commissioner shall not issue an occupancy permit for any affordable unit until the deed restriction is recorded.</p>	
9.8.15	Conflict with Other Bylaws	The provisions of this bylaw shall be considered supplemental of existing zoning bylaws. To the extent that a conflict exists between this bylaw and others, the more restrictive bylaw, or provisions therein, shall apply.	Acknowledged
9.8.16	Severability	<p>If any provision of this bylaw is held invalid by a court of competent jurisdiction, the remainder of the bylaw shall not be affected thereby.</p> <p>The invalidity of any section or section or parts of any section of this bylaw shall not affect the validity of the remainder of the town's zoning bylaw.</p>	Acknowledged
9.8.17	Waivers	The Zoning Board of Appeals may grant a waiver or amendment from one or more requirements of this bylaw if it finds that the waiver is in the public interest, that the specific information for which the waiver is	Acknowledged



9.8 Residential Inclusionary Development (Special Residential Regulations)			
Section	Description	Requirement	Proposed/Comment/Waiver Request
		sought is relevant to the project that is the subject of the application, and that the waiver is consistent with the intent of the zoning Bylaws. A waiver shall be granted only by an affirmative vote of two-thirds (2/3) of the Zoning Board of Appeals.	

**Town of Lenox  
Zoning Board of Appeals**

**Comprehensive Permit Application**

Applicant: Pennrose, LLC  
Property: 238 Pittsfield Road, Lenox, MA

Summary of Waivers from Local Requirements and Regulations

The Applicant has submitted a detailed review and analysis of the conformity of the proposed development with the provisions of the Lenox Zoning By-Law and Subdivision Rules and Regulations. The following is a Summary of those provisions from which waivers are being requested:

1. Lenox Zoning By-Law:
  - A. Sections 5.2(A)(4), 9.8.6, and 9.8.7 Multifamily dwelling use, including number of units and number of units per building
  - B. Section 6.1.8 Building height (variable based on topography and average grades with a range of 25.6 ft. to 43.3 ft.)
  - C. Sections 7.1.1, 7.1.5 & 9.8.9 Parking spaces (1.5 spaces per unit provided)
  - D. Section 7.1.8 Parking location (proposed along circular driveway)
  - E. Sections 7.1.9 and 9.8.8 Driveway design and width (22 ft. two-way driveway Plus 1 ft. mountable Cape Cod berm {24 ft. total width} provided)
  - F. 7.1.10 Parking space building and landscaping setback (less than 10 ft. provided)
  - G. 7.1.15 Parking lot screening (buffer strip and rear & side yards)
  - H. 7.1.16(1) Parking area landscaping (less than 15% required)
2. Lenox Subdivision Rules and Regulations: to extent necessary to create lots as shown in accordance with the Comprehensive Permit



Commonwealth of Massachusetts  
**DEPARTMENT OF HOUSING &  
COMMUNITY DEVELOPMENT**

Maura T. Healey, Governor ♦ Kimberley Driscoll, Lieutenant Governor ♦ Jennifer D. Maddox, Undersecretary

April 12, 2023

Mr. Charlie Adams  
Pennrose, LLC  
50 Milk Street, 16<sup>th</sup> Floor  
Boston, MA 02109

Re: 238 Pittsfield Road, Lenox, MA– Project Eligibility Letter

Dear Mr. Adams:

We are pleased to inform you that your application for project eligibility determination for the proposed 238 Pittsfield Road project located in Lenox, Massachusetts, has been approved under the Low Income Housing Tax Credit (LIHTC) program. The property is located at 238 Pittsfield Road, Lenox, Massachusetts. This approval indicates that the proposed plan is for 68 units of rental housing for families, 50 (73.5%) of which will be affordable at no more than 60% of area median income. The proposed development will consist of 23 one-bedroom units, 38 two-bedroom units, and 7 three-bedroom units. The rental structure as described in the application is generally consistent with the standards for affordable housing to be included in the community's Chapter 40B affordable housing stock. This approval does not constitute a guarantee that LIHTC funds will be allocated to the 238 Pittsfield Road project. It does create a presumption of fundability under 760 CMR 56.04 and allows Pennrose LLC to apply to the Lenox Zoning Board of Appeals for a comprehensive permit. The sponsor should note that a One Stop + submission for funding for this project must conform to all Department of Housing and Community Development (DHCD) program limits and requirements in effect at the time of submission.

As part of the review process, DHCD has made the following findings:

1. The proposed project appears generally eligible under the requirements of the Low Income Housing Tax Credit program.
2. DHCD has performed an on-site inspection of the proposed 238 Pittsfield Road project and has determined that the proposed site is an appropriate location for the project. The project will create a new neighborhood. It has access to open space and an extensive trail network. It will also take advantage of town transit resources.
3. The proposed housing design is appropriate for the site. The units will be built in eleven three-story townhome buildings. Units should have views of surrounding mountains and forests. The buildings will be built around a road loop. There will also be a central community building and children's playground.

4. The proposed project appears financially feasible in the context of the Lenox housing market. The proposal includes 50 units for households earning up to 60% AMI, with nine of those units to be reserved for households earning at or below 30% of AMI.
5. The initial proforma for the project appears financially feasible and consistent with the requirements for cost examination and limitations on profits on the basis of estimated development and operating costs. Please note again that a One Stop+ submission for funding for this project must conform to all DHCD program limits and requirements in effect at the time of submission.
6. An as-is appraisal has been commissioned. The Low-Income Housing Tax Credit Program Guidelines state that the allowable acquisition value of a site with a comprehensive permit must be equal to or less than the value under pre-existing zoning, plus reasonable carrying costs. If this project applies for funding under the Low-Income Housing Tax Credit Program, the acquisition price in the proposed budget should reflect these program guidelines.
7. The ownership entity will be a single-purpose entity controlled by the applicants and subject to limited dividend requirements. The ownership entity meet the general eligibility standards of the Low Income Housing Tax Credit program. The applicant will need to demonstrate sufficient capacity to successfully develop the project under the Low-Income Housing Tax Credit program.
8. Pennrose, LLC executed a Purchase Option Agreement with the owner.
9. The Town of Lenox has not submitted additional comments on the project.

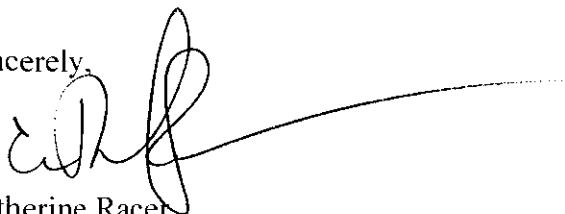
The proposed 238 Pittsfield Road project will have to comply with all state and local codes not specifically exempted by a comprehensive permit. In applying for a comprehensive permit, the project sponsor should identify all aspects of the proposal that will not comply with local requirements.

If a comprehensive permit is granted, construction of this project may not commence without DHCD's issuance of final approval pursuant to 760 CMR 56.04 (7) and an award of LIHTC funds. This project eligibility determination letter is not transferable to any other project sponsor or housing program without the express written consent of DHCD. When construction is complete, a Chapter 40B cost certification and an executed and recorded 40B regulatory agreement in compliance with DHCD's requirements pertaining to Chapter 40B must be submitted and approved by DHCD prior to the release of a Low-Income Housing Tax Credit form 8609.

This letter shall expire two years from this date, or on April 12, 2025, unless a comprehensive permit has been issued.

We congratulate you on your efforts to work with the town of Lenox to increase its supply of affordable housing. If you have any questions as you proceed with the project, please feel free to call or email Rebecca Frawley Wachtel at (617) 573-1318 or at [Rebecca.Frawley@mass.gov](mailto:Rebecca.Frawley@mass.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Racer', with a long horizontal line extending to the right.

Catherine Racer  
Director

cc: The Honorable Dave Roche, Chairman of the Lenox Select Board

Lenox Affordable Housing Trust  
6 Walker Street  
Lenox, MA 01240

April 10, 2023

To the Lenox Zoning Board of Appeals,

The Lenox Affordable Housing Trust is writing to express strong support for Pennrose's Comprehensive Permit Application for the proposed 68-unit affordable housing development, located at 238 Pittsfield Road. We believe that this project is essential to the future of our community and will provide much-needed housing for our residents.

The proposed affordable housing development would provide 68 new affordable rental units, which would be a significant contribution to the supply of available housing in our town. The units would be priced at a level that is affordable for low- and moderate-income families, ranging from 30% to 120% of the area median income. The 238 Pittsfield Road development would allow Lenox to meet its Ch. 40 subsidized housing inventory contribution and be eligible for numerous Commonwealth resources. The project would also help to reduce the cost of housing for all Lenox residents by increasing the supply of housing, all while being respectful of the Town's character and open space.

The Lenox community has expressed the need for this type of development through the Town's Housing Production Plan and Master Plan. For example:

- **The 2017 Housing Production Plan** demonstrates the need for more housing options and mixed-income rental housing development. Its five-year goals include:
  - Increasing the supply of year-round market-rate and affordable rental housing for seniors, people with disabilities, families, town employees and others who work in Lenox.
  - Ensuring that affordable housing is available in a variety of types, including multifamily and townhouse units.
  - Increasing the variety of mixed-income housing option in or near commercial areas and villages to support the local economy and promote smart growth.
- **The 2021 Master Plan** has as its overriding vision to "preserve its blend of rural character and urban amenities while becoming a more diverse population that is inclusive of first-time homeowners, younger people, and families." Accordingly, the need to expand affordable housing opportunities was a dominant theme throughout the Plan. Recommended actions to promote housing affordability and diversity include:
  - Enhancing equity through "housing to attract and support families of all life stages, sizes, and backgrounds."
  - Increasing housing production in or near commercial areas to support the local economy and promote principles of smart growth.

- Improving housing and transit to make jobs in the cultural sector more accessible for workers.

Members of the Lenox Affordable Housing Trust met with Pennrose on November 30, 2022, to review and discuss the 238 Pittsfield Road development. The development team was receptive to feedback and has continued to keep us involved through the design and planning process. We are confident that Pennrose will be a commendable development partner, as they have proved through the development of Brushwood Farm Housing Development. We are pleased to have a well-regarded developer—Pennrose was recognized in the National Association of Home Builders' 2023 Best of 55+ Housing Awards for working with the Town of Auburn, MA to develop high-quality, mixed income housing for seniors—applying for a 40B comprehensive permit that could assist the Town of Lenox in reaching our 10% SHI.

238 Pittsfield Road will effectively address Lenox's need for affordable rental housing opportunities, providing accessible, sustainable, and high-quality housing in an amenity-rich area of Town. In addition to providing much-needed housing, the proposed affordable housing development would also have several other benefits for our community, including increasing our tax base while preserving the surrounding natural environment. This project is essential to the future of Lenox and will provide much-needed housing for our residents.

Thank you for your consideration.

Sincerely,




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Marybeth Mitts, Chairperson



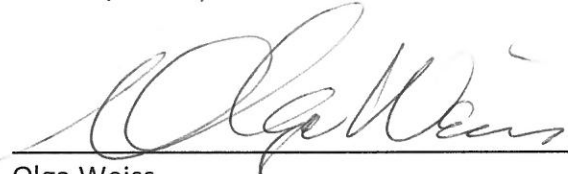
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Christopher Fenton



---

Kate McNulty-Vaughan



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Olga Weiss



---

Donald Weber



---

Julie DiGrigoli



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William "Smitty" Pignatelli



**TOWN OF LENOX**  
INCORPORATED 1767

FIRE DEPARTMENT  
CHRISTOPHER P. O'BRIEN  
Fire Chief

TO: LENOX ZONING BOARD OF APPEALS

FROM: CHRISTOPHER P. O'BRIEN, FIRE CHIEF

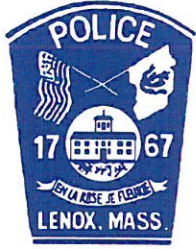
DATE: April 7, 2023

SUBJECT: PENNROSE COMPREHENSIVE PERMIT APPLICATION

I have reviewed the Pennrose materials for the proposed 68-unit affordable housing development located at 238 Pittsfield Road.

The Lenox Fire Department offers its support of this project with the understanding that the project will be subject to review and approval by the Commonwealth's Department of Housing and Community Development (DHCD) and all other applicable permitting authorities.





## LENOX POLICE DEPARTMENT

6 Walker Street, Suite 1

Lenox, Massachusetts 01240-2741

(413) 637-2346 Fax (413) 637-5507

Stephen E. O'Brien  
Chief of Police

TO: Lenox Zoning Board of Appeals

FROM: Stephen E. O'Brien, Chief of Police *SKO*

DATE: March 31, 2023

SUBJECT: Pennrose Comprehensive Permit Application

I have reviewed the Pennrose material for the proposed 68-unit affordable housing development located at 238 Pittsfield Road.

The Lenox Police Department offers its support of this project with the understanding that the project will be subject to review and approval by the Commonwealth's Department of Housing and Community Development (DHCD) and all other applicable permitting authorities.



**TOWN OF LENOX**  
Incorporated 1767  
MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS

To the Lenox Zoning Board of Appeals,

The Lenox Department of Public Works is writing to express strong support for Pennrose's Comprehensive Permit Application for the proposed 68-unit affordable housing development, located at 238 Pittsfield Road. We believe that this project is essential to the future of our community and will provide much-needed housing for our residents.

I met with Pennrose, on November 30, 2022, to review and discuss the 238 Pittsfield Road development. The development team was receptive to feedback and has continued to keep us involved through the design and planning process. We are confident that Pennrose will be a commendable development partner, as they have proved through the development of Brushwood Farm Housing.

Thank you for your time and consideration.

Respectfully,

William Gop

Superintendent of Public Works

Lenox, MA 01240

[lenoxdpw@townoflenox.com](mailto:lenoxdpw@townoflenox.com)

(413)637-5525



Town of Lenox

Land Use Department

6 Walker Street, Lenox, Massachusetts 01240

April 12, 2023

To the Zoning Board of Appeals,

I am writing to express support for the Comprehensive Permit sought by Pennrose LLC for the property at 238 Pittsfield Road.

The proposal is consistent with long-range community plans, such as the 2017 Housing Production Plan and the 2021 Master Plan.

The C-3A Zone clearly contemplates multi-family housing as an allowable use in the Schedule of Uses in the Lenox Zoning Bylaw.

Many local and regional employers struggle to recruit and retain employees, citing lack of reasonably priced housing opportunity as a critical factor. Lenox already is a destination for residents and visitors alike, and this project will help keep Lenox residents in Lenox and welcome prospective residents.

Sincerely,

Gwen M. Miller, AICP

Land Use Director/Town Planner

## 238 Pittsfield Road – Building and Coverage Tabulation Chart

MGL Chapter 40B Comprehensive Permit Application, Town of Lenox

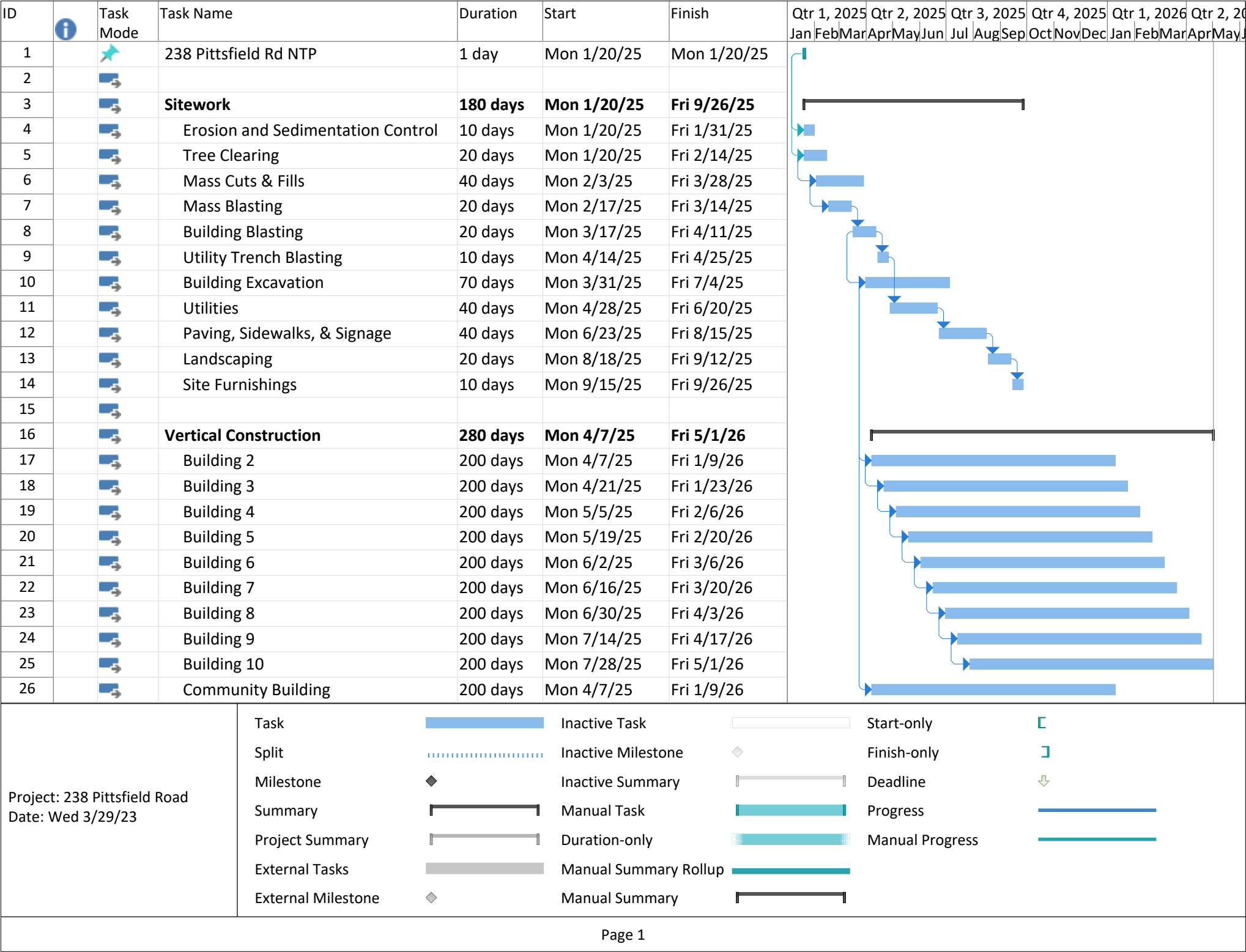
Property: 238 Pittsfield Rd, Lenox MA 01240 (21.2 acres proposed)

Zoned C-3A

<i><b>Land Use</b></i>	<i><b>Square Footage</b></i>	<i><b>Total Site Percentage</b></i>	<i><b>Open Space Percentage</b></i>
Open Space	753,472	82%	100%
Paved / Parking Areas	110,000	12%	15%
Building Coverage	32,428	4%	4%
Stormwater Management Areas	25,000	3%	3%
Slopes of > 20%	300,000	32%	40%

Total Parcel Area: 21.2 Acres =

923,472 sf



Page 1

**Project Team – 238 Pittsfield Road, Lenox**

<b>Firm</b>	<b>Role</b>
Pennrose, LLC	Developer
Innova Services Corp.	Owner's Rep
The Architectural Team (TAT)	Architect
Foresight Land Services	Civil Engineer/Survey
Crowley Cottrell, LLC	Landscape Architect
Terracon	Geotechnical Engineer
Fuss & O'Neill	Traffic Engineer
Singer & Singer LLC	Developer 40B Attorney
Klein Hornig LLP	Developer Legal
Land Services USA	Title, Insurance

# **Traffic Impact Study**

## **238 Pittsfield Road**

**Lenox, MA**

October 10, 2022



**FUSS & O'NEILL**

1550 Main Street  
Suite 400  
Springfield, MA

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238 Pittsfield Road  
Lenox, MA

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## End of Report

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(continued)

**238 Pittsfield Road  
Lenox, MA**

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### *Appendix A - Tables*

1. Crash Data Summary 2017-2019 Study Area Intersections

### *Appendix B - Figures*

1. Site Locus Map
2. 2021 AM Observed Condition
3. 2021 PM Observed Condition
4. 2021 AM Base Condition
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8. AM Site Generated Traffic Distribution Percentages
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### *Appendix C*

Site plan

### *Appendix D*

Traffic Turning Movement Counts (TMC's)

### *Appendix E*

Automatic Traffic Recorder (ATR) Data

### *Appendix F*

Intersection Capacity Analysis Worksheets – Weekday AM Peak Hour

### *Appendix G*

Intersection Capacity Analysis Worksheets – Weekday PM Peak Hour

### *Appendix H*

Intersection Crash Rate Worksheets

### *Appendix I*

Sight Distance Results

# 1 Summary Sheet

As an aid to reviewers, this summary sheet has been included to outline the various study parameters utilized in this report. Although a full explanation of the study methodologies is included in the text of the report, this summary can serve as a useful reference for reviewers. The conclusion and recommendation section of this report may be read as an executive summary.

**Applicant:** Pennrose, LLC.

**Site Acreage:** 40.49 +/- (1 parcel).

**New Development Size/Type:**

A new 66-unit multifamily residential development located at 238 Pittsfield Road.

**Parking:**

91 total parking spaces adjacent to proposed building.

**Applications:**

Town of Lenox Zoning Board of Appeals – Comprehensive Permit

**Build Year:**

2028 is the future year used for the build condition in this study to satisfy the 7-year occupancy period outlined in MassDOT's Traffic Impact Assessment Guidelines.

**Background Traffic Growth Factor:**

1.00% annual growth compounded.

**Traffic Counts:**

Collected by Innovative Data - 5/19/2021 (Turning Movement Counts)

Collected by Innovative Data - 5/18/2021 & 5/19/2021 (Automatic Traffic Recorders)

MassDOT seasonal factors were applied to adjust the May counts to seasonal peak daily traffic levels

**Peak Hours Analyzed** (As determined by turning movement counts):

AM Peak Hour – 7:30-8:30am

PM Peak Hour – 4:00-5:00pm

**New Trip Generation:**

AM Peak Hour of Adjacent Roads: 31 vehicle trips. 9 (29%) entering, 22 (71%) exiting.

PM Peak Hour of Adjacent Roads: 39 vehicle trips. 23 (59%) entering, 16 (41%) exiting.

Weekday Total: 386 vehicle trips. 193 (50%) entering, 193 (50%) exiting.

**Capacity Analysis:**

Technique – Highway Capacity Manual 6<sup>th</sup> Edition

Execution – Synchro Professional Software, Version 10.0

## 2 Introduction

The following report summarizes a site traffic impact assessment for the proposed new Multifamily Housing development at the vacant land to the east of the Pittsfield Road (US-20/US-7) and Lime Kiln Road intersection in Lenox, MA.

The proposed development at 238 Pittsfield Road includes:

- A new development consisting of 66 units of affordable housing at 238 Pittsfield Road, just to the east of Pittsfield Road's intersection with Lime Kiln Road in Lenox, MA
- A driveway leading to the new building, adding a westbound approach to the existing Pittsfield Road and Lime Kiln Road intersection.

This report presents the results of field investigation, traffic counts, traffic generation estimation, crash history analysis, sight distance analysis, intersection capacity analysis, and queuing analysis for the proposed development

## 3 Existing Condition

### 3.1 Site of Development

Located at 238 Pittsfield Road in Lenox, MA, the Affordable Housing site consists of one parcel totaling approximately 40.49 acres.

The land at 238 Pittsfield Road is currently vacant and wooded. Existing land uses for properties abutting the proposed site include: sit-down restaurant, hotel and residential.

The Affordable Housing site has one proposed driveway connecting to Pittsfield Road and adding a fourth leg to its intersection with Lime Kiln Road that will serve westbound traffic.

A locus map of the site location and the surrounding area is provided in *Appendix B, Figure 1*.

### 3.2 Adjacent Roads

The study area road network adjacent to the Lenox Multifamily Housing site driveway includes:

- Pittsfield Road (US-20/US-7)
- Lime Kiln Road

Each road is described below in more detail.

#### PITTSFIELD ROAD

- **Location:** Section of US-20/US-7 stretching from Main Street to South Street in Lenox, MA.
- **Traffic Volume:** Automatic Traffic Recorder (ATR) data collected for this study in May of 2021 gave an unadjusted average daily volume of 23,727 vehicles per day. This observed traffic

volume is 33,929 Average Daily Traffic (ADT) when seasonally adjusted using MassDOT factors.

- **Speed limit:** 45mph.
- **Lane geometry:** Two 12ft travel lanes with a 5.0ft shoulder in each direction. One 11ft dedicated left turn lane for northbound left turns onto Lime Kiln Road.
- **NHS:** Yes, Pittsfield Road is part of the National Highway System and serves as part of US Route 20 and US Route 7.
- **Jurisdiction:** Pittsfield Road is under the administrative jurisdiction of Massachusetts Department of Transportation.
- **Functional classification:** Pittsfield Road is classified as a principal arterial in the study area.
- **Adjacent land use:** In the vicinity of the Lime Kiln Road intersection, Pittsfield Road abuts a restaurant, a hotel, and residential uses.
- **Sidewalks:** No.
- **Bike lanes:** No.
- **Transit:** BRTA Route 2
- **Parking:** There is no on-street parking on Pittsfield Road.

#### LIME KILN ROAD

- **Location:** Lime Kiln Road connects Pittsfield Road with W Mountain Road.
- **Traffic volume:** No historic MassDOT counts are available in the MassDOT Transportation Data Management System. This road is primarily used for residential access and, as such, daily traffic volumes are estimated to be very low when compared to those along Pittsfield Road (<1%).
- **Speed limit:** 30 mph.
- **Lane geometry:** Lime Kiln Road is 20ft wide with no lane or shoulder markings.
- **NHS:** No, Lime Kiln Road is not part of the National Highway System.
- **Jurisdiction:** North & South Valley Rd are under the administrative jurisdiction of the Town of Lenox.
- **Functional classification:** Lime Kiln Road is classified as a local road.
- **Adjacent land use:** In the vicinity of the Pittsfield Road intersection, Lime Kiln Road abuts single-family residential uses.
- **Sidewalks:** No.
- **Bike lanes:** No.
- **Transit:** No.
- **Parking:** No. There is no on-street parking.

---

### 3.3 Study Area Intersections

The intersections evaluated in this study include:

- Pittsfield Road at Lime Kiln Road and Site Driveway

#### PITTSFIELD ROAD AT LIME KILN ROAD AND SITE DRIVEWAY

**Geometry:** A three-leg "T" intersection. The northbound and southbound approaches along Pittsfield Road each provide two through lanes. The northbound approach also provides a dedicated left turn lane

for left turns onto Lime Kiln Road. Lime Kiln Road is perpendicular to Pittsfield Road and serves as the eastbound approach to the intersection. There is no westbound approach at the intersection as it currently exists. The proposed driveway for the Multifamily Housing development will connect perpendicularly to Pittsfield Road at the intersection and serve as a fourth leg accommodating westbound traffic. This approach will provide a single combined left turn/right turn/through lane for traffic exiting the site.

**Intersection Control:** Stop sign control on the Lime Kiln Road approach. The driveway is recommended to be stop controlled.

**Crosswalks:** There are no crosswalks at this intersection.

### 3.4 Traffic Volumes, Speeds and Counts

#### **AUTOMATIC TRAFFIC RECORDER (ATR) ON PITTSFIELD ROAD**

Continuous 48-hour Automatic Traffic Recorder (ATR) traffic counts were conducted on Pittsfield Road north of Lime Kiln Road.

The ATR counts were conducted Tuesday-Wednesday May 18-19, 2021. The Average Daily Traffic (ADT) recorded over the 48-hour period was approximately 23,727 vehicles per day on Pittsfield Road on the days observed.

Using MassDOT 2019 seasonal factors to convert from May to the seasonal peak, the estimated 2021 Average Daily Traffic (AADT) on Pittsfield Road was 33,929 vehicles per day.

**Table 3.4-1: MassDOT 2019 Season Correction factors**

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15

All collected data was multiplied by a factor of  $0.95/0.70 = 1.36$

According to the ATR data, on Pittsfield Road the AM peak hour occurred between 7:15am and 8:15am with a seasonally factored total volume of 2,595 vehicles per hour. The PM peak hour occurred between 3:00pm and 4:00pm with a seasonally factored volume of 2,901 vehicles per hour.

The observed daily percentage of heavy vehicles (large trucks) on Pittsfield Road was 9.5%. The raw data from the ATR on Pittsfield Road is provided in *Appendix E*.

#### **INTERSECTION TURNING MOVEMENT COUNTS**

Manual intersection turning movement counts (TMCs) were conducted on Wednesday, May 19, 2021.

The morning counts were conducted between 7:00am-9:00am. The AM peak hour of the overall four-intersection study area was observed to occur between 7:30am-8:30am. This is the AM peak hour used for analysis in this study.

The afternoon TMCs were conducted between 4:00pm-6:00pm. The PM peak hour of the overall four-intersection study area was observed to occur between 4:00pm-5:00pm. This is the PM peak hour used for analysis in this study.

The raw data from the observed TMCs are provided in *Appendix D*. Peak hour turning movement diagrams are provided in *Appendix B*.

### **SPEED STUDY ON PITTSFIELD ROAD**

The posted speed limit on Pittsfield Road in the project area is 45mph.

Speed on Pittsfield Road was observed on Tuesday-Wednesday, May 18-19, 2021. The speed observations were made at a location just to the north of Lime Kiln Road.

In the northbound direction, the 85<sup>th</sup> percentile speed on Pittsfield Road was observed as 49mph. In the southbound direction, the 85<sup>th</sup> percentile speed was observed to be 57 mph.

The 85<sup>th</sup> percentile speed is a benchmark used by traffic engineers to determine whether the posted speed limit is being sufficiently observed by drivers. The observed 85<sup>th</sup> percentile speeds are above the posted speed limit, indicating a speeding condition of 4-12mph over the limit.

The raw observed speed data has is provided with the ATR counts in *Appendix E* of this report.

## **4 Background Traffic Conditions**

---

### **4.1 Growth Rate**

In accordance with MassDOT guidelines, a seven-year future build condition scenario was analyzed for the year 2028. Future traffic conditions were estimated by applying a compound annual growth factor to all existing peak hour traffic volumes. An annual growth rate of 1.00% was utilized for the project area.

### **4.2 Background Developments**

---

There are no other land-use developments anticipated to be completed during the 7-year analysis period that would significantly impact traffic in the study area as of the time of this publication.

### **4.3 Programmed Transportation Improvement Projects**

---

There are no currently programmed transportation improvement projects anticipated to be completed during the 7-year analysis period that would significantly impact traffic in the study area as of the time of this publication.

---

## 4.4 Estimated Base Condition and No-Build Condition Volumes

The raw peak hour count data from the TMC locations were graphically applied to the study area network. The unfactored observed May 2021 volumes are provided diagrammatically in *Appendix B, Figure 2 and Figure 3*.

The observed TMCs were next seasonally factored to seasonal peak values using MassDOT seasonal factors. The resulting volumes are the 2021 Base Condition for this study. The weekday AM and PM 2021 Base Condition turning movement volumes are provided diagrammatically in *Appendix B, Figure 4 and Figure 5*.

To estimate the background growth of traffic volume for the future year 2028, the 2021 Base Condition volumes were increased by a 1.00% annual growth rate for seven years. This volume projection results in the 2028 No-Build Condition. The weekday AM and PM 2028 No-Build Condition traffic volume estimates are given diagrammatically in *Appendix B, Figure 6 and Figure 7*.

---

## 5 Proposed Conditions

---

### 5.1 Development and Site Access

The description below represents the development concept at the time of this report publication as shown on a plan entitled 238 Pittsfield Road – Lenox Proposed Plan prepared by Crowley Cottrell, LLC, dated September 27, 2022.

The proposed development at the Lenox Multifamily Housing site includes:

- A new development consisting of 66 units of affordable housing at 238 Pittsfield Road, just to the east of Pittsfield Road's intersection with Lime Kiln Road in Lenox, MA.
- A driveway leading to the new building, adding a westbound approach to the existing Pittsfield Road and Lime Kiln Road intersection.
- Associated parking and common areas

#### SITE ACCESS

The site is proposed to be accessed by a new curb-cut on the east side (northbound travel lane) of Pittsfield Road. This curb cut is proposed to be directly across from Lime Kiln Road and will provide a fourth, westbound leg to the existing Pittsfield Road at Lime Kiln Road intersection. The site driveway approach will provide a single combined left turn/right turn/through lane for traffic exiting the site.

---

### 5.2 Pedestrian and Bicycle Access

There are no existing or proposed sidewalks on Pittsfield Road adjacent to the site. There are no existing or proposed crosswalks at the existing intersections of Pittsfield Road and Lime Kiln Road.



There are no existing bicycle lanes on Pittsfield Road. There are no bicycle lanes proposed as part of the proposed site plan.

### 5.3 Trip Generation

The expected site generated traffic volume was calculated using existing empirical data from the Institute of Transportation Engineers (ITE) publication *Trip Generation*, 11th Edition. This publication is an industry standard resource for determining trip generation.

The ITE land use code for the proposed 238 Pittsfield Road development was selected as:

- o Land Use Code 223 Affordable Housing

Based on ITE rates, the proposed development is estimated to produce 386 vehicle trips over a 24-hour period on weekday, 50 percent of trips entering and 50 percent exiting.

New vehicle trips generated by the proposed Affordable Housing development will have the greatest impact on the adjacent road network during the AM and PM peak hours of the adjacent road network. For this reason, the AM and PM peak hour trips generated from the new development are evaluated during the peak hours of the adjacent road network as identified in Section 3.4.

During the weekday morning peak hour of the adjacent road network, 7:30-8:30AM, the proposed new Affordable Housing development is estimated to generate up to 31 vehicle trips, 9 trips entering, and 22 trips exiting.

During the weekday afternoon peak hour of the adjacent road network, 4:00pm-5:00pm, the proposed new Affordable Housing development is estimated to generate up to 39 trips, 23 entering and 16 exiting.

Table 5.3-1 presents the daily and peak hour weekday trip estimates from the proposed Affordable Housing development.

**Table 5.3-1: Site Generated Vehicle Trips**

<b>Proposed Affordable Housing Development - Lenox, MA Estimated Weekday Net New Vehicle Trip Generation</b>			
	<b>Enter (vte*)</b>	<b>Exit (vte*)</b>	<b>Total (vte*)</b>
<b><u>Weekday AM Adjacent Street Peak Hour</u></b>			
New Affordable Housing w/ 66 Units	9	22	31
<b><u>Weekday PM Adjacent Street Peak Hour</u></b>			
New Affordable Housing w/ 66 Units	23	16	39
<b><u>24-Hour Weekday Total**</u></b>			
New Affordable Housing w/ 66 Units	193	193	386

\*VTE = Vehicle Trip Ends

## 5.4 Trip Distribution

### SITE DRIVEWAY UTILIZATION DISTRIBUTION

The newly generated trips will utilize the two proposed site driveways as described in Table 5.4-1.

**Table 5.4-1: Driveway Utilization Trip Distribution**

Proposed Affordable Housing Development - Lenox, MA								
Site Distribution of New Trips								
	From/To the North		From/To the South		From/To the West (vte*)		Total (vte*)	
	Entering From	Exiting To	Entering From	Exiting To	Entering From	Exiting To	Entering From	Exiting To
<b>Weekday AM Adjacent Street Peak Hour</b>								
New Affordable Housing w/ 66 Units	5	13	4	9	0	0		
<b>Project Total</b>	<b>5</b>	<b>13</b>	<b>4</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>22</b>
<b>Weekday PM Adjacent Street Peak Hour</b>								
New Affordable Housing w/ 66 Units	10	7	13	9	0	0		
<b>Project Total</b>	<b>10</b>	<b>7</b>	<b>13</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>16</b>

\*VTE = Vehicle Trip Ends

### STUDY AREA NETWORK DISTRIBUTION

The distribution of site generated traffic associated with the Affordable Housing development to and from the surrounding study area road network was determined based on 2028 No Build Condition traffic proportional traffic volumes. Existing traffic patterns were used to calculate the distribution.

Diagrams showing the percentages of distributed site generated trips are included in *Appendix B, Figure 8 and Figure 9* for the AM and PM peak hours respectively. The percentages represent the distribution of newly generated trips only.

Diagrams showing the magnitude of distributed peak hour site generated trips are included in *Appendix B, Figure 10 and Figure 11* for the AM and PM peak hours respectively. The volume totals represent newly generated trips only.

## 5.5 Combined Build Condition Volumes

The 2028 Combined Build Condition traffic volumes were calculated by adding the distributed new site vehicle trips to the projected 2028 No-Build Condition traffic volumes. The 2028 Combined Build Condition traffic volumes are given diagrammatically in *Appendix B, Figure 12 and Figure 13* for the AM and PM peak hours respectively.

## 6 Analyses

---

### 6.1 Crash Data Review

An analysis to determine vehicle crash history at each intersection was prepared. Vehicle crash data was obtained from MassDOT for each of the study area intersections described in Section 3.3. The records were gathered for the most recent 3 years of available data, 2017 through 2019. The crash rates, expressed as "crashes per Million Entering Vehicles" (MEV), were determined using the standard MassDOT intersection crash rate worksheet which are provided in *Appendix H*. A summary of the accident data and resulting crash rates is provided in *Appendix A, Table A1*.

The crash history for each of the unsignalized intersections in the study area are described below.

#### **CRASH HISTORY AT PITTSFIELD RD AND LIME KILN RD**

- There was a total of 5 crashes between 2017 and 2019.
- Average annual number of crashes was 1.67 per year between 2017 and 2019.
- The average crash rate at the intersection was 38% lower than the District 1 average unsignalized intersection crash rate (0.19 vs. 0.57 crashes/MEV).
- The average crash rate at the intersection was 38% lower than the statewide average unsignalized intersection crash rate (0.19 vs. 0.57 crashes/MEV).
- Three of the crashes were rear-end crashed, one crash was an angle crash and one crash was a sideswipe.
- Two of the five crashes resulted in non-fatal injuries, while the other three resulted in property damage only.
- The crashes are not predominately weather related since 4 of the 5 crashes occurred during clear weather.
- All five crashes occurred during daylight hours.

---

### 6.2 Intersection Visibility Review

Intersection sight distance (ISD) was previously measured and evaluated at the proposed site entrance locations in accordance with criteria set forth by the American Association of State Highway and Transportation Officials (AASHTO).

ISD accounts for the perception and reaction times needed to identify an appropriate gap in oncoming traffic thereby allowing the vehicle to safely turn onto a road and accelerate without causing severe speed reduction to conflicting vehicles. ISD is measured using a line of sight across the corners of an intersection from a point on the proposed intersecting access road set a minimum of 14.5ft from the edge of the major road, the approximate point of view of a driver stopped and waiting to turn onto the major road.

The intersection sight distance viewing from the proposed exit drive to and from the north and south on Route 7/20 is adequate for the posted speed of the roadway. Viewing to the south the measured sight

distance was approximately 620 ft., which is sufficient for a speed in excess of 55 MPH. Sight distance to the north was approximately 660 ft., also adequate for a speed in excess of 60 MPH. Sight distance measurements and criteria are presented in Appendix I.

---

### 6.3 Intersection Capacity Analysis

Capacity analyses for the unsignalized intersections in the study area were conducted using Synchro Professional Software, version 10. Capacity analyses results are discussed using the measure of effectiveness (MOE), level of service (LOS).

LOS is a measure of traffic control delay time experienced by drivers while stopped at unsignalized intersections. The LOS ratings are intended to represent the driver's perception of operating conditions, which includes driver discomfort, frustration, fuel consumption, and lost travel time. Therefore, intersections with longer delay times are less acceptable to most drivers. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 50 seconds per vehicle for unsignalized intersections. LOS F is assigned to any movement when the v/c ratio is greater than 1.0, regardless of the calculated delay.

The foregoing definitions for LOS, as well as the methodology for conducting unsignalized intersection capacity analyses, are taken from the *Highway Capacity Manual, 6<sup>th</sup> Edition* published by the Transportation Research Board.

The capacity at intersections of an uncontrolled major street and a stop controlled minor street is determined by evaluating the presence of acceptable gaps for vehicles yielding right-of-way to enter the conflicting traffic stream. Priority is given to mainline left turns onto the minor street, followed by the minor street through and right-turn moves, and, finally, the minor street left-turns. The available capacity of an approach is reduced by the traffic volumes of the higher priority moves. LOS provides a description of the delay and operational characteristics of the controlled movements or turning vehicles at the intersection. Therefore, through vehicles on the major road approaches are not LOS rated because they have free movement.

Using the above referenced methodologies, AM and PM peak hour capacity analyses were conducted at the following unsignalized intersections:

- Pittsfield Road at Lime Kiln Road/Site Driveway

Table 6.3-1 and Table 6.3-2 below present a summary of the levels of service at the unsignalized intersections for Existing, No-Build, and Build Conditions. Copies of the Synchro capacity analysis report sheets can be found in *Appendices F and G* for the AM and PM peak hours respectively.

The determination of the traffic impact from the proposed development is made through a comparison of the 2028 No-Build Condition LOS (without the proposed development) versus the 2028 Build Condition LOS (with the proposed development).

**Table 6.3-1: AM Capacity Summary**

WEEKDAY AM PEAK HOUR INTERSECTION CAPACITY ANALYSIS: LEVEL OF SERVICE SUMMARY							
Intersection	Movement	2021 Base		2028 No Build		2028 Build	
		Delay	LOS	Delay	LOS	Delay	LOS
Pittsfield Rd at Lime Kiln Rd/Site Driveway							
Pittsfield Rd	NB L	15.6	C	17.0	C	17.0	C
Pittsfield Rd	SB L/T/R	-	-	-	-	11.2	B
Lime Kiln Rd	EB L/T/R	33.2	D	39.7	E	57.4	F
Site Driveway	WB L/T/R	-	-			92.6	F
Overall:		0.1	A	0.2	A	0.2	A

\*Delay in seconds per vehicle

**Table 6.3-2: PM Capacity Summary**

WEEKDAY PM PEAK HOUR INTERSECTION CAPACITY ANALYSIS: LEVEL OF SERVICE SUMMARY							
Intersection	Movement	2021 Base		2028 No Build		2028 Build	
		Delay	LOS	Delay	LOS	Delay	LOS
Pittsfield Rd at Lime Kiln Rd/Site Driveway							
Pittsfield Rd	NB L	12.6	B	13.3	B	13.3	B
Pittsfield Rd	SB L/T/R	-	-	-	-	17.0	C
Lime Kiln Rd	EB L/T/R	142.7	F	205.4	F	>300	F
Site Driveway	WB L/T	-	-	-	-	>300	F
Overall:		0.5	A	0.8	A	1.8	A

\*Delay in seconds per vehicle

The proposed development will have some effect of intersection delay and LOS in the study area during both the AM and PM peak analysis periods by adding an additional leg to the Pittsfield Road and Lime Kiln Road intersection.

- Pittsfield Road at Lime Kiln Road has an overall LOS A in the No Build and Build conditions for the AM peak hour.
- During the AM peak hour, the proposed driveway is expected to generate just under 190 seconds of delay for the westbound left turn turning movement and 13.3 seconds of delay for the westbound right turn turning movement. Additionally, approximately 17 seconds of delay will be added to eastbound travel from Lime Kiln Road during the AM peak hour.
- Pittsfield Road at Lime Kiln Road has an overall LOS A in the No Build condition and an LOS A in the Build condition for the PM peak hour.
- During the PM peak hour, left turn capacity at the proposed driveway will be limited by the large volume of conflicting through traffic, while right turners will experience 17 seconds of delay per vehicle. Additionally, delay will be added eastbound travel from Lime Kiln Road during the PM peak hour due to the potential conflict with site driveway traffic.

- Although the proposed driveway is expected to add delay to the eastbound and westbound approaches of the intersection, these approaches experience far less volume than the northbound and southbound approaches along Pittsfield Road, which is why the overall LOS of the intersection remains an A in the AM peak hour and an A in the PM peak hour.

## 6.4 Queue Analysis

No Build and Build Condition 95th percentile design vehicle queue lengths were reviewed at each intersection in the study area. The 95th percentile design vehicle queue lengths represent the practical maximum queue lengths that can be expected at each of the critical approach lanes of the study area intersections. The queue lengths are provided in the Synchro capacity analysis reports, which are located in *Appendices F and G* for the AM and PM peak hours respectively.

Table 6.4.1 and 6.4.2 provide a summary of the 95<sup>th</sup> percentile queue lengths for turning movements at the study area intersections for the AM and PM peak hours respectively.

The determination of the traffic impact from the proposed development is made through a comparison of the 2028 No-Build Condition queue length (without the proposed development) versus the 2028 Build Condition queue length (with the proposed development).

**Table 6.4-1: AM Queuing Analysis**

WEEKDAY AM PEAK HOUR INTERSECTION CAPACITY ANALYSIS: VEHICLE QUEUE LENGTH SUMMARY (ft)				
Intersection	Movement	2021 Base	2028 No Build	2028 Build
		95% Q	95% Q	95% Q
Pittsfield Rd at Lime Kiln Rd/Site Driveway				
Pittsfield Rd	NB L	2.5	2.5	2.5
Pittsfield Rd	SB L/T/R	-	-	0.0
Lime Kiln Rd	EB L/R	2.5	5.0	-
Lime Kiln Rd	EB L/T/R	-	-	7.5
Site Driveway	WB L/T/R	-	-	35.0

**Table 6.4-2: PM Queueing Analysis**

WEEKDAY PM PEAK HOUR INTERSECTION CAPACITY ANALYSIS: VEHICLE QUEUE LENGTH SUMMARY (ft)				
IntersectionMovement		2021 Base	2028 No Build	2028 Build
		95% Q	95% Q	95% Q
Pittsfield Rd at Lime Kiln Rd/Site Driveway				
Pittsfield Rd	NB L	0.0	0.0	0.0
Pittsfield Rd	SB L/T/R	-	-	2.5
Lime Kiln Rd	EB L/R	27.5	35.0	-
Lime Kiln Rd	EB L/T/R	-	-	52.5
Site Driveway	WB L/T/R	-	-	65.0

None of the existing queue lengths at the study area intersections exceed 27.5ft, or just over 1 vehicle length. A comparison of the No-Build and Build Condition 95<sup>th</sup> percentile queue lengths show that the additional length of 95 percentile vehicle queue resulting from the proposed development is less than 5ft for the northbound and southbound approaches of the intersection. The proposed site driveway is expected to have a 95<sup>th</sup> percentile queue length of 65ft during the PM peak hour and 35ft during the AM peak hour. When the driveway is built, the queue lengths along Lime Kiln Road approach are expected to increase by 2.5ft in the AM peak hour and just over 17.5ft in the PM peak hour.

The proposed development is not projected to have detrimental effect on the study area intersection queue lengths.

## 7 Conclusion & Recommendations

### 7.1 Conclusion

The study efforts have indicated that completion and occupancy of the proposed development will generate 31 total vehicle trips at the site driveway during the weekday morning peak hour (9 vehicle entering and 22 vehicles exiting), and 39 total vehicle trips at the site driveways during the weekday afternoon peak hour (23 vehicles entering and 16 vehicles exiting).

Peak period traffic operations at the study area intersections are characterized by uncongested conditions under existing conditions. The additional traffic generated by the proposed project will result in an incremental increase in peak period traffic volumes on Pittsfield Road that will have a very small impact on traffic operations. In general, the expected increase in peak period demand at the study area intersections will be within the daily traffic variation and will not be perceptible to drivers.

Capacity analyses of the study area intersection show that the proposed development is expected to decrease the level of service for traffic at the study area intersection slightly, but it will still remain well within acceptable tolerance.

The site access intersection with Pittsfield Road will operate similar to other unsignalized intersections along Pittsfield Road. Minimum required visibility conditions at the site driveway locations are met for safe operations. Provision of a separate right turn lane will allow less conflicted right turn movements to exit the site without being impeded by left turning vehicles waiting for gaps to enter Pittsfield Road.

#### *Summary of Methodology*

This report defined a study area around the proposed 238 Pittsfield site. The study area included:

- The intersection of Pittsfield Road and Lime Kiln Road/the proposed site driveway

Analyses performed on the study area included: crash history analysis, intersection sight visibility analysis, and traffic operational capacity analysis.

Traffic count data was collected in May 2021 to form the basis of the existing 2021 Base Condition. A 2028 No-Build condition was created by assuming 1.00 percent annual background traffic growth.

New trip generation to/from the proposed development was estimated using the ITE Trip Generation rate for Affordable Housing development, Land Use Code 223. The new trips were then distributed to the study area network to create a 2028 Build Condition based on proportional network volumes.

The impact of proposed development was analyzed by comparison of three scenarios: a 2021 Base Condition, a 2028 No-Build Condition, and a 2028 Build Condition.

#### *Crash History*

An analysis of crash history in the study area was performed at the four study area intersections.

- The crash rate at the Pittsfield Road and Lime Kiln Road intersection was 38% lower than the MassDOT District 1 average unsignalized intersection crash rate. There have only been five reported accidents at this intersection in the past three years.

#### *Intersection Sight Visibility*

Stopping sight distance is generally considered the absolute minimum visibility criteria, while intersection sight distance is recommended where feasible and readily achievable. Sight distance visibility analyses at all study area intersections were performed yielding the following results:

At Proposed Site Driveway on the westbound approach to Pittsfield Road:

- The existing visibility looking in both directions on Pittsfield Road is unobstructed and will safely accommodate traffic exiting the proposed development.

#### *Traffic Operational Capacity Analysis*



An intersection capacity analysis showed that the proposed development will not change the overall level of service (LOS) at the study area intersection in the AM or PM peak hours. Additional turning movement delay resulting from the proposed development is expected for the westbound and eastbound approaches.

A queuing analysis showed that the additional length of 95<sup>th</sup> percentile queues resulting from the proposed development would not result in an unacceptable queuing condition.

---

## 7.2 Recommendations

The following recommendations are made to improve safety in the study area.

1. The proposed site driveway is recommended to have a stop sign installed where it meets Pittsfield Road to provide explicit stop control on the driveway.
2. The existing W2-2 T intersection advance warning sign south of Lime Kiln Road should be replaced by a W2-1 sign indicating a 4 way intersection.

## Appendix A

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Tables

**TABLE A-1**  
**CRASH DATA SUMMARY TABLE - 2017 to 2019**  
**STUDY AREA INTERSECTIONS**

1		
Pittsfield Road and Lime Kiln Road		
Criteria		
<b>YEAR</b>		
2017	0	
2018	2	
2019	3	
Total	5	
Annual Average No. of Crashes	1.67	
Crash Rate	0.19	
<b>TYPE</b>		
Angle	1	
Rear-End	3	
Head-On	0	
Sideswipe	1	
Pedestrian/Bicycle	0	
Collision w/ Parked Car	0	
Collision w/ Animal	0	
<u>Unknown/Other</u>	0	
Total	5	
<b>SEVERITY</b>		
Property Damage Only	3	
Non-fatal Injury	2	
Fatality	0	
<u>Unknown/Other</u>	0	
Total	5	
<b>WEATHER</b>		
Clear	4	
Wet	0	
Snow/Ice	0	
Clouds	1	
Fog	0	
<u>Unknown/Other</u>	0	
Total	5	
<b>TIME</b>		
Weekday Midnight-7:29AM	0	
Weekday 7:30 AM - 9:30 AM	1	
Weekday 9:31 AM-3:30PM	2	
Weekday 3:31 PM - 5:30 PM	1	
Weekday 5:31 PM - Midnight	0	
Weekend	1	
Total	5	
Statewide Average Crash Rates: 0.78 Signalized Intersections		
0.57 Unsignalized Intersections		
District 1 Average Crash Rates 0.78 Signalized Intersections		
0.57 Unsignalized Intersections		

## Appendix B

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Figures



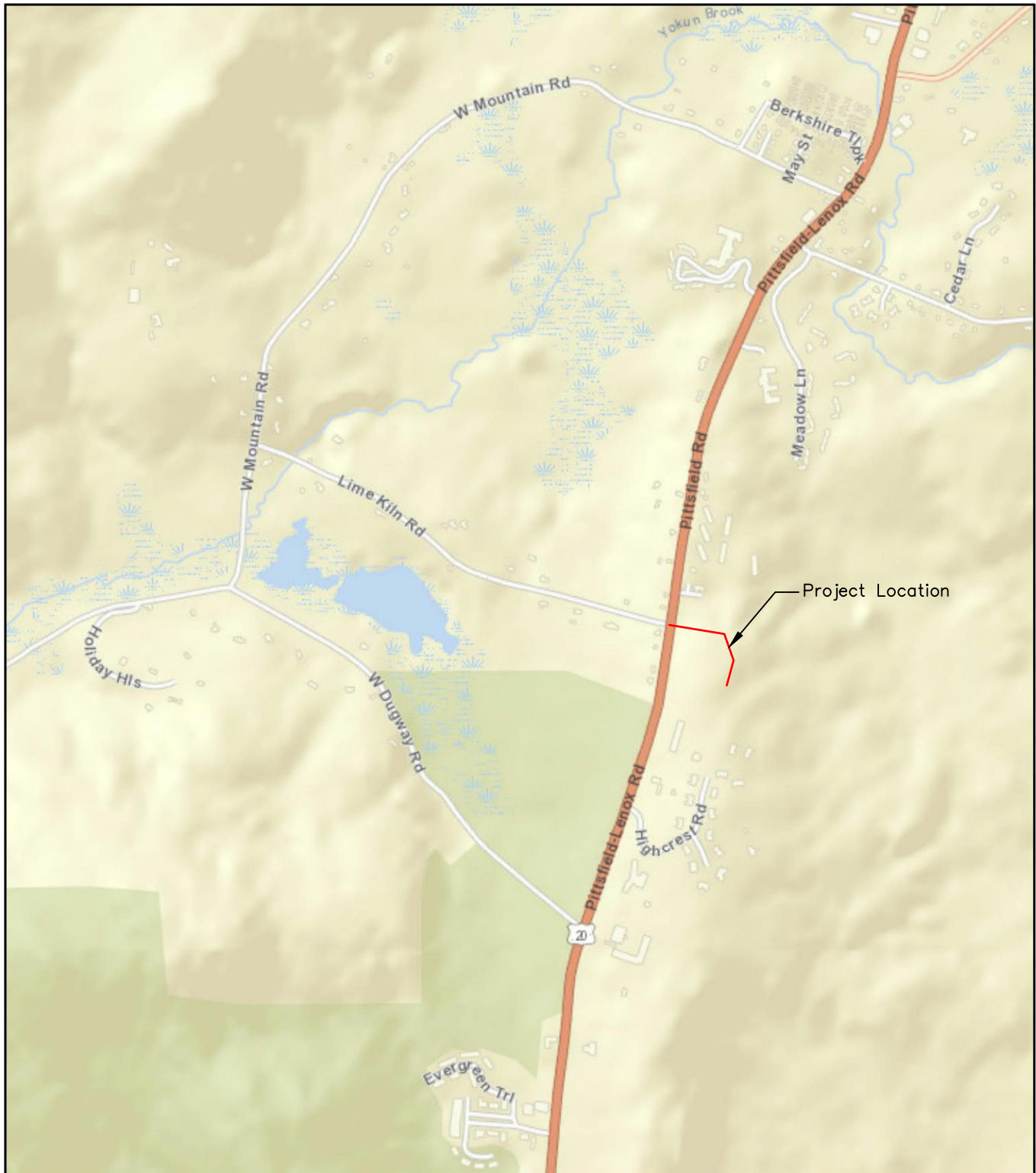
Lenox, MA

1 inch = 1112 Feet



June 11, 2021

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## FIGURE 1: STUDY AREA LOCATION MAP

PROPOSED NEW RESTAURANT DEVELOPMENT  
AT 0 PITTSFIELD RD. LENOX, MA  
PROJ. NO: 20210353

Lenox, MA

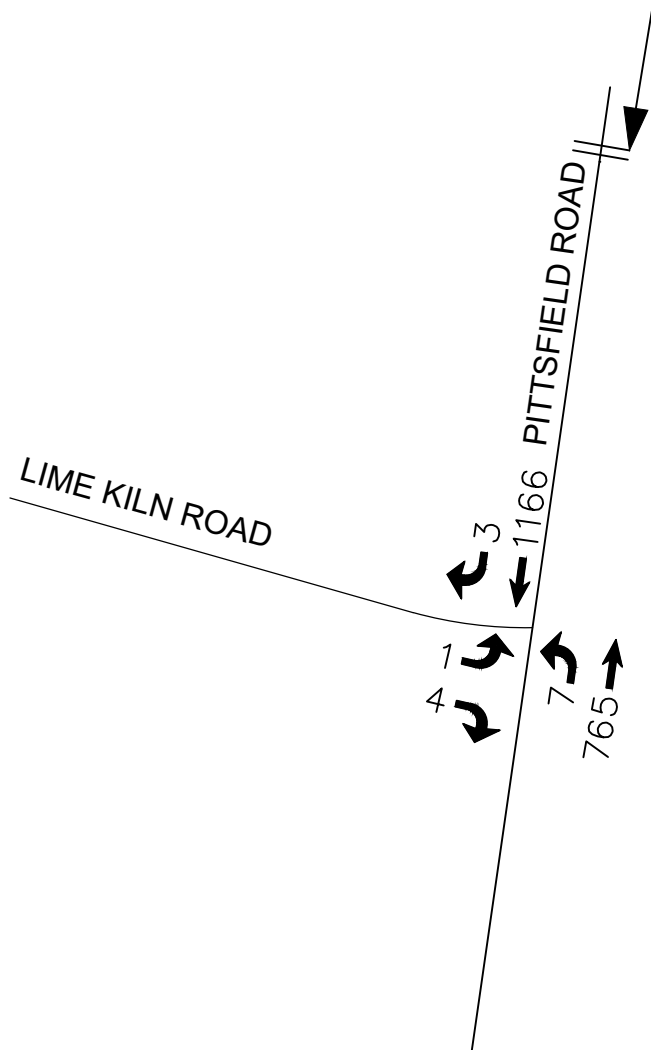
Jun. 18, 2021



## APPROXIMATE ATR LOCATION

ADT: 23727 (6.1% DAILY HV,  
5.0% AMPKHR HV)

85th-Percentile Speed: 49MPH NB, 57MPH SB



### WEEKDAY MORNING PEAK HOUR TURNING MOVEMENTS

7:30 to 8:30am

Conducted: Wednesday May. 19, 2021 UNADJUSTED AS SHOWN

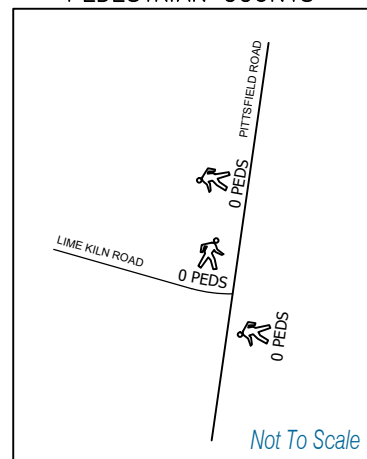
||||| = MARKED PEDESTRIAN CROSSWALK

 0 PEDS = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

### PEDESTRIAN COUNTS



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## FIGURE 2: WEEKDAY AM PEAK HOUR EXISTING TRAFFIC VOLUMES (NOT FACTORED)

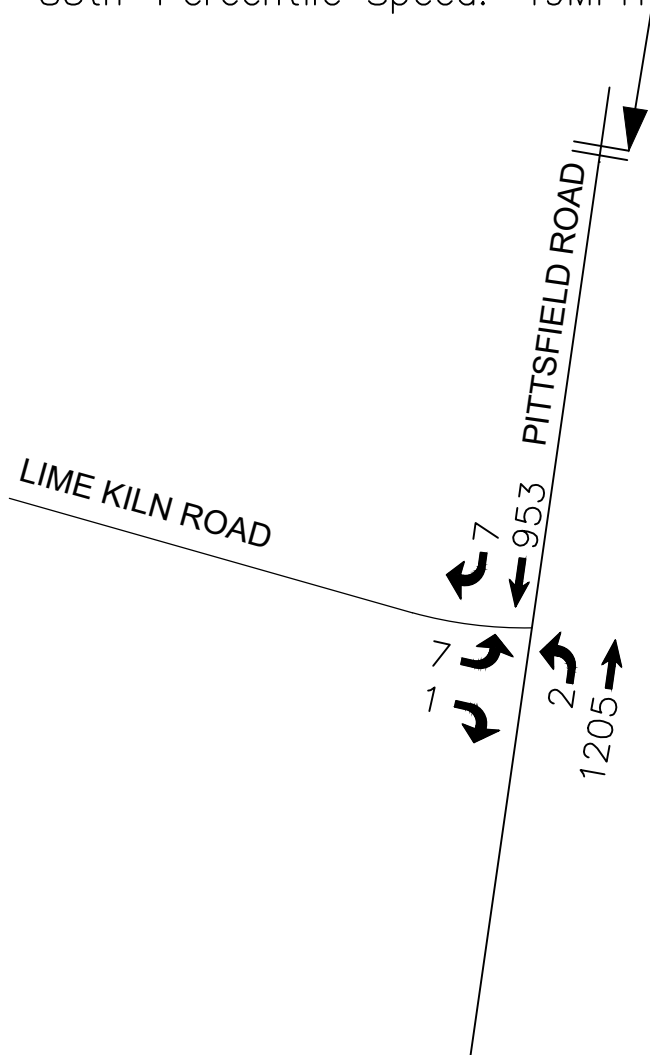
PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



APPROXIMATE ATR LOCATION  
ADT: 23727 (6.1% DAILY HV,  
5.6% PMPKHR HV)  
85th-Percentile Speed: 49MPH NB, 57MPH SB



#### WEEKDAY AFTERNOON PEAK HOUR TURNING MOVEMENTS

4:00 to 5:00pm

Conducted: Wednesday May. 19, 2021 UNADJUSTED AS SHOWN

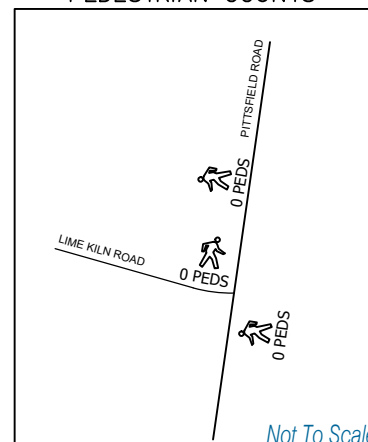
■■■■■ = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

#### PEDESTRIAN COUNTS



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**FIGURE 3: WEEKDAY PM PEAK HOUR  
EXISTING TRAFFIC VOLUMES (NOT FACTORED)**

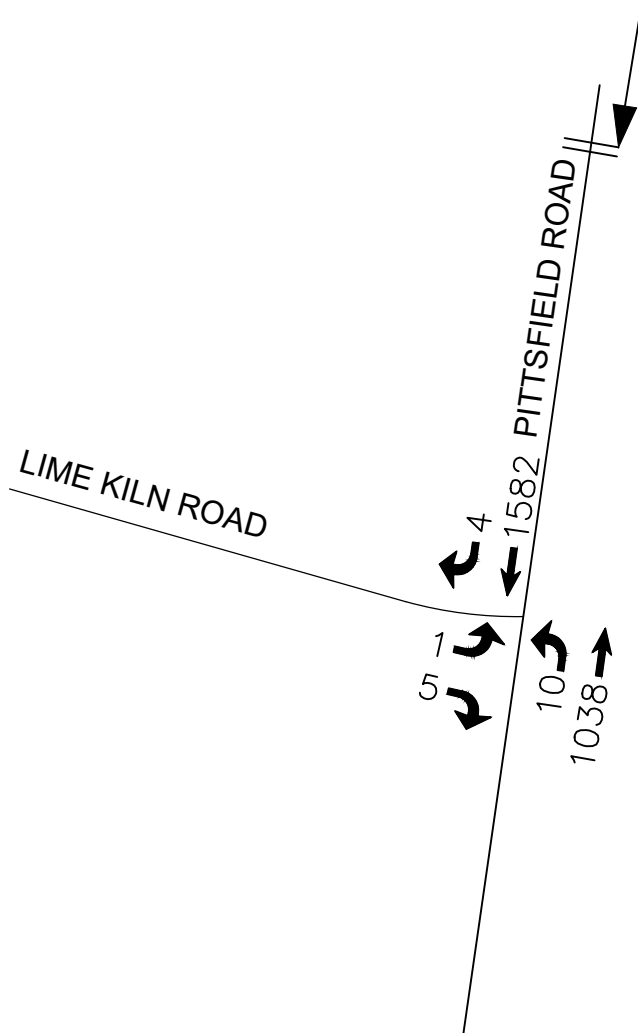
PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



APPROXIMATE ATR LOCATION  
ADT: 33929 (6.1% DAILY HV,  
5.0% AMPKHR HV)  
85th-Percentile Speed: 49MPH NB, 57MPH SB



#### WEEKDAY MORNING PEAK HOUR TURNING MOVEMENTS

7:30 to 8:30am

Conducted: Wednesday May. 19, 2021 SEASONALLY FACTORED TO AVERAGE ANNUAL

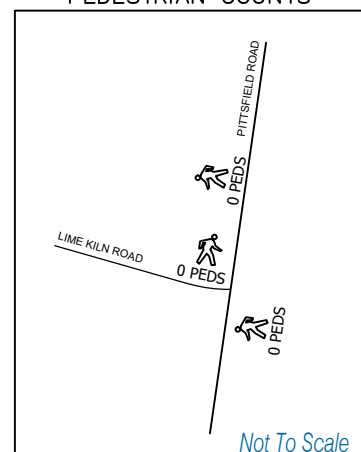
||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

#### PEDESTRIAN COUNTS



Not To Scale



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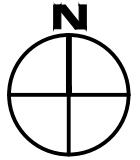
## FIGURE 4: WEEKDAY AM PEAK HOUR 2021 EXISTING TRAFFIC VOLUMES BASE CONDITION

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021

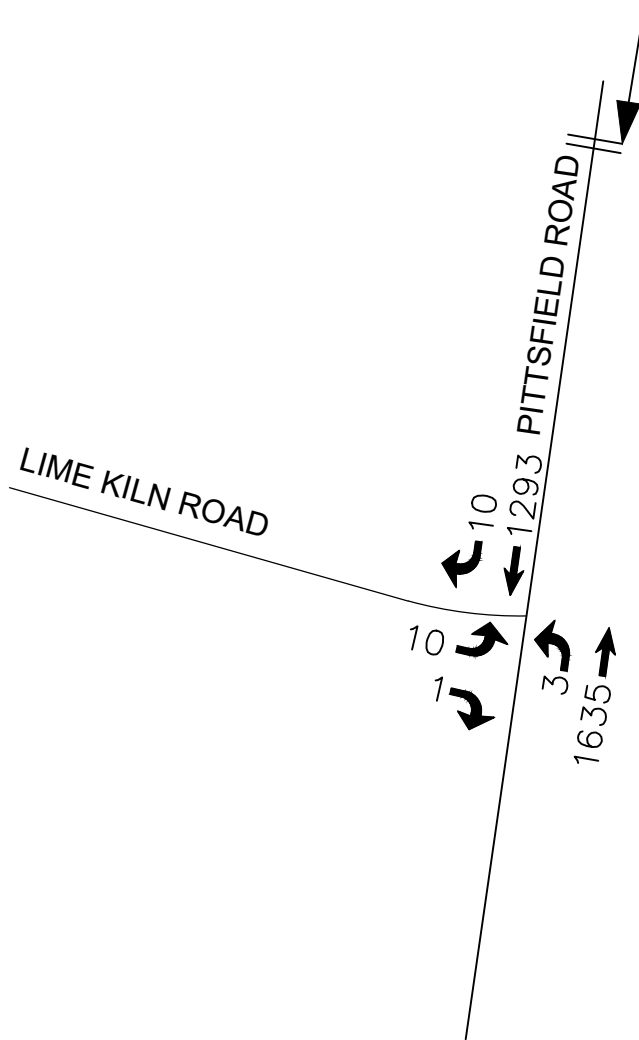




# APPROXIMATE ATR LOCATION

ADT: 33929 (6.1% DAILY HV,  
5.0% AMPKHR HV)

85th-Percentile Speed: 49MPH NB, 57MPH SB



## WEEKDAY AFTERNOON PEAK HOUR TURNING MOVEMENTS

4:00 to 5:00pm

Conducted: Wednesday May. 19, 2021 SEASONALLY FACTORED TO AVERAGE ANNUAL

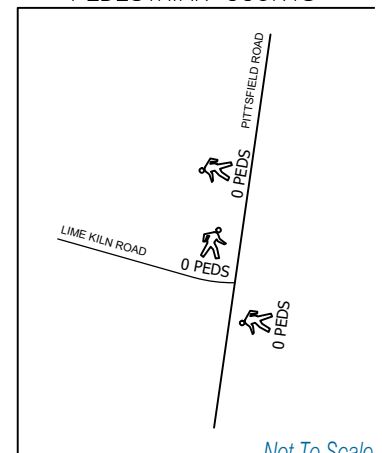
||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

## PEDESTRIAN COUNTS



Not To Scale



**FUSS & O'NEILL**

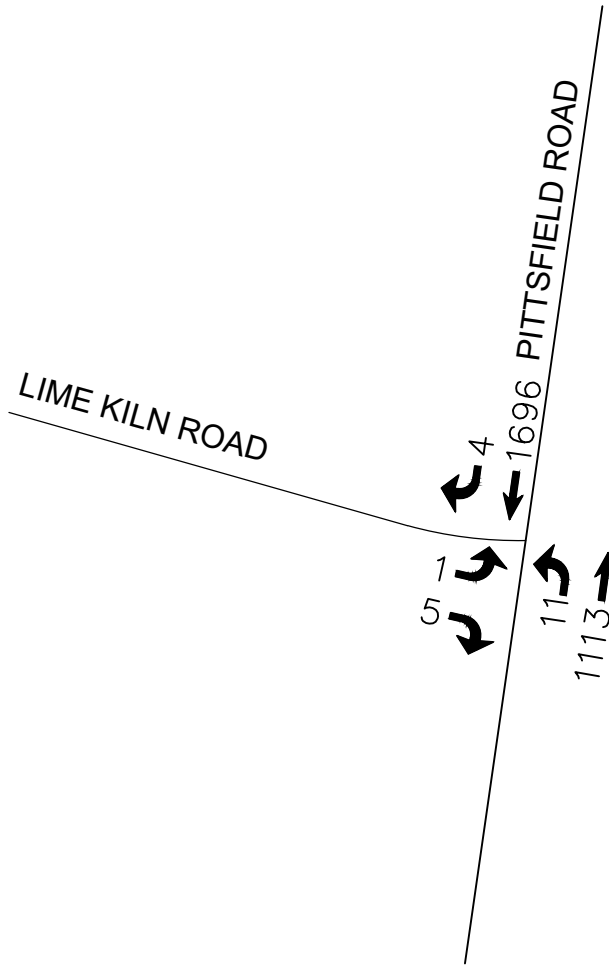
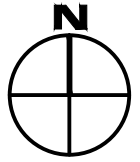
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## FIGURE 5: WEEKDAY PM PEAK HOUR 2021 EXISTING TRAFFIC VOLUMES BASE CONDITION

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



**WEEKDAY MORNING  
PEAK HOUR**

7:30 to 8:30am  
FACTORED TO 2028 USING A 1.00% COMPOUND ANNUAL GROWTH RATE

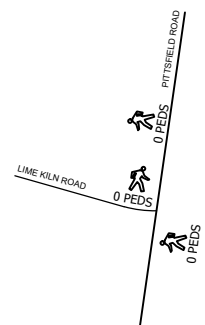
■■■■■ = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

**PEDESTRIAN COUNTS**



*Not To Scale*



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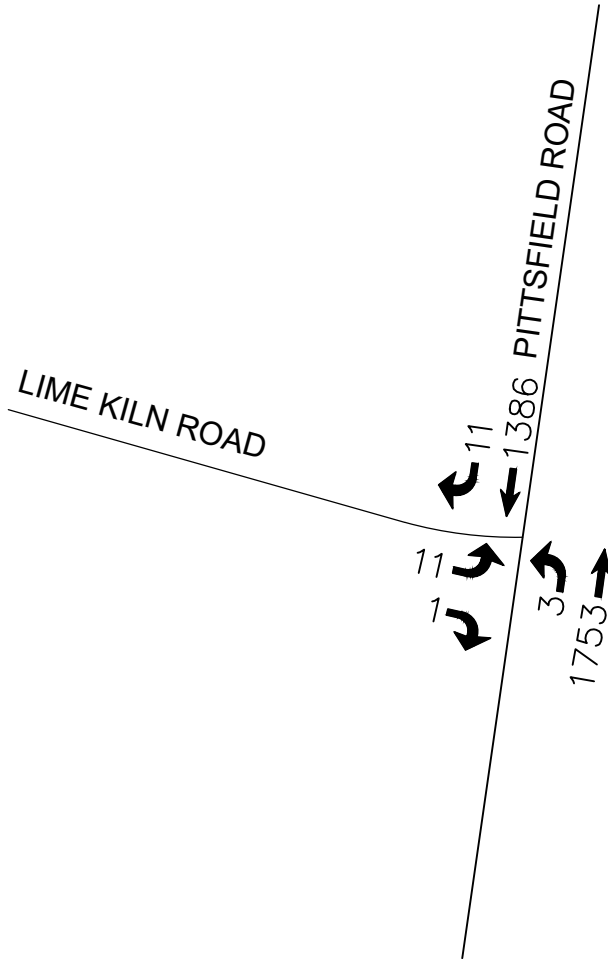
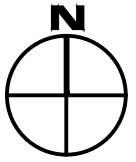
1550 MAIN STREET, SUITE 400  
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**FIGURE 6: WEEKDAY AM PEAK HOUR 2028  
NO BUILD TRAFFIC VOLUMES**

PROJ. NO: 2020353

Lenox, MA

Jun. 18, 2021



### WEEKDAY AFTERNOON PEAK HOUR

4:00 to 5:00pm

FACTORED TO 2028 USING A 1.00% COMPOUND ANNUAL GROWTH RATE

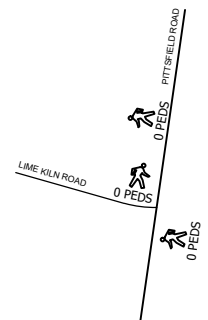
■■■■■ = MARKED PEDESTRIAN CROSSWALK

 0 PEDS = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

### PEDESTRIAN COUNTS



Not To Scale



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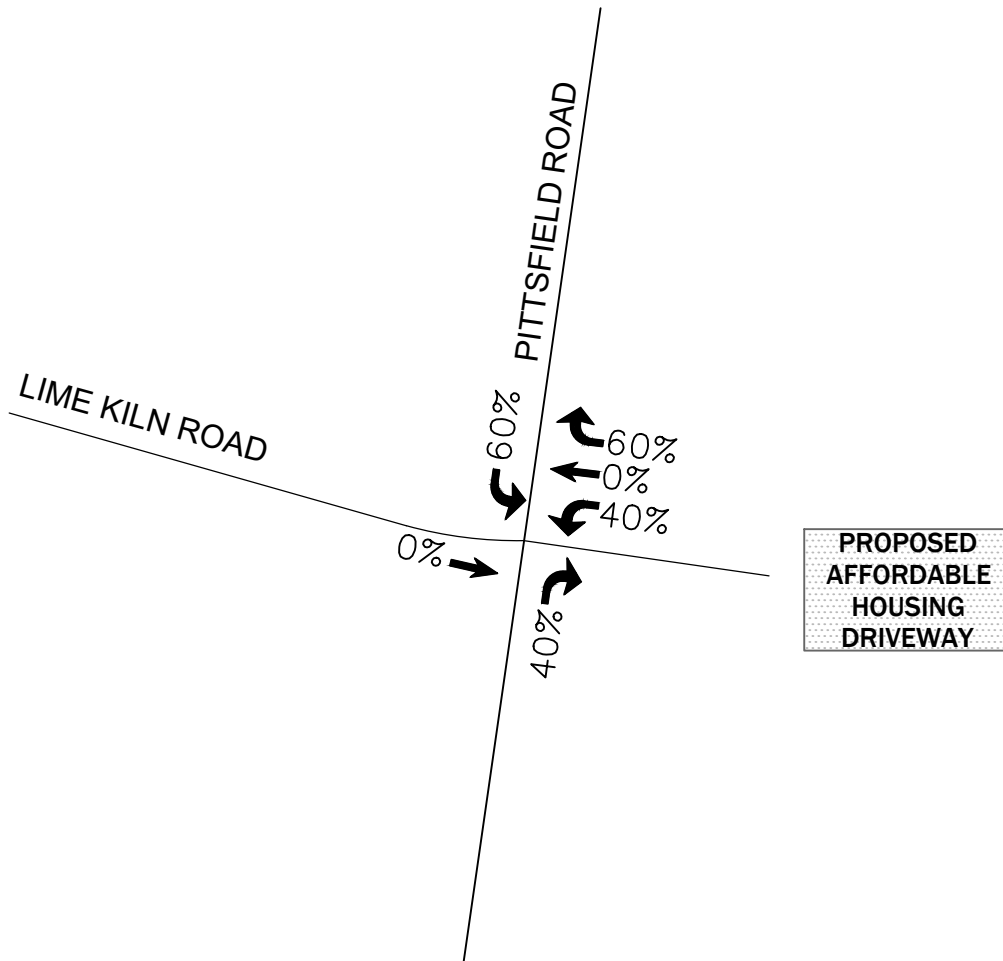
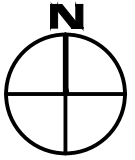
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## FIGURE 7: WEEKDAY PM PEAK HOUR 2028 NO BUILD TRAFFIC VOLUMES

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



**WEEKDAY MORNING  
PEAK HOUR**

7:30 to 8:30am

DISTRIBUTION OF SITE GENERATED TRIPS BY PERCENTAGE

||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING  
0 PEDS

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

*Not To Scale*



**FUSS & O'NEILL**

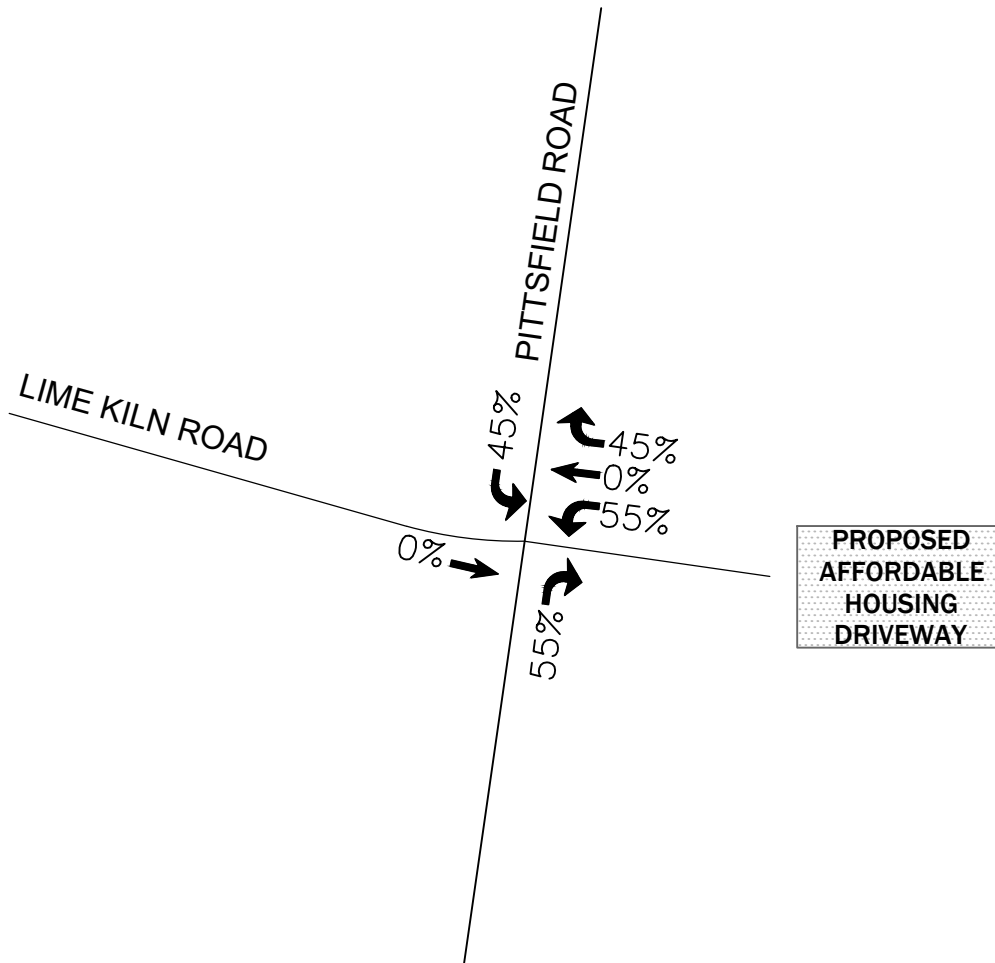
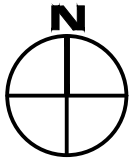
1550 MAIN STREET, SUITE 400  
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**FIGURE 8: WEEKDAY AM PEAK HOUR SITE GENERATED  
TRIP DISTRIBUTION PERCENTAGES**

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



**WEEKDAY AFTERNOON  
PEAK HOUR**

4:00 to 5:00pm

DISTRIBUTION OF SITE GENERATED TRIPS BY PERCENTAGE

||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

*Not To Scale*



**FUSS & O'NEILL**

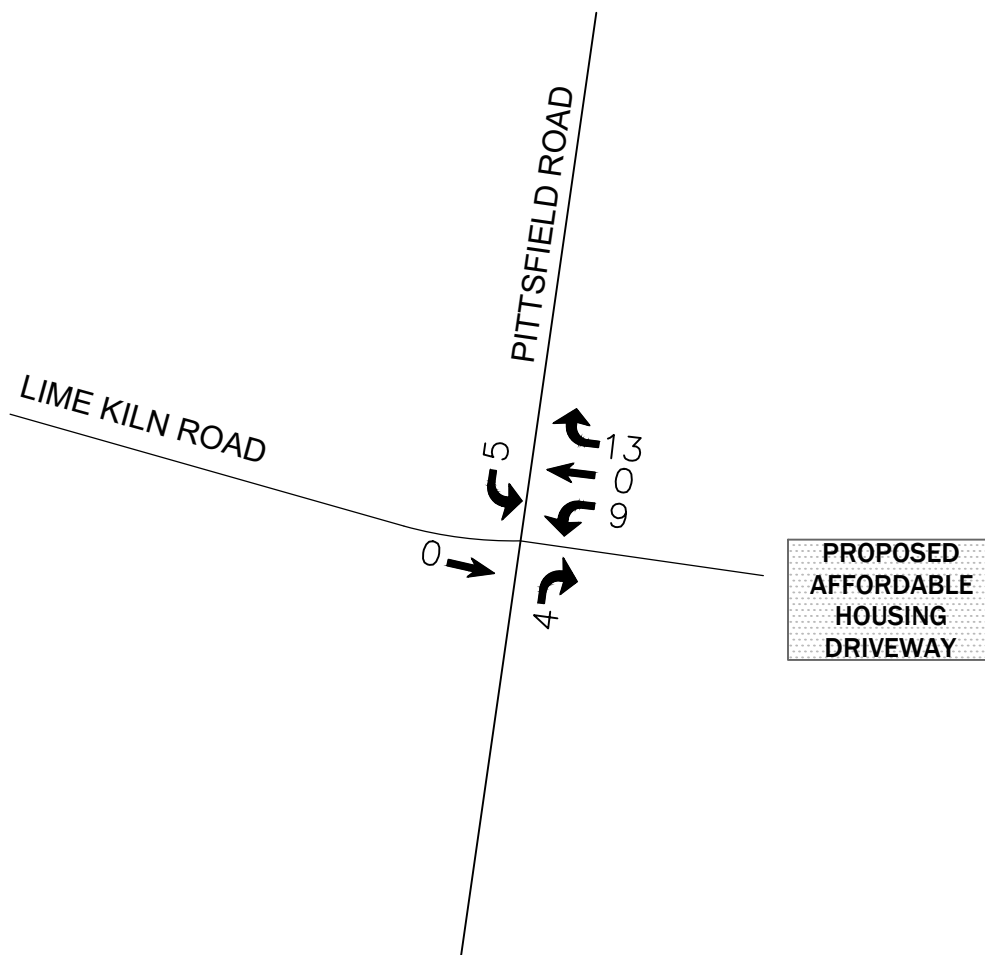
1550 MAIN STREET, SUITE 400  
SPRINGFIELD, MA 01103  
413.452.0445  
www.fando.com

**FIGURE 9: WEEKDAY PM PEAK HOUR SITE GENERATED  
TRAFFIC DISTRIBUTION PERCENTAGES**

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



### WEEKDAY MORNING PEAK HOUR

7:30 to 8:30am

DISTRIBUTION OF SITE GENERATED TRIPS BY VOLUME

■■■■■ = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

*Not To Scale*



**FUSS & O'NEILL**

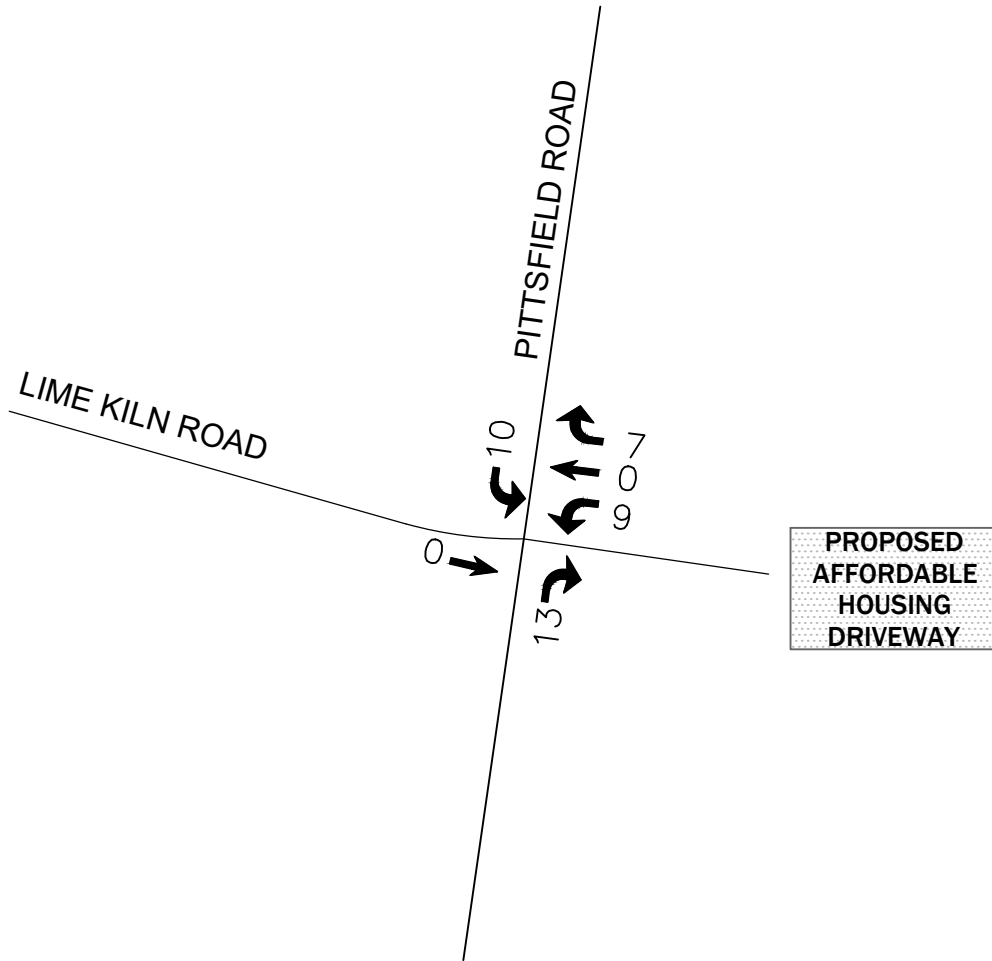
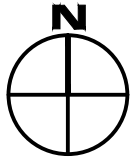
1550 MAIN STREET, SUITE 400  
SPRINGFIELD, MA 01103  
413.452.0445  
www.fando.com

## FIGURE 10: WEEKDAY AM PEAK HOUR SITE GENERATED TRAFFIC VOLUMES

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



### WEEKDAY AFTERNOON PEAK HOUR

4:00 to 5:00pm

DISTRIBUTION OF SITE GENERATED TRIPS BY VOLUME

■■■■■ = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

Not To Scale



**FUSS & O'NEILL**

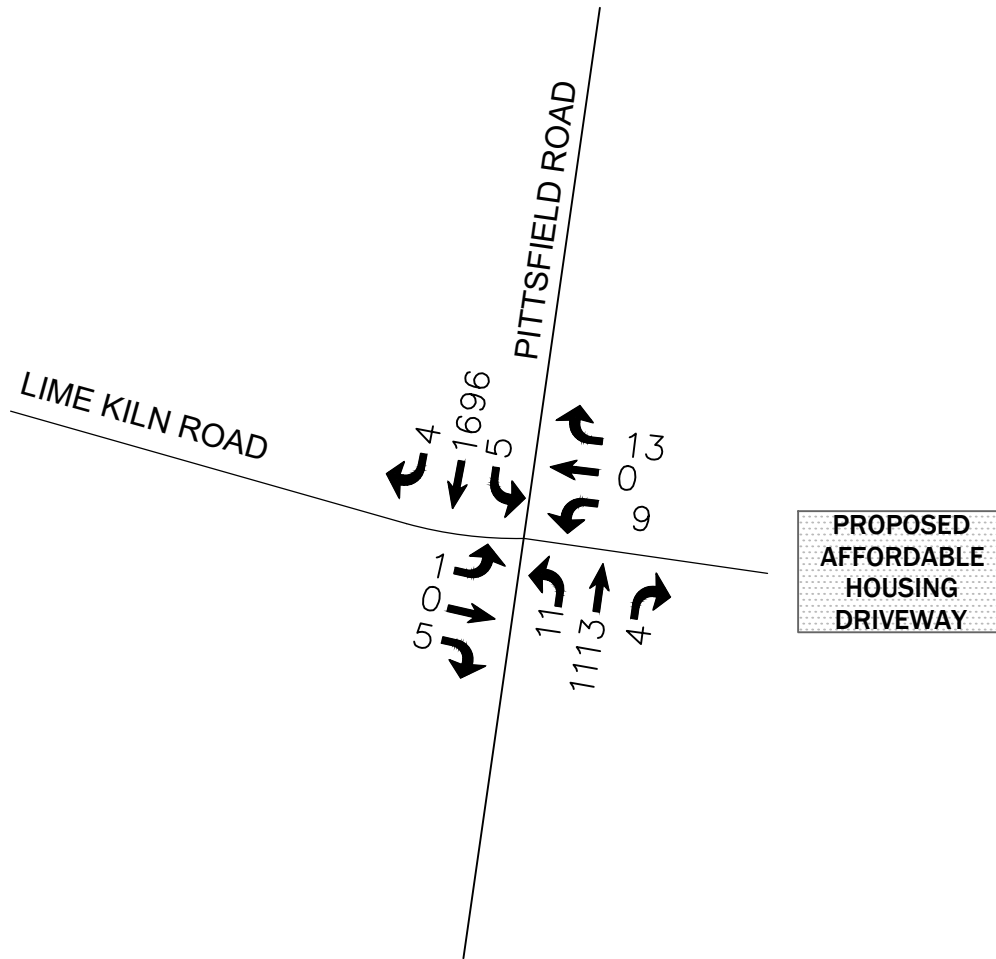
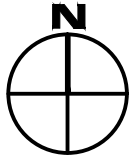
1550 MAIN STREET, SUITE 400  
SPRINGFIELD, MA 01103  
413.452.0445  
www.fando.com

## FIGURE 11: WEEKDAY PM PEAK HOUR SITE GENERATED TRAFFIC VOLUMES

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021



### WEEKDAY MORNING PEAK HOUR

7:30 to 8:30am  
2028 BUILD CONDITION

||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

*Not To Scale*



**FUSS & O'NEILL**

1550 MAIN STREET, SUITE 400  
SPRINGFIELD, MA 01103  
413.452.0445  
www.fando.com

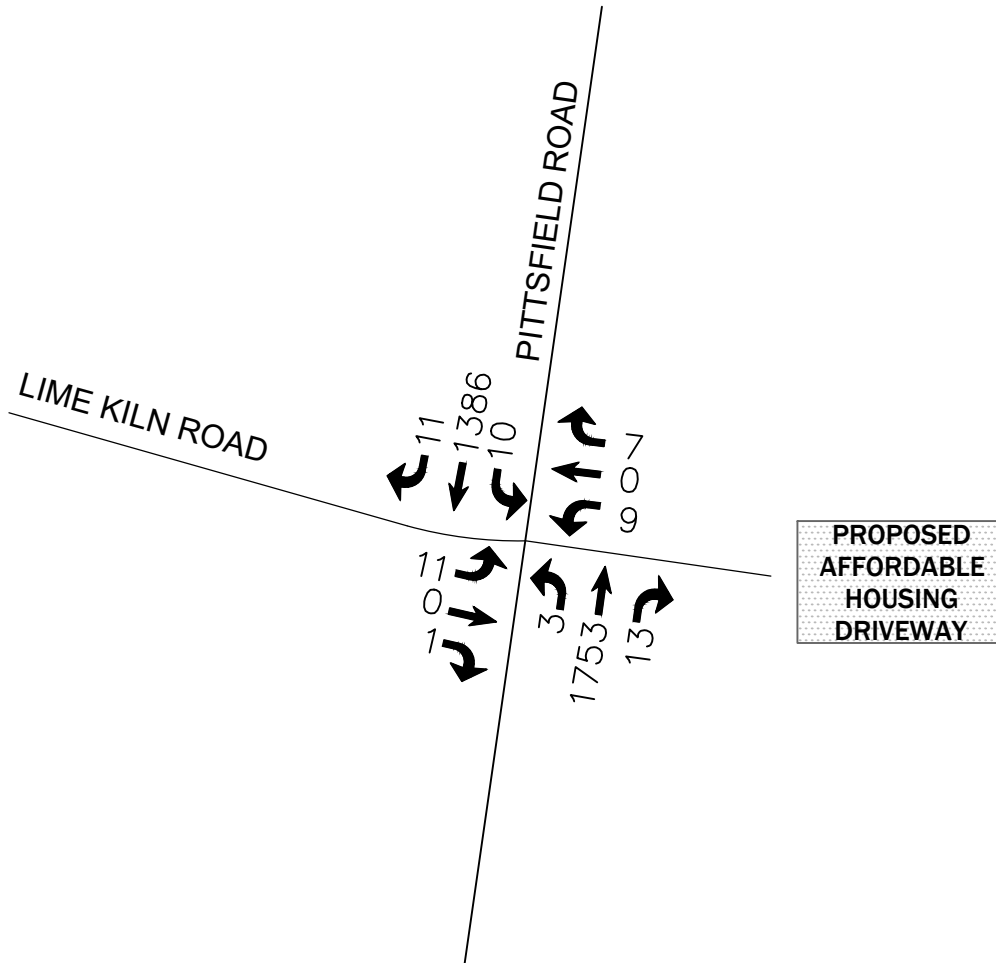
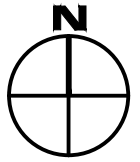
## FIGURE 12: WEEKDAY AM PEAK HOUR 2028 BUILD CONDITION TRAFFIC VOLUMES COMBINED

PROJ. NO: 20210353

Lenox, MA

Jun. 18, 2021





### WEEKDAY MORNING PEAK HOUR

4:00 to 5:00pm  
2028 BUILD CONDITION

||||| = MARKED PEDESTRIAN CROSSWALK

 = NUMBER OF PEDESTRIANS OBSERVED CROSSING

 XX (X) = (X) NUMBER OF BICYCLES

HV= HEAVY VEHICLE

Not To Scale



**FUSS & O'NEILL**

1550 MAIN STREET, SUITE 400  
SPRINGFIELD, MA 01103  
413.452.0445  
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## FIGURE 13: WEEKDAY PM PEAK HOUR 2027 BUILD CONDITION TRAFFIC VOLUMES COMBINED

PROJ. NO: 20191293

Pelham, MA

Feb. 3, 2020

## Appendix C

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### Conceptual Site Plan of 238 Pittsfield Road Affordable Housing







## Appendix D

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### Intersection Turning Movement Counts (TMCs)



# Innovative Data, LLC

P. O. Box 468  
Belchertown, Massachusetts  
InnovativeDataLLC.com or 413.668.5094

N / S: Route 20  
E / W: Lime Kiln Road  
City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

File Name : AM Peak - Route 20 @ Lime Kiln  
Site Code : 1  
Start Date : 5/19/2021  
Page No : 1

## Groups Printed- PCs and Peds - Heavy Vehicles - Bicycles

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	167	0	0	167	0	0	0	0	0	1	115	0	0	116	2	1	0	0	3	286
07:15 AM	0	227	0	0	227	0	0	0	0	0	0	150	0	0	150	0	0	0	0	0	377
07:30 AM	3	326	0	0	329	0	0	0	0	0	0	182	4	0	186	3	0	1	0	4	519
07:45 AM	0	304	0	0	304	0	0	0	0	0	0	194	0	0	194	0	0	0	0	0	498
Total	3	1024	0	0	1027	0	0	0	0	0	1	641	4	0	646	5	1	1	0	7	1680
08:00 AM	0	255	0	0	255	0	0	0	0	0	0	186	1	0	187	0	0	0	0	0	442
08:15 AM	0	281	0	0	281	0	0	0	0	0	0	203	2	0	205	1	0	0	0	1	487
08:30 AM	2	244	0	0	246	0	0	0	0	0	0	191	1	0	192	0	0	0	0	0	438
08:45 AM	0	226	0	0	226	0	0	0	0	0	0	231	0	0	231	0	0	1	0	1	458
Total	2	1006	0	0	1008	0	0	0	0	0	0	811	4	0	815	1	0	1	0	2	1825
Grand Total	5	2030	0	0	2035	0	0	0	0	0	1	1452	8	0	1461	6	1	2	0	9	3505
Apprch %	0.2	99.8	0	0		0	0	0	0		0.1	99.4	0.5	0		66.7	11.1	22.2	0		
Total %	0.1	57.9	0	0	58.1	0	0	0	0	0	0	41.4	0.2	0	41.7	0.2	0	0.1	0	0.3	
PCs and Peds	3	1918	0	0	1921	0	0	0	0	0	1	1349	7	0	1357	6	1	2	0	9	3287
% PCs and Peds																					
Heavy Vehicles	2	112	0	0	114	0	0	0	0	0	0	102	1	0	103	0	0	0	0	0	217
% Heavy Vehicles	40	5.5	0	0	5.6	0	0	0	0	0	0	7	12.5	0	7	0	0	0	0	0	6.2
Bicycles	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	3	326	0	0	329	0	0	0	0	0	0	182	4	0	186	3	0	1	0	4	519
07:45 AM	0	304	0	0	304	0	0	0	0	0	0	194	0	0	194	0	0	0	0	0	498
08:00 AM	0	255	0	0	255	0	0	0	0	0	0	186	1	0	187	0	0	0	0	0	442
08:15 AM	0	281	0	0	281	0	0	0	0	0	0	203	2	0	205	1	0	0	0	1	487
Total Volume	3	1166	0	0	1169	0	0	0	0	0	0	765	7	0	772	4	0	1	0	5	1946
% App. Total	0.3	99.7	0	0		0	0	0	0		0	99.1	0.9	0		80	0	20	0		
PHF	.250	.894	.000	.000	.888	.000	.000	.000	.000	.000	.000	.942	.438	.000	.941	.333	.000	.250	.000	.313	.937



# Innovative Data, LLC

P. O. Box 468  
Belchertown, Massachusetts  
InnovativeDataLLC.com or 413.668.5094

N / S: Route 20  
E / W: Lime Kiln Road  
City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

File Name : AM Peak - Route 20 @ Lime Kiln  
Site Code : 1  
Start Date : 5/19/2021  
Page No : 1

## Groups Printed- Heavy Vehicles

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	10	0	0	10	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	24
07:15 AM	0	8	0	0	8	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	18
07:30 AM	1	22	0	0	23	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	37
07:45 AM	0	12	0	0	12	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	22
Total	1	52	0	0	53	0	0	0	0	0	0	48	0	0	48	0	0	0	0	0	101
08:00 AM	0	10	0	0	10	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	29
08:15 AM	0	16	0	0	16	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	34
08:30 AM	1	16	0	0	17	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	26
08:45 AM	0	18	0	0	18	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	27
Total	1	60	0	0	61	0	0	0	0	0	0	54	1	0	55	0	0	0	0	0	116
Grand Total	2	112	0	0	114	0	0	0	0	0	0	102	1	0	103	0	0	0	0	0	217
Apprch %	1.8	98.2	0	0		0	0	0	0		0	99	1	0		0	0	0	0		
Total %	0.9	51.6	0	0	52.5	0	0	0	0	0	0	47	0.5	0	47.5	0	0	0	0	0	

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total					App. Total					App. Total					App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

07:30 AM	1	22	0	0	23	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	37
07:45 AM	0	12	0	0	12	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	22
08:00 AM	0	10	0	0	10	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	29
08:15 AM	0	16	0	0	16	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	34
Total Volume	1	60	0	0	61	0	0	0	0	0	0	60	1	0	61	0	0	0	0	0	122
% App. Total	1.6	98.4	0	0		0	0	0	0		0	98.4	1.6	0		0	0	0	0		
PHF	.250	.682	.000	.000	.663	.000	.000	.000	.000	.000	.000	.833	.250	.000	.803	.000	.000	.000	.000	.000	.824



# Innovative Data, LLC

P. O. Box 468  
Belchertown, Massachusetts  
InnovativeDataLLC.com or 413.668.5094

N / S: Route 20  
E / W: Lime Kiln Road  
City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

File Name : PM Peak - Route 20 @ Lime Kiln  
Site Code : 2  
Start Date : 5/19/2021  
Page No : 1

## Groups Printed- PCs and Peds - Heavy Vehicles - Bicycles

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	2	235	0	0	237	0	0	0	0	0	0	289	1	0	290	0	0	2	0	2	529
04:15 PM	2	240	0	0	242	0	0	0	0	0	0	312	1	0	313	0	0	2	0	2	557
04:30 PM	0	248	0	0	248	0	0	0	0	0	0	338	0	0	338	1	0	1	0	2	588
04:45 PM	3	230	0	0	233	0	0	0	0	0	0	266	0	0	266	0	0	2	0	2	501
Total	7	953	0	0	960	0	0	0	0	0	0	1205	2	0	1207	1	0	7	0	8	2175
05:00 PM	2	235	0	0	237	0	0	0	0	0	0	282	0	0	282	2	0	0	0	2	521
05:15 PM	0	243	0	0	243	0	0	0	0	0	0	248	1	0	249	0	0	0	0	0	492
05:30 PM	1	188	0	0	189	0	0	0	0	0	0	222	0	0	222	0	0	1	0	1	412
05:45 PM	0	182	0	0	182	0	0	0	0	0	2	199	0	0	201	1	0	0	0	1	384
Total	3	848	0	0	851	0	0	0	0	0	2	951	1	0	954	3	0	1	0	4	1809
Grand Total	10	1801	0	0	1811	0	0	0	0	0	2	2156	3	0	2161	4	0	8	0	12	3984
Apprch %	0.6	99.4	0	0		0	0	0	0		0.1	99.8	0.1	0		33.3	0	66.7	0		
Total %	0.3	45.2	0	0	45.5	0	0	0	0	0	0.1	54.1	0.1	0	54.2	0.1	0	0.2	0	0.3	
PCs and Peds	10	1741	0	0	1751	0	0	0	0	0	2	2094	3	0	2099	4	0	7	0	11	3861
% PCs and Peds																					
Heavy Vehicles	0	58	0	0	58	0	0	0	0	0	0	61	0	0	61	0	0	1	0	1	120
% Heavy Vehicles	0	3.2	0	0	3.2	0	0	0	0	0	0	2.8	0	0	2.8	0	0	12.5	0	8.3	3
Bicycles	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Bicycles	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	2	235	0	0	237	0	0	0	0	0	0	289	1	0	290	0	0	2	0	2	529
04:15 PM	2	240	0	0	242	0	0	0	0	0	0	312	1	0	313	0	0	2	0	2	557
04:30 PM	0	248	0	0	248	0	0	0	0	0	0	338	0	0	338	1	0	1	0	2	588
04:45 PM	3	230	0	0	233	0	0	0	0	0	0	266	0	0	266	0	0	2	0	2	501
Total Volume	7	953	0	0	960	0	0	0	0	0	0	1205	2	0	1207	1	0	7	0	8	2175
% App. Total	0.7	99.3	0	0		0	0	0	0		0	99.8	0.2	0		12.5	0	87.5	0		
PHF	.583	.961	.000	.000	.968	.000	.000	.000	.000	.000	.000	.891	.500	.000	.893	.250	.000	.875	.000	1.00	.925



# Innovative Data, LLC

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N / S: Route 20  
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City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

File Name : PM Peak - Route 20 @ Lime Kiln  
Site Code : 2  
Start Date : 5/19/2021  
Page No : 1

## Groups Printed- Heavy Vehicles

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	7	0	0	7	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	17
04:15 PM	0	12	0	0	12	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	21
04:30 PM	0	14	0	0	14	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	22
04:45 PM	0	10	0	0	10	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	15
Total	0	43	0	0	43	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	75
05:00 PM	0	1	0	0	1	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	15
05:15 PM	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
05:30 PM	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
05:45 PM	0	6	0	0	6	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	13
Total	0	15	0	0	15	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	45
Grand Total	0	58	0	0	58	0	0	0	0	0	0	61	0	0	61	0	0	1	0	1	120
Apprch %	0	100	0	0		0	0	0	0		0	100	0	0		0	0	100	0		
Total %	0	48.3	0	0	48.3	0	0	0	0	0	0	50.8	0	0	50.8	0	0	0.8	0	0.8	

	Route 20 From North					From East					Route 20 From South					Lime Kiln From West					
Start Time	Right	Thru	Left	Peds	App. Total					App. Total					App. Total						

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	0	7	0	0	7	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	17
04:15 PM	0	12	0	0	12	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	21
04:30 PM	0	14	0	0	14	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	22
04:45 PM	0	10	0	0	10	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	15
Total Volume	0	43	0	0	43	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	75
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	100	0		
PHF	.000	.768	.000	.000	.768	.000	.000	.000	.000	.000	.000	.775	.000	.000	.775	.000	.000	.250	.000	.250	.852



## Appendix E

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### Automatic Traffic Recorder (ATR) Data



# Innovative Data, LLC

P.O. Pox 468

Belchertown, Massachusetts

InnovativeDataLLC.com or 413.668.5094

Location: Route 20 (Northbound)  
Location: North of Lime Kiln Road  
City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

Start Time	Tue A.M.	5/18/20 P.M.		Wed A.M.	5/19/20 P.M.		Thu A.M.	5/20/20 P.M.		Daily Average A.M.	P.M.
12:00	12	228		23	211		0	*		12	220
12:15	14	211		7	197		*	*		10	204
12:30	11	183		9	219		*	*		10	201
12:45	9	211		18	194		*	*		14	202
01:00	4	186		4	185		*	*		4	186
01:15	10	198		6	223		*	*		8	210
01:30	3	200		3	199		*	*		3	200
01:45	9	199		6	188		*	*		8	194
02:00	8	214		6	204		*	*		7	209
02:15	7	200		6	227		*	*		6	214
02:30	7	244		11	260		*	*		9	252
02:45	10	246		2	229		*	*		6	238
03:00	3	290		3	309		*	*		3	300
03:15	5	262		5	333		*	*		5	298
03:30	6	325		3	318		*	*		4	322
03:45	2	251		8	285		*	*		5	268
04:00	6	281		6	272		*	*		6	276
04:15	7	276		11	289		*	*		9	282
04:30	9	269		9	312		*	*		9	290
04:45	7	283		8	238		*	*		8	260
05:00	12	264		17	267		*	*		14	266
05:15	21	260		19	243		*	*		20	252
05:30	54	199		40	204		*	*		47	202
05:45	47	181		59	194		*	*		53	188
06:00	54	147		42	181		*	*		48	164
06:15	93	159		80	170		*	*		86	164
06:30	130	152		146	141		*	*		138	146
06:45	107	138		127	133		*	*		117	136
07:00	124	131		126	125		*	*		125	128
07:15	157	134		154	142		*	*		156	138
07:30	211	115		208	126		*	*		210	120
07:45	217	90		166	121		*	*		192	106
08:00	177	92		187	96		*	*		182	94
08:15	213	86		192	100		*	*		202	93
08:30	200	79		185	107		*	*		192	93
08:45	218	63		221	83		*	*		220	73
09:00	165	71		149	73		*	*		157	72
09:15	159	57		169	59		*	*		164	58
09:30	175	43		193	62		*	*		184	52
09:45	186	37		158	54		*	*		172	46
10:00	152	30		173	65		*	*		162	48
10:15	182	55		194	46		*	*		188	50
10:30	191	40		196	57		*	*		194	48
10:45	181	31		188	31		*	*		184	31
11:00	184	50		181	51		*	*		182	50
11:15	168	31		188	41		*	*		178	36
11:30	173	26		191	19		*	*		182	22
11:45	195	14		183	16		*	*		189	15
Total	4295	7532		4286	7899		0	0		4284	7717
Combined Total	11827			12185			0			12001	
Peak	07:30	03:30	-	08:00	03:00	-	-	-	-	08:00	03:00
Vol.	818	1133	-	785	1245	-	-	-	-	796	1188
P.H.F.	0.942	0.872		0.888	0.935					0.905	0.922
ADT	ADT 12.000		AADT 12.000								



# Innovative Data, LLC

P.O. Pox 468

Belchertown, Massachusetts

InnovativeDataLLC.com or 413.668.5094

Location: Route 20 (Southbound)

Location: North of Lime Kiln Road

City, State: Lenox, Massachusetts

Client: Fuss & O'Neill / S. Savaria

Start Time	Tue A.M.	5/18/20 P.M.	Wed A.M.	5/19/20 P.M.	Thu A.M.	5/20/20 P.M.	Daily Average	
							A.M.	P.M.
12:00	3	191	6	177	0	*	3	184
12:15	3	198	11	202	*	*	7	200
12:30	5	218	9	171	*	*	7	194
12:45	3	226	2	190	*	*	2	208
01:00	6	181	4	201	*	*	5	191
01:15	5	197	6	190	*	*	6	194
01:30	4	163	2	195	*	*	3	179
01:45	7	204	5	223	*	*	6	214
02:00	2	208	2	209	*	*	2	208
02:15	3	201	4	238	*	*	4	220
02:30	3	236	2	233	*	*	2	234
02:45	2	257	3	249	*	*	2	253
03:00	3	216	7	237	*	*	5	226
03:15	4	251	4	206	*	*	4	228
03:30	7	217	10	207	*	*	8	212
03:45	8	234	10	216	*	*	9	225
04:00	16	207	12	226	*	*	14	216
04:15	13	215	14	225	*	*	14	220
04:30	25	241	19	218	*	*	22	230
04:45	29	241	32	215	*	*	30	228
05:00	27	214	32	227	*	*	30	220
05:15	52	196	51	226	*	*	52	211
05:30	92	159	86	178	*	*	89	168
05:45	76	184	89	167	*	*	82	176
06:00	79	138	98	150	*	*	88	144
06:15	121	143	115	157	*	*	118	150
06:30	210	118	199	106	*	*	204	112
06:45	216	109	200	98	*	*	208	104
07:00	180	95	190	100	*	*	185	98
07:15	256	94	253	94	*	*	254	94
07:30	309	79	311	87	*	*	310	83
07:45	263	88	263	73	*	*	263	80
08:00	234	88	262	73	*	*	248	80
08:15	263	60	242	73	*	*	252	66
08:30	199	57	202	75	*	*	200	66
08:45	213	50	224	66	*	*	218	58
09:00	189	51	176	45	*	*	182	48
09:15	185	48	169	39	*	*	177	44
09:30	175	30	191	37	*	*	183	34
09:45	200	44	174	44	*	*	187	44
10:00	179	31	187	42	*	*	183	36
10:15	176	36	178	39	*	*	177	38
10:30	179	22	200	35	*	*	190	28
10:45	189	29	201	44	*	*	195	36
11:00	186	18	170	15	*	*	178	16
11:15	179	16	169	22	*	*	174	19
11:30	180	22	204	9	*	*	192	16
11:45	186	14	197	16	*	*	192	15
Total	5144	6535	5197	6565	0	0	5166	6548
Combined Total	11679		11762		0		11714	
Peak	07:30	02:30	-	07:15	02:15	-	07:15	02:30
Vol.	1069	960	-	1089	957	-	1075	941
P.H.F.	0.865	0.934	-	0.875	0.961	-	0.867	0.930
ADT	ADT 11,717		AADT 11,717					



Location: Route 20 (Northbound)  
 Location: North of Lime Kiln Road  
 City, State: Lenox, Massachusetts  
 Client: Fuss & O'Neill / S. Savaria

# Innovative Data, LLC

P.O. Pox 468  
 Belchertown, Massachusetts  
 InnovativeDataLLC.com or 413.668.5094

## Northbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
05/18/21	0	0	0	0	1	12	14	16	2	1	0	0	0	0	46	48	51
01:00	0	0	0	0	1	3	11	7	3	1	0	0	0	0	26	50	54
02:00	0	0	0	0	0	5	9	10	4	3	1	0	0	0	32	54	59
03:00	0	0	0	0	1	7	7	1	0	0	0	0	0	0	16	43	45
04:00	0	0	0	0	0	10	13	3	3	0	0	0	0	0	29	47	52
05:00	0	0	0	0	1	8	55	43	23	4	0	0	0	0	134	51	54
06:00	0	0	0	2	2	35	156	133	46	8	2	0	0	0	384	49	54
07:00	1	1	1	0	14	67	253	269	93	9	1	0	0	0	709	49	53
08:00	1	2	0	2	14	93	375	247	64	9	1	0	0	0	808	49	52
09:00	2	0	0	1	17	101	300	213	44	6	1	0	0	0	685	48	51
10:00	4	1	0	5	37	112	297	188	55	7	0	0	0	0	706	48	52
11:00	1	0	0	1	9	62	331	251	64	1	0	0	0	0	720	49	52
12 PM	2	0	0	5	12	109	351	282	69	3	0	0	0	0	833	49	52
13:00	1	0	1	3	14	90	313	272	78	9	1	1	0	0	783	49	53
14:00	4	0	0	1	14	94	379	320	79	12	1	0	0	0	904	49	52
15:00	11	3	3	1	23	75	426	460	104	16	6	0	0	0	1128	49	53
16:00	6	2	0	1	14	77	434	447	121	6	1	0	0	0	1109	49	52
17:00	8	0	0	3	18	69	324	365	93	20	4	0	0	0	904	49	53
18:00	1	0	0	1	4	50	197	252	72	16	2	0	0	1	596	50	54
19:00	1	1	1	0	8	28	163	189	67	11	0	0	1	0	470	50	54
20:00	0	0	0	0	2	52	130	94	32	8	0	1	0	1	320	49	53
21:00	0	0	0	1	6	33	92	56	18	1	1	0	0	0	208	49	52
22:00	1	0	0	0	3	28	62	46	9	5	2	0	0	0	156	49	54
23:00	0	0	0	0	4	11	55	32	14	2	1	2	0	0	121	50	54
Total	44	10	6	27	219	1231	4747	4196	1157	158	25	4	1	2	11827		
Percent	0.4%	0.1%	0.1%	0.2%	1.9%	10.4%	40.1%	35.5%	9.8%	1.3%	0.2%	0.0%	0.0%	0.0%			
AM Peak	10:00	08:00	07:00	10:00	10:00	10:00	08:00	07:00	07:00	07:00	06:00				08:00		
Vol.	4	2	1	5	37	112	375	269	93	9	2				808		
PM Peak	15:00	15:00	15:00	12:00	15:00	12:00	16:00	15:00	16:00	17:00	15:00	23:00	19:00	18:00	15:00		
Vol.	11	3	3	5	23	109	434	460	121	20	6	2	1	1	1128		



# Innovative Data, LLC

P.O. Pox 468

Belchertown, Massachusetts

InnovativeDataLLC.com or 413.668.5094

Location: Route 20 (Northbound)

Location: North of Lime Kiln Road

City, State: Lenox, Massachusetts

Client: Fuss & O'Neill / S. Savaria

## Northbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
05/19/21	0	0	0	0	2	15	24	11	3	2	0	0	0	0	57	48	53
01:00	0	0	0	0	0	5	10	2	2	0	0	0	0	0	19	47	52
02:00	0	0	0	0	0	6	8	8	1	1	1	0	0	0	25	49	58
03:00	0	0	0	0	1	0	8	4	3	2	1	0	0	0	19	55	60
04:00	0	0	0	0	0	11	11	9	2	1	0	0	0	0	34	48	53
05:00	0	0	0	0	2	17	54	35	22	2	3	0	0	0	135	51	54
06:00	1	0	1	3	15	68	153	123	29	2	0	0	0	0	395	48	51
07:00	1	1	1	7	22	94	275	215	34	4	0	0	0	0	654	48	50
08:00	2	2	2	5	27	161	366	177	41	1	1	0	0	0	785	47	50
09:00	3	0	0	5	8	117	303	191	34	6	2	0	0	0	669	48	51
10:00	5	0	1	4	13	138	333	208	43	5	1	0	0	0	751	48	51
11:00	6	0	2	2	8	96	316	236	69	8	0	0	0	0	743	49	52
12 PM	2	0	3	2	12	96	314	283	98	10	0	1	0	0	821	49	53
13:00	4	0	0	0	2	88	315	315	60	11	0	0	0	0	795	49	52
14:00	1	0	0	0	10	104	372	343	77	12	1	0	0	0	920	49	52
15:00	3	2	0	10	37	176	564	365	76	9	1	1	0	1	1245	48	51
16:00	10	0	2	7	28	190	471	327	69	7	0	0	0	0	1111	48	51
17:00	5	0	1	2	23	130	372	293	71	11	0	0	0	0	908	49	52
18:00	5	0	0	0	4	50	233	226	83	19	5	0	0	0	625	50	54
19:00	0	0	0	0	15	61	197	186	47	7	0	1	0	0	514	49	53
20:00	1	0	0	0	8	47	165	124	35	5	0	1	0	0	386	49	53
21:00	0	0	0	1	4	46	114	62	19	2	0	0	0	0	248	48	52
22:00	0	0	0	1	3	47	81	49	15	3	0	0	0	0	199	48	52
23:00	0	0	0	0	6	27	48	37	7	2	0	0	0	0	127	48	51
Total	49	5	13	49	250	1790	5107	3829	940	132	16	4	0	1	12185		
Percent	0.4%	0.0%	0.1%	0.4%	2.1%	14.7%	41.9%	31.4%	7.7%	1.1%	0.1%	0.0%	0.0%	0.0%			
AM Peak	11:00	08:00	08:00	07:00	08:00	08:00	08:00	11:00	11:00	11:00	05:00				08:00		
Vol.	6	2	2	7	27	161	366	236	69	8	3				785		
PM Peak	16:00	15:00	12:00	15:00	15:00	16:00	15:00	15:00	12:00	18:00	18:00	12:00		15:00	15:00		
Vol.	10	2	3	10	37	190	564	365	98	19	5	1		1	1245		
Grand Total	93	15	19	76	469	3021	9854	8025	2097	290	41	8	1	3	24012		
Percent	0.4%	0.1%	0.1%	0.3%	2.0%	12.6%	41.0%	33.4%	8.7%	1.2%	0.2%	0.0%	0.0%	0.0%			

15th Percentile : 39 MPH  
 50th Percentile : 44 MPH  
 85th Percentile : 49 MPH  
 95th Percentile : 52 MPH

Statistic  
s

10 MPH Pace Speed : 41-50 MPH

Number in Pace : 17879



Location: Route 20 (Southbound)  
 Location: North of Lime Kiln Road  
 City, State: Lenox, Massachusetts  
 Client: Fuss & O'Neill / S. Savaria

# Innovative Data, LLC

P.O. Pox 468  
 Belchertown, Massachusetts  
 InnovativeDataLLC.com or 413.668.5094

## Southbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
05/18/21	0	0	0	0	1	0	2	10	1	0	0	0	0	0	14	49	51
01:00	0	0	0	0	0	1	6	10	3	1	1	0	0	0	22	52	59
02:00	0	1	0	0	0	1	1	5	1	0	1	0	0	0	10	52	62
03:00	0	0	0	0	0	1	3	11	7	0	0	0	0	0	22	52	54
04:00	1	0	0	0	3	4	10	31	21	12	1	0	0	0	83	55	58
05:00	0	0	1	1	1	6	23	56	82	65	10	1	1	0	247	58	59
06:00	2	3	2	3	5	8	27	119	225	173	44	12	2	1	626	58	63
07:00	5	1	2	3	10	15	63	231	354	251	63	8	2	0	1008	58	61
08:00	4	2	2	4	6	22	69	298	322	147	30	3	0	0	909	56	59
09:00	4	1	1	3	4	18	65	264	255	100	25	6	3	0	749	56	59
10:00	3	0	0	3	8	22	99	263	239	73	10	3	0	0	723	54	58
11:00	3	1	1	1	6	18	106	270	213	89	18	3	1	1	731	55	59
12 PM	11	3	0	0	8	18	102	272	297	100	16	6	0	0	833	54	59
13:00	10	1	0	0	12	37	86	243	237	95	21	2	0	1	745	55	59
14:00	1	1	0	2	1	28	140	336	246	126	18	3	0	0	902	55	59
15:00	5	1	2	3	4	24	125	284	300	128	37	3	2	0	918	56	59
16:00	3	1	0	1	3	13	71	282	323	159	39	7	2	0	904	57	60
17:00	2	1	1	1	0	10	90	232	254	113	40	6	2	1	753	57	61
18:00	2	0	1	0	1	6	33	158	166	94	42	4	1	0	508	58	62
19:00	0	0	1	0	0	3	30	112	113	70	17	8	2	0	356	58	62
20:00	0	0	0	1	1	11	44	82	75	31	9	0	0	1	255	55	59
21:00	0	0	0	0	2	8	28	66	39	23	6	1	0	0	173	55	59
22:00	0	0	1	1	0	2	24	43	28	12	6	1	0	0	118	55	60
23:00	0	0	0	0	0	1	11	26	20	11	1	0	0	0	70	55	58
Total	56	17	15	27	76	277	1258	3704	3821	1873	455	77	18	5	11679		
Percent	0.5%	0.1%	0.1%	0.2%	0.7%	2.4%	10.8%	31.7%	32.7%	16.0%	3.9%	0.7%	0.2%	0.0%			
AM Peak	07:00	06:00	06:00	08:00	07:00	08:00	11:00	08:00	07:00	07:00	07:00	06:00	09:00	06:00	07:00		
Vol.	5	3	2	4	10	22	106	298	354	251	63	12	3	1	1008		
PM Peak	12:00	12:00	15:00	15:00	13:00	13:00	14:00	14:00	16:00	16:00	18:00	19:00	15:00	13:00	15:00		
Vol.	11	3	2	3	12	37	140	336	323	159	42	8	2	1	918		



# Innovative Data, LLC

P.O. Pox 468

Belchertown, Massachusetts

InnovativeDataIc.com or 413.668.5094

Location: Route 20 (Southbound)  
Location: North of Lime Kiln Road  
City, State: Lenox, Massachusetts  
Client: Fuss & O'Neill / S. Savaria

## Southbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
05/19/21	1	0	0	1	0	1	7	11	6	0	1	0	0	0	28	52	54
01:00	0	0	0	0	0	0	4	6	6	0	1	0	0	0	17	53	60
02:00	0	0	0	0	0	0	2	2	4	0	2	1	0	0	11	63	67
03:00	0	0	0	0	0	1	3	8	11	7	1	0	0	0	31	57	59
04:00	3	2	0	0	1	3	9	24	24	7	4	0	0	0	77	54	60
05:00	0	1	1	1	1	5	16	37	84	72	28	10	1	1	258	60	64
06:00	1	4	4	3	2	5	19	80	196	195	83	15	4	1	612	60	64
07:00	6	3	2	1	10	17	44	171	382	270	92	15	4	0	1017	59	63
08:00	7	2	0	2	1	11	75	242	337	197	43	10	2	1	930	57	60
09:00	1	3	0	1	2	16	46	187	248	162	37	7	0	0	710	58	61
10:00	1	1	1	3	4	11	78	205	271	143	43	4	1	0	766	57	61
11:00	8	1	0	1	6	21	83	241	256	105	14	4	0	0	740	55	59
12 PM	9	0	0	3	4	14	95	264	251	88	10	1	1	0	740	54	58
13:00	10	0	0	0	4	27	98	254	273	120	19	3	0	1	809	55	59
14:00	9	0	0	5	4	29	99	319	339	97	22	6	0	0	929	54	59
15:00	9	0	0	3	5	16	127	309	269	104	19	3	1	1	866	54	59
16:00	10	2	0	2	4	24	83	261	287	169	36	5	1	0	884	57	59
17:00	4	0	0	1	1	9	68	240	290	146	31	6	2	0	798	57	59
18:00	6	0	1	0	2	9	37	129	203	90	26	7	0	1	511	57	61
19:00	1	0	0	0	0	3	35	97	116	74	19	9	0	0	354	58	62
20:00	0	0	0	0	0	11	28	105	95	39	7	2	0	0	287	55	59
21:00	0	0	0	0	2	3	34	53	53	16	4	0	0	0	165	54	58
22:00	1	0	0	0	1	5	30	54	46	16	6	1	0	0	160	54	59
23:00	0	0	0	0	1	1	7	26	16	9	1	0	1	0	62	55	59
Total	87	19	9	27	55	242	1127	3325	4063	2126	549	109	18	6	11762		
Percent	0.7%	0.2%	0.1%	0.2%	0.5%	2.1%	9.6%	28.3%	34.5%	18.1%	4.7%	0.9%	0.2%	0.1%			
AM Peak	11:00	06:00	06:00	06:00	07:00	11:00	11:00	08:00	07:00	07:00	07:00	06:00	06:00	05:00	07:00		
Vol.	8	4	4	3	10	21	83	242	382	270	92	15	4	1	1017		
PM Peak	13:00	16:00	18:00	14:00	15:00	14:00	15:00	14:00	14:00	16:00	16:00	19:00	17:00	13:00	14:00		
Vol.	10	2	1	5	5	29	127	319	339	169	36	9	2	1	929		
Grand Total	143	36	24	54	131	519	2385	7029	7884	3999	1004	186	36	11	23441		
Percent	0.6%	0.2%	0.1%	0.2%	0.6%	2.2%	10.2%	30.0%	33.6%	17.1%	4.3%	0.8%	0.2%	0.0%			

15th Percentile : 45 MPH  
50th Percentile : 50 MPH  
85th Percentile : 57 MPH  
95th Percentile : 60 MPH

Statistic  
s

10 MPH Pace Speed : 46-55 MPH

Number in Pace : 14913



Location: Route 20 (Northbound)  
 Location: North of Lime Kiln Road  
 City, State: Lenox, Massachusetts  
 Client: Fuss & O'Neill / S. Savaria

# Innovative Data, LLC

P.O. Pox 468  
 Belchertown, Massachusetts  
 InnovativeDataLLC.com or 413.668.5094

## Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
05/18/21	0	35	7	1	0	0	0	2	0	0	0	0	1	0	46
01:00	0	21	0	1	2	0	0	0	2	0	0	0	0	0	26
02:00	0	26	3	0	1	0	0	0	2	0	0	0	0	0	32
03:00	0	7	3	0	3	0	0	0	2	0	1	0	0	0	16
04:00	0	17	3	2	1	1	0	0	4	1	0	0	0	0	29
05:00	5	78	29	2	4	12	0	1	2	1	0	0	0	0	134
06:00	3	277	71	2	9	3	1	4	10	3	0	1	0	0	384
07:00	8	530	97	5	8	19	13	8	14	2	0	3	1	1	709
08:00	5	630	107	4	15	15	3	4	15	3	0	0	1	6	808
09:00	11	512	102	4	13	17	5	5	8	2	2	2	1	1	685
10:00	4	547	102	4	16	11	6	7	5	1	0	0	0	3	706
11:00	6	563	109	3	12	14	2	4	4	0	0	0	0	3	720
12 PM	9	643	120	3	14	16	4	10	7	1	0	2	0	4	833
13:00	9	607	102	4	21	17	6	3	9	2	2	0	1	0	783
14:00	6	708	129	7	14	12	3	12	6	0	1	1	1	4	904
15:00	20	864	181	3	15	12	1	10	8	5	0	2	4	3	1128
16:00	16	905	140	0	9	9	2	9	5	2	0	2	1	9	1109
17:00	11	765	97	3	9	7	2	3	1	2	1	0	1	2	904
18:00	9	510	57	0	9	3	0	1	6	1	0	0	0	0	596
19:00	10	392	52	2	4	1	1	1	3	1	0	1	0	2	470
20:00	0	280	34	0	1	0	0	1	2	1	0	0	0	1	320
21:00	4	184	20	0	0	0	0	0	0	0	0	0	0	0	208
22:00	0	139	13	0	2	0	0	1	1	0	0	0	0	0	156
23:00	2	107	6	0	2	0	0	1	3	0	0	0	0	0	121
Total	138	9347	1584	50	184	169	49	87	119	28	7	14	12	39	11827
Percent	1.2%	79.0%	13.4%	0.4%	1.6%	1.4%	0.4%	0.7%	1.0%	0.2%	0.1%	0.1%	0.1%	0.3%	
AM Peak	09:00	08:00	11:00	07:00	10:00	07:00	07:00	07:00	08:00	06:00	09:00	07:00	00:00	08:00	
Vol.	11	630	109	5	16	19	13	8	15	3	2	3	1	6	
PM Peak	15:00	16:00	15:00	14:00	13:00	13:00	13:00	14:00	13:00	15:00	13:00	12:00	15:00	16:00	
Vol.	20	905	181	7	21	17	6	12	9	5	2	2	4	9	





Location: Route 20 (Northbound)  
 Location: North of Lime Kiln Road  
 City, State: Lenox, Massachusetts  
 Client: Fuss & O'Neill / S. Savaria

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## Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
05/19/21	0	47	5	0	2	0	0	1	2	0	0	0	0	0	57
01:00	0	13	2	0	1	0	0	0	3	0	0	0	0	0	19
02:00	0	17	2	1	2	0	0	0	2	0	1	0	0	0	25
03:00	0	16	0	1	1	0	0	0	1	0	0	0	0	0	19
04:00	0	22	5	1	1	2	0	0	3	0	0	0	0	0	34
05:00	4	74	29	1	5	12	0	1	8	0	0	0	0	1	135
06:00	5	280	71	1	14	3	4	5	9	1	0	1	0	1	395
07:00	12	498	85	5	21	8	4	6	8	3	1	0	0	3	654
08:00	7	597	121	5	19	14	2	10	7	0	0	0	1	2	785
09:00	6	503	97	5	20	15	1	8	9	2	0	0	1	2	669
10:00	10	583	112	4	14	13	2	4	7	1	0	0	0	1	751
11:00	6	571	96	3	18	14	5	11	10	0	1	2	1	5	743
12 PM	15	659	95	1	11	17	1	8	11	0	0	1	1	1	821
13:00	11	628	95	6	15	16	2	6	9	1	1	0	4	1	795
14:00	9	715	131	1	20	12	4	11	10	2	1	1	1	2	920
15:00	14	961	201	3	15	17	4	9	7	2	2	1	2	7	1245
16:00	24	904	123	4	15	6	4	11	3	3	2	3	0	9	1111
17:00	21	751	97	4	14	3	2	2	3	2	1	1	2	5	908
18:00	7	535	63	2	7	3	0	3	2	1	0	0	0	2	625
19:00	4	438	54	3	8	3	0	1	2	0	0	1	0	0	514
20:00	4	343	30	0	3	2	1	0	2	1	0	0	0	0	386
21:00	1	221	23	0	1	0	0	0	2	0	0	0	0	0	248
22:00	1	179	15	1	1	0	0	2	0	0	0	0	0	0	199
23:00	2	113	9	1	0	0	0	1	1	0	0	0	0	0	127
Total	163	9668	1561	53	228	160	36	100	121	19	10	11	13	42	12185
Percent	1.3%	79.3%	12.8%	0.4%	1.9%	1.3%	0.3%	0.8%	1.0%	0.2%	0.1%	0.1%	0.1%	0.3%	
AM Peak	07:00	08:00	08:00	07:00	07:00	09:00	11:00	11:00	11:00	07:00	02:00	11:00	08:00	11:00	
Vol.	12	597	121	5	21	15	5	11	10	3	1	2	1	5	
PM Peak	16:00	15:00	15:00	13:00	14:00	12:00	14:00	14:00	12:00	16:00	15:00	16:00	13:00	16:00	
Vol.	24	961	201	6	20	17	4	11	11	3	2	3	4	9	
Grand Total	301	19015	3145	103	412	329	85	187	240	47	17	25	25	81	24012
Percent	1.3%	79.2%	13.1%	0.4%	1.7%	1.4%	0.4%	0.8%	1.0%	0.2%	0.1%	0.1%	0.1%	0.3%	



Location: Route 20 (Southbound)  
 Location: North of Lime Kiln Road  
 City, State: Lenox, Massachusetts  
 Client: Fuss & O'Neill / S. Savaria

# Innovative Data, LLC

P.O. Pox 468  
 Belchertown, Massachusetts  
 InnovativeDataLLC.com or 413.668.5094

## Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
05/18/21	0	8	3	1	0	0	0	1	1	0	0	0	0	0	14
01:00	0	16	3	1	1	0	0	0	1	0	0	0	0	0	22
02:00	2	3	1	1	1	0	0	0	2	0	0	0	0	0	10
03:00	0	15	3	0	1	0	0	0	3	0	0	0	0	0	22
04:00	1	41	21	2	10	3	0	0	5	0	0	0	0	0	83
05:00	3	143	61	3	27	3	0	2	4	0	0	0	1	0	247
06:00	11	370	123	8	90	8	3	8	2	1	0	0	0	2	626
07:00	16	680	161	8	93	3	2	24	8	4	2	0	2	5	1008
08:00	11	604	171	10	62	12	7	23	6	0	1	0	0	2	909
09:00	6	501	128	5	59	9	4	17	8	5	1	0	3	3	749
10:00	7	479	116	7	65	9	8	19	10	1	0	0	2	0	723
11:00	5	541	94	10	51	3	7	7	8	2	1	0	0	2	731
12 PM	17	574	131	8	61	9	7	15	3	2	0	3	0	3	833
13:00	8	502	119	11	61	9	5	20	6	0	0	0	0	4	745
14:00	6	667	122	8	60	4	3	15	12	2	1	0	1	1	902
15:00	12	643	135	10	71	4	7	17	14	1	0	1	0	3	918
16:00	17	667	133	1	56	2	7	17	2	0	1	0	0	1	904
17:00	2	590	102	1	39	1	1	11	3	0	0	0	1	2	753
18:00	5	395	73	2	24	0	2	5	2	0	0	0	0	0	508
19:00	4	263	48	2	34	0	0	3	2	0	0	0	0	0	356
20:00	3	182	41	1	21	0	0	2	5	0	0	0	0	0	255
21:00	3	136	17	0	12	0	0	0	4	1	0	0	0	0	173
22:00	0	100	11	0	3	0	0	0	3	0	0	1	0	0	118
23:00	0	52	10	1	6	0	0	1	0	0	0	0	0	0	70
Total	139	8172	1827	101	908	79	63	207	114	19	7	5	10	28	11679
Percent	1.2%	70.0%	15.6%	0.9%	7.8%	0.7%	0.5%	1.8%	1.0%	0.2%	0.1%	0.0%	0.1%	0.2%	
AM Peak	07:00	07:00	08:00	08:00	07:00	08:00	10:00	07:00	10:00	09:00	07:00		09:00	07:00	
Vol.	16	680	171	10	93	12	8	24	10	5	2		3	5	
PM Peak	12:00	14:00	15:00	13:00	15:00	12:00	12:00	13:00	15:00	12:00	14:00	12:00	14:00	13:00	
Vol.	17	667	135	11	71	9	7	20	14	2	1	3	1	4	



Location: Route 20 (Southbound)  
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## Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
05/19/21	0	19	3	2	2	0	0	0	2	0	0	0	0	0	28
01:00	0	12	1	2	1	0	0	0	1	0	0	0	0	0	17
02:00	0	4	4	1	0	0	0	0	2	0	0	0	0	0	11
03:00	0	19	7	0	3	1	0	0	1	0	0	0	0	0	31
04:00	1	38	14	2	14	2	0	2	4	0	0	0	0	0	77
05:00	6	141	47	2	50	1	0	8	3	0	0	0	0	0	258
06:00	11	340	98	10	115	8	2	23	1	1	0	1	0	2	612
07:00	16	641	169	10	116	8	2	39	6	3	2	0	1	4	1017
08:00	10	587	147	16	109	4	7	37	6	2	3	0	0	2	930
09:00	4	450	133	6	71	4	8	23	7	1	0	0	1	2	710
10:00	3	516	115	7	78	6	5	19	12	2	0	1	0	2	766
11:00	10	524	105	10	52	7	8	14	4	1	2	0	1	2	740
12 PM	2	534	108	7	54	4	6	10	8	0	0	1	0	6	740
13:00	4	568	113	2	69	7	8	23	8	2	0	0	0	5	809
14:00	10	651	126	14	77	7	6	23	6	2	0	1	0	6	929
15:00	11	617	130	9	59	4	6	21	2	3	1	0	1	2	866
16:00	14	636	113	2	73	5	8	20	4	4	1	1	0	3	884
17:00	16	605	103	2	51	0	0	16	0	3	0	1	0	1	798
18:00	6	389	65	2	38	0	0	9	2	0	0	0	0	0	511
19:00	1	265	47	3	27	1	1	4	5	0	0	0	0	0	354
20:00	2	226	37	0	20	1	0	1	0	0	0	0	0	0	287
21:00	0	128	21	1	12	0	0	1	2	0	0	0	0	0	165
22:00	0	131	16	1	6	0	0	3	2	0	0	1	0	0	160
23:00	0	44	9	0	7	0	0	1	1	0	0	0	0	0	62
Total	127	8085	1731	111	1104	70	67	297	89	24	9	7	4	37	11762
Percent	1.1%	68.7%	14.7%	0.9%	9.4%	0.6%	0.6%	2.5%	0.8%	0.2%	0.1%	0.1%	0.0%	0.3%	
AM Peak	07:00	07:00	07:00	08:00	07:00	06:00	09:00	07:00	10:00	07:00	08:00	06:00	07:00	07:00	
Vol.	16	641	169	16	116	8	8	39	12	3	3	1	1	4	
PM Peak	17:00	14:00	15:00	14:00	14:00	13:00	13:00	13:00	12:00	16:00	15:00	12:00	15:00	12:00	
Vol.	16	651	130	14	77	7	8	23	8	4	1	1	1	6	
Grand Total	266	16257	3558	212	2012	149	130	504	203	43	16	12	14	65	23441
Percent	1.1%	69.4%	15.2%	0.9%	8.6%	0.6%	0.6%	2.2%	0.9%	0.2%	0.1%	0.1%	0.1%	0.3%	





## Appendix F

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### Intersection Capacity Analysis Worksheets – Weekday AM Peak Hour

HCM 6th TWSC  
1: Pittsfield Rd & Lime Kiln Rd

Base Conditions  
2021 AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	5	10	1038	1582	4
Future Vol, veh/h	1	5	10	1038	1582	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	8	8	5	5
Mvmt Flow	1	5	11	1104	1683	4





Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2259	844	1687	0	-	0
Stage 1	1685	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-	-
Pot Cap-1 Maneuver	36	311	349	-	-	-
Stage 1	139	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	35	311	349	-	-	-
Mov Cap-2 Maneuver	35	-	-	-	-	-
Stage 1	135	-	-	-	-	-
Stage 2	532	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.2	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	349	-	134	-	-
HCM Lane V/C Ratio	0.03	-	0.048	-	-
HCM Control Delay (s)	15.6	-	33.2	-	-
HCM Lane LOS	C	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

HCM 6th TWSC  
1: Pittsfield Rd & Lime Kiln Rd

No-Build  
2028 AM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	5	11	1113	1696	4
Future Vol, veh/h	1	5	11	1113	1696	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	8	8	5	5
Mvmt Flow	1	5	12	1184	1804	4

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2422	904	1808	0	-	0
Stage 1	1806	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-	-
Pot Cap-1 Maneuver	28	284	312	-	-	-
Stage 1	119	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	27	284	312	-	-	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	114	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	39.7	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	312	-	110	-	-
HCM Lane V/C Ratio	0.038	-	0.058	-	-
HCM Control Delay (s)	17	-	39.7	-	-
HCM Lane LOS	C	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 6th TWSC  
1: Pittsfield Rd & Lime Kiln Rd/Site Driveway

Build  
2028 AM Peak Hour

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔			↔	
Traffic Vol, veh/h	1	0	5	9	0	13	11	1113	5	4	1696	4
Future Vol, veh/h	1	0	5	9	0	13	11	1113	5	4	1696	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	160	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	2	2	2	8	8	2	2	5	5
Mvmt Flow	1	0	5	10	0	14	12	1184	5	4	1804	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2430	3027	904	2121	3027	595	1808	0	0	1189	0	0
Stage 1	1814	1814	-	1211	1211	-	-	-	-	-	-	-
Stage 2	616	1213	-	910	1816	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.54	6.9	7.54	6.54	6.94	4.26	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.02	3.3	3.52	4.02	3.32	2.28	-	-	2.22	-	-
Pot Cap-1 Maneuver	17	13	284	29	13	447	312	-	-	583	-	-
Stage 1	83	128	-	193	253	-	-	-	-	-	-	-
Stage 2	450	253	-	296	128	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	16	13	284	28	13	447	312	-	-	583	-	-
Mov Cap-2 Maneuver	16	13	-	28	13	-	-	-	-	-	-	-
Stage 1	80	128	-	186	243	-	-	-	-	-	-	-
Stage 2	419	243	-	290	128	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	57.4		85.5		0.2		0	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	312	-	-	75 28 447	583	-	-
HCM Lane V/C Ratio	0.038	-	-	0.085 0.342 0.031	0.007	-	-
HCM Control Delay (s)	17	-	-	57.4 189.7 13.3	11.2	0	-
HCM Lane LOS	C	-	-	F F B	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3 1.1 0.1	0	-	-

## Appendix G






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### Intersection Capacity Analysis Worksheets – Weekday PM Peak Hour



HCM 6th TWSC  
1: Pittsfield Rd & Lime Kiln Rd

Base Conditions  
2021 PM Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	3	1635	1293	10
Future Vol, veh/h	10	1	3	1635	1293	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	3	3	4	4
Mvmt Flow	11	1	3	1758	1390	11






Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2281	701	1401	0	-	0
Stage 1	1396	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.16	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.23	-	-	-
Pot Cap-1 Maneuver	34	386	478	-	-	-
Stage 1	198	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	34	386	478	-	-	-
Mov Cap-2 Maneuver	34	-	-	-	-	-
Stage 1	197	-	-	-	-	-
Stage 2	369	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	142.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	478	-	37	-	-
HCM Lane V/C Ratio	0.007	-	0.32	-	-
HCM Control Delay (s)	12.6	-	142.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

HCM 6th TWSC  
1: Pittsfield Rd & Lime Kiln Rd

No-Build  
2028 PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	1	3	1753	1386	11
Future Vol, veh/h	11	1	3	1753	1386	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	3	3	4	4
Mvmt Flow	12	1	3	1885	1490	12

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2445	751	1502	0	-	0
Stage 1	1496	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.16	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.23	-	-	-
Pot Cap-1 Maneuver	27	358	437	-	-	-
Stage 1	175	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	27	358	437	-	-	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	174	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	205.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	437	-	29	-	-
HCM Lane V/C Ratio	0.007	-	0.445	-	-
HCM Control Delay (s)	13.3	-	205.4	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0	-	1.4	-	-

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕			↕	
Traffic Vol, veh/h	11	0	1	9	0	7	3	1753	13	10	1386	11
Future Vol, veh/h	11	0	1	9	0	7	3	1753	13	10	1386	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	160	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	2	2	2	3	3	2	2	4	4
Mvmt Flow	12	0	1	10	0	8	3	1885	14	11	1490	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2467	3423	751	2665	3422	950	1502	0	0	1899	0	0
Stage 1	1518	1518	-	1898	1898	-	-	-	-	-	-	-
Stage 2	949	1905	-	767	1524	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.54	6.9	7.54	6.54	6.94	4.16	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.02	3.3	3.52	4.02	3.32	2.23	-	-	2.22	-	-
Pot Cap-1 Maneuver	16	7	358	11	7	261	437	-	-	310	-	-
Stage 1	127	180	-	72	116	-	-	-	-	-	-	-
Stage 2	284	115	-	361	179	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	13	5	358	~ 9	5	261	437	-	-	310	-	-
Mov Cap-2 Maneuver	13	5	-	~ 9	5	-	-	-	-	-	-	-
Stage 1	126	141	-	71	115	-	-	-	-	-	-	-
Stage 2	274	114	-	282	140	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	571.6	493.4	0	1.9
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	437	-	-	14 9 261	310	-	-
HCM Lane V/C Ratio	0.007	-	-	0.922 1.075 0.029	0.035	-	-
HCM Control Delay (s)	13.3	-	-	571.6 862.2 19.2	17	1.8	-
HCM Lane LOS	B	-	-	F F C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	2.1 1.9 0.1	0.1	-	-

## Notes

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

## Appendix H

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### Intersection Crash Rate Worksheets

## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lenox COUNT DATE : 5/18/2020 & 5/19/2020

DISTRICT : 1 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

### ~ INTERSECTION DATA ~

MAJOR STREET : Pittsfield Road

MINOR STREET(S) : Lime Kiln Road

INTERSECTION  
 DIAGRAM  
 (Label Approaches)



### PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (AM/PM) :	1207	960	8			2175

" K " FACTOR : 0.09 INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME : 24167

TOTAL # OF CRASHES : 5 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR ( A ) : 1.67

CRASH RATE CALCULATION :

0.19

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : \_\_\_\_\_

Project Title & Date : 20220677A10 PROPOSED AFFORDABLE HOUSING DEVELOPMENT IN LENOX, MA

## Appendix I

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### Sight Distance Results

SIGHT DISTANCE RESULTS AT PITTSFIELD RD AND LIME KILN RD			
SSD	Major Rd Pittsfield Rd	Stopping Sight Distance	
		Required*	Existing
		415ft <sup>a</sup> (360ft) <sup>b</sup>	890ft
	2. Pittsfield Rd Traveling Southbound	525ft <sup>a</sup> (360ft) <sup>b</sup>	766ft
ISD	Minor Rd Lime Kiln Rd Eastbound	Intersection Sight Distance	
		Recommended*	Existing
		495ft <sup>a</sup> (390ft) <sup>b</sup>	662ft
	Minor Rd Site Driveway Westbound	Intersection Sight Distance	
		Recommended*	Existing
		570ft <sup>a</sup> (400ft) <sup>b</sup>	660ft
	6. Looking South at Pittsfield Rd	520ft <sup>a</sup> (425ft) <sup>b</sup>	620ft

Notes:

<sup>a</sup> Sight distance at observed 85th percentile speed

<sup>b</sup> Sight distance at posted speed limit

\* Source: American Association of State Highway and Transportation Officials (AASHTO). 2018. *Policy on Geometric Design of Highways and Streets*. Section 3.2.2.3 and Section 9.5.3.2.1.

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# STORMWATER REPORT

Pennrose – Curme

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**Property Location:**

*Pittsfield Road  
Map #22, Lot #27  
Lenox, MA 01240*

**Property Owner:**

*Forty Acres and A Mule, LLC.  
17 Glenoe Road  
Chestnut Hill, MA 02467*

**Applicant:**

*Pennrose Development – Boston  
50 Milk Street, 16<sup>th</sup> Floor  
Boston, MA 02109*

**Civil Engineer:**

*Foresight Land Services, Inc.  
1496 West Housatonic Street  
Pittsfield, MA 01201*

**March, 2023**

**FORESIGHT**  
LAND SERVICES





**STORMWATER REPORT TABLE OF CONTENTS**

- a) Stormwater Report
- b) Summary of Storm Drainage Analysis
- c) Stormwater Recharge Worksheets
- d) TSS Removal Worksheets
- e) Water Quality Volume Worksheet

Plans: See Civil Site Plan Set, by Foresight Land Services, Dated March 31st, 2023

**STORMWATER REPORT**  
**PENNROSE-CURME**  
**PITTSFIELD ROAD, MAP 22, LOT 27, LENOX, MA**

In accordance with the Lenox Zoning Bylaws, §7.4 Drainage and Erosion Control, and the “Guidelines for Soil and Water Conservation in Urbanizing Areas of Massachusetts”, the following narrative and compliance documentation are provided for the proposed stormwater system.

**INTRODUCTION**

This report accompanies an application for a Special Permit in the Town of Lenox in accordance with the Lenox Zoning Bylaws for a Proposed Multi-Family Housing Development in zones C-3A and C-1A.

The Pennrose project has been designed to minimize short term and long term impacts related to erosion and stormwater. Erosion and sedimentation control measures are specified to avoid impacts to the wetland resource areas adjacent ecosystems and off site properties. The project is subject to the Wetlands Protection Act since portions of the work will be performed within the 100 foot buffer zone. All stormwater will be controlled on site outside any wetland resource area. As required under the Lenox Zoning Bylaw 3.5. *Site Plan Approval in the C-1A and C-3A Zones: 3.5.11 Stormwater Managment*, the stormwater system has been design so that the resulting stormwater conditions resemble, as nearly as possible, the pre-existing conditions of volume, velocity, quality and location of runoff. Using MassDEP Stormwater regulations as a guide, calculations verifying that these requirements have been met are attached and are outlined within. A Stormwater Management Operation & Maintenance Plan with Long Term Pollution Prevention Plan has also been developed and can be provided upon request.

A Stormwater Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permitting will be developed pending contractor selection.

**SITE DESCRIPTION**

The parcel, Lenox Assessors Map 22 Lot 27 is located on the east side of Pittsfield Road (Route 7 & 20) and consists of approximately 40.49± acres. The parcel has approximately 832 feet of frontage on Pittsfield Road and is currently undeveloped and wooded. Land use of this parcel is Commercial (C-3A) and Residential (R-1A). The surrounding neighborhood is commercial (Trattoria Restaurant to the North and Days Inn to the South) and residential (to the West across Route 7 and Southeast). To the East is mostly woodland extending to East Street.

According to FEMA Flood Panels 250029 0002 B dated July 5, 1982, no portion of the property is located within the 100-year floodplain.

The site is not within a Natural Heritage & Endangered Species Program area of Estimated or Priority Habitat and no Potential or Certified Vernal Pools are found on the property.

A small portion of the project will be located within the buffer zone of an area subject to the Wetlands Protection Act. As such, a permit will be required from the Conservation Commission. The areas are located immediately adjacent to Route 7/20 at the curb cut. There is no practical alternative for the curb cut and no alternative to access the site due to very steep slopes/embankments and ledge conditions.

## PROPOSED PROJECT

The applicant is proposing an affordable housing complex with the construction of 10 new residential buildings on site to expand Lenox's affordable housing.

Site work includes:

- (10) Multi-Family Dwelling Units
- (1) Community Building
- Paved 22' wide access loop driveway
- (99) Off-Street Parking Spaces w/ Accessible parking
- Accessible walking paths connecting HCP parking to dwellings and clubhouse
- Series of Stormwater catch basins, manholes, control structures, infiltrators, swales, etc.
- Sewer, water, & site utilities

Other minor miscellaneous configurations to items such as pedestrian/cart paths, fire access and service access, stormwater improvements, utilities connections, and landscaping will be executed.

## PROPOSED STORMWATER SYSTEM

***Stormwater will be conveyed to Stormwater Management Areas (SWMA) through a system of roof leaders, pipe drainage, vegetated swales, deep sump catch basins with oil hoods, sediment separation tanks, yard drains, manholes, swales, etc.***

The stormwater mitigation/infiltration areas are capable of handling the 2-year, 10-year-, 25-year, and 100-year storm events through the use of outlet control structures which will have multi-stage outlets to handle the 2-year, 10-year-, 25-year, and 100-year storm events.

***The Stormwater Management Areas (SWMA) proposed at the project site are as follows:***

- SWMA 1-5 – Subsurface infiltration system consisting of 4 rows of 6 Cultec Contactor 100HD chambers with a multistage outlet control structure. These systems are proposed in close proximity to Housing units, with each bed having a total storage of approximately 785.2 Cubic Feet
- SWMA 6 – Subsurface infiltration system consisting of 7 rows of 7 Cultec Recharger 150XLHD chambers with a multistage outlet control structure. This system is proposed to be located east of the proposed parking area, with a total storage of approximately 2,643.4 Cubic Feet
- SWMA 7 – Water Quality Swale - Dry with approximately 27,816 Cubic Feet of storage. This management area is located near the northern property line and works in conjunction with SWMA 6.

## CONSTRUCTION-PHASE MITIGATING MEASURES

Erosion and sedimentation control measures shall be installed prior to the beginning of construction and in accordance with the construction and sequencing schedule. Erosion controls shall be installed as shown on the plans and shall be maintained by the Sitework Contractor through the construction period until the site is completely stabilized. Additional sedimentation and erosion control measures shall be installed and maintained as determined in the field to be necessary to control sediments from stormwater runoff from leaving the construction site or being deposited in any wetlands or watercourses. Erosion and

sedimentation control measures shall be installed and maintained as indicated on the plans and specifications, as directed, and as evidently required to control sedimentation.

Erosion controls shall remain in place and shall be maintained in functional order until the construction site has vegetated and stabilized, and the Conservation Commission has authorized the removal. Erosion controls shall also be used for approximate limit of work.

A stabilized construction entrance (anti-tracking pad) will be installed and maintained to prevent tracking mud onto Veteran's Memorial Highway. Sweeping will be performed as needed.

Disturbed areas shall be finished graded and stabilized with vegetation, gravel, or pavement as soon in the construction schedule as possible. Stock piled material shall be protected from erosion by covering or establishing erosion controls ringing the base of temporary piles.

### ESTIMATED CONSTRUCTION SCHEDULE AND SEQUENCING

(Estimated schedule to be confirmed – preliminary for permitting only)

Construction work for the Project will be undertaken in an orderly and phased manner and carried out in a way designed to avoid disruption to the area to the maximum degree possible. Construction will be phased so that, to the extent possible, construction will be completed and the area restored before commencing the next phase. At all times during construction appropriate noise, sedimentation and erosion controls shall be employed. The Project will be phased to minimize disruption and disturbance with sedimentation and erosion controls applicable to the operations being performed.

#### Estimated Construction Sequence (Subject to Change)

- Begin sitework
- Install erosion control barriers, stabilized construction entrance; maintain throughout construction
- Install sediment traps
- Install straw bale inlet sediment traps around existing catch basins at driveway intersection
- Clear vegetation on site proposed for removal. Protect vegetation to remain
- Strip and stockpile topsoil on site; cover stockpiles with temporary vegetation, tarps, etc; ring with erosion control barriers
- Construct temporary diversion swales to direct uphill drainage away from construction site; discharge into temporary sediment traps
- Construct driveways; install temporary waterway check dams on both side of driveways as required; install straw bale check dam across upper end of existing entrance drive at end of each work day; remove sediments and maintain entrance driveway as required; sweep pavement at end of each construction day; more frequently as needed to prevent tracking onto state highway;
- Earthwork – cuts and fills; as soon as practical, stabilize disturbed slopes with temporary vegetation, erosion control fabric and/or tarps
- Install additional sediment traps as grading and drainage patterns change
- Maintain all erosion and sedimentation control measures throughout construction – typical
- Prepare and install underground infiltration areas– cap off and bypass storm drainage to temporary stilling basin(s) (do not allow runoff water to enter infiltrators until all sitework is completed)
- Install main line drainage conveyance system
- Install inlet sediment traps around all drainage structures
- Rough grade parking areas
- Pave driveways (base course)
- Construct building foundations

- Install other site utilities: sewer and water connection, electric/telephone/data, gas, etc
- Begin building construction
- Complete storm drainage and site utilities. Connect drainage system to SWMA's
- Fine grade parking areas and fine grade slopes and embankments
- Topsoil, erosion control fabric, and temporary seed slopes and embankments
- Stabilize all earth slopes with additional measures as required
- Pave parking with base course
- Construct final curbing and sidewalks
- Install landscaping
- Final paving, striping, cleanup
- Complete sitework
- Complete building construction

### STORMWATER COMPLIANCE

The following demonstrates that the proposed stormwater management system is in compliance to the maximum extent practicable with the performance standards as outlined in the MassDEP Stormwater Management Handbook.

- *Standard #1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

Standard #1 is Met (See Standards 4-6 for Additional Information) – There are no new untreated discharges to wetlands associated with the proposed work. Proposed roof drainage is treated by stormwater infiltration systems and new impervious area directed to Infiltration chambers and Water Quality Swales. No untreated point source discharges are proposed within the wetlands' Buffer Zone. All storm drain outlet pipes will have flared end sections and discharge onto a stone scour pad.

- *Standard #2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

Standard #2 is Met – Post-development peak discharge rates do not exceed the pre-development rates. The proposed drainage improvements do not increase the peak discharge rates for the 2-year, 10-year, 25-year, and 100-year design storm events. See the attached Drainage Analysis Summary for more information.

- *Standard #3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

Standard #3 is Met – The annual recharge from the post-development site approximates the annual recharge from pre-development conditions. The soil is classified as Hydrologic Groups C & D by NRCS has a design recharge rate of 0.25 inches of runoff. Infiltration chambers taking

roof and parking area runoff are proposed to provide annual recharge. Drawdown rates have been conservatively assumed as D soils with infiltration rates of 0.09 inches / hour.

- *Standard #4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*
  - a. *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
  - b. *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
  - c. *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Standard #4 is Met – TSS removal is met through the use of a treatment chain including deep sump catch basins, sediment separator, infiltration chambers, and water quality swale. The percent of TSS removal is calculated to be greater than 80%.

- *Standard #5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Standard #5 is Not Applicable – The proposed work does not constitute as an area with higher pollutant loads.

- *Standard #6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A “storm water discharge” as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

Standard #6 is Not Applicable – The proposed discharge area is not within the Zone II or an Interim Wellhead Protection Area of a public water supply, and stormwater does not discharge near or to any critical area.

- *Standard #7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing*

*stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

Standard #7 is Not Applicable – The proposed work is not considered a redevelopment project.

- *Standard #8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

Standard #8 is Met – Erosion and sedimentation control measures are proposed through the use of straw bales and silt fence, and where applicable, straw wattles or coir logs. Construction Sediment Traps will be installed and maintained. All erosion and sedimentation control measures will be maintained throughout the construction stage, and shall not be removed until the site is properly stabilized. The project will be covered by a NPDES Construction General Permit and a SWPPP will be submitted before land disturbance begins.

- *Standard #9: A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Standard #9 is Met – A long-term operation and maintenance plan has been prepared and is available upon request. The Stormwater system has been designed to provide ease of inspection and maintenance and protect the wetland resources.

- *Standard #10: All illicit discharges to the stormwater management system are prohibited.*

Standard #10 is Met – There are no known illicit discharges that have been observed within the proposed area of work. The *Illicit Discharge Compliance Statement* is in the Operation and Maintenance Plan, which is available upon request.

## CONCLUSION

The design of the sitework and stormwater management system has been developed to minimize impacts to the site during and after construction, to prevent erosion, capture construction sediments, and to control stormwater runoff from the site. Erosion Control Barriers are proposed to prevent sediment from leaving the construction site and protect wetland resource areas of the project area. The proposed site work plans specify erosion and sedimentation control measures to avoid disturbance to the nearby resource areas. Stormwater management has been designed to maximize pollution removal, infiltrate stormwater to recharge groundwater, mimic existing drainage patterns, and prevent overloading of any downstream drainage facilities.

**DRAINAGE ANALYSIS SUMMARY**  
**PENNROSE – CURME**  
**PITTSFIELD ROAD, LENOX, MA**

**Basis Of Study**

- 1) This storm drainage analysis is submitted for review under Section 7.4 Drainage and Erosion Control of the Lenox Zoning Bylaw for a Special Permit for (10) or more new Dwelling Units that is located on 25 acres or more of land and results in more than 20,000 square feet of ground floor area and paved parking area.
- 2) The stormwater management system on the project site includes the following Best Management Practices:
  - Catch basins with deep sumps.
  - Surface drainage diverted into sediment separator and subsurface infiltration chambers to treat runoff, recharge ground water, & attenuate peak flows.
  - Water Quality Swale to treat runoff to regulate peak flows.
  - Minimizing extent of sitework by clustering development.
  - Operation and maintenance measures including parking lot sweeping and catch basin sump cleaning.
- 3) The hydrologic conditions of the site are analyzed under both the Existing (Pre-development) Conditions and Future (Post-development) Conditions for the 2, 10, 25 and 100-year design storm analysis. Design Points are chosen where the storm drainage leaves the project limits, down gradient of the proposed development. The Design Points allow comparison of the Existing and Future Conditions. These Design Points and Drainage areas (subcatchments) are shown on the Drainage Calculations.
- 4) Contributing drainage areas and vegetative cover conditions have been delineated on the basis of available topographic maps, record plans, and general field observations. Soil types underlying the various areas of the site have been identified using the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey ([websoilsurvey.sc.egov.usda.gov](http://websoilsurvey.sc.egov.usda.gov)). Hydrologic Soil Groups were then determined for each subcatchment. This data was then utilized to calculate the Runoff Curve Numbers for each subcatchment.
- 5) The Time of Concentration ( $T_c$ ) of the runoff within each subcatchment is determined using TR-55 sheet flow, shallow concentrated flow, channel flow, and other conditions, based on the available topographic mapping and field observation.
- 6) Precipitation records for each design storm are taken from NOAA Atlas 14, Volume 10, Version 2, Precipitation Frequency Data Server. For project site in Lenox, the following values are listed:

2-year 24 hour storm	2.94"
10-year 24 hour storm	4.74"
25-year 24 hour storm	5.87"
100-year 24 hour storm	7.61"

- 7) Maximum flow capacities of the existing and proposed drainage structures are calculated assuming the inlet structures, piping, and discharge channels are maintained in good condition, unobstructed by sediment or debris.



- 8) Peak Rates of Runoff are calculated for the Existing and Future conditions using computerized hydrology and hydraulics programs. This study was performed utilizing “HydroCAD”, v. 10.00, ©2019 HydroCAD Software Solutions LLC. This program is based on the methods promulgated by USDA Natural Resources Conservation Service (formerly known as Soil Conservation Service) in Technical Release Number 20 (TR-20) and the simplified tabular method contained in TR-55. Refer to the attached summaries.

### **Summary and Conclusions**

The Peak Outflow at the design points analyzed will not increase as a result of the proposed project for the 2-year, 10-year, 25-year, and 100-year storm events. Refer to the following Table A, which summarize the results of the storm drainage analysis.

**Table A**  
**Summary of Storm Drainage Analysis Comparison of Peak Rates of Runoff**  
 24-Hour Design Storm Event (Precipitation-inches)

<b><u>North (1R) Drainage Area</u></b>				
	<b>2yr (2.94")</b>	<b>10yr (4.74")</b>	<b>25yr (5.87")</b>	<b>100yr (7.61")</b>
<b>Pre-Development (Q)</b>	2.93	8.13	11.78	17.70
<b>Post-Development (Q)</b>	2.67	6.44	9.10	13.42
<b>Reduction (cfs)</b>	0.26	1.69	2.68	4.28
<b>(%)</b>	8.87%	20.79%	22.75%	24.18%
<b><u>East (2R) Drainage Area</u></b>				
	<b>2yr (2.94")</b>	<b>10yr (4.74")</b>	<b>25yr (5.87")</b>	<b>100yr (7.61")</b>
<b>Pre-Development (Q)</b>	5.05	13.89	20.14	30.42
<b>Post-Development (Q)</b>	4.45	10.84	15.26	22.41
<b>Reduction (cfs)</b>	0.60	3.05	4.88	8.01
<b>(%)</b>	11.88%	21.96%	24.23%	26.33%

<u><i>South (3R) Drainage Area</i></u>				
	<b>2yr (2.94")</b>	<b>10yr (4.74")</b>	<b>25yr (5.87")</b>	<b>100yr (7.61")</b>
<b>Pre-Development (Q)</b>	14.57	40.12	58.17	87.36
<b>Post-Development (Q)</b>	11.87	36.59	57.73	87.05
<b>Reduction (cfs)</b>	2.30	3.53	0.44	0.31
<b>(%)</b>	18.53%	8.80%	0.76%	0.35%

The design and size of the facilities are based on the anticipated runoff from a 2, 10, 25, and 100-year storm event per Lenox Zoning Section 7.4 and MassDEP Stormwater Handbook. Any new development within the watershed would require stormwater controls to mitigate for peak rates of runoff.

**RECHARGE & STORMWATER SIZING WORKSHEET**  
**(PENNROSE DRAINAGE AREAS)**

**PENNROSE - CURME**  
**PITTSFIELD ROAD, LENOX, MA**

**CALCULATE RECHARGE VOLUME**

1. Total Area of Hydrological Group A soils (Aa) = 0 acres
2. Total Impervious Area overlaying Group A (Ia) = 0 acres
3. Total Area of Hydrological Group B soils (Ab) = 0 acres
4. Total Impervious Area overlaying Group B (Ib) = 0 acres
5. Total Area of Hydrological Group C soils (Ac) = 7.32 acres
6. Total New Impervious Area overlaying Group C (Ic) = 1.24 Total Increase
7. Total Area of Hydrological Group D soils (Ad) = 14.645 Acres
8. Total Impervious Area overlaying Group D (Id) = 1.24 Acres

**Recharge Volumes: (ReVn) where n = soil class**

1. ReVa: Ia x 0.60 = 0 acres x 0.60 inches = 0 acre-inches
2. ReVb: Ib x 0.35 = 0 acres x 0.35 inches = 0 acre-inches
3. ReVc: Ic x 0.25 = 1.24 acres x 0.25 inches = 0.31 acre-inches
4. ReVd: Id x 0.10 = 1.24 acres x 0.10 = .124 acre-inches
5. Total Recharge Volume: (ReV = ReVa + ReVb + ReVc+ ReVd)

$$\text{ReV} = \quad 0 \quad + \quad 0 \quad + \quad 0.31 \quad + \quad .124 \quad = \quad 0.434 \quad = \quad \mathbf{0.0362 \text{ acre-feet}}$$

\_\_\_\_\_ acre-inches ÷ 12 \_\_\_\_\_

**IDENTIFY RECHARGE VOLUME TO BE INFILTRATED**

ReV = **0.0362 acre-feet**

0.0362 ac-ft \* 43,560SF/ac = 1575.42 CF **SAY 1580 CF required**

**Total Impervious/ Impervious Directed to Recharge Facilities (SF) = 108,000/76,988 = 1.403**

Total storage provided in SWMA systems (Static Method) =

**1580 CF (1.403)= 2216.74 CF Required**

\* Storage volume provided in SWMA 1, 2, 3, 4, 5, 6 below low flow outlets and not allocated to water quality

$$337 \text{ CF} \times (5) \text{ Roof Infiltrators} = \underline{1685 \text{ CF}} + \underline{938 \text{ CF}} \text{ Parking Infiltrators} = \\ = \mathbf{2623 \text{ CF Provided}^*} > \mathbf{2216.74 \text{ CF}}$$

#### CALCULATE DRAWDOWN TIME (72 HOURS MAXIMUM)

Drawdown time =  $R_v / [(K) * (\text{Bottom Area})]$

$R_v$  = Provided Recharge Volume

$K$  = Saturated Hydraulic Conductivity for “Static” Method

(Table 2.3.3 – Mass Stormwater Handbook) = 0.09 inches/hour

Infiltration Chamber System Drawdown Time =

$$\underline{337 \text{ CF}} / [(0.09 \text{ inch/hr}) * (712.5 \text{ SF for SWMA\#1}) * (1 \text{ ft/12 in})] = \underline{63.1 \text{ hours}}$$

$$\underline{337 \text{ CF}} / [(0.09 \text{ inch/hr}) * (712.5 \text{ SF for SWMA\#2}) * (1 \text{ ft/12 in})] = \underline{63.1 \text{ hours}}$$

$$\underline{337 \text{ CF}} / [(0.09 \text{ inch/hr}) * (712.5 \text{ SF for SWMA\#3}) * (1 \text{ ft/12 in})] = \underline{63.1 \text{ hours}}$$

$$\underline{337 \text{ CF}} / [(0.09 \text{ inch/hr}) * (712.5 \text{ SF for SWMA\#4}) * (1 \text{ ft/12 in})] = \underline{63.1 \text{ hours}}$$

$$\underline{337 \text{ CF}} / [(0.09 \text{ inch/hr}) * (712.5 \text{ SF for SWMA\#5}) * (1 \text{ ft/12 in})] = \underline{63.1 \text{ hours}}$$

$$\underline{938 \text{ CF}} / [(0.09 \text{ inch/hr}) * (1806.625 \text{ SF for SWMA\#1}) * (1 \text{ ft/12 in})] = \underline{69.23 \text{ hours}}$$

ANALYZE EFFECTS OF GROUNDWATER MOUNDING

*A mounding analysis should be provided where infiltration (bottom of structure) occurs less than 4' from estimated seasonal high ground water and the recharge system is designed to attenuate the peak discharge from a 10-year or higher 24-hour storm.*

It is not anticipated that the bottom of the infiltration chamber stone will be less than 2' from estimated seasonal high ground water. The infiltration areas are within areas of existing and/or proposed fill. Upon closing on the property, the applicant will analyze existing site soils below the proposed infiltration areas. Adjustments to the system will be made if high groundwater is encountered to avoid negative impacts due to high groundwater.

EFFECT OF INFILTRATION SYSTEM ON NEARBY WETLANDS

*The following documentation is provided to show that the infiltration BMP's will not adversely affect nearby wetland resource areas.*

The infiltration system will not adversely affect the nearby wetlands. The primary infiltration/groundwater recharge for the site will be provided by the infiltration chambers which collect and mitigate stormwater runoff from the site.

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: West

TSS Removal Calculation Worksheet	B	C	D	E	F
	BMP <sup>1</sup>	TSS Removal Rate <sup>1</sup>	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	Subsurface Infiltration Structure	0.80	1.00	0.80	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20

Total TSS Removal =

80%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project: E3036 - Pennrose  
Prepared By: AZM  
Date: 1/13/2023

\*Equals remaining load from previous BMP (E)  
which enters the BMP

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: North

TSS Removal Calculation Worksheet	B	C	D	E	F
	BMP <sup>1</sup>	TSS Removal Rate <sup>1</sup>	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Sediment Forebay	0.25	0.75	0.19	0.56
		0.00	0.56	0.00	0.56
		0.00	0.56	0.00	0.56
		0.00	0.56	0.00	0.56

Total TSS Removal =

44%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project: E3036- Pennrose  
Prepared By: AZM  
Date: 1/13/2023

\*Equals remaining load from previous BMP (E)  
which enters the BMP

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: East

TSS Removal  
Calculation Worksheet

B BMP <sup>1</sup>	C TSS Removal Rate <sup>1</sup>	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Oil Grit Separator	0.25	0.75	0.19	0.56
Subsurface Infiltration Structure	0.80	0.56	0.45	0.11
Water Quality Swale - Wet	0.70	0.11	0.08	0.03
	0.00	0.03	0.00	0.03

Total TSS Removal =

97%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project: E3036 - Pennrose  
Prepared By: AZM  
Date: 1/13/2023

\*Equals remaining load from previous BMP (E)  
which enters the BMP



**EXHIBIT D  
TSS REMOVAL WORKSHEET**

Project: Curme - Housing Development  
For Stormwater Water Quality - Standard 4 (0.5" water quality volume storm\*)

Calc by: AZM  
FLS Proj. E3036  
Date: 3/31/2023

<b>WEIGHTED TSS REMOVAL CALCULATION WORKSHEET (Mass. DEP)</b>				
<b>Description of BMP</b>	<b>Volume from Impervious to BMP (acre-feet)</b>	<b>TSS removal % (MassDEP)</b>	<b>% New Impervious Area Directed to BMP</b>	<b>TSS Volume removed by BMPs</b>
North	0.018280437	80%	100%	0.00015
East	0.008168	44%	100%	0.00004
South	0.07634025	97%	100%	0.00074
<b>Totals</b>	<b>0.103</b>			<b>0.00092</b>

**Weighted TSS % Removal = 90%**


**WATER QUALITY VOLUME WORKSHEET**

**PENNROSE – CURME  
PITTSFIELD ROAD, LENOX, MA**

WQV= water quality volume

ReV = recharge volume

I = total impervious area (including rooftop)

Ir = rooftop impervious area

RR = rooftop runoff

1. Total Contributing Site Area 21.965 acres

2. Percent New Impervious 11.3 %

3. Total New Impervious Area (I) 2.48 acres (new impervious)

4. Find WQV:

(a) using 0.5" rule:  $WQV = (0.5")(I) = 1.24 \text{ acre-inches} / 12 \text{ inches} = \underline{\mathbf{0.1033 \text{ Acre-feet}}}$

OR

(b) using 1.0" rule:  $WQV = (1.0")(I) = \underline{\hspace{1cm}} \text{ acre-inches} / 12 \text{ inches} = \underline{\hspace{1cm}} \text{ Acre-feet}$

**Determine Amount of WQV to be conveyed through water quality BMP's**

=WQV = **0.1033 acre-feet**

0.1033 ac-ft \* 43,560 SF/ac = 4501.2 CF **SAY 4505 CF required**

**Total storage Provided = 288 + 4449 CF\* > 5,100 CF Required**

\* Storage volume provided in SWMA 6 & 7, below low flow outlets/ weirs & not allocated to recharge volume.

**SAMPLE – OPERATION & MAINTENANCE PLAN****PENNROSE – CURME****PITTSFIELD ROAD (ROUTE 20 & 7), LENOX, MA****PROJECT DATA:**Name: Pennrose - CurmeAddress: 0 Pittsfield Road (Route 20& 7), Lenox, MA**OWNER OF STORMWATER SYSTEM:**Name: Pennrose – CurmeContact Person: Rebecca Schofield

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

**OPERATOR RESPONSIBLE FOR OPERATION & MAINTENANCE OF SYSTEM:**

Name: \_\_\_\_\_

**BRIEF SUMMARY OF PROJECT**

The parcel, Lenox Assessors Map 22 Lot 27, is located on the east side of Pittsfield Road (Route 7 & 20) and consists of approximately 40.49± acres. The parcel has approximately 832 feet of frontage on Pittsfield Road and is currently undeveloped and wooded. Land use of this parcel is Commercial (C-3A) and Residential (R-1A). The surrounding neighborhood is commercial (Trattoria Restaurant to the North and Days Inn to the South) and residential (to the West across Route 7 and Southeast). To the East is mostly woodland extending to East Street.

According to FEMA Flood Panels 250029 0002 B dated July 5, 1982, no portion of the property is located within the 100-year floodplain.

The site is not within a Natural Heritage & Endangered Species Program area of Estimated or Priority Habitat and no Potential or Certified Vernal Pools are found on the property.

A small portion of the project will be located within the buffer zone of an area subject to the Wetlands Protection Act. As such, a permit will be required from the Conservation Commission. The areas are located immediately adjacent to Route 7/20 at the curb cut. There is no practical alternative for the curb cut and no alternative to access the site due to very steep slopes/embankments and ledge conditions.

**PROPOSED PROJECT**

The applicant is proposing an affordable housing complex with the construction of 10 new residential buildings on site to expand Lenox's affordable housing.

Site work includes:

- (10) Multi-Family Dwelling Units
- (1) Community Building
- Paved 22' wide access loop driveway
- (99) Off-Street Parking Spaces w/ Accessible parking
- Accessible walking paths connecting HCP to Facilities
- Series of Stormwater catch basins, manholes, control structures, infiltrators, swales, etc.
- Sewer, water, & site utilities

Other minor miscellaneous configurations to items such as pedestrian/cart paths, fire access and service access, stormwater improvements, utilities connections, and landscaping will be executed.

### **SUMMARY OF STORMWATER SYSTEM**

**Storm Drainage System:** The storm drainage systems consists of deep sump catch basins along access drive which direct the stormwater to sediment separator and infiltration structures, and then to water quality swales for the majority of the new impervious area. Another portion of the new impervious area is directed to deep sump catch basins which direct stormwater to a sediment forebay and level spreader. All roof drainage is to be diverted through infiltration structures.

**Stormwater Management Practices:** Stormwater management and Total Suspended Solids (TSS) removal will be conducted through the use of Best Management Practices (BMP's). In order to reduce TSS (to the maximum extent practicable), it is proposed to use the following:

- Oversized Sump Catch Basins
- Stormwater Infiltration System
- Water Quality Swale
- Level Spreader

The drainage system will have routine operation and maintenance procedures generally including:

- Periodic removal of coarse sediments from the drainage channels.
- Routine inspection and maintenance of the underground drainage.

### **WETLANDS AND RECEIVING WATERS**

The site does not include wetland alteration, but drainage will ultimately be received by jurisdictional wetlands nearby which are protected under the Mass. Wetlands Protection Act administered by the Conservation Commission, and the Federal Clean Waters Act. These include the wetland resource areas as described in the Notice of Intent and depicted on the attached plans.

*Note: Under the Mass. Wetlands Protection Act regulations (310 CMR 10.02 (3), 1997 revisions), maintenance of the stormwater management system affecting any wetland areas which were previously created for the purpose of stormwater management, does not require the filing of a Notice of Intent or a Request for Determination of Applicability. For example, assume that a water quality basin, wet detention basin, or outlet swale are constructed for the project. These drainage facilities will naturally become populated with wetland vegetation. Five years later, maintenance needs to be performed to remove accumulated sediments from the drainage basins or outlet swale. This work does not constitute alteration of wetlands, and does not require filing or approval under the WPA, as long as the work is only maintenance. (Enlargement or substantial changes to the drainage system would require approval.) However, as a matter of good communication, we recommend that the Owner or Operator notify the Conservation Commission before the maintenance work is begun. The Order of Conditions issued by the Conservation Commission may have additional conditions or requirements that continue after the Certificate of Compliance is issued for construction. A copy of the Order of Conditions and any continuing conditions should be attached to this Operation and Maintenance Plan.*

Owner, Operator, Contractor(s), and other personnel who perform work on the site should become familiar with the location and characteristics of the wetland resource areas, and of the requirements under the applicable federal, state, and local laws and regulations. Wetlands in close proximity of work areas should be flagged with signage. Work within 100' of Bordering Vegetated Wetlands (BVW) or Bank (Intermittent Stream) is under the jurisdiction of the Conservation Commission and must be reviewed prior to work

proposed within the 100-foot Buffer Zone.

This Operation and Maintenance Plan is an essential component of the Stormwater Management System for the Project. The Owner is ultimately responsible for assuring that the Stormwater System is operated and maintained in accordance with all applicable permits and approvals, including, but not limited to Massachusetts Wetlands Protection Act permits, Massachusetts Stormwater Management Policy, Massachusetts Groundwater or Surface Water Discharge Permits, and U.S.E.P.A. General Permit, and the Stockbridge Stormwater Management and Erosion Control Bylaw. Copies of all applicable permits and plans should be attached to this O&M plan. All Permit requirements are incorporated by reference into this Operation and Maintenance Plan whether they are attached or not.

#### **SCHEDULE FOR INSPECTION AND ROUTINE MAINTENANCE OF STORMWATER SYSTEM:**

*Note: Notification of Conservation Commission is recommended before performing any excavation or major maintenance of the stormwater system, though stormwater structures are not considered wetland resources. All components of the Stormwater System shall be inspected after every major storm event for the first few months after construction to ensure proper stabilization and function.*

Drainage Channels	<ul style="list-style-type: none"> <li>• Inspect Bi-Annually in the Spring and Fall;</li> <li>• Check for sediments; remove sediments if more than 4" deep. Remove sediment and debris at least once per year.</li> <li>• Check inlet and outlet pipes for debris or obstructions. Clean as necessary;</li> <li>• Mow applicable areas at least once per year with a minimum grass length of 4", Grass height shall not exceed 6" or be cut less than 3". Mow as needed during growing season;</li> <li>• Inspect and maintain outlet control device as applicable;</li> <li>• Maintain as required with additional mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Re-seed periodically to maintain dense grass growth. Plant with alternative grass species if the original grass cover is not successfully established.</li> </ul>
Catch Basin Sumps	<ul style="list-style-type: none"> <li>• Inspect quarterly and clean inlets;</li> <li>• Inspect or clean sump at the end of the foliage and snow-removal seasons.</li> <li>• Remove sediments if greater than ½ sump capacity;</li> <li>• Remove Sediments from sumps annually in the spring, at a minimum;</li> <li>• Dispose of sediments and debris off site at approved location in accordance with applicable state and federal laws and regulations.</li> </ul>
Water Quality Swales	<ul style="list-style-type: none"> <li>• For the first few months after construction and twice a year thereafter, inspect swales to make sure vegetation is adequate and slopes are not eroding and check for rilling and gullyng.</li> <li>• Repair eroded areas and revegetate as necessary.</li> <li>• Mow as needed ~ two to twelve times a year</li> <li>• Manually remove sediments and debris at least once per year.</li> <li>• Re-seed as necessary</li> </ul>
Level Spreaders	<ul style="list-style-type: none"> <li>• Inspect level spreaders regularly, especially after large rainfall events.</li> <li>• Note and repair any erosion or low spots in the spreader.</li> </ul>
Infiltration Chambers	<ul style="list-style-type: none"> <li>• Inspect Bi-Annually in the Spring and Fall</li> <li>• Periodically monitor water depths at 0, 24, and 48 hours after a storm event to check infiltration rates over a period of years to determine clogging problems.</li> </ul>

## **LONG TERM POLLUTION PREVENTION PLAN**

### **Good Housekeeping Practices:**

Where applicable, the Operator shall apply good housekeeping practices including, but not limited to the following. See SWPPP for additional information:

#### **Materials Management:** As applicable

- An effort will be made to store only enough product required to perform the required work. Regular inventory of materials will reduce the occurrence of overstocking.
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, wherever possible, should be under a roof or other enclosure to prevent contact with stormwater.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The Operator will inspect daily to ensure proper use and disposal of materials onsite.
- Routinely clean work space and maintain machinery.
- Regularly inspect equipment and facilities.
- Train employees to respond to spills or leaks.

#### **Vehicle Washing Controls:** As applicable

- Wash vehicles on gravel, grass, or other permeable surface outside of the Buffer Zone or pump wash water runoff to a permeable area.
- Block off catch basin grates, if applicable.
- Use hose nozzles that turn off automatically.
- Use only biodegradable soaps.

#### **Other Good House Keeping Practices:**

- Litter and other debris shall be collected and properly disposed of as frequently as necessary
- Property owners shall keep the site maintained and in an orderly manner to protect downstream resources.

### **Storage & Use of Hazardous Products, Petroleum Products, Fertilizers, Herbicides, & Pesticides:**

Where applicable, the following practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. (If a Total Maximum Daily Load (TDML) is developed that indicates that use of fertilizers containing nutrients must be reduced, a nutrient management plan shall be developed.)

#### **Hazardous Products:**

- Shall be stored in a secured area under cover
- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturer's or local and State recommended methods for proper disposal will be followed.

#### **Petroleum Products:**

- Shall be stored in a secured area undercover.
- All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers

which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Fertilizers:

- Shall be stored in a secured area undercover.
- Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. Stored fertilizers will be kept covered. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
- Any overcast fertilizer on grasses or paved areas shall be cleaned off.

Paints:

- All containers will be tightly sealed and stored in a secure covered area when not required for use. Excess paint will not be discharged to the storm or sanitary sewer systems but will be properly disposed of according to manufacturer's instructions and State and local regulations.

Spill Prevention and Response Plans

In addition to the good housekeeping and material management practices discussed in the previous sections, the following practices will be followed for spill prevention and cleanup:

<b>Spill Control Practices</b>	
<input checked="" type="checkbox"/>	Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
<input checked="" type="checkbox"/>	Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
<input checked="" type="checkbox"/>	All spills will be cleaned up immediately after discovery.
<input checked="" type="checkbox"/>	The spill area will be kept ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
<input checked="" type="checkbox"/>	Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.
<input checked="" type="checkbox"/>	The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
<input checked="" type="checkbox"/>	The Operator or Operator's representative will be the spill prevention and cleanup coordinator. He/she will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted onsite.

Maintenance of Lawns, Gardens, and other Landscaped Areas:

- Inspect lawns, gardens, and other landscaped areas for signs of erosions, bare spots, diseased plant species, and overall vegetation health.
- Regularly mow the grassed areas as required. Refer to the Schedule for Inspection and Routine Maintenance of Stormwater System (above) for specific mowing and maintenance requirements of the Stormwater system.

- Remove and Replant, reseed, re-mulch, and prune as required to maintain healthy vegetation.

Pet Waste Management:

In no case, should pet wastes be allowed to discharge into the stormwater system.

Operations and Maintenance of Septic Systems:

See SWPPP for construction phase sanitary waste provisions.

Solid Waste Management:

- All waste materials will be collected and stored in a securely covered (lidded or tarped, or enclosed within the building) metal dumpster rented from a licensed hauler or equivalent waste receptacle.
- The dumpster/waste receptacle will meet all local and State solid waste management regulations.
- All trash and debris from the site will be deposited in the dumpster and/or waste receptacle.
- The dumpster and/or waste receptacle will be emptied a minimum of once per week or more often if necessary, and the trash will be hauled to a state approved landfill. No waste materials will be buried onsite.
- All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted onsite. The Operator who manages the day-to-day site operations will be responsible for seeing that these procedures are followed.

Snow Disposal and Plowing (as relative to Wetland resource Areas):

- Snow shall not be plowed or stored into the wetland resource areas or within any the stormwater system (i.e. rain garden, Water Quality Swale, etc.).
- Store snow in a designated onsite location or properly disposed at an offsite location.
- Minimize the use of salt/sand or other deicing chemicals.

Winter Road Salt and/or Sand Use and Storage:

- Preferably, salt and deicing chemicals for the driveway will be stored off-site and only employed when necessary.
- Any salt and deicing chemicals necessarily stored onsite shall be stored in a proper container or structure designed to prevent the generation and escape of contaminated runoff or leachate.
- Storage design shall apply the following BMP components: A flat site, slightly raised above surrounding grades, adequate space, an impervious/paved storage pad, proper roofing, and runoff collection/containment.

Prevention of Illicit Discharges to the Stormwater Management System:

- All non-stormwater discharges must be reported and documented as illicit discharges. An Illicit Discharge Compliance Statement (see example in Attachment B) must be submitted to the issuing authority verifying that no illicit discharges exist on the site. Pollution prevention measures shall be implemented to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with the process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.
- Illicit discharges do not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing, and water used to clean residential buildings without detergents.
- A scaled plan of the site must accompany the Illicit Discharge Compliance Statement identifying the location of any systems for conveying stormwater on the site and showing that these systems do not allow the entry of any illicit discharges into the stormwater management system. The plan shall also show the locations of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between these systems and the stormwater management systems. This



information shall be included with the plans submitted with the Notice of Intent and Operation and Maintenance Plan or included as a separate plan with the Illicit Discharge Compliance Statement.

- If applicable, where illicit discharges have been identified, the actions taken to identify and remove the illicit discharges must be documented and shown on the plan.

#### Training Requirements for Staff and Personnel Involved with Implementing the Long Term Pollution Prevention Plan:

- Staff and personnel involved with implementing this plan shall be trained to understand this Operation and Maintenance plan, the SWPPP, emergency procedures, Good Housekeeping BMPs, stormwater BMPs, sedimentation and erosion control measures, and the non-stormwater BMPs.
- Refer to the Stormwater Management Fact Sheet (Attachment D) and the SWPPP for further information and training logs.

#### Emergency Contact List

- See Attachment E for Emergency Contacts.

#### Comprehensive Site Evaluation

A comprehensive site inspection shall be performed on an annual basis. The scope of the comprehensive site inspection should encompass all of the noted possible sources of pollution and activities noted. The Operator should use the attached form(s) (Attachment D) for the inspection process and note the date, time, and an account of the circumstances leading up to any found contaminants. If the release is a reportable quantity of oil or other controlled substance, the Operator shall notify all appropriate and applicable agencies.

The annual inspections should take place in the spring, immediately following a rainfall event, in order to get the most representative inspections. The inspections should involve visually inspecting the site and the surrounding areas. The results of the inspection should be noted on the forms provided. Any noted contaminants should be recorded on the forms and acted upon as noted below.

Also, as a result of good housekeeping measures throughout the course of the year, the Operator shall determine what, if any, additional measures or changes need to be made to the Operation and Maintenance Plan.

#### Records Keeping and Actions Requirements

All comprehensive site analysis shall be logged and kept with the Operation and Maintenance Plan. Any other notes and/or issues arising on a daily basis shall be logged and kept with the Operation and Maintenance Plan.

If there is a “reportable incident” the Operator shall log the incident in the Operation and Maintenance Plan and revise the Operation and Maintenance Plan within 14 days of the noted incident. The Operation and Maintenance Plan revision should be designed to alleviate the source of contamination and reduce the noted pollutants. After the Operation and Maintenance Plan revision, the pollution source noted shall be inspected and logged again during the next rainfall event. If the suspected contaminant is not present, the Operator shall log this information and pay close attention to this area during the next annual inspection. If the contaminant is still present, the Operation and Maintenance Plan shall be revised again, within 14 days, and re-evaluated during the next rainfall event until the contaminant is satisfactorily reduced or eliminated, i.e. not present during the subsequent inspection.

A reportable incident means any incident that is noted as having a Physical Observation other than “none” (on the Visual Inspection Worksheet) and/or any noted pollution sources recognized during the course of operations. Daily good housekeeping such as sweeping and picking up stray trash/paper/plastic materials does not constitute a reportable incident.

Records must be kept with the Operation and Maintenance Plan documenting the status and effectiveness of plan implementation. At a minimum, records must address the results of the annual evaluations, routine maintenance and inspections, spills, monitoring, and maintenance activities.

#### Facilities Maintenance

Maintenance involves the regular operation, inspection, and replacement or repair of systems and BMPs.

Storm water BMP reviews should be performed throughout the year, per the above schedule, in addition to the required annual inspections. Any potential problems or maintenance requirements should be reported and documented. All BMPs identified in the Operation and Maintenance Plan must be maintained in effective operating condition.

As noted, good housekeeping is a key component of the Operation and Maintenance Plan. Good housekeeping includes all of the Pollution prevention measures noted under this Operation and Maintenance Plan and all subsequent measure implemented throughout operations. The facilities maintenance plan will quickly respond to noted deficiencies as well as provide preventative maintenance where applicable.

#### Disclaimer

This Operation and Maintenance Plan is intended to satisfy the requirements under the Massachusetts Stormwater Handbook only and does not cover the exact steps required for materials handling and reporting as established under local, state and federal codes and permits. This Operation and Maintenance Plan does not alleviate the owner from complying with any and all other requirements governing the operation and maintenance of a facility of this nature.

Owner, Operator, Contractor(s), and other personnel who perform work on the site should become familiar with the location and characteristics of the wetland resource areas, and of the requirements under the applicable federal, state, and local laws and regulations.

This Operation and Maintenance Plan is an essential component of the Stormwater Management System for the Project. The Owner is ultimately responsible for assuring that the Stormwater System is operated and maintained in accordance with all applicable permits and approvals, including, but not limited to Massachusetts Wetlands Protection Act permits, Massachusetts Stormwater Management Policy, Massachusetts Groundwater or Surface Water Discharge Permits, and U.S.E.P.A. NPDES Stormwater Discharge Permit. Copies of all applicable permits and plans should be attached to this Operation and Maintenance Plan. All Permit requirements are incorporated by reference into this Operation and Maintenance Plan whether they are attached or not.

**Attachment A**  
**Policy #BWP-94-092: Reuse & Disposal of Street Sweepings**

This Policy provides guidance on Massachusetts Department of Environmental Protection requirements, standards, and approvals for handling, reuse and disposal of street sweepings.

By Carl F. Dierker,  
Assistant Commissioner, Bureau of Waste Prevention  
[Signature on Original]

### **1. Policy Statement & Scope**

This Policy explains Department of Environmental Protection (MassDEP) requirements for managing street sweepings. Street sweepings are solid waste subject to the Massachusetts solid waste regulations. The options for managing street sweepings are as follows.

1. Use the street sweepings in accordance with the preapproved uses described in Section 4 of this policy.
2. Use the street sweepings for a beneficial use after obtaining prior approval from MassDEP under the provisions of the solid waste regulations, 310 CMR 19.060, Beneficial Use of Solid Wastes.
3. Dispose of street sweepings at a permitted solid waste landfill.

The provisions and requirements for managing street sweepings under these options are the subject of this policy.

### **2. Applicability**

This policy applies to the reuse or disposal of street sweepings that are generated in the ordinary and customary maintenance of roadways. The policy does not apply to catch basin cleanings or street sweepings mixed with catch basin cleanings or other wastes. The policy does not apply to the material generated as the result of the cleanup of an oil or hazardous material spill.

Street sweepings are not exempt from the Hazardous Waste Regulations, 310 CMR 30.000, and must be handled as hazardous waste when they exhibit any of the characteristics of a hazardous waste. If there is no evidence of unusual contamination, MassDEP does not require street sweepings to be routinely tested, but, as is the case with any waste, the generator has the ultimate responsibility for determining whether the waste is a hazardous waste.

### **3. Definitions**

*Department* or means the Massachusetts Department of Environmental Protection (MassDEP).

*Public Way* means the strip of land over and under a publicly owned, paved road or highway and includes the publicly owned land adjacent to the road or highway.

*Street Sweepings* means materials consisting primarily of sand and soil generated during the routine cleaning of roadways but may also contain some leaves and other miscellaneous solid wastes collected during street sweeping. *Street sweepings* does not mean the material generated during the cleanup of a spill or material from other structures associated with a roadway such as catch basins.

*Urban center roads* means local roads in central commercial and retail business districts and industrial and manufacturing areas.

### **4. Pre-Approved Uses, Restrictions & Conditions**

This policy allows street sweepings to be used in several applications. No approval from MassDEP is required when the restrictions and conditions identified in this policy are adhered to. However, sweepings shall not be

used unless prior approval is obtained from the owner of the location where the sweepings are to be used.

#### **4.1. Use at Landfills**

Street sweepings may be used for daily cover at lined or unlined permitted solid waste landfills and need no prior MassDEP approval if the sweepings satisfy the requirements for daily cover material specified at 310 CMR 19.130(15).

#### **4.2. Use as Fill in Public Ways**

Street sweepings shall be used for fill in public ways without prior approval from MassDEP only when the following restrictions and conditions are observed:

- The sweepings have not been collected from Urban Center Roads (see definition);
- The sweepings are used under the road surface or as fill along the side of the road within the public way;
- The sweepings are not used in residential areas;
- The sweepings are kept above the level of the groundwater;
- The sweepings are not used in designated "No Salt Areas";
- The following definitions have been taken verbatim from the solid waste regulations and are repeated here for clarity in understanding this policy.
- The sweepings are not used within the 100 foot buffer zone of a wetland or within wetland resource areas including bordering vegetative wetlands and riverfront areas;
- The sweepings are not used within 500 feet of a ground or surface drinking water supply.

#### **4.3. Use As an Additive to Restricted Use Compost**

Street sweepings shall be used as an additive to compost without prior approval from MassDEP only when the following restrictions and conditions are observed:

- The sweepings have not been collected from Urban Center Roads (see definition);
- The compost is used only in public ways;
- The compost is not used in residential areas;
- The compost is kept above the level of the groundwater;
- The compost is not used in designated "No Salt Areas";
- The compost is not used within the 100 foot buffer zone of a wetland or within wetland resource areas including bordering vegetative wetlands and riverfront areas;
- The compost is not used within 500 feet of a ground or surface drinking water supply.

#### **5. Other Uses**

Any use not pre-approved in the preceding section requires prior MassDEP approval under the Beneficial Use provisions of the *Solid Waste Management Facility Regulations* at 310 CMR 19.060. A "Beneficial Use Determination" or BUD can be made only after the submission of an application characterizing the waste and describing the proposed beneficial use.

#### **6. Disposal**

While the beneficial use of street sweepings is strongly encouraged, MassDEP does not prohibit the disposal of street sweepings. Street sweepings may be disposed in either lined or unlined permitted solid waste landfills without prior approval from the Department.

#### **7. Handling**

##### **7.1. Collection of Street Sweepings**

Although MassDEP does not regulate the collection of street sweepings, collection practices should be compatible with intended uses. For example, sweepings from Urban Center Roads are not approved for the uses allowed for sweepings from other areas. Keeping sweepings from Urban Center Roads separate from

sweepings from other areas will make the full benefits of this policy available.

This policy does not cover sweepings known to be contaminated by spills, and such sweepings should be collected separately and kept segregated. Depending on the contamination and circumstances, the handling of contaminated sweepings may be governed by the Massachusetts Contingency Plan, 310 CMR 40, the Massachusetts Hazardous Waste Regulations, 310 CMR 30, the Massachusetts Site Assignment Regulations for Solid Waste Facilities, 310 CMR 16 or the Massachusetts Solid Waste Management Facility Regulations, 310 CMR 19.

## 7.2. Storage

Street sweepings shall be temporarily stored prior to use, only when the following conditions are satisfied:

- Storage must be at the site where the sweepings are generated (in the public way) or at a location, such as a DPW yard, that is under the control of the governmental entity which is doing the sweeping or has contracted for the sweeping;
- The sweepings shall be protected from wind and rain to the extent necessary to prevent dust, erosion and off-site migration;
- The sweepings shall not be stored within the 100 foot buffer zone of a wetland or within wetland resource areas including bordering vegetative wetlands and riverfront areas;
- The sweepings shall not be stored within 500 feet of a ground or surface drinking water supply;
- Storage shall incorporate good management practice and result in no public nuisance;
- Storage must be temporary. Street sweepings shall be used within one year of collection unless the MassDEP Regional Office in the region where the sweepings are stored grants a written extension. An extension may be granted when it is demonstrated that all storage conditions will continue to be satisfied and the stored sweepings will be put to a specific identified use prior to the expiration of the extension period.

## 7.3. Preparation Prior to Use

Solid waste, such as paper, auto parts and other trash, shall be removed from the sweepings prior to use. Leaves, twigs and other organic matter should also be removed when good engineering practice indicates this is necessary to produce a material that is suitable for the intended use.

## 8. Background

MassDEP has consistently classified street sweepings as solid waste subject to Massachusetts General Law Chapter 111, Section 150A and the Massachusetts Solid Waste Regulations (*Site Assignment Regulations for Solid Waste Facilities*, 310 CMR 16.00 and *Solid Waste Management Facility Regulations*, 310 CMR 19.000). There has been confusion among some in the regulated community about this classification.

Prior to the development of this policy, the options for handling street sweepings were limited to:

1. Disposal at a permitted solid waste landfill,
2. Use as cover at a permitted solid waste landfill or
3. Use in accordance with a Beneficial Use Determination (BUD). BUD decisions are made on a case-by-case basis and require the submittal of a formal application to MassDEP containing data showing the chemical composition of the street sweepings.

The simplest of these options was either to use the sweepings for landfill cover or to dispose of the sweepings at the local landfill. As many local landfills close, these options become less available to many communities. However, transporting sweepings to a distant landfill involves increased transportation costs and possibly payment of tipping fees.

To clarify the requirements and to provide simpler and less expensive alternatives for handling street sweepings, the Department undertook the development of this policy. Because useful studies of the chemical

composition of street sweepings could not be found in the literature, MassDEP solicited the help of municipalities and state agencies in conducting a study of the composition of street sweepings from various types of areas. The results showed that sweepings from all areas, except Urban Center Roads, were similar with the main constituents of concern being total petroleum hydrocarbons (TPH) and polynuclear aromatic hydrocarbons (PAHs). Very limited data from Urban Center Roads indicated that sweepings from these areas may be more contaminated than sweepings from other areas.

The test results indicate that sweepings may contain levels of contamination that are unsuitable for unrestricted use. However, except for sweepings from Urban Center Roads, the levels of contamination were consistent and low enough to allow the use of sweepings in restricted applications without requiring testing or pre-approval as long as certain conditions were met. Sweepings from urban areas were excluded from some pre-approved uses. This situation could change when more data are available from Urban Center Roads.

This policy makes it possible for municipalities, state agencies and other governmental entities to handle street sweepings in an environmentally sound manner with a minimum of paperwork and expense.

### **9. Additional Information**

For additional copies of this policy, permit application forms or other MassDEP documents, call any MassDEP Regional Office and ask for the Service Center or visit <http://www.mass.gov/dep>. The permit application numbers for Beneficial Use Determinations are BWP SW 39, 40, 41 and 42.

Copies of all Massachusetts regulations, including the solid waste regulations, may be purchased from the State House Bookstore, 617-727-2834. The solid waste regulations are:

310 CMR 16.000, *Site Assignment Regulations for Solid Waste Facilities*  
310 CMR 19.000, *Solid Waste Management Facility Regulations*

Questions about the Provisions of the Policy – If you have technical questions about the policy, please call any MassDEP office and ask to speak with a staff member about the provisions of the policy.

**Attachment B**  
**Illicit Discharge Compliance Statement**

***SAMPLE – SIGNED STATEMENT TO FOLLOW PENDING SALE OF PROPERTY***

Storm Water Discharges have been evaluated on behalf of the Applicant by Foresight Land Services to check for the presence of Non-Storm Water Sources. This evaluation was performed as visual field observations at the site-specific areas. At the time of the inspection on \_\_\_\_\_, there were not visible signs of non-storm water discharge.

*No Non-Storm water discharges have been identified and none are proposed in the construction plans.*

*As Applicant, I hereby agree that, if any Non-Storm Water Discharges are identified during the normal course of construction or subsequent operations on the property, they shall be recorded, measures implemented to abate the illicit discharge, and the Conservation Commission shall be notified.*

Evaluation Date by Foresight Land Services, Inc.: \_\_\_\_\_

\_\_\_\_\_  
Signed (print and sign)  
Applicant:

\_\_\_\_\_  
Date

**Attachment C**

**NOT APPLICABLE****Table LUHPPL: Best Management Practices for Land Uses with Higher Potential Pollutant Loads**

- Discharges from certain land uses with higher potential pollutant loads may be subject to additional requirements, including the need to obtain an individual or general discharge permit pursuant to the MA Clean Waters Act or Federal Clean Water Act.
- All proponents must implement source control and pollution prevention.
- All BMPs shall be designed in accordance with specifications and procedures in the Massachusetts Stormwater Handbook Volumes 2 and 3.
- The required water quality volume equals 1 inch times the total impervious area of the post-development site.
- Many land uses have the potential to generate higher potential pollutant loads of oil and grease. These land uses include, without limitation, industrial machinery and equipment and railroad equipment maintenance, log storage and sorting yards, aircraft maintenance areas, railroad yards, fueling stations, vehicle maintenance and repair, construction businesses, paving, heavy equipment storage and/or maintenance, the storage of petroleum products, high-intensity-use parking lots, and fleet storage areas. To treat the runoff from such land uses, the following BMPs must be used to pretreat the runoff prior to discharge to an infiltration structure: an oil grit separator, a sand filter, organic filter, filtering bioretention area or equivalent.
- 44% TSS removal is required prior to discharge to an infiltration device.
- Until they complete the STEP or TARP verification process outlined in Volume 2, proprietary BMPs may not be used as a terminal treatment device for runoff from land uses with higher potential pollutant loads. For the purpose of this requirement, subsurface structures, even those that have a storage chamber that has been manufactured are not proprietary BMPs, since the pretreatment occurs in the soil below the structure, not in the structure itself.

**Pretreatment**

	Deep Sump Catch Basin
	Oil Grit Separator
	Proprietary Separators - See Volume 2
	Sediment Forebays
	Vegetated Filter Strip ( <i>must be lined</i> )

**Treatment**

Sand Filters, Organic Filters, Proprietary Media Filters, Wet Basins, Filtering Bioretention Areas, and Extended Dry Detention Basins must be lined and sealed unless 44% of the TSS has been removed prior to discharge to the BMP.	Filtering Bioretention Areas including rain gardens
	Constructed Stormwater Wetlands
	Dry Water Quality Swales
	Extended Dry Detention Basins
	Gravel Wetlands
	Proprietary Media Filter. (Does not include catch basin inserts) (Proprietary Media Filters may be used for terminal treatment for runoff from land uses with higher potential pollutant loads, only if verified for such use by the TARP or STEP process. See Volume 2.)
	Sand /Organic Filters
	Wet Basins

**Infiltration**

	Exfiltrating Bioretention Areas including rain gardens
	Infiltration Basins
	Infiltration Trenches
	Leaching Catch Basins
	Subsurface Structures

**Attachment D**



## Stormwater Management Fact Sheet – Employee Training

United States  
Environmental Protection  
Agency

Office of Water  
Washington, D.C.

EPA 832-F-99-010  
September 1999



# Storm Water Management Fact Sheet Employee Training

### DESCRIPTION

In-house employee training programs are established to teach employees about storm water management, potential sources of contaminants, and Best Management Practices (BMPs). Employee training programs should instill all personnel with a thorough understanding of their Storm Water Pollution Prevention Plan (SWPPP), including BMPs, processes and materials they are working with, safety hazards, practices for preventing discharges, and procedures for responding quickly and properly to toxic and hazardous material incidents.

### APPLICABILITY

Typically, most industrial facilities have employee training programs. Usually these address such areas as health and safety training and fire protection. Training on storm water management and BMPs can be incorporated into these programs.

Employees can be taught through 1) posters, employee meetings, courses, and bulletin boards about storm water management, potential contaminant sources, and prevention of contamination in surface water runoff, and 2) field training programs that show areas of potential storm water contamination and associated pollutants, followed by a discussion of site-specific BMPs by trained personnel.

### ADVANTAGES AND DISADVANTAGES

Advantages of an employee training program are that the program can be a low-cost and easily implementable storm water management BMP.

The program can be standardized and repeated as necessary, both to train new employees and to keep its objectives fresh in the minds of more senior employees. A training program is also flexible and can be adapted as a facility's storm water management needs change over time.

Obstacles to an employee training program include:

- Lack of commitment from senior management.
- Lack of employee motivation.
- Lack of incentive to become involved in BMP implementation.

### KEY PROGRAM COMPONENTS

Specific design criteria for implementing an employee training program include:

- Ensuring strong commitment and periodic input from senior management.
- Communicating frequently to ensure adequate understanding of SWPPP goals and objectives.
- Utilizing experience from past spills to prevent future spills.
- Making employees aware of BMP monitoring and spill reporting procedures.
- Developing operating manuals and standard procedures.

- Implementing spill drills.

## IMPLEMENTATION

An employee training program should be an on-going, yearly process. Meetings about SWPPPs should be held at least annually, possibly in conjunction with other training programs. Figure 1 illustrates a sample employee training worksheet. Worksheets such as these can be used to plan and track employee training programs. Program performance depends on employees' participation and on senior management's commitment to reducing point and nonpoint sources of pollution; therefore, performance will vary among facilities. To be effective these programs need senior management's support

## COSTS

Costs for implementing an employee training program are highly variable. Most storm water training program costs will be directly related to labor and associated overhead costs. Trainers can reduce costs by using free educational materials available on the subject of storm water quality.

Figure 2 can be used to estimate the annual costs for an in-house training program. Table 1 provides an example of how this worksheet can be used to estimate annual costs.

## REFERENCES

1. U.S. EPA, 1979. *NPDES BMP Guidance Document*.
2. U.S. EPA, Pre-print, 1992. *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*. EPA 832-R-92-006.

## ADDITIONAL INFORMATION

Center for Watershed Protection  
Tom Schueler  
8391 Main Street  
Ellicott City, MD 21043

City of Coral Gables, Florida

Tim Clark  
285 Aragon Avenue  
Coral Gables, FL 33134

Hillsborough County, Florida  
Jose Rodriguez  
Hillsborough County Public Works  
601 East Kennedy Boulevard  
Tampa, FL 33601

King County, Washington  
Dave Hancock  
Department of Natural Resources, Water and Land  
Resources Division, Drainage Services Section  
700 5<sup>th</sup> Avenue, Suite 2200  
Seattle, WA 98104

Mitchell Training, Inc.  
Barbara Mitchell  
5414 SW 177<sup>th</sup> Street  
Archer, FL 32618

Southeastern Wisconsin Regional Planning  
Commission  
Bob Biebel  
916 N. East Avenue, P.O. Box 1607  
Waukesha, WI 53187

The mention of trade names or commercial products does not constitute endorsement or recommendation for the use by the U.S. Environmental Protection Agency.

For more information contact:

Municipal Technology Branch  
U.S. EPA  
Mail Code 4204  
401 M St., S.W.  
Washington, D.C., 20460



EMPLOYEE TRAINING		Worksheet Completed by: _____ Title: _____ Date: _____	
Instructions: Describe the employee training program for your facility below. The program should, at a minimum, address spill prevention and response, good housekeeping, and material management practices. Provide a schedule for the training program and list the employees who attend the training sessions.			
Training Topics	Brief Description of Training Program/Materials (e.g., film, newsletter, course)	Schedule for Training (list dates)	Participants
Spill Prevention and Response			
Good Housekeeping			
Material Management Practices			
Other Topics			

Source: U. S. EPA, 1992.

**FIGURE 1 SAMPLE WORKSHEET FOR TRACKING EMPLOYEE TRAINING**

Title	Number	Average Hourly Rate (\$)	Overhead* Multiplier	Estimated Yearly Hours on SW Training	Estimated Annual Cost (\$)
Stormwater Engineer	1	x 15	x 2.0	x 20	= 600
Plant Management	5	x 20	x 2.0	x 10	= 2,000
Plant Employees	100	x 10	x 2.0	x 5	= <u>10,000</u>
Total Estimated Annual Cost \$12,600					

\*Note: Defined as a multiplier (typically ranging between 1 and 3) that takes into account those costs associated with costs other than salary of employing a person, expenses, etc

**TABLE 1 EXAMPLE OF ANNUAL EMPLOYEE TRAINING COSTS**

Title	Number	Average Hourly Rate (\$)	Overhead Multiplier	Estimated Yearly Hours on SW Training	Estimated Annual Cost (\$)
_____	_____	x _____	x _____	x _____	= _____ (A)
_____	_____	x _____	x _____	x _____	= _____ (B)
_____	_____	x _____	x _____	x _____	= _____ (C)
_____	_____	x _____	x _____	x _____	= _____ (D)
Total Estimated Annual Cost (Sum of A+B+C+D) _____					

Source: U.S. EPA, 1992.

**FIGURE 2 SAMPLE ANNUAL TRAINING COST WORKSHEET**

**Attachment E**  
**List of Emergency Contacts**

**Owner/Operator(s):**

Company or Organization Name: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

E-mail: \_\_\_\_\_

**Emergency 24-Hour Contact:**

Company or Organization Name: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

E-mail: \_\_\_\_\_

**Local Police Department:**Telephone Number: (413) 637-2346– For emergencies dial 911**This Operation and Maintenance Plan was Prepared by:**Company or Organization Name: Foresight Land Services, Inc.Name: Steven A. Mack, P.E.Address: 1496 West Housatonic StreetCity, State, Zip Code: Pittsfield, MA 01201Telephone Number: (413) 499-1560Fax Number: (413) 499-3307E-mail: [smack@foresightland.com](mailto:smack@foresightland.com)

**Attachment F**  
**Visual Inspection Worksheet**

Outfall(Point) # \_\_\_\_\_ Photograph # \_\_\_\_\_ Date: \_\_\_\_\_

Location: \_\_\_\_\_

Weather: air temp: \_\_\_\_\_°F      rain: Y   N      sunny      cloudy

Outfall flow rate estimate: \_\_\_\_\_gal/min

Known industrial or commercial uses in drainage area?      Y   N

Describe: \_\_\_\_\_

**PHYSICAL OBSERVATIONS**

**Odor:**   none   sewage   sulfide   oil   gas   rancid-sour   other: \_\_\_\_\_

**Color:**   none   yellow   brown   green   gray   other: \_\_\_\_\_

**Turbidity:**   none   cloudy   opaque

**Floatables:**   none   petroleum sheen   sewage   other: \_\_\_\_\_ (collect sample)

**Deposits/stains:**   none   sediment   oily   describe: \_\_\_\_\_ (collect sample)

**Vegetation conditions:**   normal   excessive growth   inhibited growth

extent: \_\_\_\_\_

**Damage to outfall structures:**

identify structure: \_\_\_\_\_

damage: none / concrete cracking / concrete spalling / peeling paint / corrosion

other damage: \_\_\_\_\_

extent: \_\_\_\_\_

(USEPA)

**PROJECT NARRATIVE & MUNICIPAL IMPACT REPORT**  
**0 PITTSFIELD ROAD, MAP 22, LOT 27, LENOX, MA**

**General**

Pennrose Development – Boston, proposes the construction of an affordable housing complex on the property, located across from Lime Kiln Road at 0 Pittsfield Road, Lenox, MA (Map 22, Lot 27). The proposed project consists of 10 residential buildings, a community building, and related features with a driveway off of Pittsfield Road (Route 7 & 20) across from Lime Kiln Road. Parking will be located primarily along the roadway through the complex with an additional parking area located to the east of the complex.

**Existing Site**

The property is located within the C-3A Zoning District (front 1,000 feet) and the R-1A Zoning District (back portion of the property). Lot requirements per the Lenox Zoning Bylaw are as follows:

	<b>C-3A Required</b>	<b>Existing</b>	<b>Pennrose (Proposed Form A)</b>
<b>Minimum Lot Size</b>	3 Acres	40.49± Ac	21.2± Ac
<b>Minimum Lot Frontage</b>	300'	832± feet	832± feet
<b>Minimum Lot Width</b>	300'	834± feet	834± feet
<b>Minimum Street Line Setback</b>	75'	Vacant Land	87'±
<b>Minimum Lot Line Setback</b>	30'	Vacant Land	>30' (See Waiver List Under Section 9.8.5)
<b>District Boundary Line Setback</b>	50'	Vacant Land	>50'
<b>Sign Setback</b>	35'	Vacant Land	N/A
<b>Parking Area Setback</b>	30'	Vacant Land	> 30'
<b>Maximum Building Height</b>	35'	Vacant Land	Waiver Requested (see building height table below)
<b>Maximum Building Coverage</b>	20%	Vacant Land	< 20% (See Building Coverage Tabulation Chart Below)

**Table 1 – Table of Dimensional Requirements (Lenox Zoning Bylaw)**

**Building Height Table**

Building Type	Building Number	Building Height (feet)
Clubhouse	1	25.6
Type A	3	38.6
Type A	5	40.7
Type A	9	40.7
Type B	4	39.7
Type B	6	39.9
Type B	8	37.8

Type C	10	42.1
Type C	11	43.3
Type D	2	38.2
Type D	7	37.2

### Building Coverage Tabulation Chart

Land Use	Square Footage	Total Site Percentage	Open Space Percentage
Open Space	753,472	82%	100%
Paved/Parking Areas	110,000	12%	15%
Building Coverage	32,428	4%	4%
Stormwater Management Areas	25,000	3%	3%
Slopes of > 20%	300,000	32%	40%

Pursuant to Section 5.2 of the Lenox Zoning Bylaw, multifamily dwellings are permitted within the C-3A Zoning District by a Special Permit from the Board of Appeals. A Site Plan Approval is required under Section 3.5 of the Zoning Bylaws.

### Property Overview

The parcel, Lenox Assessors Map 22 Lot 27, is located on the east side of Pittsfield Road (Route 7 & 20) and consists of approximately 40.49± acres. The parcel has approximately 832 feet of frontage on Pittsfield Road and is currently undeveloped and wooded. Land use of this parcel is Commercial (C-3A) and Residential (R-1A). The surrounding neighborhood is commercial (Trattoria Restaurant to the North and Days Inn to the South) and residential (to the West across Route 7 and Southeast). To the East is mostly woodland extending to East Street.

According to FEMA Flood Panels 250029 0002 B dated July 5, 1982, no portion of the property is located within the 100-year floodplain.

The site is not within a Natural Heritage & Endangered Species Program area of Estimated or Priority Habitat and no Potential or Certified Vernal Pools are found on the property.

A small portion of the project will be located within the buffer zone of an area subject to the Wetlands Protection Act. As such, a permit will be required from the Conservation Commission. The areas are located immediately adjacent to Route 7/20 at the curb cut. There is no practical alternative for the curb cut and no alternative to access the site due to very steep slopes/embankments and ledge conditions.

### General Overview of Proposed Project

The proposed project will be an affordable housing complex with construction of 10 new residential structures and a community building with associated parking and infrastructure. The proposed project will consist of the following:

- \* 10 townhome buildings consisting of a mix of 1 BR, 2 BR, and 3 BR units totaling 68 units:
  - 23 1 BR units
  - 38 2 BR units

- 73 BR units
- Total of 120 bedrooms
- \* A community building
- \* Parking area and infrastructure

The residential units will be clustered, retaining large areas of wooded open space, and will be well screened from adjacent areas.

### **Access**

Access to the project will be from a 22' wide paved road off of Pittsfield Road. Proposed road will be approximately 1,520 feet long (from entrance and around loop) x 22 feet wide loop road with cape cod berm (curbing). Road will have a maximum grade of 10%.

### **Parking**

Section 7.1 of the Lenox Zoning Bylaw establishes the off-street parking requirements: 2 spaces for each dwelling unit. The required number of parking spaces is calculated as follows:

#### **Required Parking:**

- Dwelling units: 2 parking spaces per unit x 68 units = 136 spaces

TOTAL REQUIRED PARKING: 136 spaces

#### **Proposed Parking:**

- Dwelling units: 1.5 spaces per unit x 68 units = 99 spaces

TOTAL PROVIDED PARKING: 99 spaces (including HCP spaces)

The total number of spaces required by the Lenox Zoning Bylaw is 136 spaces.

The applicant is proposing 99 spaces based on demand from past development and their experience with similar projects. Parking will be mixed parallel parking and head-in spaces along the road and one parking lot near the community building.

### **Utilities**

#### **Electric/Telephone/Cable**

New electric, telephone and cable TV wiring will be installed underground in accordance with the Site Plan Standards of the Town. Electric transformer and service pedestals will be above ground, located, as practical, and screened as necessary.

#### **Water/Sewer**

The facility is served by municipal water and sewer. Existing 8" municipal water main is located along the frontage of the property, along the westerly property line, within an existing easement. Fire flow tests are required to confirm adequate pressure and flow for the facility. Any pressure deficiencies will be handled by installation of water booster pump(s).

Discussions with Town of Lenox DPW indicate capacity limitations within the existing downstream sewer. Applicant will provide storage and off-peak discharge to the municipal system as required, to not overload



existing sewer system. Discussions with Town DPW are ongoing and related to this item. Any requirements to satisfy DPW discussions will be met.

The following is a summary of the proposed water/sewer usage at the project (based on 120 bedrooms at 110 GPD/bedroom):

	Daily Average	Maximum Daily
Proposed Usage (120 bedrooms)	6,600 GPD	13,200 GPD

The DPW is reviewing the potential need for the installation of off-peak storage of sewage needed to handle the increase flows. If off-peak storage is required, the applicant will comply. Applicant will be installing booster pump(s) within the community building to address known water pressure issues at this location.

#### **Fire Protection**

The applicant will work closely with the Town's Fire Chief to develop an adequate fire access plan and water supply. A new hydrant is proposed within the new development to aid in fire protection and the buildings will be sprinklered.

#### **Stormwater Management**

Drainage systems will meet or exceed the Town's Zoning Bylaw Section 5.4 Drainage and Erosion Control.

Stormwater mitigation measures are proposed for a full range of design storms: 2-year, 10-year, 25-year, and 100-year. These best management practices will remove suspended solids and treat water quality, infiltrate runoff from the roofs and parking areas, recharge groundwater, detain excess stormwater, discharge treated stormwater across the site in sheet mimicking the natural conditions and flow patterns. There will be no increase in the rate of runoff from the developed compared to existing conditions for all design-storm events. No piped connection is proposed municipal drainage system. Best management practices include:

- Catch basins with deep sumps.
- Constructed wetland and stormwater management areas.
- Subsurface stormwater infiltration chambers.
- Roof drainage discharged into underground infiltration galleries to recharge groundwater.
- Minimizing extent of sitework by clustering development.
- Operation and maintenance measures including parking lot sweeping and catch basin sump cleaning.

See attached Drainage Analysis Summary for additional information.

Erosion and sedimentation control measures will be implemented. Construction activities will be carried out in accordance with a detailed Stormwater Pollution Prevention Plan ("SWPPP") in compliance with US EPA Stormwater Construction General Permit requirements.

#### **Site Lighting & Signage**

Lighting infrastructure will be downward directional / shielded to prevent overflow at the property lines. Proposed lighting will conform to the Town lighting requirements.

**Solid Waste Disposal**

Solid waste will be disposed of by a private commercial hauler to the Resource Recovery Plant in Pittsfield or another state approved disposal facility. Dumpster locations are shown on the submitted plans.

**Traffic Impacts**

See attached Traffic Report prepared by Fuss & O'Neill. Recommendations, from the study, include a right hand and left-hand turning lane to exit the site. Also, repainting of the turning lanes for the southbound traffic within Route 7 will provide adequate maneuvering into the site. In discussions with MassDOT, they have said a northbound turning lane/widening is not required.

**Wetlands Protection Act**

A small portion of the project will be located within the buffer zone of an area subject to the Wetlands Protection Act. As such, a permit will be required from the Conservation Commission. The area is located immediately adjacent to Route 7/20 at the curb cut. There is no practical alternative for the curb cut and no alternative to access the site due to very steep slopes/embankments and ledge conditions.

**Waivers Requested**

See attached zoning conformance summary for list of waivers proposed.

**Special Permit Criteria**

*1. Community needs served by the proposal;*

Discussions with Lenox residents and officials have been very positive with respect to the addition of affordable housing to service a community need.

*2. Traffic flow and safety, including parking and loading;*

Traffic flow and safety has been analyzed by a qualified traffic consultant and all recommendations will be included in the project. Parking and loading areas conform to zoning requirements.

*3. Adequacy of utilities and other public services;*

Discussions with Lenox DPW have been positive, and any DPW requirements will be incorporated into the plans.

*4. Neighborhood character and social structures;*

Project, as designed, has large, wooded buffers to neighbors. Neighbors are predominantly commercial, and the project is located within the commercial zoning district.

*5. Impacts on the natural environment;*

Project, as designed, retains the majority of the property as wooded open space that will be used for passive recreation.

6. *Potential economic and fiscal impact to the Town, including impact on town services, tax base, and employment.*

Project will contribute to the tax base.

### **Site Plan Review Criteria**

1. *Protection of the abutting properties and community to minimize any detrimental use of the site.*

Project, as designed, aims to protect the abutting properties and community to minimize any detrimental use of the site.

2. *Convenience and safety of vehicular and pedestrian movement within the site and the relationship to adjoining ways and properties.*

Safety and convenience of vehicular and pedestrian movement within the site and to adjoining ways and properties has been discussed and carefully considered in the design of the project.

3. *Adequacy of the methods of disposal of sewage and refuse and the drainage of surface and subsurface water.*

Project, as designed, consists of adequate methods of sewage and refuse disposal and drainage of surface and subsurface water

4. *Adequate means of protecting wetlands, watersheds, aquifers, and well areas.*

The project has been designed to protect the wetlands, watersheds, etc. that are within the site.

5. *Provisions for off-street loading and unloading of vehicles incidental to the normal operation of the establishment, parking, lighting and internal traffic control.*

No off-street loading is required for this project.

6. *Provision of open space consistent with Town Open Space Plan Concepts.*

Project, as designed, has carefully taken into consideration the Town Open Space Plan Concepts.

7. *The natural landscape shall be preserved in its existing state insofar as practicable, by minimizing tree cutting, and soil removal or filling of the site. Any grade changes shall be in keeping with the general appearance of neighboring developed areas.*

Project, as designed, aim to preserve the natural landscape of the site, minimizing tree cutting, soil removal and filling, and designing the grading to be of similar appearance of the neighboring areas.

8. *Location and design shall not cause avoidable damage to wildlife habitats or corridors, or to any plant species listed as endangered, threatened or of special concern by the Massachusetts Natural Heritage Program, or to any tree exceeding 24 inches trunk diameter four and a half (4 1/2) feet above grade. Applicants must submit documentation to the SPGA of having consulted with the Conservation Commission and the MA NHP regarding these considerations, and that the proposed site either contains no such habitats or materials or that all feasible efforts to avoid, minimize or*

*compensate for damage have been reflected in the proposal.*

A Notice of Intent is being filed with the Lenox Conservation Commission, and all applicable regulations, especially regarding endangered species, will be followed. The project, as proposed, will utilize all feasible efforts to avoid, minimize, or compensate for any damage.

9. *The layout of design features, such as vegetative buffers, within developments which will integrate into the existing landscape.*

Project, as designed, will integrate the proposed landscaping design into the existing landscape.

10. *Consistency of the proposed development with the Town Master Plan Concepts.*

The project is in harmony with the Town Master Plan Concepts, notably with the Housing goals regarding increasing affordable housing options to welcome new residents of all backgrounds to the Town of Lenox.

11. *Compliance with the provision of Massachusetts General Laws, Chapter 40A and 41A, the rules and regulations of state and federal agencies and the Bylaw of the Town of Lenox.*

The project is in compliance with M.G.L. Chapter 40A and 41A, the rules and regulations of state and federal agencies, and the Town of Lenox Bylaws.

### **Summary and Conclusion**

The development of the Pennrose parcel is in harmony with neighboring properties. The proposed use will be setback from the property line and screened in accordance with zoning regulations.

The proposed municipal utility connections will be designed to accommodate additional water, sewer, and drainage flows. The internal water and sewer systems will be tied into the existing municipal connections. New drainage infrastructure is proposed to mitigate stormwater flows. Fire protection improvements are proposed in the form of new hydrants and water mains.

Lighting infrastructure will be downward directional and shielded to prevent overflow at the property lines.

No impacts are proposed to wetland areas, and Conservation Commission approval will be requested for work within the buffer zone.

Compliance with both the letter and the spirit of the zoning bylaws is demonstrated by this Narrative and Municipal Impact Report for the proposed project.

## FEATURES

- IDA Dark Sky Compliant, No Up-light configuration
- Elegant form factor blended with Performance Optics
- Integral NEMA 3R Enclosure
- Dual receptacle power panel
- PA System capability
- Bluetooth® enabled RGBW accent



NU configurations in 3000K and warmer CCTs only

## CONTROL TECHNOLOGY



## SPECIFICATIONS

### CONSTRUCTION

#### HOUSING:

- Castings are low copper aluminum alloy die-cast
- Gaskets are molded silicone to prevent harmful ingress to the lamp and driver compartments
- IP65 rated

#### SHAFT:

- Aluminum shaft(s) is .125" thick extruded aluminum 6061 alloy
- Concrete shaft(s) conforms to current specifications for "Portland Cement" ASTM C150, Type I or II. Aggregates shall meet current requirements of "Specifications for Concrete Aggregates," ASTM C33. Water shall be clean and free from deleterious amounts of silt, oil, acids, alkalies or organic materials. Wire for reinforcement shall conform to ASTM A185. Steel for lugs and plates shall conform to ASTM A36, or A283 grade D
- Concrete shaft(s) is medium sand-blasted with anti-graffiti sealer and material color shall be integral to the concrete mix
- Concrete shaft(s) is cured to allow for completion of the hydration process, and result in a 28 day compressive strength of not less than 4,500 psi
- Concrete shaft(s) is cast from fiberglass molds used to insure uniform parts. Mold parting lines may be slightly visible in finished parts

### OPTICS

- LEDs mount to a metal printed circuit board assembly (MCPCB)
- Optical lenses are clear injection molded PMMA acrylic
- U0 configurations have an optically clear flat tempered glass lens, all other configurations have either an optically clear or high transmission diffused acrylic lens

### INSTALLATION

- Aluminum shaft configurations will have four 3/8" x 10" x 2" zinc plated L-hook anchor bolts shall to be installed with an included template. Nuts and washers are provided to level and secure the mounting plate to the anchor bolts
- Aluminum shaft configurations will have a mounting plate and be able to be rotated 20° in either direction during installation for aiming adjustment
- Concrete shaft configurations will have four steel mounting tabs for installation on four 1/2" x 10" x 2" zinc electroplated L-hook anchor bolts. Each anchor bolt is supplied with two nuts, two washers, and a rigid pressed board template
- Concrete shaft configurations are palletized with adequate hold-downs to prevent load movement in transit
- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury

# Pavilion™



## RELATED PRODUCTS

Pavilion Square      Pavilion Round  
Impact Rated

### ELECTRICAL

- Universal voltage, 120 through 277V with a ±10% tolerance. Driver is Underwriters Laboratories listed
- High voltage configurations, 208-277, 347/480. Driver is Underwriters Laboratories listed
- "Thermal Shield", secondary side, thermistor provides protection for the sustainable life of LED module and electronic components
- Drivers are greater than a 0.9 power factor, less than 20% harmonic distortion, and be suitable for operation in -40°C to 40°C ambient environments
- Luminaire is capable of operating at 100% brightness in a 40°C environment. Both driver and optical array have integral thermal protection that will dim the luminaire upon detection of temperatures in excess of 85°C

(Specifications continued on page 3)

KEY DATA	
Lumen Range	397–2350
Wattage Range	14–22
Efficacy Range (LPW)	29–108
Reported Life (Hours)	L70/60,000

## ORDERING GUIDE

Example: PA7R-FT-NU-1-12L-010-5K7-24A-BLS-UNV-EM

CATALOG #

### HOUSING

PA7R							
Model	Top	Optics		Distribution		Light Engine <sup>13</sup>	
PA7R Pavilion 7" Ø Round	FT <sup>1</sup> Flat Top CT <sup>1</sup> Crowned Top	NU	No Up-light	1	Type I	12L-010-AMB <sup>11</sup>	14W, Monochromatic Amber
		CH	Clear Horizontal Lens	2	Type II	12L-010-3K7	14W (1000 nominal lm), 3000K, 70 CRI
		CL <sup>2</sup>	Clear Vertical Lens	3	Type III	12L-010-4K7	14W (1000 nominal lm), 4000K, 70 CRI
		DL <sup>2,3</sup>	Diffuse Vertical Lens	3HS	Type III + House side shield	12L-010-5K7	14W (1000 nominal lm), 5000K, 70 CRI
		LV	Louvers	4	Type IV	12L-020-AMB <sup>11</sup>	22W, Monochromatic Amber
		GC	Grille with clear vertical lens	5	Type V	12L-020-3K7	22W (2000 nominal lm), 3000K, 70 CRI
		GD <sup>3</sup>	Grille with diffuse vertical lens			12L-020-4K7	22W (2000 nominal lm), 4000K, 70 CRI
						12L-020-5K7	22W (2000 nominal lm), 5000K, 70 CRI
Consult factory for other CCTs (2700K - 6500K) and CRIs (80, 90 CRI)							

Body	Fixture Finish	Control Options	Voltage	Options
24A 24" OAH, Aluminum	BLS Black Gloss Smooth	MW <sup>6</sup> Motion sensing (50% dim, 100% output upon detection)	UNV 120-277V	EM <sup>8</sup> Battery Backup
42A 42" OAH, Aluminum	BLT Black Matte Textured	NXW NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	120 <sup>7</sup> 120V	LR <sup>9</sup> Luminous Accent
42BR-C 42" OAH, Brown Concrete	DBS Dark Bronze Gloss Smooth		277 <sup>7</sup> 208-277V	SF <sup>10</sup> Single Fuse
42CH-C 42" OAH, Charcoal Concrete	DBT Dark Bronze Matte Textured		347 <sup>7</sup> 347V	DF <sup>10</sup> Double Fuse
42NG-C 42" OAH, Natural Gray Concrete	GTT Graphite Matte Textured		480 <sup>7</sup> 480V	
42WH-C 42" OAH, White Concrete	LGS Light Grey Gloss Smooth			
42A-ROP <sup>4</sup> 42" OAH, Aluminum + Dual Receptacle Outlet Panel and Cover	LGT Light Grey Matte Textured			
42A-ROP-L <sup>4</sup> 42" OAH, Aluminum + Dual Receptacle Outlet Panel and Locking Cover	PSS Platinum Silver Gloss Smooth			
42A-2GEB 42" OAH, Aluminum + Integral Recessed 2 Gang Electrical Box	VGT Verde Green Matte Textured			
42A-SG3 42" OAH, Aluminum + Speaker Grille Enclosure for 3" Ø speaker	WHS White Gloss Smooth			
44A 44" Non-Impact Resistant OAH, Aluminum	WHT White Matte Textured			
44A-ROP 44" Non-Impact Resistant OAH, Aluminum + Dual Receptacle Outlet Panel and Cover	Color Option			
44A-ROP-L 44" Non-Impact Resistant OAH, Aluminum + Dual Receptacle Outlet Panel and Locking Cover	CC <sup>12</sup> Custom Color			
44A-2GEB 44" Non-Impact Resistant OAH, Aluminum + Integral Recessed 2 Gang Electrical Box				
44A-SG3 44" Non-Impact Resistant OAH, Aluminum + Speaker Grille Enclosure for 3" Ø speaker				
For Impact Rated 44" OAH Round Pavilion				

- Adds .6 / 15mm to OAH (over all height).
- CL and DL configurations shall be IK04
- Only Available with 1 Type I or 5 Type V distributions only.
- For GFCI/USB limited voltage to 120VAC only.
- 24"Ø typical coverage area, not available with CH.
- Dedicated input voltage, required for MW Motions sensing.
- 0°C min starting temperature, 90+ minute run time, output equivalent to 12L-010-#K7
- Adds +5 watts and 1" / 254mm to overall height.
- SF for 120, 277 and 347 input voltage, DF for 208, 240 and 480 input voltage.
- Turtle friendly
- Consult factory for custom color, marine and corrosive finish options
- 5-step MacAdam Ellipse Binning standard. Consult factory for 3-step MacAdam Ellipse Binning.

# PA7R

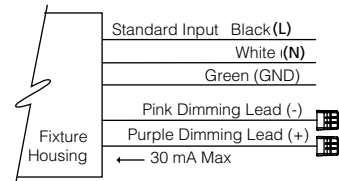
BOLLARD

## SPECIFICATIONS CONT'D

CATALOG #:

### CONTROLS

- Standard fixtures dimming range shall be from 10% to 100% and be compatible with 0-10V, user-defined, control devices



- Optional motion sensor shall be capable of detecting motion 360° around the bollard. When no motion is detected for the specified time, the sensor wattage to factory preset level, reducing the light level accordingly. When motion is detected by the sensor, the bollard shall return to full wattage and full light output. Please contact KIM Lighting if project requirements vary from standard configuration

### WIRELESS CONTROLS

#### BLUETOOTH®:

- The Integral module shall enable the adjustment of the Luminous Accent to dim or change color to the desired setting when paired with RGBW Remote App via cellular/tablet device
- The integral module shall be compatible with Bluetooth Low Energy (BLE) or Bluetooth® Smart mobile devices operating on iOS8 or Android Gingerbread operating systems or newer
- Mobile App, dimming range from 0% to 100% through the use of RGBW app (available on IOS and Android)
- Color selection and adjustment
- Camera function for color matching
- Intensity slider for dimming/ramping up
- Save and rename up to 10 presets
- Group and rename fixtures
- Fixture is password protected, refer to instructions to set unique password

### DMX:

- 6 wires: Red (DMX+), Brown (DMX-), Yellow (DMX Ground), Black (Line Voltage), White (common), and Green (Ground)
- Single DMX universe with six slots/addresses of virtual control which are pre-programmed at the factory:
  - DMX slot/address 1 = red
  - DMX slot/address 2 = green
  - DMX slot/address 3 = blue
  - DMX slot/address 4 = white
- Fully DMX RDM compatible
- Mobile App specification in additional information section

### NX

- Luminaires enabled with NX Lighting Controls wireless radios create an intelligent mesh network with the interior controls. Groups are dimmed via an astronomical time clock and schedules can be updated at any time with the Bluetooth® commissioning app. Contact factory for more information

### OPTIONAL BACKUP BATTERY

- Integral battery backup provides emergency path of egress lighting for the required 90 minutes for 0°C ambient environments

### CAUTION:

- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury

### CERTIFICATIONS AND LISTINGS

- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- IP65 rated
- IEC 66262 Mechanical Impact Code IK10

- IDA approved, 3000K and warmer CCTs only
- RoHS compliant

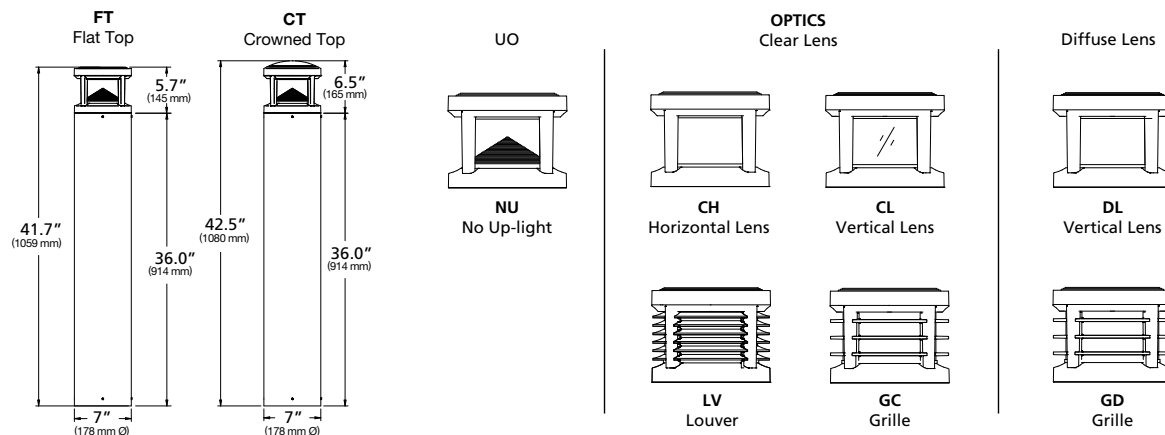
### WARRANTY

- 5 year warranty
- See HLI Standard Warranty for additional information



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## DIMENSIONS



## DELIVERED LUMENS

Drive Current	LEDs #	Nominal Watts	Nominal Lumens	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
550mA	12L	22	2,000	NU UO Optics	1	1044	0	0	0	48	1136	0	0	0	52	1164	0	0	0	54
					2	1199	0	0	0	55	1305	0	0	0	60	1336	0	0	0	62
					3	1128	0	0	1	52	1228	0	0	1	57	1257	0	0	1	58
					3HS	953	0	0	0	44	1037	0	0	0	48	1062	0	0	1	49
					4	1362	0	0	0	63	1482	0	0	1	68	1518	0	0	1	70
					5	1265	1	0	0	58	1377	1	0	0	63	1410	1	0	0	65
				CH Clear Horizontal Lens	1	1778	0	3	1	82	1935	0	3	1	89	1981	0	3	1	91
					2	1711	1	3	1	79	1862	1	3	1	86	1906	1	3	1	88
					3	1643	1	3	1	76	1788	1	3	1	82	1831	1	3	1	84
					3HS	1443	0	3	1	66	1570	0	3	1	72	1608	0	3	1	74
					4	1731	0	3	1	80	1884	0	3	1	87	1929	0	3	1	89
					5	1841	1	3	1	85	2003	1	3	1	92	2051	1	3	1	95
				CL Clear Vertical Lens	1	1852	0	4	1	85	2016	1	4	1	93	2064	1	4	1	95
					2	1984	1	3	1	91	2159	1	3	1	99	2211	1	3	1	102
					3	2062	1	3	1	95	2244	1	3	1	103	2298	1	3	1	106
					3HS	1665	0	3	1	77	1811	0	3	1	83	1855	0	3	1	85
					4	2055	0	3	1	95	2236	1	3	1	103	2290	1	3	1	106
					5	2109	1	3	1	97	2295	1	3	1	106	2350	1	3	1	108



### DELIVERED LUMENS (CONTINUED)

Drive Current	LEDs #	Nominal Watts	Nominal Lumens	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
550mA	12L	22	2,000	DL Diffused Vertical Lens	1	1639	1	3	2	76	1783	1	3	2	82	1826	1	3	2	84
					5	1721	1	3	2	79	1873	1	3	2	86	1918	1	3	2	88
				LV External Louvers	1	746	0	3	1	34	811	1	3	1	37	831	1	3	1	38
					2	814	1	3	1	37	885	1	3	1	41	907	1	3	1	42
					3	838	1	3	1	39	912	1	3	1	42	934	1	3	1	43
					3HS	605	0	3	1	28	658	0	3	1	30	674	0	3	1	31
					4	879	0	3	1	41	956	1	3	1	44	979	1	3	1	45
					5	888	1	3	1	41	966	1	3	1	45	989	1	3	1	46
				GC Grill with Clear Lens	1	1038	0	3	1	48	1130	0	3	1	52	1157	0	3	1	53
					2	1021	0	3	1	47	1111	1	3	1	51	1138	1	3	1	52
					3	1024	0	3	1	47	1114	1	3	1	51	1141	1	3	1	53
					3HS	854	0	3	1	39	930	0	3	1	43	952	0	3	1	44
					4	1109	0	3	1	51	1207	0	3	1	56	1236	0	3	1	57
					5	1037	1	3	1	48	1128	1	3	1	52	1155	1	3	1	53
				GD Grill with Diffused Lens	1	1036	0	3	1	48	1127	1	3	2	52	1154	1	3	2	53
					5	953	1	3	1	44	1037	1	3	1	48	1062	1	3	1	49

**DELIVERED LUMENS (CONTINUED)**

Drive Current	LEDs #	Nominal Watts	Nominal Lumens	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
350mA	12L	14	1,000	NU U0 Optics	1	749	0	0	0	54	815	0	0	0	59	835	0	0	0	60
					2	860	0	0	0	62	936	0	0	0	67	958	0	0	0	69
					3	809	0	0	0	58	881	0	0	0	63	902	0	0	0	65
					3HS	684	0	0	0	49	744	0	0	0	53	762	0	0	0	55
					4	977	0	0	0	70	1063	0	0	0	76	1089	0	0	0	78
					5	908	1	0	0	65	988	1	0	0	71	1011	1	0	0	73
				CH Clear Horizontal Lens	1	1184	0	3	1	85	1288	0	3	1	92	1319	0	3	1	95
					2	1139	0	3	1	82	1239	0	3	1	89	1269	0	3	1	91
					3	1094	0	3	1	79	1190	0	3	1	85	1219	0	3	1	87
					3HS	960	0	3	1	69	1045	0	3	1	75	1070	0	3	1	77
					4	1152	0	3	1	83	1254	0	3	1	90	1284	0	3	1	92
					5	1225	1	3	1	88	1333	1	3	1	96	1365	1	3	1	98
				CL Clear Vertical Lens	1	1146	0	3	1	82	1247	0	3	1	90	1277	0	3	1	92
					2	1228	0	3	1	88	1336	1	3	1	96	1368	1	3	1	98
					3	1276	0	3	1	92	1389	1	3	1	100	1422	1	3	1	102
					3HS	1030	0	3	1	74	1121	0	3	1	80	1148	0	3	1	82
					4	1272	0	3	1	91	1384	0	3	1	99	1417	0	3	1	102
					5	1305	1	3	1	94	1420	1	3	1	102	1454	1	3	1	104
				DL Diffused Vertical Lens	1	1086	0	3	1	78	1182	0	3	1	85	1210	0	3	1	87
					5	1141	1	3	1	82	1241	1	3	1	89	1271	1	3	1	91

### DELIVERED LUMENS (CONTINUED)

Drive Current	LEDs #	Nominal Watts	Nominal Lumens	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
350mA	12L	14	1,000	LV External Louvers	1	489	0	3	1	35	533	0	3	1	38	545	0	3	1	39
					2	534	0	3	1	38	581	0	3	1	42	595	0	3	1	43
					3	550	0	3	1	40	599	0	3	1	43	613	0	3	1	44
					3HS	397	0	3	1	29	432	0	3	1	31	442	0	3	1	32
					4	577	0	3	1	41	628	0	3	1	45	643	0	3	1	46
					5	583	1	3	1	42	634	1	3	1	46	649	1	3	1	47
				GC Grill with Clear Lens	1	843	0	3	1	61	917	0	3	1	66	939	0	3	1	67
					2	829	0	3	1	60	903	0	3	1	65	924	0	3	1	66
					3	831	0	3	1	60	905	0	3	1	65	926	0	3	1	67
					3HS	694	0	3	1	50	755	0	3	1	54	773	0	3	1	56
					4	901	0	3	1	65	980	0	3	1	70	1004	0	3	1	72
					5	842	1	3	1	60	916	1	3	1	66	938	1	3	1	67
				GD Grill with Diffused Lens	1	728	0	3	1	52	792	0	3	1	57	811	0	3	1	58
					5	782	1	3	1	56	851	1	3	1	61	872	1	3	1	63

# PA7R

BOLLARD

## PHOTOMETRY

PA7R-CH1-12L-020-4K7

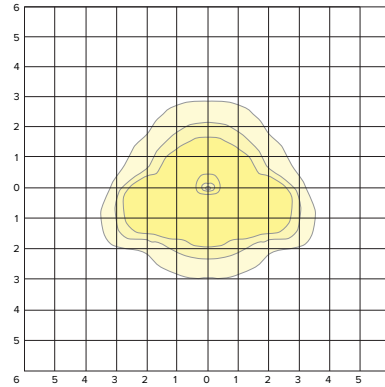
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1935
Watts	22
Efficacy	88.0
IES Type	II
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1132	81.8%
Downward House Side	251	18.1%
Downward Total	1384	71%
Upward Street Side	348	63%
Upward House Side	205	37%
Upward Total	553	29%
Total Flux	1937	100%

### ISOFOOT CANDLE PLOT



PA7R-CH2-12L-020-4K7

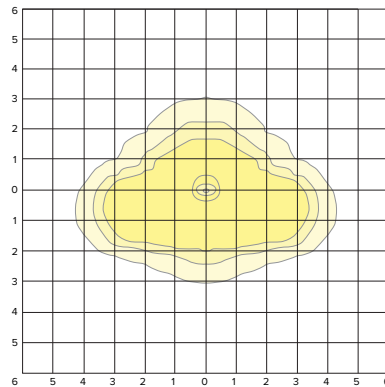
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1862
Watts	22
Efficacy	85.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1176	78.7%
Downward House Side	319	21.3%
Downward Total	1494	80%
Upward Street Side	220	60%
Upward House Side	149	40%
Upward Total	369	20%
Total Flux	1863	100%

### ISOFOOT CANDLE PLOT



PA7R-CH3-12L-020-4K7

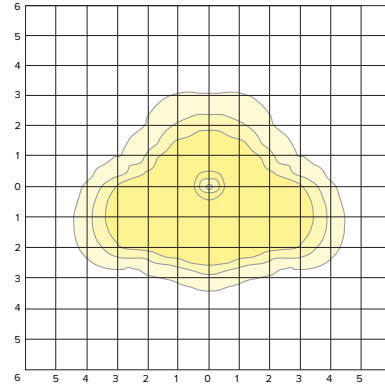
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1788
Watts	21.76
Efficacy	82.0
IES Type	III
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1184	80.3%
Downward House Side	290	19.7%
Downward Total	1474	82%
Upward Street Side	185	59%
Upward House Side	130	41%
Upward Total	315	18%
Total Flux	1789	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-CH3HS-12L-020-4K7

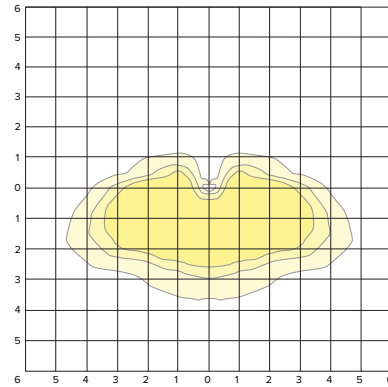
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1570
Watts	21.64
Efficacy	73.0
IES Type	III
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1187	92.0%
Downward House Side	103	8.0%
Downward Total	1290	82%
Upward Street Side	230	82%
Upward House Side	51	18%
Upward Total	282	18%
Total Flux	1571	100%

### ISOFOOT CANDLE PLOT



PA7R-CH4-12L-020-4K7

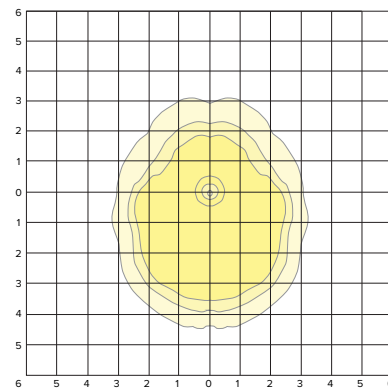
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1884
Watts	21.73
Efficacy	87.0
IES Type	IV
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1316	84.0%
Downward House Side	250	16.0%
Downward Total	1566	83%
Upward Street Side	184	58%
Upward House Side	136	42%
Upward Total	319	17%
Total Flux	1885	100%

### ISOFOOT CANDLE PLOT



PA7R-CH5-12L-020-4K7

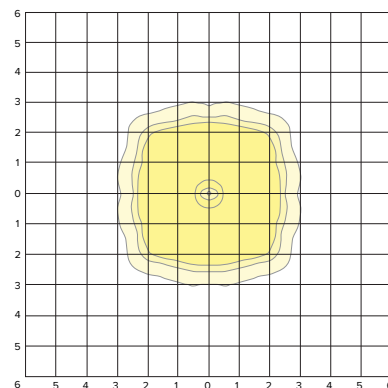
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2003
Watts	21.73
Efficacy	92.0
IES Type	VS
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	825	50.0%
Downward House Side	825	50.0%
Downward Total	1650	82%
Upward Street Side	177	50%
Upward House Side	177	50%
Upward Total	354	18%
Total Flux	2004	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

### PA7R-CL1-12L-020-4K7

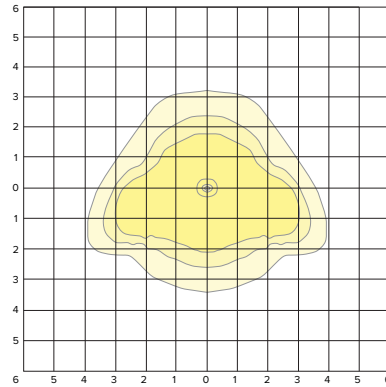
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2016
Watts	21.7
Efficacy	93.0
IES Type	II
BUG Rating	B1-U4-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1078	77.5%
Downward House Side	312	22.5%
Downward Total	1390	69%
Upward Street Side	373	59%
Upward House Side	254	41%
Upward Total	627	31%
Total Flux	2017	100%

#### ISOFOOT CANDLE PLOT



### PA7R-CL2-12L-020-4K7

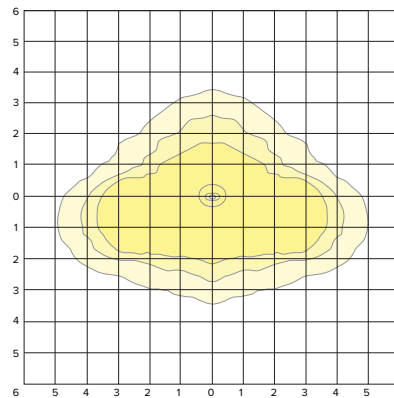
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2159
Watts	21.69
Efficacy	100.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1325	77.5%
Downward House Side	384	22.5%
Downward Total	1709	79%
Upward Street Side	258	57%
Upward House Side	193	43%
Upward Total	451	21%
Total Flux	2160	100%

#### ISOFOOT CANDLE PLOT



### PA7R-CL3-12L-020-4K7

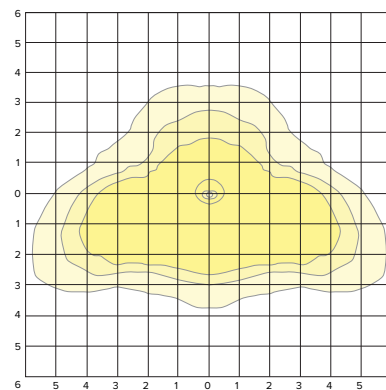
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2244
Watts	21.72
Efficacy	103.0
IES Type	III
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1472	80.0%
Downward House Side	367	20.0%
Downward Total	1839	82%
Upward Street Side	231	57%
Upward House Side	175	43%
Upward Total	406	18%
Total Flux	2245	100%

#### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-CL3HS-12L-020-4K7

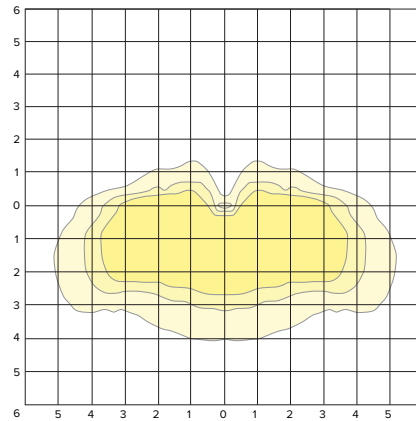
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1811
Watts	21.7
Efficacy	83.0
IES Type	III
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1361	92.0%
Downward House Side	118	8.0%
Downward Total	1479	82%
Upward Street Side	277	83%
Upward House Side	56	17%
Upward Total	334	18%
Total Flux	1812	100%

### ISOFOOT CANDLE PLOT



PA7R-CL4-12L-020-4K7

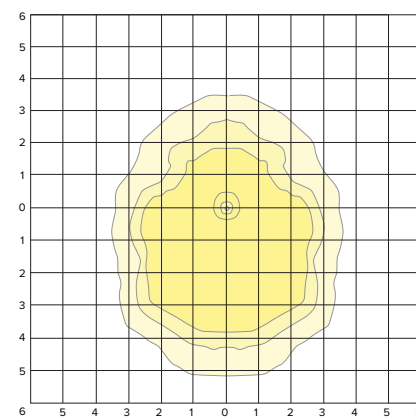
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2236
Watts	21.71
Efficacy	103.0
IES Type	IV
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1552	84.9%
Downward House Side	275	15.0%
Downward Total	1827	82%
Upward Street Side	230	56%
Upward House Side	180	44%
Upward Total	410	18%
Total Flux	2237	100%

### ISOFOOT CANDLE PLOT



PA7R-CL5-12L-020-4K7

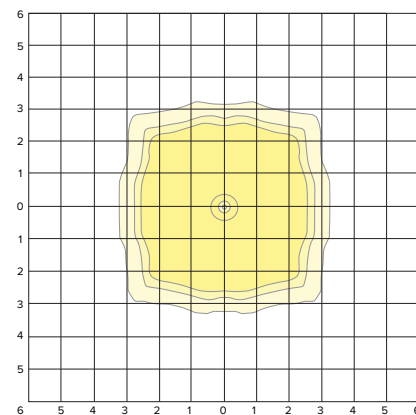
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	2296
Watts	21.75
Efficacy	106.0
IES Type	VS
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	937	50.0%
Downward House Side	937	50.0%
Downward Total	1874	82%
Upward Street Side	211	50%
Upward House Side	211	50%
Upward Total	422	18%
Total Flux	2296	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-DL1-12L-020-4K7

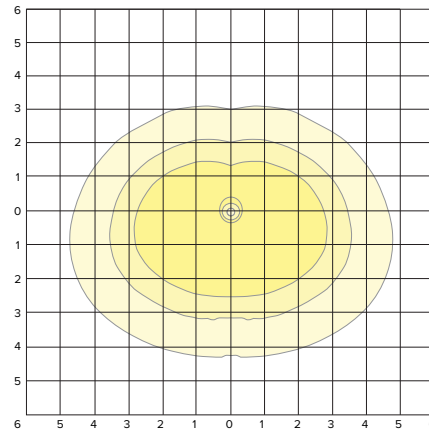
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1783
Watts	21.74
Efficacy	82.0
IES Type	IV
BUG Rating	B1-U3-G2
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	746	66.2%
Downward House Side	381	33.8%
Downward Total	1127	63%
Upward Street Side	408	62%
Upward House Side	248	38%
Upward Total	657	37%
Total Flux	1784	100%

### ISOFOOT CANDLE PLOT



PA7R-DL5-12L-020-4K7

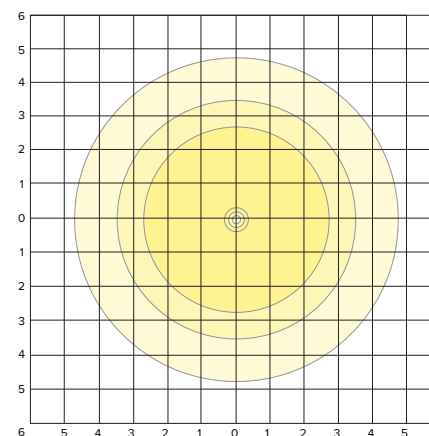
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1873
Watts	21.75
Efficacy	86.0
IES Type	VS
BUG Rating	B1-U3-G2
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	656	50.0%
Downward House Side	656	50.0%
Downward Total	1313	70%
Upward Street Side	281	50%
Upward House Side	281	50%
Upward Total	561	30%
Total Flux	1874	100%

### ISOFOOT CANDLE PLOT



PA7R-GC1-12L-020-4K7

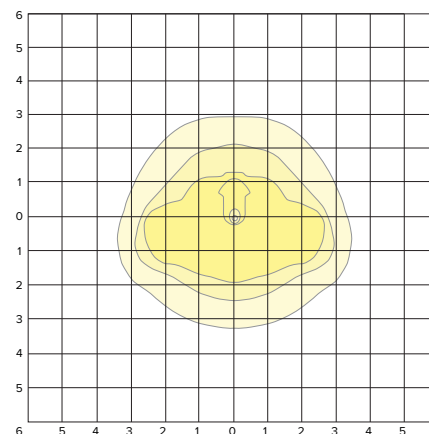
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1130
Watts	21.73
Efficacy	52.0
IES Type	II
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	434	67.6%
Downward House Side	208	32.4%
Downward Total	642	57%
Upward Street Side	298	61%
Upward House Side	191	39%
Upward Total	489	43%
Total Flux	1131	100%

### ISOFOOT CANDLE PLOT





# PA7R

BOLLARD

## PHOTOMETRY

### PA7R-GC2-12L-020-4K7

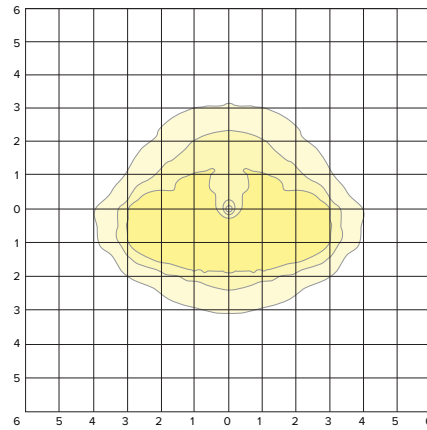
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1111
Watts	21.59
Efficacy	51.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	488	68.3%
Downward House Side	227	31.7%
Downward Total	715	64%
Upward Street Side	238	60%
Upward House Side	159	40%
Upward Total	397	36%
Total Flux	1112	100%

#### ISOFOOT CANDLE PLOT



### PA7R-GC3-12L-020-4K7

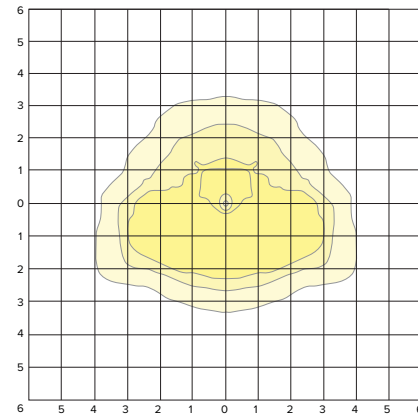
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1114
Watts	21.7
Efficacy	51.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	513	69.8%
Downward House Side	221	30.1%
Downward Total	735	66%
Upward Street Side	234	62%
Upward House Side	146	38%
Upward Total	380	34%
Total Flux	1114	100%

#### ISOFOOT CANDLE PLOT



### PA7R-GC3HS-12L-020-4K7

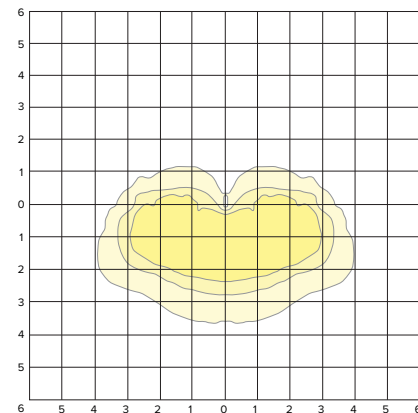
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	930
Watts	21.59
Efficacy	43.0
IES Type	III
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	533	87.1%
Downward House Side	79	12.8%
Downward Total	612	66%
Upward Street Side	265	83%
Upward House Side	54	17%
Upward Total	319	34%
Total Flux	931	100%

#### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-GC4-12L-020-4K7

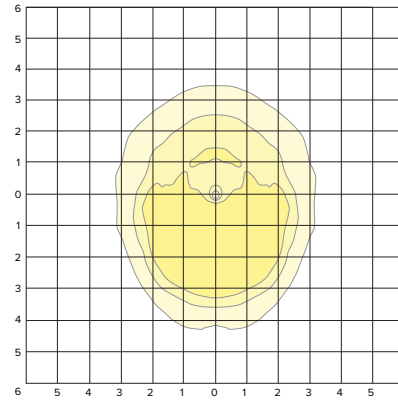
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1207
Watts	21.59
Efficacy	56.0
IES Type	IV
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	591	74.2%
Downward House Side	205	25.8%
Downward Total	796	66%
Upward Street Side	267	65%
Upward House Side	146	35%
Upward Total	412	34%
Total Flux	1208	100%

### ISOFOOT CANDLE PLOT



PA7R-GC5-12L-020-4K7

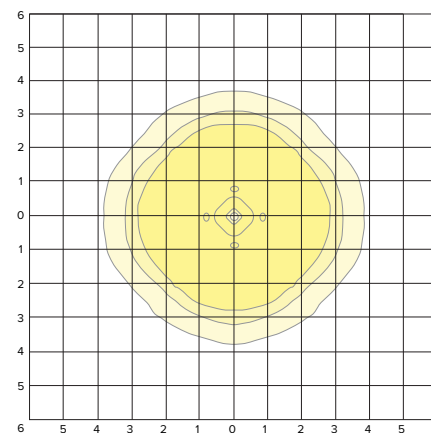
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1128
Watts	21.59
Efficacy	52.0
IES Type	VS
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	382	50.0%
Downward House Side	382	50.0%
Downward Total	764	68%
Upward Street Side	183	50%
Upward House Side	183	50%
Upward Total	365	32%
Total Flux	1129	100%

### ISOFOOT CANDLE PLOT



PA7R-GD1-12L-020-4K7

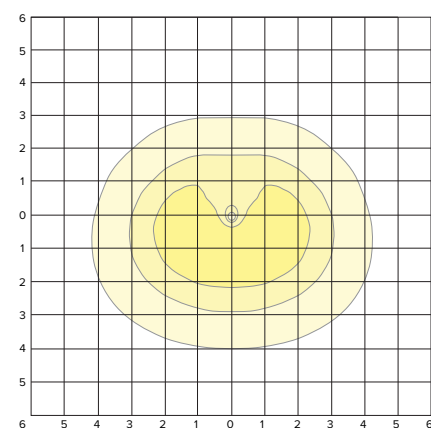
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1127
Watts	21.71
Efficacy	51.9
IES Type	IV
BUG Rating	B1-U3-G2
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	407	62.8%
Downward House Side	241	37.2%
Downward Total	648	57%
Upward Street Side	287	60%
Upward House Side	193	40%
Upward Total	479	43%
Total Flux	1127	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-GD5-12L-020-4K7

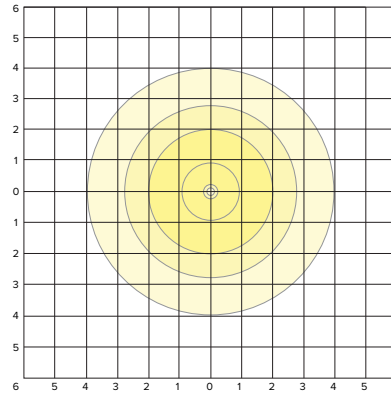
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1037
Watts	21.6
Efficacy	48.0
IES Type	VS
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	309	50.0%
Downward House Side	309	50.0%
Downward Total	618	60%
Upward Street Side	210	50%
Upward House Side	210	50%
Upward Total	420	40%
Total Flux	1038	100%

### ISOFOOT CANDLE PLOT



PA7R-LV1-12L-020-4K7

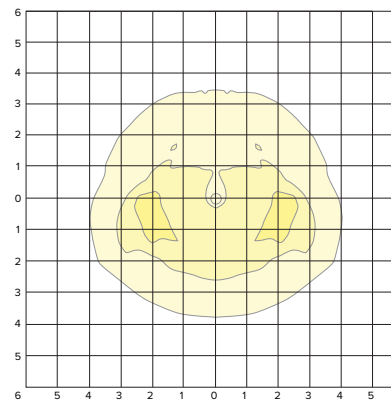
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	811
Watts	21.73
Efficacy	37.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	303	57.7%
Downward House Side	222	42.2%
Downward Total	526	65%
Upward Street Side	160	56%
Upward House Side	126	44%
Upward Total	286	35%
Total Flux	812	100%

### ISOFOOT CANDLE PLOT



PA7R-LV2-12L-020-4K7

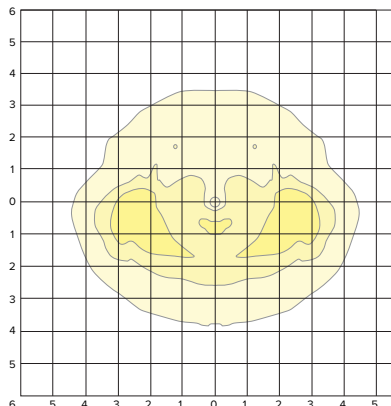
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	885
Watts	21.68
Efficacy	41.0
IES Type	II
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	378	61.9%
Downward House Side	233	38.1%
Downward Total	611	69%
Upward Street Side	158	58%
Upward House Side	116	42%
Upward Total	274	31%
Total Flux	885	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-LV3-12L-020-4K7

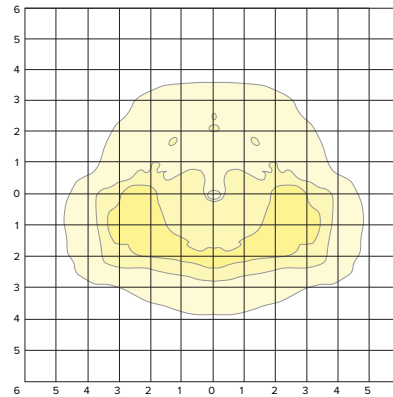
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	912
Watts	21.69
Efficacy	42.0
IES Type	III
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	414	63.7%
Downward House Side	233	35.8%
Downward Total	650	71%
Upward Street Side	154	59%
Upward House Side	109	41%
Upward Total	263	29%
Total Flux	913	100%

### ISOFOOT CANDLE PLOT



PA7R-LV3HS-12L-020-4K7

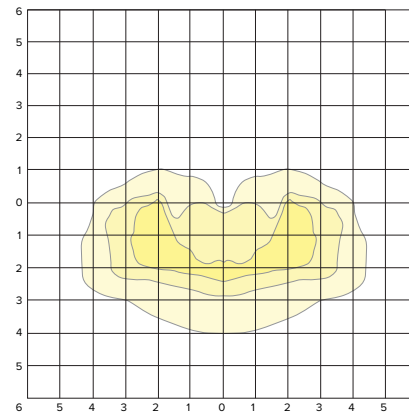
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	658
Watts	21.69
Efficacy	30.0
IES Type	III
BUG Rating	B0-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	383	82.5%
Downward House Side	81	17.5%
Downward Total	464	71%
Upward Street Side	155	80%
Upward House Side	39	20%
Upward Total	194	29%
Total Flux	658	100%

### ISOFOOT CANDLE PLOT



PA7R-LV4-12L-020-4K7

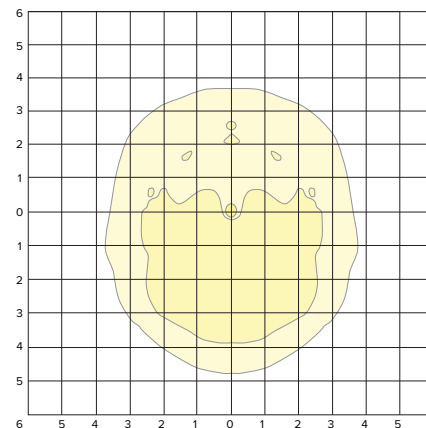
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	956
Watts	21.69
Efficacy	44.0
IES Type	IV
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	454	67.5%
Downward House Side	219	32.5%
Downward Total	673	70%
Upward Street Side	176	62%
Upward House Side	107	38%
Upward Total	283	30%
Total Flux	956	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

PA7R-LV5-12L-020-4K7

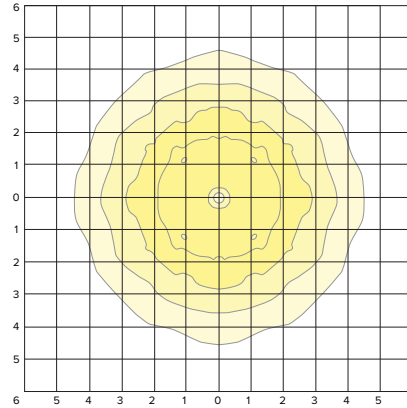
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	966
Watts	21.7
Efficacy	45.0
IES Type	VS
BUG Rating	B1-U3-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	354	50.0%
Downward House Side	354	50.0%
Downward Total	708	73%
Upward Street Side	129	50%
Upward House Side	129	50%
Upward Total	259	27%
Total Flux	967	100%

### ISOFOOT CANDLE PLOT



PA7R-NU1-12L-020-4K7

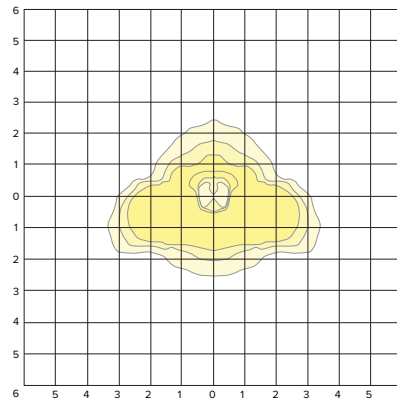
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1136
Watts	21.75
Efficacy	52.0
IES Type	I
BUG Rating	B0-U0-G0
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	986	86.7%
Downward House Side	151	13.3%
Downward Total	1137	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1137	100%

### ISOFOOT CANDLE PLOT



PA7R-NU2-12L-020-4K7

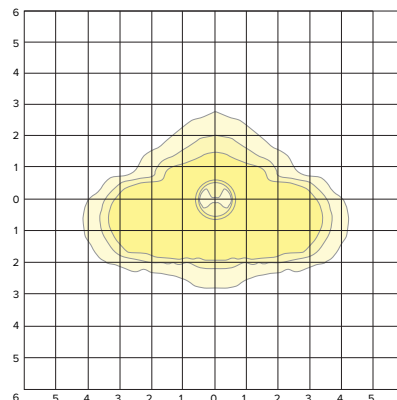
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1305
Watts	21.74
Efficacy	60.0
IES Type	II
BUG Rating	B0-U0-G0
Mounting Height	3.5 ft
Grid Scale	6 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1073	82.2%
Downward House Side	233	17.8%
Downward Total	1306	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1306	100%

### ISOFOOT CANDLE PLOT



# PA7R

BOLLARD

## PHOTOMETRY

### PA7R-NU3-12L-020-4K7

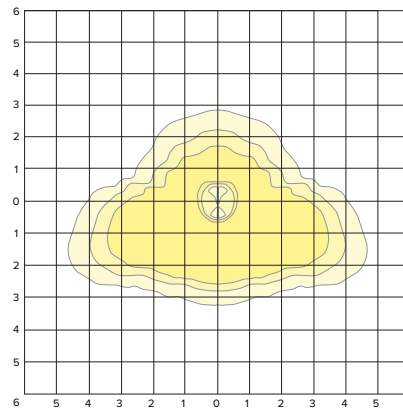
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1228
Watts	21.76
Efficacy	56.0
IES Type	III
BUG Rating	B0-U0-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1035	84.3%
Downward House Side	194	15.8%
Downward Total	1228	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1228	100%

#### ISOFOOT CANDLE PLOT



### PA7R-NU3HS-12L-020-4K7

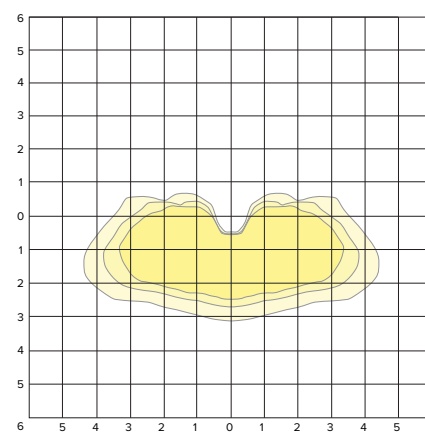
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1037
Watts	21.74
Efficacy	48.0
IES Type	III
BUG Rating	B0-U0-G0
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	987	95.1%
Downward House Side	51	4.9%
Downward Total	1038	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1038	100%

#### ISOFOOT CANDLE PLOT



### PA7R-NU4-12L-020-4K7

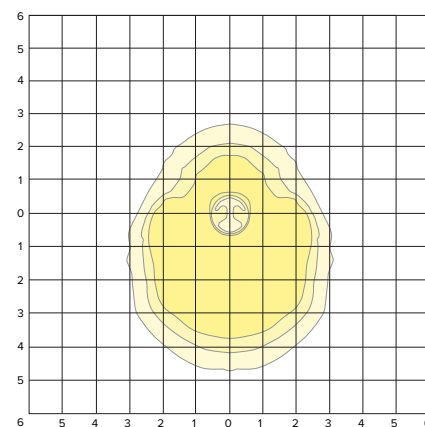
#### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1482
Watts	21.67
Efficacy	68.0
IES Type	IV
BUG Rating	B0-U0-G1
Mounting Height	3.5 ft
Grid Scale	6 ft

#### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	1318	88.9%
Downward House Side	164	11.1%
Downward Total	1483	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1483	100%

#### ISOFOOT CANDLE PLOT



PA7R

BOLLARD

PHOTOMETRY(CONTINUED)

PA7R-NU5-12L-020-4K7

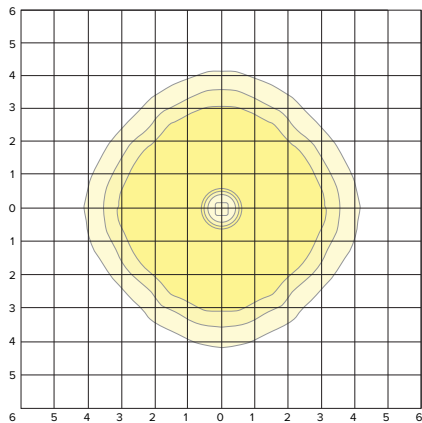
LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	1377
Watts	21.68
Efficacy	63.0
IES Type	VS
BUG Rating	B1-U0-G0
Mounting Height	3.5 ft
Grid Scale	6 ft

ZONAL LUMEN SUMMARY

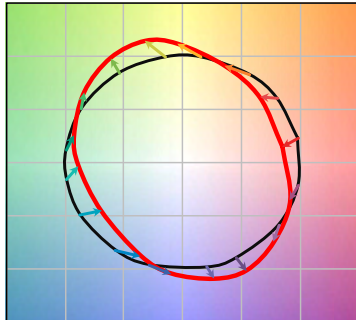
Zone	Lumens	% Luminaire
Downward Street Side	689	50.0%
Downward House Side	689	50.0%
Downward Total	1377	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	1377	100%

ISOFOOT CANDLE PLOT



## TM-30 DATA

### COLOR VECTOR GRAPHIC

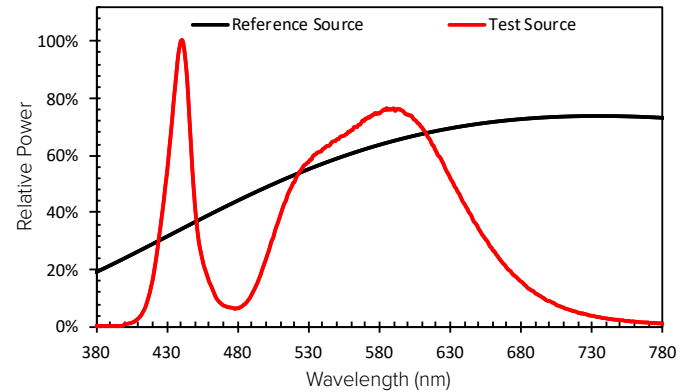


— Reference Illuminant — Test Source

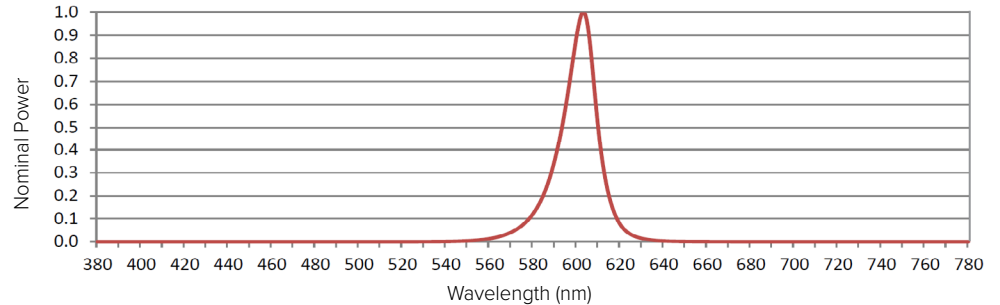
### TEST SOURCE

R <sub>f</sub>	68
R <sub>a</sub>	99
CCT(K)	3947
D <sub>uv</sub>	0.0004
x	0.3831
y	0.3793
CIE R <sub>a</sub>	72

### SPECTRAL POWER DISTRIBUTION COMPARISON



### AMBER SPECTRAL POWER DISTRIBUTION



## ELECTRICAL DATA

Electrical													Dimming				
# LED	System Watts	Drive Current	Line Voltage		Amps AC						Min. Power Factor	Max THD (%)	Dimming Range	Source current out of 0-10V		Absolute voltage range on 0-10V (+)	
			VAC	Hz	120	208	240	277	347	480				Min	Max	Min	Max
12	22	550mA	120-480	50/60	0.18	0.11	0.09	0.08	0.06	0.05	>0.9	20	10% to 100%	0mA	1mA	0V	10V
	14	350mA			0.12	0.07	0.06	0.05	0.04	0.03							

TM-21 Lifetime Calculation - Projected Lumen Maintenance (25°C / 77°C) & (40°C / 104°C)						
Hours	0	25,000	36,000	50,000	100,000	Reported L70
Projected Lumen Maintenance	100%	98%	97%	95%	90%	60khrs

CRI Lumen Multiplier 80 and 90 CRI		
CCT	80 CRI	90 CRI
2700K	0.859	0.655
3000K	0.9119	0.7033
3500K	0.906	0.732
4000K	0.8941	0.734
5000K	0.879	0.7712
Scaling factor of 5000K 70CRI lumen packages		



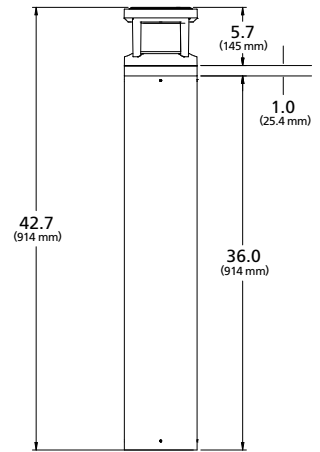
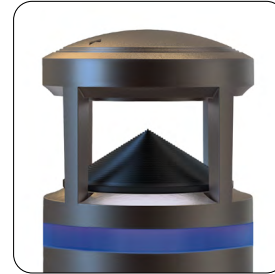
## ADDITIONAL INFORMATION

### LUMINOUS ACCENT:

- The Luminous Accent option adds an additional 1" / 25.4mm to the overall fixture height and may be controlled via wired DMX RDM or Bluetooth® wireless. The Luminous Accent shall be IK08.

### RGBW REMOTE APP

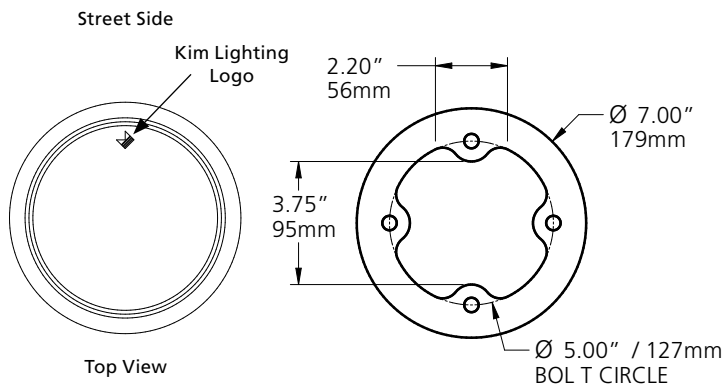
- The RGBW Remote application may be downloaded free of charge from the Apple App Store or Google Play.
- Color selection and adjustment.
- Camera function for color matching.
- Intensity slider for dimming/ramping up.
- Save and rename up to 10 presets.
- Group and rename fixtures.
- Fixture is password protected, refer to instructions to set unique password.



### MOUNTING

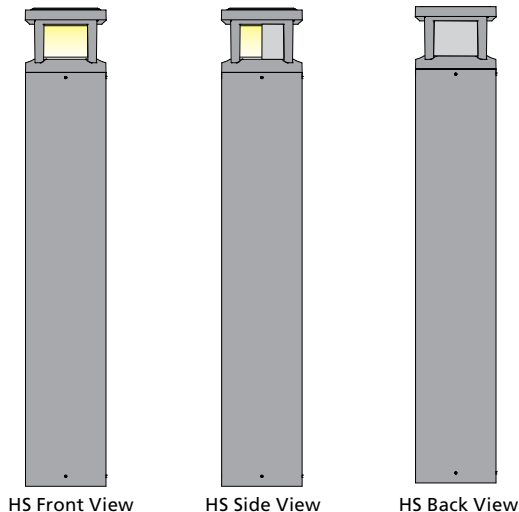
#### ALUMINUM BODY

- Once attached to base mounting plate, fixture may be rotated 20° in either direction and secured with set screws at base of the bollard body. KIM Lighting logo indicates 'street side' output.



### SHIELDING

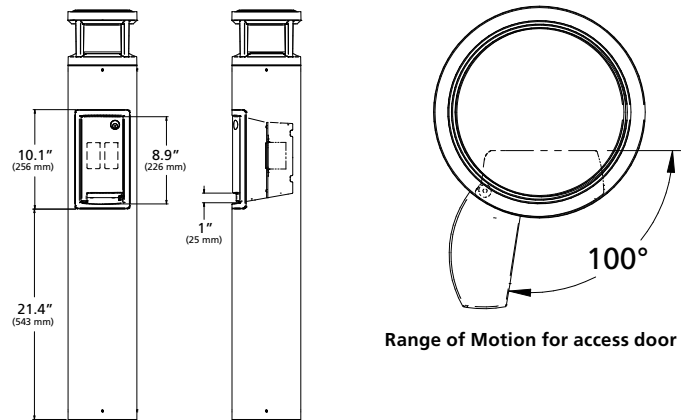
- HS configurations feature factory installed 180° shield(s) that may also be installed in the field for any Optic configuration.



## ADDITIONAL INFORMATION (CONTINUED)

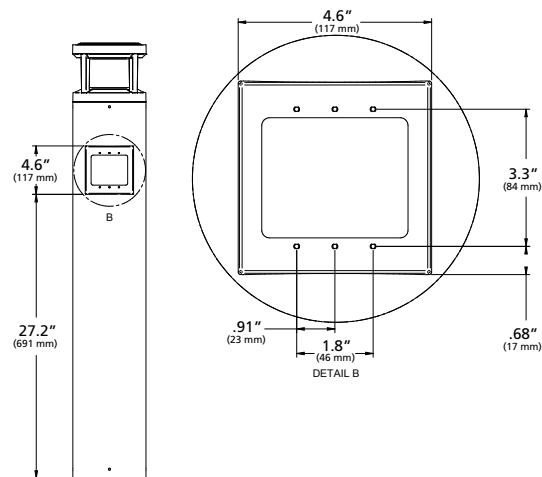
### RECEPTACLE OUTLET PANEL

- The Receptacle outlet panel shall be NEMA 3R rated for wet location(s) while in use and shall be compatible with any single receptacle outlet device with standard mounting holes. Door shall be self-closing. Tamper resistant lock must be specified at time of order. Devices and device wiring by others.



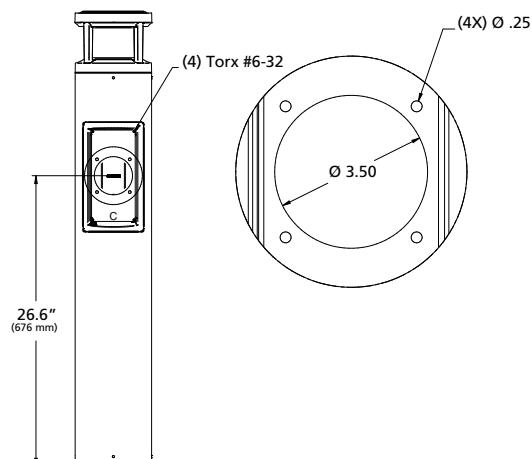
### INTEGRAL ELECTRICAL BOX

- The integral 2 Gang electrical box shall be 3" deep and have standard mounting holes for installing either a single receptacle outlet device or a pair of single receptacle outlet device. Devices, device wiring, device hardware and bezel by others.



### SPEAKER GRILLE ENCLOSURE

- The speaker grille enclosure shall accommodate a 3"Ø marine grade speaker rated for outdoor use. Grille shall be secured with (4) Torx # screws for accessibility. Mounting provisions as shown. Speaker, mounting bracket/hardware and wiring by others.



# UR20 - Post Top

ARCHITECTURAL AREA/SITE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

## FEATURES

- 20" size in single/dual arm post top, pole and wall mount
- High performance optics up to 16,874 delivered lumens
- Elegant form factor
- Diffusion lens option
- UL/cUL listed for wet locations, IP66 and 4G/1.5G vibration rated



## CONTROL TECHNOLOGY



## SPECIFICATIONS

### CONSTRUCTION

- Low copper aluminum alloy die-casting is designed as one-piece.
- Molded silicone gasket throughout insures the sealing between the two compartments and provides ingress protection.
- All external fasteners are stainless steel.
- Cover is secured to Lens frame by the latch and hinge.

### OPTICS

- LEDs mount to a metal printed circuit board assembly (MCPCB).
- Optical lenses are clear injection molded PMMA acrylic.
- Optional Backlight Control on each LED module to completely control unwanted backlight.
- Optional fixture finish optical surfaces will not exceed BUG ratings of the standard white finish.

### LENS

- Standard lens (CLR) IK08
- Clear Polycarbonate Lens (CP) IK10

### INSTALLATION

- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

### ELECTRICAL

- Universal voltage, 120 through 277V with a  $\pm 10\%$  tolerance. Driver is Underwriters Laboratories listed.
- High voltage configurations, 347/480. Driver has a 0-10V dimming interface for multi-level illumination options. Driver is Underwriters Laboratories listed.
- "Thermal Shield", secondary side, thermistor provides protection for the sustainable life of LED module and electronic components
- Drivers shall have greater than a 0.9 power factor, less than 20% harmonic distortion, and be suitable for operation in  $-40^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  ambient environments.
- Luminaire shall be capable of operating at 100% brightness in a  $40^{\circ}\text{C}$  environment. Both driver and optical array have integral thermal protection that will dim the luminaire upon detection of temperatures in excess of  $85^{\circ}\text{C}$ .
- Surge protection: 10,000k in parallel, 20,000k in series
- Wiring: No. 18AWM rated  $105^{\circ}\text{C}$ , wet rating.

Ouro™



Ouro Post Top

## RELATED PRODUCTS

Ouro Small Arm Mount

Ouro Large Post Top

Ouro Large Arm Mount

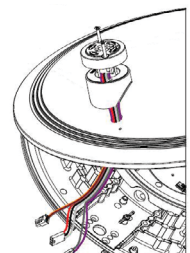
### CONTROLS

#### 7PR

- Fully gasketed and wired 7-pin receptacle option. Easy access location above the electrical compartment. 7-pin construction allows for a user-defined interface and provides a controlled definition of operational performance. ANSI twist-lock control module by-others.

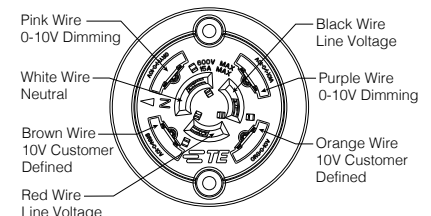
Standard customer operation modes:

- Traditional on/off photoelectric control.
- 5-pin wireless photoelectric control for added dimming feature.
- 7-pin wireless photoelectric control for for dimming and additional I/O connections for customer use.



7-Pin receptacle placement

KEY DATA	
Lumen Range	2694 – 16874
Wattage Range	25 – 150
Efficacy Range (LPW)	95 – 133
Reported Life (Hours)	L70/>60,000
Weight	35 lbs – 15.8 Kg
EPA	0.608



(Specifications continued on page 3)

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## ORDERING GUIDE

Example: UR20-24L-25-3K8-3-L-UNV-FMSA33-BLT-7PR-BC

CATALOG # 

### HOUSING

UR20							
Model	LED Engine	CCT/CRI	Distribution	Rotation	Voltage		
UR20	Ouro	<b>No Lens or Clear Lens</b>	<b>AM</b> <sup>11</sup> Amber, 595nm	<b>No Lens or Clear Lens</b>	<b>(Blank)</b> Blank for no rotation	<b>UNV</b> 120-277V	
	<b>24L-25</b> 3,000 lm	<b>27K8</b> 2700K, 80 CRI	<b>FR</b> Type I/Front Row	<b>L</b> <sup>1</sup> Optic rotation left	<b>347</b> 347V		
	<b>24L-65</b> 7,000 lm	<b>3K7</b> 3000K, 70 CRI	<b>2</b> Type II	<b>R</b> <sup>1</sup> Optic rotation right	<b>480</b> 480V		
	<b>56L-75</b> 10,000 lm	<b>3K8</b> 3000K, 80 CRI	<b>3</b> Type III		<b>DALI</b> 120-277V		
	<b>56L-110</b> 15,000 lm	<b>35K8</b> 3500K, 80 CRI	<b>4</b> Type IV		<b>Consult factory</b>		
	<b>56L-140</b> 17,000 lm	<b>3K9</b> 3000K, 90 CRI	<b>4W</b> Type IV Wide				
	<b>HDL - High Diffusion Lens</b>	<b>4K7</b> 4000K, 70 CRI	<b>5QM</b> Type V Square Medium				
	<b>28L-30</b> 3,000 lm	<b>4K8</b> 4000K, 80 CRI	<b>5QN</b> Type V Square Narrow				
	<b>28L-70</b> 7,000 lm	<b>5K7</b> 5000K, 70 CRI	<b>5R</b> Type V Rectangular				
	<b>68L-80</b> 9,000 lm	Consult factory for other CCTs and CRIs	<b>5W</b> Type V Wide (Round)				
	<b>68L-115</b> 13,000 lm		<b>HDL - High Diffusion Lens</b>				
	<b>68L-150</b> 15,000 lm		<b>3</b> Type III/Asymmetric				
			<b>5W</b> Type V/Symmetric				

Mounting		Fixture Finish		Control Options		Options		Control Accessories	
<b>FM33</b>	Flush mt 3.0" OD pole, 3" fixture base	<b>BLS</b>	Black Gloss Smooth	<b>7PR-TL</b>	7 pin PCR with twist lock photocontrol	<b>BC</b> <sup>6</sup>	Back-light Control	<b>WIR-RME-L</b>	wiSCAPE External Fixture Module
<b>FM44</b>	Flush mt 3.6" to 4.0" OD pole, 4" fixture base	<b>BLT</b>	Black Matte Textured	<b>7PR-SC</b>	7 pin PCR with shorting cap	<b>SF</b>	Single Fuse	<b>SCH-R</b>	Occ. Sensor for Round Pole (up to 30' MH)
<b>PT23</b>	3" Post Top mount for 2 3/8" OD x 4" Long Tenon	<b>DBS</b>	Dark Bronze Gloss Smooth	<b>7PR</b>	7 pin PCR, wireless control enabled	<b>DF</b>	Double Fuse	<b>SCH-S</b>	Occ. Sensor for Square Pole (up to 30' MH)
<b>PT24</b>	4" Post Top mount for 2 3/8" OD T x 4" Long Tenon	<b>DBT</b>	Dark Bronze Matte Textured	<b>AD-01</b> <sup>2</sup>	AstroDIM: 50% output at midnight	<b>CLR</b> <sup>5,6,13</sup>	Clear Lens	<b>NXOFM-1R1D-UNV</b>	NX 7-Pin Twist-Lock® with NX Networked Wireless Radio, Integral Automatic Dimming Photocell, Integral Single Pole Relay with Dimming, and Bluetooth Programming
<b>PT34</b>	4" Post Top mount for 2 7/8" OD x 4" Long Tenon	<b>GTT</b>	Graphite Matte Textured	<b>AD-02</b> <sup>2</sup>	AstroDIM: 50% output midnight to 4 AM	<b>TPL</b>	Tamper proof latch		
<b>FMSA33</b>	Solo Arm Post Top Flush Mount 3.0" OD Pole, 3" fixture base	<b>LGS</b>	Light Grey Gloss Smooth	<b>AD-03</b> <sup>2</sup>	AstroDIM: 50% output 10PM	<b>CP</b> <sup>5,6,12</sup>	Clear Polycarbonate Lens		
<b>FMSA34</b>	Solo Arm Post Top Flush Mount 3.6" to 4.0" OD Pole, 4" fixture base	<b>LGT</b>	Light Grey Matte Textured	<b>AD-04</b> <sup>2</sup>	AstroDIM: 50% output 10PM to 4AM	<b>WBFM3</b> <sup>14</sup>	3" Solo Arm/Standard Post Top Mount Wall Bracket		
<b>PTSA23</b>	3" Solo Arm Post Top Mount for 2-3/8" OD x 4" Long Tenon	<b>PSS</b>	Platinum Silver Gloss Smooth	<b>NXW</b> <sup>15</sup>	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	<b>WBFM4</b> <sup>14</sup>	4" Solo Arm/Standard Post Top Mount Wall Bracket		
<b>PTSA24</b>	4" Solo Arm Post Top Mount for 2-3/8" OD x 4" Long Tenon	<b>VGT</b>	Verde Green Matte Textured	<b>WSP-40F-1</b> <sup>2,5</sup>	Dimming Occ. Sensor for up to 40' MH, 120/277/347V	<b>TAFM3</b> <sup>14,16</sup>	3" Solo Arm/Standard Post Top Mount Twin Arm Mount		
<b>PTSA34</b>	4" Solo Arm Post Top Mount for 2-7/8" OD x 4" Long Tenon	<b>WHS</b>	White Gloss Smooth	<b>WSP-40F-2</b> <sup>2,5</sup>	Dimming Occ. Sensor for up to 40' MH, 208/240V	<b>TAFM4</b> <sup>14,16</sup>	4" Solo Arm/Standard Post Top Mount Twin Arm Mount		
		<b>WHT</b>	White Matte Textured	<b>WSP-40F-3</b> <sup>2,5</sup>	Dimming Occ. Sensor for up to 40' MH, 480V				
		<b>Color Option</b>		<b>NXWS16F</b> <sup>2,5,15</sup>	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming				
		<b>CC</b> <sup>7</sup> Custom Color		<b>NXWS40F</b> <sup>2,5,15</sup>	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming				

1 Not available with 5QM, 5QN, and 5W distributions.  
2 Not available with other sensor or wireless control options.  
3 Not available with 347V and 480V.  
4 24L and 56L only  
5 Not available with HDL option.  
6 Consult factory for custom color, marine and corrosive finish options.  
7 Turtle Friendly.  
8 Please see Delivered Lumens chart on Page 5 for lumen  
9 Microsoft, Encarta, MSN, and Windows are either registered trademarks or trademarks  
of Microsoft Corporation in the United States and/or other countries.

11 Not available with 24L-65 and the 56L-140 configuration of the LED Engine  
12 IK10 rated. Consult factory for details  
13 IK08 rated. Consult factory for details  
14 Must order with Flush Mount "FM" mounting option and correct pole diameter.  
15 Not available with Solo Arm Post Top (FMSA/PTSA)  
16 Order one for each pair of fixtures per pole.

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

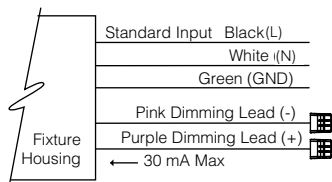
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CATALOG #:	

## SPECIFICATIONS (CONTINUED)

### CONTROLS (CONTINUED)

#### DIMMING:

- Dimming range from 100% to 10% through the use of the standard 0-10V interface on the programmable driver.
- Modular wiring harness in the service area provides user access to the dimming circuitry.
- Dimming circuitry compatible with 0-10V, user-defined control devices.
- Optional factory programmed dimming profile.



#### WIRELESS CONTROLS

##### WISCAPE™

- wiSCAPE™ wireless control modules allow an individual fixture to be managed, monitored and measured. The modules communicate securely over a robust certified meshed radio signal. The wiSCAPE modules provide on/off/dim control, external device input, alerts and metering.

##### WIR-RME-L

- wiSCAPE External Module, 120-480V, 1000ft range (LOS), Internal Photocell, 1 Digital Input, Compatible with the A-25-7H option

#### NX LIGHTING CONTROLS

- NX lighting controls platform utilizes a Distributed Network Architecture (DNA) that connects intelligent devices including luminaires, controllers, panels, occupancy sensors, photocells, wall switches and dimmers, creating a system with an unmatched level of reliability, scalability and simplicity

#### POLE MOUNTED

##### ROUND POLE-MOUNTED OCCUPANCY

- Sensor up to 30'. Select voltage and finish color.

##### SCH-R

- Round Pole-Mounted Occupancy Sensor: up to 30' - an outdoor occupancy sensor with 0-10V interface dimming control that mounts directly to the pole. Wide 360° pattern. Module colors are available in Black, Gray, and White. Module is cut for round pole mounting. Pole diameter is needed upon order. Poles to be drilled in the field will be provided with installation instructions.

- Ordering Example: SCH-R4/277<sup>2</sup>/BL<sup>3</sup>

##### SQUARE POLE-MOUNTED OCCUPANCY

Sensor up to 30'. Select voltage and finish color.

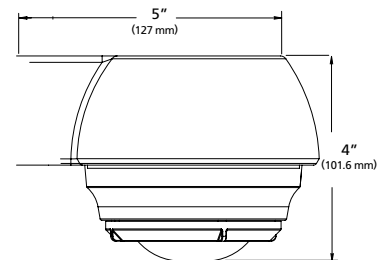
##### SCH-S

- Square Pole-Mounted Occupancy Sensor: up to 30' - an outdoor occupancy sensor with 0-10V interface dimming control that mounts directly to the pole. Wide 360° pattern. Module colors are available in Black, Gray, and White. Module is cut for round pole mounting. Pole diameter is needed upon order. Poles to be drilled in the field will be provided with installation instructions.

- Ordering Example: SCH-S/277<sup>2</sup>/BL<sup>3</sup>

#### ASTRODIM

- AstroDIM provides multi-stage night-time power reduction based on an internal timer referenced to the power on/off time. There is no need for an external control infrastructure. The unit automatically performs a dimming profile based on the predefined scheduled reference to the midpoint, which is calculated based on the power on/off times.



#### OPTIONAL FUSING:

- SF for 120, 277, and 347 Line volts

#### CAUTION:

- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

#### CERTIFICATIONS AND LISTINGS

- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- ANSI C136.31-2010 Vibration tested and compliant 1.5G and 4G reference page 4
- IEC 66262 Mechanical Impact Code IK08, IK10
- IDA approved, 3000K and warmer CCTs only
- IP66 rated
- RoHS compliant
- This product qualifies as a "designated country construction material" per FAR 52.225-11 Buy American-Construction Materials under Trade Agreements effective 6/06/2020. See Buy American Solutions

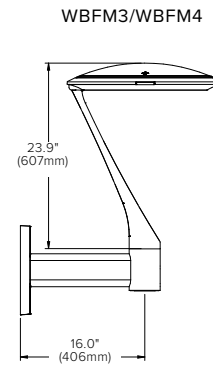
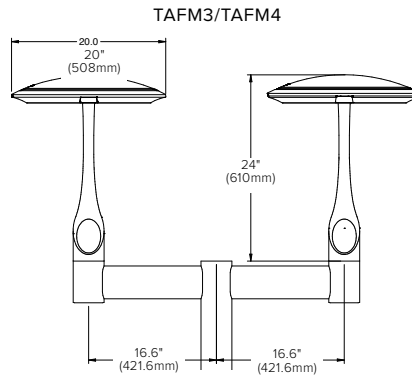
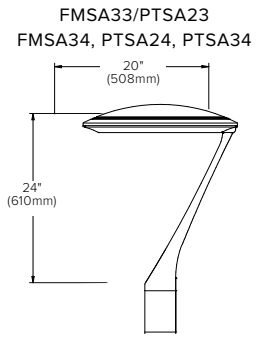
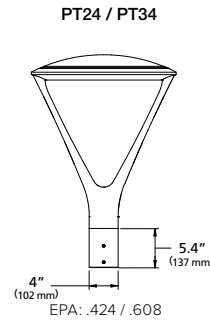
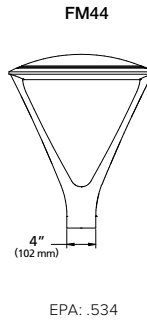
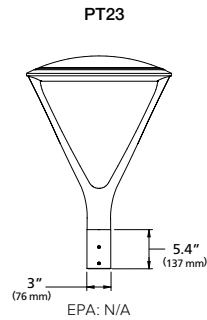
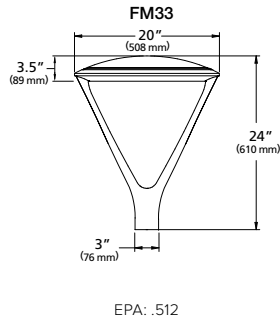
#### WARRANTY

- 5 year warranty

# UR20 - Post Top

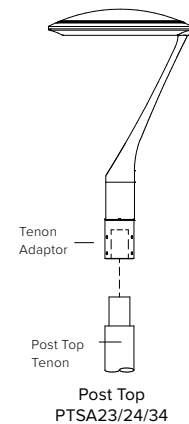
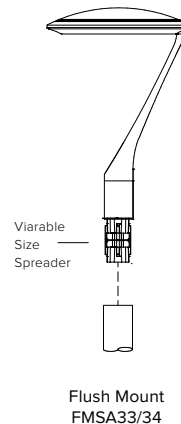
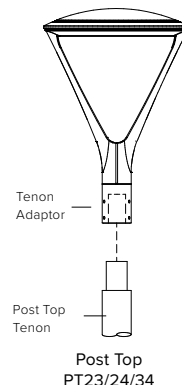
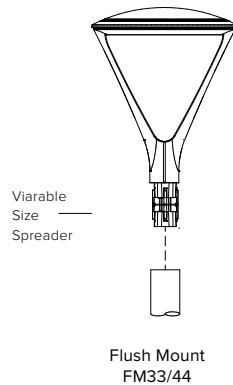
ARCHITECTURAL AREA/SITE

## DIMENSIONS

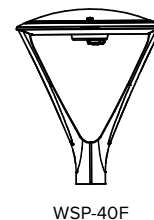
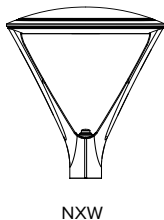


ARM	DIAMETER
FMSA33	3" diameter
FMSA34	4" diameter
PTSA23	3" diameter with Tenon mount
PTSA24	4" diameter with Tenon mount
PTSA34	4" diameter with tenon mount

## MOUNTING INSTALLATION



## SENSOR PLACEMENT



## MOUNTING VIBRATION RATINGS

UR 20 Arm		UR28 Arm		UR 20 Post Top		UR 28 Post Top		UR 20 Solo Arm	
Ordering Code	Rating	Ordering Code	Rating	Ordering Code	Rating	Ordering Code	Rating	Ordering Code	Rating
ASQ	4G	ASQ	4G	FM33	4G	FM44	1.5G	FMSA33	1.5G
A34	4G	A34	4G	FM44	1.5G	FM45	1.5G	FMSA34	1.5G
A46	4G	A46	4G	PT23	4G	PT24	1.5G	PTSA23	1.5G
MAF	4G	MAF	4G	PT24	4G	PT34	1.5G	PTSA24	1.5G
				PT34	1.5G	PT25	1.5G	PTSA34	1.5G

For the 4 G test, ANSI C136.31-2010 Vibration is tested to comply with Vibration Test Level 1 Normal Applications, Vibration Test Level 2 Bridge/Overpass Applications, and Vibration Test Level 3

For the 1.5G test, ANSI C136.31-2010 Vibration is tested to comply with Vibration Level 1 Bridge/Overpass Applications

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## DELIVERED LUMENS

LEDs #	Lumens Package	Drive Current	Nominal Watts	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
24L	3,000	298mA	25	No lens	FR	2932	0	0	1	115	3119	0	0	1	123	3098	0	0	1	124
					FR-BC	1994	0	0	0	78	2121	0	0	0	83	2107	0	0	0	83
					2	2943	1	0	1	116	3099	1	0	1	122	3110	1	0	1	124
					2-BC	1724	0	0	1	68	1834	0	0	1	72	1822	0	0	1	72
					3	3007	1	0	1	118	3200	1	0	1	126	3178	1	0	1	127
					3-BC	1830	0	0	1	73	1947	0	0	1	78	1934	0	0	1	77
					4	3056	0	0	1	120	3251	0	0	1	128	3229	0	0	1	129
					4-BC	2235	0	0	1	88	2377	0	0	1	93	2362	0	0	1	93
					4W	3171	1	0	1	125	3374	1	0	1	133	3351	1	0	1	134
					4W-BC	1912	0	0	1	75	2034	0	0	1	80	2020	0	0	1	79
					5QM	2931	2	0	1	115	3119	2	0	1	123	3098	2	0	1	124
					5QN	2694	2	0	1	106	2866	2	0	1	113	2847	2	0	1	114
					5R	3054	2	0	2	120	3250	2	0	2	128	3228	2	0	2	129
					5W	3043	2	0	1	120	3237	2	0	1	127	3216	2	0	1	129
				Clear lens	FR	2773	0	0	1	109	2951	0	0	1	116	2930	0	0	1	117
					FR-BC	1886	0	0	1	74	2007	0	0	1	79	1993	0	0	1	78
					2	2784	1	0	1	109	2963	1	0	1	116	2942	1	0	1	118
					2-BC	1631	0	0	1	64	1736	0	0	1	68	1723	0	0	1	67
					3	2845	1	0	1	111	3028	1	0	1	119	3007	1	0	1	120
					3BC	1806	0	0	1	72	1922	0	0	1	77	1909	0	0	1	76
					4	2891	0	0	1	113	3076	0	0	1	120	3055	0	0	1	122
					4-BC	2114	0	0	1	83	2250	0	0	1	88	2234	0	0	1	88
					4W	2999	1	0	1	117	3192	1	0	1	125	3169	1	0	1	127
					4W-BC	1808	0	0	1	71	1924	0	0	1	75	1911	0	0	1	76
					5QM	2773	1	0	1	109	2950	2	0	1	116	2931	2	0	1	117
					5QN	2549	1	0	0	100	2712	2	0	1	106	2693	2	0	1	108
					5R	2890	2	0	2	113	3075	2	0	2	120	3054	2	0	2	122
					5W	2879	2	0	1	113	3064	2	0	1	120	3042	2	0	1	122
28L		298mA	30	HDL lens	3	2816	1	0	1	96	2997	1	0	1	102	3020	1	0	1	101
					5W	2917	1	0	1	100	3105	1	0	1	106	3084	1	0	1	103

Scaling factors 27K8 = 0.859, 35K8 = 0.906 of 5K7 lumen packages

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## DELIVERED LUMENS (CONTINUED)

LEDs #	Lumens Package	Drive Current	Nominal Watts	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
24L	7,000	800mA	65	No lens	FR	6754	1	0	1	104	7187	1	0	1	111	7138	1	0	1	110
					FR-BC	4392	0	0	1	68	4673	0	0	1	72	4641	0	0	1	71
					2	6571	1	0	2	101	6992	1	0	2	108	6944	1	0	2	107
					2-BC	3799	0	0	1	58	4042	0	0	1	62	4014	0	0	1	62
					3	6625	1	0	2	102	7051	1	0	2	108	7002	1	0	2	108
					3BC	4032	0	0	1	62	4291	0	0	1	66	4261	0	0	1	66
					4	6788	1	0	2	104	7223	1	0	2	111	7174	1	0	2	110
					4-BC	4924	0	0	2	76	5239	0	0	2	81	5203	0	0	2	80
					4W	6900	1	0	2	106	7343	1	0	2	113	7291	1	0	2	112
					4W-BC	4212	0	0	2	65	4482	0	0	2	69	4451	0	0	2	68
					5QM	7025	3	0	1	108	7477	3	0	1	115	7425	3	0	1	114
					5QN	6964	3	0	1	107	7410	3	0	1	114	7323	3	0	1	113
					5R	7038	3	0	3	108	7489	3	0	3	115	7437	3	0	3	114
					5W	7011	3	0	2	108	7460	3	0	2	115	7409	3	0	2	114
				Clear lens	FR	6432	1	0	1	97	6844	1	0	1	104	6798	1	0	1	105
					FR-BC	4182	0	0	1	63	4450	0	0	1	67	4420	0	0	1	67
					2	6258	1	0	1	95	6659	1	0	2	101	6613	1	0	2	102
					2-BC	3617	0	0	1	55	3849	0	0	1	58	3823	0	0	1	58
					3	6310	1	0	2	96	6714	1	0	2	102	6668	1	0	2	103
					3-BC	3599	0	0	1	55	3829	0	0	1	59	3803	0	0	1	59
					4	6465	1	0	2	98	6879	1	0	2	104	6832	1	0	2	105
					4-BC	4688	0	0	2	71	4990	0	0	2	76	4955	0	0	2	75
					4W	6572	1	0	2	100	6993	1	0	2	106	6944	1	0	2	107
					4W-BC	4011	0	0	2	61	4268	0	0	2	65	4238	0	0	2	64
					5QM	6691	3	0	1	101	7119	3	0	1	108	7070	3	0	1	109
					5QN	6632	2	0	1	100	7058	3	0	1	107	7009	3	0	1	108
					5R	6702	3	0	3	102	7131	3	0	3	108	7082	3	0	3	109
					5W	6676	3	0	2	101	7104	3	0	2	108	7055	3	0	2	109
28L	700mA	70	HDL lens	3	6047	2	0	2	92	6047	2	0	2	92	6236	2	0	2	89	
				5W	6221	2	0	1	94	6619	2	0	1	100	6525	2	0	1	93	

Scaling factors 27K8 = 0.859, 35K8 = 0.906 of 5K7 lumen packages



# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## DELIVERED LUMENS (CONTINUED)

LEDs #	Lumens Package	Drive Current	Nominal Watts	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
56L	10,000	420mA	75	No lens	FR	9315	1	0	1	124	9913	1	0	1	132	9845	1	0	1	131
					FR-BC	6058	0	0	1	81	6445	0	0	1	86	6402	0	0	1	85
					2	9063	2	0	2	120	9644	2	0	2	128	9578	2	0	2	128
					2-BC	5239	0	0	1	70	5575	0	0	1	74	5536	0	0	1	74
					3	9139	2	0	2	125	9725	2	0	2	134	9657	2	0	2	129
					3-BC	5561	0	0	2	74	5877	0	0	2	78	5561	0	0	2	74
					4	9362	1	0	2	124	9362	1	0	2	124	9876	1	0	2	132
					4-BC	6791	0	0	2	90	7226	0	0	2	96	7168	0	0	2	96
					4W	9518	1	0	2	126	10129	1	0	2	135	10058	1	0	2	134
					4W-BC	5809	0	0	2	77	6181	0	0	2	82	6138	0	0	2	82
					5QM	9691	3	0	1	129	10312	3	0	1	137	10240	3	0	1	137
					5QN	9606	3	0	1	128	10222	3	0	1	136	10151	3	0	1	135
					5R	9706	3	0	3	129	10328	3	0	3	137	10258	3	0	3	137
					5W	9669	4	0	2	129	10289	4	0	2	137	10217	4	0	2	136
				Clear lens	FR	8871	1	0	1	117	9760	1	0	1	129	9374	1	0	1	125
					FR-BC	5769	0	0	1	76	6138	0	0	1	81	6096	0	0	1	81
					2	8631	2	0	2	114	9183	2	0	2	121	9121	2	0	2	122
					2-BC	4989	0	0	1	67	5309	0	0	1	71	5272	0	0	1	62
					3	8703	1	0	2	115	9260	2	0	2	122	9197	2	0	2	123
					3-BC	4964	1	0	1	66	5282	1	0	2	70	5245	1	0	2	69
					4	8916	1	0	2	118	9487	1	0	2	125	9423	1	0	2	126
					4-BC	6467	0	0	2	85	6881	0	0	2	91	6834	0	0	2	90
					4W	9065	1	0	2	120	9646	1	0	2	128	9579	1	0	2	128
					4W-BC	5532	0	0	2	74	5887	0	0	2	78	5845	0	0	2	78
					5QM	9228	3	0	1	122	9820	3	0	1	130	9752	3	0	1	130
					5QN	9147	3	0	1	121	9734	3	0	1	129	9668	3	0	1	129
					5R	9244	3	0	3	122	9836	3	0	3	130	9769	3	0	3	130
					5W	9208	4	0	2	122	9798	4	0	2	130	9732	4	0	2	130
68L		350mA	80	HDL lens	3	7853	2	0	2	99	8356	2	0	2	106	8299	2	0	2	104
					5W	8080	2	0	2	102	8684	3	0	2	110	8684	3	0	2	109

Scaling factors 27K8 = 0.859, 35K8 = 0.906 of 5K7 lumen packages

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## DELIVERED LUMENS (CONTINUED)

LEDs #	Lumens Package	Drive Current	Nominal Watts	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
56L	15,000	600mA	110	No lens	FR	13533	1	0	1	125	14399	1	0	2	133	14301	1	0	2	130
					FR-BC	8799	1	0	1	81	9363	1	0	1	86	9300	1	0	1	85
					2	13165	2	0	2	121	14009	2	0	2	129	13913	2	0	2	126
					2-BC	7611	1	0	2	70	8098	1	0	2	75	8042	1	0	2	74
					3	13275	2	0	3	122	14126	2	0	3	130	14030	2	0	3	128
					3-BC	8079	1	0	2	73	8596	1	0	2	78	8538	1	0	2	78
					4	13601	1	0	3	125	14472	1	0	3	133	14373	1	0	3	131
					4-BC	9865	1	0	2	91	10497	1	0	3	97	10425	1	0	3	96
					4W	13827	2	0	3	127	14713	2	0	3	136	14611	2	0	3	133
					4W-BC	8437	0	0	2	78	8978	0	0	2	83	8916	0	0	2	82
					5QM	14077	4	0	2	130	14979	4	0	2	138	14876	4	0	2	135
					5QN	13953	4	0	1	129	14848	4	0	1	137	14747	4	0	1	134
					5R	14100	4	0	4	130	15004	4	0	4	138	14901	4	0	4	135
					5W	14046	4	0	2	129	14946	4	0	2	138	14844	4	0	3	135
				Clear lens	FR	12803	1	0	1	118	13624	1	0	1	126	13531	1	0	1	123
					FR-BC	9298	1	0	1	86	8325	1	0	1	77	8798	1	0	1	81
					2	12455	2	0	2	115	13254	2	0	2	123	13164	2	0	2	120
					2-BC	7200	1	0	1	67	7661	1	0	2	71	7610	1	0	2	70
					3	12560	2	0	3	116	13365	2	0	3	124	13273	2	0	3	121
					3-BC	7163	1	0	2	65	7622	1	0	2	69	7570	1	0	2	69
					4	12868	1	0	3	119	13692	1	0	3	127	13599	1	0	3	124
					4-BC	9333	1	0	2	86	9931	1	0	2	92	9864	1	0	2	90
					4W	13081	2	0	3	121	13920	2	0	3	129	13823	2	0	3	126
					4W-BC	7983	0	0	2	74	8495	0	0	2	79	8436	0	0	2	78
					5QM	13318	3	0	2	123	14172	4	0	2	131	14075	4	0	2	128
					5QN	13202	3	0	1	122	14048	4	0	1	130	13951	4	0	1	127
					5R	13341	4	0	4	123	14195	4	0	4	131	14099	4	0	4	128
					5W	13290	4	0	2	123	14141	4	0	2	131	14044	4	0	2	128
68L		500mA	115	HDL lens	3	11577	2	0	2	102	12320	2	0	2	109	12236	2	0	2	106
					5W	11912	3	0	2	105	12676	3	0	2	112	12588	3	0	2	109

Scaling factors 27K8 = 0.859, 35K8 = 0.906 of 5K7 lumen packages

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

## DELIVERED LUMENS (CONTINUED)

LEDs #	Lumens Package	Drive Current	Nominal Watts	Lens Options	Distribution	3000K 70CRI					4000K 70CRI					5000K 70CRI				
						Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
							B	U	G			B	U	G			B	U	G	
56L	17,000	750mA	140	No lens	FR	15323	2	0	2	111	16306	2	0	2	118	16194	2	0	2	116
					FR-BC	9964	1	0	1	72	10603	1	0	1	77	10530	1	0	1	76
					2	14897	2	0	2	108	15852	2	0	2	115	15743	2	0	2	112
					2-BC	8618	1	0	2	63	9169	1	0	2	67	9107	1	0	2	66
					3	15032	2	0	3	109	15996	2	0	3	116	15886	2	0	3	113
					3-BC	9147	1	0	2	65	9733	1	0	2	70	9667	1	0	2	69
					4	15400	1	0	3	112	16387	1	0	4	119	16275	1	0	4	116
					4-BC	11170	1	0	3	81	11886	1	0	3	86	11804	1	0	3	86
					4W	15656	2	0	3	114	16660	2	0	4	121	16544	2	0	4	118
					4W-BC	9554	0	0	2	69	10166	0	0	2	74	10095	0	0	2	73
					5QM	15939	4	0	2	116	16962	4	0	2	123	16845	4	0	2	120
					5QN	15801	4	0	1	115	16813	4	0	1	122	16698	4	0	1	119
					5R	15966	4	0	4	116	16990	4	0	4	123	16874	4	0	4	121
					5W	15906	4	0	3	115	16925	4	0	3	123	16808	4	0	3	120
				Clear lens	FR	14541	1	0	2	105	15473	2	0	2	111	15367	2	0	2	110
					FR-BC	9456	1	0	1	68	10061	1	0	1	72	9993	1	0	1	72
					2	14146	2	0	2	102	15053	2	0	2	108	14950	2	0	2	107
					2-BC	8178	1	0	2	59	8702	1	0	2	63	8642	1	0	2	62
					3	14265	2	0	3	103	15179	2	0	3	109	15076	2	0	3	108
					3BC	8136	1	0	2	58	8657	1	0	2	62	8598	1	0	2	61
					4	14614	1	0	3	105	15551	1	0	3	112	15445	1	0	3	110
					4-BC	10600	1	0	3	76	11279	1	0	3	81	11203	1	0	3	81
					4W	14858	2	0	3	107	15811	2	0	3	114	15700	2	0	3	112
					4W-BC	9067	0	0	2	65	9649	0	0	2	70	9581	0	0	2	69
					5QM	15126	4	0	2	109	16095	4	0	2	116	15985	4	0	2	114
					5QN	14994	4	0	1	108	15955	4	0	1	115	15846	4	0	1	113
					5R	15152	4	0	4	109	16122	4	0	4	116	16012	4	0	4	114
					5W	15094	4	0	3	109	16061	4	0	3	116	15951	4	0	3	114
68L		625mA	150	HDL lens	3	13240	2	0	2	89	13992	3	0	3	95	13897	3	0	3	93
					5W	13623	3	0	2	92	14396	3	0	2	97	14298	3	0	2	95

Scaling factors 27K8 = 0.859, 35K8 = 0.906 of 5K7 lumen packages

# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## PHOTOMETRY

UR20-56L-140-4K7-FR-PT

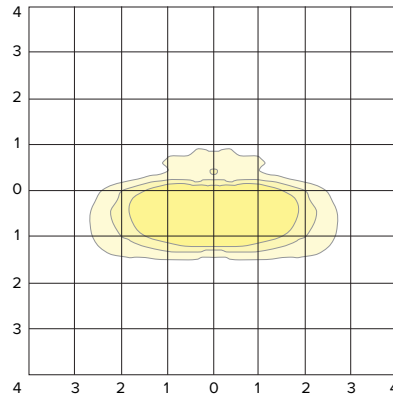
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16306
Watts	140
Efficacy	116.5
IES Type	II
BUG Rating	B2-U0-G2
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	14198	87.1%
Downward House Side	2108	12.9%
Downward Total	16306	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16306	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-2-PT

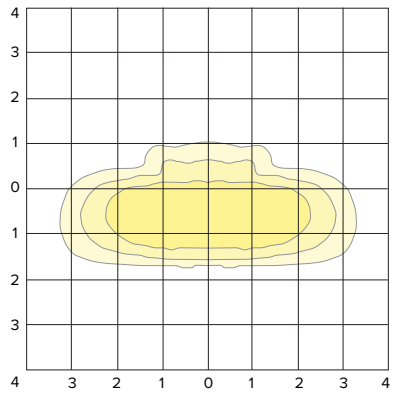
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	15852
Watts	140
Efficacy	113.2
IES Type	II
BUG Rating	B2-U0-G2
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	12851	81.1%
Downward House Side	3001	18.9%
Downward Total	15852	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	15852	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-3-PT

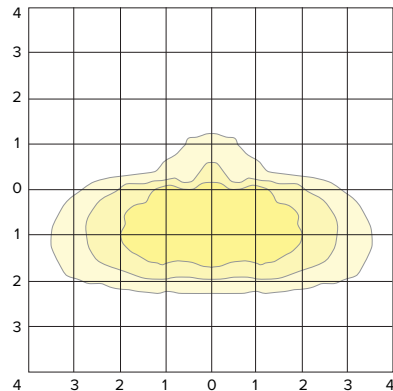
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	15996
Watts	140
Efficacy	114.3
IES Type	III
BUG Rating	B2-U0-G3
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	13422	83.9%
Downward House Side	2574	16.1%
Downward Total	15996	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	15996	100%

### ISOFOOT CANDLE PLOT



# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## PHOTOMETRY

UR20-56L-140-4K7-4-PT

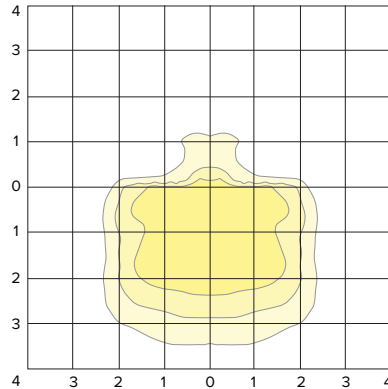
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16387
Watts	140
Efficacy	117.1
IES Type	IV
BUG Rating	B1-U0-G4
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	14697	89.7%
Downward House Side	1690	10.3%
Downward Total	16387	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16387	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-4W-PT

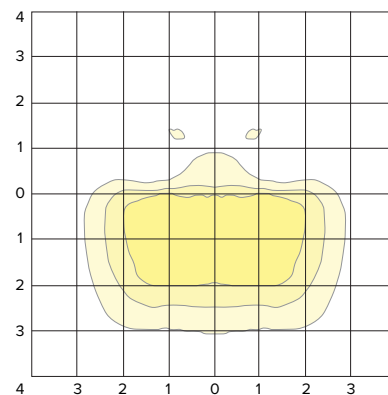
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16660
Watts	138
Efficacy	120.7
IES Type	IV
BUG Rating	B2-U0-G4
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	14955	89.8%
Downward House Side	1705	10.2%
Downward Total	16660	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16660	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-5QM-PT

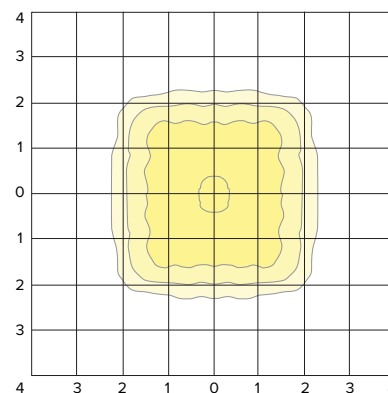
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16962
Watts	140
Efficacy	121.2
IES Type	VS
BUG Rating	B4-U0-G2
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	8481	50.0%
Downward House Side	8481	50.0%
Downward Total	16962	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16962	100%

### ISOFOOT CANDLE PLOT



# UR20 - Post Top

ARCHITECTURAL AREA/SITE

## PHOTOMETRY

UR20-56L-140-4K7-5QN-PT

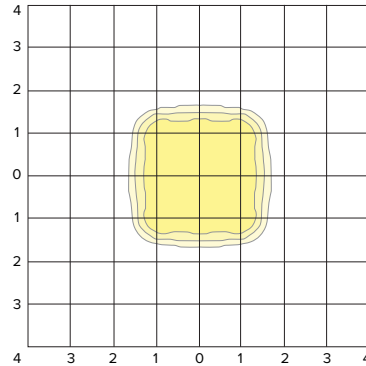
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16813
Watts	140
Efficacy	120.1
IES Type	VS
BUG Rating	B4-U0-G1
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	8407	50.0%
Downward House Side	8407	50.0%
Downward Total	16813	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16813	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-5R-PT

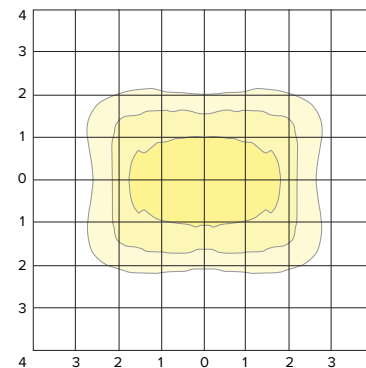
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16990
Watts	140
Efficacy	121.4
IES Type	III
BUG Rating	B4-U0-G4
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	8495	50.0%
Downward House Side	8495	50.0%
Downward Total	16990	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16990	100%

### ISOFOOT CANDLE PLOT



UR20-56L-140-4K7-5W-PT

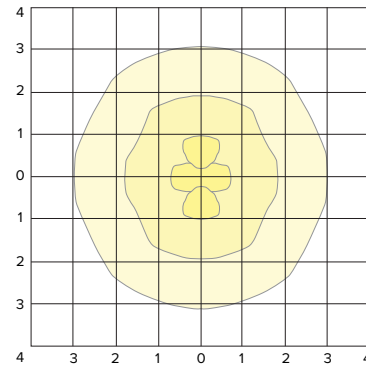
### LUMINAIRE DATA

Description	4000K, 70CRI
Delivered Lumens	16925
Watts	140
Efficacy	120.9
IES Type	VS
BUG Rating	B4-U0-G3
Mounting Height	30 ft
Grid Scale	30 ft

### ZONAL LUMEN SUMMARY

Zone	Lumens	% Luminaire
Downward Street Side	8463	50.0%
Downward House Side	8463	50.0%
Downward Total	16925	100%
Upward Street Side	0	0%
Upward House Side	0	0%
Upward Total	0	0%
Total Flux	16925	100%

### ISOFOOT CANDLE PLOT



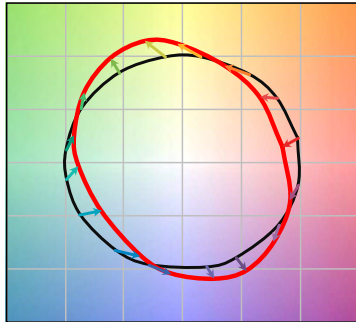
# UR20 - Post Top

ARCHITECTURAL AREA/SITE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

## TM-30 DATA

### COLOR VECTOR GRAPHIC

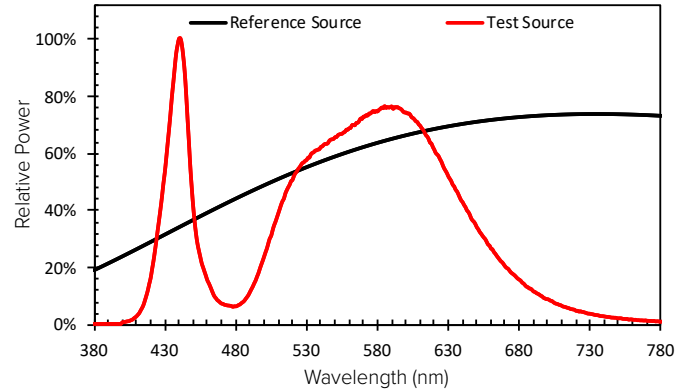


— Reference Illuminant — Test Source

### TEST SOURCE

R <sub>f</sub>	68
R <sub>a</sub>	99
CCT(K)	3947
D <sub>uv</sub>	0.0004
x	0.3831
y	0.3793
CIE R <sub>a</sub>	72

### SPECTRAL POWER DISTRIBUTION COMPARISON



## ELECTRICAL DATA

Drive Current	LED Count	System Watts	Line Voltage		Amps AC						Min. Power Factor	Max THD (%)	Dimming				
													Dimming Range	Source current out of 0-10V		Absolute voltage range on 0-10V (+)	
			VAC	Hz	120	208	240	277	347	480				Min	Max	Min	Max
298mA	24	25	120-480	50/60	0.21	0.12	0.10	0.09	0.07	0.05	>0.9	20	10% to 100%	0mA	1mA	0V	10V
298mA	28	30			0.25	0.14	0.13	0.11	0.09	0.06							
800mA	24	65			0.54	0.31	0.27	0.23	0.19	0.14							
700mA	28	70			0.58	0.34	0.29	0.25	0.20	0.15							
420mA	56	75			0.63	0.36	0.31	0.27	0.22	0.16							
350mA	68	80			0.67	0.38	0.33	0.29	0.23	0.17							
600mA	56	110			0.92	0.53	0.46	0.40	0.32	0.23							
500mA	68	115			0.96	0.55	0.48	0.42	0.33	0.24							
850mA	56	140			1.17	0.67	0.58	0.51	0.40	0.29							
675mA	68	150			1.25	0.72	0.63	0.54	0.43	0.31							

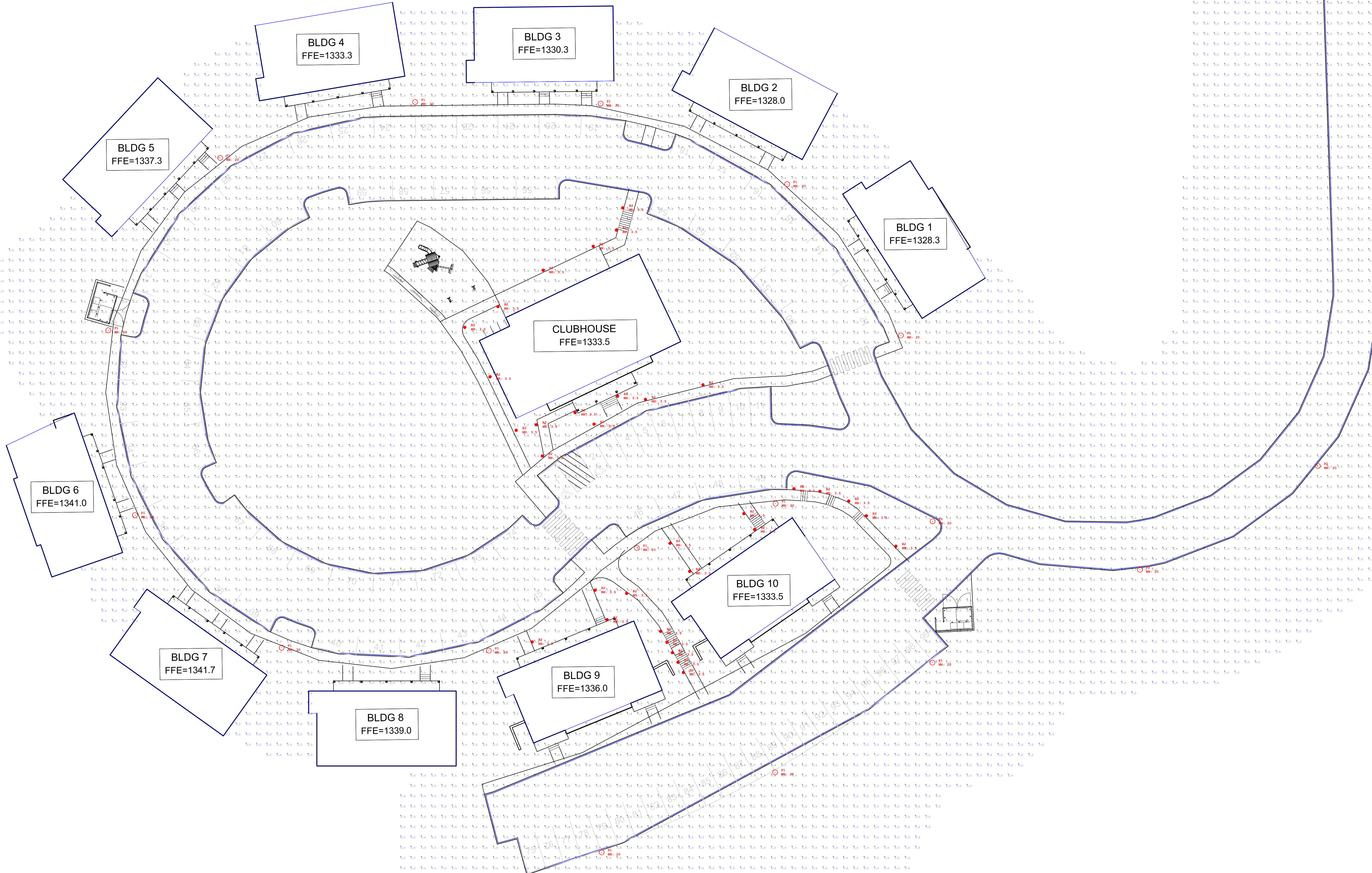
### TM-21 Lifetime Calculation - Projected Lumen Maintenance (25°C / 77°C)

Ambient Temp.	0	25,000	36,000	50,000	100,000	Reported L70
25°C / 77°F	100%	97%	95%	93%	87%	60khrs

### CRI Lumen Multiplier

CCT	Amber	70 CRI	80 CRI	90 CRI
Amber	0.1727s	—	—	—
2700K	—	—	0.859	—
3000K	—	1	0.9119	0.7033
3500K	—	—	0.906	—
4000K	—	1	0.8941	0.734
5000K	—	1	0.879	0.7712





Luminaire Schedule					
Qty	Label	Arr. Watts	Arrangement	LLF	Description
33	B2	21.74	SINGLE	0.900	PAR78-NUG-121-020-3K7
14	P1	110	SINGLE	0.900	UR20-S6L-110-3K7-4-BC-PP
5	P2	110	SINGLE	0.900	UR20-S6L-110-3K7-2-BC-PP
1	P3	110	SINGLE	0.900	UR20-S6L-110-3K7-3-BC-PP

Calculation Summary					
Label	Units	Avg	Max	Min	Avg/Min
Site	Fc	0.82	32.3	0.0	N.A.

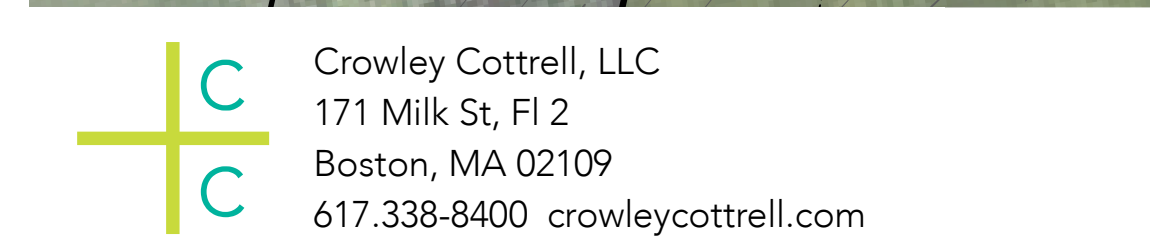
Project:  
238 Pittsfield Road - Lenox Housing -  
Site

  
**illuminat**  
263 Winn Street  
Burlington, MA 01803  
(781) 935-8500  
333 Pleasant Valley Road  
South Windsor, CT 06074  
(860) 282-0597

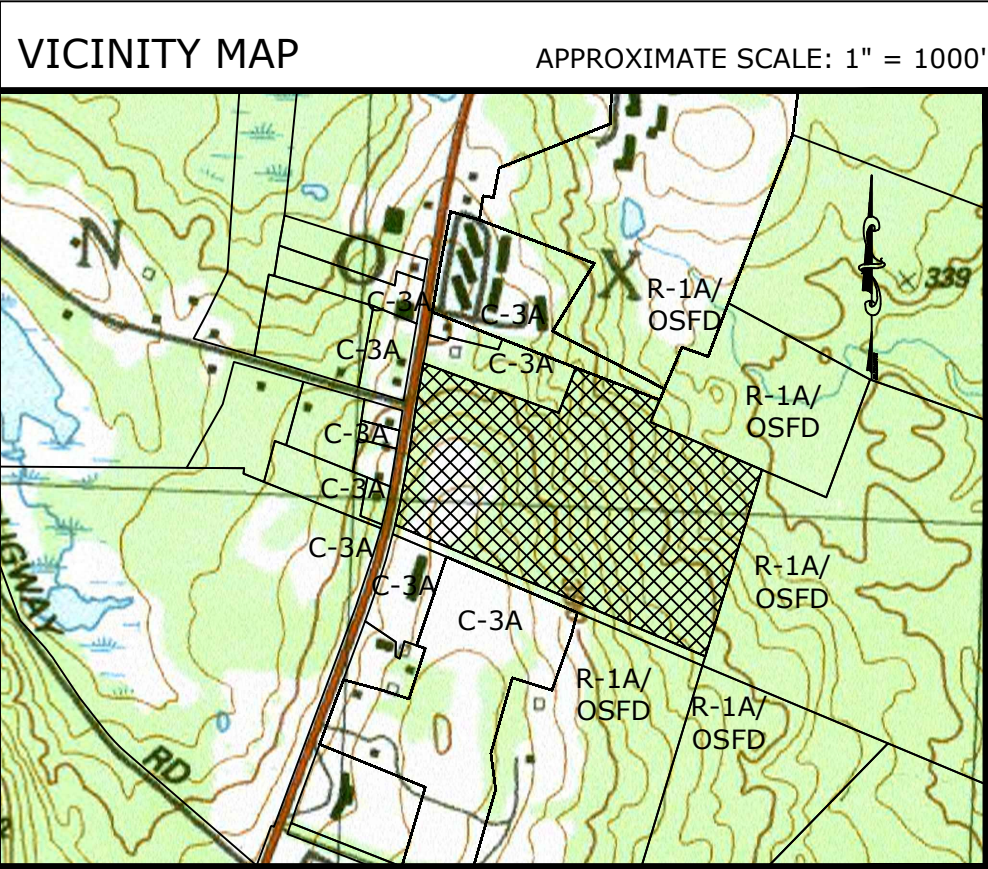
Detail: Photometric Calculation  
Date: 03/29/2023  
Revision: 1  
Scale: 1" = 30'-0"  
Drawn By: SHJ

Drawing Number:  
  
**L-1**  
  
Sheet 1 of 1









MAP 17 LOT 41

GENERAL NOTES

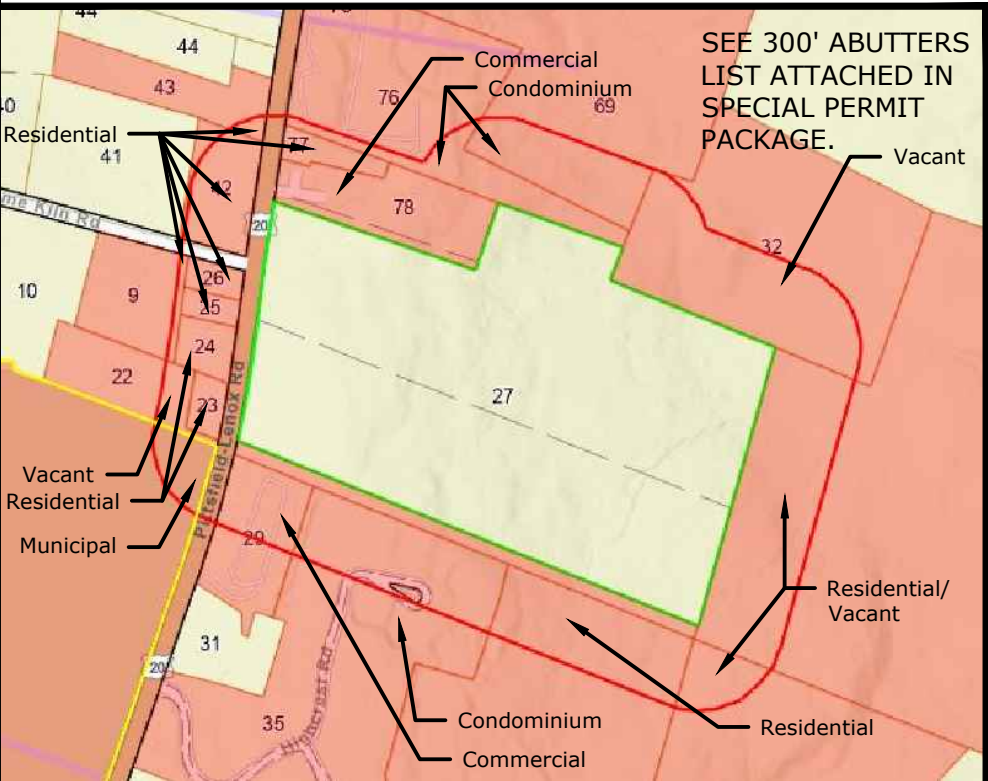
1. This Plan of Land is intended solely to represent the boundary lines of the subject property.
2. Unless otherwise noted hereon, this survey plan shall not be construed as depicting the presence, absence, or limits of any or all regulated wetlands or floodplains. Any surface water features shown, such as streams or ponds, are not represented as indicating limits of wetland resource areas.
3. No other permits, approvals, uses, site conditions or suitability are expressed or implied hereby, either directly or by omission.
4. All parcels are subject to and with the benefit of all rights, restrictions, conditions, easements, leases, encumbrances and appurtenances of record.
5. Endorsement does not imply compliance with Wetlands Protection Act or zoning.
6. Horizontal Datum is based upon 1995 Altered Highway Layout #7142 plan entitled "The Commonwealth of Massachusetts Plan of Road in the Town of Lenox, Berkshire County, Altered and Laid Out as a State Highways by the Department of Highways, Dated August 23, 1995, Scale: 40 Feet to the Inch" and filed with Mass Highway Department, District 1, 270 Main St, Lenox, 01240.

CONSTRUCTION-PHASE MEASURES FOR CONTROL OF SEDIMENT AND EROSION AND PROTECTION OF WETLANDS

1. Do not disturb existing vegetated areas far in advance of construction. Limit disturbance only to the extent and duration required for imminent construction activities. Retain and protect natural vegetation and vegetative filter strips wherever possible.
2. Temporary vegetation or a heavy mat of wood chips shall be established on all earth stockpiles or stripped areas which will be bare for more than two months and less than 12 months. Such vegetation shall consist of a commercial conservation seed mixture with a high percentage of annual rye grass. Permanent herbaceous cover shall be established on areas which would be bare more than 12 months.
3. A heavy mat of straw mulch, wood chips, erosion control netting, mesh or blanket matting shall be used on disturbed areas if vegetation cannot be established due to season or on-going construction process, or if otherwise required.
4. Silt fence or carefully positioned staked straw bales shall be installed along the downhill edge of disturbed earthwork areas where required to control erosion and sedimentation.
5. Water courses, including intermittent drainage swales, shall be protected from siltation by silt fence barriers or carefully positioned staked straw bale check dams.
6. Sediment traps shall be constructed downhill of disturbed areas and upstream of watercourses and/or wetlands. Trapped sediments shall be removed from the basins during the construction period before they become 50% full to prevent sediment from being transported downhill. Dispose of sediments in on-site upland disposal areas, properly graded, seeded and mulched.
7. Permanent drainage control structures shall be installed as early as possible in the construction process. Drains shall be provided with drain inlet sediment filters and/or traps.
8. Do not fuel construction equipment or store fuel or other potential contaminants within 100 feet of water courses or wetlands.
9. Precast concrete shall be washed down at the manufacturer's plant. Cast-in-place concrete within 100 feet of watercourses/wetlands shall be placed so as to minimize runoff of stormwater from fresh concrete, through use of sumps, diversions, etc. Concrete trucks and equipment contaminated with fresh concrete shall not be washed down within 100 feet of wetlands.
10. Strictly adhere to all general and special conditions of any Wetlands Protection Act Permits, including plans, details, construction sequencing outline, and other applicable requirements.

LAND USE MAP

Not to Scale



# Curme Pennrose

## Pittsfield-Lenox Road

### Lenox, MA



AERIAL LOCUS MAP

Scale: 1" = 60'±

LEGEND

- ADA = AMERICANS WITH DISABILITIES ACT  
APPROX = APPROXIMATE  
DS = DOOR SILL  
PVC = POLYVINYL CHLORIDE  
C.I.P. = CAST IRON PIPE  
C.M.P. = CORRUGATED METAL PIPE  
ELEV = ELEVATION  
INV = INVERT  
LP = LIGHT POLE
- AIR-CONDITIONER  
BOULDER  
BOUND FOUND  
DOWN SPOUT  
BENCHMARK  
ELECTRICAL METER  
ELECTRICAL RECEPTACLE WATERPROOF  
FLAG POLE  
GAS METER

- GENERATOR AC  
IRON PIPE FOUND  
FENCE POST  
LIGHT POLE  
LIQUID PROPANE  
LATH FOUND  
MANHOLE  
HYDRANT  
SEWER MANHOLE  
SIGN  
TELEPHONE PEDESTAL  
TRANSFORMER  
PILLAR  
WATER SPIGOT  
WATER SHUT OFF VALVE  
CONIFEROUS TREE  
DECIDUOUS TREE

- EXISTING BUILDING  
RIPRAP  
LEDGE
- 1' EXISTING CONTOUR LINE  
5' EXISTING CONTOUR LINE  
APPROXIMATE PROPERTY LINE  
BUILDING OVERHANG  
EDGE OF WOODS  
EDGE OF ASPHALT  
EDGE OF GRAVEL  
EDGE OF CONCRETE  
EDGE OF STONE  
EDGE OF BRICK  
EDGE OF WOODS ROAD  
EDGE OF LAWN  
FENCE

- HEDGE ROW  
RETAINING WALL  
SWALE  
WETLAND BUFFER ZONE  
FLAGGED WETLAND BOUNDARY  
DRAINAGE LINE  
EDGE OF WATER  
APPROX. WATER SUPPLY  
APPROX. GAS SUPPLY  
APPROX. TELEPHONE  
APPROX. TV/CABLE  
APPROX. SEWER  
APPROX. ELECTRIC  
200' RESORT BUFFER ZONE

SHEET INDEX	
C-0	COVER SHEET & SHEET INDEX
C-1	CONCEPT FORM A PLAN
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C-4	PROPOSED GRADING, DRAINAGE & EROSION CONTROL PLAN
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EARTHWORK, GRADING AND ACCESSIBILITY NOTES:

GENERAL

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ALL EXCAVATIONS AND OTHER SITEWORK COMPLY WITH CURRENT OSHA STANDARDS AND TRENCH SAFETY REGULATIONS.
2. AREAS BEYOND THE LIMITS OF PROPOSED WORK THAT ARE DISTURBED BY CONTRACTOR'S WORK SHALL BE RESTORED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
3. ACCESS TO THE SITE FOR EMERGENCY VEHICLES MUST BE PRESERVED AT ALL TIMES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING OF TRENCHES AND EXCAVATIONS DURING CONSTRUCTION.
5. ALL DEMOLISHED MATERIALS, DEBRIS, PAVEMENT, CURBING, TREES AND STUMPS DESIGNATED FOR REMOVAL, SURPLUS MATERIALS, ETC, SHALL BE HANDLED AND DISPOSED OF OFF-SITE BY THE CONTRACTOR AT HIS EXPENSE, AT IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.
6. ALL WORK WITHIN ANY PUBLIC RIGHT OF WAY (I.E. MUNICIPAL, STATE, ETC) SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE STANDARDS AND SPECIFICATIONS OF THE AGENCY HAVING JURISDICTION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED WORK PERMITS FOR WORK WITHIN A PUBLIC WAY.
8. ALL WORK INCLUDED IN THE CONDITIONS OF APPROVAL FOR LOCAL, STATE AND/OR FEDERAL PERMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONFORMED TO THROUGHOUT CONSTRUCTION.
9. UNLESS OTHERWISE NOTED, ALL MATERIALS AND WORK METHODS SHALL COMPLY WITH THE MASS. DOT STANDARD SPECIFICATIONS.

GRADING:

1. CONTRACTOR SHALL ASSURE THAT THERE IS POSITIVE SURFACE DRAINAGE AWAY FROM BUILDINGS IN ALL AREAS.
2. REFER TO AND COORDINATE THE SITEWORK WITH THE ARCHITECTURAL PLANS FOR GRADING AROUND BUILDINGS, RAMPS, STEPS, DOORWAYS, FOUNDATIONS, AND RELATED CONSTRUCTION.

ACCESSIBILITY:

1. CONTRACTOR SHALL PERFORM THE SITEWORK SO AS TO COMPLY WITH THE APPLICABLE REQUIREMENTS OF MASS. ARCHITECTURAL ACCESS BOARD, 521 CMR.
2. EXCEPT WHERE NOTED, IT IS THE DESIGN INTENTION THAT EXTERIOR DOORWAYS SHALL BE ACCESSIBLE AND THAT WALKWAYS APPROACHING BUILDINGS SHALL BE ACCESSIBLE.
3. UNLESS OTHERWISE NOTED OR PERMITTED, ACCESSIBLE WALKWAYS SHALL BE CONSTRUCTED WITH A MAXIMUM RUNNING SLOPE OF 5.0% (LAYOUT TO SLOPE OF 4.5% TO ACCOUNT FOR CONSTRUCTION TOLERANCES), AND A MAXIMUM CROSS PITCH OF 2.0% (LAYOUT TO 1.5% FOR CONSTRUCTION TOLERANCES).
4. PER 521 CMR 22.3.1 (EXCEPTION), FOR STREETS AND WAYS WHICH HAVE NATURAL TOPOGRAPHY IN EXCESS OF 5%, SIDEWALKS MAY BE PERMITTED TO HAVE RUNNING SLOPES IN EXCESS OF 5% WITHOUT REQUIRING A RAMP.
5. CURB RAMPS SHALL COMPLY WITH THE APPLICABLE MASS. AAB (521 CMR 21 ET SEQ) REGULATIONS. WHERE APPLICABLE, CURB RAMPS SHALL ALSO CONFORM TO MASS. DOT STANDARDS.
6. UNLESS OTHERWISE NOTED, HANDICAP PARKING SPACES AND ACCESS AISLES SHALL BE CONSTRUCTED WITH A MAXIMUM SLOPE IN ANY DIRECTION OF 2.0% (521 CMR 23.4). LAYOUT SHOULD BE TO SLOPE OF 1.5% TO ALLOW FOR CONSTRUCTION TOLERANCES.
7. HANDICAP RAMPS SHALL BE CONSTRUCTED TO COMPLY WITH 521 CMR 24. THE MAXIMUM SLOPE SHALL BE 1:12 (8.33%) WITHOUT ANY ALLOWANCE FOR EXCEEDANCE.) THE MAXIMUM RISE OF ANY RUN SHALL NOT EXCEED 30" AND THE MAXIMUM LENGTH OF ANY RUN BETWEEN LANDINGS SHALL NOT EXCEED 30'.
8. THE SPOT GRADES SHOWN ON THE PLANS ARE PROVIDED TO GIVE GUIDANCE TO THE CONTRACTOR ABOUT THE DESIGN INTENT FOR ACCESSIBILITY. CONTRACTOR SHALL LAYOUT AND CONSTRUCT THE WORK TO COMPLY WITH THE MASS AAB REQUIREMENTS. ANY DEVIATIONS NOTED IN THE LAYOUT THAT WOULD AFFECT ACCESSIBILITY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND CIVIL ENGINEER.
9. ANY PORTION OF THE CONSTRUCTED WORK WHICH EXCEEDS THE MAXIMUM SLOPES SPECIFIED IN 521 CMR WILL BE CONSIDERED NON-COMPLIANT; THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR REMEDIATING THE NON-COMPLIANT WORK TO BRING IT WITHIN THE MASS. AAB REQUIREMENTS.

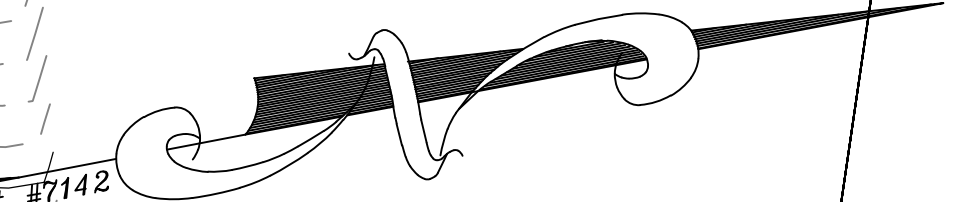
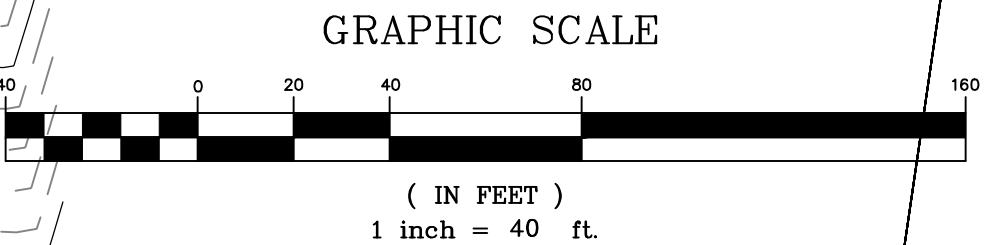
GENERAL NOTES REGARDING SITE UTILITIES:

1. PRIOR TO CONSTRUCTION, SITEWORK CONTRACTOR SHALL NOTIFY THE DIG SAFE CENTER, PLUS THE MUNICIPAL AND/OR STATE PUBLIC WORKS DEPARTMENT AND PRIVATE UTILITIES TO ALLOW FOR THEM TO FIELD LOCATE THE FACILITIES IN THE VICINITY OF THE WORK. UPDATE THE NOTIFICATIONS TO DIG SAFE, ETC AS REQUIRED DURING CONSTRUCTION
2. LOCATE AND PROTECT ALL UTILITIES AND STRUCTURES TO REMAIN. LOCATE AND PROPERLY DECOMMISSION EXISTING UTILITIES. ANY UNREPORTED UNDERGROUND UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER FOR A DETERMINATION ABOUT WHETHER OR NOT THEY SHOULD BE REPAIRED OR MAY BE DECOMMISSIONED.
3. COORDINATE SITEWORK WITH OTHER TRADES.
4. COORDINATE EXACT LOCATION, ELEVATION & SIZE OF ALL FOUNDATION PENETRATIONS FOR ALL UTILITIES WITH CONTRACTORS: M/E/P/FF/T
5. REFER TO PLANS AND SPECIFICATIONS FOR REQUIREMENTS FOR EXPLORATORY TEST PITS AND OTHER PRE-CONSTRUCTION EXPLORATIONS.
6. PIPING SUBJECT TO PLUMBING CODE: SITEWORK CONTRACTOR SHALL INSTALL SEWER, WATER AND BUILDING DRAINAGE SERVICE LINES SUBJECT TO THE MASS. STATE PLUMBING CODE TO WITHIN TEN FEET (10') FROM THE BUILDING FOUNDATION. PLUMBING CONTRACTOR SHALL MAKE THE FINAL INSTALLATION AND CONNECTION OF THE SEWER, WATER AND BUILDING DRAINAGE SERVICE LINES WITHIN THE FINAL TEN FEET TO THE BUILDING FOUNDATION. SITEWORK CONTRACTOR SHALL EXCAVATE, BED AND BACKFILL THE TRENCHES TO THE BUILDING FOUNDATION FOR THIS PIPING. (NOTE: BUILDING DRAINAGE LINES INCLUDES STORM DRAIN LINES SUCH AS ROOF LEADERS THAT ORIGINATE INSIDE THE BUILDING; IT DOES NOT INCLUDE FOUNDATION DRAINS, ROOF LEADERS FROM DOWNSPOUTS THAT ORIGINATE OUTSIDE THE BUILDING, OR SURFACE DRAINS OUTSIDE THE BUILDING, WHICH ARE SITEWORK COMPONENTS TO BE INSTALLED BY THE SITEWORK CONTRACTOR.)
7. FIRE PROTECTION PIPING SUBJECT TO FIRE CODE: SITEWORK AND FIRE PROTECTION CONTRACTOR SHALL COORDINATE THE INSTALLATION AND TESTING UNDER NFPA STDS (NFPA24, ETC) OF THE FIRE LINES AND APPURTENANCES FROM THE WATER MAIN TO THE BUILDING. SITEWORK CONTRACTOR SHALL EXCAVATE, BED AND BACKFILL THE TRENCHES AND FURNISH THE PIPING TO THE BUILDING FOUNDATION FOR THIS PIPING.
- 7A. ANY FIRE SERVICE MAIN INSTALLATION AND TESTING WORK SUBJECT TO NFPA-24 SHALL BE WITNESSED BY THE LICENSED FIRE PROTECTION CONTRACTOR. UPON COMPLETION OF THE WORK INCLUDING FLOW AND PRESSURE TESTS, SITEWORK CONTRACTOR SHALL SUBMIT THE COMPLETED "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING."
8. COORDINATE SITEWORK WITH UTILITY COMPANIES: ELECTRIC, COMMUNICATIONS, WIFI, TV, GAS, ETC.
9. COORDINATE WITH ELECTRICAL CONTRACTOR (EC) FOR SITE LIGHTING: EXCAVATE, BED AND BACKFILL FOR CONDUITS, HANDHOLES, VAULTS, AND APPURTENANCES (FURNISHED AND INSTALLED BY EC); FURNISH AND INSTALL PRECAST CONC. POLE BASES WITH EMBEDDED ANCHOR BOLTS AND SWEEPS PROVIDED BY EC, ETC.
10. COORDINATE WITH MEP CONTRACTOR (MC) FOR CAST-IN-PLACE CONC. PADS FOR TRANSFORMER, GENERATOR, CONDENSERS, AIR HANDLERS, ETC; MC TO SUPPLY ANY EMBEDDED ITEMS TO SITEWORK CONTRACTOR FOR INSTALLATION.
11. STORM DRAINAGE, EROSION AND SEDIMENTATION CONTROL, AND WETLANDS PROTECTION: REFER TO EROSION AND SEDIMENTATION CONTROL PLANS AND SPECIFICATIONS. PERFORM ALL SITEWORK AS REQUIRED TO REMAIN IN COMPLIANCE THROUGHOUT CONSTRUCTION AND IN ACCORDANCE WITH APPLICABLE PERMITS, INCLUDING BUT NOT LIMITED TO WETLANDS PROTECTION ACT, AND CONSTRUCTION GENERAL PERMIT UNDER THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) ISSUED BY EPA.
12. WATER AND SEWER LINES SHALL BE SEPARATED A MINIMUM OF 10' HORIZONTALLY AND A MINIMUM OF 18" VERTICALLY AT CROSSINGS. SEE DETAIL.

# PRELIMINARY

3.31.23	ISSUE FOR SPECIAL PERMIT	AZM
NO.	DATE	BY
REVISION/ISSUE		
SHEET TITLE		
COVER SHEET AND SHEET INDEX		
PROJECT TITLE		
PENNROSE Pittsfield-Lenox Road Lenox, MA		
DESIGNED BY SAM		
DRAWN BY AZM		
CHECKED BY MAL		
SHEET NO. C-0		
OF SHEETS		
FORESIGHT LAND SERVICES, INC. 1496 WEST HOUATONIC STREET - PITTSFIELD, MA 01201 TEL (413) 499-1960 FAX (413) 499-3307 WWW.FORESIGHTLAND.COM		
ENGINEERING SURVEYING PLANNING		
E3036-004.dwg		

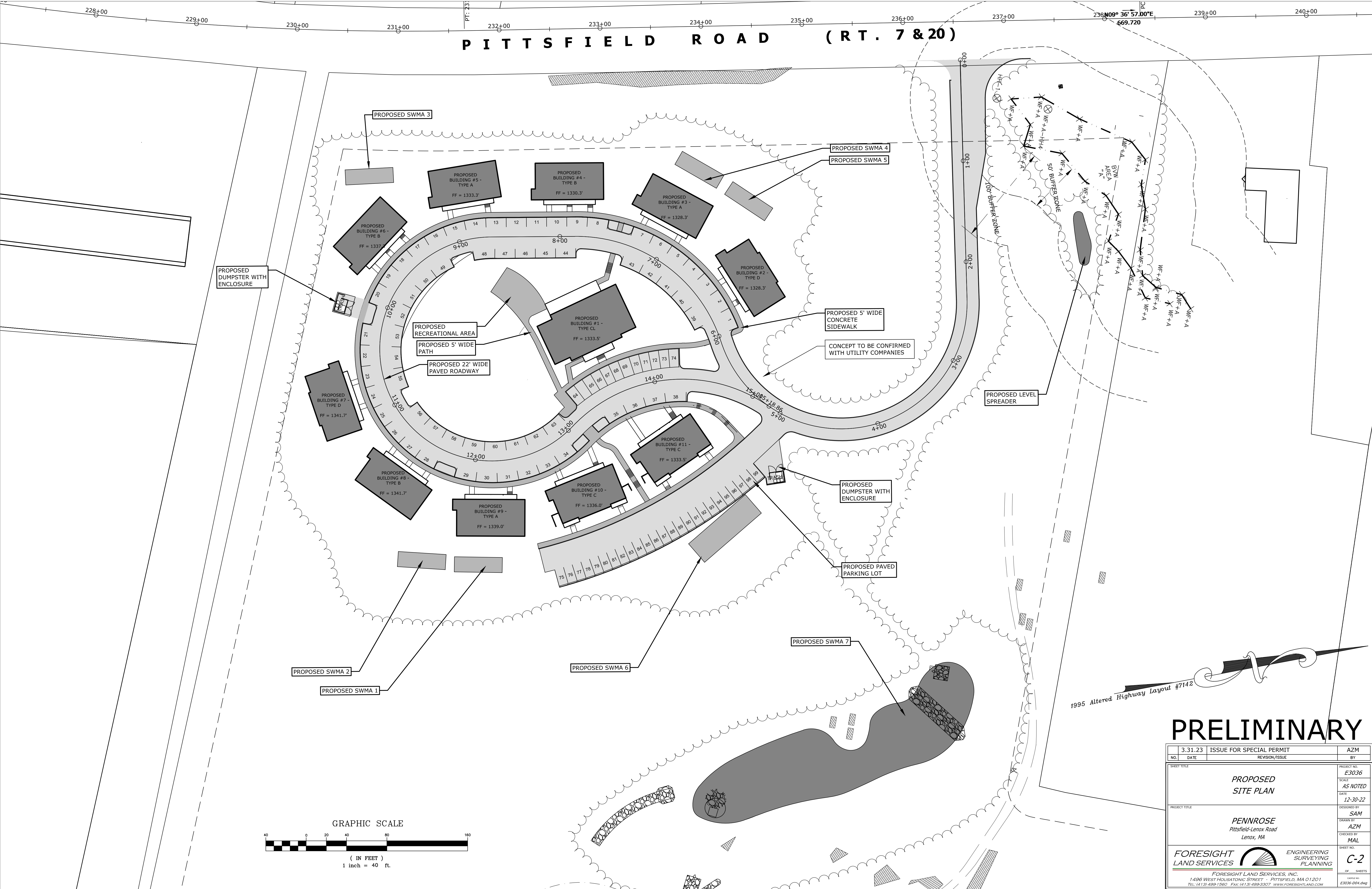




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C-1.1		
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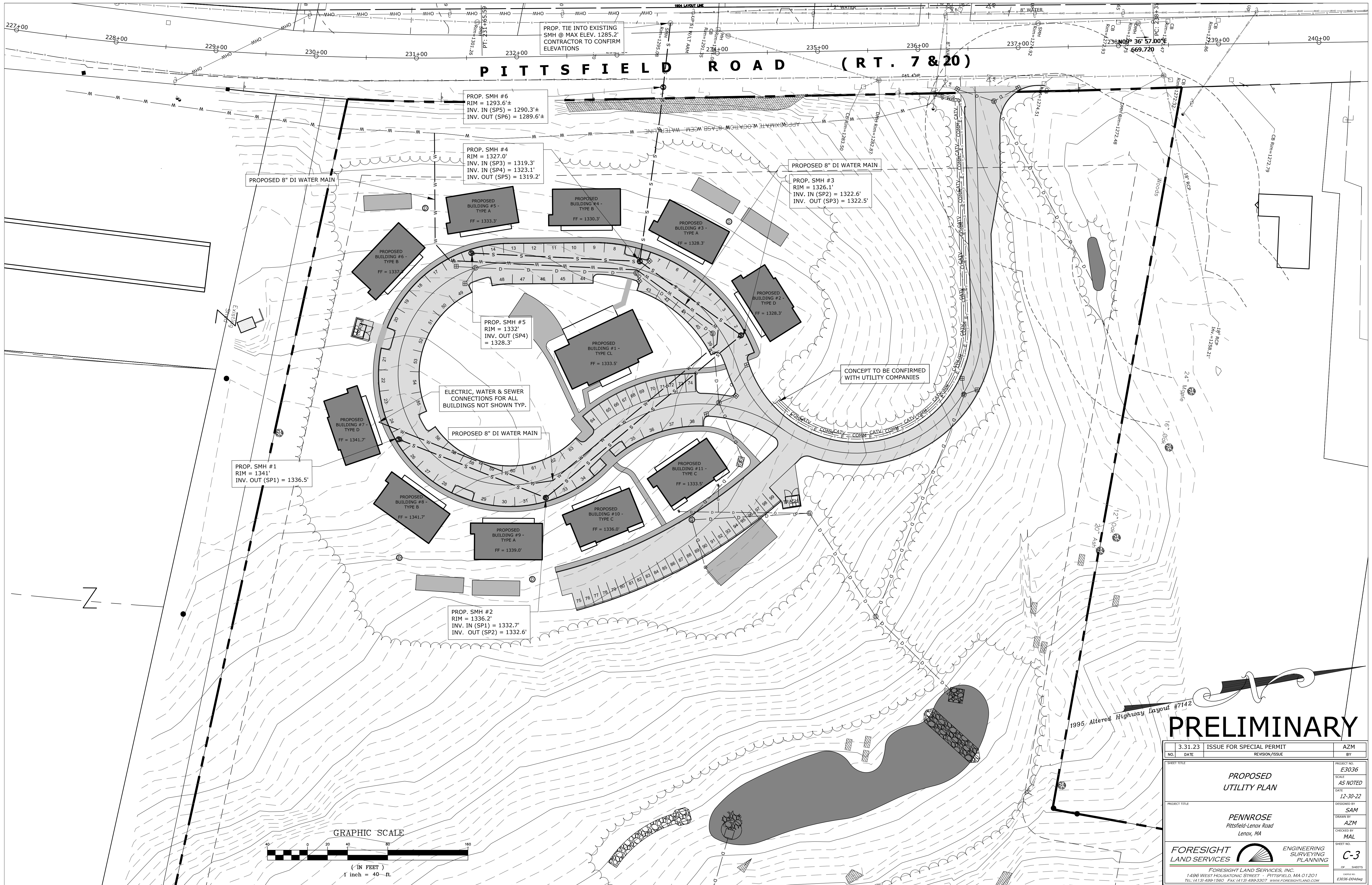




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OF SHEETS		
PROJECT NO. E3036		
SCALE AS NOTED		
DATE 12-30-22		
DESIGNED BY SAM		
DRAWN BY AZM		
CHECKED BY MAL		
ENGINEERING SURVEYING PLANNING		
FORESIGHT LAND SERVICES		
FORESIGHT LAND SERVICES, INC. 1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201 TEL: (413) 499-1560 FAX: (413) 499-3307 WWW.FORESIGHTLAND.COM		
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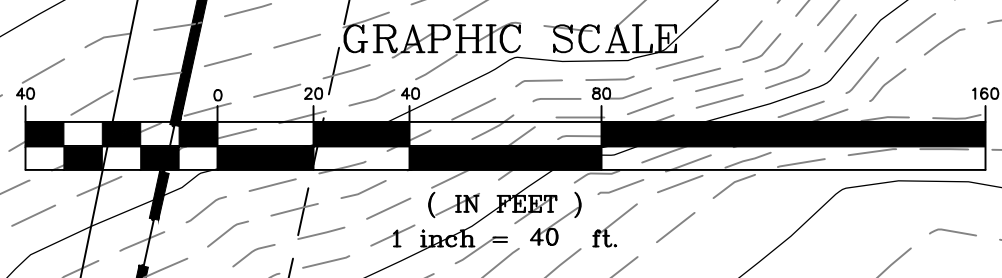
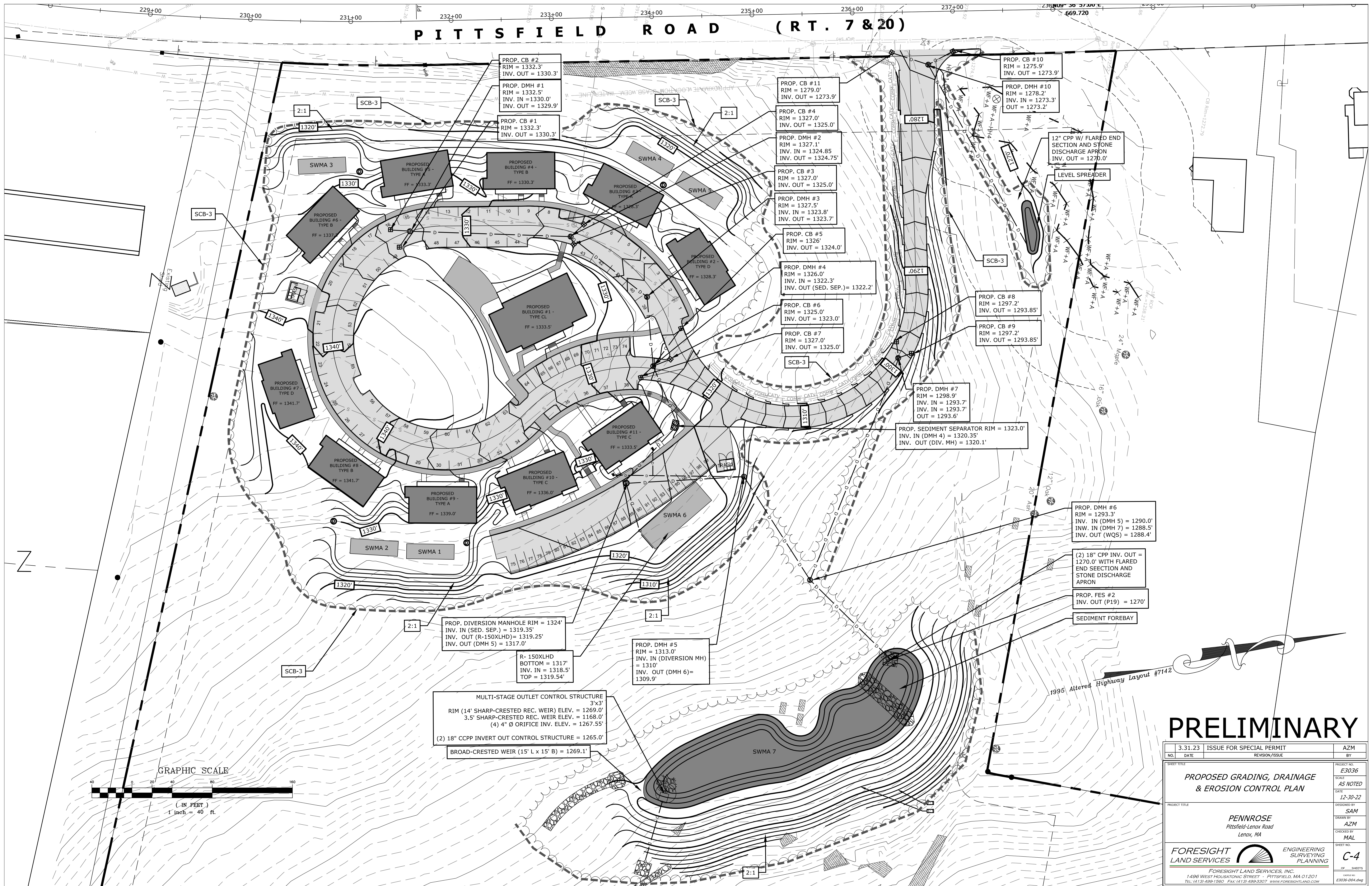





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CHECKED BY		AZM
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PROJECT NO.		E3036-0046ng
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FORESIGHT LAND SERVICES, INC.		
1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201		
TEL: (413) 499-1960 FAX: (413) 499-3307 WWW.FORESIGHTLAND.COM		

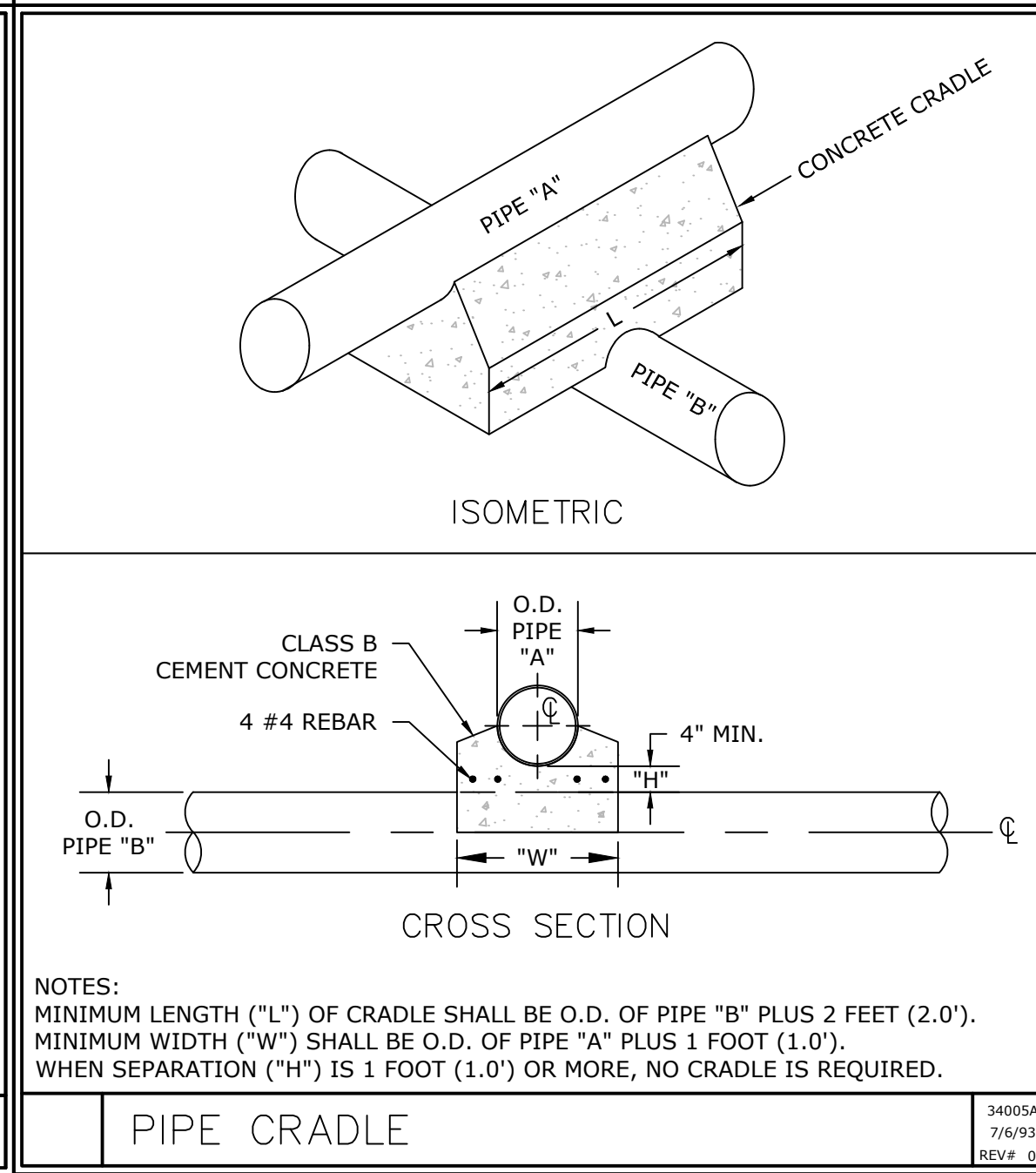
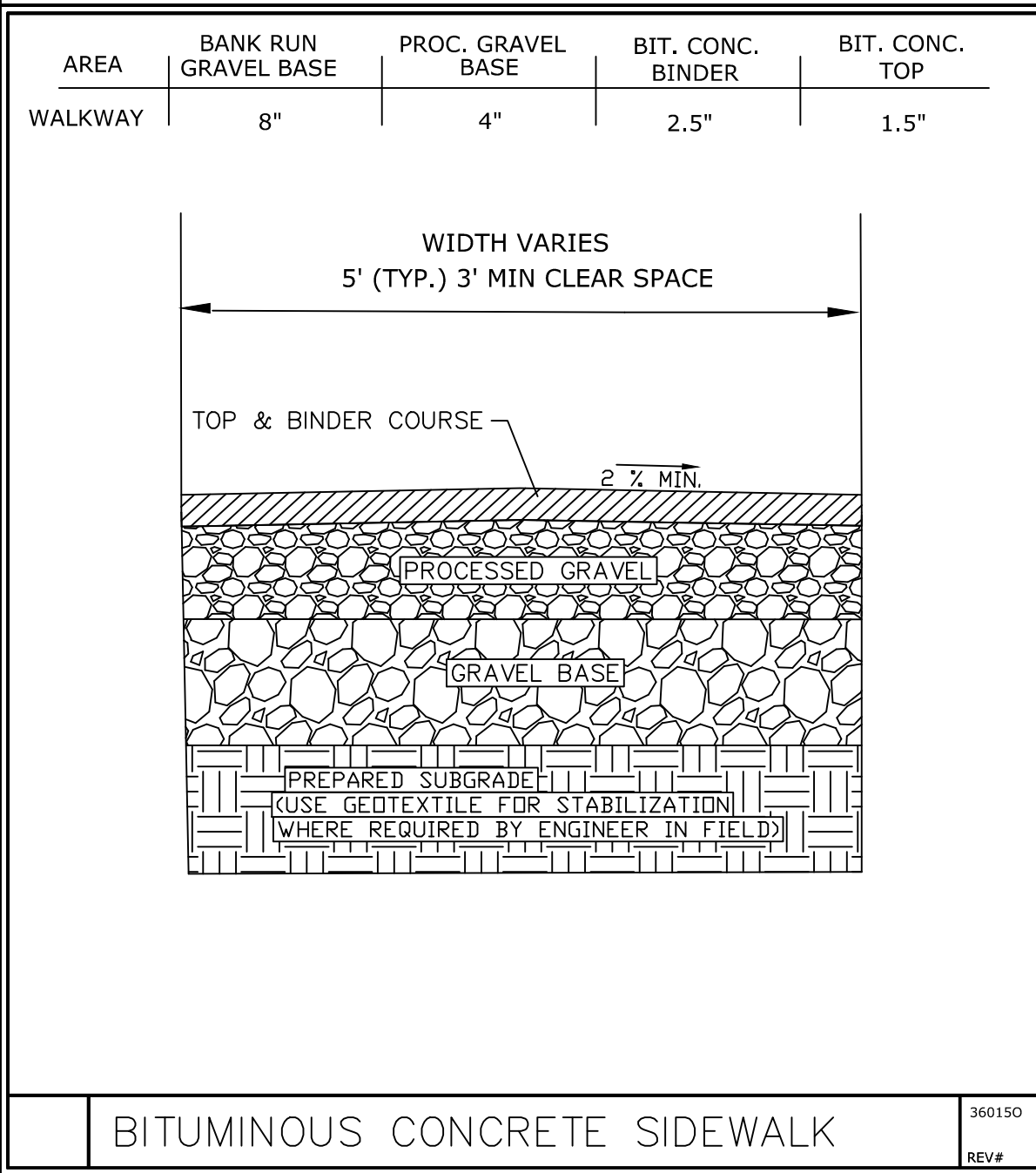
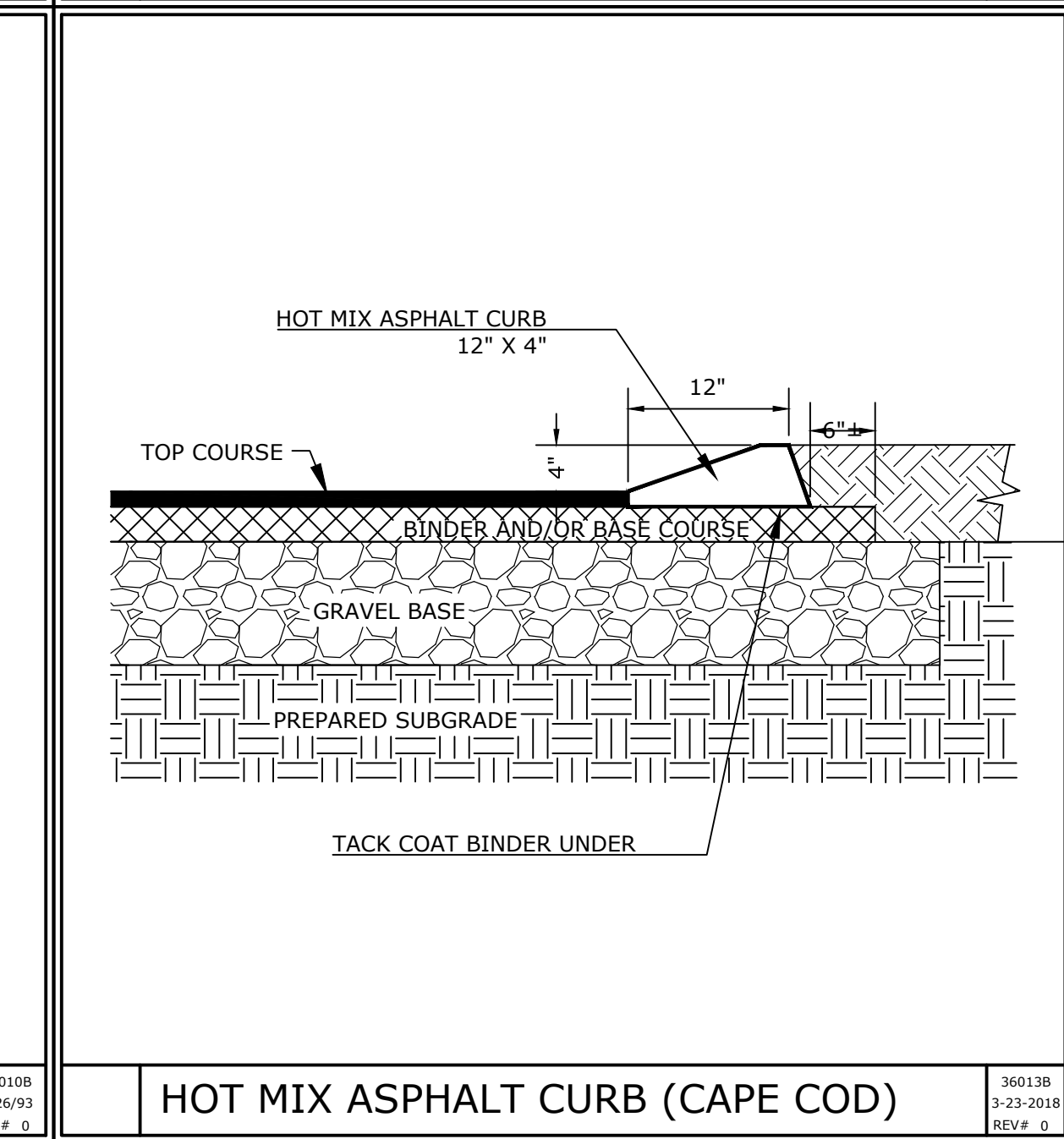
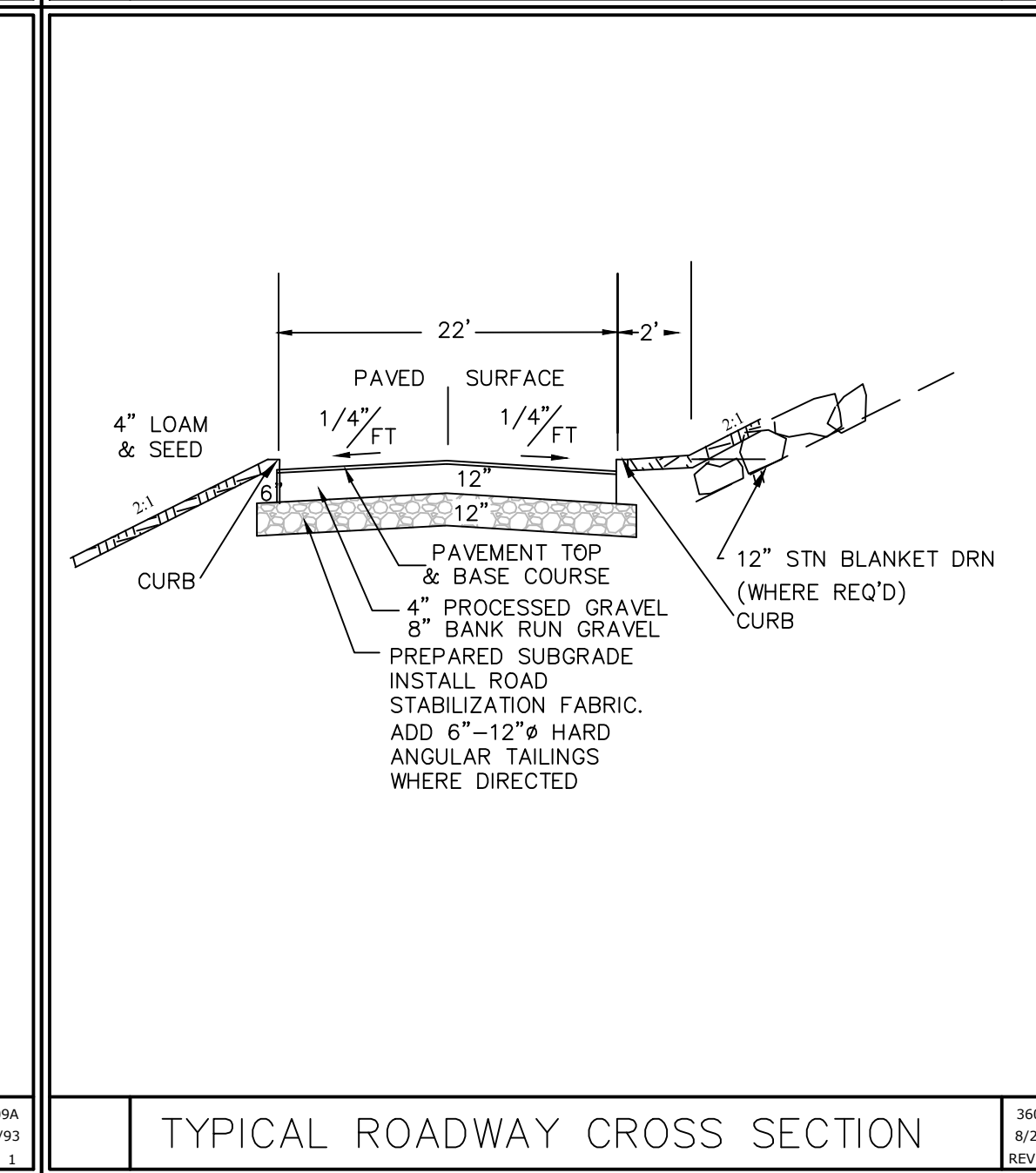
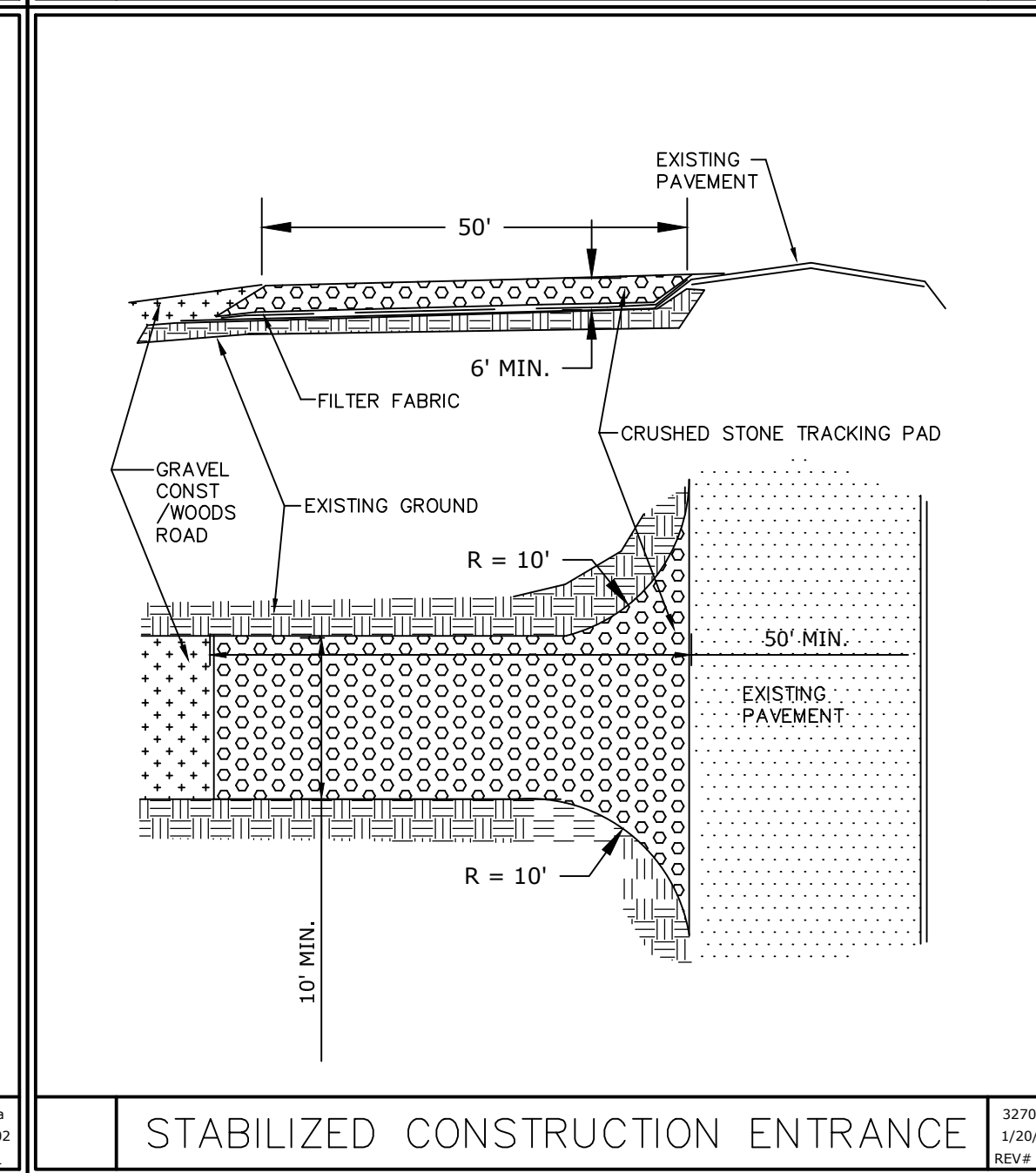
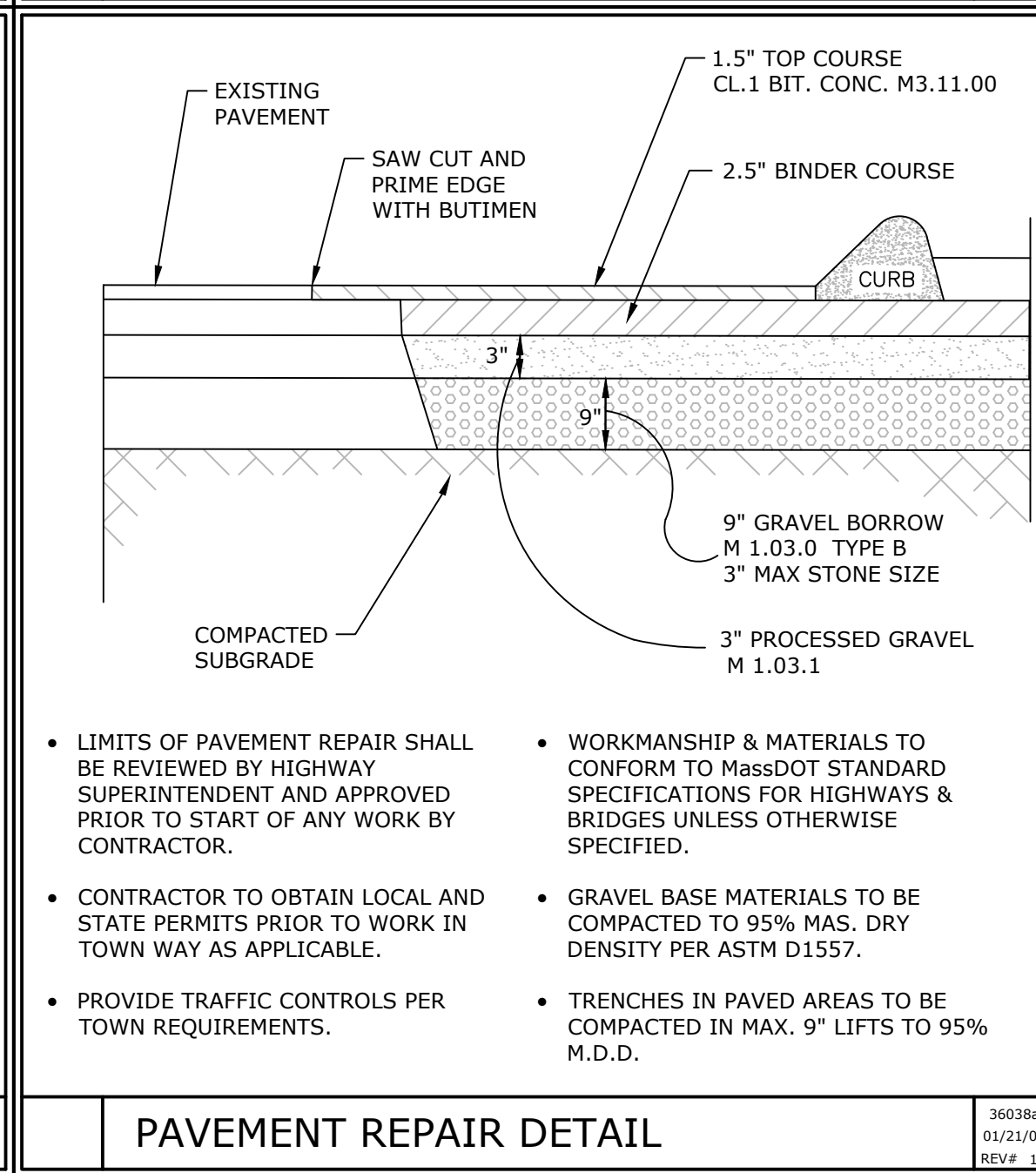
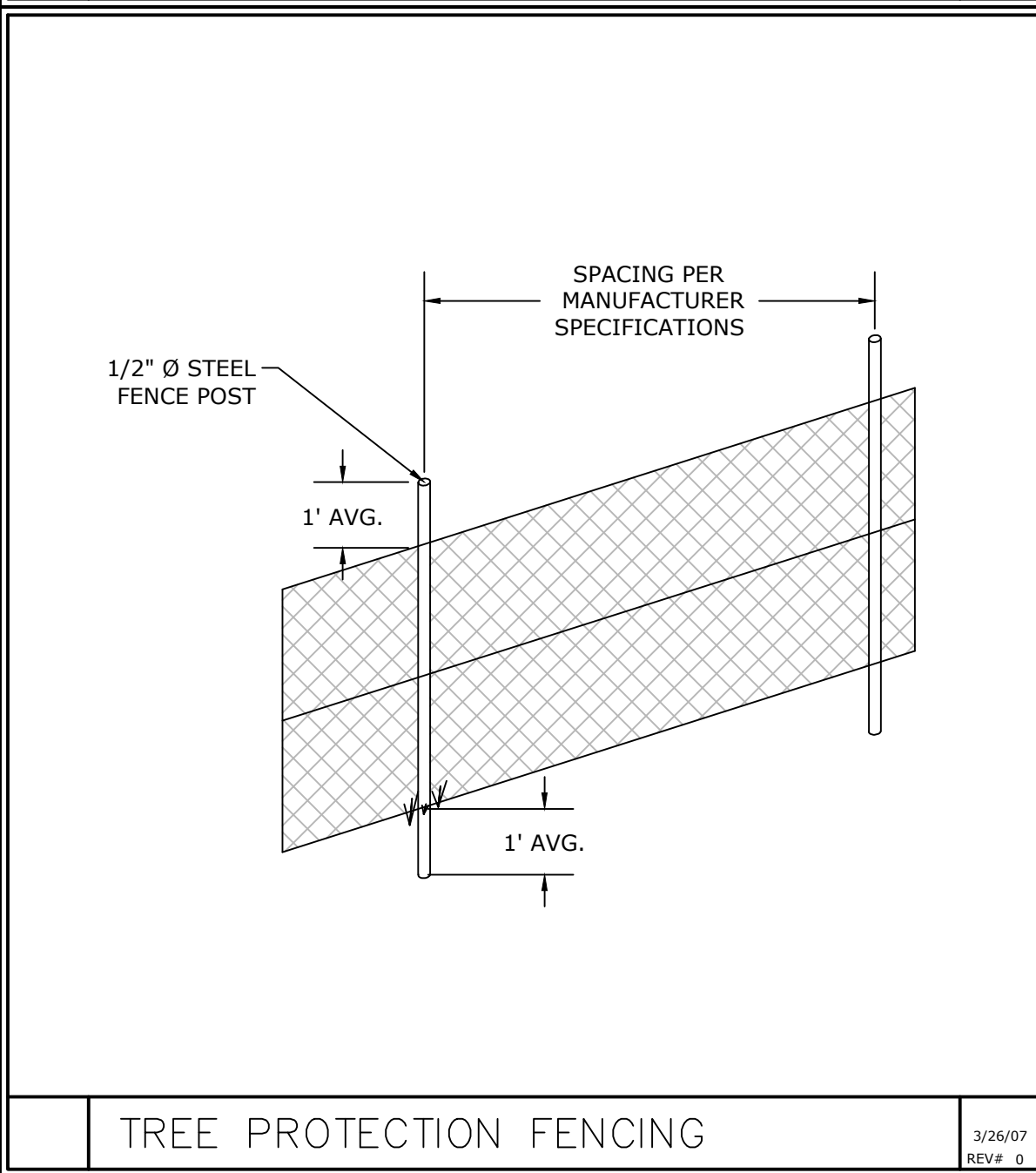
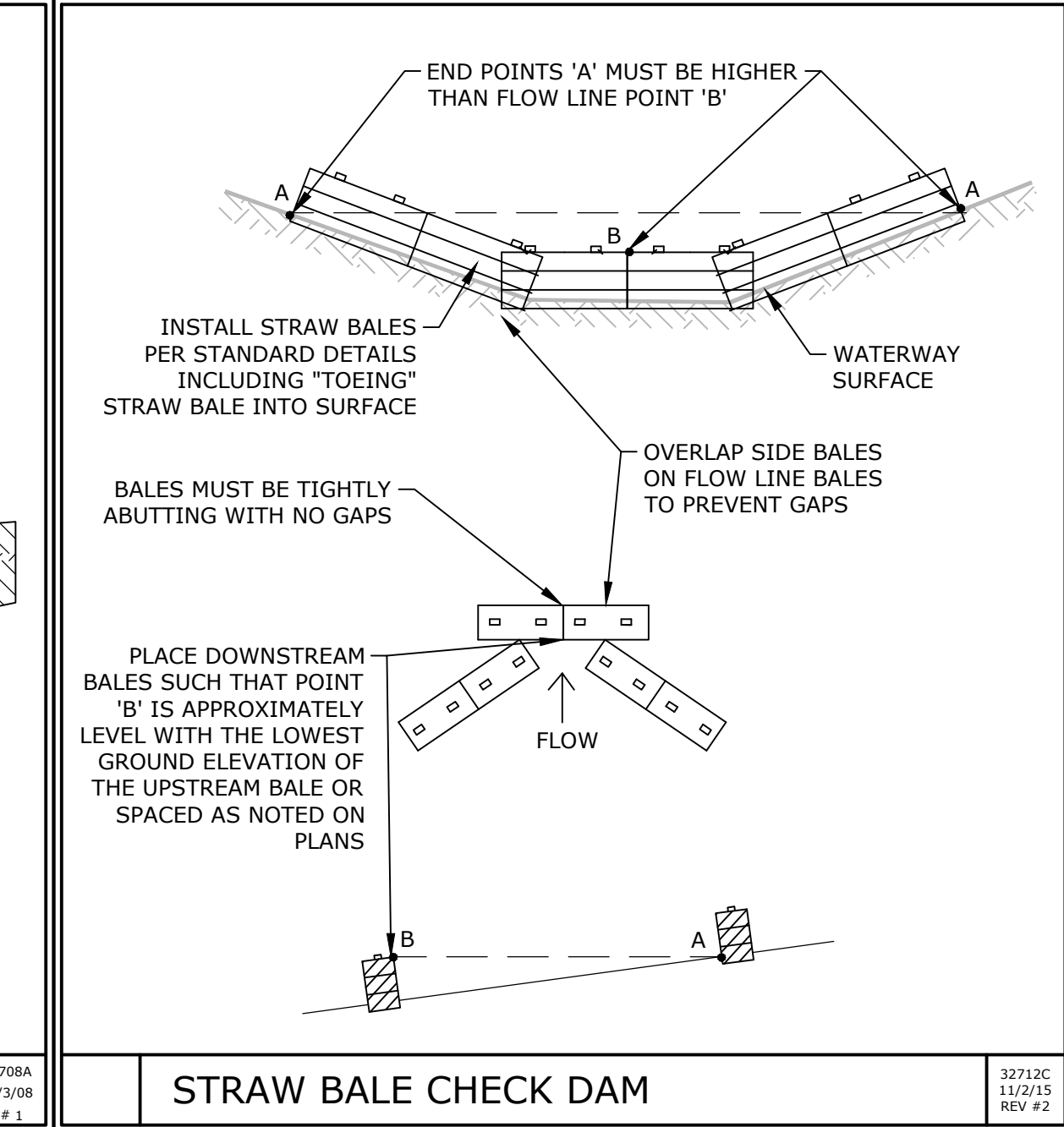
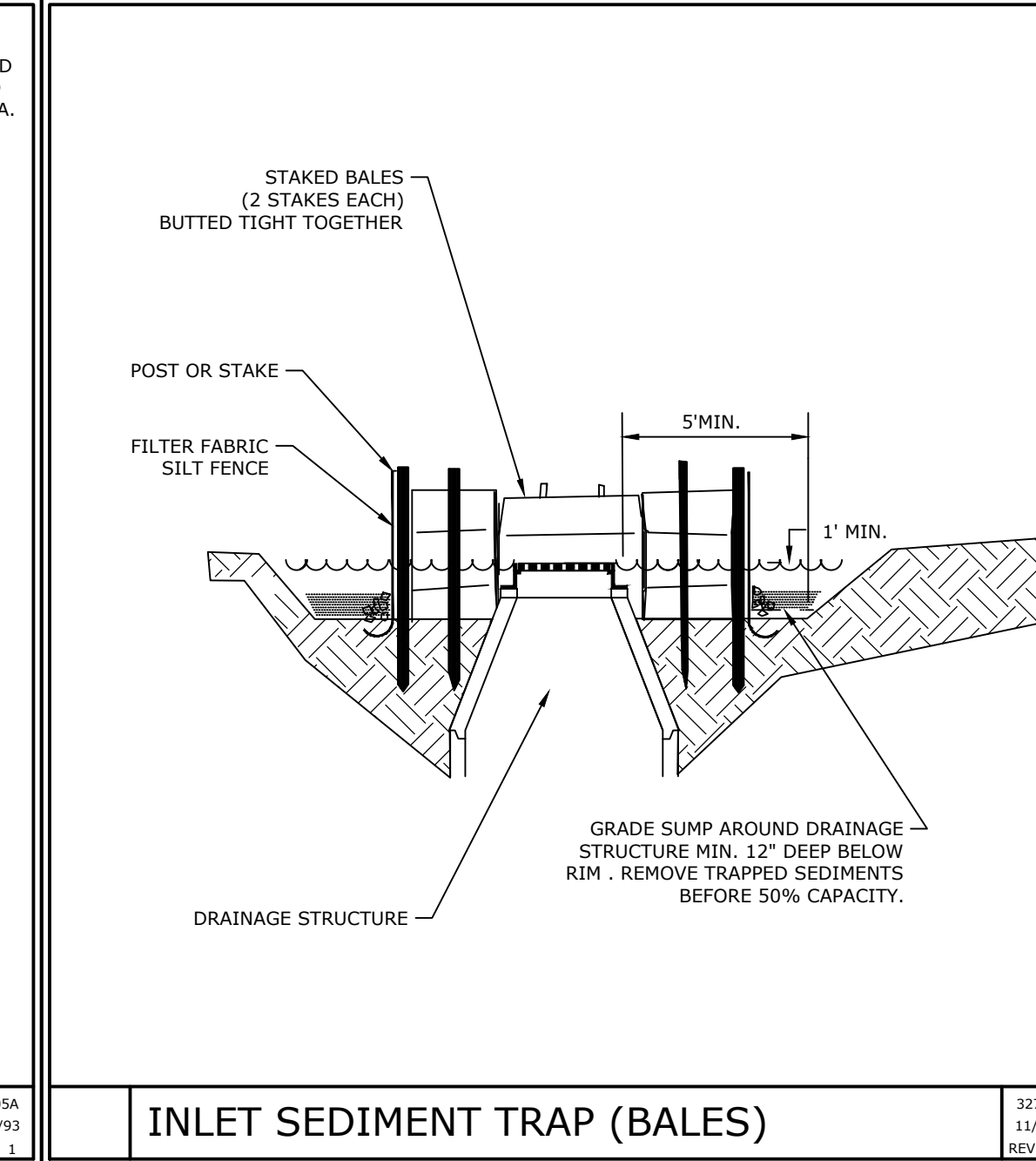
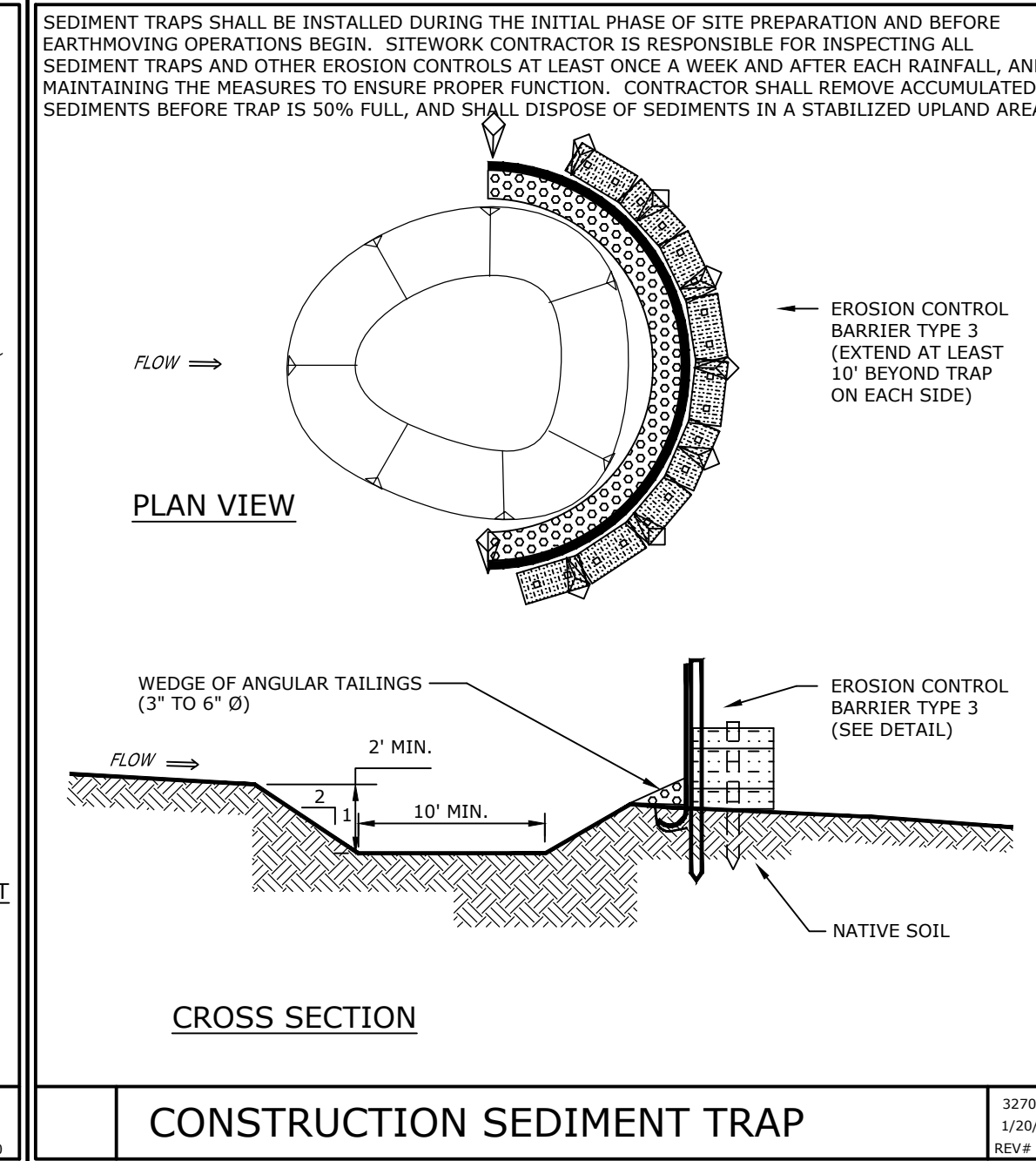
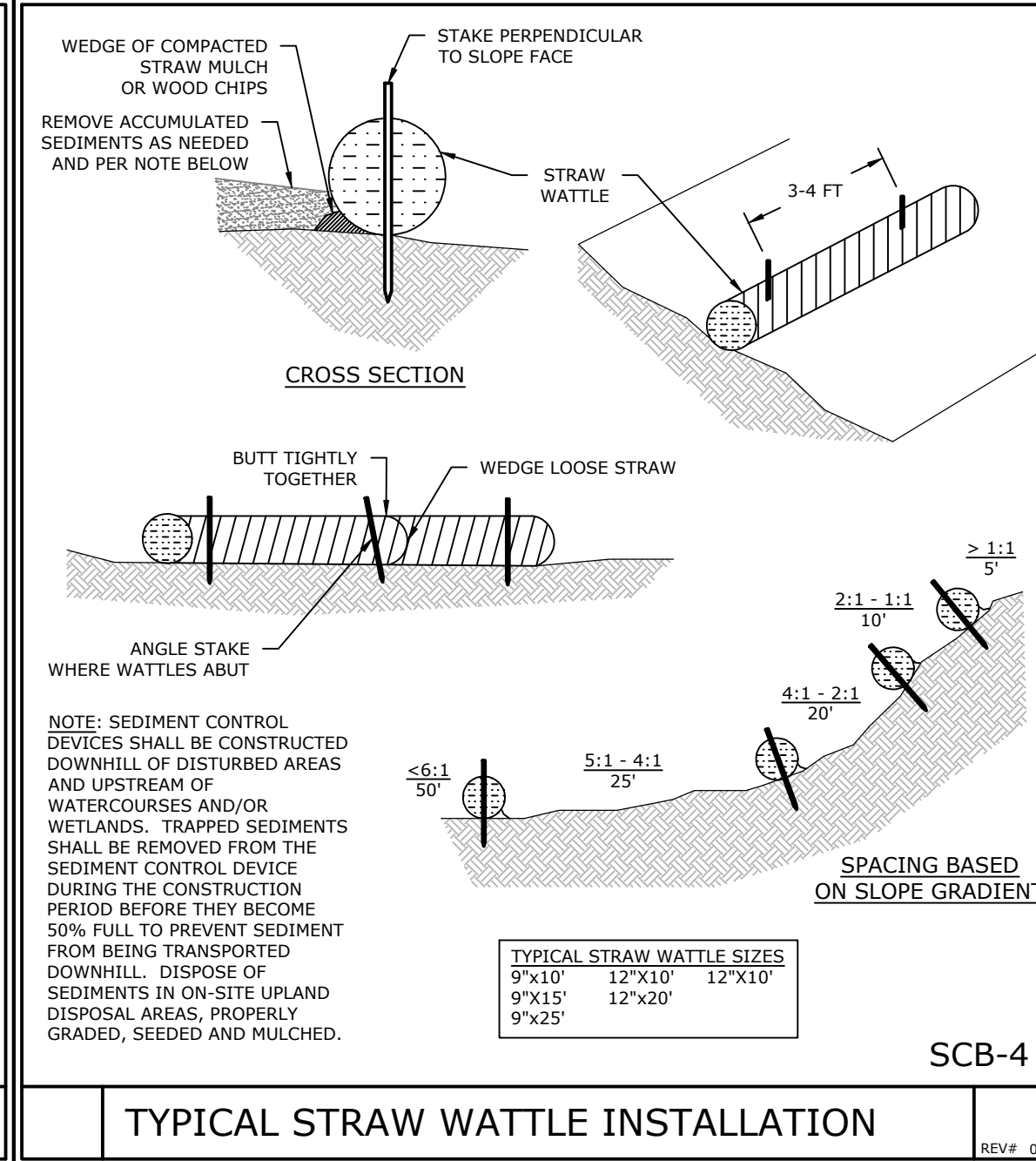
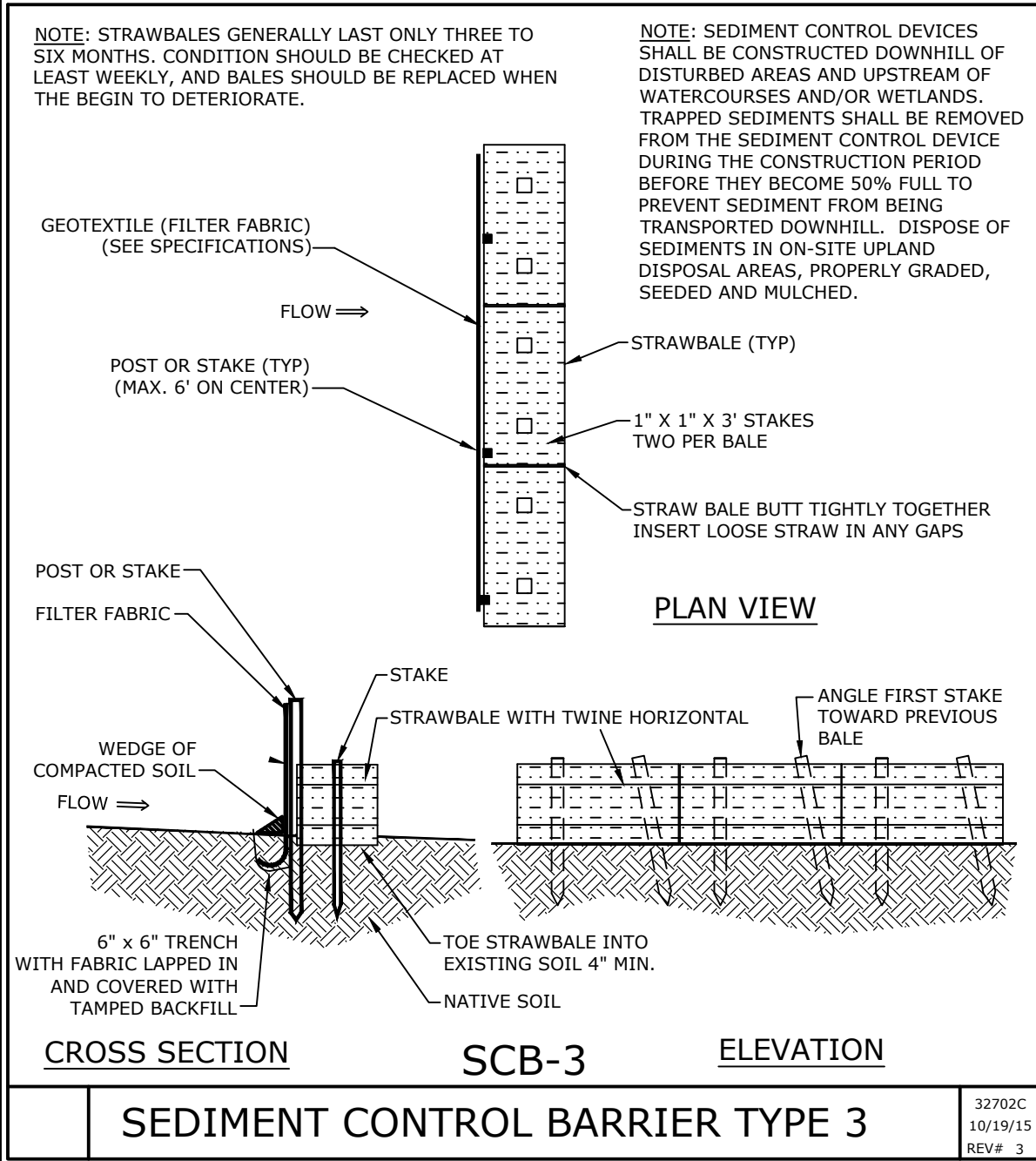




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				SCALE	
				AS NOTED	
				DATE	
<p><i>PENNROSE</i> <i>Pittsfield-Lenox Road</i> <i>Lenox, MA</i></p>				12-30-22	
				DESIGNED BY	
				SAM	
				DRAWN BY	
<p><i>FORESIGHT</i>  <i>ENGINEERING SURVEYING PLANNING</i></p>				AZM	
				CHECKED BY	
				MAL	
				SHEET NO.	
<p><i>FORESIGHT LAND SERVICES, INC.</i> <i>1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201</i> <i>TEL: (413) 499-1960 FAX: (413) 499-3307 WWW.FORESIGHTLAND.COM</i></p>				C-4	
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				CAPITAL NO.	
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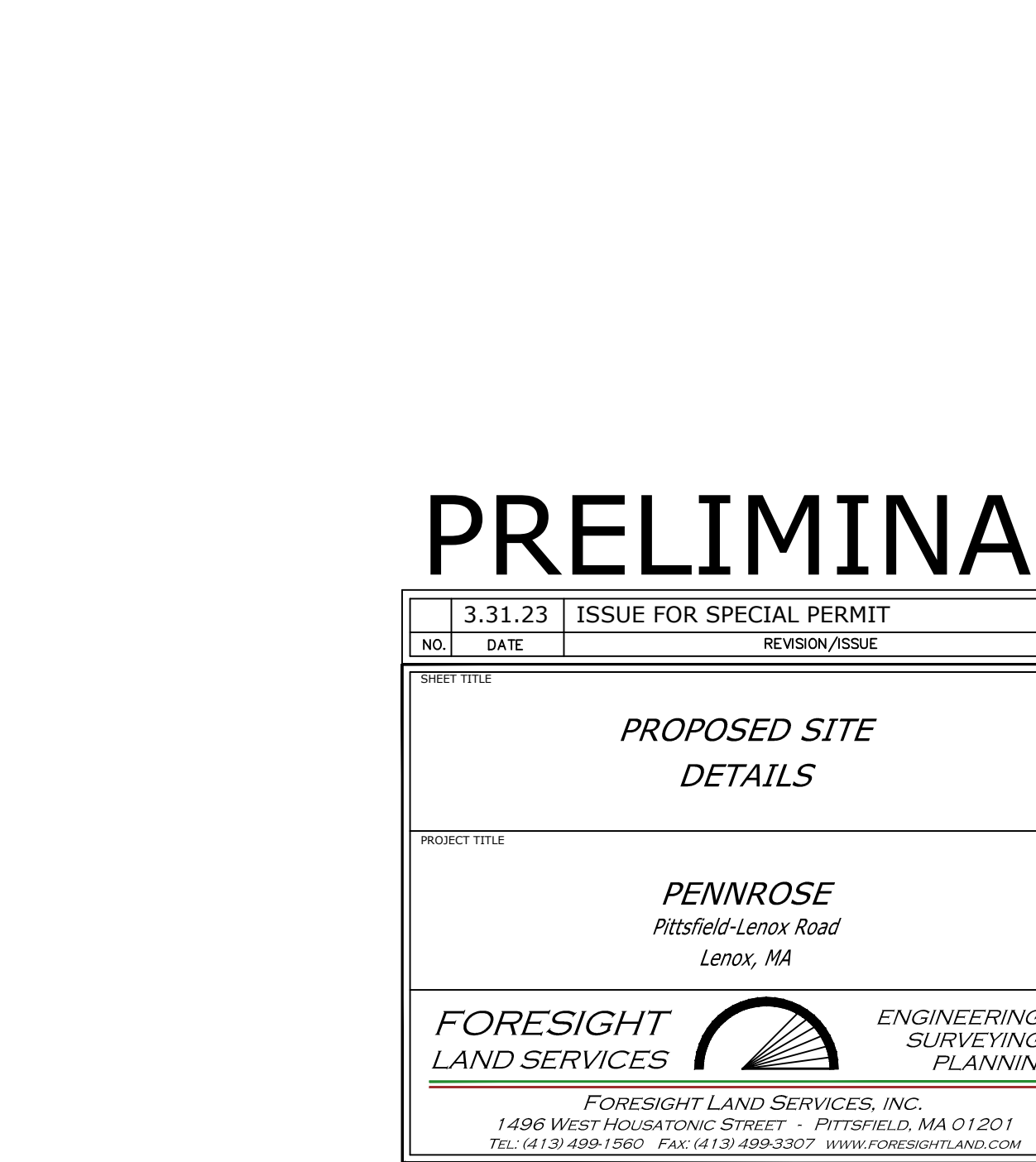
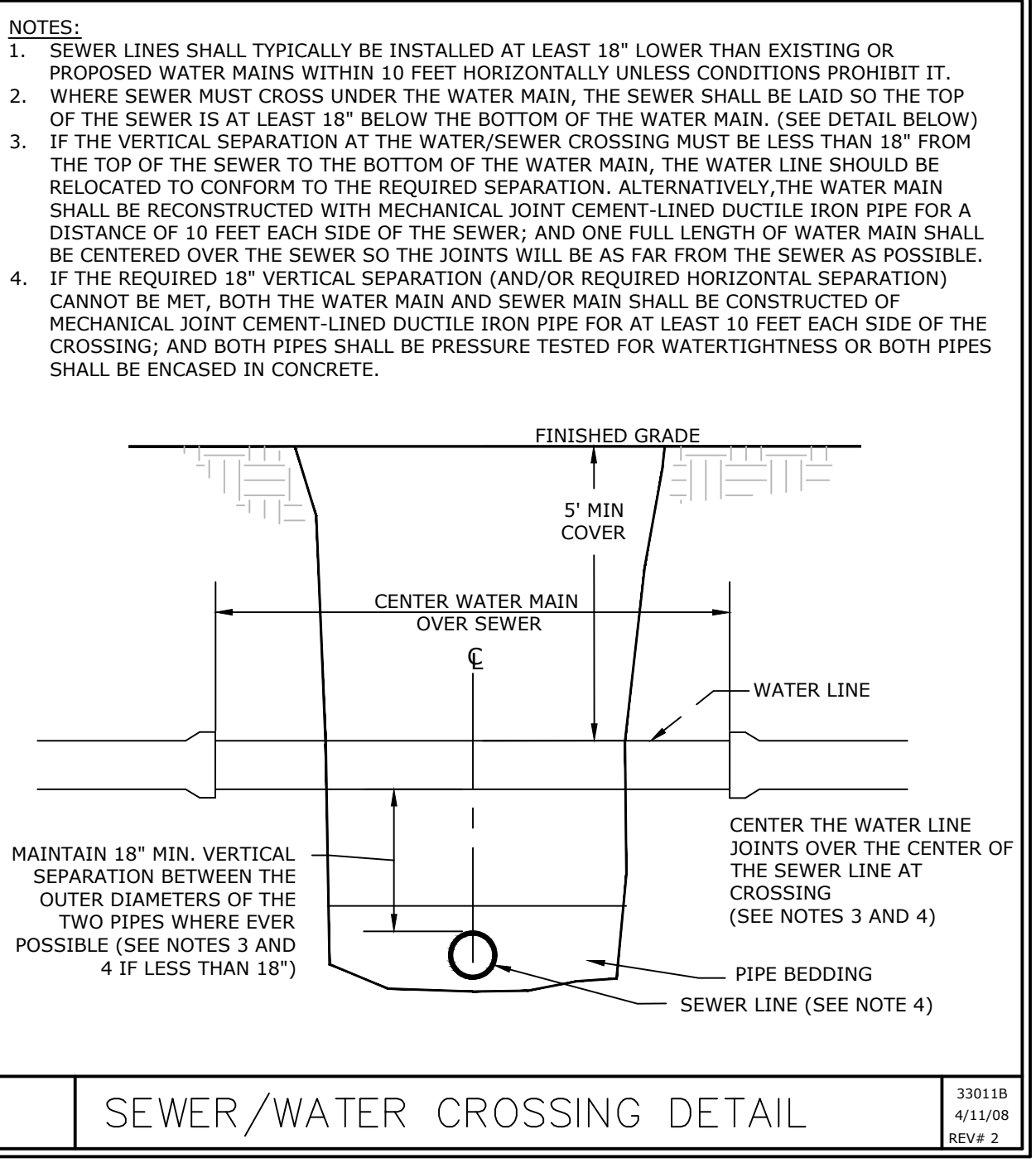
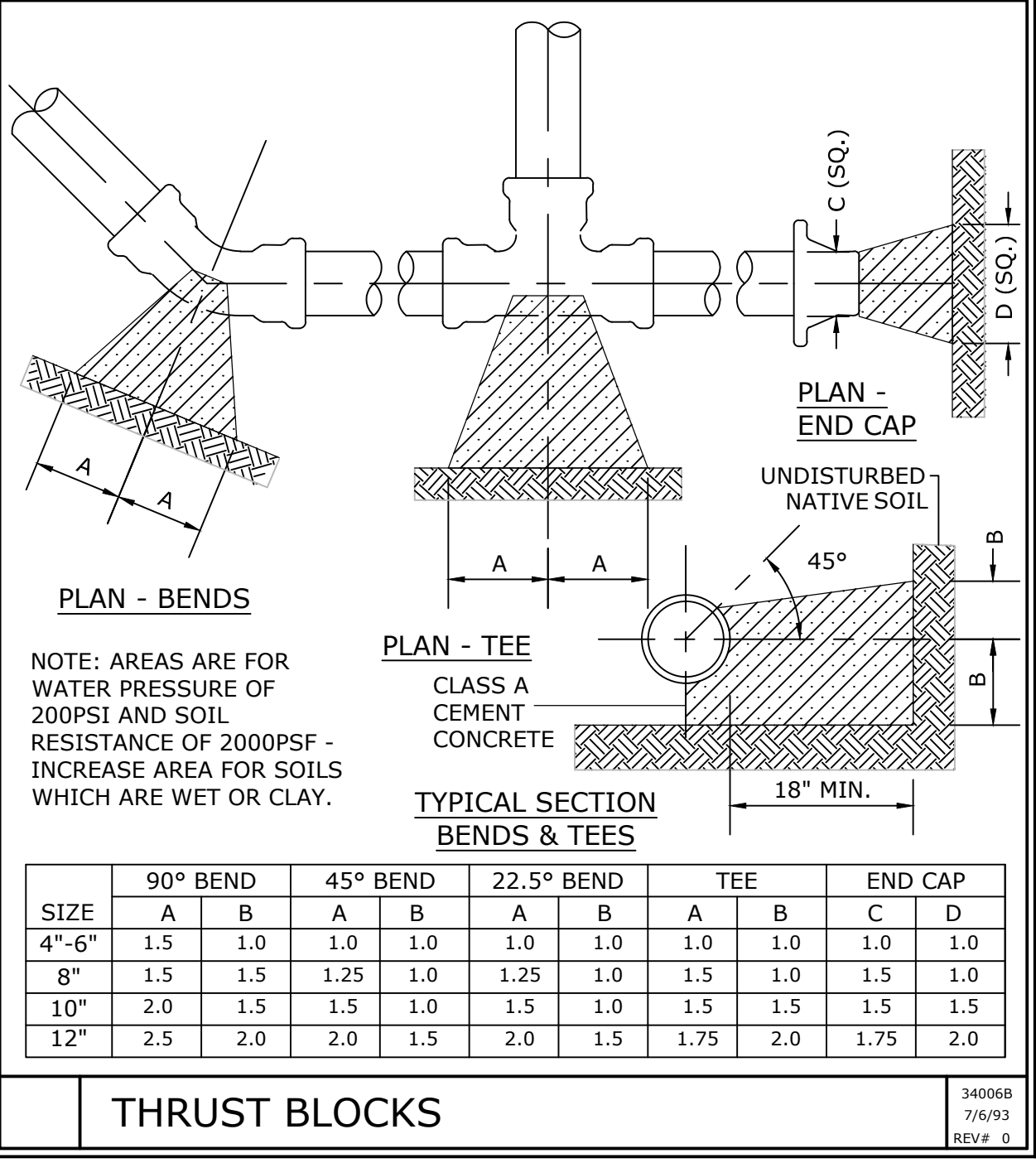
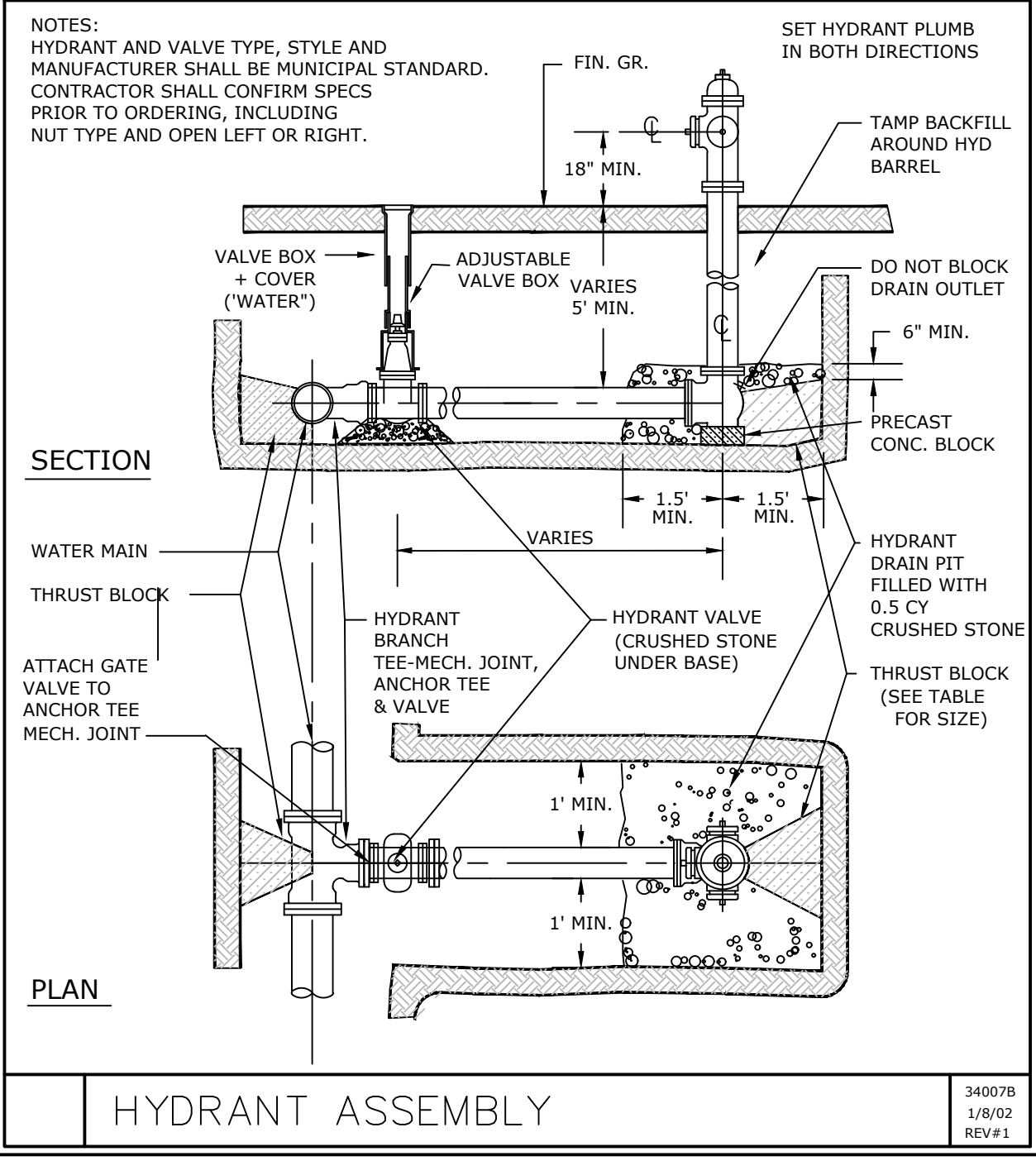
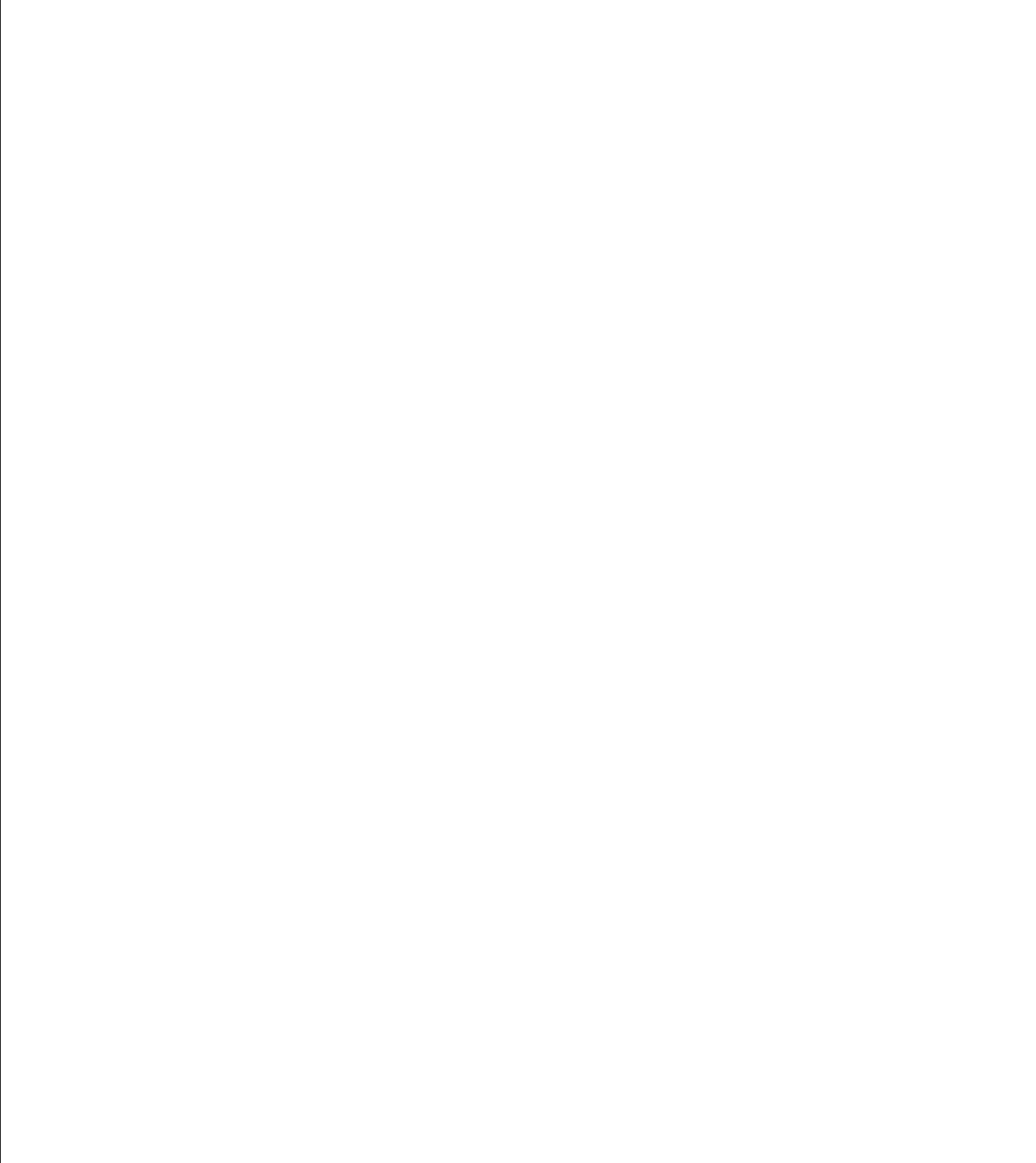
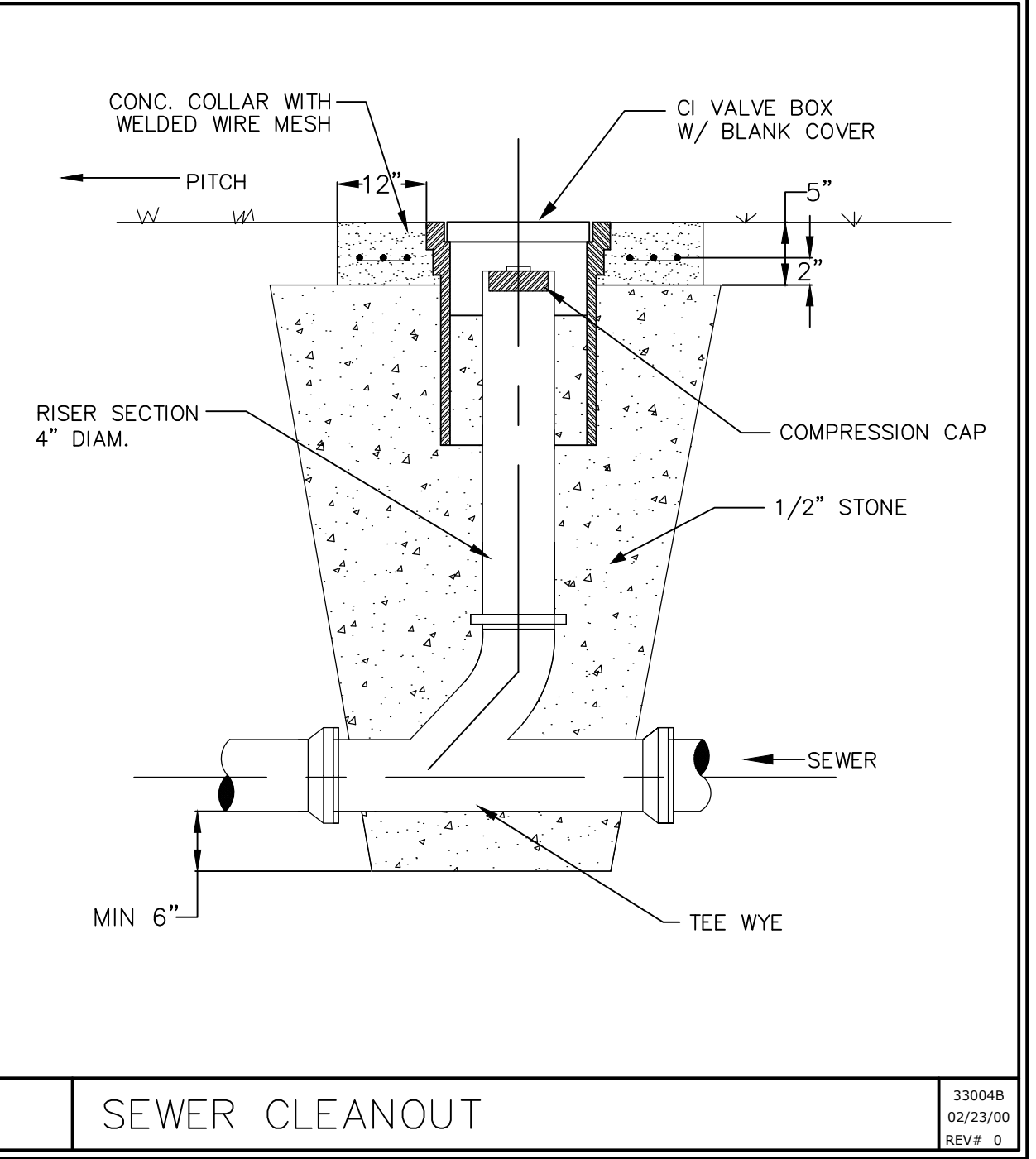
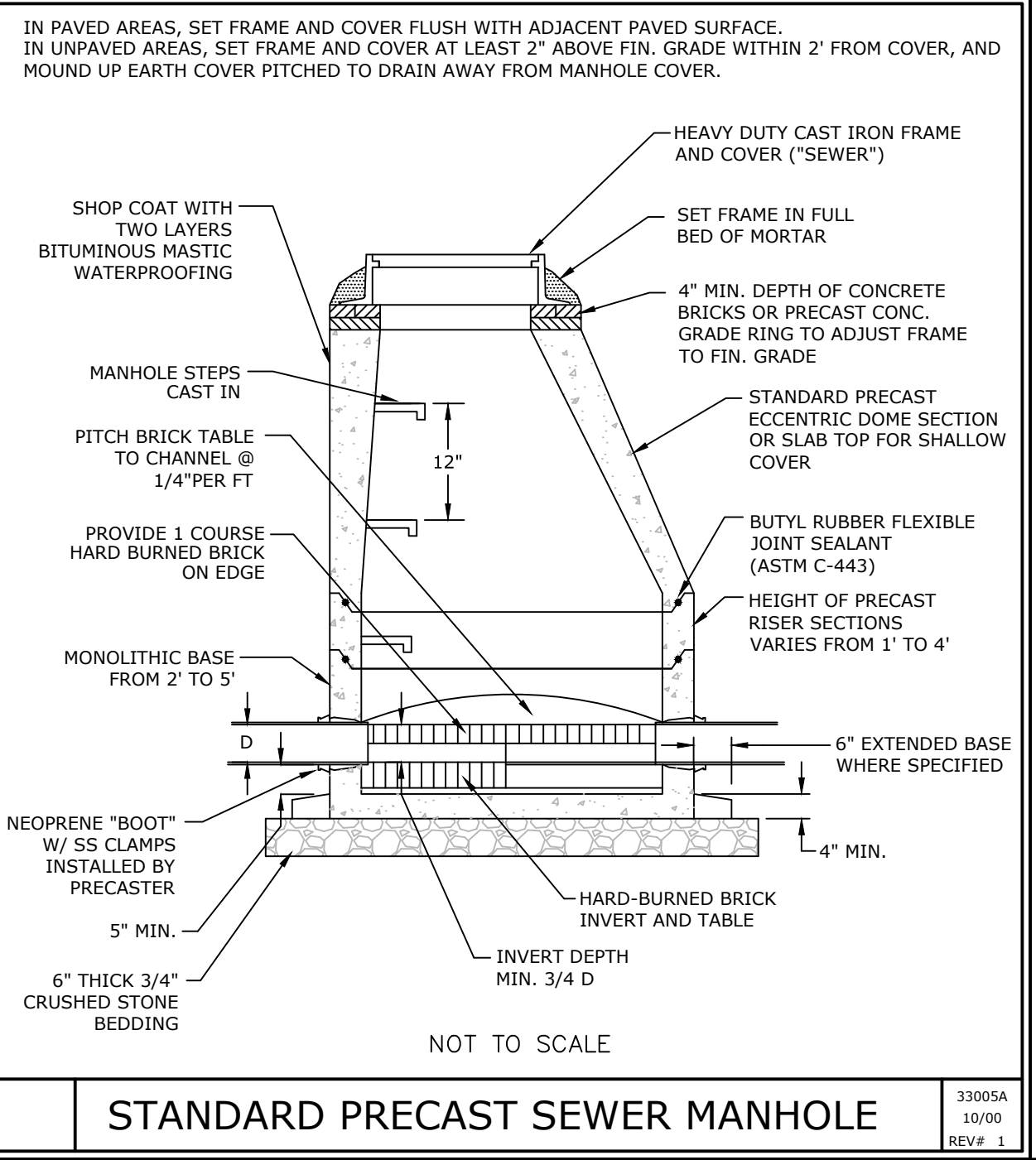
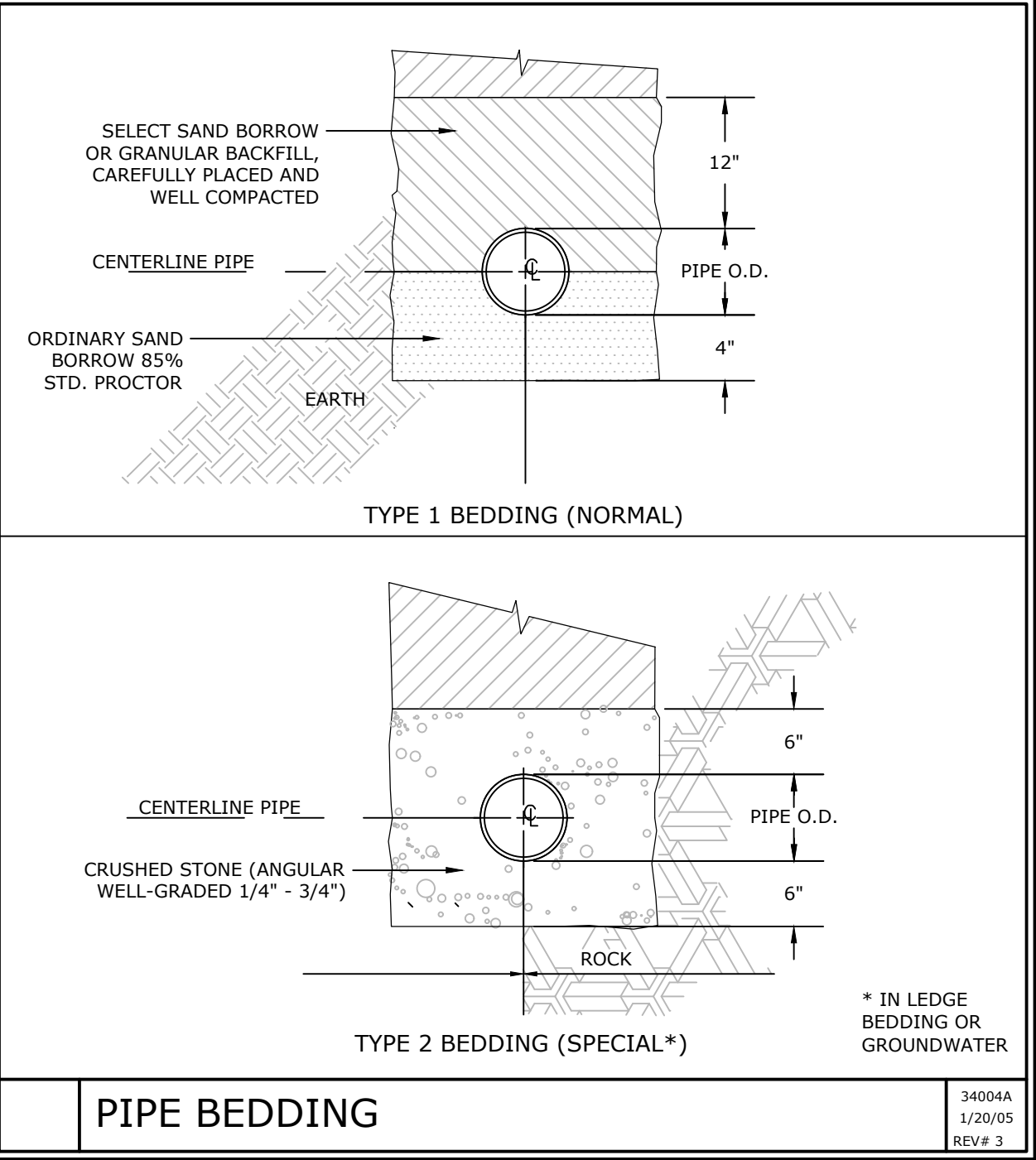
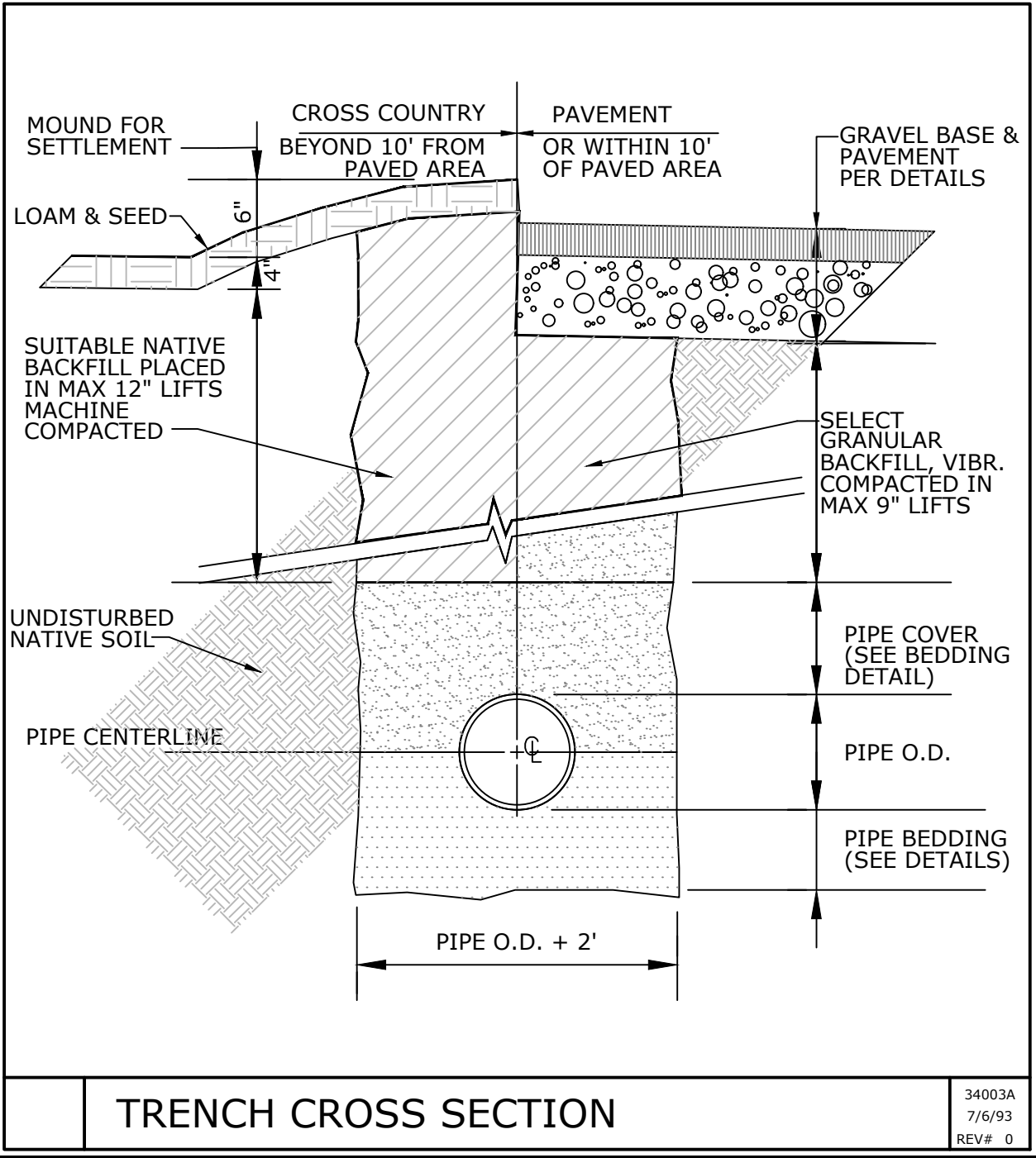
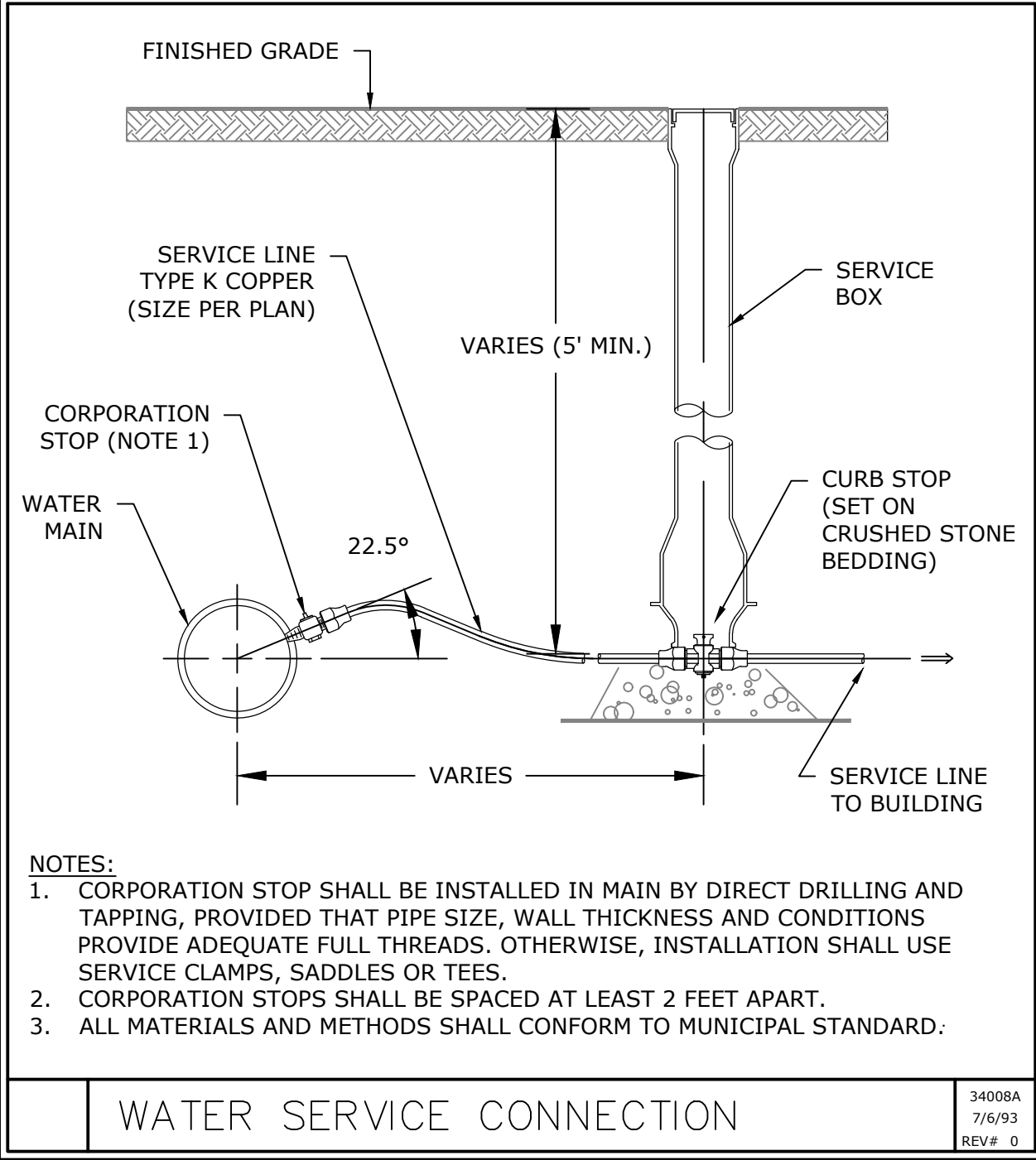
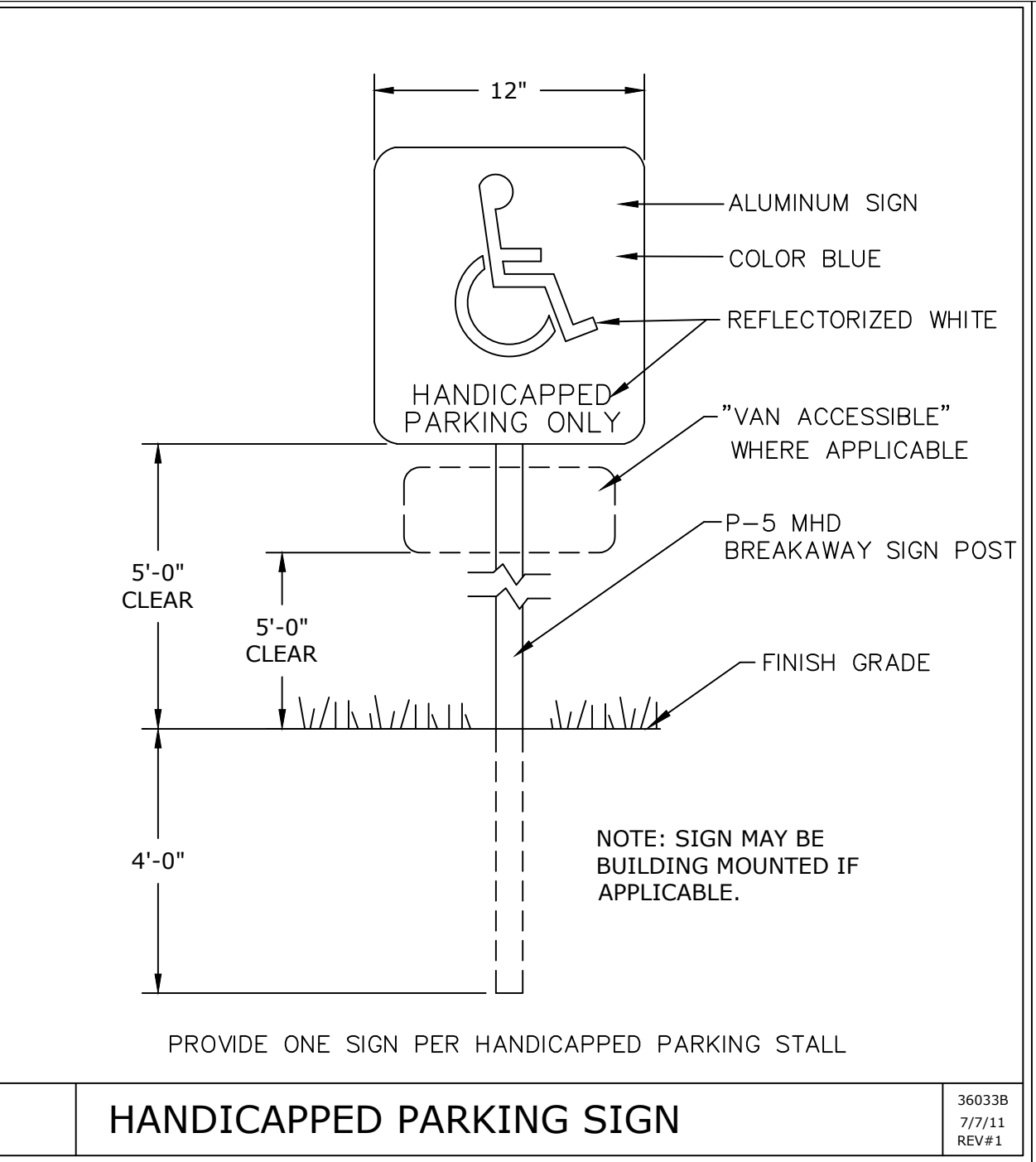
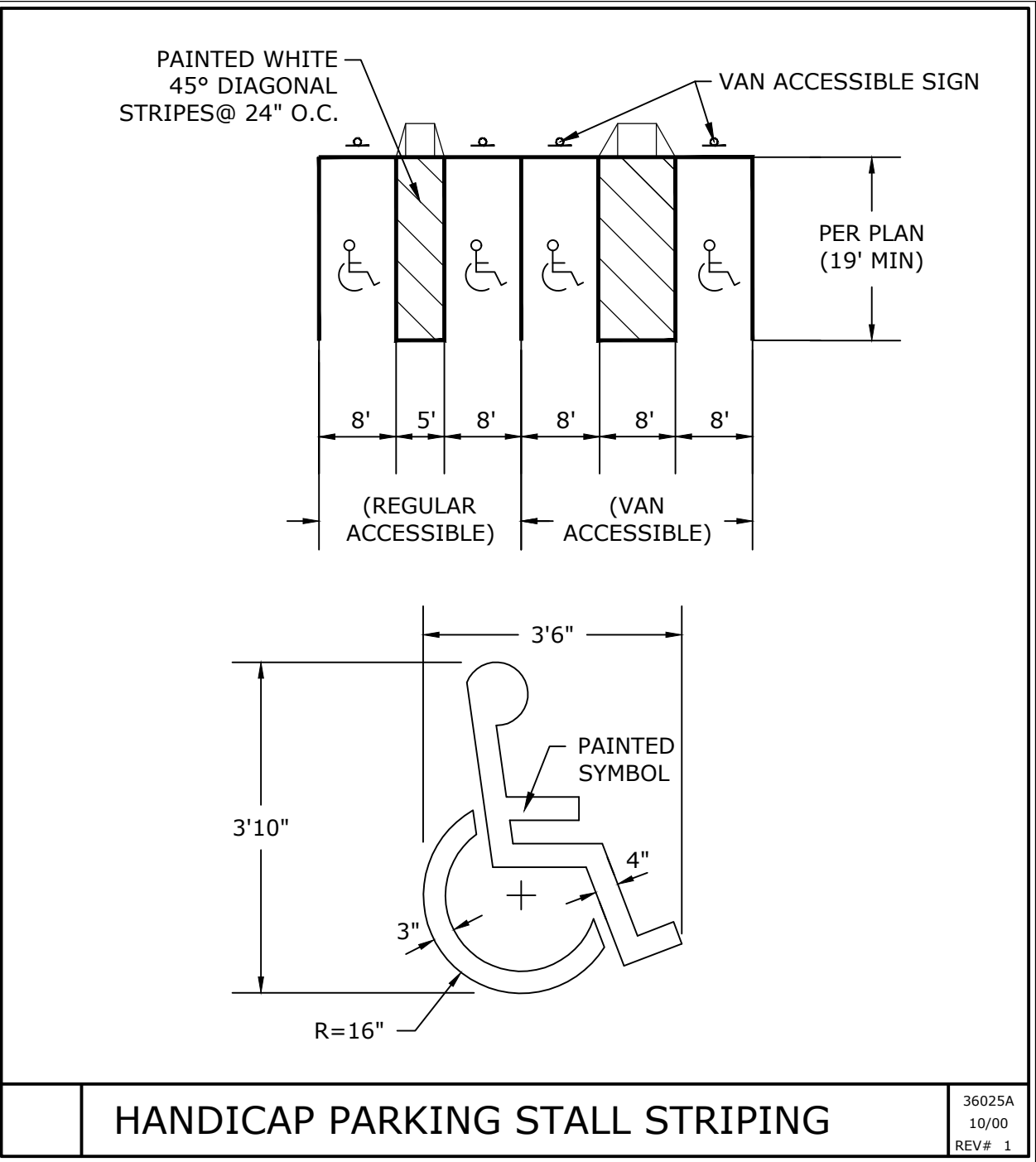
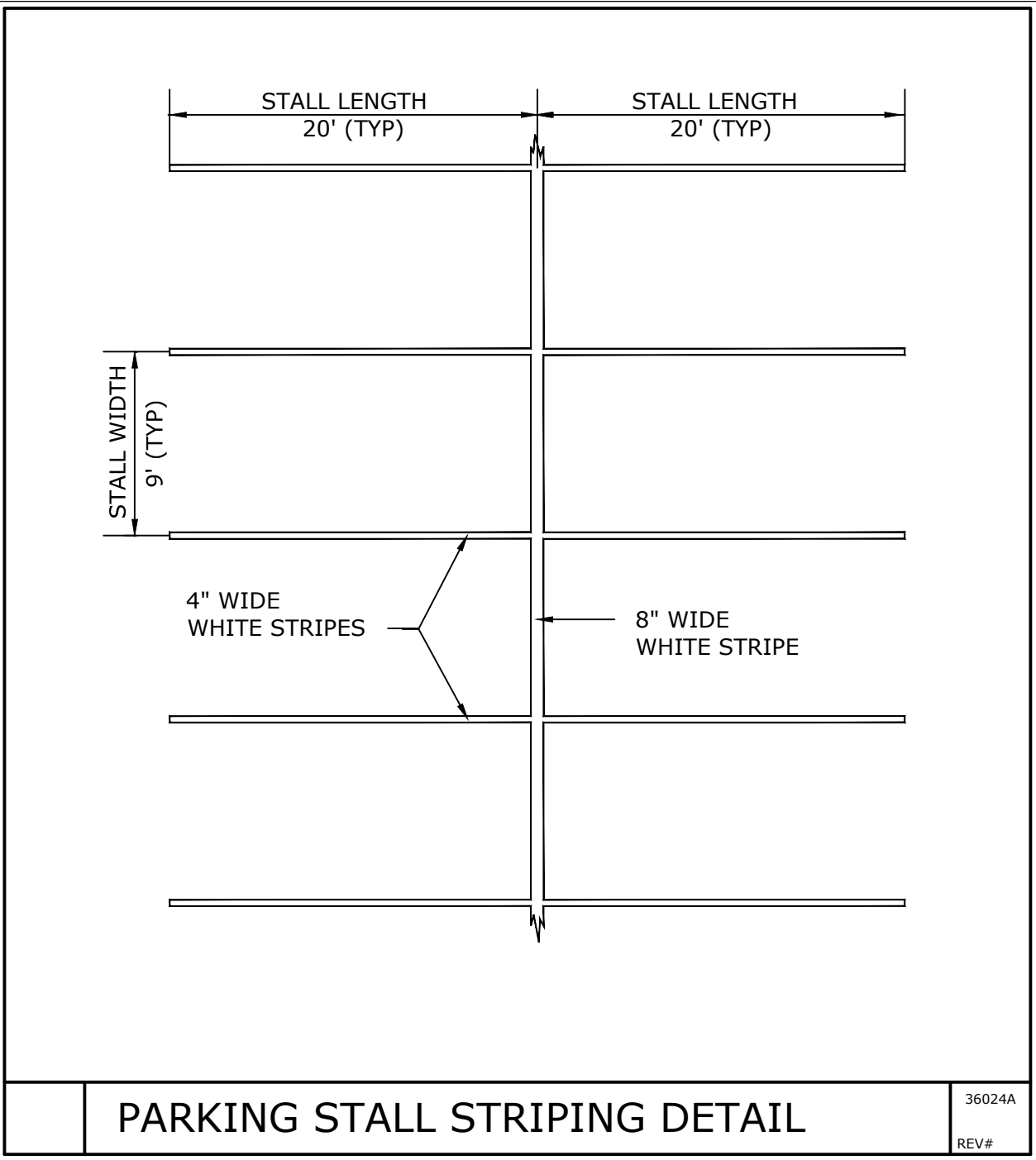
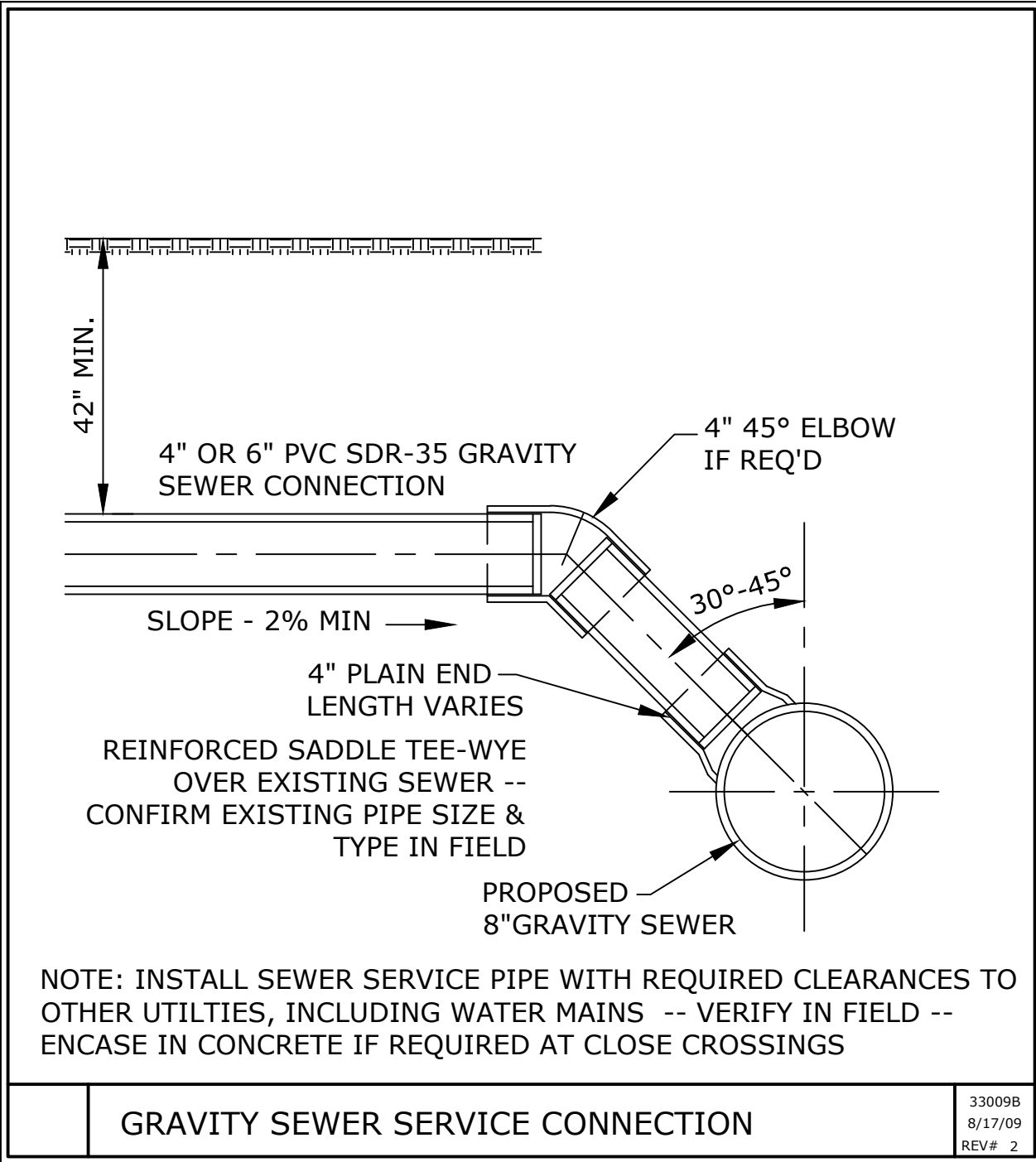




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NO.	DATE	BY
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PROPOSED SITE DETAILS		E3036
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		AS NOTED
PROJECT TITLE		DATE
		12-30-22
		DESIGNED BY
PENNROSE Pittsfield-Lenox Road Lenox, MA		SAM
		DRAWN BY
		AZM
FORESIGHT LAND SERVICES		CHECKED BY
ENGINEERING SURVEYING PLANNING		SHEET NO.
		C-5
		OF SHEETS
FORESIGHT LAND SERVICES, INC. 1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201 TEL (413) 499-1960 FAX (413) 499-3307 WWW.FORESIGHTLAND.COM		

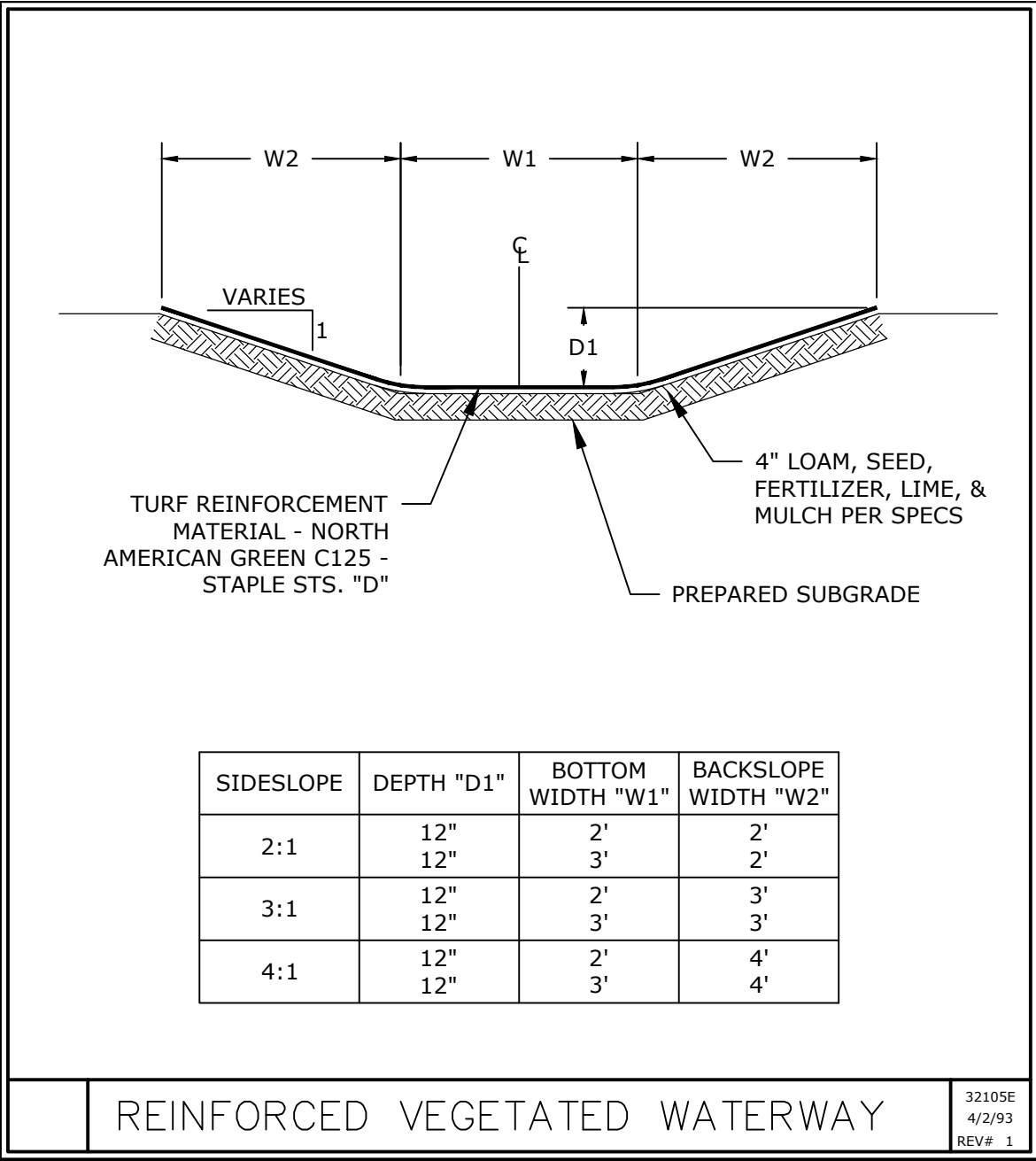




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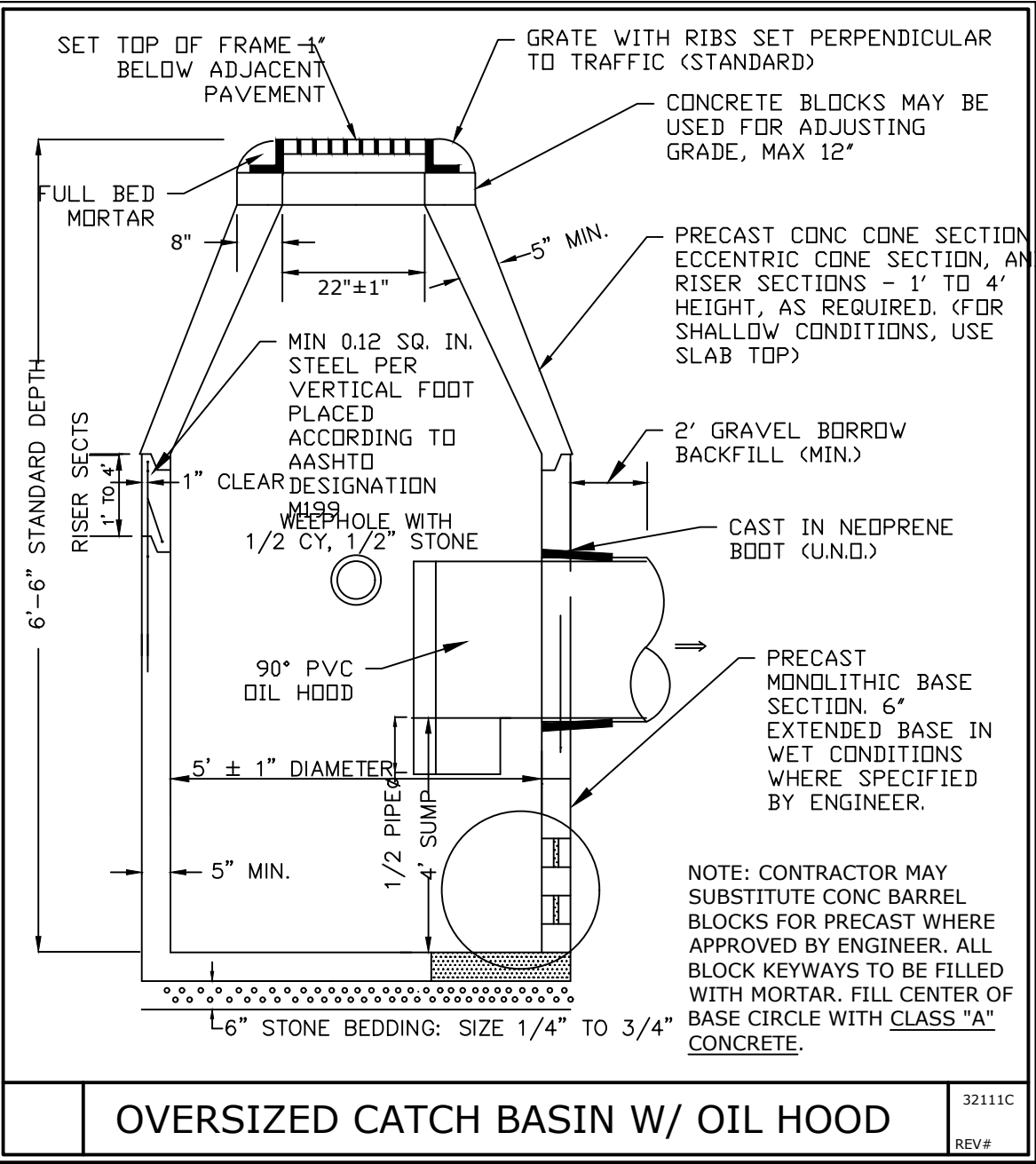
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SCALE		AS NOTED
DATE		12-30-22
PROJECT TITLE		DESIGNED BY
PENNROSE Pittsfield-Lenox Road Lenox, MA		SAM
DRAWN BY		AZM
CHECKED BY		
SHEET NO.		C-6
OF SHEETS		
FORESIGHT LAND SERVICES		ENGINEERING SURVEYING PLANNING
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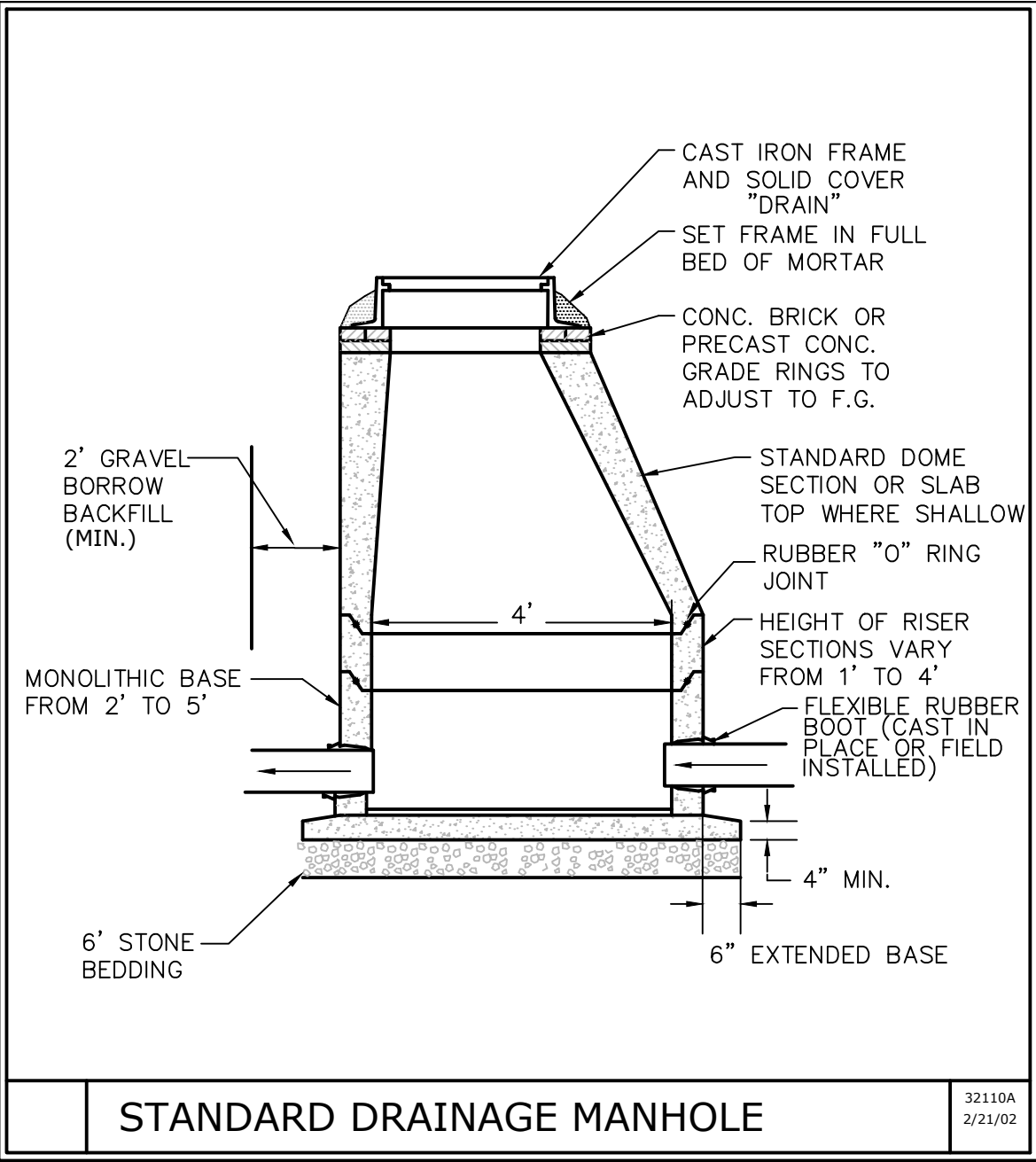
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4/2/93  
REV# 1



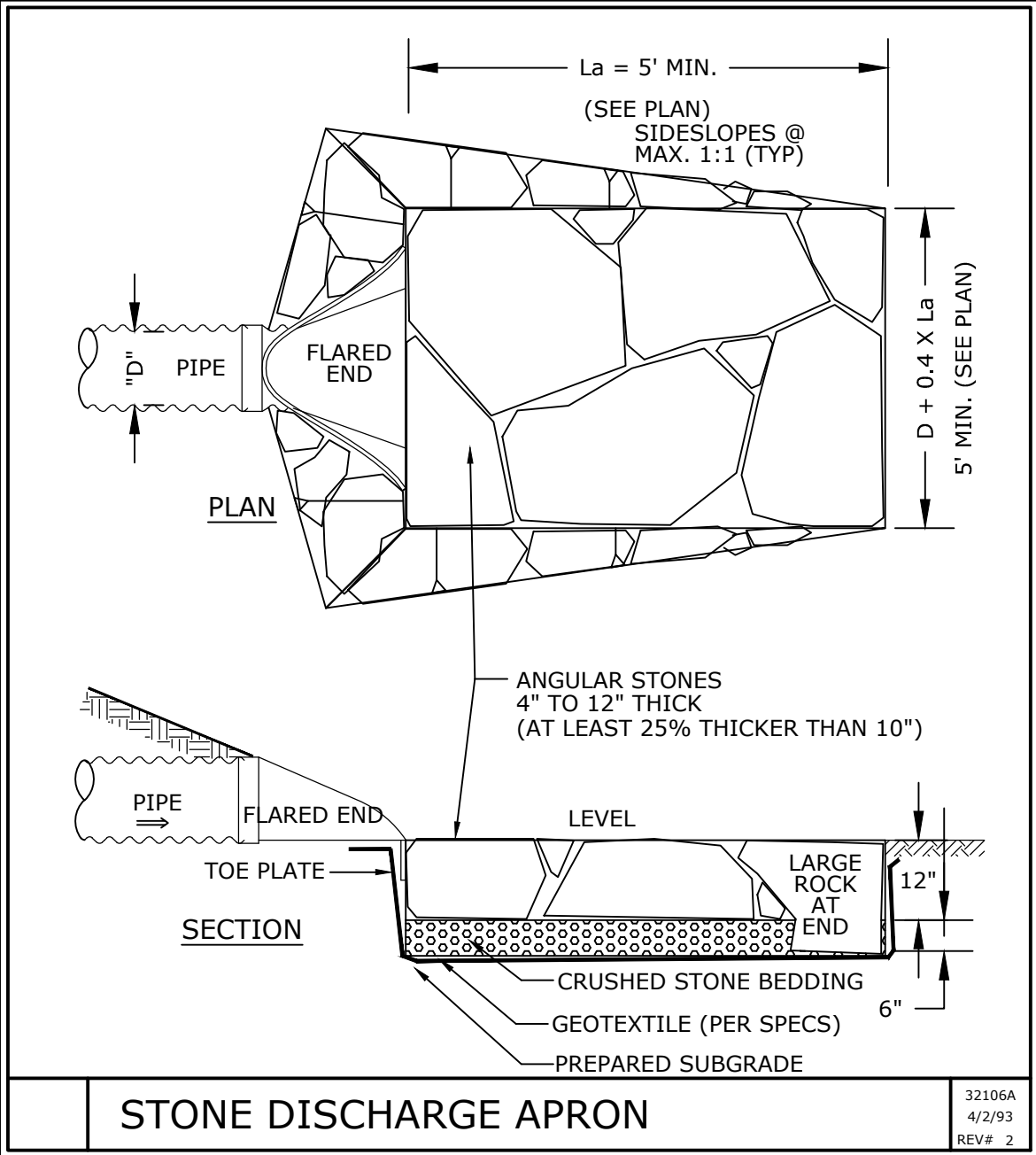
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32111C  
REV#



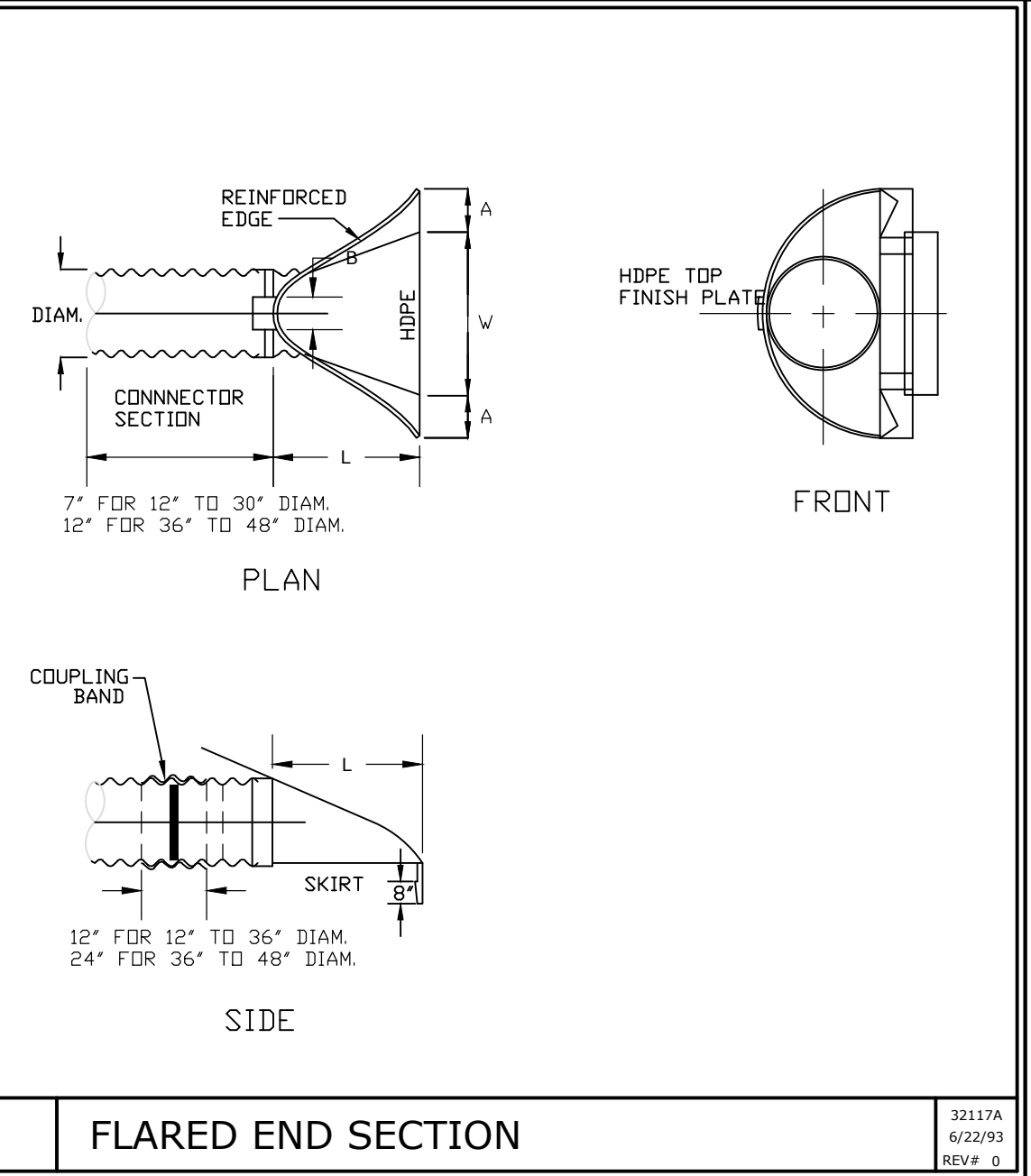
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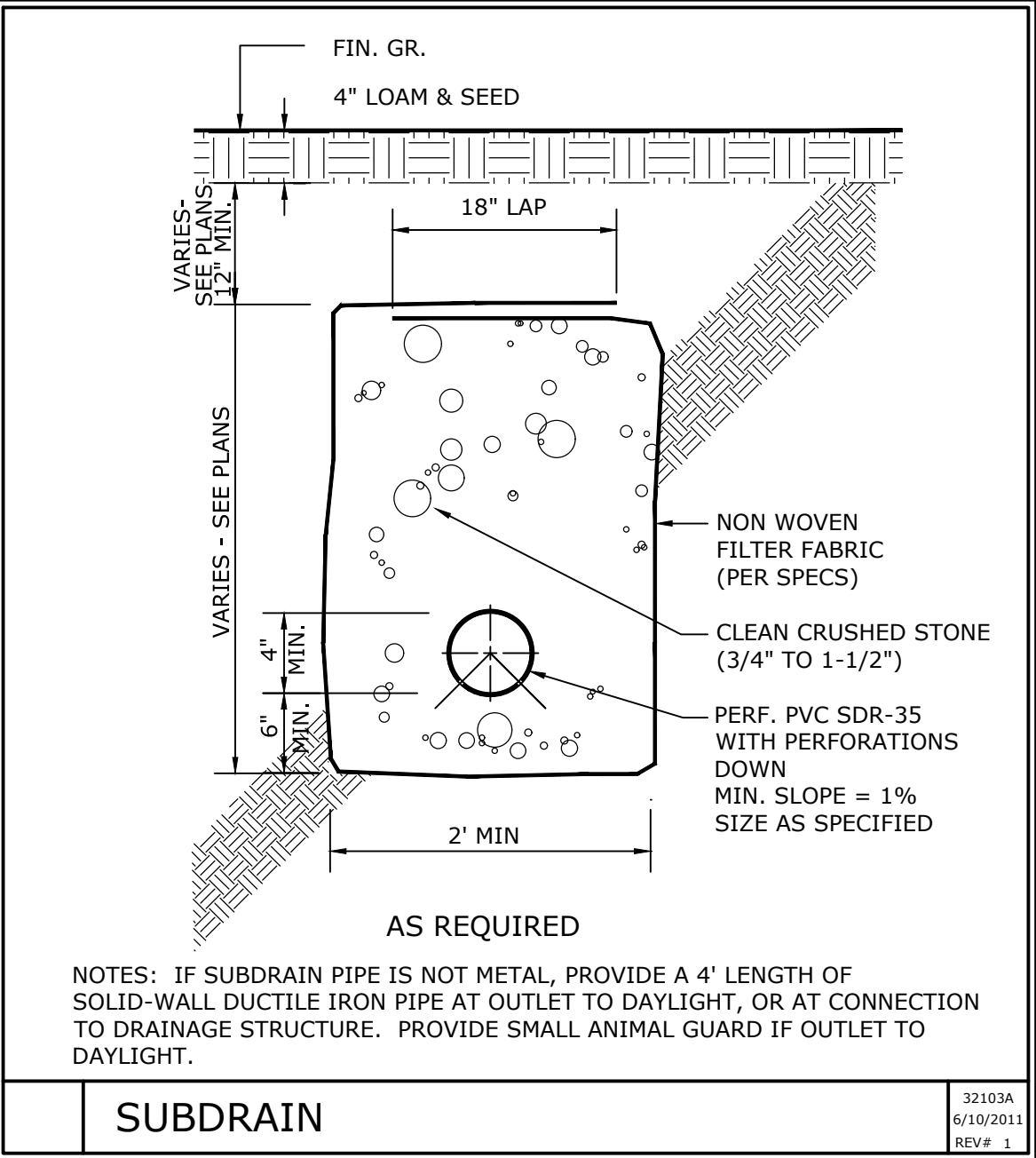
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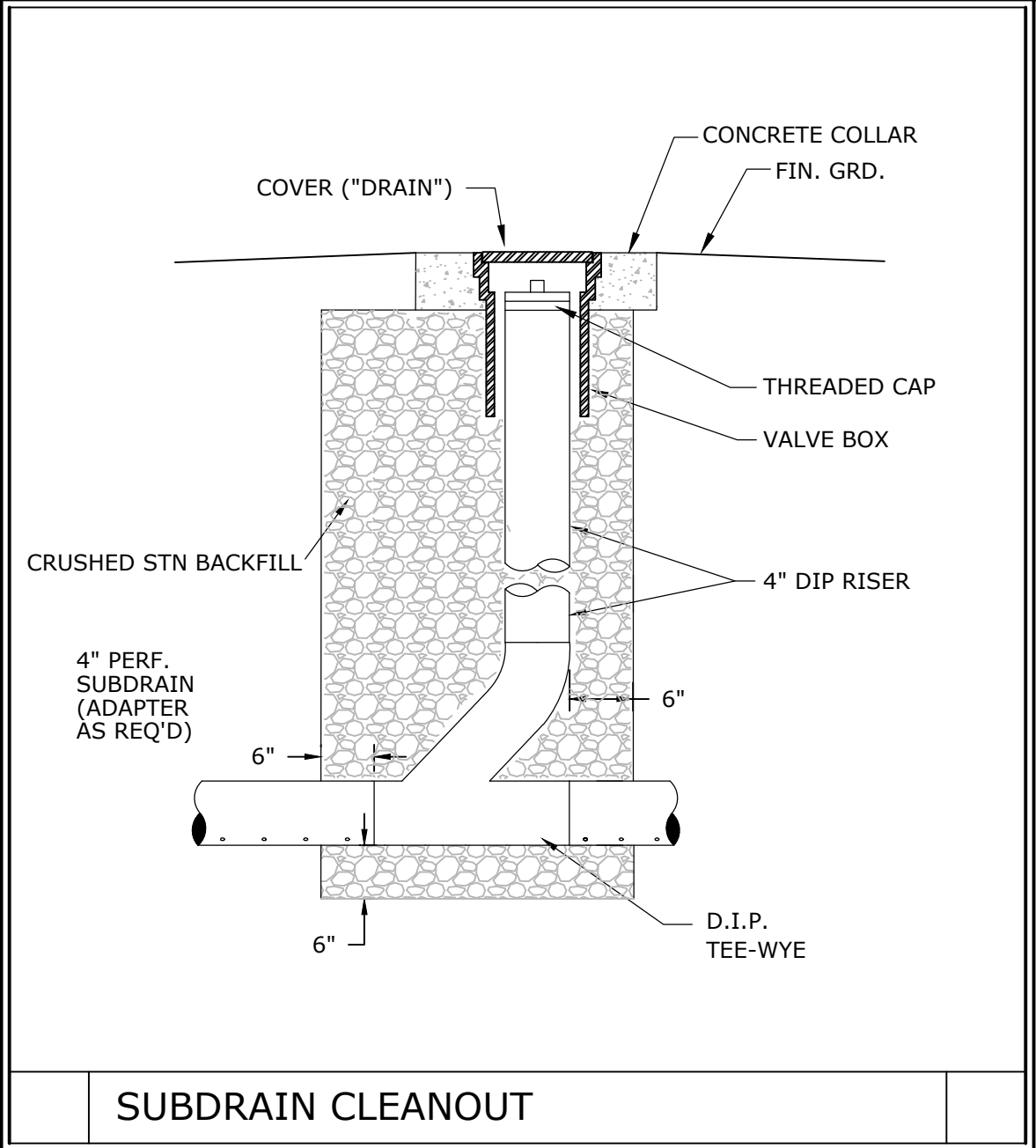
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6/22/93  
REV# 0

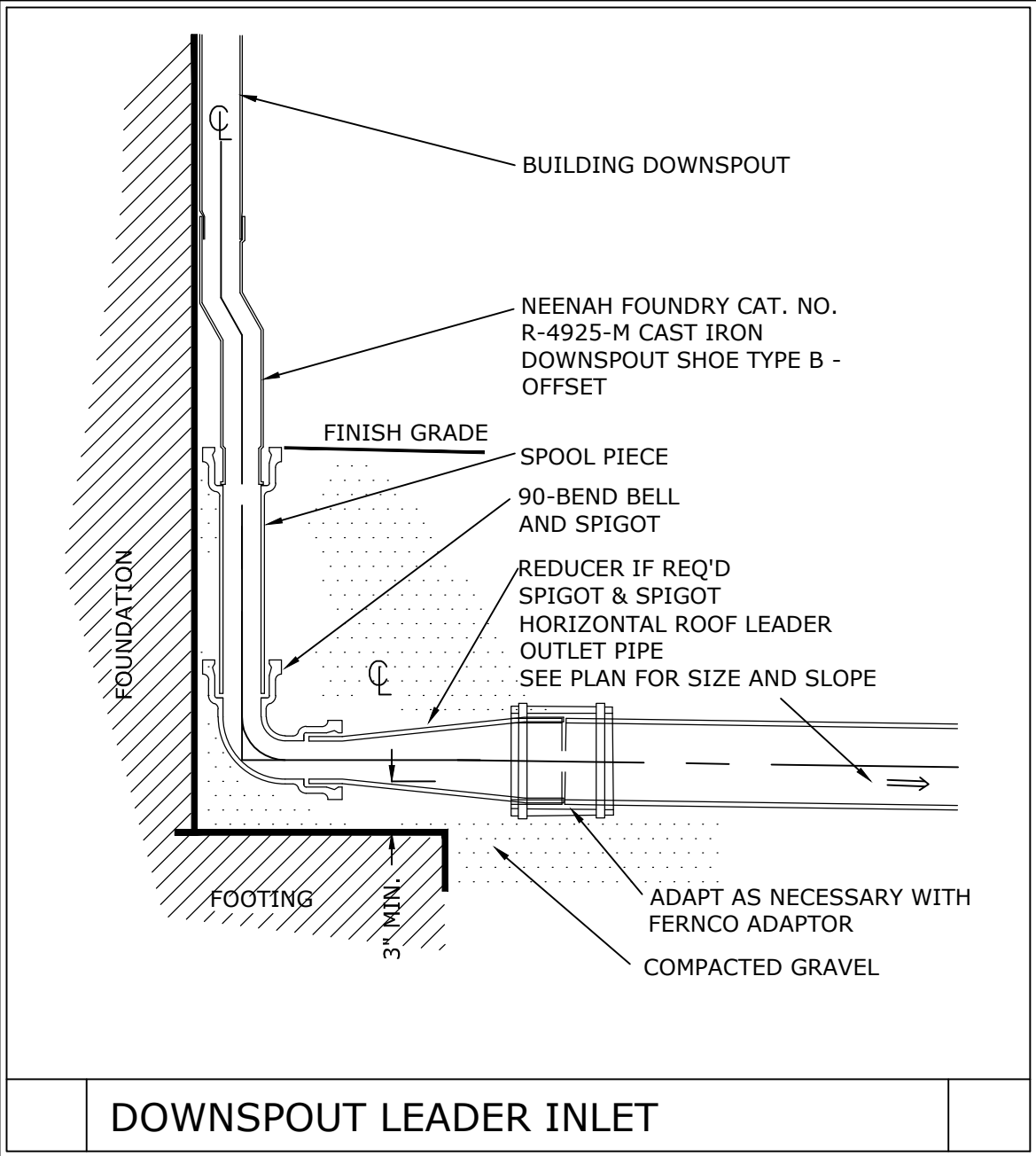


SUBDRAIN

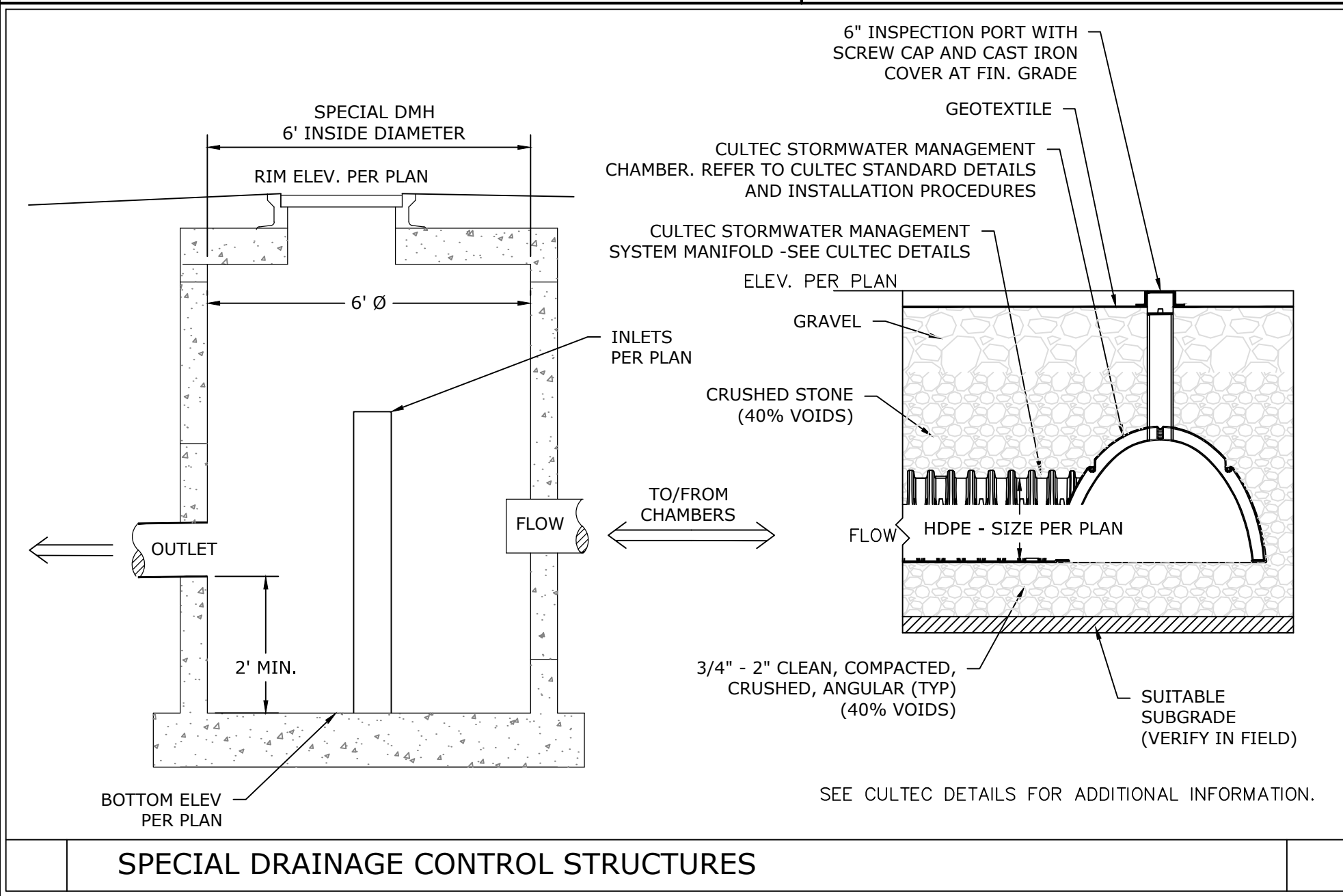
32103A  
6/10/2013  
REV# 1



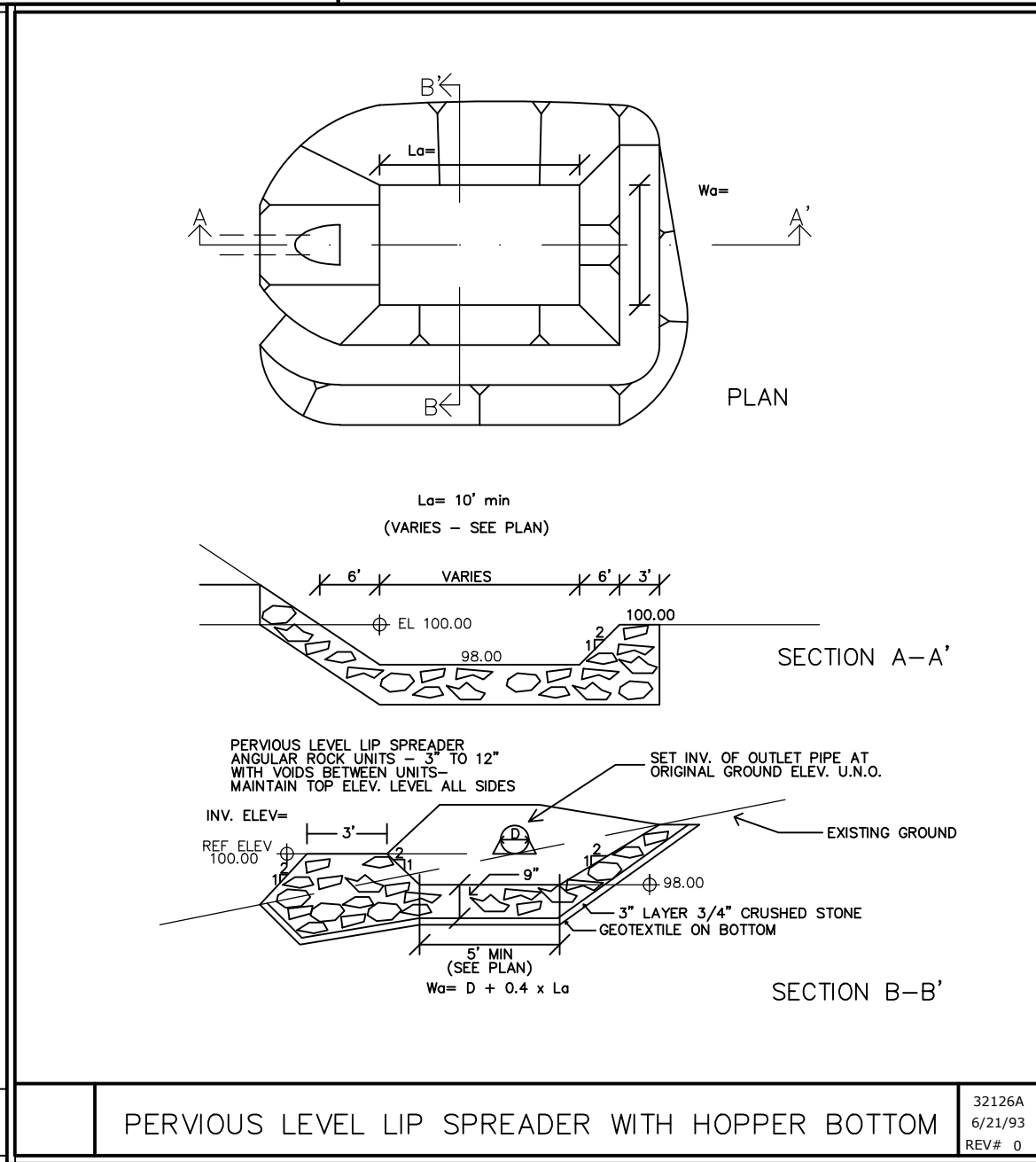
SUBDRAIN CLEANOUT



DOWNSPOUT LEADER INLET

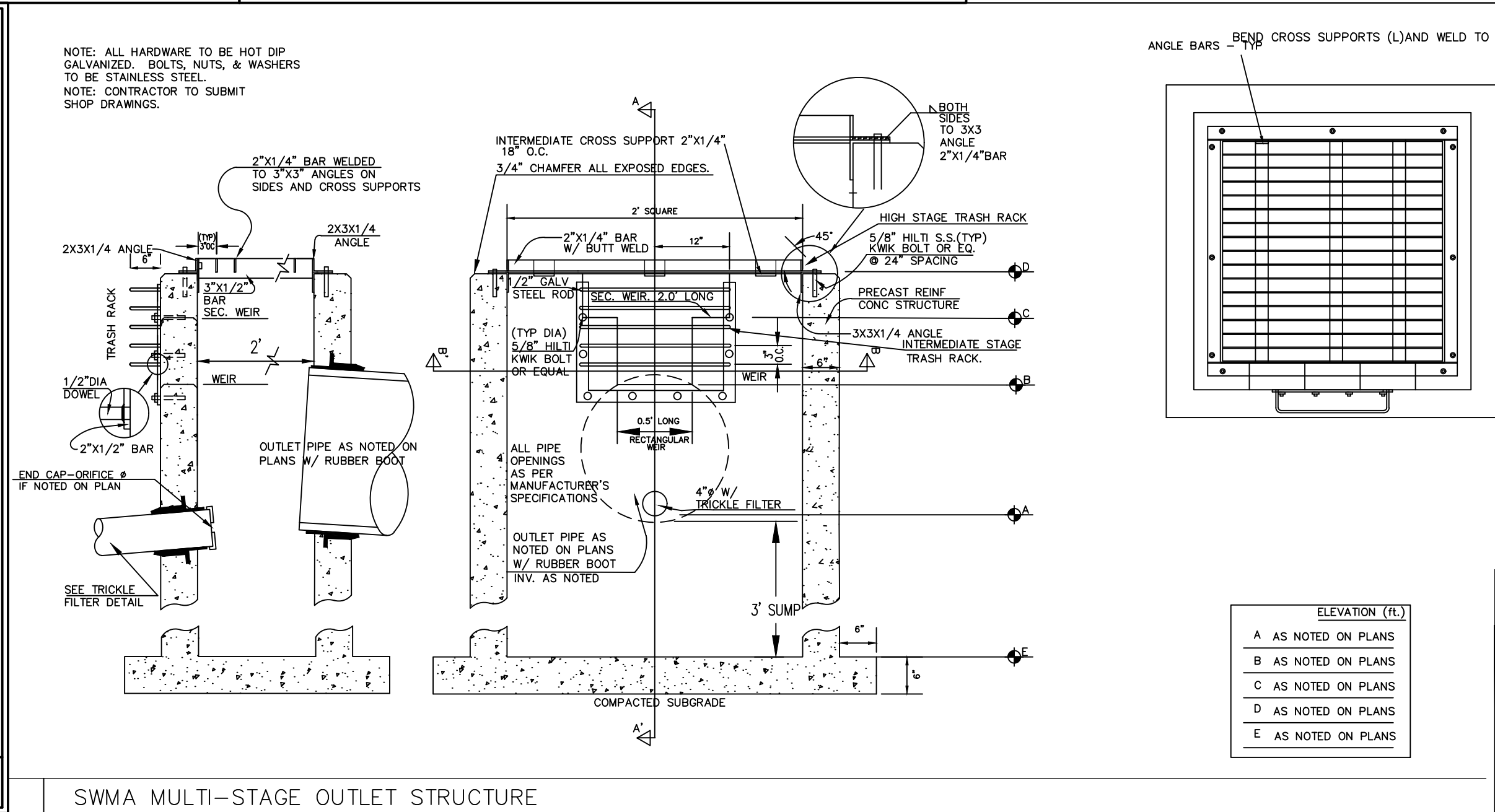


SPECIAL DRAINAGE CONTROL STRUCTURES



PERVIOUS LEVEL LIP SPREADER WITH HOPPER BOTTOM

32126A  
6/21/93  
REV# 0



SWMA MULTI-STAGE OUTLET STRUCTURE

PRELIMINARY

3.31.23 ISSUE FOR SPECIAL PERMIT		AZM
NO.	DATE	BY
SHEET TITLE		PROJECT NO.
PROPOSED SITE DETAILS		E3036
SCALE		AS NOTED
DATE		12-30-22
PROJECT TITLE		DESIGNED BY
PENNROSE		SAM
Pittsfield-Lenox Road		DRAWN BY
Lenox, MA		AZM
FORESIGHT LAND SERVICES		CHECKED BY
ENGINEERING SURVEYING PLANNING		
FORESIGHT LAND SERVICES, INC.		SHEET NO.
1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201		C-7
TEL (413) 499-1960 FAX (413) 499-3307 WWW.FORESIGHTLAND.COM		OF SHEETS
		E3036-004.dwg











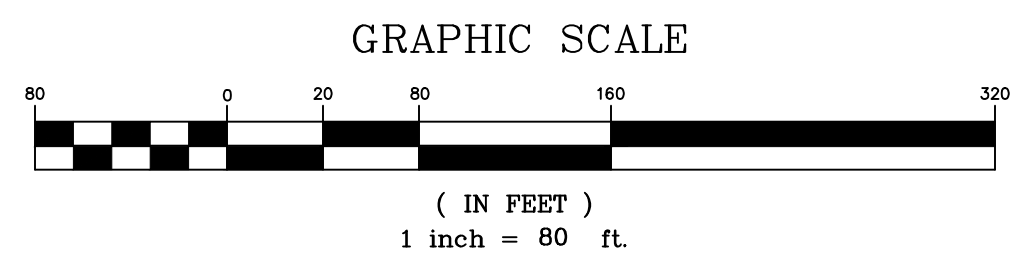
LIME KILN ROAD

PITTSFIELD ROAD (RT. 7 & 20)

21.2 +/- ACRES  
(PENNROSE LOT)

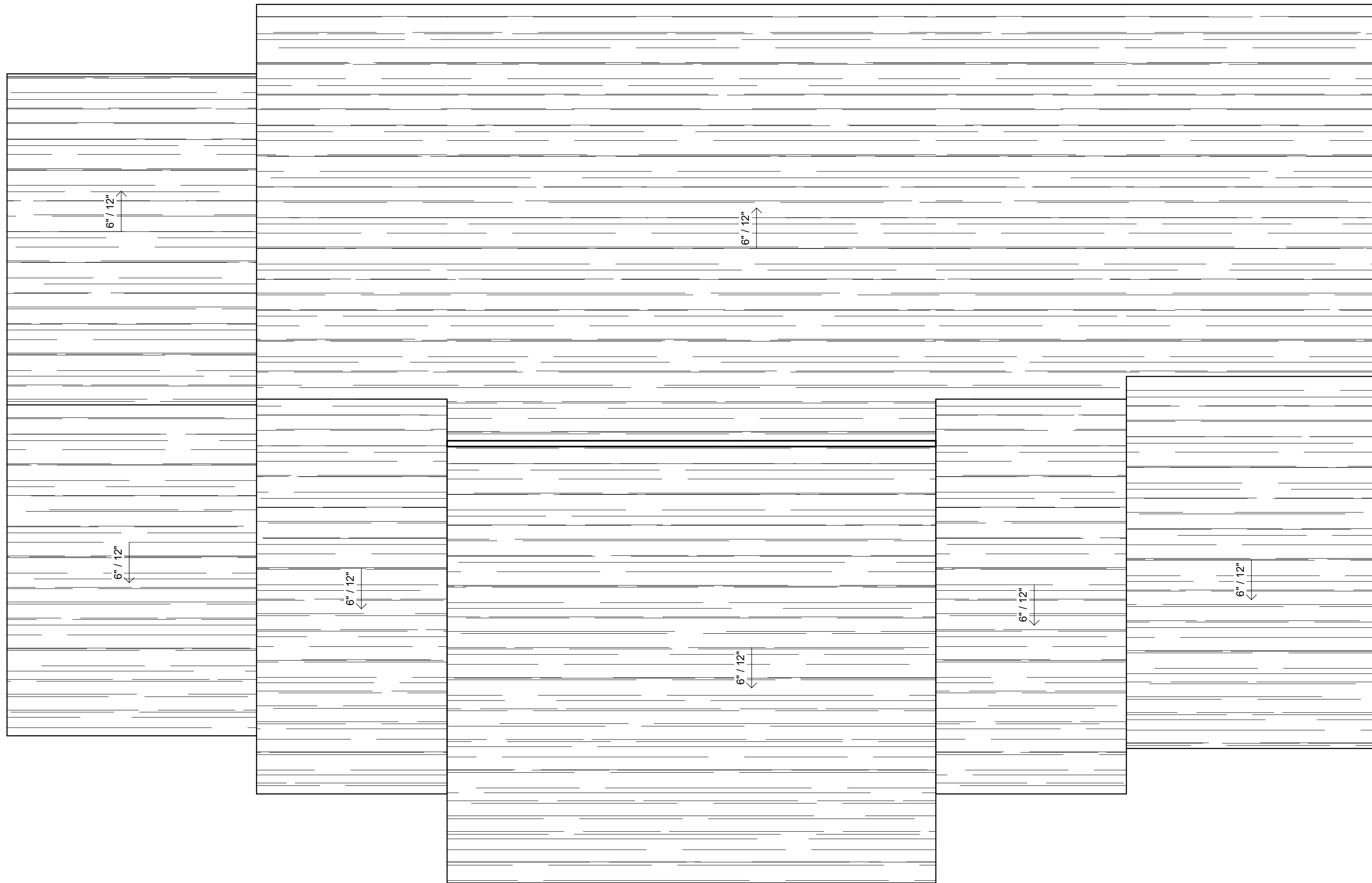
18.9 +/- ACRES  
(CURME LOT - NOT A BUILDING LOT)

Commercial Zone C-3A  
ZONING DISTRICT BOUNDARY  
Residential Zone R-1A  
(Formerly R-40, -30, -20)

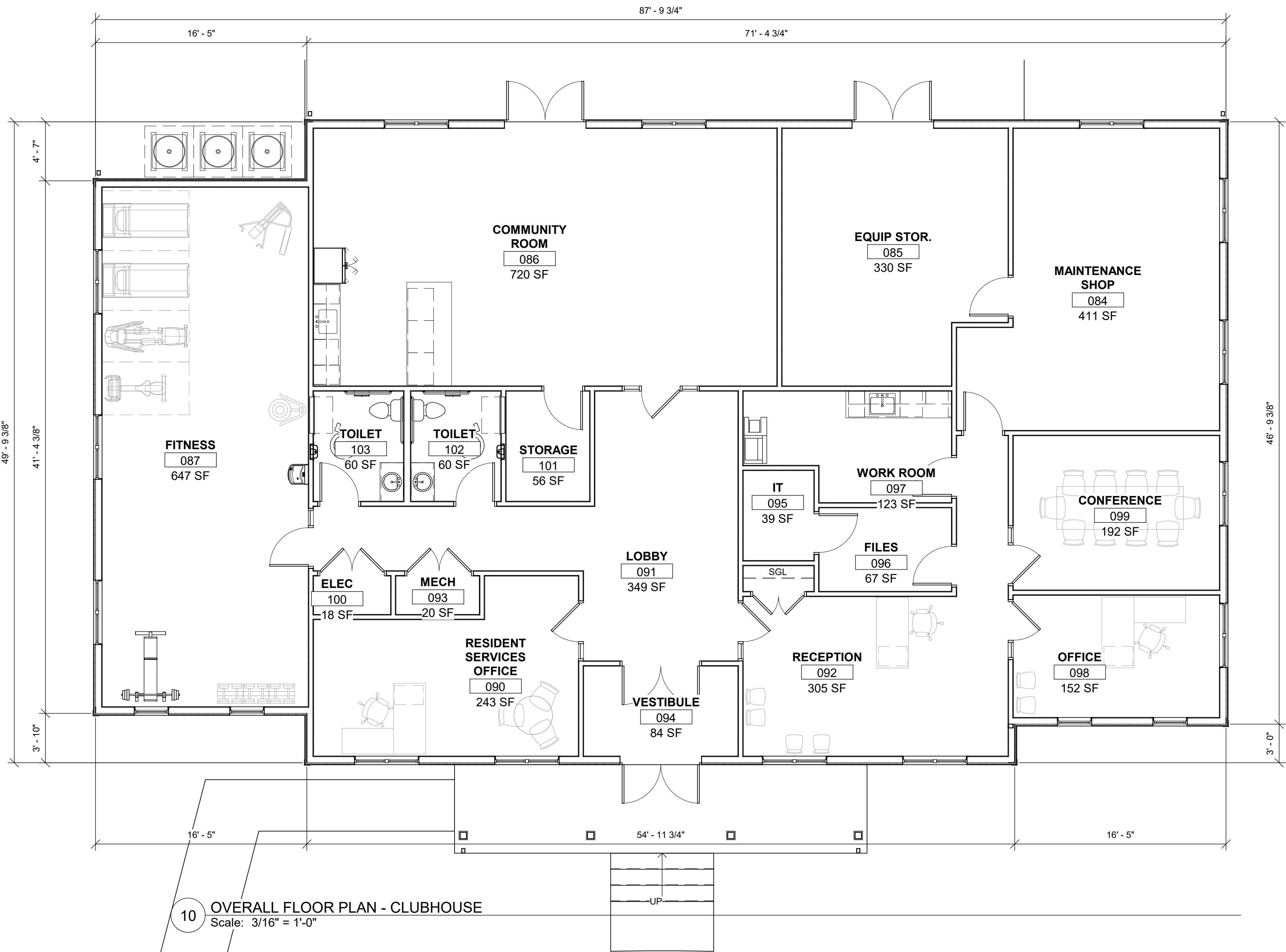


PRELIMINARY

NO.	DATE	REVISION/ISSUE	BY
SHEET TITLE			
CONCEPT FORM A PLAN			PROJECT NO. E3036
			SCALE AS NOTED
			DATE 3-22-2023
			DESIGNED BY SAM
			DRAWN BY AZM
			CHECKED BY MAL
			SHEET NO. C-1
			OF _____ SHEETS
PROJECT TITLE			
PENNROSE Pittsfield-Lenox Road Lenox, MA			
FORESIGHT LAND SERVICES, INC. 1496 WEST HOUSATONIC STREET - PITTSFIELD, MA 01201 TEL (413) 499-1560 FAX (413) 499-3307 WWW.FORESIGHTLAND.COM			
ENGINEERING SURVEYING PLANNING			
E3036-003.dwg			



11 ROOF PLAN - CLUBHOUSE  
Scale: 3/16" = 1'-0"



10 OVERALL FLOOR PLAN - CLUBHOUSE  
Scale: 3/16" = 1'-0"

tat

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F 617.884.4329  
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Consultant:

Revision:

Architect of Record:

Drawn: Author

Checked: Checker

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNROSE - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

OVERALL PLANS -  
CLUBHOUSE

Project Number:

22031

Issue Date:

MARCH 31, 2023

Sheet Number:

A1.01

Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

**PENNROSE - 238  
PITTSFIELD RD**

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

**OVERALL PLANS -  
BUILDING A**

Project Number:

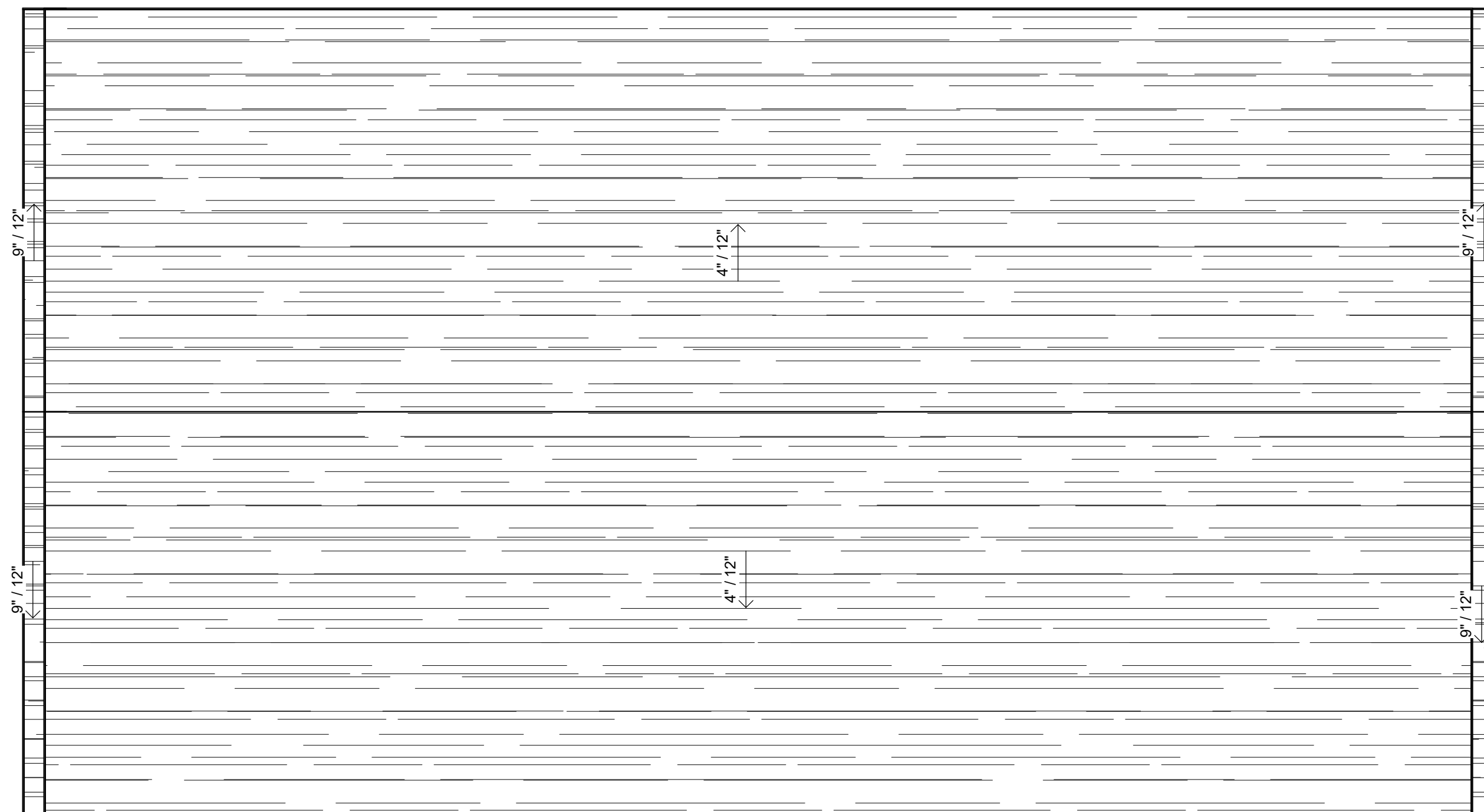
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Issue Date:

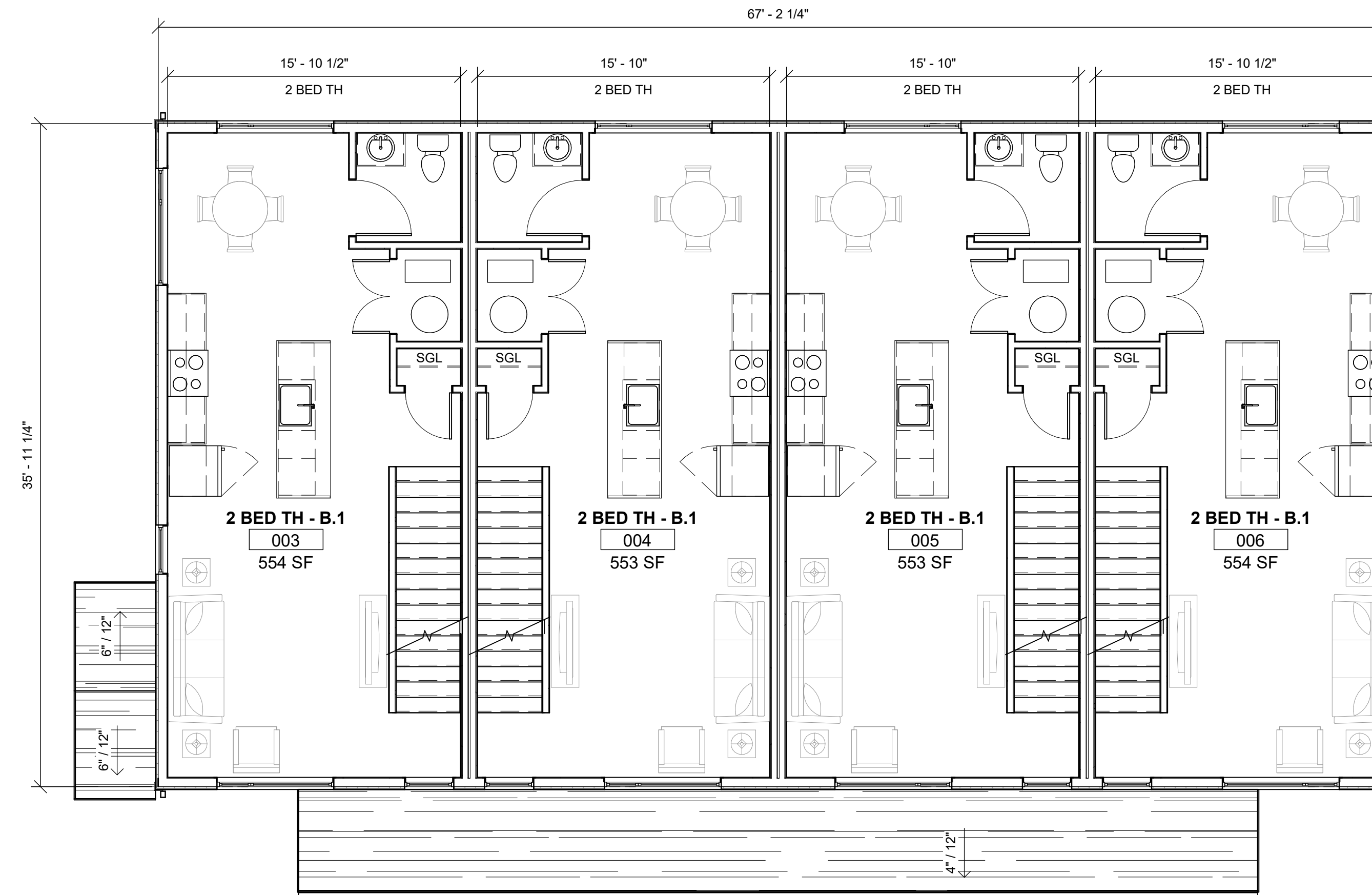
**MARCH 31, 2023**

Sheet Number:

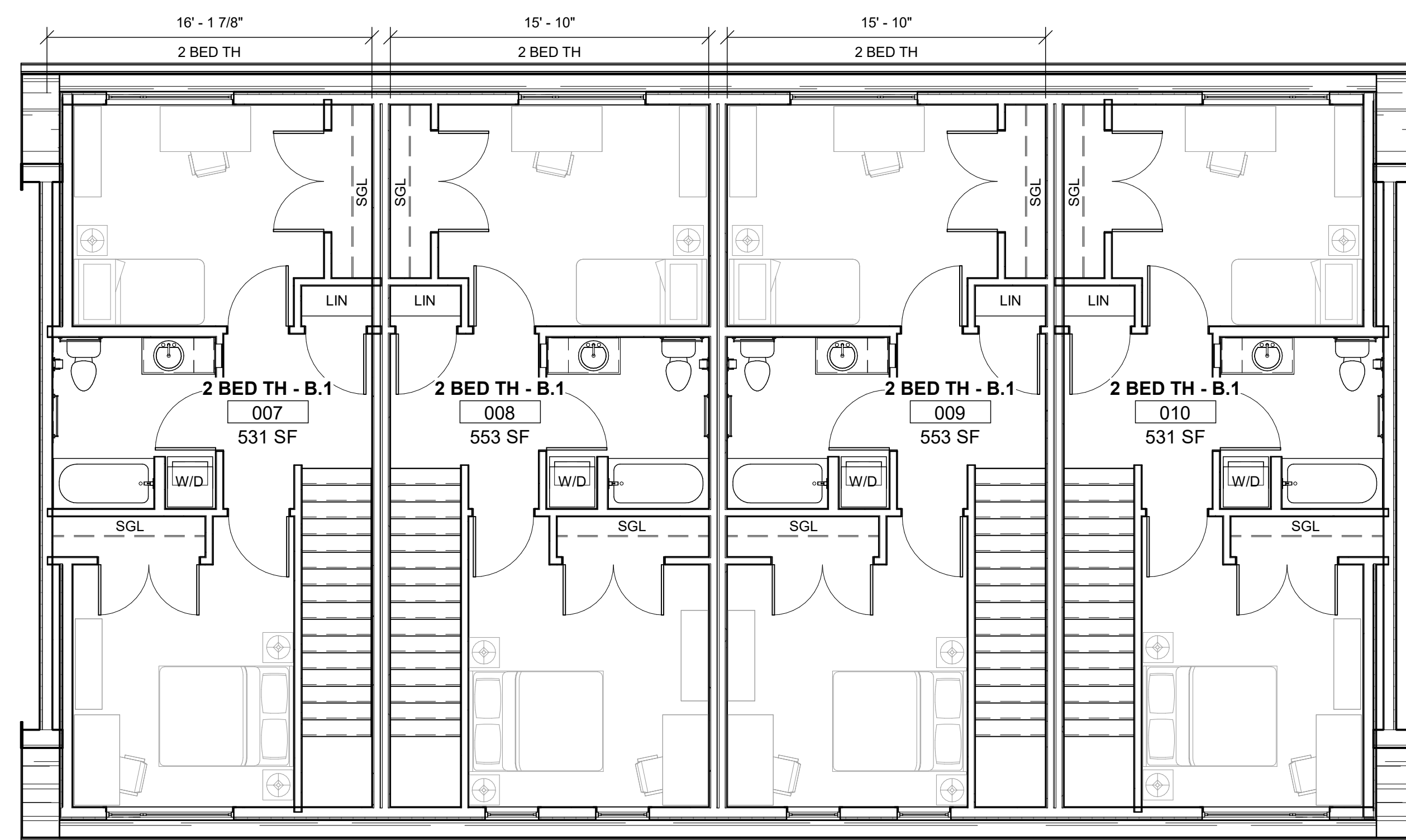
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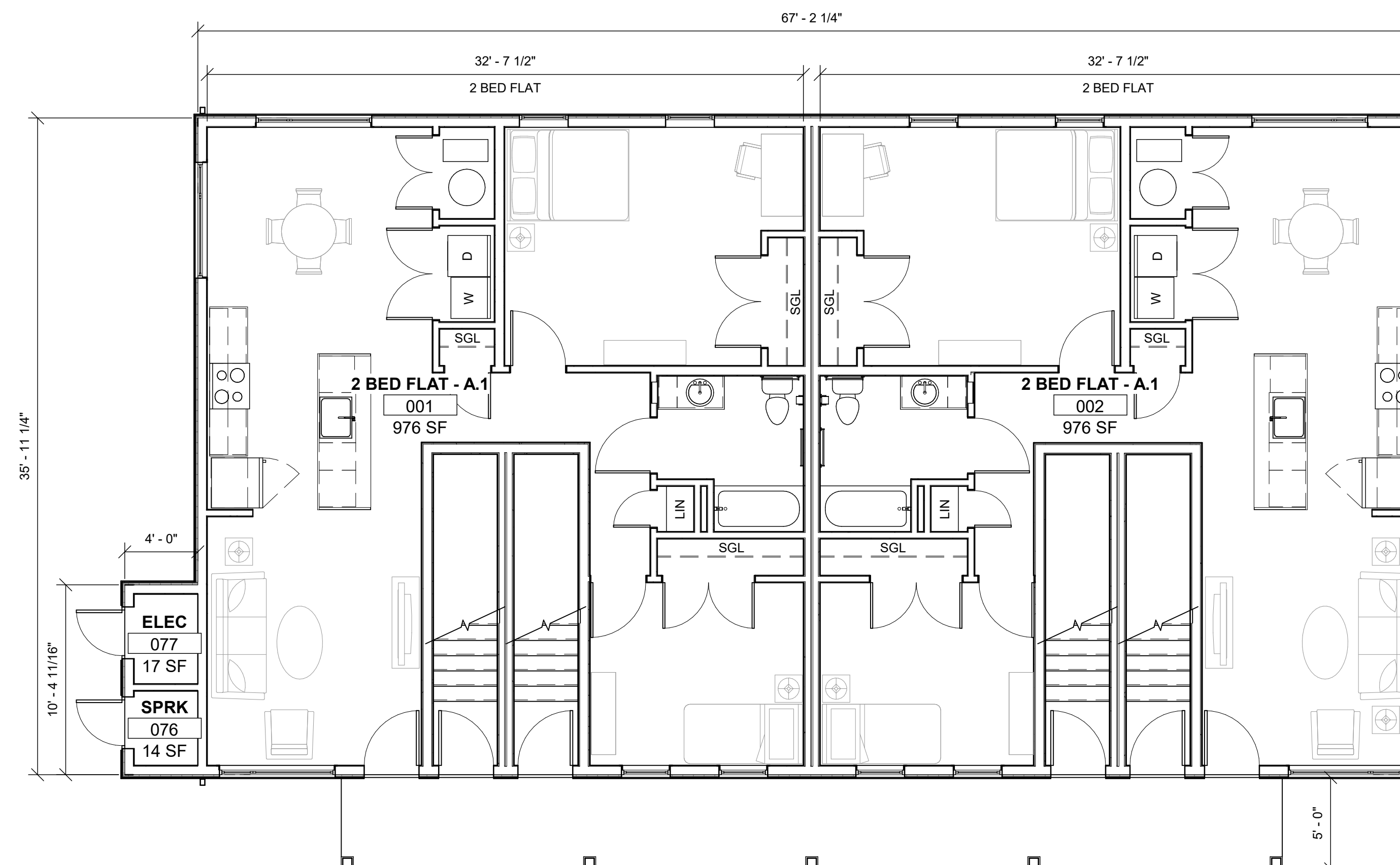
**21 BUILDING A ROOF PLAN**  
Scale: 3/16" = 1'-0"



**11 OVERALL FLOOR PLAN - BUILDING A LEVEL 2**  
Scale: 3/16" = 1'-0"



**20 OVERALL FLOOR PLAN - BUILDING A LEVEL 3**  
Scale: 3/16" = 1'-0"



**10 OVERALL FLOOR PLAN - BUILDING A LEVEL 1**  
Scale: 3/16" = 1'-0"

Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

**PENNROSE - 238  
PITTSFIELD RD**

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

**OVERALL PLANS -  
BUILDING B**

Project Number:

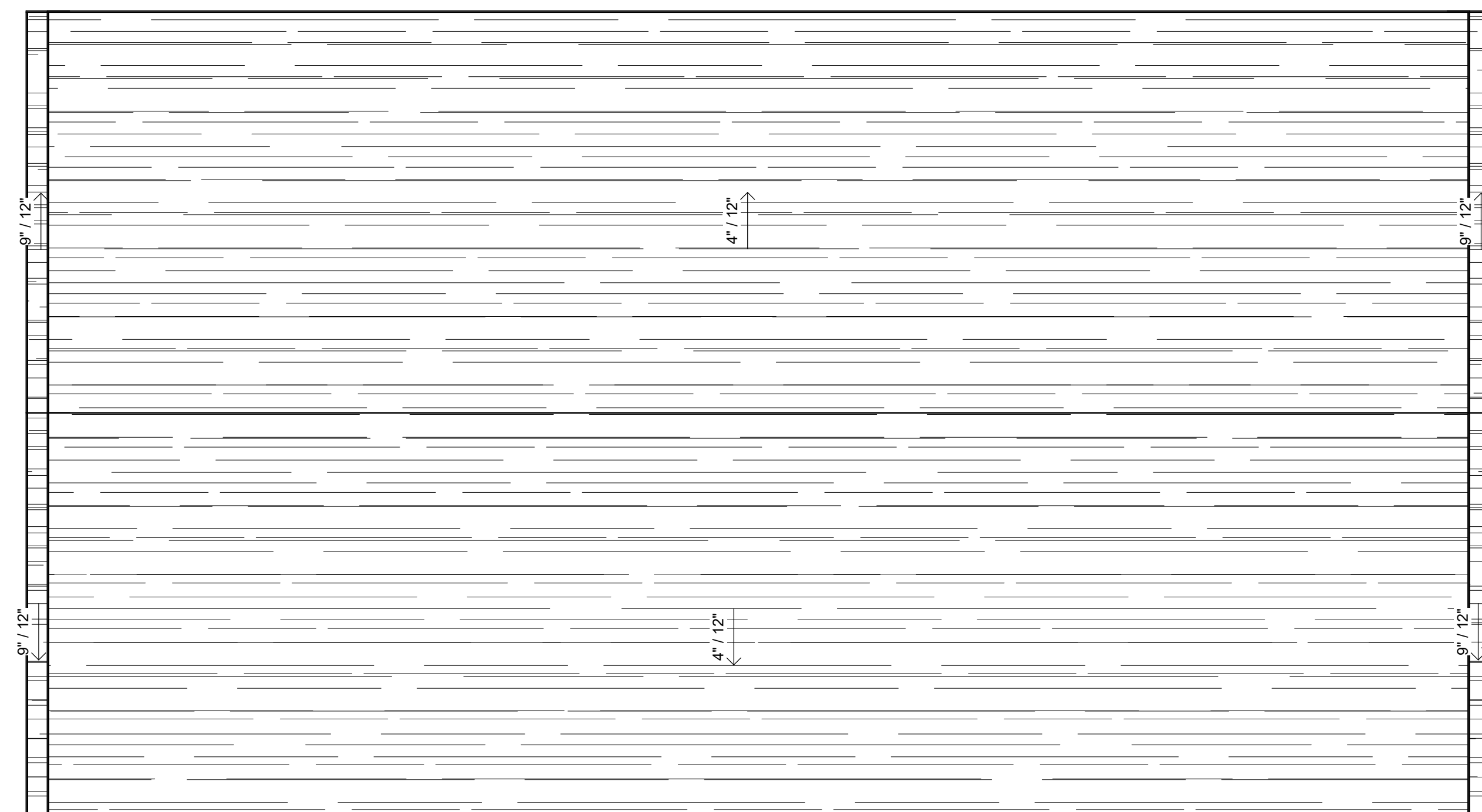
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Issue Date:

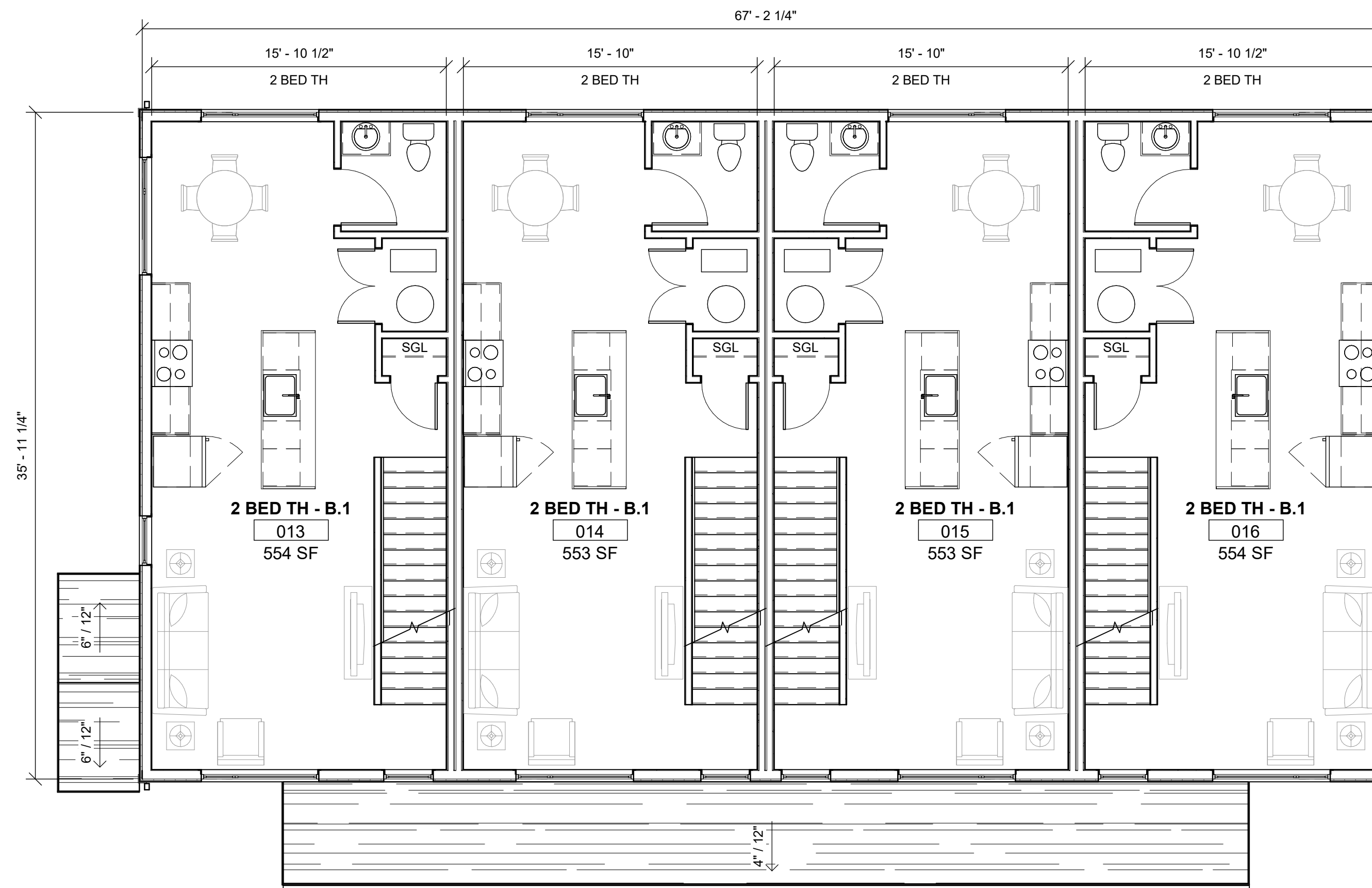
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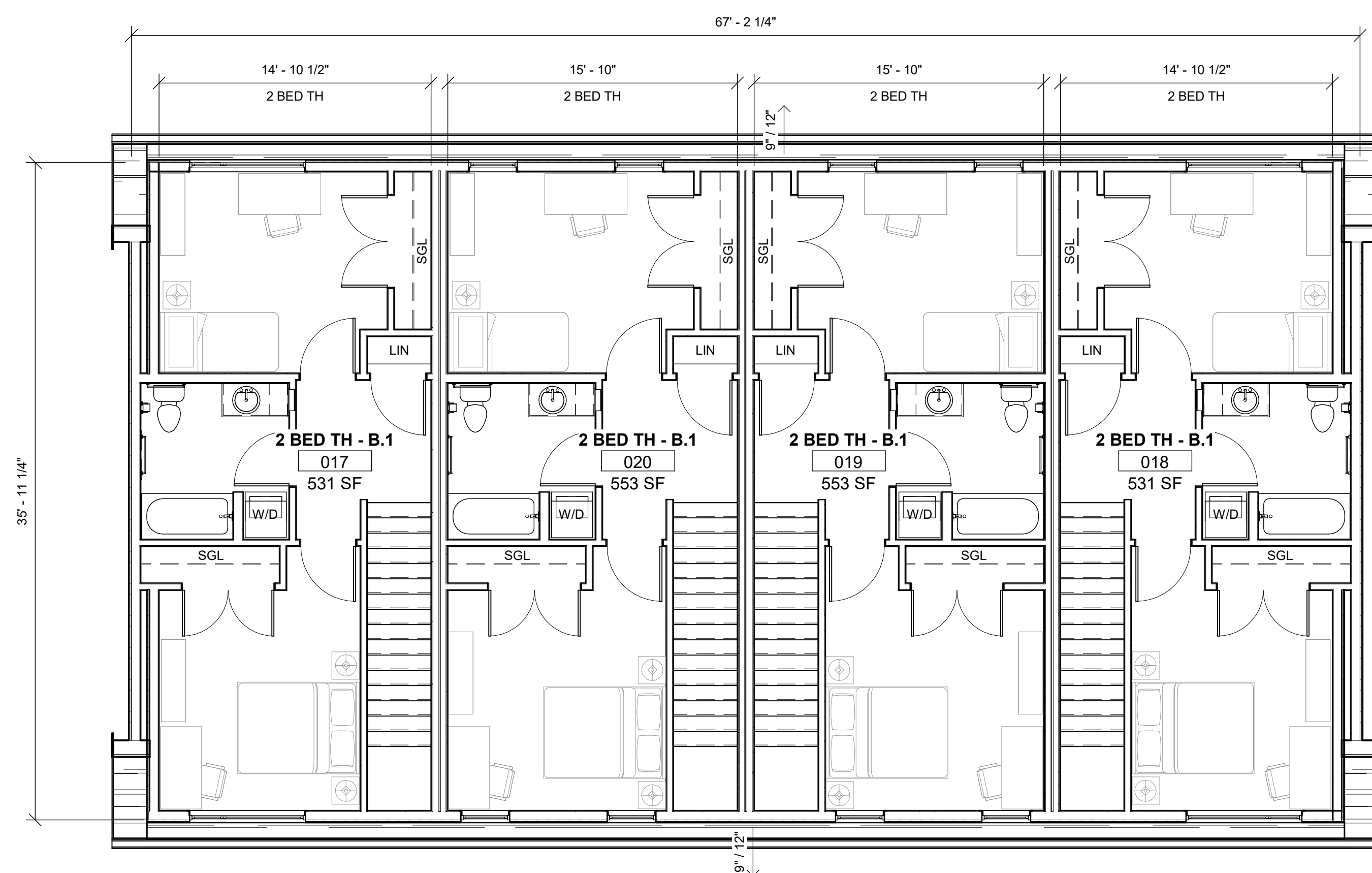
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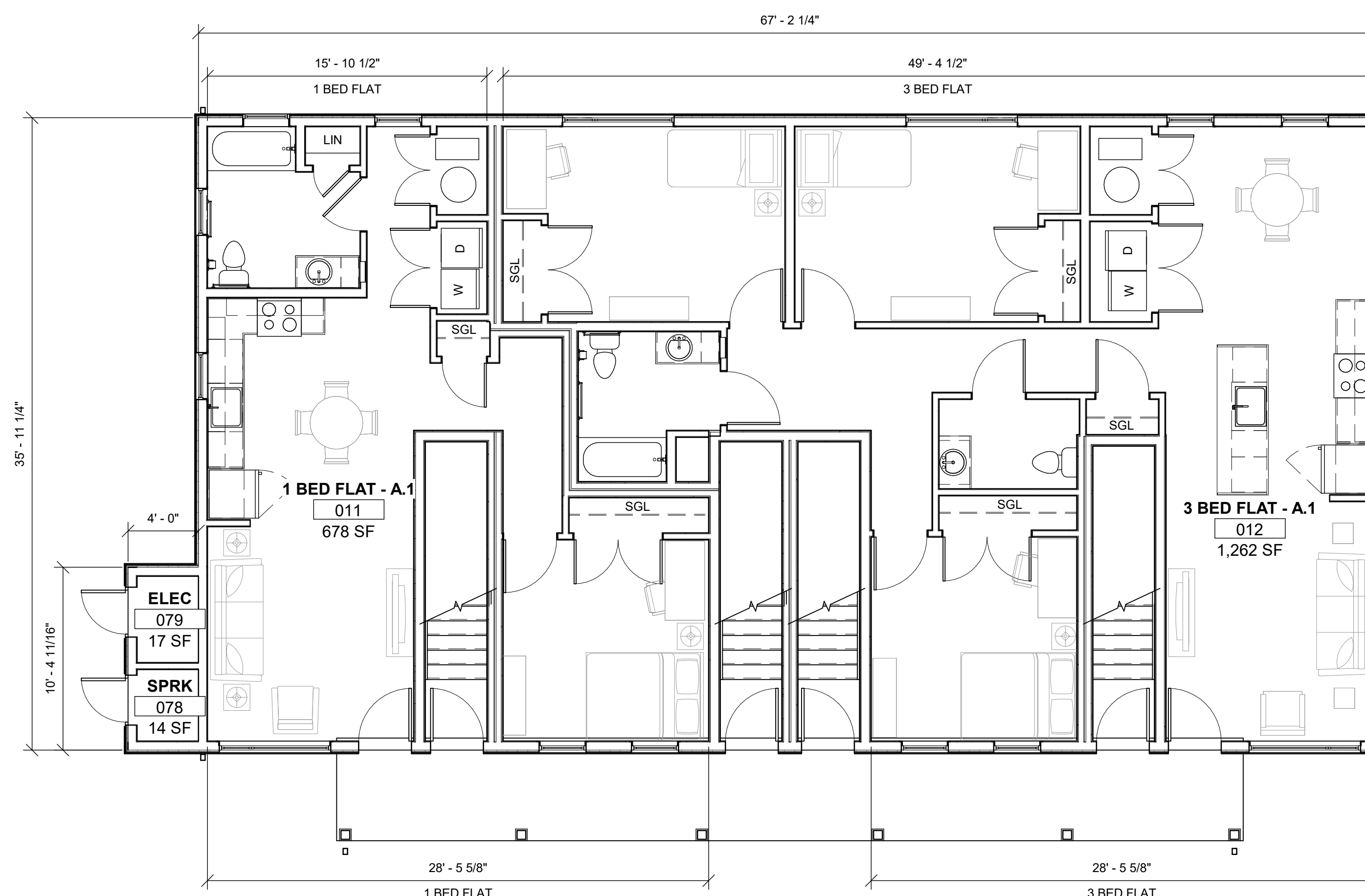
**21 BUILDING B ROOF PLAN**  
Scale: 3/16" = 1'-0"



**11 OVERALL FLOOR PLAN - BUILDING B LEVEL 2**  
Scale: 3/16" = 1'-0"



**20 OVERALL FLOOR PLAN - BUILDING B LEVEL 3**  
Scale: 3/16" = 1'-0"



**10 OVERALL FLOOR PLAN - BUILDING B LEVEL 1**  
Scale: 3/16" = 1'-0"

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Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNRose - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

OVERALL PLANS -  
BUILDING C

Project Number:

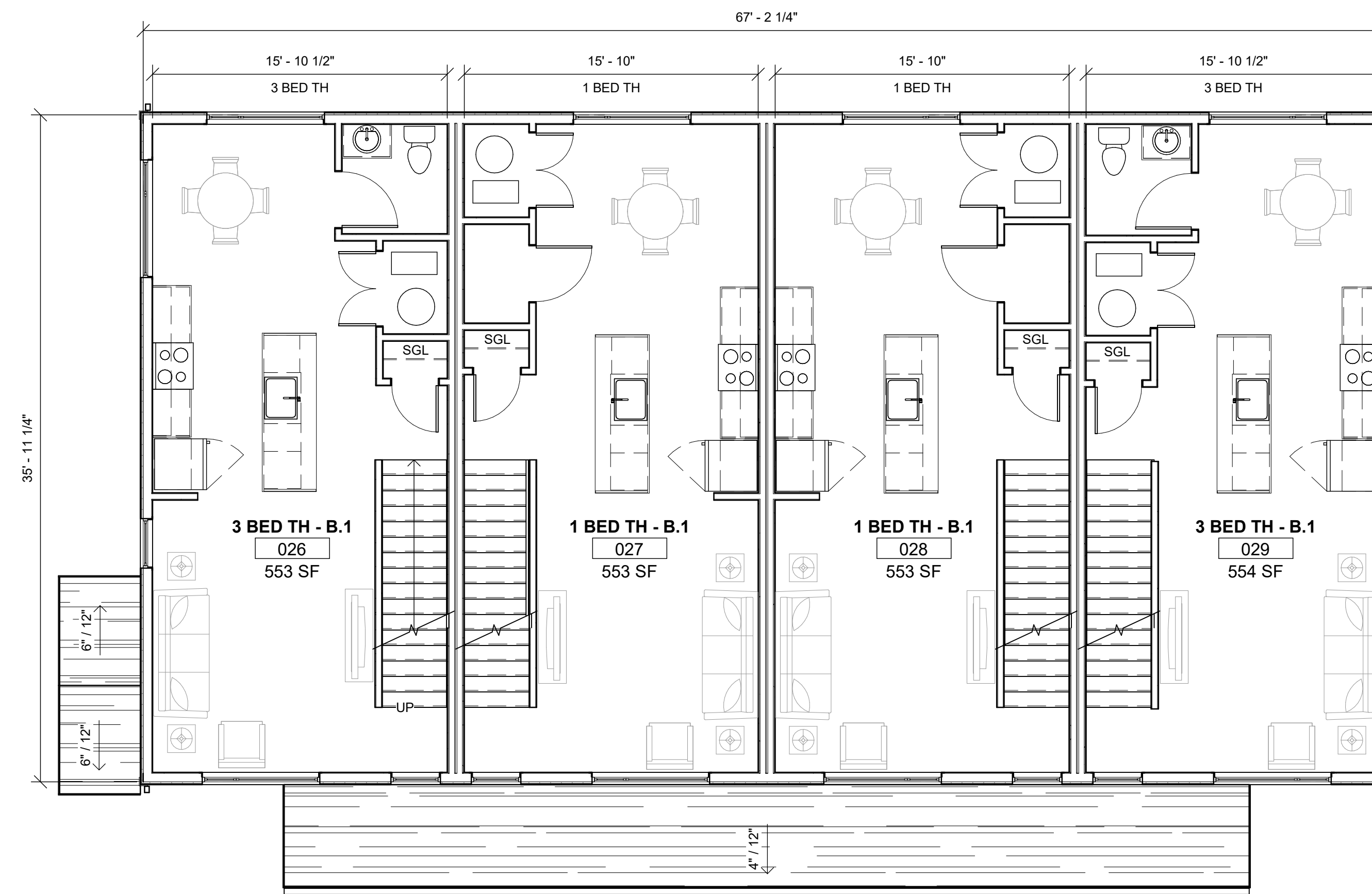
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Issue Date:

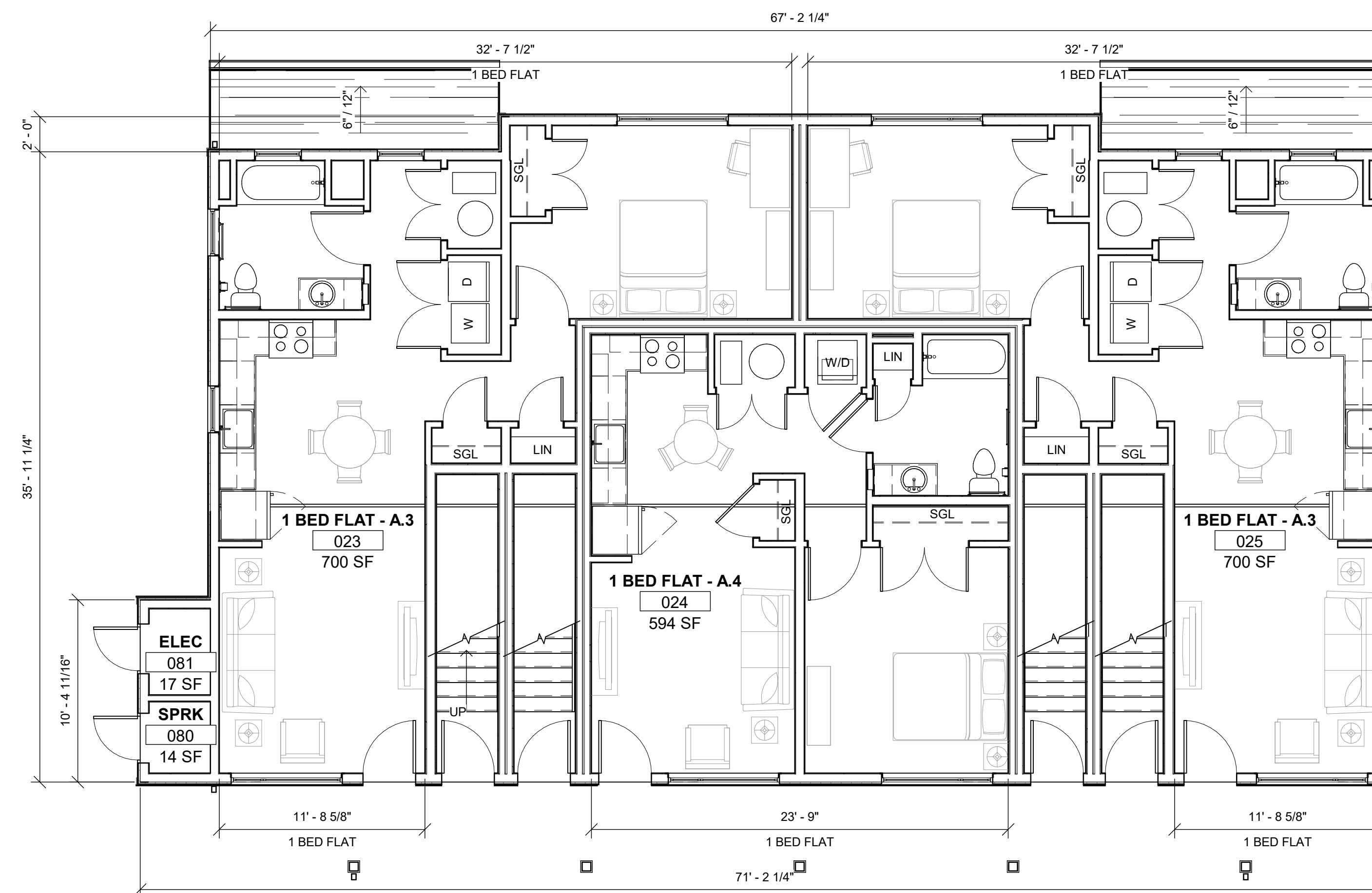
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Sheet Number:

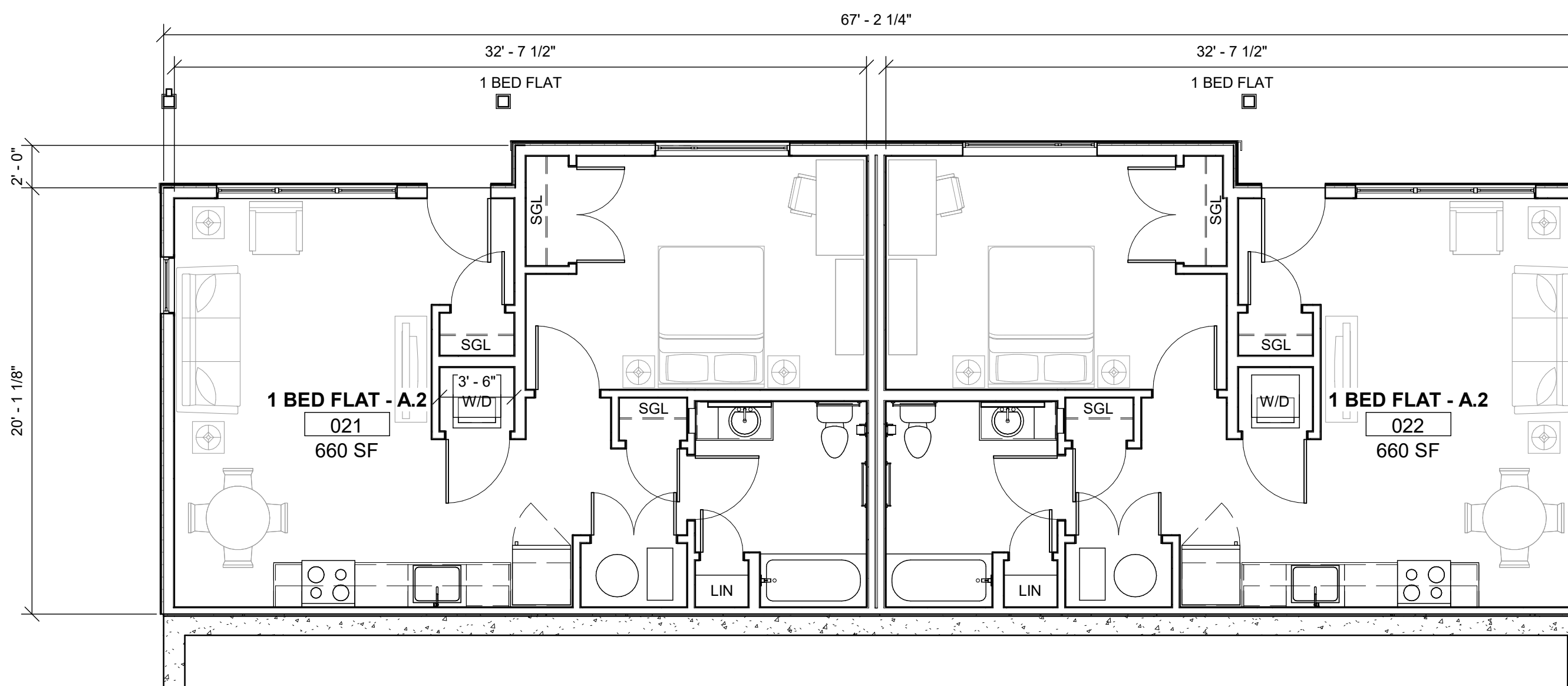
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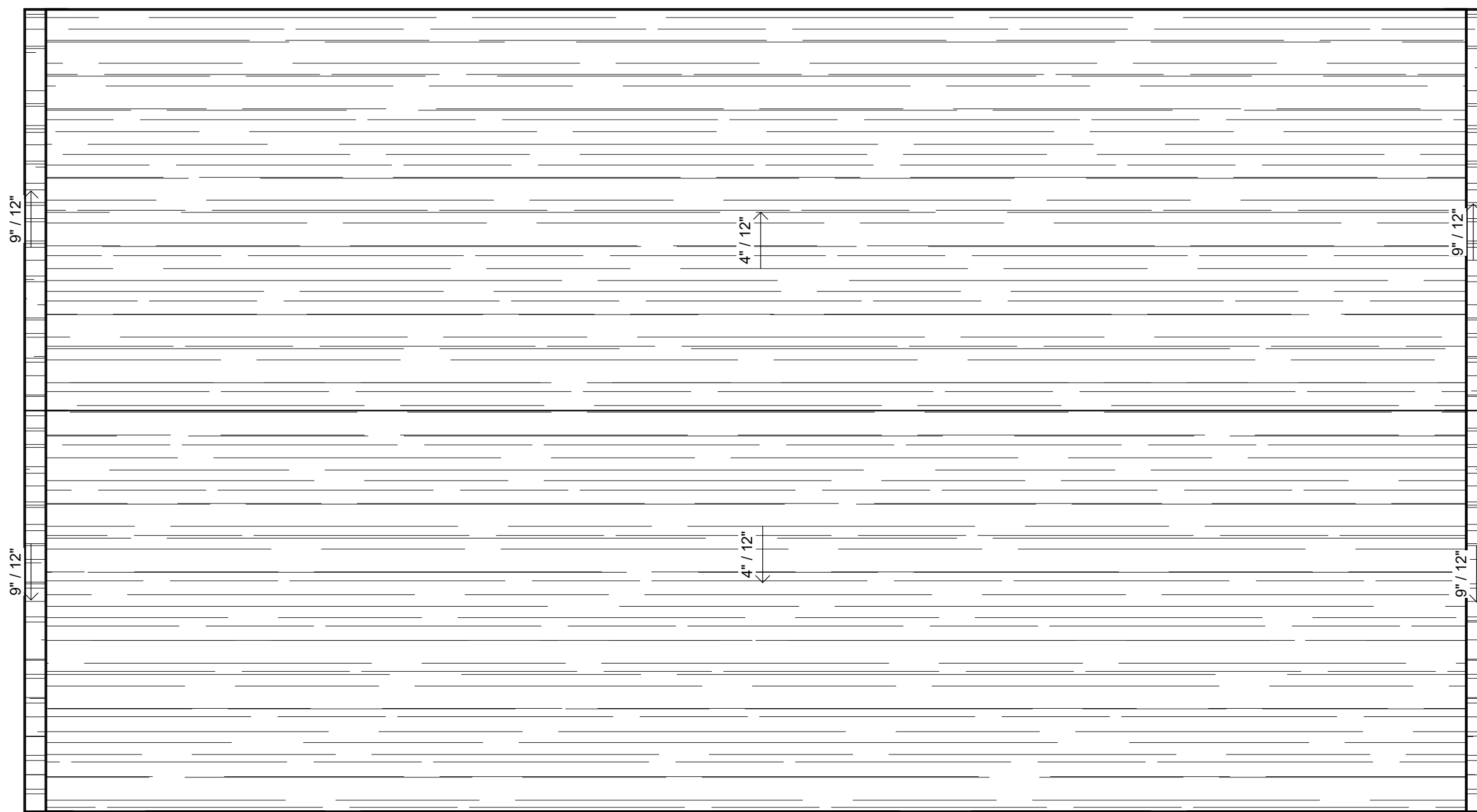
12 OVERALL FLOOR PLAN - BUILDING C LEVEL 2  
Scale: 3/16" = 1'-0"



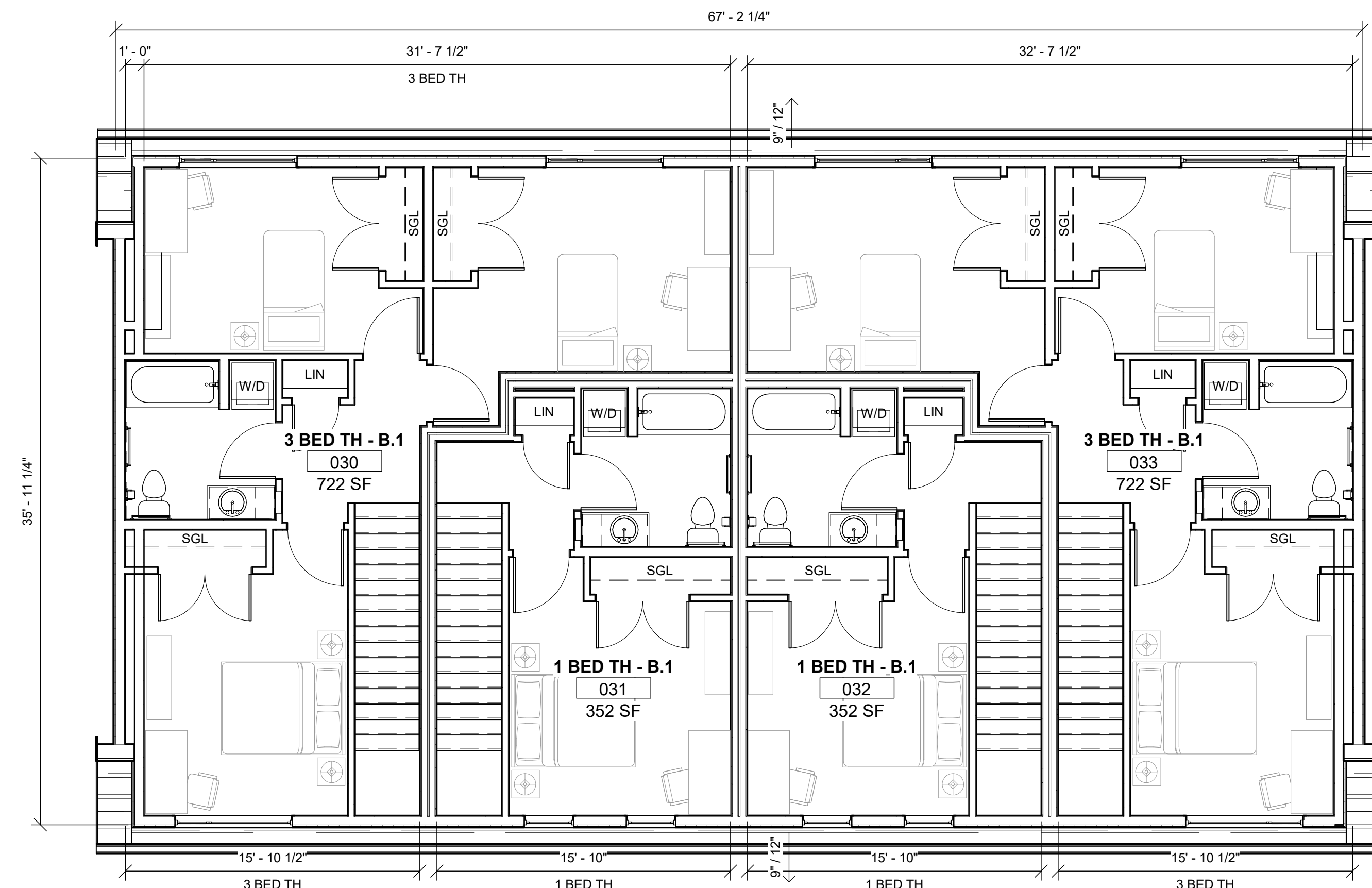
11 OVERALL FLOOR PLAN - BUILDING C LEVEL 1  
Scale: 3/16" = 1'-0"



10 OVERALL FLOOR PLAN - BUILDING C GARDEN LEVEL  
Scale: 3/16" = 1'-0"



21 BUILDING C ROOF PLAN  
Scale: 3/16" = 1'-0"



20 OVERALL FLOOR PLAN - BUILDING C LEVEL 3  
Scale: 3/16" = 1'-0"



Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

**PENNROSE - 238  
PITTSFIELD RD**

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

**OVERALL PLANS -  
BUILDING D**

Project Number:

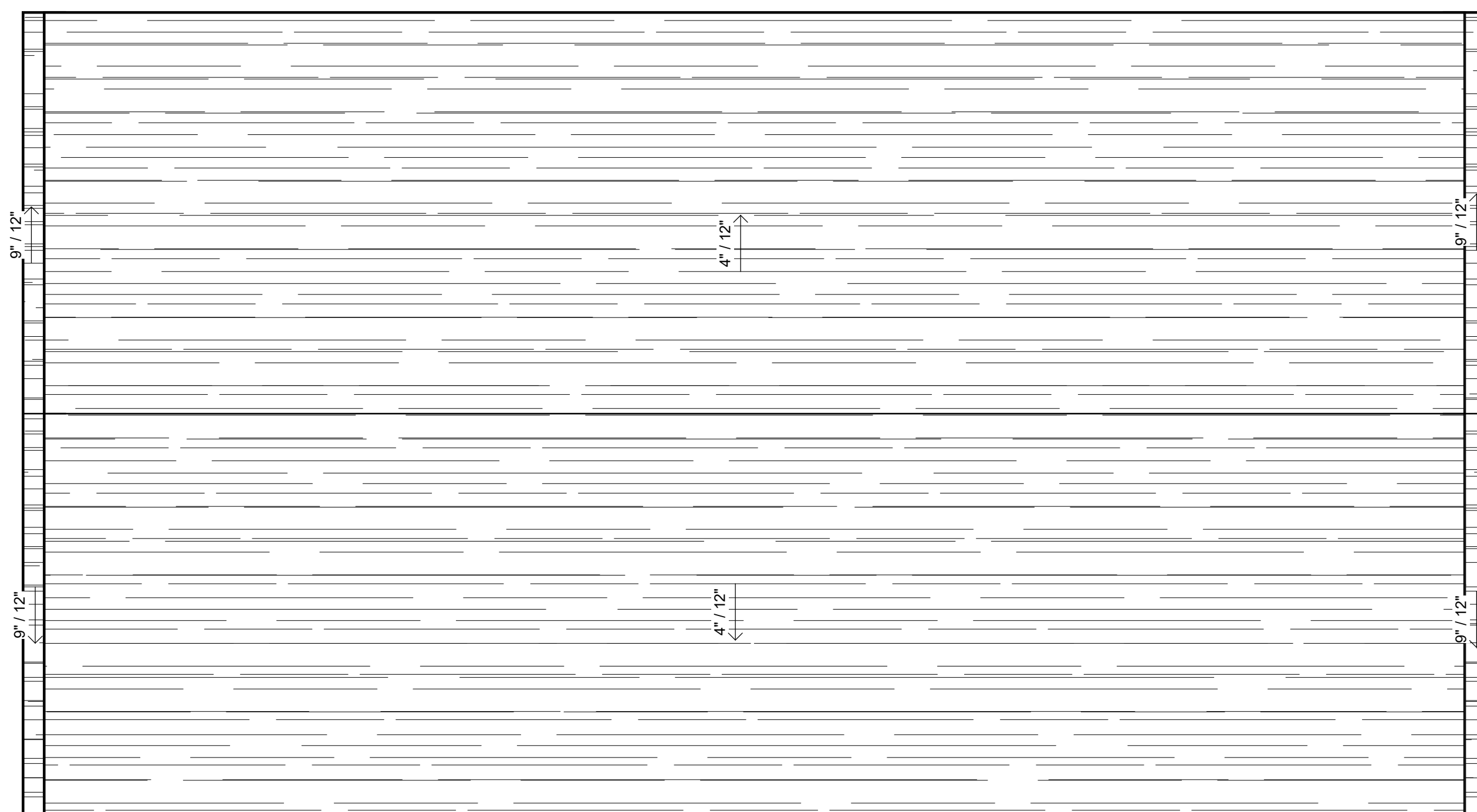
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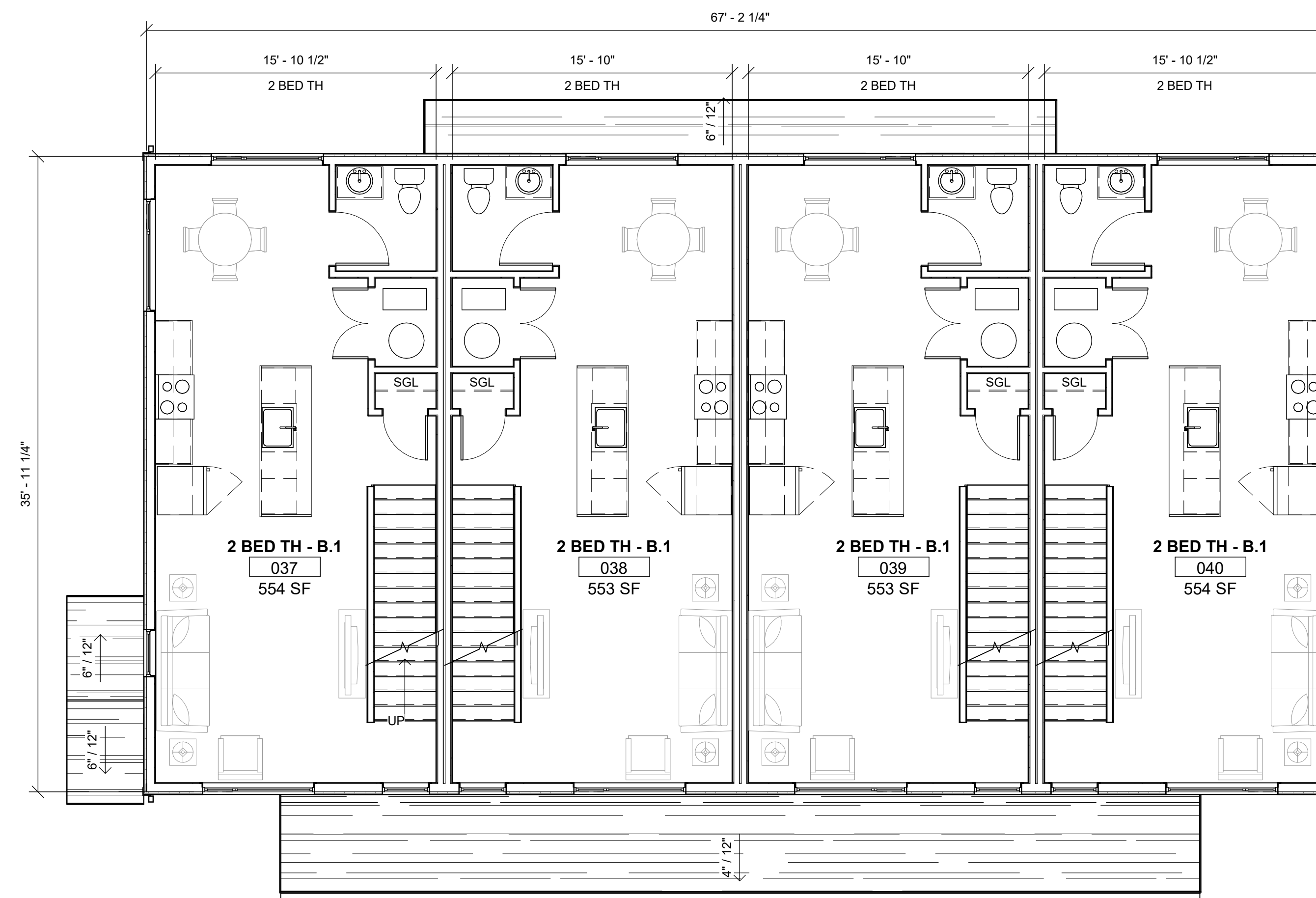
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Sheet Number:

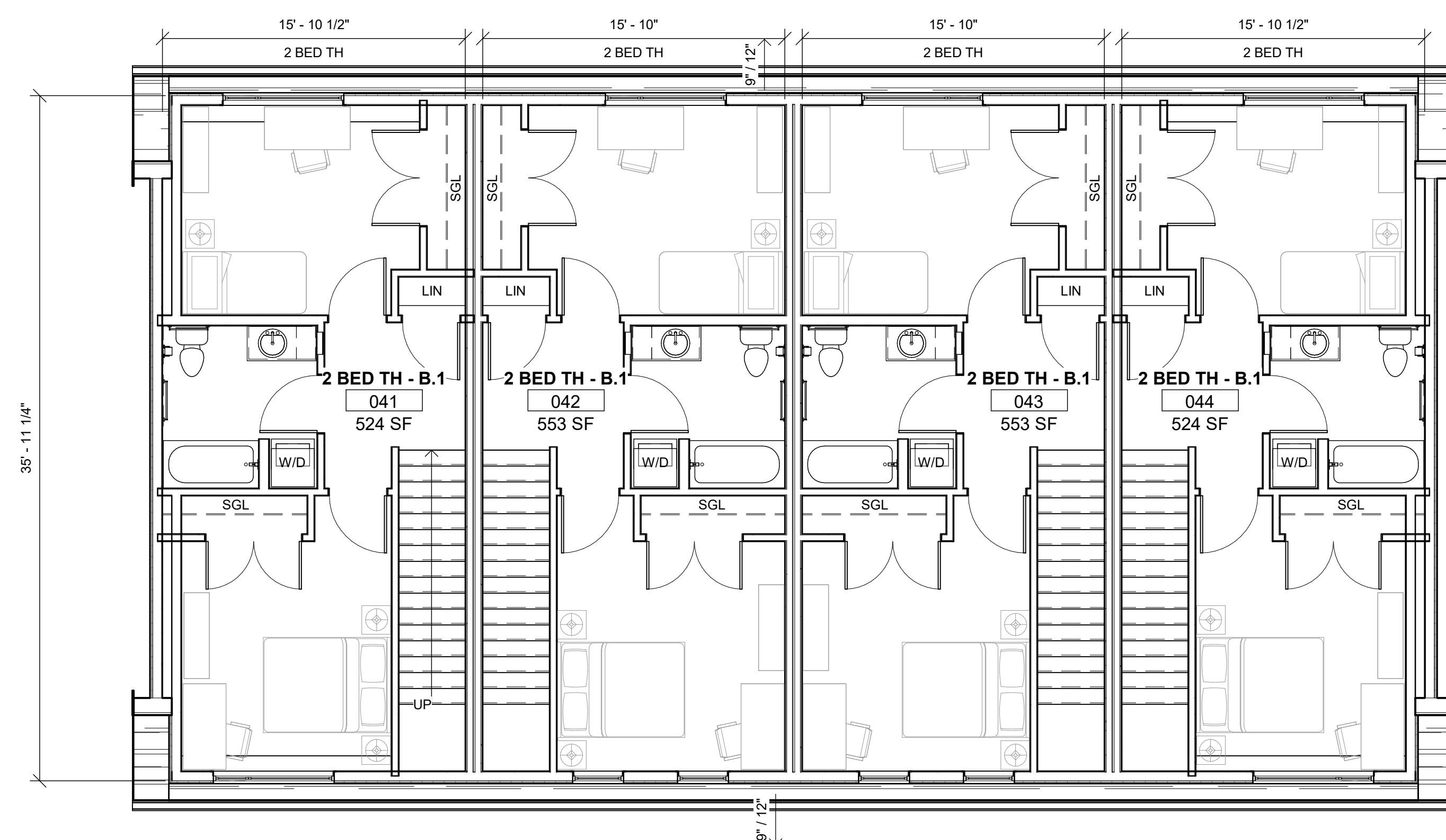
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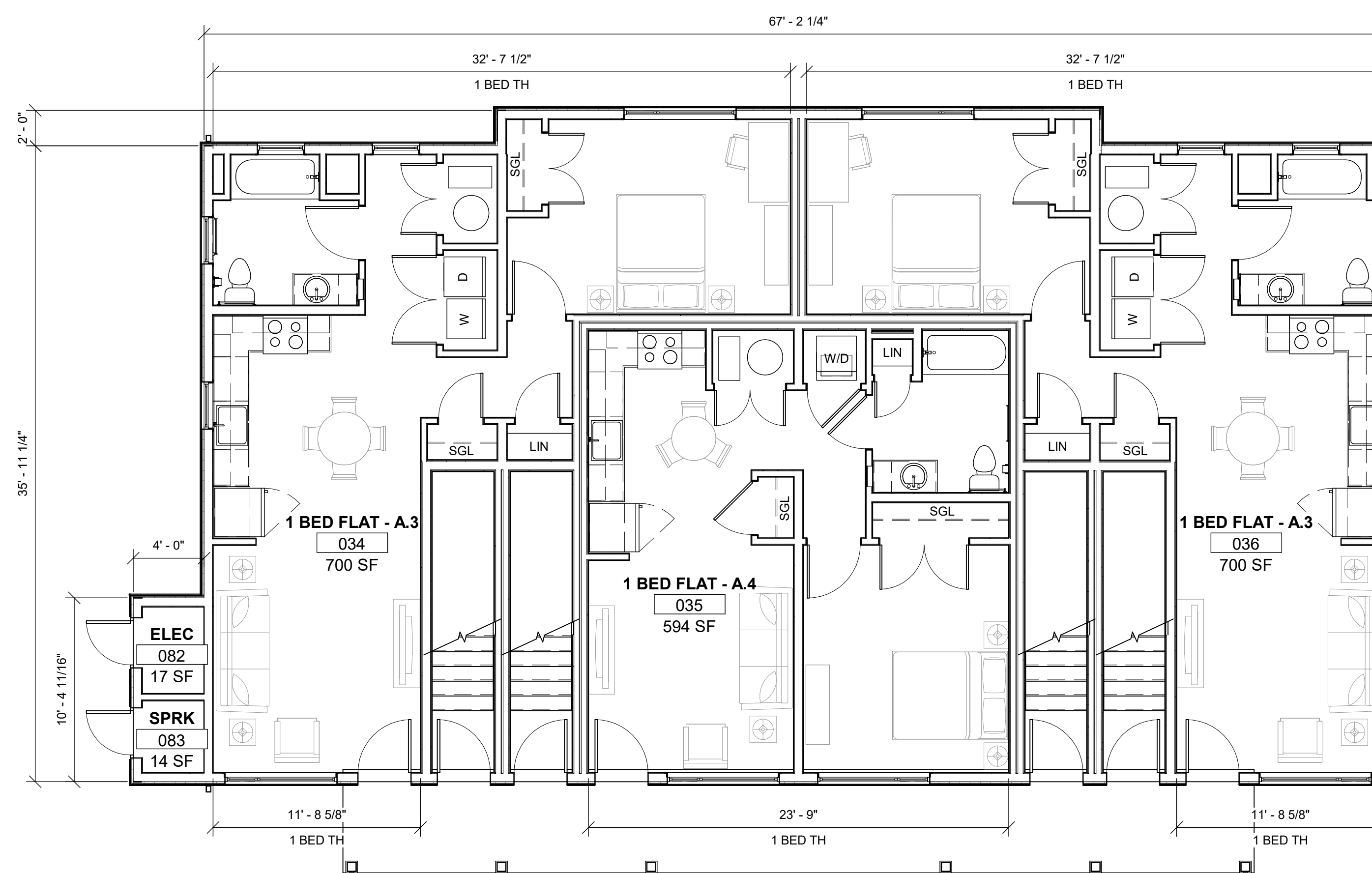
**21 BUILDING D ROOF PLAN**  
Scale: 3/16" = 1'-0"



**11 OVERALL FLOOR PLAN - BUILDING D LEVEL 2**  
Scale: 3/16" = 1'-0"



**20 OVERALL FLOOR PLAN - BUILDING D LEVEL 3**  
Scale: 3/16" = 1'-0"



**10 OVERALL FLOOR PLAN - BUILDING D LEVEL 1**  
Scale: 3/16" = 1'-0"

Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: AS

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNROSE - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

EXTERIOR ELEVATIONS  
- CLUBHOUSE

Project Number:

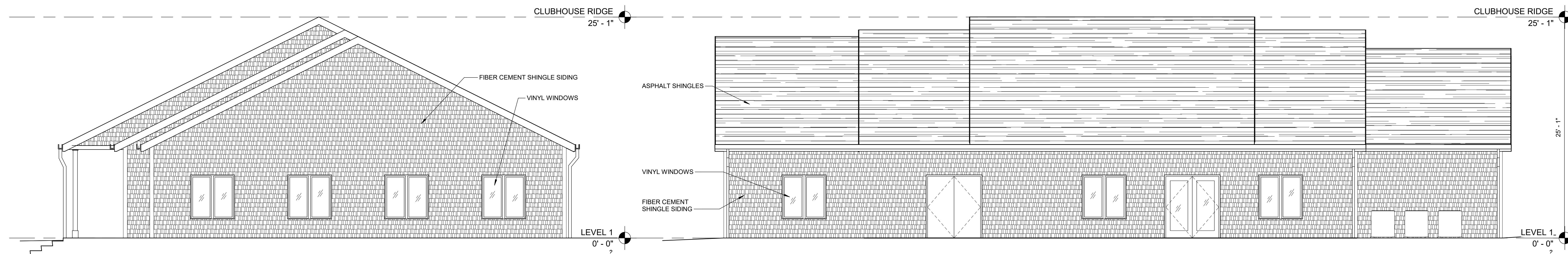
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Issue Date:

MARCH 31, 2023

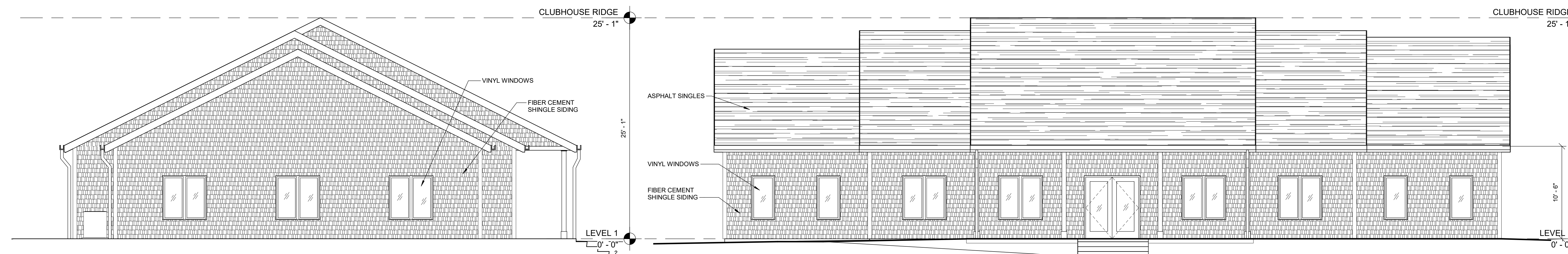
Sheet Number:

A4.01



21 CLUBHOUSE - SIDE 1  
Scale: 3/16" = 1'-0"

11 CLUBHOUSE - BACK  
Scale: 3/16" = 1'-0"



20 CLUBHOUSE - SIDE 2  
Scale: 3/16" = 1'-0"

10 CLUBHOUSE - FRONT  
Scale: 3/16" = 1'-0"

Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNROSE - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

EXTERIOR ELEVATIONS  
- BUILDING A

Project Number:

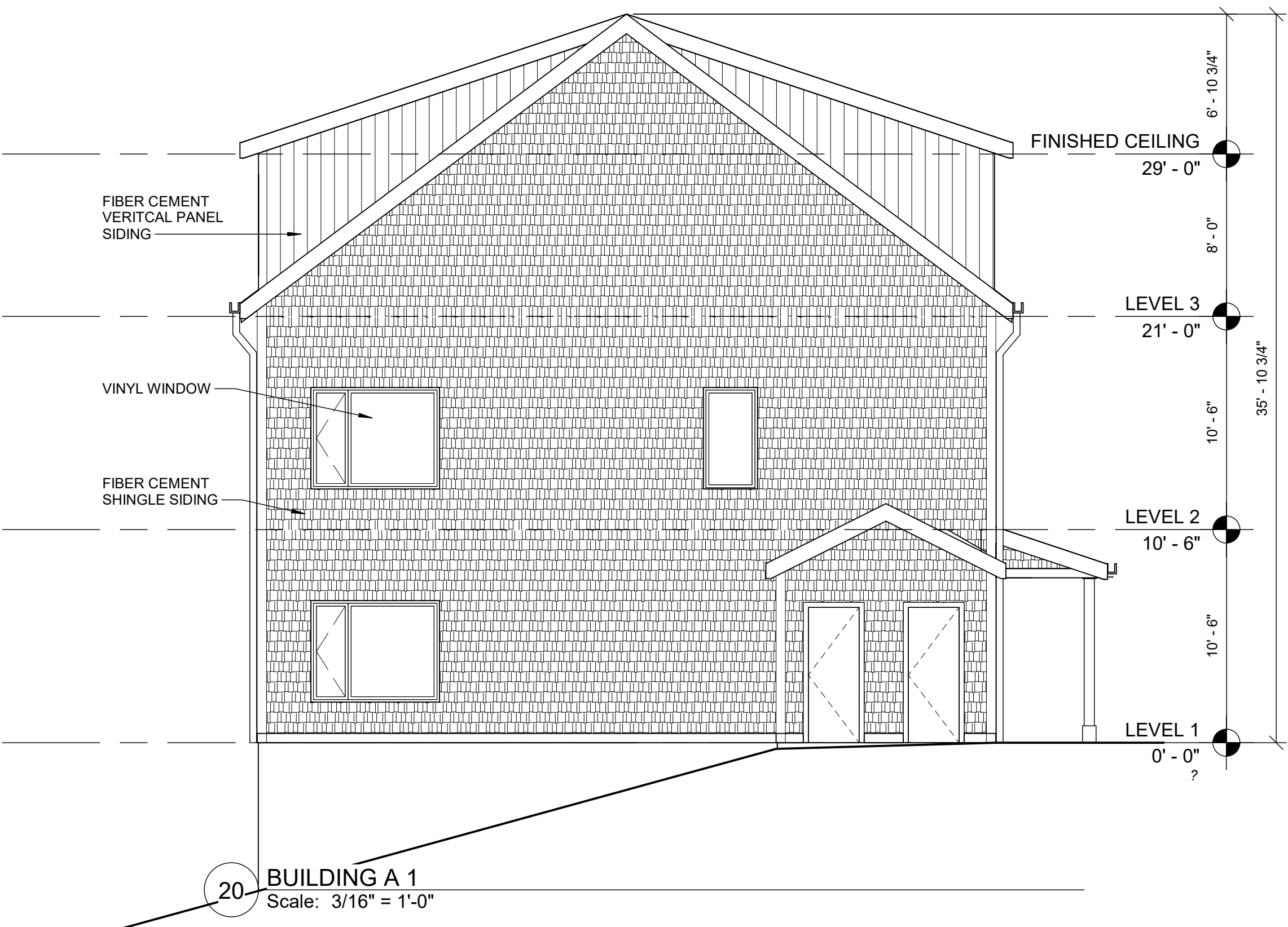
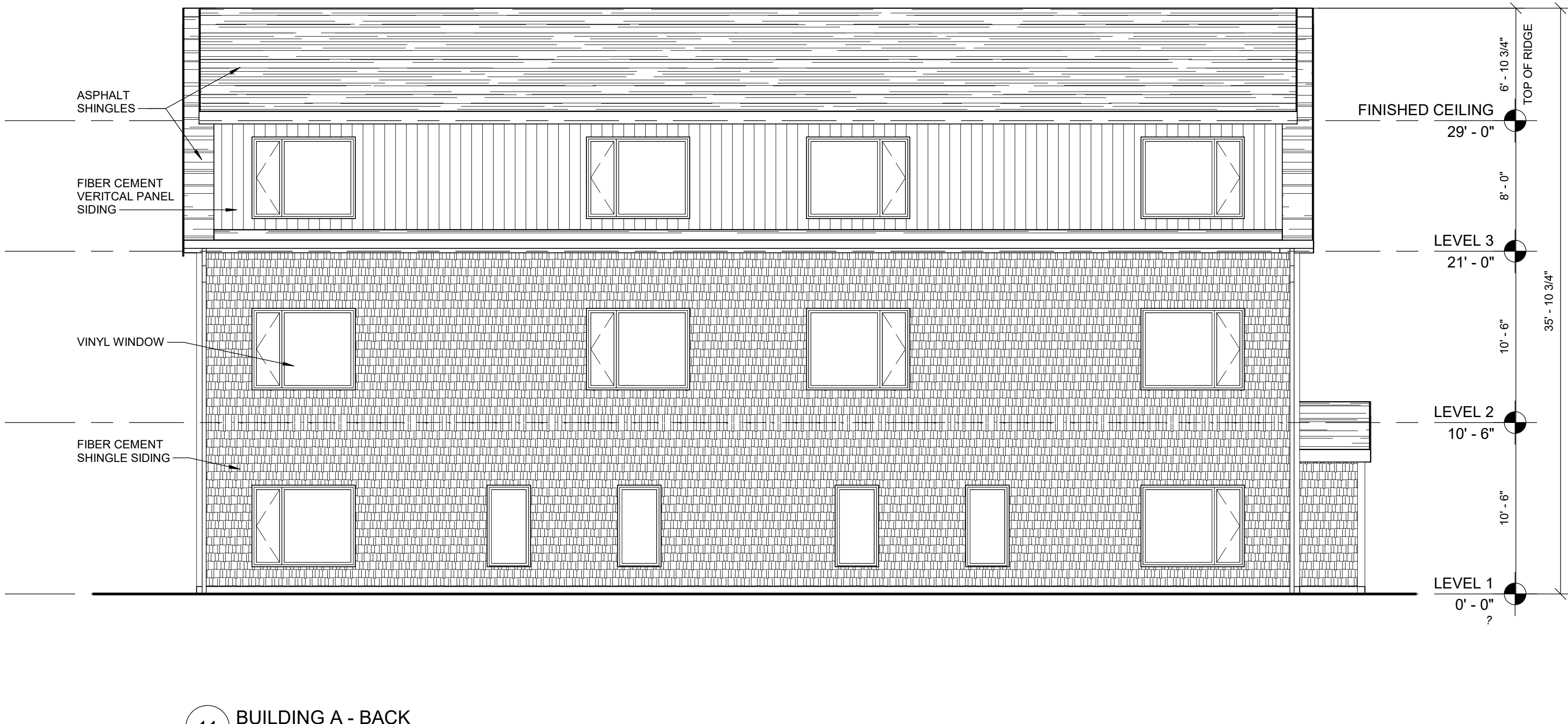
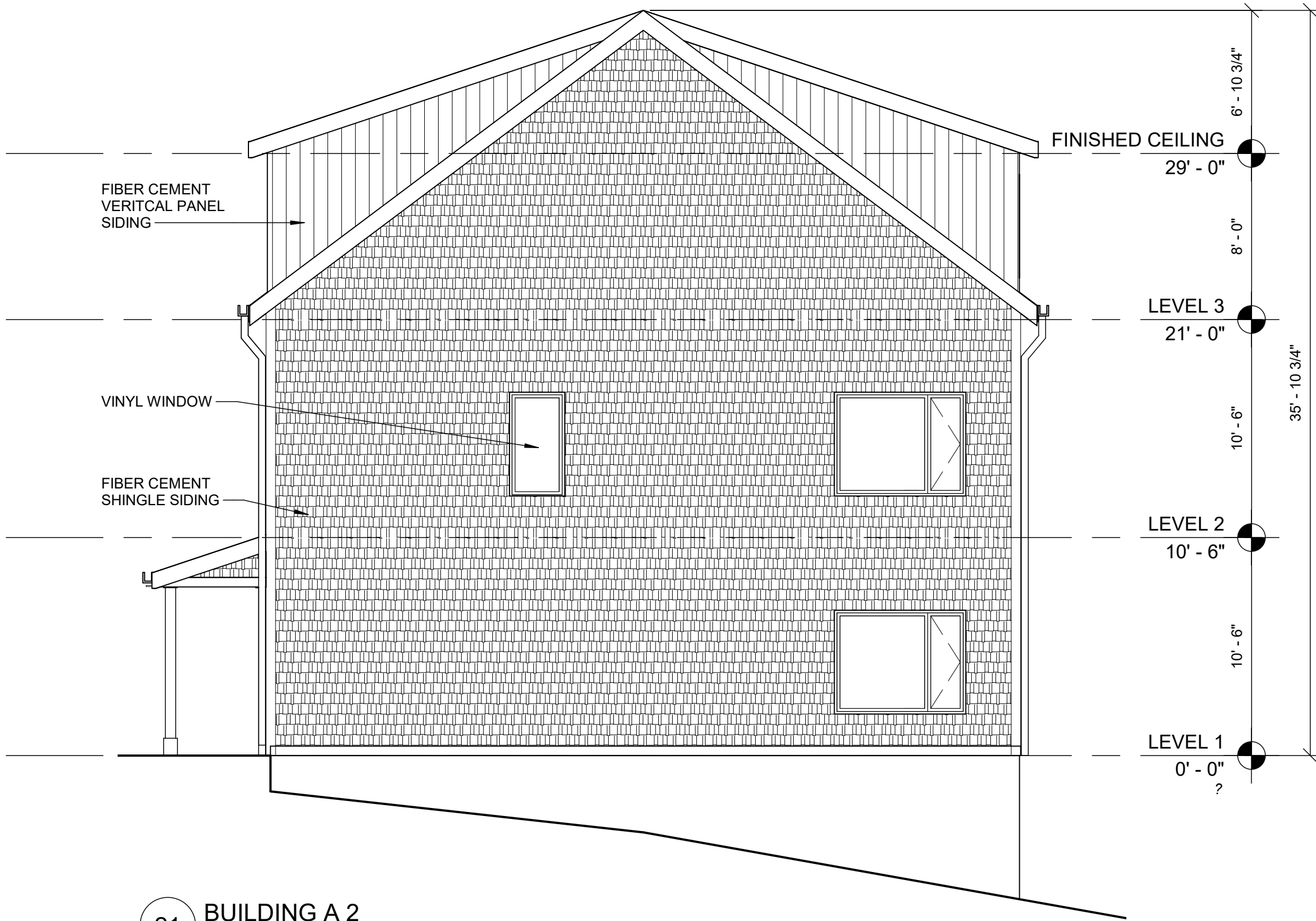
22031

Issue Date:

MARCH 31, 2023

Sheet Number:

A4.02



Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNROSE - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

EXTERIOR ELEVATIONS  
- BUILDING B

Project Number:

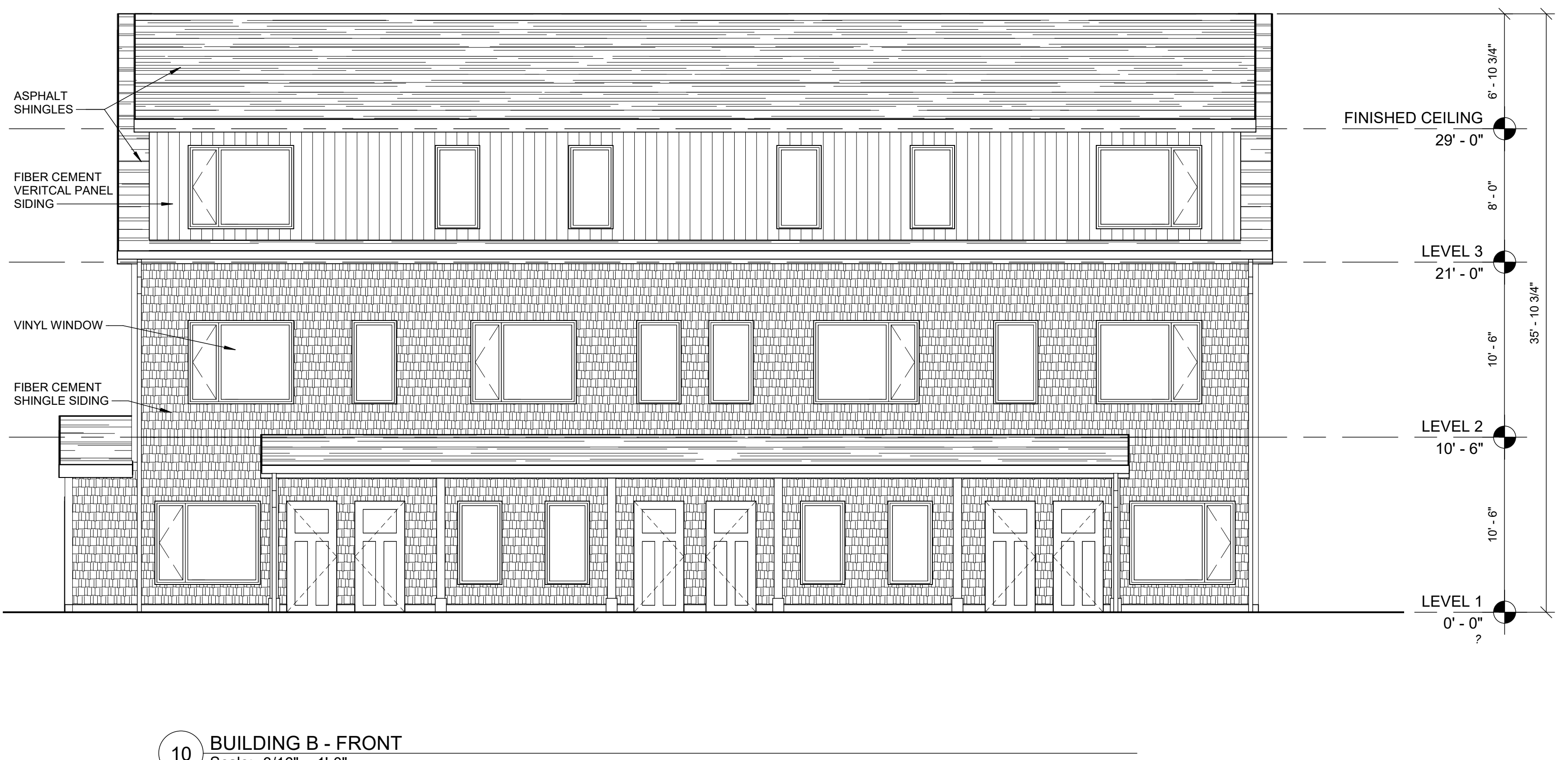
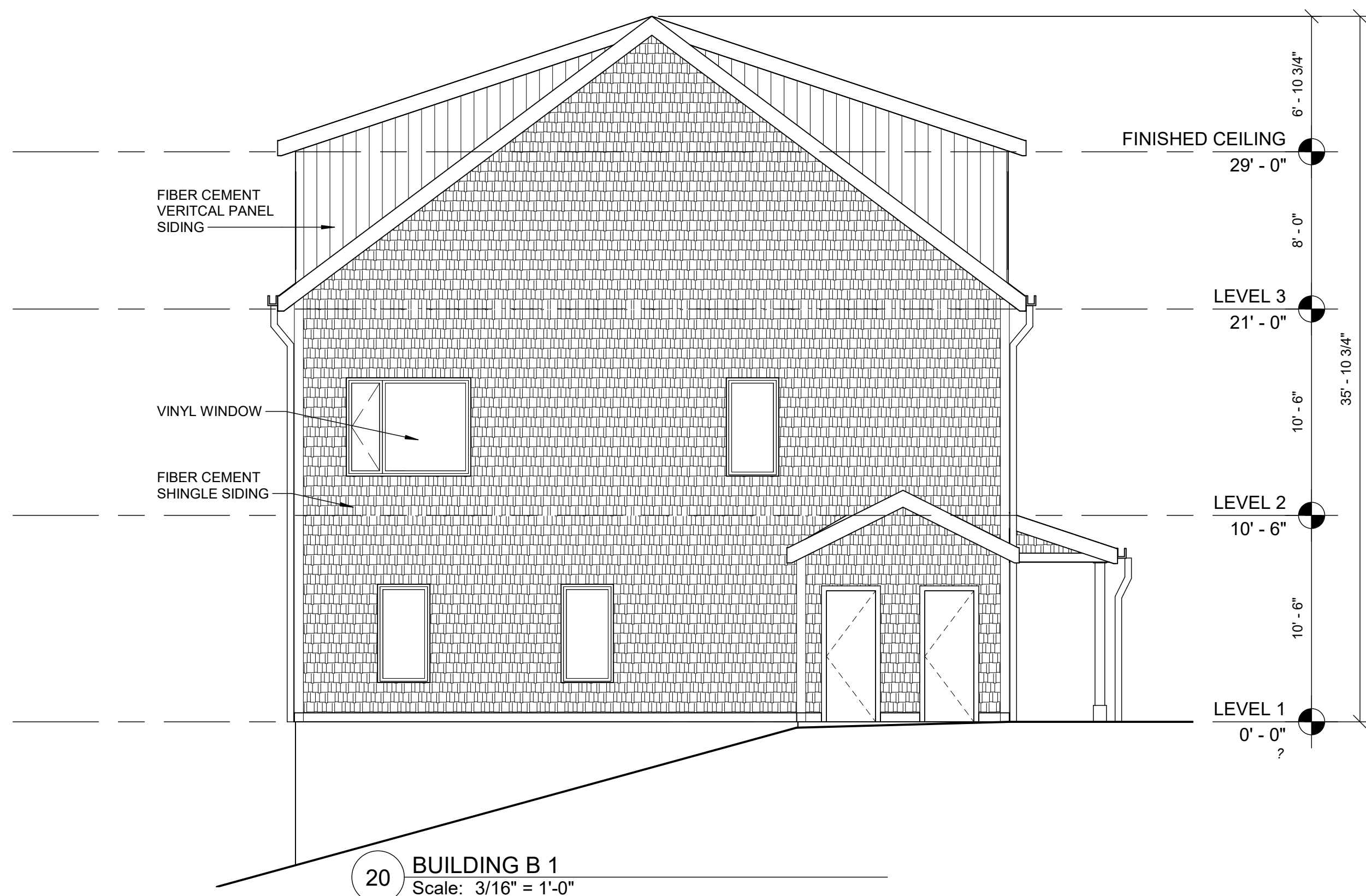
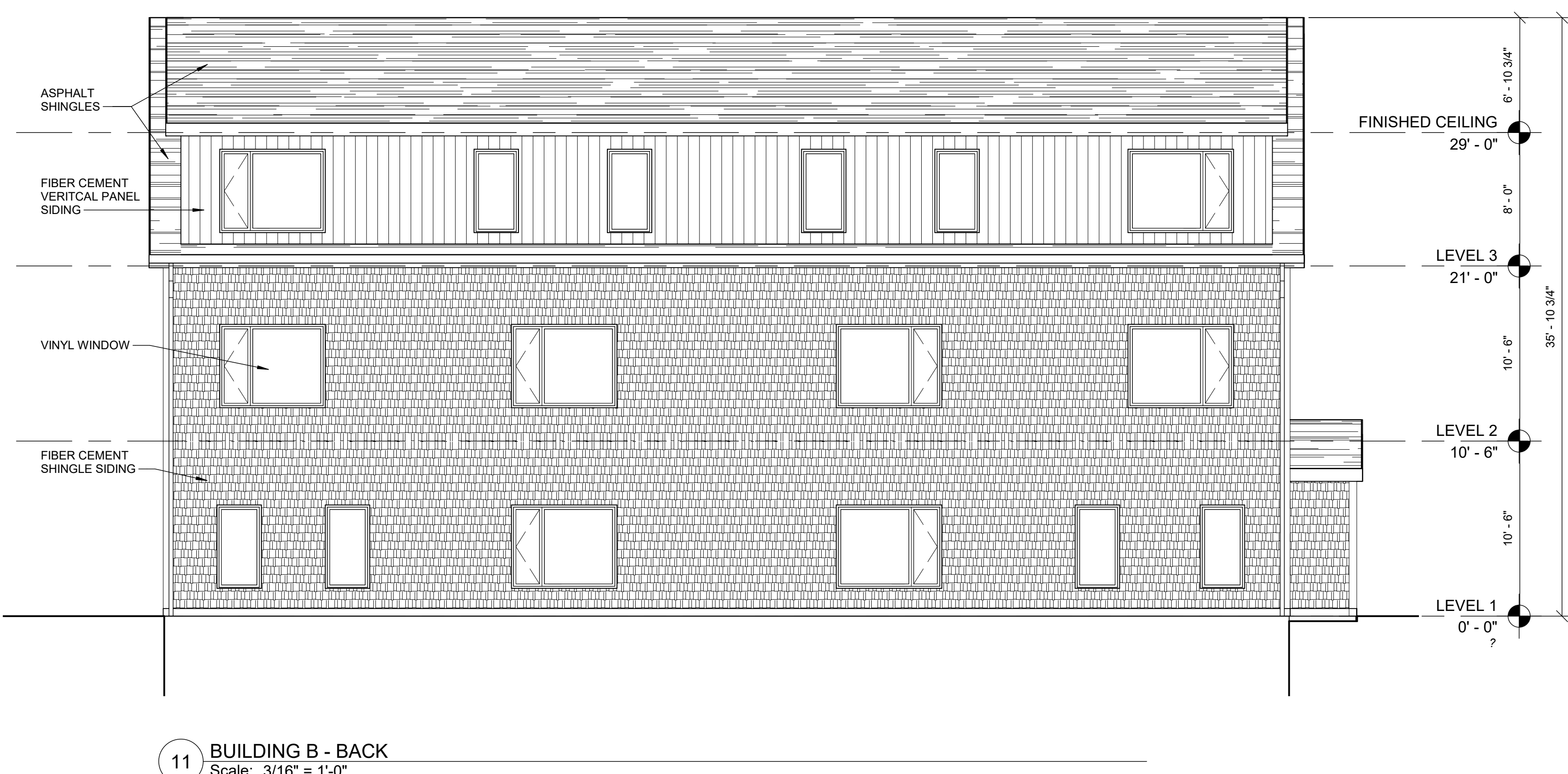
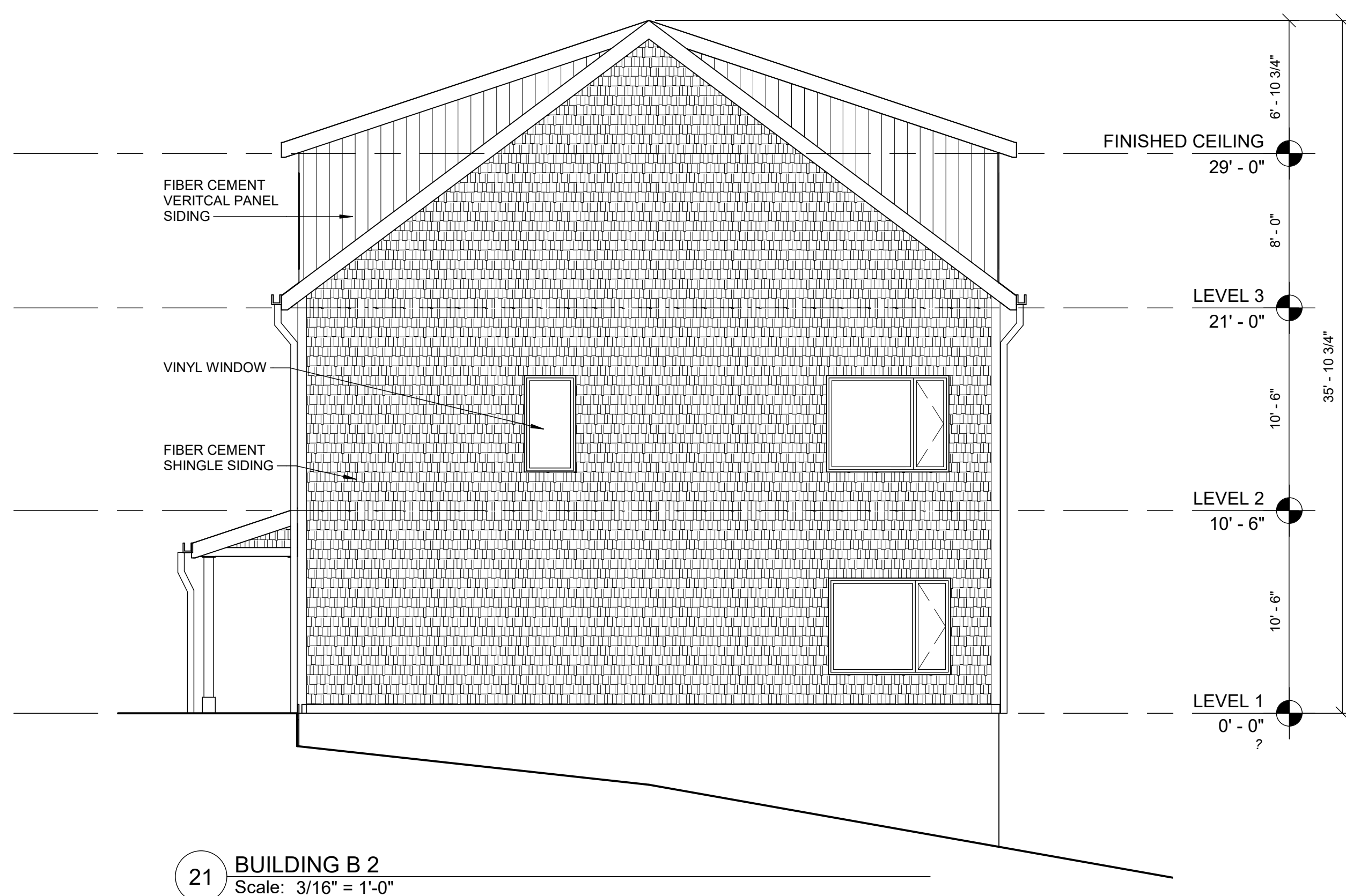
22031

Issue Date:

MARCH 31, 2023

Sheet Number:

A4.03





Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

PENNROSE - 238  
PITTSFIELD RD

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

EXTERIOR ELEVATIONS  
- BUILDING C

Project Number:

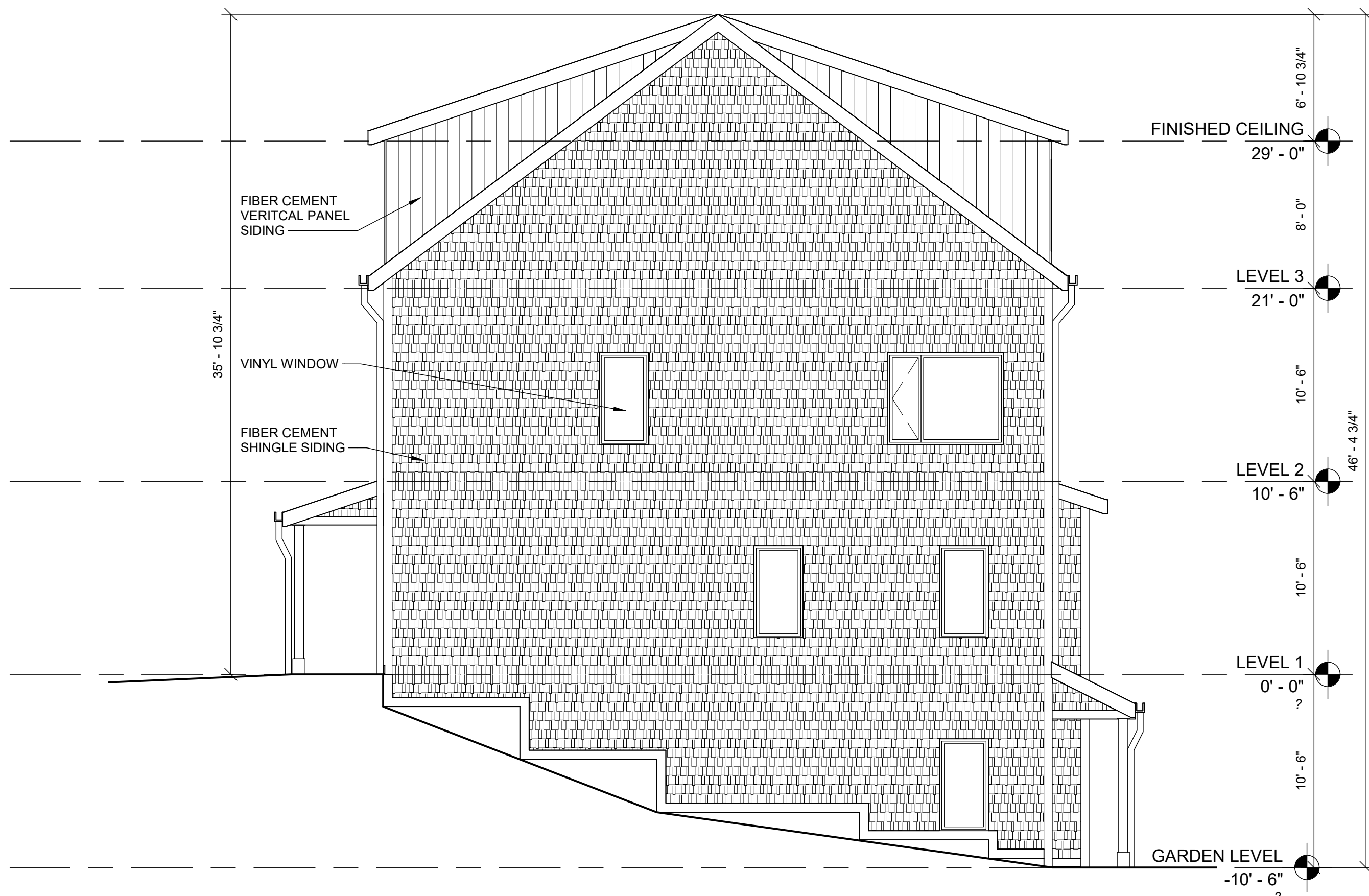
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Issue Date:

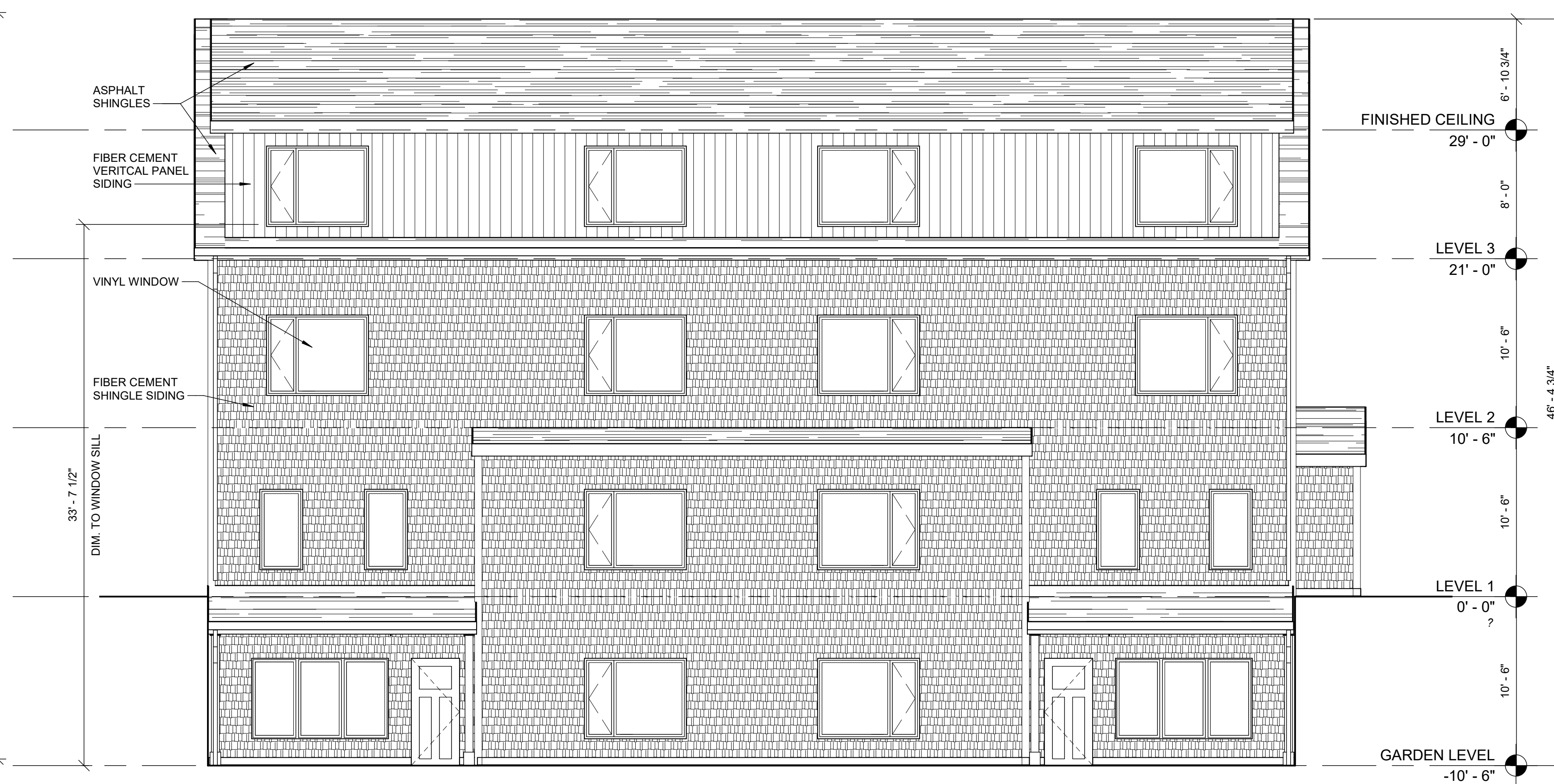
MARCH 31, 2023

Sheet Number:

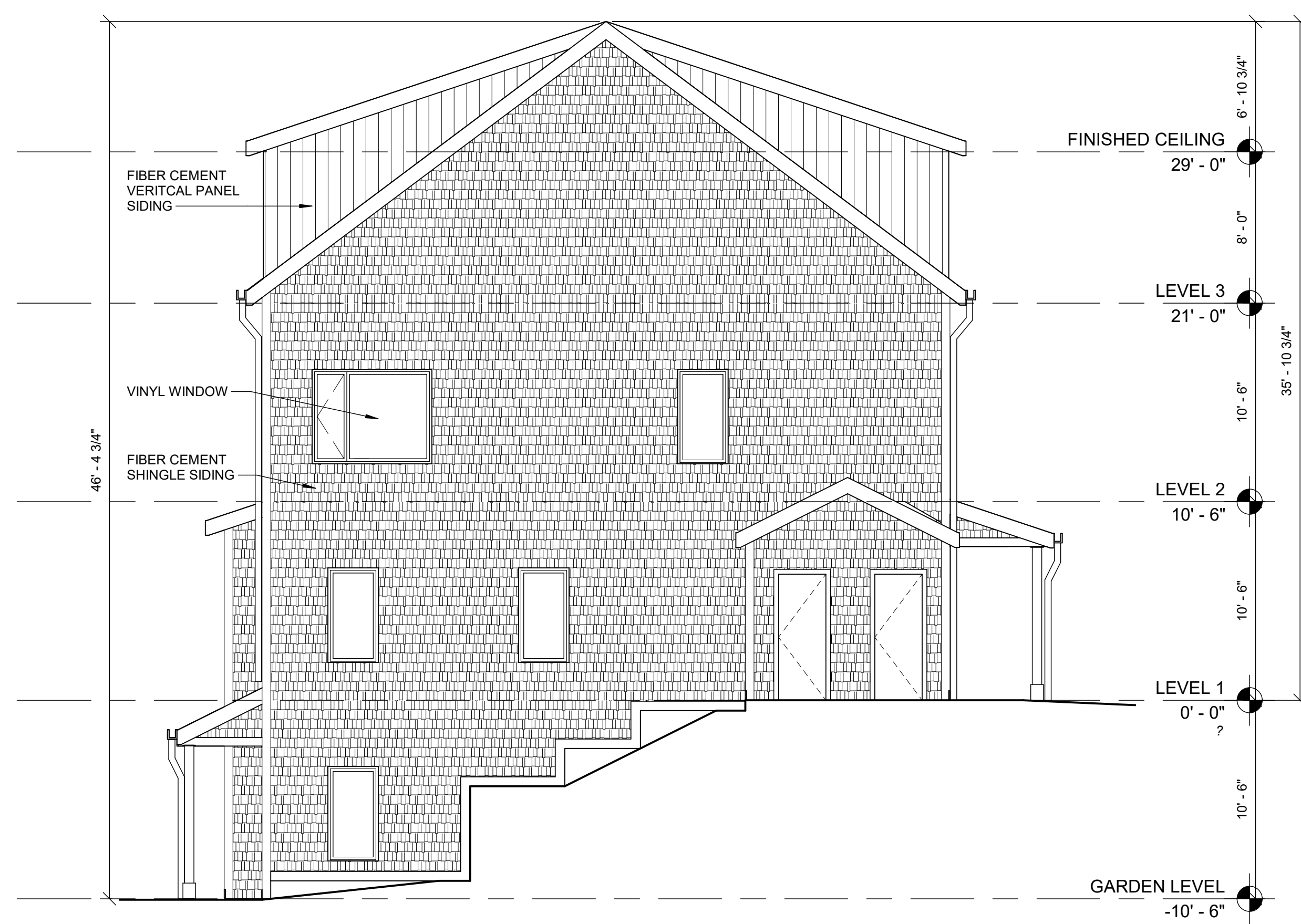
A4.04



21 BUILDING C 2  
Scale: 3/16" = 1'-0"



11 BUILDING C - BACK  
Scale: 3/16" = 1'-0"



20 BUILDING C 1  
Scale: 3/16" = 1'-0"



10 BUILDING C - FRONT  
Scale: 3/16" = 1'-0"

Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: TAT

Scale: 3/16" = 1'-0"

Key Plan:

Project Name:

**PENNROSE - 238  
PITTSFIELD RD**

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

**EXTERIOR ELEVATIONS  
- BUILDING D**

Project Number:

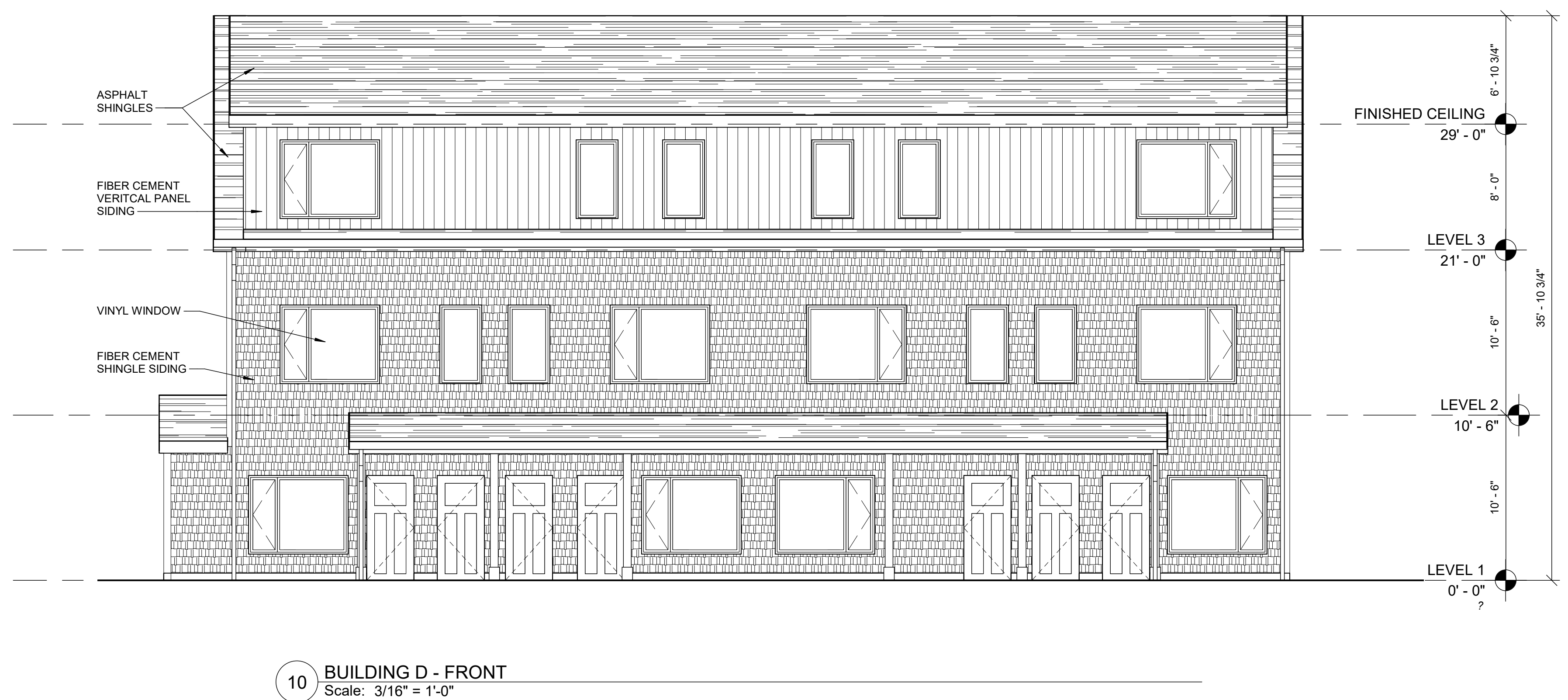
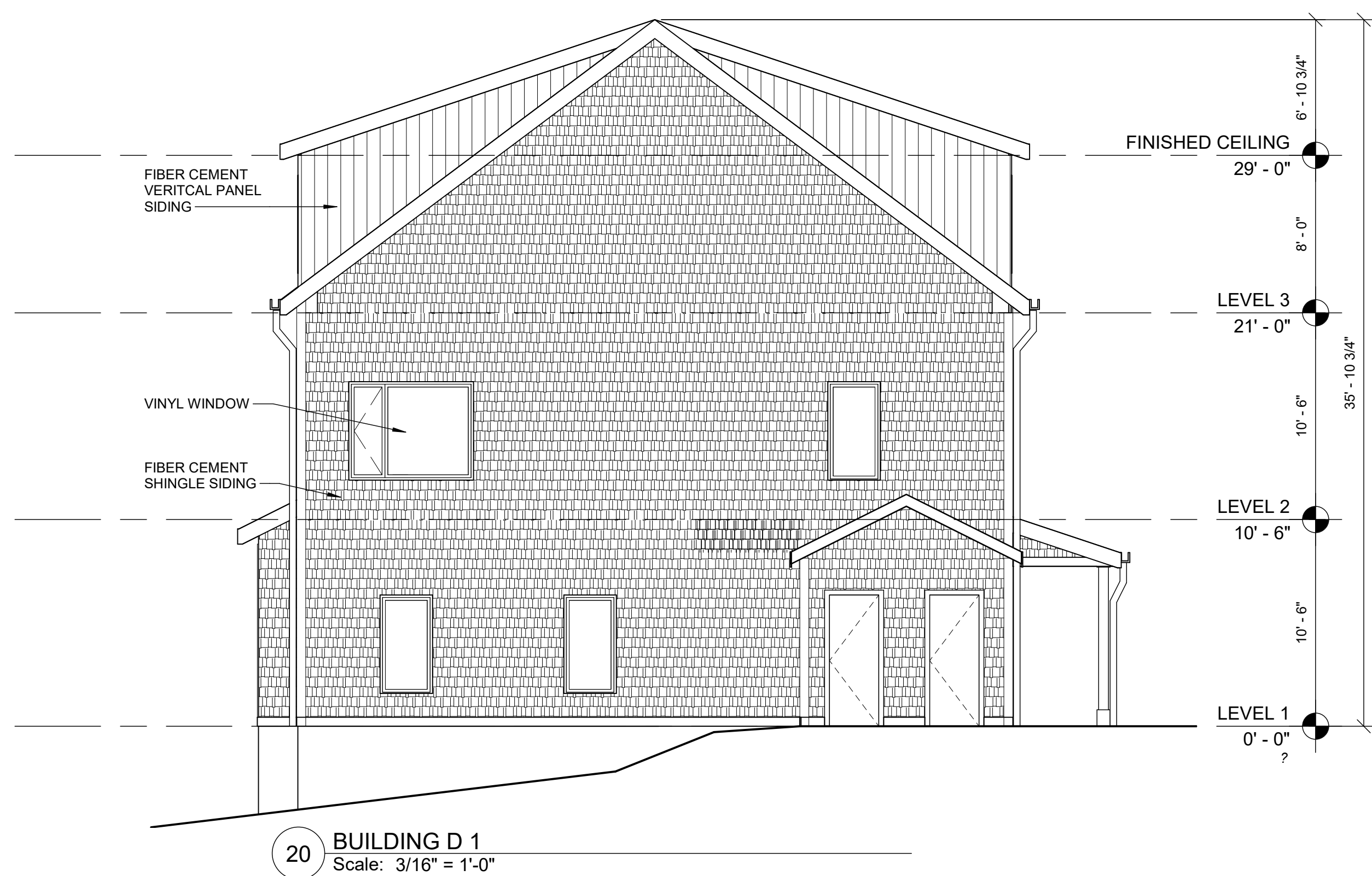
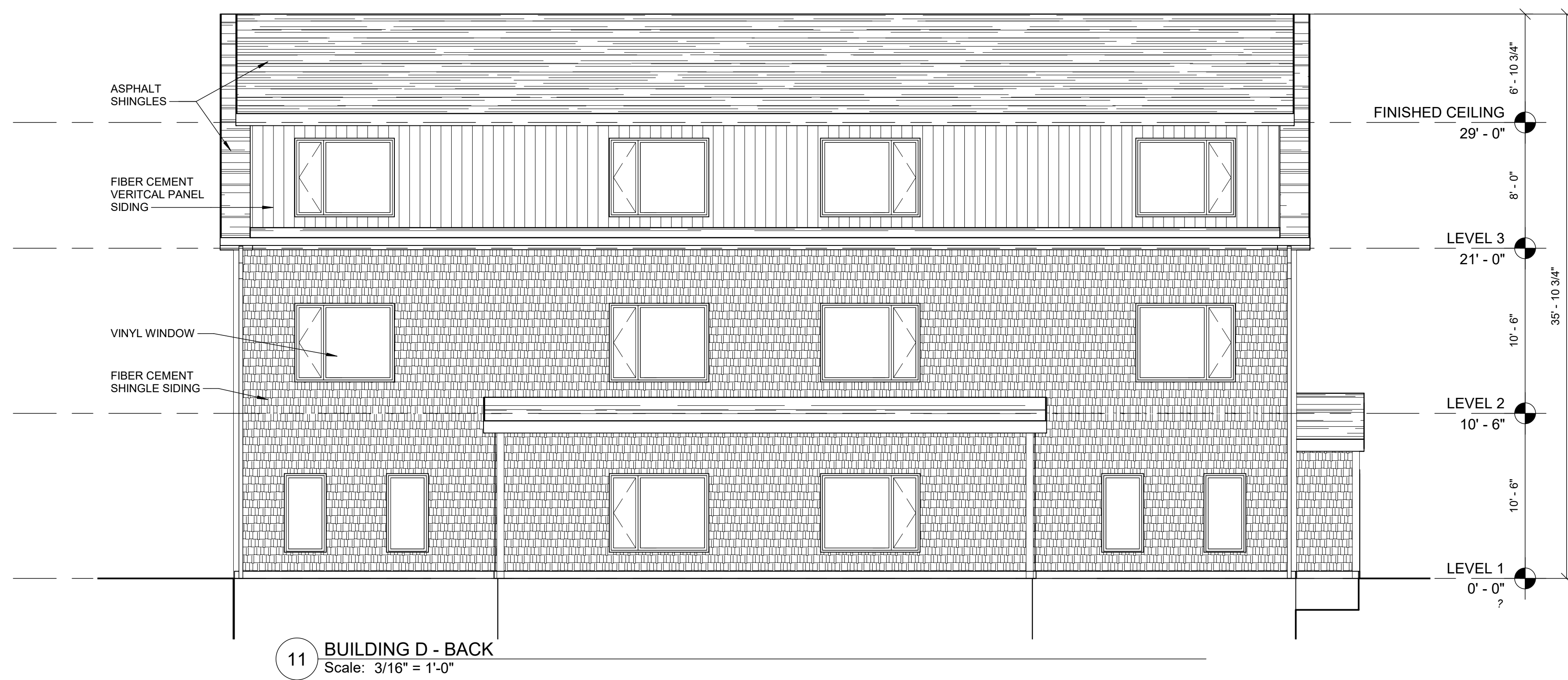
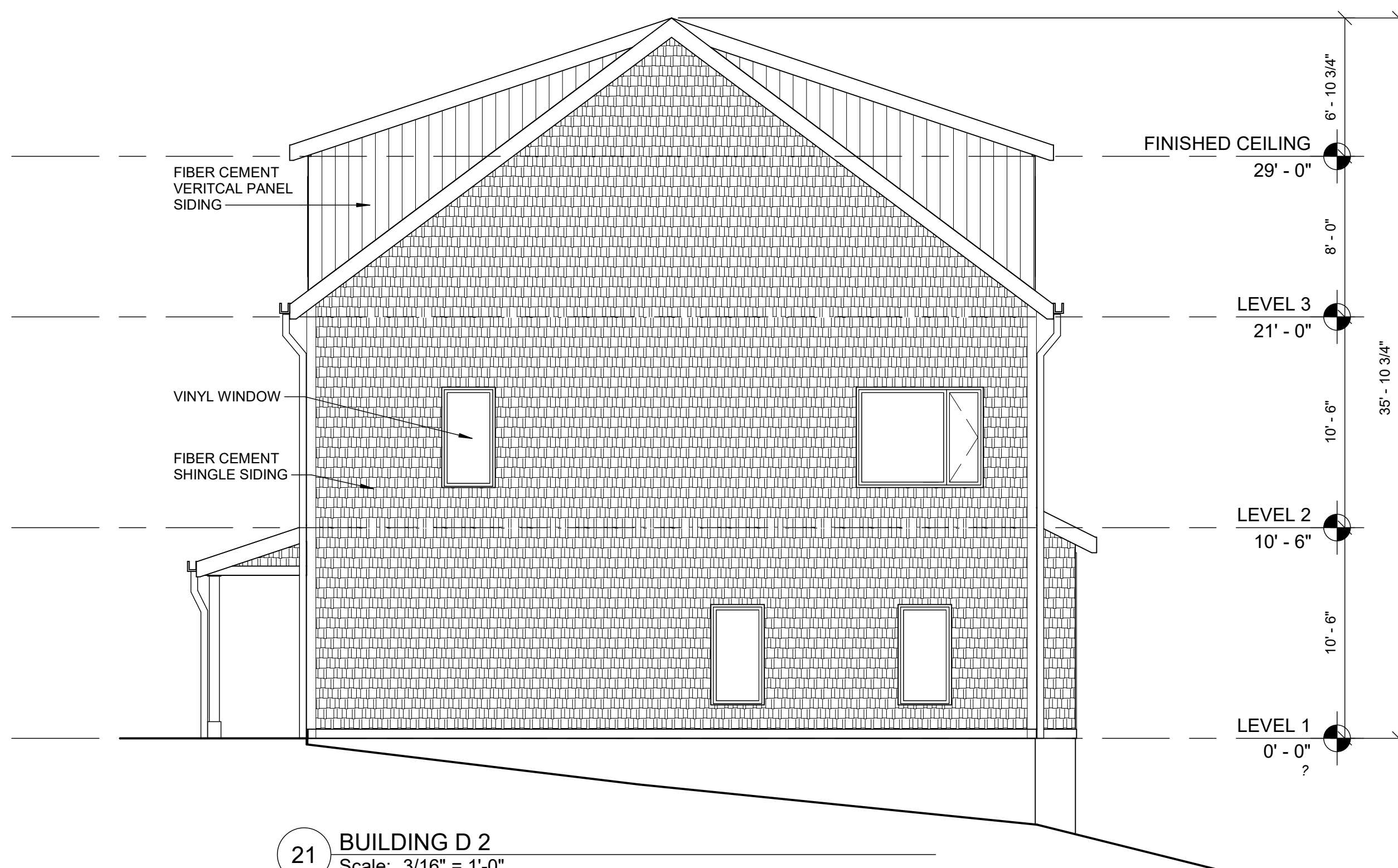
**22031**

Issue Date:

**MARCH 31, 2023**

Sheet Number:

**A4.05**





Consultant:

Revision:

Architect of Record:

Drawn: JS

Checked: AS

Scale: As indicated

Key Plan:

Project Name:

**PENNROSE - 238  
PITTSFIELD RD**

238 Pittsfield Rd.  
Lenox, MA

Sheet Name:

**BUILDING SECTIONS**

Project Number:

22031

Issue Date:

**MARCH 31, 2023**

Sheet Number:

**A5.01**

- 1 HR ROOF ASSEMBLY (RC-1)**
- UL PS22
  - ARCHITECTURAL ASPHALT SHINGLES
  - ROOF UNDERLAYMENT SHEATHING AS SPECIFIED BY STRUCTURAL
  - ENGINEERED OPEN WEB TRUSS
  - R-49 BLOW-IN CELLULOSE INSULATION
  - 1/2" RESILIENT CHANNEL
  - 1 LAYER 5/8" GWB

- TYPICAL EXTERIOR WALL ASSEMBLY (EWS-A)**
- 1 HR RATED UL V302
  - 5/8" FINISHED GWB, PAINTED
  - VAPOR BARRIER
  - 5 1/2" BATT INSULATION, R-23
  - 2x6 WOOD STUD FRAMING
  - ZIP SYSTEM R SHEATHING, 7/16" PS-2 RATED OSB COVERBOARD BONDED TO 1 1/2" INSULATION
  - FIBER CEMENT LAPBOARD SIDING

- 1 HR FLOOR ASSEMBLY (FC-1)**
- UL L521
  - LVT FINISH FLOOR
  - 1" GYPCRETE TOPPING
  - 1/4" ACOUSTICAL MAT UNDERLAYMENT
  - 3/4" PLYWOOD FLOOR SHEATHING
  - 18" OPEN WEB ENGINEERED TRUSSES
  - 3-1/2" ACOUSTICAL BATT INSULATION
  - 1/2" RESILIENT CHANNEL
  - 5/8" GWB CEILING
  - CLOSED CELL SPRAY FOAM INSULATION AT ALL RIM JOISTS

- WINDOWS**
- TRIPLE GLAZED UPVC
  - U-0.16 AND SHGC 0.38

- DOORS**
- FIBERGLASS
  - R-6.6 MIN

- SLAB ON GRADE (FS-1)**
- 4" MIN SLAB THICKNESS OVER CRUSHED STONE
  - 10 MIL VAPOR BARRIER, LAP 12" SEAL ALL JOINTS
  - MIN R-10 INSULATION AT BUILDING PERIMETER, CONTINUOUS HORIZONTAL FROM INSIDE FACE OF FOUNDATION WALL

- FOUNDATION WALL (E6A)**
- REINFORCED CONCRETE FOUNDATION AND FOOTING, REFER TO STRUCTURAL DWGS
  - RIGID INSULATION, R-10, CONTINUOUS VERTICAL AT INSIDE FACE OF FOUNDATION WALL

30 TYPICAL WALL SECTION  
Scale: 1/2" = 1'-0"

21 Section 5  
Scale: 3/16" = 1'-0"

20 BUILDING C SECTION  
Scale: 3/16" = 1'-0"

10 BUILDING A SECTION  
Scale: 3/16" = 1'-0"