Date	December 13, 2022
To	Town of Cumberland Planning Board
From	Carla Nixon, Town Planner
Subject	**Final Major Subdivision Plan Review: White Rock Terrace Apartments**

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1. REQUEST/OVERVIEW:

The applicant is the Szanton Company. The applicant is requesting Final Major Subdivision Review for White Rock Terrace, a four story, 55 unit, senior, affordable apartment building. The building will be located off Sky View Drive (off Route 1) on a portion of the lot shown on Tax Assessor Map R01, Lot 11-7 in the Cumberland Foreside Village subdivision. The parcel, which is 2.28 acres in size, is located in the Office Commercial South (OC-S) zoning district within a contract zone.

The project received Preliminary Subdivision Approval last month.

Travis Letellier, P.E. of Acorn Engineering, Inc., is the Applicant's representative. Dan Diffin, P.E., of SYTDesign Engineers reviewed the plans for the Town of Cumberland.

2. PROJECT HISTORY:

- Sketch Plan Review: 9/20/22
- Preliminary Plan Approval Granted: 11-15-22
- Four waiver requests approved by Planning Board on 11-15-22 (see below)

3. APPROVED WAIVER REQUESTS:

1) Hydro-geologic study; project will be served by public water and sewer.
2) High Intensity Soil Survey.
3) Parking Requirement: To reduce the parking requirement from 2 spaces per dwelling unit to 1.4 spaces per dwelling unit.
4) Waiver from noting the location of trees greater than 10" in diameter on the plan.

4. OUTSIDE AGENCY APPROVALS STATUS:

Agency	Type of Permit	Status
MDEP	SLODA Amendment	Pending
Maine Historic Preservation Commission		On file
Maine Department of Agriculture, Conservation and Forestry	Rare & Exemplary Botanical Features. None documented.	On file
Maine Dept. of Inland Fisheries & Wildlife		On file
Portland Water District	Capacity to Serve	On file

5. DEPARTMENT HEAD REVIEWS:

William Longley, CEO: No comments.

Police Chief Charles Rumsey: No concerns.

Fire Chief Dan Small:

1) The automatic fire protection sprinkler system shall be installed per Town of Cumberland Ordinance and shall also meet the requirements of the National Fire Protection Association. The fire department connection shall be equipped with a 5" locking coupling that is located in an area that is approved by the fire department. The sprinkler system shall send a water flow signal to the fire alarm panel whenever water is moving throughout the system. The fire department shall receive a copy of the sprinkler system drawings that have been approved and permitted by the State Fire Marshal's Office.

2) Due to the fire protection sprinkler system requirement the building shall be equipped with a fire alarm system that is monitored by an approved fire alarm company. The system shall have annunciator panels located at the main entrance(s) that can be silenced with the push of ***one*** button from these locations. The strobe or other visual alarm signaling devices shall remain active when the system is silenced. The alarm system shall identify the exact location of each individual initiation device with plain text at the fire alarm panel and remote annunciators.

3) The building shall be equipped with hinged key boxes at all entry points that are approved by the fire department. The boxes shall be large enough to contain four complete sets of keys/access cards/etc. that fit all areas and utility devices in the entire building. The box locations shall be approved by the fire department.

6. **CUMBERLAND LANDS & CONSERVATION COMMITTEE:** No comments.

7. **TOWN ENGINEER'S REVIEW: December 8, 2022**

Section 250-34—Water Supply

1. The apartment building will use public water; therefore, the project will need approval from the Portland Water District. Please provide the Portland Water District approval letter as part of the final plan application. ***Approval letter from PWD dated 11-2-22 is on file.***

Section 250-35—Sewage Disposal

2. The apartment building will use public sewer; therefore, the project will need approval from the Town of Cumberland Sewer Department. Please provide the Cumberland Sewer approval letter as part of the final plan application. ***Approval letter from Town Manager dated 12-8-22 on file.***

All comments from the preliminary plan review have been addressed.

IX. PROPOSED FINDINGS OF FACT - Chapter 250 - Subdivision of Land

The purpose of these standards shall be to assure the comfort, convenience, safety, health and welfare of the people, to protect the environment and to promote the development of an economically sound and stable community. To this end, in approving subdivisions within the Town of Cumberland, Maine, the Board shall consider the following criteria and before granting approval shall determine that the proposed subdivision:

1. Pollution. The proposed subdivision will not result in undue water or air pollution. In making this determination, it shall at least consider:

A. The elevation of the land above sea level and its relation to the flood plains;

B. The nature of soils and subsoil and their ability to adequately support waste disposal;

C. The slope of the land and its effect on effluents;

D. The availability of streams for disposal of effluents; and

E. The applicable state and local health and water resource rules and regulations;

There are no flood plains or streams on the site. The project will be served by public sewer.

Based on the information provided, the Board finds that the standards of this section have been met.

2. Sufficient Water. The proposed subdivision has sufficient water available for the reasonable foreseeable needs of the subdivision;

The project will be served by public water; a capacity to serve letter is on file from the Portland Water District.

Based on the information provided, The Board finds that the standards of this section have been met.

3. Municipal Water Supply. The proposed subdivision will not cause an unreasonable burden on an existing water supply, if one is to be used;

The 55 apartment units will not create a burden on the existing municipal water supply as indicated in the capacity to serve letter from the Portland Water District.

Based on the information provided, the Board finds the standards of this section have been met.

4. Erosion. The proposed subdivision will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results;

An erosion and sedimentation control plan that includes housekeeping procedures for maintenance has been submitted, and the plan has been reviewed and approved by the Town Engineer.

Based on the information provided, the Board finds that the standards of this section have been met.

5. Traffic. The proposed subdivision will not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed;

A traffic impact assessment dated 10/24/22 was submitted that shows estimated trip counts. The repost states that the project will be a low trip generator and will not require a traffic movement permit from MDOT.

Based on the information provided, the Board finds that the standards of this section have been met.

6. Sewage disposal. The proposed subdivision will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services, if they are utilized;

The project will not cause an unreasonable burden on the municipal sewer system as indicated in the capacity to serve letters from the Portland Water District and the Town Manager.

Based on the information provided, the Board finds that the standards of this section have been.

7. Municipal solid waste disposal. The proposed subdivision will not cause an unreasonable burden on the municipality's ability to dispose of solid waste, if municipal services are to be utilized;

The property management company or owner will be responsible for locating the solid waste and recyclable material to the space allocated for solid waste storage as noted on Site Plan Sheet C-10. A commercial waste. A commercial waste hauler will dispose of the trash that is placed in the dumpster.

Based on the information provided, the Board finds that the standards of this section have been met.

8. Aesthetic, cultural and natural values. The proposed subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline;

   Letters are on file from State agencies indicating that the proposed subdivision will have no adverse impact on any of the above features.

   The Board finds that the standards of this section have been met.

9. Conformity with local ordinances and plans. The proposed subdivision conforms to a duly adopted subdivision regulation or ordinance, comprehensive plan, development plan or land use plan, if any. In making this determination, the municipal reviewing authority may interpret these ordinances and plans;

   The plans have been reviewed and approved by the Town Planner, the Town Engineer and Town department heads.

   The Board finds that the standards of this section have been met.

10. Financial and technical capacity. The subdivider has adequate financial and technical capacity to meet the standards of this section;

    Financial Capacity: The total project budget is approximately $19,000,000. A statement of Financial Capacity, including funding sources, was submitted in the application packet.

    Technical capacity is evidenced by the use of professional technical consultants as outlined in the application packet. In addition, a statement from the developer was provided that gave an overview of past projects completed in Maine and New Hampshire.

    The Board finds that the standards of this section have been met.

11. Surface waters; outstanding river segments. Whenever situated entirely or partially within the watershed of any pond or lake or within 250 feet of any wetland, great pond or river as defined in Title 38 chapter 3, subchapter I, article 2-B, the proposed subdivision will not adversely affect the quality of that body of water or unreasonably affect the shoreline of the body of water;

    The project is not situated in any of the areas listed above.
    Based on the information provided, the Board finds that the standards of this section have been met.

12. Ground water. The proposed subdivision will not alone, or in conjunction with, existing activities, adversely affect the quality or quantity of ground water;

    The residential apartments, which will be served by public water and sewer, will not adversely affect the quantity or quality of groundwater.

    Based on the information provided, the Board finds that the standards of this section have been met.

13. Flood areas. Based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and information presented by the applicant whether the subdivision is in a flood-prone area. If the subdivision, or any part of it, is in such an area, the subdivider shall determine the 100-year flood elevation and flood hazard boundaries within the subdivision. The proposed subdivision plan must include a condition of plan approval requiring that principal structures in the subdivision will be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation;

    The development is not located within a 100-year flood plain as shown on the applicable FEMA Flood Insurance Rate Map.

    Based on the information provided, the Board finds that the standards of this section have been met.

14. Storm water. The proposed subdivision will provide for adequate storm water management;

A stormwater Management Report dated October 2022 was included in the application. The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. The plan has been reviewed and approved by the Town Engineer.

Based on the information provided, the Board finds that the standards of this section have been met.

15. Freshwater wetlands. All potential freshwater wetlands, as defined in 30-A M.R.S.A. §4401 (2-A), within the proposed subdivision have been identified on any maps submitted as part of the application, regardless of the size of these wetlands. Any mapping of freshwater wetlands may be done with the help of the local soil and water conservation district.

Wetland areas have been identified on the plans.

Based on the information provided, the Board finds that the standards of this section have been met.

16. River, stream or brook... Any river, stream, or brook within or abutting the proposed subdivision has been identified on any map submitted as a part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in Title 38, Section 480-B, Subsection 9. [Amended; Effective. 11/27/89]

There were no streams identified on the site.

Based on the information provided, the Board finds that the standards of this section have been met.

Design and Performance Standards

(1) Route 1 Design Standards
(2) Route 1 Design Standards: APPLICABLE
(3) Town Center District Design and Performance Standards
(4) Village Mixed Use Performance Standards.

ROUTE 1 DESIGN AND PERFORMANCE STANDARDS:

1.2 Site Planning and Design

1.1 Master Planning

On properties that are large enough to accommodate more than a single structure, developers will be expected to prepare a conceptual master plan to show the Planning Board the general location of future buildings, parking lots, circulation patterns, open space, utilities, provisions for stormwater management, and other components of site development.

On sites with multiple buildings, the outdoor space defined by the structures should be designed as a focal point for the development, with provisions for seating and other outdoor use. Landscaping, bollards and other site features should maintain a safe separation between vehicles and pedestrians.

FINDING: There will be only one structure on this parcel.

1.2 Professional Design

Developers shall have their site plans designed by licensed professionals (civil engineers, architects or landscape architects) as required by State of Maine professional licensing requirements to address the health, safety, welfare and visual pleasure of the general public, during all hours of operation and all seasons of the year.

FINDING: The above professionals were involved in the preparation of the site plan.

1.3 Route 1 Buffer Strip

Developments should be designed to preserve the naturally forested character of much of the Rt. 1 corridor. A 75' is required.

FINDING: The parcel does not front on Rt. 1, so this provision is not applicable.

1.4 Vehicular Access

Development along Cumberland's Route 1 corridor should promote safe, user-friendly and efficient vehicular movement while reducing both the number of trips on the roadway and the number of curb cuts wherever possible. The vehicular movements discussed in this chapter, both on-site and off-site, shall be designed by a professional engineer and shall be in conformance with all Maine Department of Transportation requirements.

FINDING: The project will be served by an entrance to a parking area located off of Skyview Drive and not directly from Route 1.

1.4.1 Route 1 Curb Cuts

To promote vehicular, bicycle and pedestrian safety, the number of curb cuts on Route 1 should be kept to a minimum. Adjacent uses are encouraged to use shared driveways wherever possible, thereby reducing the number of turning motions onto and off of Route 1. This practice will increase motorist, bicycle and pedestrian safety, and has the added environmental benefit of helping to reduce impervious (paved) area.

Driveways and their associated turning movements should be carefully designed and spaced to reduce interruptions in Route 1's level of service and to promote safe and easily understandable vehicular movements. Where curb cuts will interrupt sidewalks, ADA requires that the cross slope not exceed 2% in order to maintain accessibility.

New driveways and existing driveways for which the use has changed or expanded require a Maine Department of Transportation "Driveway Entrance Permit." The Planning Board will not grant project approval until the Town has been provided a copy of the permit, or alternately, until the applicant provides the Town a letter from the DOT stating that such a permit is not required. The MDOT may also require a Traffic Movement Permit if the number of vehicle trips exceeds the threshold established by the MDOT.

FINDING: Not Applicable.

1.4.2 Site Circulation

Internal vehicular movement on each site should be designed to achieve the following goals: to ensure the safety of motorists, delivery vehicles, pedestrians and cyclists by providing clear cues to the motorist as to where to drive or park, etc., once they enter the site. Landscaping, to reduce impervious areas, is encouraged as much possible.

Every effort should be made to restrict paved surfaces to a maximum of two sides of the building. The site should not feature a building surrounded by drive lanes and parking.

To ensure safe and easily understandable circulation, parking spaces, directional arrows, crosswalks and other markings on the ground should be painted on the pavement paint or shown by other suitable methods.

FINDING: The plan reflects all of the above recommended features.

1.4.3 Driveways between Parcels

Driveways between adjacent parcels should be used where feasible in order to make deliveries easier and reduce unnecessary trips and turning movements on Route 1.

These driveways should provide safe, direct access between adjacent lots, but only where the paved areas of the two adjacent lots are reasonably close together. However, they are inappropriate where they would require excessive impervious (paved) area or impose undue financial burden on the owner.

All such driveways between parcels should have pedestrian walkways when possible.

FINDING: Not Applicable.

1.5 Building Placement

Objective: Buildings should be placed on their sites in a way that is sensitive to existing site conditions and respectful of adjacent uses.

1.5.1 Location of Building on the Site

In placing the building on the site, the designer should carefully consider the building's relationship to existing site features such as the size of the site, existing vegetation and topography, drainage, etc., as well as the abutting land uses.

The site design should make every effort to avoid creating a building surrounded by parking lot. In addition, buildings should generally be square to Route 1 and should avoid unusual geometry in building placement unless the site requires it.

FINDING: The location of the building on the site is appropriate. Parking is on only one side of the building.

1.5.2 Building Entrances

The building's main entrance should be a dominant architectural feature of the building, clearly demarcated by the site design and landscaping. Main entrances should front onto the most convenient parking area.

At building entrance areas and drop-off areas, site furnishings such as benches, sitting walls and, if appropriate, bicycle racks should be encouraged. Additional plantings may be desirable at these points to clearly identify the building entrance and to invite pedestrians into it.

Where building entrances do not face Route 1, the Route 1 façade should still be made interesting and attractive to drivers on Route 1.

FINDING: The building entrances are covered and set off by architectural details.

1.5.3 Building Setbacks

If adjacent building facades are parallel with Route 1 and buildings have consistent setbacks from Route 1, the visual effect from the road will be orderly and attractive.

Side and rear building setbacks must conform to the requirements of the underlying zone.

FINDING: All setbacks are conforming and appropriate.

1.5.4 Hillside Development

When a proposed development is located on a hillside that is visible from Route 1 or from other public areas, its presence will be much more obvious than development on a level site. Because of this, it is even more important that the structure be designed to fit harmoniously into the visual environment. The use of berms and plantings, where appropriate, will help soften the impact of buildings located in open fields.

Site clearing should also be minimized and vegetation should be retained or provided to minimize the visual impact of the development. Issues of drainage, run-off and erosion should also be closely examined.

FINDING: The building will be slightly visible from Route 1 when looking up Skyview Drive. The building architecture is consistent with these standards and the orientation of the building toward Skyview Drive and down to Route 1 is appropriate.

1.5.5 Universal Accessibility

Development of all properties, buildings, parking lots, crosswalks, walkways and other site features must comply with the applicable standards of the Americans with Disabilities Act (ADA).

FINDING: All ADA requirements have been met.

1.6 Parking

Objective: Development should provide safe, convenient and attractive parking. Parking lots should be designed to complement adjacent buildings, the site and the Route 1 corridor without becoming a dominant visual element. Every effort should be made to break up the scale of parking lots by reducing the amount of pavement visible from the road. Careful attention should be given to circulation, landscaping, lighting and walkways.

FINDING: The parking is located to one side of the building.

1.6.1 Location

Parking lots should be located to the side or rear of buildings. Parking should only be placed between the building and Route 1 if natural site constraints such as wetlands or topography, allow no other option. If parking must be built between the building and Route 1, it should be limited, if at all possible, to only one row of parking spaces and be adequately buffered.

FINDING: There is no parking between the building and Route 1.

1.6.2 Landscaping

A 75' buffer between Route 1 and buildings and parking is intended to ensure that views from Route One are not of expanses of asphalt shall be required of each new development that is on Route 1

Parking should be separated from the building by a landscaped strip a minimum of five to ten feet wide.

Landscaping around and within parking lots will shade hot surfaces and visually soften the appearance of the hard surfaces. Parking lots should be designed and landscaped to create a pedestrian-friendly environment. A landscaped border around parking lots is encouraged, and landscaping should screen the parking area from adjacent residential uses. Tree plantings between rows of parking are very desirable. Granite curbs, while more expensive, are more attractive and require less maintenance than asphalt ones.

FINDING: The parcel does not front on Route 1.

Snow Storage

Provision should be made for snow storage in the design of all parking areas, and these areas should be indicated on the site plan. The area used for snow storage should not conflict with proposed landscaping or circulation patterns. These areas should be sited to avoid problems with visibility, drainage or icing during winter months.

FINDING: Locations for snow storage are shown on the plan.

1.6.4 Impervious Surfaces

The amount of paved surface required for parking, driveways and service areas should be limited as much as possible in order to provide green space, reduce run-off and preserve site character. This will have the added benefit of reducing construction and maintenance costs.

FINDING: The plan reflects these recommendations.

1.7 Service Areas

Objective: Service areas include exterior dumpsters, recycling facilities, mechanical units, loading docks and other similar uses. Service areas associated with uses along Route 1 should be designed to meet the needs of the facility with a minimum of visual, odor or noise problems. They should be the smallest size needed to fit the specific requirements of the building and its intended operation and should be fully screened from view by either plantings or architectural elements such as attractive fences.

FINDING: Service areas are located to the rear of the building.

1.7.1 Location

Service areas should, if possible, be located so that they are not visible from Route 1 or from the building entrance. Locations that face abutting residential properties should also be avoided wherever possible.

Dumpster, recycling facilities and other outdoor service facilities should be consolidated into a single site location, in accordance with appropriate life safety requirements.

FINDING: Service areas are not visible from Route 1. The dumpster will be fenced and screened with plantings.

1.7.2 Design

Service areas should be designed to accommodate the turning movements of anticipated vehicles, and should be separated from other vehicle movements, parking areas and pedestrian routes.

Wherever possible, service drives should be separated from areas where people will be walking by landscaped islands, grade changes, berms, or other devices to minimize conflicts.

Gates on enclosures should be designed to prevent sagging or binding. Wooden fencing is always preferred, but where chain link is necessary for safety considerations, it should be screened by landscaping and painted a dark color, or coated with dark vinyl.

FINDING: The above criteria have been met.

1.7.3 Buffering/Screening

Service areas should be screened to minimize visibility from sensitive viewpoints such as Route 1, nearby residential dwellings, public open space, pedestrian pathways, and building entrances. Landscape screening may consist of evergreen trees, shrubs, and/or planted earth berms. Architectural screening may consist of walls, fences or shed structures, and should complement the design of the main structure through repetition of materials, detailing, scale and color.

Where plantings do not survive, or where they grow to a point where they no longer serve as effective screens, they shall be replaced or supplemented to meet the intent of the plan as approved by the Planning Board.

FINDING: The above criteria have been met.

1.8 Open Space

Objective: In order to provide an attractive, hospitable and usable environment, future development along Route 1 should have generous amounts of open space and attractive site details for such elements as pavement, curbing, sitting and other public areas, landscaping, planters, walls, signage, lighting, bollards, waste receptacles and other elements in the landscape.

FINDING: The site plan shows open areas around the building.

1.8.1 Internal Walkways

Internal walkways should invite pedestrians onto the property and make them feel welcome.

Walkways extending the full length of a commercial building are encouraged along any façade that features a customer entrance and an abutting parking area. Such walkways should be located five to ten feet from the face of the building to allow for planting beds. Such walkways should be shown on the project's landscaping plan.

Wherever feasible, interconnections between adjacent properties should be developed to encourage pedestrian movement and reduce vehicle trips.

At a minimum bituminous concrete should be used as the primary material for internal walkways, except that for entrance areas and other special features the use of brick or special paving shall be encouraged. Walkways should be separated from parking areas and travel lanes by raised curbing. Granite is strongly preferred for its durability, appearance and low maintenance requirements.

Driveway crosswalks should be marked by a change in pavement texture, pattern or color to maximize pedestrian safety in parking and other potentially hazardous areas.

FINDING: There are walkways around all four side of the building and from Skyview Drive to the building.

1.8.2 Landscaping

Where there are trees in the 75" buffer between Route 1 and the building, existing healthy trees should be maintained in their natural state. Where there are few or no trees in the 75' buffer, the buffer area should be landscaped either with trees, or with flowering shrubs, fencing, or such architectural elements as stone walls.

Where plantings do not survive, or grow to a point where they no longer serve as effective buffers, they shall be replaced or enhanced to meet the intent of the approved plan.

FINDING: The parcel does not front on Route 1, but there is generous landscaping provided around the site.

1.8.3 Usable Open Space

Whenever possible, site plans should provide inviting open spaces where people can sit, relax and socialize. Open spaces should be thought of as outdoor rooms, with consideration to ground surfaces, landscaping, lighting and other physical elements. Examples of such spaces include a forecourt outside a building entrance, or a peaceful place outdoors where employees can sit down and eat lunch or have breaks.

FINDING: Usable open space areas have been provided, including seating areas, lawn and garden beds.

1.9 Buffering of Adjacent Uses

Objective: Buffering or screening may be necessary to effectively separate quite different land uses such as housing and office or commercial buildings. Plantings, earth berms, stone walls, grade changes, fences, distance and other means can be used to create the necessary visual and psychological separation.

1.9.1 Appropriateness

The selection of the proper type of buffer should result from considering existing site conditions, distances to property lines, the intensity (size, number of users) of the proposed land use, and the degree of concern expressed by the Planning Department, Planning Board, and abutting landowners. Discussions regarding the need for buffers, and appropriate sizes and types, should begin at the sketch plan stage of review.

1.9.2 Design

Buffers and screens should be considered an integral part of the site and landscaping plans. Stone walls, plantings, fencing, landforms, berms, and other materials used for buffers should be similar in form, texture, scale and appearance to other landscape elements. Structural measures, such as screening walls, should likewise be related to the architecture in terms of scale, materials, forms and surface treatment.

1.9.3 Maintenance

Where plantings do not survive, or where they grow to a point where they no longer serve as effective buffers, they shall be replaced or supplemented to meet the intent of the plan as approved by the Planning Board.

FINDING: Buffering to the single-family homes on Casco Bay Drive, Nautical Way and Clipper Way has been provided through a combination of spatial distance, berms and plantings.

1.10 Erosion, Sedimentation and Stormwater Management

Objective: Protecting the natural environment in Cumberland is as much a priority in these design standards as protecting the visual environment. A developer should take every measure possible in the construction and operation of a project to ensure that little or no adverse impact to the natural environment occurs. These measures should be as visually attractive as possible.

1.10.1 Erosion and Sedimentation

Before any site work, construction or the disturbance of any soil occurs on a property, methods, techniques, designs, practices and other means to control erosion and sedimentation, as approved or required by the Maine Department of Environmental Protection, shall be in place. For guidance developers should refer to "Maine Erosion and Sedimentation Control Handbook for Construction – Best Management Practices," produced by the Cumberland County Soil and Water Conservation District and the Maine DEP.

FINDING: The erosion and sedimentation control plan has been reviewed and approved by the Town Engineer and will be in conformance with Maine DEP Chapter 500 Basic and General Standards.

1.11 Utilities

Objective: It is important to make efficient use of the utility infrastructure that exists along the Route 1 corridor, and to ensure that utility connections to individual development lots are as inconspicuous as possible.

FINDING: All utilities will be underground.

1.11.1 Water and Sewer

All proposed development along the Route 1 Corridor must connect to the municipal water supply and the municipal sewer, wherever such connections are available. Proposed connections are subject to review by the Town and/or its peer reviewers.

FINDING: There will be a connection to the public water and sewer line from Route 1 up Skyview Drive.

1.11.2 Electric, Telephone and Cable

Electric, telephone, cable and other wired connections from existing utilities on Route 1 should be made to individual development lots via underground conduit wherever possible. This prevents the accumulation of unsightly overhead wires, and preserves the natural character of the corridor.

FINDING: Service will be via underground lines.

2.1 General Architectural Form

These standards encourage the use of materials and forms that are characteristic of the construction of ordinary houses and commercial buildings of 19th century in northern New England, and particularly in Maine. Modern interpretations and versions of these materials and forms are entirely appropriate and encouraged.

FINDING: The structure is designed in the traditional New England style of architecture with gable roof forms, and projecting bays; clapboard and shingle siding;

2.1.1 Roofs

Because of the need to shed snow, New England roofs have generally been pitched rather than flat. Federal roofs are sometimes gambrel-shaped. In the Greek Revival style they are often gabled or have dormers, and have decorative "returns" at the bottom edge of the gable or dormers, suggesting the pediment of a Greek temple. Victorian houses typically have more steeply sloped roofs. Flat roofs are to be avoided.

FINDING: The roofline is pitched.

2.1.2 Windows

Windows are typically vertical rectangles, often with two or more panes of glass. They may have shutters. If shutters are used, each should be wide enough to actually cover half of the window. Horizontal and vertical "lights", rows of small panes of New England buildings such as parapets. Where parapets are used to break up a flat roofline, the height of glass, are common over and next to doors. Window frames often have a decorative wood or stone pediment over them.

FINDING: The windows reflect the above criteria.

2.1.3 Detailing

Each historical period also has its characteristic embellishments. Federal buildings may have a decorative fanlight over the entrance door. Greek Revival buildings have corner-boards in the form of pilasters or even rows of actual columns across 1 façade, below a pediment. Victorian buildings use a wealth of turned columns and decorative scroll-work and shingle-work. Too many embellishments can look "busy", and mixing the details of several periods or styles can also spoil the desired effect. Modern interpretations of older styles often used simplified forms to suggest the details that were more elaborately defined in earlier periods.

FINDING: The detailing reflects the above criteria.

2.1.4 Building Materials

Traditional siding materials common to Northern New England are brick, painted clapboard and either painted or unpainted shingles. Contemporary materials that have the same visual characteristics as traditional materials (e.g., cemeticious clapboards or vinyl siding) are acceptable if attention is paid to detailing (e.g., corners, trim at openings, changes in material). Metal cladding is not permitted.

Common traditional roofing materials are shingles – cedar originally or asphalt now, as well as standing seam metal. Where visible, the roofing color should be selected to complement the color and texture of the building's façade. Roofing colors are usually darker than the color of the façade.

Colors commonly found in historic New England houses vary by period. In the Federal and Greek Revival periods, white was the most common color, often with green or black shutters. But houses were not infrequently painted "sober" colors such as dull mustard or gray. In the Victorian period much brighter colors were often used, with trim in complementary colors. The characteristic colors for barns are white, barn red, or weathered shingle.

FINDING: The building materials reflect the above criteria.

2.2 Large Scale Buildings

Objective: Due to their visibility and mass, the design of new large structures (10,000 square feet or greater) have the ability to greatly enhance or detract from Route 1's visual character. These structures should be designed as attractive pieces of commercial architecture that are responsive to their site and compatible with adjacent development.

FINDING: The building reflects the above criteria.

2.2.1 Design and Massing

Large structures should be designed so that their large mass is broken up into smaller visual components through the use of clustered volumes, projections, recesses and varied façade treatment. The design should provide variation to add shadow and depth and a feeling of reduced scale.

FINDING: The building reflects the above criteria.

2.2.2 Site Design

Wherever possible, large buildings should fit into the existing topography and vegetation, and should not require dramatic grade changes around their perimeter. Landscaping, site walls, pedestrian amenities and existing trees can be effective in reducing the apparent scale of large buildings.

FINDING: The building reflects the above criteria.

2.2.3 Architectural Details

Large structures should have the same degree of detailing found in well-designed smaller and medium sized buildings along the Route 1 corridor. Architectural details can be used to reduce the scale and uniformity of large buildings. Elements such as colonnades, pilasters, gable ends, awnings, display windows and appropriately positioned light fixtures can be effective means of achieving a human scale.

FINDING: The building reflects the above criteria.

2.2.4 Facades and Exterior Walls

Unbroken facades in excess of 80 feet are overwhelming whether they are visible from Route 1, other roadways or pedestrian areas, or when they abut residential areas. Breaking up the plane of the wall can reduce this sense of overwhelming scale. Where the plane of the wall is broken, the offset should be proportionate to the building's height and length. A general rule of thumb for such projections or recesses is that their depth shall be at least 3% of the façade's length, and they shall extend for at least 20% of the façade's length.

Other devices to add interest to long walls include strong shadow lines, changes in rooflines, pilasters and similar architectural details, as well as patterns in the surface material and wall openings. All façade elements should be coordinated with the landscape plan.

Facades of commercial buildings that face Route 1 or other roadways should have transparent openings (e.g. display windows or entry areas) along 30% or more of the length of the ground floor. Blank or unadorned walls facing public roads, residential neighborhoods, or abutting properties are boring and unattractive.

FINDING: The building reflects the above criteria.

2.2.5 Building Entrances

Large structures should have clearly defined and highly visible entrances emphasized through such devices as significant variations in rooflines or cornice lines, changes in materials, porticos, landscape treatments, distinctive lighting or other architectural treatments.

FINDING: The building reflects the above criteria.

2.3 Linear Commercial Buildings

THIS SECTION IS NOT APPLICABLE.

Objective: Linear commercial structures, such as multi-tenant offices or commercial buildings may be appropriate along Route 1 provided that they are designed with façade and roofline elements that reduce their sense of large scale and add visual interest.

2.3.1 Design

Buildings with multiple storefronts should be visually unified through the use of complementary architectural forms, similar materials and colors, consistent details, and a uniform signage size and mounting system.

FINDING: N/A

2.3.2 Façade Design

The use of covered walkways, arcades, or open colonnades is strongly encouraged along long facades to provide shelter, encourage people to walk from store to store, and to visually unite the structure. Pedestrian entrances to each business or tenant should be clearly defined and easily accessible.

FINDING: N/A

2.3.3 Focal Points

Linear commercial buildings can include a focal point – such as a raised entranceway or clock tower, or other architectural element – to add visual interest and help reduce the scale of the building.

FINDING: N/A

2.3.4 Façade Offsets

Variations in the plane of the front façade add visual interest. They also create opportunities for common entries, and social or landscaped spaces.

FINDING: N/A

2.3.5 Rooflines

Variations in rooflines, detailing, cornice lines and building heights should be incorporated into the design to break up the scale of linear commercial buildings.

FINDING: N/A

2.4 Smaller Freestanding Commercial Buildings

Objective: Smaller freestanding commercial buildings can easily make use of traditional New England building forms and should be designed to be attractive pieces of architecture, expressive of their use and compatible with surrounding buildings.

2.4.1 Single Use Buildings

THIS SECTION IS NOT APPLICABLE

Buildings that are constructed for use by a single business are generally smaller in scale than multi-tenant buildings. Single use buildings should be designed to be attractive and architecturally cohesive. To the greatest extent possible, the same materials, window types and roof types should be used throughout.

FINDING: N/A

2.4.2 Franchise Design

Franchise architecture with highly contrasting color schemes, non-traditional forms, reflective siding and roof materials are not related to any traditional New England style. They are buildings that are stylized to the point where the structure is a form of advertising. However, franchises have been willing to use existing "vernacular" buildings, and sometimes have designs that somewhat reflect local styles.

FINDING: N/A

2.4.3. Mixed Use Buildings

Buildings containing mixed uses (e.g., health club on the first floor with professional offices on the second floor) are encouraged. The architecture of a mixed-use building can reflect the different uses on the upper floors by a difference in façade treatment, as long as the building has a unified design theme.

FINDING: N/A

2.5 Residential Structures

Objective: Cumberland's future housing stock in the Route 1 corridor should be well designed and constructed, and is encouraged to have some connection to the traditional styles of New England residential architecture. The large mass of multiplex dwellings, can be broken up by façade articulation and architectural detailing in order to reduce their apparent size.

Building form and massing can conform to traditional New England residences by using gable or gambrel roofs with generous overhangs. Traditional vertically hung windows are encouraged. Garages should not constitute a major element of the front of the house that faces the street, but should be located to the side or rear wherever possible.

Dwellings with ells and additions, and ones with multiple roof planes harken back to traditional New England farm and seaside homes. Box-like, ranch or split-level "contractor modern" type dwellings do not particularly reflect Maine styles.

Similarly, traditional New England building materials such as wooden shingles and clapboards are encouraged. Modern low-maintenance materials such as cemeticious shingles and clapboards may be substituted.

FINDING: There is only one multi-plex structure on the site.

2.6 Residential Care Facilities

Objective: Ensure that the future needs of Cumberland's aging population are met in healthy and well-designed facilities, and that the architecture and site design of such facilities fit into the Cumberland context.

The design of Residential Care Facilities can also draw on the local vernacular architecture of gable roofs, multiple building forms and traditional materials. Landscaping, site design and resident amenities will also be of concern to the Planning Board. The site should offer outdoor amenities such as decks, terraces, gardens, gazebos, lawns or similar features. Residential Care Facilities should be buffered from roadways and adjacent uses as much as possible.

FINDING: N/A

2.7 Hotels

Objective: To ensure that any future hotels in the Town of Cumberland are in keeping with the character of the surrounding area, and that the scale and design respects the architectural context of the region.

Using traditional building materials and colors is encouraged, and the use of large blocks of bright, primary colors is discouraged.

The signage and lighting standards contained in this publication will help as well.

FINDING: N/A

2.7.1 All Building Types: Awnings and Canopies

Awnings and canopies can enhance the appearance and function of a building by providing shade, shelter, shadow patterns, and visual interest. Where awnings are used, they should complement the overall design and color of the building.

Whether fixed or retractable, awnings and canopies should be an integral element of the architecture. They should be located directly over windows and doors to provide protection from the elements. Awnings or canopies should not be used as light sources or advertising features. Graphics and wording located on canopies and awnings will be considered part of the total signage area. Any such graphics shall be designed as an integral part of the signage program for the property, and coordinated with other sign elements in terms of typeface, color and spacing.

FINDING: N/A

3.1 Sign Design

Objective: Commercial uses along Route 1 in Cumberland should be identified by attractive, legible signs that serve the need of the individual business, while complementing the site and the architecture. All signage shall comply with the requirements of the Zoning Ordinance of the Town of Cumberland.

3.1.1 Signage Plan

For development proposals requiring one or more signs, the applicant shall provide a detailed signage plan as part of Site Plan or Subdivision review. The signage plan should show the location of all signs on a site plan drawing and on building elevations, as well as sign construction details, dimensions, elevations, etc., and accurate graphic representations of the proposed wording.

FINDING: TBD with sign permit application

3.1.2 Sign Location

Signs should be placed in locations that do not interfere with the safe and logical usage of the site. They should not block motorists' lines of sight or create hazards for pedestrians or bicyclists. Roof mounted signs are not encouraged.

FINDING: TBD with sign permit application.

3.1.3 Sign Design

The shape and materials and finish of all proposed signage should complement the architectural features of the associated building. Simple geometric forms are preferable for all signs. All signage shall comply with the requirements of the Zoning Ordinance of the Town of Cumberland.

FINDING: TBD with sign permit application

3.1.4 Sign Colors

Signs should be limited to two or three contrasting colors that are clearly complimentary to the colors of the associated building.

FINDING: TBD with sign permit application

3.1.5 Sign Content

To ensure a clear and easily readable message, a single sign with a minimum of informational content should be used. As a general rule no more than about 30 letters should be used on any sign.

Lettering on any sign intended to be read by passing motorists needs to be legible at the posted speed limit. In general a minimum letter height of 6 inches is appropriate. Smaller letters can require motorists to slow down thereby creating traffic and safety hazards. Upper and lower case lettering is preferred to all upper case, as it is easier to read.

The use of variable message "reader boards", sponsor logos, slogans or other messages that promote products or services other than the tenants' are not permitted.

Signage for any proposed development should prominently feature its assigned street address to facilitate general way-finding and e-911 emergency response.

FINDING: TBD with sign permit application

3.2 Sign Type

Objective: To ensure that any sign type complements the architecture of the associated building, and to ensure that they are attractively designed and functional while clearly delivering the intended information.

3.2.1 Building Mounted Signs

Building or façade mounted signs should be designed as an integral element of the architecture, and should not obscure any of the architectural details of the building. Signage should be mounted on vertical surfaces and should not project past or interfere with any fascia trim. Signs should be located a minimum of 18" from the edge of a vertical wall, however the overall proportions of both the wall and sign should be taken into consideration in the placement of the sign.

Flush mounted (flat) signage should be mounted with concealed hardware. Perpendicularly mounted hanging signs should be mounted with hardware designed to complement the building's architecture. All metal hardware should be corrosion and rust resistant to prevent staining or discoloration of the building.

FINDING; TBD with sign permit application

3.2.2 Freestanding Signs

An alternative to a façade-mounted sign is a freestanding "pylon" sign. These signs are typically located between the building and the roadway right-of-way, adjacent to the site's vehicular entry point.

As with façade-mounted signage, design and content standards shall apply. Because freestanding signs amount to architecture themselves, it is important that they be carefully designed to complement the associated building. This will entail similar forms, materials, colors and finishes. Landscaping surrounding the base of such signs shall be consistent with the landscaping of the entire site.

Where a freestanding sign lists multiple tenants, there should be an apparent hierarchy: i.e., Address, name of the building or development, primary tenant, other tenants.

FINDING: TBD with sign permit application

3.2.3 Wayfinding Signs

To prevent visual clutter and motorist confusion, additional smaller signs indicating site circulation are generally discouraged. However they are sometimes needed to clarify complex circulation patterns. Wayfinding signage is also sometimes required to indicate different areas of site usage, such as secondary building entries, loading, or service areas. The Planning Board shall exercise its discretion in the requirement or prohibition of such signs.

Where required, wayfinding signage should be unobtrusive, no taller than absolutely necessary, and shall complement the overall architecture and signage plan in terms of materials, color, form and finishes.

FINDING: TBD with sign permit application

3.3 Sign Illumination

Only externally lit signs are permitted in the Route 1 corridor because, compared with internally lit signs, the direction and intensity of the light can be more easily controlled. Externally illuminated signs are made of an opaque material and have a dedicated light fixture or fixtures mounted in close proximity, aimed directly at the sign face. The illumination level on the vertical surface of the sign should create a noticeable contrast with the surrounding building or landscape without causing undue reflection or glare.

Lighting fixtures should be located, aimed and shielded such that light is only directed onto the surface of the sign. Wherever possible, fixtures should be mounted above the sign and be aimed downward to prevent illumination of the sky.

FINDING: To be determined with sign permit application.

4 Lighting

Outdoor lighting is used to identify businesses and illuminate roadways, parking lots, yards, sidewalks and buildings. When well designed and properly installed it can be very useful in providing us with better visibility, safety, and a sense of security, while at the same time minimizing energy use and operating costs. If outdoor lighting is not well designed or is improperly installed it can be a costly and inefficient nuisance. The main issues are glare (hampering the safety of motorists and pedestrians rather than enhancing it), light trespass (shining onto neighboring properties and into residential windows), energy waste (lighting too brightly or lighting areas other than intended or necessary), and sky glow (lighting shining outward and upward washing out views of the nighttime sky).

4.1 Good Lighting

Objective: Good lighting does only the job it is intended to do, and with minimum adverse impact on the environment. Common sense and respect for neighbors goes a long way toward attaining this goal.

The applicant should provide sufficient lighting for the job without over-illuminating.

Fixtures should be fully shielded, giving off no light above the horizontal plane. They should also direct the light onto the intended areas. Fully shielded produce very little glare, which can dazzle the eyes of motorists and pedestrians.

The height and positioning of fixtures is also important, since even well shielded fixtures placed on tall poles can create light trespass. Fixtures should be positioned to uniformly illuminate the subject area. Hot spots created by too-bright or too-low fixtures make the in between areas seem dark, which can create safety problems.

High efficiency lamps are encouraged. Shielded lights can be lower in wattage and will actually light an area better than unshielded high-output lights because they don't waste light by casting it outward and upward.

FINDING: Complies

4.2 The Lighting Plan

Objective: As part of Site Plan or Subdivision review the Planning Board may, at its discretion, require that a lighting plan be provided. It should be prepared by a professional with expertise in lighting design. The intent of the lighting plan is to show how the least amount of light possible will be provided to achieve the lighting requirements.

4.2.1 Elements of the Lighting Plan

In addition to meeting the requirements of the Zoning Ordinance, the Lighting Plan should contain a narrative that describes the hierarchy of site lighting, describes how lighting will be used to provide safety and security, and describes how it will achieve aesthetic goals. The Lighting Plan should include specifications and illustrations of all proposed fixtures, including mounting heights, photometric data, and other descriptive information. It should also include a maintenance and replacement schedule for the fixtures and bulbs.

The Planning Board may require a photometric diagram that shows illumination levels from all externally and internally visible light sources, including signage.

The location and design of lighting systems should complement adjacent buildings, pedestrian routes, and site plan features. Pole fixtures should be proportionate to the buildings and spaces they are designed to illuminate.

Buffers, screen walls, fencing and other landscape elements should be coordinated with the lighting plan to avoid dark spots and potential hiding places.

Where proposed lighting abuts residential areas, parking lot lighting and other use-related site lighting should be substantially reduced in intensity within one hour of the business closing.

FINDING: Complies

4.3 Types of Lighting

4.3.1 Façade and Landscaping Lighting

Lighting on the front of a building can highlight architectural features or details of a building and add depth and interest to landscaping. This style of lighting should not be used to wash an entire façade in light or light the entire yard. Rather should be used to emphasize particular aspects of the project. All fixtures should be located, aimed and shielded so that they only illuminate the façade or particular plantings and do not illuminate nearby roadways, sidewalks or adjacent properties. For lighting a façade, the fixtures should be designed to illuminate the portion of the face of the building from above, aimed downward, to eliminate skyglow.

4.3.2 Parking Lot and Driveway Lighting

Parking lot and driveway lighting should be designed to provide the minimum lighting necessary for safety and visibility. Poles and fixtures should be in proportion to the roadways and areas they are intended to illuminate.

All fixtures should be fully shielded or "cut-off" style, such that no light is cast above the horizontal plane. Decorative fixtures are strongly encouraged as long as they meet the cut-off criteria, and their design and color complement the architecture and landscaping of the project.

FINDING: Complies

4.3.3 Pedestrian Lighting

Places where people walk, such as sidewalks, stairs, sitting areas, curbs and landscaping should be adequately but not excessively illuminated.

Mounting heights for pedestrian lighting should be appropriate in design and scale for the project and its setting. Bollard fixtures of 3' to 4' in height and ornamental fixtures of up to 12' in height are encouraged. Fixtures should be a maximum of 1 watts and should not create glare or light trespass onto abutting properties.

FINDING: Complies

EXPIRATION OF APPROVAL: Construction of the improvements covered by any site plan approval must be substantially commenced with 12 months of the date upon which the approval was granted. If construction has not been substantially commenced within 12 months of the date upon which approval was granted, the approval shall be null and void. If construction has not been substantially completed within 24 months of the date upon which approval was granted or within a time period as specified by the Planning Board, the approval shall be null and void. The applicant may request an extension of the period. Such request must be made in writing and must be made to the Planning Board. The Planning Board may grant up to two one-year extensions to the period if the approved plan conforms to the ordinances in effect at the time the extension is granted and any and all federal and state approvals and permits are current.

STANDARD CONDITION OF APPROVAL: This approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted by the applicant. Any variation from the plans, proposals and supporting documents, except de minimis changes as so determined by the Town Planner which do not affect approval standards, is subject to review and approval of the Planning Board prior to implementation.

(Proposed Conditions of Approval on next page….)

PROPOSED CONDITIONS OF APPROVAL:

1. A preconstruction conference is required prior to the start of construction.
2. The amended SLODA permit shall be submitted to the Town Planner prior to the preconstruction conference.
3. A performance guarantee in an amount and form acceptable to the Town Manager will be required prior to the preconstruction conference.
4. All clearing limits shall be flagged and approved by the Town Engineer prior to the preconstruction conference.
5. A blasting permit, if required, shall be obtained from the Code Enforcement Officer.
6. All legal and technical review fees shall be paid to the Town prior to the preconstruction conference.
7. An electronic copy of the as-built plans shall be submitted to the Town Planner prior to the release of any remaining inspection fees.
8. The owner will be responsible for the removal of solid waste via a private waste hauler.
9. A sign permit for any proposed signs is required.
10. All storage for fuel, chemicals, chemical or industrial wastes, biodegradable raw materials, or liquid, gaseous or solid materials shall meet the standards of the Maine Department of Environmental Protection and the State Fire Marshal's office.
11. The building shall comply with the requirements of the State Fire Marshal's Office and the Town Fire Chief.

AMENDED AND RESTATED CONTRACT ZONING AGREEMENT BY AND BETWEEN THE TOWN OF CUMBERLAND

AND

HERITAGE VILLAGE DEVELOPMENT GROUP, LLC

RELATING TO THE HERITAGE VILLAGE (formerly "CUMBERLAND FORESIDE VILLAGE") SUBDIVISION ROUTE 1, CUMBERLAND, MAINE

This Amended and Restated Contract Zoning Agreement is entered into this 5th day of September, 2019, by and between the Town of Cumberland, a municipal corporation (the "Town"), and Heritage Village Development Group, LLC, a Florida limited liability company qualified to conduct business in Maine (the "Developer"), pursuant to the Conditional and Contract Rezoning Provisions set forth in 30-A M.R.S.A. Section 4352 (the "Act") and Section 315-79 of the Cumberland Code, as may be amended from time to time.

WHEREAS, the Town and Peter Kennedy ("Kennedy") entered into a Contract Zoning Agreement dated September 10, 2002, which is recorded at the Cumberland County Registry of Deeds in Book 18114, Page 330 (the "Original Agreement"); and

WHEREAS, Kennedy conveyed his property which is subject to the Agreement to Cumberland Foreside Village, LLC ("CFV") by Deed dated December 27, 2005 and recorded at the Cumberland County Registry of Deeds in Book 23549, Page 231; and

WHEREAS, Kennedy assigned his interest in the Original Agreement to the CFV by Assignment of Contract Zoning Agreement dated December 27, 2005 and recorded at the Cumberland County Registry of Deeds in Book 23652, Page 65; and

WHEREAS, the Town and the CFV amended and restated the Original Agreement in its entirety in the Amended and Restated Contract Zoning Agreement dated January 31, 2007, which is recorded at the Cumberland County Registry of Deeds in Book 24825, Page 242 (the "Amended and Restated Agreement"); and

WHEREAS, the Town and CFV amended the Amended and Restated Agreement on October 23, 2014 by document titled First Amendment to Amended and Restated Contract Zoning Agreement (the "First Amendment"), which is recorded at the Cumberland County Registry of Deeds in Book 31899, Page 262; and

WHEREAS, the Town and CFV amended and restated the Original Agreement and the First Amendment in its entirety on February 27, 2015 by document titled Amended and Restated Contract Zoning Agreement, which is recorded at the Cumberland County Registry of Deeds in Book 32162, Page 191 (the "2015 Amended and Restated Agreement"); and

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WHEREAS, the Town and CFV amended and restated the Original Agreement in its entirety in order to incorporate subsequent amendments (the Amended and Restated Agreement, the First Amendment and the 2015 Amended and Restated Agreement), and proposed additional amendments to expand the permitted residential development and revise the lot lines of the parcels consistent with the development goals of the Original Agreement, which is recorded at the Cumberland County Registry of Deeds in Book 33880, Page 87 (the "2016 Amended and Restated Agreement"); and

WHEREAS, the Town and CFV amended and restated the 2016 Amended and Restated Agreement in its entirety on May 11, 2017 in order to amend and clarify the requirements set forth herein related to the common walkway/path and the buffers along Interstate 295 and Route 1 corridors, which is recorded at the Cumberland County Registry of Deeds in Book 34000, Page 177 (the "2017 Amended and Restated Agreement"); and

WHEREAS, CFV conveyed its property which is subject to the 2017 Amended and Restated Agreement to the Developer by Deeds dated October 10, 2017 and recorded at the Cumberland County Registry of Deeds in Book 34376, Page 330 and to David Chase (as to Lot 9A/B only) by Deed dated October 10, 2017 and recorded at the Cumberland County Registry of Deeds in Book 34376, Page 332; and

WHEREAS, the Town and the Developer desire to amend and restate the 2017 Amended and Restated Agreement in its entirety in order to amend and clarify the requirements set forth herein related to the development of the commercial lots; for additional residential dwelling units; to expand where retail stores can be located; and to add new standards for private roads.

NOW THEREFORE, the 2017 Amended and Restated Agreement is hereby amended and restated in its entirety, as follows, it being understood that this Amended and Restated Contract Zoning Agreement supersedes and replaces the Original Agreement, the former Amended and Restated Agreement dated January 31, 2007, the First Amendment dated October 23, 2014, the 2015 Amended and Restated Contract Zoning Agreement dated February 27, 2015, the 2016 Amended and Restated Contract Zoning Agreement dated April 12, 2016, and the 2017 Amended and Restated Contract Zoning Agreement dated May 11, 2017, which shall be of no further force and effect:

WHEREAS, the Property subject to this Amended and Restated Contract Zoning Agreement consists of the approximately 74.87 acre parcel of land (the "Project") located off U.S. Route One, depicted as Lots 1 – 10B on **Exhibit A** (the "Plan") prepared by Mohr & Seredin dated April 18, 2019 and more particularly described in **Exhibit A-1** attached hereto; and

WHEREAS, CFV received subdivision approval from the Cumberland Planning Board on August 16, 2016, in accordance with the subdivision plan prepared by Owen Haskell dated August 18, 2016 and recorded in the Cumberland County Registry of Deeds in Plan Book 216, Page 335, and subsequently amended on March 21, 2017 in accordance with the subdivision plan prepared by Owen Haskell dated January 26, 2017 and recorded

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in the Cumberland County Registry of Deeds in Plan Book 217, Page 85 and which may be further amended from time to time, such amendments to be expressly incorporated herein; and

WHEREAS, the Developer's Updated Estimated Schedule of Completion of the Project is attached hereto as **Exhibit B**; and

WHEREAS, in order for the Project to be financially feasible for the construction and sale of commercial buildings and residential dwelling units while meeting all applicable codes, certain amendments with respect to density, setbacks, road lengths and certain other performance standards of the Cumberland Code are required; and

WHEREAS, on June 3, 2019, the Cumberland Town Council approved the execution of this Amended and Restated Contract Zoning Agreement, subject to later compliance with Subdivision and Site Plan Standards as set forth in Chapter 229 and Chapter 250 the Cumberland Code, provided such Ordinance provisions are not in conflict with the Act.

NOW THEREFORE, pursuant to the provisions of 30-A M.R.S.A. § 4352(8) and Section 315-79 of the Cumberland Code (as may be amended from time to time), the Cumberland Town Council hereby finds that this Amended and Restated Contract Zoning Agreement:

A) is consistent with the Comprehensive Plan duly adopted by the Town of Cumberland on April 14, 2014; and

B) establishes a contract zone area consistent with the existing and permitted uses in the original zone of the area involved; and

C) only includes conditions and restrictions which relate to the physical development, design and future operation of the proposed development; and

D) imposes those conditions and restrictions which are necessary and appropriate for the protection of the public health, safety and general welfare of the Town of Cumberland.

The parties agree as follows:

I. Establishment of the Contract Zone:

The Town hereby agrees that the approximately 74.87 acres shown on the Plan shall be a Contract Zone pursuant to the provisions of 30-A M.R.S.A. § 4352(8) and Section 315-79 of the Cumberland Code.

II. Permitted Uses Within the Contract Zone:

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The development permitted within the Contract Zone established in paragraph I above shall be as follows (Note: References to lot numbers herein shall be to those lot numbers as shown on the Plan attached hereto as **Exhibit A**, unless expressly stated otherwise):

A) All uses authorized as of the date of execution of this Amended and Restated Contract Zoning Agreement and as may be amended hereafter either as permitted uses or special exceptions in the Office Commercial South District, Section 315-13 of the Cumberland Code, and expressly including residential care facilities as defined in Section 315-4 of the Cumberland Code. Light Manufacturing shall be permitted on Lots 3 and 4 only, as shown on **Exhibit A**.

B) Residential Dwelling Units as follows:

(1) Up to 141 residential dwelling units on Lots 10A and 10B as shown on the Plan.

(2) Up to 120 residential dwelling units on Lot 7 as shown on the Plan; provided that at least twenty-five percent (25%) of the dwelling units developed on Lot 7 are occupied by a tenant that is 55 years of age or older and whose median family income is less than 140% of the United States Department of Housing and Urban Development median family income for the Greater Portland Metropolitan Statistical Area at the time of occupancy.

For purposes of this Subsection B, the Developer shall vary the mix between duplex and multiplex dwellings on Lot 7, provided that each unit within a duplex or multiplex shall be counted as a residential dwelling unit for purposes of the limitations imposed in subsections B(1) and B(2) above. The residential development permitted under this Section shall include buffering as set forth in Section III of this Agreement. The residential development permitted under this Paragraph shall not be subject to the net residential density requirements of Section 315-43(E) of the Cumberland Code; provided, however, that the requirements of Section 315-43(E) shall not apply to the development of multiplex dwellings under this Paragraph. The development of multiplex dwellings permitted under this Paragraph shall also be exempt from the regulations of Section 315-44 of the Cumberland Code related to multiplex dwellings. (Note: there are no detached single family uses allowed on Lot 7 or 8)

C) Commercial development of not less than six (6) lots, as shown on the Plan; said commercial development to be developed with buffering from existing or proposed adjacent residential areas of the Project as set forth in Section III of this Agreement.

D) An Antenna or Alternative Tower Structure (Note: this is the term used in the Zoning Ordinance) properly buffered from all residential uses in accordance with Section 315-72 of the Cumberland Code.

E) On Lots 1, 7 and 8 only, all uses authorized as of the date of execution of this Amended and Restated Contract Zoning Agreement and as may be amended hereafter

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either as permitted uses or special exceptions in the Town Center District, Section 315-21 of the Cumberland Code.

III. Restrictions within the Contract Zone:

A) The setback provisions within the Contract Zone shall be as follows. All setbacks shall be measured from the exterior wall of the structure and shall not include overhangs, which overhangs shall not exceed one foot on any side of the structure.

(1) setbacks for detached dwelling units:

- Front yard setback not less than 15 feet.
- Side yard setback not less than 9 feet each side.
- Rear yard setback not less than 15 feet.
- Driveway setback not less than 5 feet, unless driveways are shared by 2 or more lots, in which case there are no driveway setback requirements.
- If a residential lot is adjacent to a commercial lot, there shall be a 25 foot buffer of undisturbed or replanted vegetation. The Developer shall provide for additional plantings, as approved by the Planning Board, within the 25 foot undisturbed buffer where existing conditions do not provide adequate screening between the properties.

(2) setbacks for commercial lots:

- Front yard setback not less than 25 feet.
- Side yard setback not less than 20 feet each side.
- Rear yard setback not less than 40 feet.
- Driveway setback not less than 10 feet, unless driveways are shared for access by 2 or more lots in which case there are no driveway setback requirements.
- If a commercial lot is adjacent to a residential lot, there shall be a 25 foot buffer of undisturbed or replanted vegetation. The Developer shall provide for additional plantings, as approved by the Planning Board, within the 25 foot undisturbed buffer where existing conditions do not provide adequate screening between the properties.

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(3) setbacks for Residential Care Facilities and duplex and multiplex dwellings:

- Front yard setback not less than 50 feet.
- Side yard setback not less than 30 feet each side.
- Rear yard setback not less than 50 feet.
- Driveway setback not less than 5 feet.
- If a Residential Care Facility, duplex or multiplex dwelling is adjacent to a commercial lot, there shall be a 25 foot buffer of undisturbed or replanted vegetation. The Developer shall provide for additional plantings, as approved by the Planning Board, within the 25 foot undisturbed buffer where existing conditions do not provide adequate screening between the properties.
- Any building that is constructed for the sole purpose of and used exclusively in connection with the development of multiplex dwellings and located on the same lot as the multiplex dwellings, such as a community center or rental office, shall be subject to the setback requirements of this section; provided, however, that the rear setback for such building shall be not less than 25 feet.

(4) A setback of not less than 100 feet shall be maintained along the entire length of the property boundary that borders the Interstate 295 highway. The setback shall be measured from the edge of the I-295 right of way and shall remain at all times undisturbed. The Town shall periodically survey this setback to ensure that it has been maintained. In the event that this area is disturbed for any reason, the Developer shall be required to prepare and submit a landscape plan to be approved by the Town Council and shall be required to complete plantings in accordance with the approved plan within a timeframe designated by the Town Council. Additional plantings consisting of evergreen trees shall be field located with Town staff. Plantings shall be at least five feet (5') tall when planted. Plantings shall be required within the portion of the setback that runs along Lot 10B, the Cumberland Foreside Village Apartments, as shown on **Exhibit A** to provide a visual buffer of the multiplex dwelling units constructed on that lot.

B) The minimum frontage on the street providing access to each residential lot shall be 50 feet and for each commercial lot shall be 150 feet for lots with frontage on Route 1 and 100 feet for interior lots.

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C) The length of Skyview Drive, the dead-end road serving the commercial and residential portion(s) of the Project, shall be not more than 3,000 feet, and the road right-of-way be established at 50 feet in width, with a paved width of at least 24 feet (base shall be 30 feet wide), a five foot paved sidewalk for Skyview Drive, a four foot esplanade and an enclosed drainage system if the road is public. All other roads, except for driveways and alleyways, within the interior commercial lots in the project shall be constructed with a paved width of at least 24 feet, shall require an enclosed drainage system, curbing and a five foot paved sidewalk, and be constructed in accordance with the geometric design standards for commercial subdivisions found in Chapter 250 of the Cumberland Code as amended, unless the roads are private and for residential use, in which case the roads may be constructed as set forth in **Exhibit D** of this Contract Zone Amendment.

D) The height restriction on all nonresidential structures and multiplex dwellings shall be 50 feet and the height restriction on all detached (single family) and duplex dwellings shall be 40 feet.

E) There shall be no other variances from the Cumberland Zoning Ordinance granted to any lot owner beyond those expressly set forth herein, unless the Town and Developer agree by written and duly authorized amendment to this Agreement.

F) This Agreement shall be subject to the Town's Impact Fee Ordinance to the extent applicable. Impact Fees shall be calculated based on the gross floor area of the total structure for each multiplex dwelling structure constructed under Section II(B) of this Agreement. The gross floor area of the multiplex dwelling structure shall be reduced by the gross floor area of any dwelling unit within that structure that is designated to be occupied by a tenant that is 55 years of age or older. The senior and affordable residential development permitted under Section II (B)(2) of this Agreement shall be exempt from the requirements of the Town's Growth Management Ordinance pursuant to Section 118-6(D) of the Cumberland Code; provided, however, that the Developer shall be responsible to pay a fee of $100 per multiplex dwelling unit in lieu of a growth permit. All other residential development permitted under Section II (B)(2) of this Agreement shall be subject to the requirements of the Town's Growth Management Ordinance

G) Any commercial development or multiplex dwelling development shall be subject to Route One Design Standards, as may be amended, as well as the Design Guidelines and Design Requirements set forth in **Exhibit C**. This shall include the requirement for 10% integrated green space which may include amenities such as benches, tables and playground equipment.

H) The Route 1 buffer shown on the Plan shall be 35 feet from the Route 1 right of way. 25 feet of the Route 1 buffer shall be undisturbed vegetation and the remaining 10 feet shall be used for a common walkway/path. A common walkway/path shall be constructed within the Route 1 right of way beginning at Sky View Drive and ending at the northerly lot line of Lot 5, subject to approval by the Town, or within 25 feet of the Route 1 right of way beginning at Sky View Drive and ending at Lot 9 The common walkway/path shall be completed prior to the occupancy of any residential dwellings constructed pursuant to Section II(B). No additional buffer shall be required along Route

1 for Lot 9 as shown on **Exhibit A**, provided that the front setback for the property as set forth in Section III(A) is met and that the setback area includes undisturbed vegetation to the greatest extent practicable and additional plantings as necessary to create a sufficient vegetated buffer within the setback.

I) Notwithstanding anything in Section III(A) above to the contrary, the building setback from Route 1 shall be 65 feet from the Route 1 right of way, except that the building setback from Route 1 on Lot 9 only shall be 25 feet from the Route 1 right of way.

J) The minimum lot size for commercial lots shall be 60,000 square feet.

K) The use of bituminous or concrete curb throughout the road network and on site plans shall be allowed at the developer's option.

L) The parking requirements of Section 315-57 of the Cumberland Code shall apply to development under this Agreement; provided, however, that the minimum number of parking spaces required for multiplex dwellings under Section II(B) shall be two (2) spaces per dwelling unit, unless waived by the Planning Board during site plan review. A landscaped berm may be required by the Planning Board on the exterior perimeter of each parking area developed under Section II (B). Such berms shall be designed and constructed to provide screening from vehicle headlights within the parking area facing outward in both easterly and westerly directions.

M) Notwithstanding anything in the Town's Zoning Ordinance to the contrary, Residential Care Facilities shall be subject to the following requirements:

(1) Minimum lot size of two acres;

(2) Site coverage. The facility, as measured by the area of the building footprint of all structures, shall not cover more than 30% of any site's gross acreage. This limitation on site coverage applies only to structures and does not apply to drives, parking areas, walkways, and gardens;

(3) Open Space. At least 20% of the gross site acreage shall be devoted to vegetated open space. The open space may include lawn areas, forest area~~,~~ areas with a vegetative cover, and gardens. Open space shall not include areas covered by structures, parking areas, drives, walkways, swimming pools, tennis courts, or similar improvements; and

(4) Height. The maximum building height shall not exceed 50 feet.

N) A fifteen-foot trail easement shall be located within Lot 8 as conceptually shown on Exhibit A with the exact easement location to be determined at the time of subdivision approval. The trail/path/walk shall be constructed by Heritage Village Development Group, LLC or its assigns.

O) All development on Lots 7 and 8 shall comply with the lighting requirements set forth in the International Dark Sky Association (IDA) 2011 Model Lighting Ordinance.

Subject to the following, the Cumberland Planning Board shall have review authority under the applicable provisions of the Cumberland Subdivision, Site Plan and Zoning Ordinances to impose conditions of approval pursuant to said Ordinances relating to the development and construction of the Project.

IV. Miscellaneous Provisions:

A) Offsite Improvements: The Developer shall be responsible for the design, engineering and construction of all offsite improvements as may be required for the residential development permitted under this Agreement. The obligations related to the design, engineering, construction and financing of other offsite improvements as may be required for all other development permitted under this Agreement shall be negotiated by the Parties.

B) Survival Clause: The terms and conditions of this Agreement shall run with the land and be binding upon and shall inure to the benefit of the respective successors, heirs and assigns of the parties hereto except as specifically set forth herein. A true copy of this Agreement shall be recorded in the Cumberland County Registry of Deeds.

C) Arbitration Clause: In the event of any dispute between the parties hereto arising out of the Town's approval of (or failure to approve) eligible and qualified purchasers, such dispute shall be submitted to arbitration pursuant to the rules and regulations of the American Arbitration Association, or such other similar arbitration tribunal as the parties may select. The decision of such arbitration panel shall be final, binding and conclusive as to all issues arbitrated therein. Any and all other disputes, claims, counterclaims, and other matters in question between the parties hereto arising out of or relating to this Agreement shall be decided by a Maine court of competent jurisdiction.

D) Further Assurances: In order to effectively and properly implement this Agreement, the parties agree to negotiate in good faith the terms and conditions of such further instruments and agreements as may be reasonably necessary from time to time to give effect to this Agreement.

E) Maine Agreement: This contract is a Maine agreement, entered into in the State of Maine and shall be governed by and enforced in accordance with the laws of the State of Maine.

F) Binding Covenants: The above-stated restrictions, provisions, and conditions are an essential part of this contract and shall run with the subject premises, shall bind the Developer, its successors and assigns with respect to the Project or any part thereof or any interest therein, and any party in possession or occupancy of said property or any part thereof, and shall inure to the benefit of and be enforceable by, the Town, by and through its duly authorized representatives. However, if all site work related to the infrastructure on the subdivision plan is not substantially completed within five (5) years

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from the date of this Amended and Restated Agreement, then the Town Council shall review the status of the project and shall determine whether to initiate a rezoning of the property to the current zoning classification as it exists at the time of the rezoning determination.

G) Severability: In the event any one or more clauses of this Agreement shall be held to be void or unenforceable for any reason by any court of competent jurisdiction, such clause or clauses shall be deemed to be severable and of no force or effect in such jurisdiction, and the remainder of this Agreement shall be deemed to be valid and in full force and effect, and the terms of this Agreement shall be equitably adjusted if possible so as to compensate the appropriate party for any consideration lost because of the elimination of such clause or clauses.

[SIGNATURE PAGE TO FOLLOW]

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IN WITNESS WHEREOF, the parties have hereunto caused this Agreement to be executed as of the day and year first above written.

WITNESS:

Jessica Ryan
Name:

TOWN OF CUMBERLAND

By: _____
William R. Shane
Town Manager

HERITAGE VILLAGE DEVELOPMENT GROUP, LLC

Brenda L. Moore
Name:

By: _____
Peter D. Kennedy
Sole Member and Manager

State of Maine
County of Cumberland, ss.

September 5, 2019

Then personally appeared the above-named William R. Shane in his capacity as Town Manager of the Town of Cumberland and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of the Town of Cumberland.

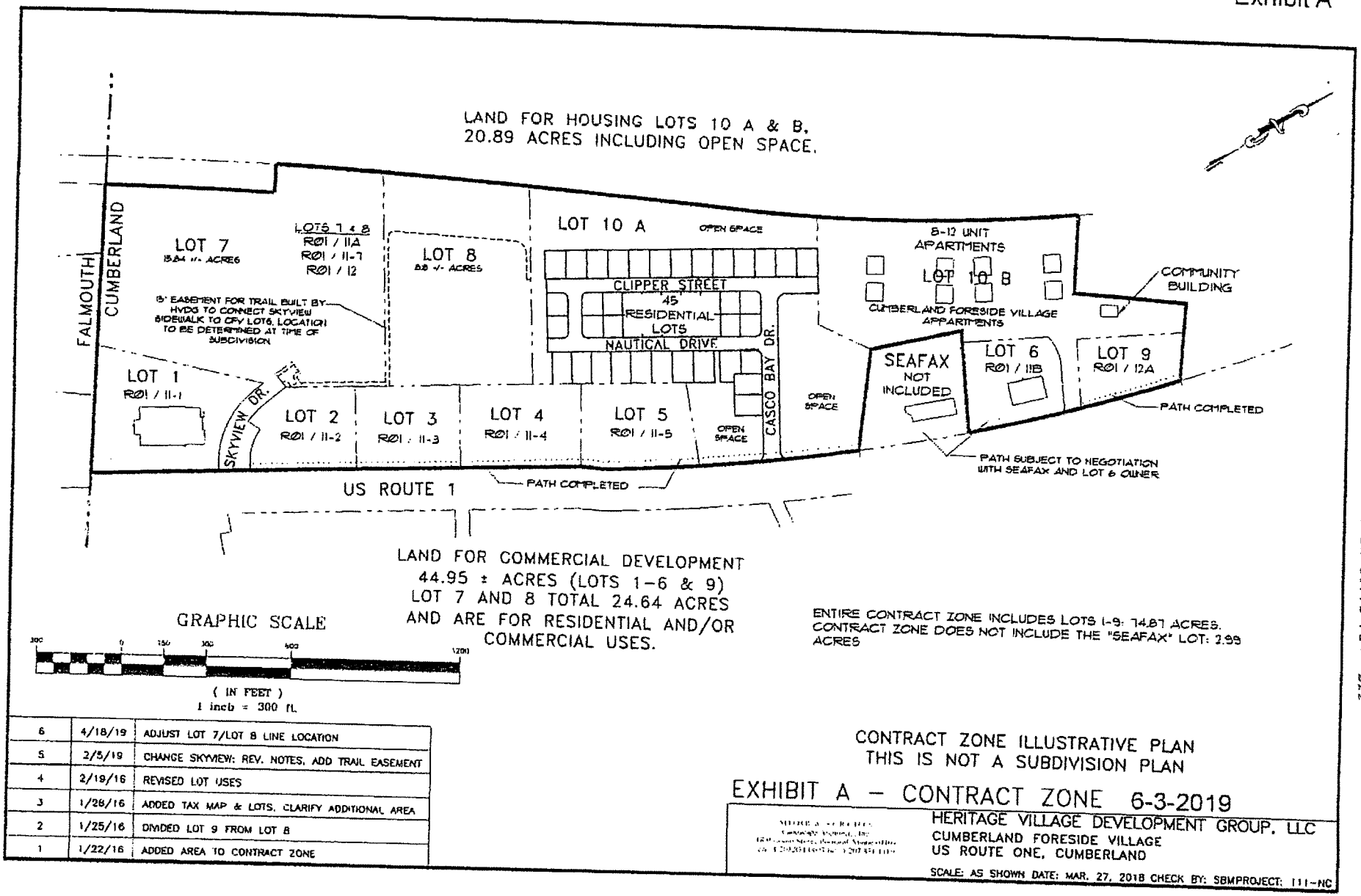
Before me,

Christina A. Silberman
Notary Public
Print Name: Christina A. Silberman
Commission Expires: 9-19-2022

Christina A. Silberman
Notary Public of Maine
My Commission Expires September 19, 2022

SEAL

Exhibit A



6	4/18/19	ADJUST LOT 7/LOT 8 LINE LOCATION
5	2/5/19	CHANGE SKYVIEW: REV. NOTES, ADD TRAIL EASEMENT
4	2/19/16	REVISED LOT USES
3	1/26/16	ADDED TAX MAP & LOTS, CLARIFY ADDITIONAL AREA
2	1/25/16	DIVIDED LOT 9 FROM LOT 8
1	1/22/16	ADDED AREA TO CONTRACT ZONE

CONTRACT ZONE ILLUSTRATIVE PLAN
THIS IS NOT A SUBDIVISION PLAN

EXHIBIT A – CONTRACT ZONE 6-3-2019

HERITAGE VILLAGE DEVELOPMENT GROUP, LLC
CUMBERLAND FORESIDE VILLAGE
US ROUTE ONE, CUMBERLAND

SCALE: AS SHOWN DATE: MAR. 27, 2018 CHECK BY: SBMPROJECT: 111-NC

Doc#: 45350 Bk:35978 Pg: 211

EXHIBIT A-1

OWEN HASKELL, INC. Professional Land Surveyors

390 U.S. Route 1, Unit 10 • Falmouth, ME 04105 • 207-774-0424 • FAX: 774-0511 • www.owenhaskell.com

Description
of
Amended Contract Zone 6-3-2019

A certain lot or parcel of land situated on the westerly side of U.S. Route One in the Town of Cumberland, County of Cumberland, and State of Maine bounded and described as follows:

Beginning at the intersection of the westerly sideline of said U.S. Route One and the Cumberland/Falmouth town line;

Thence, N-55°-09'-09"-W along said town line 1034.93 feet to the Easterly sideline of I-295;

Thence, Northerly by the following courses and distances along the Easterly sideline of Said I-295:

Thence, Northerly along a curve to the right having a radius of 22,668.32 feet an arc length of 595.32 feet

Thence, N-54°-46'-38"-E 100.00 feet;

Thence Northerly along a curve to the right having a radius of 22,768.32 feet an arc length of 992.02 feet;

Thence N-37°-43'-09"-E 661.39 feet;

Thence Northerly along a curve to the left having a radius of 6073.58 feet an arc length of 1206.99 feet;

Thence S-55°-06'-49"-E along land of Eleanor A. Randall 278.96 feet;

Thence N-36°-43'-05"-E along land of said Randall 396.71 feet;

Thence S-54°-17'-11"-E along land of said Randall 274.45 feet to Said U.S. Route One;

Thence Southerly along said U.S. Route One and along a curve to the right having a radius of 7092.03 feet an arc length of 774.63 feet;

Thence N-62°-15'-59"-W along land now or formally of BBW Real Estate LLC 367.24 feet;

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Thence S-19°-34'-32"-W along land of said BBW Real Estate LLC 327.21 feet to land of the Town of Cumberland;

Thence S-51°-07'-38"-E along the common line between the land of said BBW Real Estate LLC and said Town of Cumberland 368.93 feet to said U.S. Route One;

Thence Southerly along a curve to the right having a radius of 7902.03 feet and along said U.S. Route One and arc length of 909.60 feet;

Thence S-36°-58'-14"-W along said U.S. Route One 86.37 feet;

Thence S-30°-44'-43"-W along said U.S. Route One 1737.04 feet to the point of beginning; all bearings are magnetic.

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EXHIBIT B

Updated Estimated Schedule of Completion of the Project
Cumberland Foreside Village
June 3, 2019

A. Schedule of Regulatory Reviews:

	2019
– Complete project plans and documents as needed	2 - 3 months (June – Aug. 2019)
– Planning Board Subdivision Review	as required by sales
– Planning Board Site Plan Review (concurrent with subdivision)	as required by sales
– DEP SLODA review and approval	3 – 4 months (contingent on sales)

B. Anticipated Construction Schedule:

	June 2019 – November 2022
– Install a landscaped berm adjacent to CFV housing	June to August 2019
– Lot 8 to be cleared of stockpiles and debris, graded and stabilized (Lot 8 shall not be used as a staging area unless approved by the Planning Board)	July to October 2019
– Construction of subdivision private roads and infrastructure	TBD (based on lot sales)
– Sitework for Interior Lots	TBD (based on lot sales)
– Sitework for remaining Route 1 Lots	TBD (based on lot sales)
– Sitework for Interior Lots	TBD (based on lot sales)

EXHIBIT C
6-3-19

Cumberland Foreside Village Contract Zone

Development Guidelines for Lots 7 and 8 and Design Requirements for Commercial Properties, Duplex and Multiplex Dwellings

The following design guidelines and requirements have been prepared as a part of the Contract Zone for the Cumberland Foreside Village Subdivision. These will serve to guide the development of the parcel in an orderly manner and will establish the design criteria for the development of the individual buildings on all lots used for commercial purposes, as well as for the residential use buildings.

The Development Guidelines are included to assure that a mix of building forms, sizes, architectural details and a range of materials are included for all of the proposed construction. The overall intent of the design guidelines is to assure that the building designs are well thought through and have coordinated architectural forms, variety of massing, appropriate materials and color selections.

A. Development Guidelines for Lot 7 and Lot 8:

The Contract Zone for Cumberland Foreside Village establishes a mix of uses on Lots 7 and 8. The uses on Lot 8 include commercial as set forth in the OC-S Zone, and uses allowed in the Town Center District (TCD). Lot 7 allows both of these zoning district uses, as well as 120 residential dwelling units. These development guidelines set forth the intended mix of the uses and limitations on the types of each use, with residential uses restricted to Lot 7.

For the Commercial and Town Center uses, the intent of the Guidelines is to have the development project include a variety of uses and range of building types, as well as building scales and architectural details. No one building form, massing, scale, or type shall be repeated without changes in the building size, detailing and fenestration unless the buildings are physically connected by secondary elements such as porches, breezeways, etc.. The Design Guidelines below and the attached images convey the design intent for the types of building to be constructed. A minimum of 10% of the TCD use area shall be dedicated to open space with pedestrian amenities.

The portion of the project for residential development on Lot 7 should include a mixture of duplex, triplex and multiplex structures. These can be connected or free standing, and shall have variety in building heights and structural massing. All larger scale structures must comply with the Design Guidelines, and follow the general appearance in the attached images for multiplex structures, the repetition of building forms, and shall be limited to the buildings without changes in the building height, mass, exterior appearances and detailing. A minimum of 10% of the residential area must bet set aside for integrated greenspace with amenities within the greenspace integrated into the development scheme.

B. General Design Guidelines:

- The design for the buildings at Cumberland Foreside Village (CFV) are to be encouraged to draw upon elements found in traditional New England vernacular architecture.
- All buildings proposed for CFV should be designed by an Architect registered in the State of Maine; buildings designed by Engineers are acceptable as long as the guidelines contained herein are closely followed.
- Individual building designs should have all of the façade elements coordinated to achieve harmony and continuity in the structure's appearance.
- Adjacent structures must be considered in the design for all new buildings. This should include scale of building, use of materials, and general building form.
- Buildings within 200 feet of US Route One, and in particular building elevations directly fronting on US Route One, need to have well designed, carefully detailed facades that have architectural interest and appeal. The existing Seafax and Exactitude structures can be referred to with regard to this guideline.
- All buildings on Route 1 shall comply with the Town of Cumberland Route One Design Standards.

C. Specific Design Standards:

- Exterior siding materials are encouraged to be traditional appearing building materials common to Northern New England. The use of asphalt shingles, T-111, or highly reflective siding materials is not permitted.
- The mass of larger structures needs to be broken down through the use of architectural detailing, changes in materials or other means so as to create visual interest. Main entrances to the buildings should be emphasized by architectural detailing, glazing, lighting, etc.
- Arbitrary or frequent changes in siding materials, applied embellishments, or the addition of architectural details that are not integrated into the building form or function are not allowed.
- All functional elements visible on the exterior of the structure (eg. meters, service connection, downspouts, vents, etc.) shall be treated as integral parts of, and incorporated into, the building design. HVAC units shall be screened and not visible from the street.
- All buildings shall provide an appropriate proportion of windows, doors or other fenestration so as to break up the building façade visible from Route 1 and any public view. The building fenestration should provide sufficient transparency to provide views to the interior of the building as functionally appropriate. Careful attention must be paid to the relative size, detailing and positioning of all openings in the building elevations.
- Pitched roofs with traditional slopes (higher than 6 in. 12) are required on buildings less than 5,000 sf. Where the roof will be visible from adjoining public ways, the roofing materials should be selected so as to complement the building's façade. Preferred roofing materials shall include architectural grade asphalt shingles, standing-seam metal roofing, or natural materials.

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- Color selected for the exterior surfaces of buildings should be earth-toned, or colors that are earth-tones, muted and not garish. The use of bright colors must be limited to areas where accents are desired (eg. doors, window trim, entrances, etc.).
- Where roofs are flat, parapets or other architectural elements should be used to break up a large expanse (eg. greater than 80 feet) of flat roof-line. Roof-top mounted mechanical or other equipment shall be screened/shielded from view from the street.
- Long horizontal facades of buildings (those greater than 60 feet in length) should be made more interesting through either changes in the façade plane or selection of materials to provide interest through color, shadow, non-functional windows, etc.
- Buildings with multiple entrances or uses shall be designed to be visually unified through complimentary detailing and use of materials, with no awnings allowed.
- Separate accessory structures on the same lot as a principal structure shall have consistent architectural detail so as to provide unified project design.
- Underground utility connections are required.
- Sidewalks along buildings and a trail in the I-295 buffer are required.
- A 5' walkway, with 10' of cleared space, is required within the Route 1 buffer zone as shown in Exhibit D.
- Signage shall consist of natural materials (wood, stone, etc.) and shall not be internally lit.
- A minimum of $3,000.00 of landscape improvements is required for every dwelling unit/$5,000.00 per structure.
- Refer to the CZA document for Dark Sky compliance for all lighting.

EXHIBIT D
6-3-19

STANDARDS FOR RESIDENTIAL USE PRIVATE ROADS ON LOT 7
CUMBERLAND FORESIDE VILLAGE

A. All private roads for residential use on Lot 7 within the Contract Zone shall be designed in accordance with the private roadway standards as contained in Article VI and Table 2 of Chapter 350 of the Cumberland Code as modified by Section 4315-18, V-MUZ District of the Cumberland Code, and as further modified below:

Standard:	Private Road:
Right-of-Way Width	30'
Roadway Pavement Width	18'
Grass Esplanade	4' (one side)
Paved Sidewalk	5' (one side)
Maximum Dead End Road Length	750'
Minimum Roadway Centerline Grade (1.0% preferred)	1.0%
Maximum Roadway Centerline Grade	10%
Minimum Centerline Radius (100' preferred)	100'
Minimum Tangent Length Between Curves of Reverse Alignment	0'
Minimum Angle of Street Intersection (90° preferred)	75°
Minimum Distance Between Street Intersections on Same Side	100'
Minimum Distance Between Street Intersections on Opposite Side	10'
Minimum Pavement Crown	¼" per foot
Minimum Slope of Gravel Shoulder	½" per foot
Minimum K Factor, Crest Vertical Curve	15
Minimum K Factor, Sag Vertical Curve	20
MPH Design Speed	25
Maximum Grade within 75' of Intersection	3%
Minimum Property Line Radius at Intersection	0'
Dead End Turn Around	Tee Turn Around 25' Length

B. The following design standards shall apply to Lot 7 residential use private roads:

1. The drainage system for private roads shall consist of closed drainage to the extent practicable; however, shallow under-drained swales may be used alongside roadways where no sidewalk is proposed. Where sidewalks are proposed, they shall be constructed with curb and access to the closed drain system through catch basin inlets, for example.

2. Parking and garage doors towards the public right-of-way are permissible provided the garages are architecturally designed to not be the principal element of the structure. Parking and garage doors facing towards private roads and private drives are permissible.

3. A minimum of two (2) street trees at 2 ½" caliper shall be planted for each residential unit adjacent to a private way.

Received
Recorded Register of Deeds
Sep 13,2019 02:59:07P
Cumberland County
Nancy A. Lane

PDK
WJS

ACORN ENGINEERING, INC.

Cumberland Planning Board
c/o Carla Nixon, Director of Planning
Town of Cumberland
290 Tuttle Road
Cumberland, Maine 04021

November 29, 2022

Subject: **Comment Response Letter**
White Rock Terrace Development – Cumberland, ME
Applicant: The Szanton Company

On behalf of The Szanton Company, we are pleased to respond to the comments that we received dated November 9th, 2022.

Chapter 250: Subdivision of Land

Section 250-4(D) – Erosion

Comment – *Erosion Control measures were provided on the Grading & Drainage Plan, Sheet C-30. Please show silt sacks on the catch basins, stone check dams in the drainage swales, and a stabilized construction entrance on the plans to meet the MEDEP requirements.*

Response – Please see Sheet C-30 for the additions of erosion control measures to the plans.

Section 250-4(N) – Stormwater

Comment – *The peak flows during the 25-year storm exceed the predevelopment peak flows at Point of Analysis #1 by 1.6 cfs. The Stormwater Report attempts to combine the POI #1 and POI #2 peak flows to present only a 1 cfs increase, but the flows to each POI go in opposite directions and should be analyzed independently of each other. Please review additional detention measures to lower the 25-year runoff flows at POI #1 below pre-developed conditions.*

Response – The GUSF has been updated to include additional storage volume. The result of this additional storage volume is that the peak flow in the 25-year storm event to POI#1 has been reduced to 12.6 CFS, matching the pre-development peak flow.

Comment – *Please confirm that flows from the underdrain pipes were accounted for in the model for Pond-1 Underdrain Soil Filter, Pond 2- Rain Garden, Pond 3, and 4 Drip Edge.*

Response – No underdrain pipes are directed to Pond 1 in design or in the model. A roof drain is directed to Pond 1, as shown on Sheet C-30, and is accounted for in the impervious area being treated on the property. The roof dripline and foundation drain are combined with this design and outlet to a point beyond the rain garden to the Sky View Drive drainage swale.

Comment – *In Table 3 of the Stormwater Management Report, the calculation appears to indicate that the GUSF would need to be sized for a 1,763 square foot area. With the numbers included in the report (33,250 SF impervious and 8,500 SF landscaped), the MEDEP calculation would indicate that the GUSF should be 1,833 SF in size. Please confirm.*

Response – The 1,763 figure was a typo on our report, it is correct that the GUSF has a minimum area of 1,833 sf and we are providing 1,850 sf in our design.

Comment – *There does not appear to be a detail on the plans for the roof dripline filter. Please provide one in accordance with MEDEP requirements. Please also provide information on how much of the roof area will drain to the roof dripline filter and the sizing of the stone reservoir and depths of the filter media below.*

Response – The detail for a roof dripline filter has been updated on Sheet C-45 with the sizing of the stone reservoir and depth of filter media. A diagram has also been provided on this sheet to show the portions of the roof that are draining to this filter.

Comment – *Please provide information on why a 4.26" and 3.24" runoff analysis was provided for this work.*

Response – The sections in the HydroCAD report that included these rainfall events were included by mistake, they have no purpose for the design of this site and have been removed from the updated report attached to this response.

Comment – *The "Post-development Calculations" in the Stormwater Management Report refers to porous pavement to control runoff. Please identify on the plans where the porous pavement will be installed and provide a detail for review.*

Response – There is no porous pavement proposed on site. Apologies, this was a typo in the submission.

Comment – *Please provide sizing for the proposed rain garden if it is intended to provide treatment of stormwater runoff for the project.*

Response – The rain garden is intended to provide treatment and detention, the sizing of the BMP has been added to the updated Stormwater Report.

<u>Section 250-29 - Review and approval by other agencies</u>

Comment – *The project will require review by the Maine Department of Environmental Protection for an amendment to the existing Site Location of Development permit for the property. Please*

provide an update on whether this has been submitted to the Maine DEP.

Response – The amendment to the existing Site Location of Development permit has been submitted to the DEP.

Section 250-34—Water Supply

Comment – *The apartment building will use public water therefore the project will need approval from the Portland Water District. Please provide the Portland Water District approval as part of the final plan application.*

Response – The Portland Water District has provided an ability to serve letter for the development.

Section 250-35—Sewage Disposal

Comment – *The apartment building will use public sewer; therefore, the project will need approval from the Town of Cumberland Sewer department. Please provide the Cumberland Sewer approval as part of the final plan application.*

Response – An ability to serve request has been accepted by the Cumberland Sewer Department and a formal response will be forthcoming.

Section 250-45– Waivers and modifications.

Comment – *Waiver Request 1 – Hydrogeological Study – SME recommends approval of this waiver.*

Response – No response needed, the waiver request was granted by the Planning Board at the November 15, 2022 meeting.

Comment – *Waiver Request 2 – High Intensity Soils Survey – SME recommends approval of this waiver.*

Response – No response needed, the waiver request was granted by the Planning Board at the November 15, 2022 meeting.

Comment – *Waiver Request 3 - Identification of 10-inch Trees on Existing Conditions Plan – SME recommends approval of this waiver.*

Response – No response needed, the waiver request was granted by the Planning Board at the November 15, 2022 meeting.

Comment – *Waiver Request 4 – Parking Requirement – The proposed parking ratio of 1.4 space per apartment is consistent with parking requirements in the OCS Zone north of the project area, which requires 1.5 parking spaces per apartment. Given the data presented from other Senior Housing projects and our similar experience working on senior housing, SME is in general agreement that 77 spaces are adequate parking for the proposed senior housing development.*

Response – No response needed, the waiver request was granted by the Planning Board at the November 15, 2022 meeting.

Chapter 229: Site Plan Review

Section 229(I) Buffering and Landscaping

Comment – *Please provide a Landscape Plan as part of the final submission.*

Response – Please see the landscape plan that was included as part of the original submission.

Section 229(J) Noise

Comment – *Please provide details on any outdoor equipment required (generator, HVAC Unit, etc.) and how noise will be controlled at the adjacent property lines.*

Response – There will likely be eight heat pump condenser units for the property, each located on a 4'x6' concrete pad, located on the updated plans. Noise will be buffered by the building and by a fence surrounding the units. See Sheet C-10 for location of the concrete pads.

Section 229(L) Capacity of the Applicant

Comment – *The Applicant should provide a letter from a funding institution demonstrating capacity to fund the $12 million portion of the construction project not from the Maine Housing Tax Credits. SME recommends that proof of the additional funding from Maine Housing be provided as a Condition of Approval prior to the preconstruction meeting.*

Response – Proof of funding from Maine Housing will be provided prior to the preconstruction meeting.

General Comments

Comment – *Plan Sheet C-10- Overall Site Plan - There was no ADA Van Accessible spot proposed. SME recommends the applicant adjust the parking layout to allow one ADA compliant Van Accessible Parking space per ADA requirements.*

Response – The parking layout has been adjusted to incorporate one 11' ADA compliant van accessible parking space with a 5' aisle at the entrance to the building.

Comment – *Plan Sheet C-20 – Utility Plan – The Portland Water District typically requires separated domestic and sprinkler services from the building with two tie-ins at the 12-inch water main. Please provide approval from the PWD for the single tie in.*

Response – Through discussion with the PWD, there will be two tie-ins with the new water line in the Sky View Drive extension. The updated plans have incorporated comments made by the PWD.

Comment – *Plan Sheet C-20 – Please confirm that a 4-foot by 4-foot transformer pad is large enough for this level of development. More typical sizes are 7-foot by 7-foot or 9-foot by 9-foot.*

Response – MEP guidance is forthcoming, but likely a 7x7 transformer pad will be required. This is updated on Sheet C-20.

Comment – *Plan Sheet C-30 - Grading and Drainage Plan – Please replace the 6-inch culvert at the driveway entrance with a minimum 15-inch culvert to minimize clogging. Please confirm cover and clearances with the sewer line in your response.*

Response – The 6-inch culvert at the driveway entrance has been replaced with a 15-inch culvert, please see Sheet C-30. At the sewer crossing the culvert invert is 119.95' and the top of the sewer pipe is 118.55'.

Comment – *Plan Sheet C-30 – Grading and Drainage Plan – please provide dimensions for the rip rap emergency overflow on the GUSF.*

Response –Dimensions for the rip rap emergency overflow on the GUSF have been provided on Sheet C-30. Details for the spillway have been added to Sheet C-44.

Please refer to the attached letters from the project architects for remaining responses to the design review comments. Please let us know if you have any additional questions or comments.

Sincerely,

Travis Letellier, P.E.
Project Manager
Acorn Engineering, Inc.

PLANT LIST - TREES

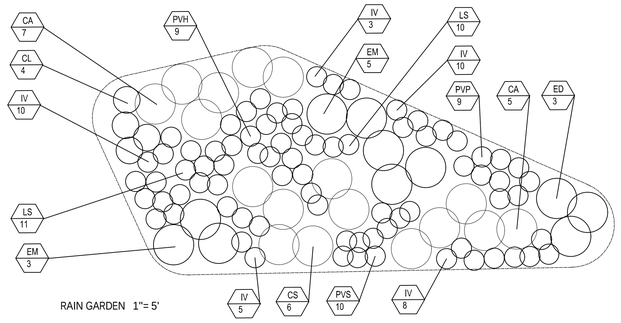
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
	AR	*Acer rubrum 'Armstrong' or 'Bowhall'*	Red Maple	2-2.5" CAL.	B&B	Y
	AS	*Acer saccharum*	Sugar Maple	2-2.5" CAL.	B&B	Y
	CC	*Crataegus c. "Inermis"*	Thornless Cockspur Hawthorn	2-2.5" CAL.	B&B	Y
	GT	*Gleditsia triacanthos 'Shademaster'*	Honeylocust	2-2.5" CAL.	B&B	N
	PA	*Prunus accolade*	Accolade Cherry	2-2.5" CAL.	B&B	N
	PO	*Picea omorika*	Serbian Spruce	6-7' hgt.	B&B	N

PLANT LIST - SHRUBS AND GROUNDCOVERS

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
	MD	*Microbiota decussata*	Siberian Carpet Cypress	18-24" / #7	cont.	N
	PVC	*Panicum virgatum ;Cheyene Sky"*	Cheyene Sky Switchgrass	#3	cont.	Y
	PV	*Panicum virgatum 'Heavy Metal'*	Switchgrass	#3	CONT.	Y
	RKO	*Rosa "Knockout"*	Knockout Shrub Rose	#3	CONT.	N
	RM	*Rosa Morden Centennial*	Morden Shrub Rose	#3	CONT.	N
	RA	*Rhus aromatica 'Gro-Low'*	Fragrant Sumac	18-24" / #5	cont.	N
	RB	*Rhododendron 'Boule-de-Neige'*	Rhododendron	3' ht.	b+b	N
	SV	*Syringa Vulgaris "Donald Wyman"*	Donald Wyman Lilac	4-5' / #7	cont.	N
	VT	*Viburnum plic. tomentsum 'Shoshoni'*	Doublefile Viburnum	2.5-3' / #7	cont.	N

PLANT LIST - RAIN GARDEN

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
	CA	*Clethra alnifolia 'Sixteen Candles'*	Sweet Pepperbush	2-2.5'/#5	CONT.	Y
	CL	*Chasmanthium latifolium*	Northern Sea Oats	#3	CONT.	Y
	CS	*Cornus sericea 'Farrow'*	Redtwig Dogwood	2-2.5'/#7	CONT	Y
	ED	*Eupatorium dubium 'Baby Joe'*	Joe Pye Weed	#2	CONT.	Y
	EM	*Eupatorium maculatum 'Gateway'*	Joe Pye Weed	#2	CONT.	Y
	IV	*Iris versicolor*	Blue Flag Iris	#2	CONT.	Y
	LS	*Liatris spicata 'Kobold'*	Blazing Star	#2	CONT.	N
	PVH	*Panicum virgatum 'Heavy Metal'*	Switchgrass	#3	CONT.	Y
	PVP	*Panicum virgatum 'Purple Tears'*	Switchgrass	#3	CONT.	Y
	PVS	*Panicum virgatum 'Shenandoah'*	Switchgrass	#3	CONT.	Y



RAIN GARDEN 1"= 5'

PLANT NOTES

1. CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THE PLAN. ANY DISCREPANCY BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THOSE REQUIRED ON THE PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL RENUMERATION. ANY DISCREPANCIES SHALL BE CLARIFIED WITH THE LANDSCAPE ARCHITECT PRIOR TO ORDERING PLANT MATERIAL.
32. ALL MATERIALS SHALL CONFORM TO SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
3. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THE ORIGINAL GRADES BEFORE DIGGING.
4. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
5. ALL PLANT BEDS SHALL MEET MINIMUM TOPSOIL REQUIREMENTS (SEE SPECIFICATIONS).
6. NO PLANT MATERIAL SHALL BE INSTALLED UNTIL GRUBBING, BED PREPARATION, AND FINISH GRADING HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
7. ALL PLANTS BEDS AND TREE WELLS SHALL HAVE A MINIMUM OF 3" OF UNIFORMLY DISTRIBUTED, DARK, SHREDDED BARK MULCH.
8. ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
18. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST AND PLANTING SPECIFICATIONS FOR SEASONAL REQUIREMENTS AND OTHER RESTRICTIONS RELATED TO THE TIME AND SEASON OF PLANTING.
19. PLANTING SOIL MIX: 1 PART COMPOST, 8 PARTS TOPSOIL, 3 PARTS HUMUS.
TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL, FREE FROM CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION, PH RANGE 5.0-7.0 , AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT.
SANDY LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

TEXTURAL CLASS	% OF TOTAL WEIGHT	AVERAGE %
SAND (0.05- 2.0 MM)	45 TO 75%	60%
SILT (0.002- 0.05 MM)	15 TO 35%	25%
CLAY (< 0.002 MM)	5 TO 25%	15%

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
TOWN SUBMISSION	TAL 10/25/22

DRAWING NAME: LANDSCAPE PLAN
PROJECT NAME/ ADDRESS: WHITE ROCK TERRACE
CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

DRAWING NO.
L-1

WHITE ROCK TERRACE

THE SZANTON COMPANY
CUMBERLAND, MAINE

LEGEND

EXISTING

PROPOSED

	UNDERDRAIN
	STRIPING
	SEDIMENTATION BARRIER
	EDGE OF EX. PAVEMENT
	CURB
	SIGN
	LAMP OR LIGHT POLE
	WATER VALVE
	FIRE HYDRANT
	SEWER MANHOLE
	CATCH BASIN
	DRAIN MANHOLE
UGE	UNDERGROUND ELECTRIC LINE
	ELECTRICAL MANHOLE
W W	UNDERGROUND WATER LINE
131	MINOR CONTOURS (1 FT)
130	MAJOR CONTOURS (5 FT)
	STORM DRAIN LINE
S	SEWER LINE
	EXISTING/PROPOSED BUILDING
	PROPERTY LINE
	SETBACKS
	GRADE BREAK

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

INDEX

CALL BEFORE YOU DIG
1-888-DIG-SAFE
1-888-344-7233

PROJECT TEAM

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RYAN SENATORE ARCHITECTURE
500 CONGRESS ST, #2
PORTLAND, MAINE
CONTACT: RYAN SENATORE, R.A.
(207) 650-6414

DEVELOPER:

THE SZANTON COMPANY, LLC.
10 FREE STREET, 3RD FLOOR
PORTLAND, ME 04101
CONTACT: KRISTIN MARTIN
(207)245-6436

CIVIL ENGINEER:

ACORN ENGINEERING, INC.
500 WASHINGTON STREET, SUTE 201
PORTLAND, MAINE 04101
CONTACT: TRAVIS LETELLIER, P.E.
(207) 775-2655

LANDSCAPE ARCHITECT:

CARROLL ASSOCIATES
217 COMMERCIAL STREET
PORTLAND, MAINE 04101
CONTACT: PATRICK CARROLL
(207) 772-1552

SURVEYOR:

OWEN HASKELL, INC.
390 US-1 UNIT 10
FALMOUTH, MAINE 04105
CONTACT: ELLEN C. BREWER, P.L.S.
(207) 774-0424

UTILITY CONTACTS

SEWER:

CUMBERLAND SEWER DISTRICT
290 TUTTLE ROAD
CUMBERLAND, MAINE 04021
CONTACT: WILLIAM SHANE
(207)829-2205

TELEPHONE:

CONSOLIDATED COMMUNICATIONS
(FORMERLY FAIRPOINT)
45 FOREST AVENUE
PORTLAND, MAINE 04101
CONTACT: PAT MORRISON
(207) 745-9363

WATER:

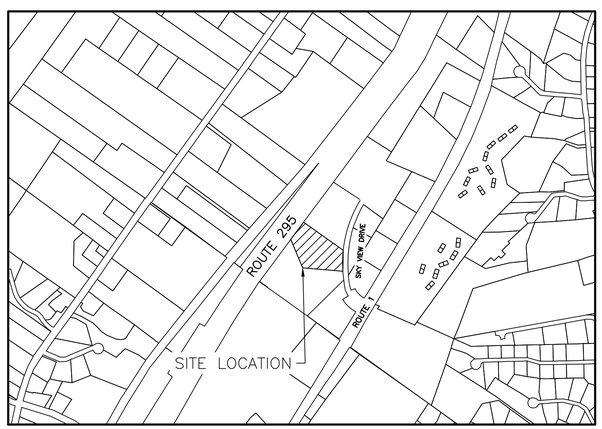
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

CABLE:

SPECTRUM CABLE
118 JOHNSON ROAD
PORTLAND, MAINE, 04102
CONTACT: MARK PELLETIER
(877) 546-0962

ELECTRIC:

CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: JAMIE COUGH
(207) 828-2882



VICINITY MAP
NTS

ABBREVIATIONS

PARTIAL LIST OF ABBREVIATIONS AND THEIR CORRESPONDING MEANING. PLEASE CONTACT THE ENGINEER FOR ANY CLARIFICATION

APPROX.	APPROXIMATE
BC	BOTTOM OF CURB
BMP	BEST MANAGEMENT PRACTICE
BOT.	BOTTOM
CB	CATCH BASIN
CF	CUBIC FOOT
CIP	CAST IN PLACE
CL	CENTERLINE
CM	CONSTRUCTION MANAGER
CMP	CENTRAL MAINE POWER
CONC.	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARD
DIP	DUCTILE IRON PIPE
DIA.	DIAMETER
DIM.	DIMENSION
EA.	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EQUIV.	EQUIVALENT
EST.	ESTIMATE
EEMP.	ENVIRONMENTAL MEDIA MANAGEMENT PLAN
EX.	EXISTING
FFE	FINISH FLOOR ELEVATION
FT.	FEET
GAL.	GALVANIZED
ID	INNER DIAMETER
IN.	INCH
INV.	INVERT
L	LENGTH
MAX.	MAXIMUM
MDOT	MAINE DEPARTMENT OF TRANSPORTATION
M.E.P	MECHANICAL, ELECTRICAL, PLUMBING DESIGNER
MFG.	MANUFACTURED
MH	MANHOLE
MIN.	MINIMUM
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OHE/T/C	OVERHEAD ELECTRIC/TELEPHONE/CABLE
PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
RD	ROOF DRAIN
RET.	RETAINING
ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SMH	SEWER MANHOLE
SPEC.	SPECIFICATION
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
UD	UNDERDRAIN
UGE	UNDERGROUND ELECTRIC
VIF	VERIFY IN FIELD

STATE OF MAINE
WILLIAM H. SAVAGE
11419
10/25/22
LICENSED PROFESSIONAL ENGINEER

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME/ ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE
CLIENT/OWNER OF RECORD: THE SZANTON COMPANY, 10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
CIVIL ENGINEERING
ACORN ENGINEERING, INC.
PO BOX 3477 PORTLAND, MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

STATE OF MAINE
TRAVIS A. LETELLIER
10422
REGISTERED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.
C-01

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE TOWN OF CUMBERLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED "AS-BUILT". IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED BOUNDARY & TOPOGRAPHIC SURVEY BY OWEN HASKELL, INC FOR THE SZANTON COMPANY, LLC, DATED 10/7/22.
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY SUMMIT ENGINEERING, INC. AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE CUMBERLAND DEPARTMENT OF PUBLIC WORKS ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONSTRUCTION MANAGEMENT PLAN NARRATIVE PREPARED BY ACORN ENGINEERING, INC. SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
12. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
13. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES IMMEDIATELY ABUTTING THE SITE. A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILL, PROVIDE CURING OF CONCRETE FOR 28 DAYS OR AS DIRECTED BY MATERIALS TESTING ENGINEER.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY THE OWNER AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE TOWN OF CUMBERLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A SITE PLAN APPROVAL FROM THE TOWN OF CUMBERLAND AND AN AMENDMENT TO A MAINE DEP STORMWATER SITE LAW PERMIT #L-21578-39-C-N.
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE TOWN OF CUMBERLAND. ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY; NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS. SEE BORING LOGS FOR ADDITIONAL INFORMATION.
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. NO ADDITIONAL PAYMENT FOR UNSUITABLE MATERIALS.
6. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
7. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
8. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE TOWN. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED BEFORE BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT "WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE", MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH TOWN OF CUMBERLAND, STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE TOWN IN ACCORDANCE WITH THE TOWN OF CUMBERLAND STANDARDS PRIOR TO ANY WORK.
15. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL AT NO EXTRA EXPENSE TO THE OWNER.
16. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE.
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS
   - BITUMINOUS ASPHALT PAVEMENT
   - CONCRETE PADS AND BLOCKS
   - FENCE POST AND FENCING
   - UNDERGROUND UTILITY LINES
   - ABOVE AND OR BELOW FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY / DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: GENERAL NOTES

PROJECT NAME/ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

A C O R N
ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

STATE OF MAINE ... LICENSED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.

C-02

GENERAL NOTES:

1. ALL SIDEWALK AND CURBING SHALL BE BUILT TO TOWN OF CUMBERLAND STANDARDS.
2. EXISTING CONDITIONS PROVIDED BY OWEN HASKELL, INC ON A PLAN ENTITLED BOUNDARY AND TOPOGRAPHIC SURVEY. PLAN IS DATED OCTOBER 7, 2022 .
3. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO TOWN OF CUMBERLAND STANDARDS.
4. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.

STANDARD NOTES FOR MAJOR DEVELOPMENT REVIEW PLANS:

1. PRIOR TO ANY CERTIFICATE OF OCCUPANCY BEING ISSUED, THE APPLICANT'S DESIGNING ENGINEER SHALL SUBMIT A FINAL INSPECTION REPORT TO THE CITY INDICATING THAT THE STORMWATER SYSTEM AND ALL SITE IMPROVEMENTS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN. MINIMUM 48 HOUR NOTICE REQUIRED.
2. A BUILDING/USE PERMIT SHALL BE REQUIRED FOR ALL ACTIVITIES REGULATED BY THE ZONING AND LAND USE CODE INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
   - 3.1 THE CONSTRUCTION, ALTERATION, RELOCATION, DEMOLITION, PLACEMENT, OR REMOVAL OF OR THE ADDITION TO ANY STRUCTURE OR BUILDING OR PART THEREOF;
   - 3.2 THE CONSTRUCTION/ INSTALLATION OF A WALL OR FENCE 3.5 FEET OR GREATER IN HEIGHT IN ACCORDANCE WITH ARTICLE XII, SEC. 7;
   - 3.3 THE ERECTION/ INSTALLATION OF A SIGN OR THE REPLACEMENT OF A SIGN FACE REGULATED IN ACCORDANCE WITH ARTICLE XII, SECTION 16 OF THIS CODE;
   - 3.4 THE CONSTRUCTION OF A DRIVEWAY OR PARKING LOT;
   - 3.5 THE CHANGE OF USE OR OCCUPANCY OF A BUILDING, STRUCTURE, OR LOT OF LAND
3. NO PERMIT SHALL BE ISSUED FOR THE CONSTRUCTION, ADDITION, ALTERATION, REMOVAL, DEMOLITION OR CHANGE OF USE OF ANY BUILDING, STRUCTURE OR PART THEREOF, OR FOR THE USE OF ANY PREMISES UNLESS THE PLANS AND INTENDED USE INDICATE THAT THE BUILDING, STRUCTURE OR PREMISES IS TO CONFORM IN ALL RESPECTS TO ZONING AND LAND USE CODE OF THE CITY OF LEWISTON AND THE LAND USE LAWS OF THE STATE OF MAINE.
4. THE GRANTING OF THIS APPROVAL IS DEPENDENT UPON AND LIMITED TO THE PROPOSALS AND PLANS CONTAINED IN THE APPLICATION AND SUPPORTING DOCUMENTS SUBMITTED AND AFFIRMED TO BY THE APPLICANT. ANY VARIATION FROM THESE PLANS, PROPOSALS, AND SUPPORTING DOCUMENTS IS SUBJECT TO REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION. FURTHER SUBDIVISION OF PROPOSED LOTS BY THE APPLICANT OR FUTURE OWNERS IS SPECIFICALLY PROHIBITED WITHOUT PRIOR APPROVAL OF THE BOARD
5. THE APPLICANT SHALL SECURE AND COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LICENSES, PERMITS, AUTHORIZATIONS, CONDITIONS, AGREEMENTS, AND ORDERS PRIOR TO OR DURING CONSTRUCTION AND OPERATION, AS APPROPRIATE.

SPACE AND BULK STANDARDS

CONTRACT ZONE MULTI-FAMILY	REQUIRED	PROVIDED
FRONT YARD SETBACK	50'	50.50'
SIDE YARD SETBACK	30'	30.50'
REAR YARD SETBACK	50'	>50'
MAX BUILDING HEIGHT	50'	49.90'
MIN STREET FRONTAGE	50'	285'
MIN LOT SIZE	2 ACRES	4.4 ACRES
MAX SITE COVERAGE	30%	7%
MIN OPEN SPACE	20%	57%

PARKING TABLE

AREA	PARKING SPACES
9'X18' SPACES	67
ADA SPACES	10
TOTAL	77**
TOWN CODE REQUIREMENT (2 PER UNIT)	110**

**WAIVER GRANTED BY PLANNING BOARD TO REDUCE PARKING

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: **OVERALL SITE PLAN**

PROJECT NAME/ ADDRESS: **WHITE ROCK TERRACE – SKYVIEW DRIVE**

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

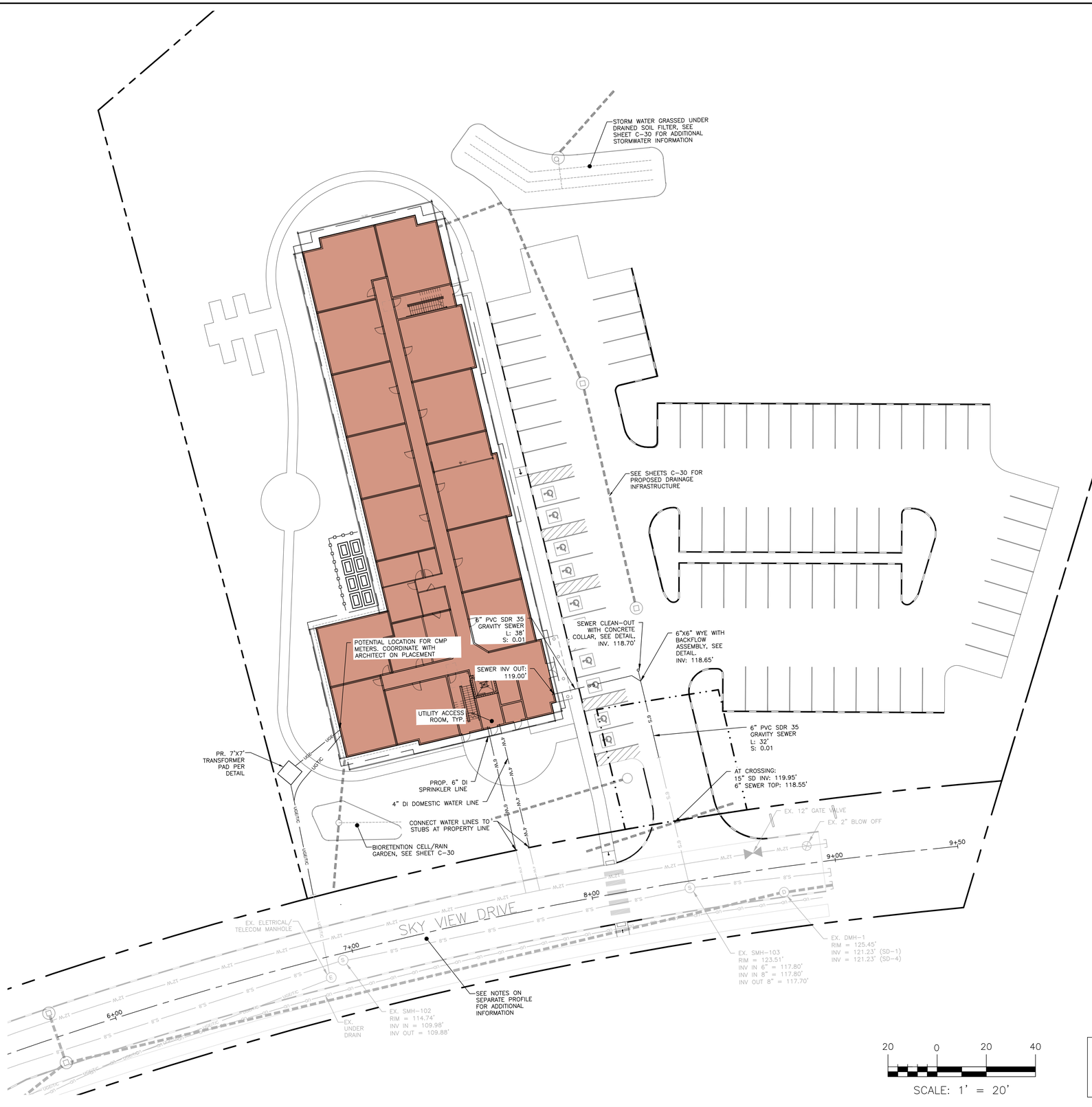
STATE OF MAINE ... LICENSED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.

C-10

GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF CUMBERLAND TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH TOWN SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. ALL TENANTS OF THE BUILDING MUST BE ABLE TO ACCESS THE WATER METER, CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND THE TOWN OF CUMBERLAND.
7. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION AND TRANSFORMER SIZE, IF NECESSARY DEFINED BY M.E.P. M.E.P. TO FINALIZE SERVICE CONNECTION TO BUILDING. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.



20 0 20 40

SCALE: 1' = 20'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: **UTILITY PLAN**

PROJECT NAME/ ADDRESS: **WHITE ROCK TERRACE - SKYVIEW DRIVE**

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2855

FILE:	1175.1_CIVIL
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DRAWN BY:	AWG
CHECKED BY:	WHS

STATE OF MAINE — TRAVIS A. LOUGEE — 13001 — LICENSED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.

C-20

GENERAL NOTES:

1. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
2. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
3. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
4. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.
5. ANY SLOPE BETWEEN AND INCLUDING, 2:1 TO 3:1 SHALL BE STABILIZED WITH ECB. SLOPES STEEPER THAN 2:1 SHALL BE REINFORCED WITH RIPRAP. SEE DETAILS.
6. ALL UNDERDRAINS SHALL HAVE A MINIMUM SLOPE OF 0.20%
7. ALL STORM DRAIN SHALL BE EITHER PVC SDR 35, OR ADS N-12 DUAL WALL, OR APPROVED EQUIVALENT.
8. ALL STRUCTURES 4' INSIDE DIA. UNLESS OTHERWISE NOTED.
9. COORDINATE DOWNSPOUT INSTALLATION WITH ARCHITECT.
10. CONTRACTOR IS RESPONSIBLE FOR ENSURING PIPE MATERIAL IS RATED FOR PROPOSED DEPTHS.
11. SLOPES WITHIN ADA PARKING AND ACCESS AISLES TO BE LESS THAN 2%

20 0 20 40

SCALE: 1' = 20'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: **GRADING & DRAINAGE PLAN**

PROJECT NAME/ ADDRESS: **WHITE ROCK TERRACE - SKYVIEW DRIVE**

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

A C O R N ENGINEERING, INC.

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PO BOX 3372, PORTLAND MAINE 04101
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DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

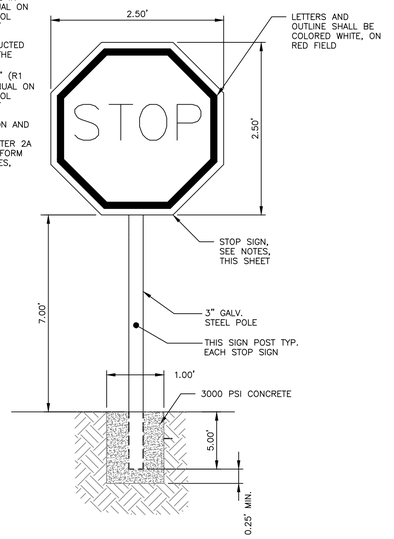
STATE OF MAINE Travis A. Letellier 13920 LICENSED PROFESSIONAL ENGINEER 10/25/2022

DRAWING NO.

C-30

NOTES:

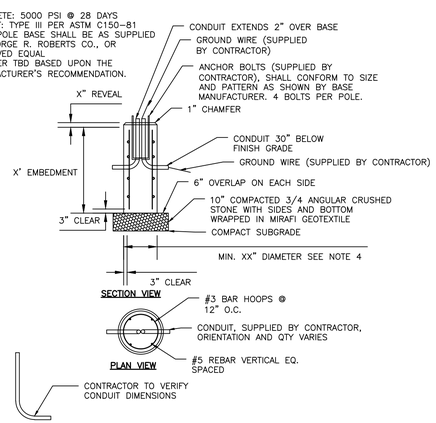
1. ALL ASPECTS OF STOP SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
2. SIGN SHALL BE CONSTRUCTED AS SIGN R1-1 UNDER THE "REGULATORY SIGNS, BARRICADES, AND GATES" (R1 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.



TRAFFIC SIGN DETAIL
NOT TO SCALE

SCHEDULE		
HEIGHT OF POLE	MIN DIAMETER	MIN EMBEDMENT
<20'	18"	5'
20'-40'	2'	6'
>40'	3'	8'

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.

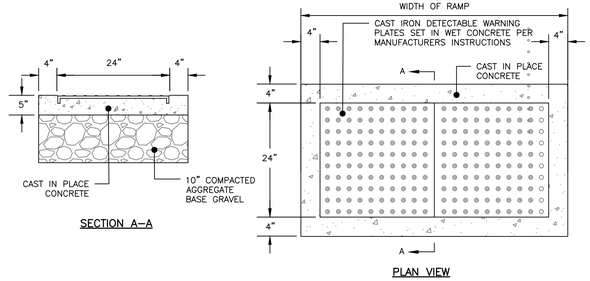


LIGHT POLE BASE
NOT TO SCALE

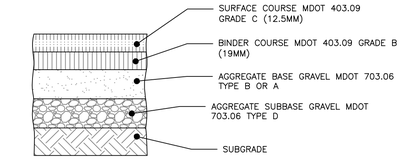
REVEALS	
APPLICATIONS	REVEAL
STREET/SIDEWALK	4"
OTHER PED HARDSCAPE	FLUSH
PEDESTRIAN LAWN/MULCH	4"
PARKING AREAS (OPEN TRAFFIC)	24-36"

NOTES:

1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FORM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE



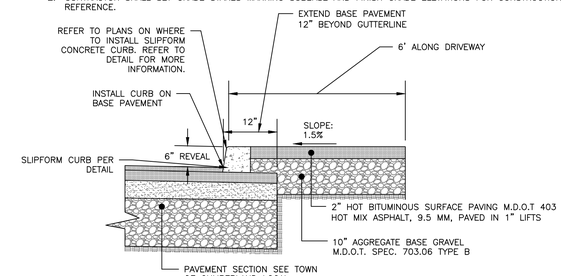
NOTE:
COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557

THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 703.09 (12.5mm)
2-1/4"	BINDER COURSE MDOT 703.09 (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
12"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

INTERNAL PARKING AND PRIVATE DRIVE PAVEMENT PROFILE
NOT TO SCALE

NOTES:

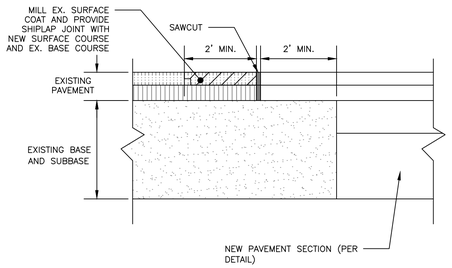
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.



INTERNAL BITUMINOUS SIDEWALK ALONG DRIVEWAY DETAIL
NOT TO SCALE

NOTES:

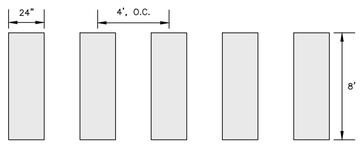
1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
2. THE NEW PAVEMENT SECTION SHALL MEET PAVEMENT SECTION DETAIL AT A MINIMUM OR THE THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.



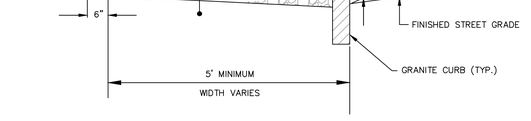
PAVEMENT SAWCUT DETAIL
NOT TO SCALE

NOTE:

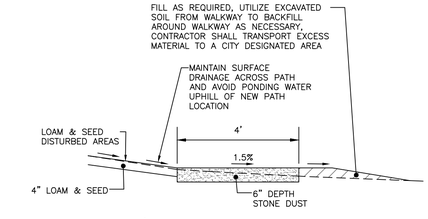
1. CROSSWALKS TO BE BUILT IN CONFORMANCE WITH MUTCD STANDARDS, LATEST EDITION.
2. CROSSWALKS ARE TO BE PAINTED WHITE MEETING MAINE DOT SPECIFICATIONS.
3. BLOCKS TO BE PARALLEL TO THE DIRECTION OF CAR TRAFFIC.



BLOCK CROSSWALK
NOT TO SCALE



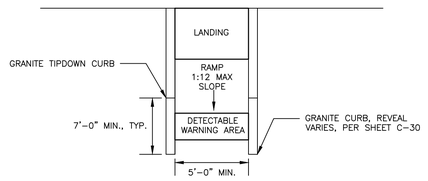
BITUMINOUS SIDEWALK
NOT TO SCALE



4' WIDE STONE DUST PATH
NOT TO SCALE

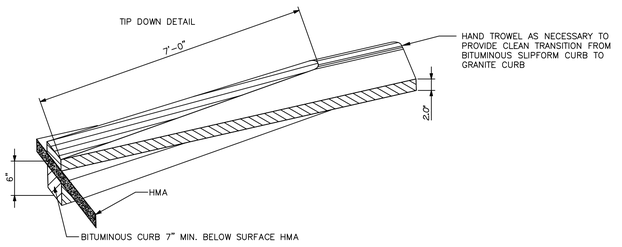
NOTES:

1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.

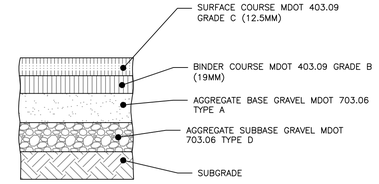


DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAX	2%
LANDING	2%	2%
RAMP	8.33% MAX	MATCH STREET GRADE
SIDEWALK	PER C-30	2%

SIDEWALK RAMP LAYOUT
NOT TO SCALE



SLIPFORM BITUMINOUS CURB DETAIL
NOT TO SCALE



NOTES:

1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557
2. SURFACE AND AGGREGATE MATERIALS SHALL MEET THE TOWN OF CUMBERLAND STANDARDS IN ADDITION TO MDOT STANDARDS.

THICKNESS OF LAYERS	
STANDARD	LAYERS
2"	SURFACE COURSE MDOT 403.09 GRADE C (9.5mm)
3.5"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
21"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

TOWN OF CUMBERLAND BITUMINOUS PAVEMENT PROFILE
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: SITE DETAILS - 1

PROJECT NAME/ ADDRESS: WHITE ROCK TERRACE - SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY, 10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

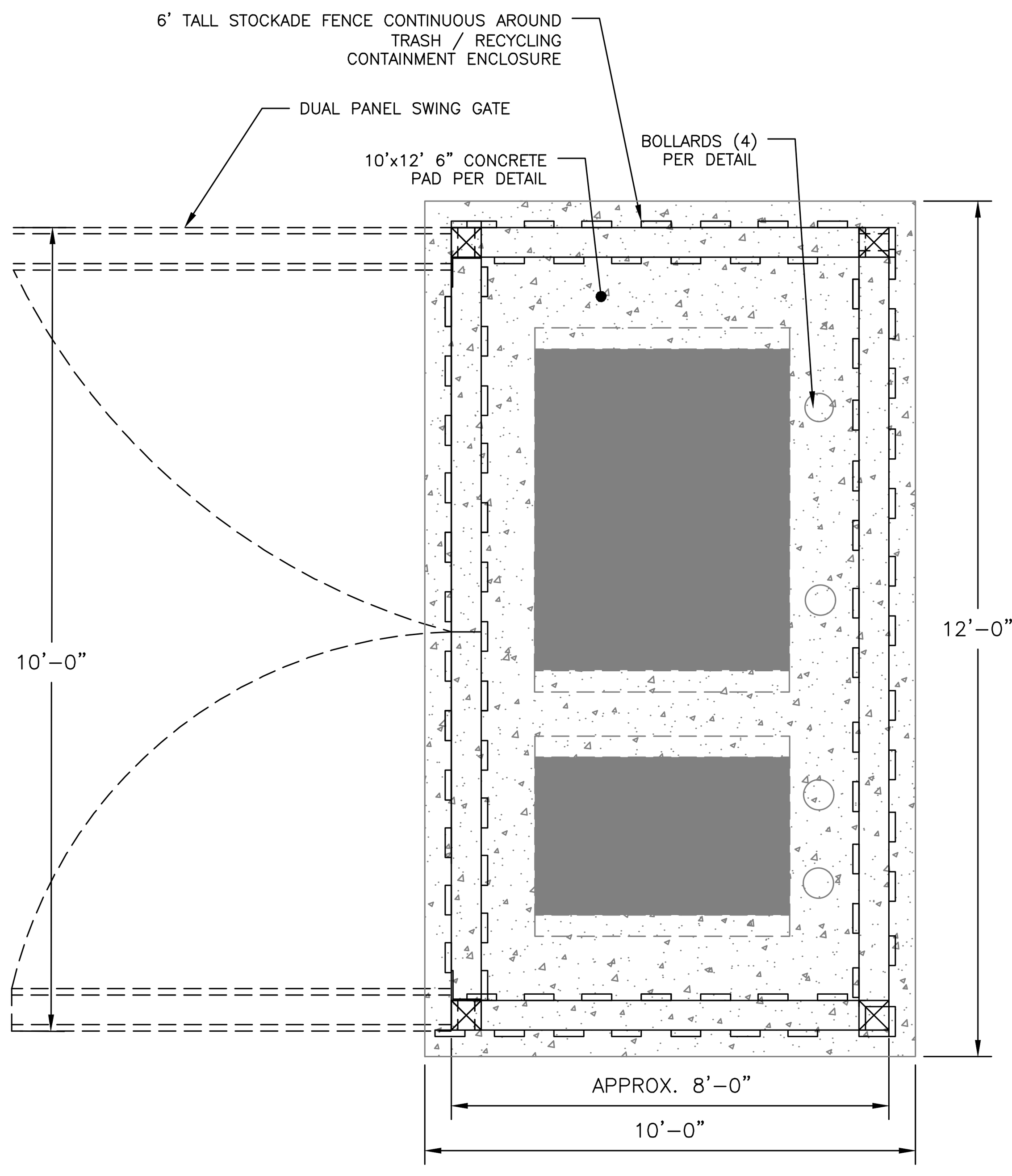
THESE PLANS SHALL NOT BE MODIFIED IN ANY WAY WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ACORN ENGINEERING, INC. WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
133 FLAGSTAFF ROAD, WINDHAM, MAINE 04101
PO BOX 1237 (207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

STATE OF MAINE — TODD A. LEWIS — 12705 — REGISTERED PROFESSIONAL ENGINEER
10/25/2022

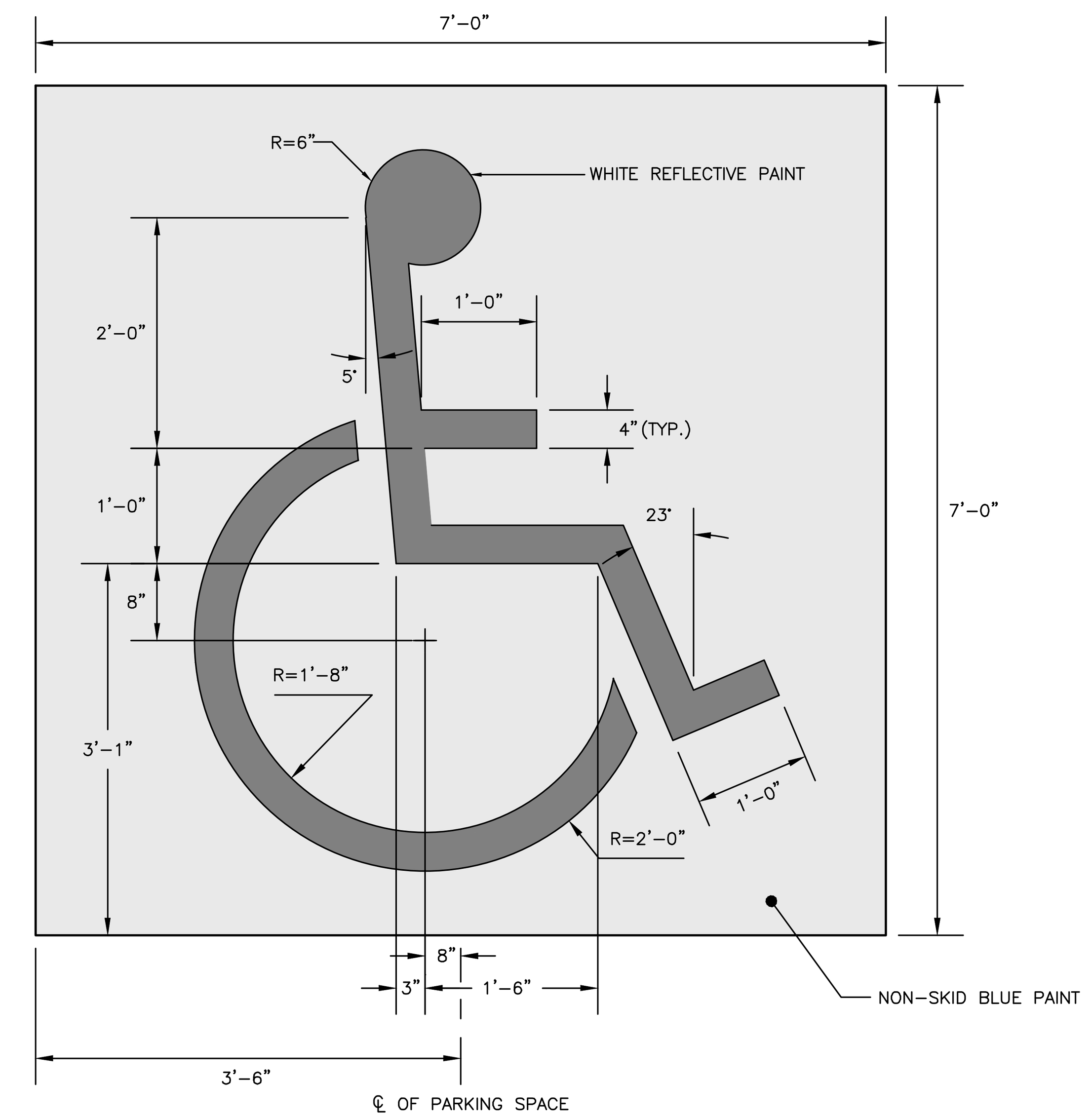
DRAWING NO.
C-40



PLAN VIEW

TRASH ENCLOSURE DETAIL

NOT TO SCALE

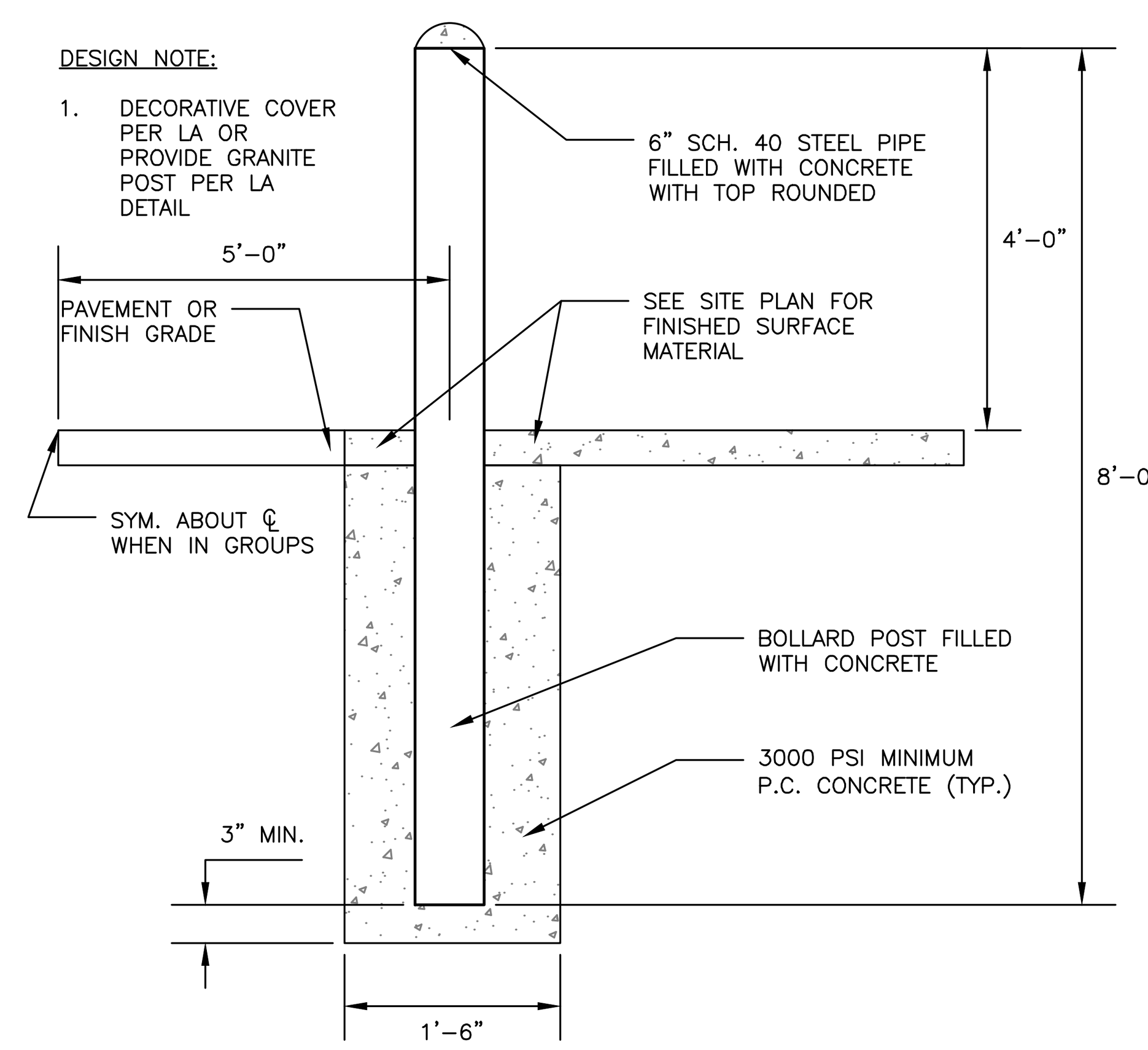


INTERNATIONAL BARRIER FREE SYMBOL

NOT TO SCALE

DESIGN NOTE:

1. DECORATIVE COVER PER LA OR PROVIDE GRANITE POST PER LA DETAIL

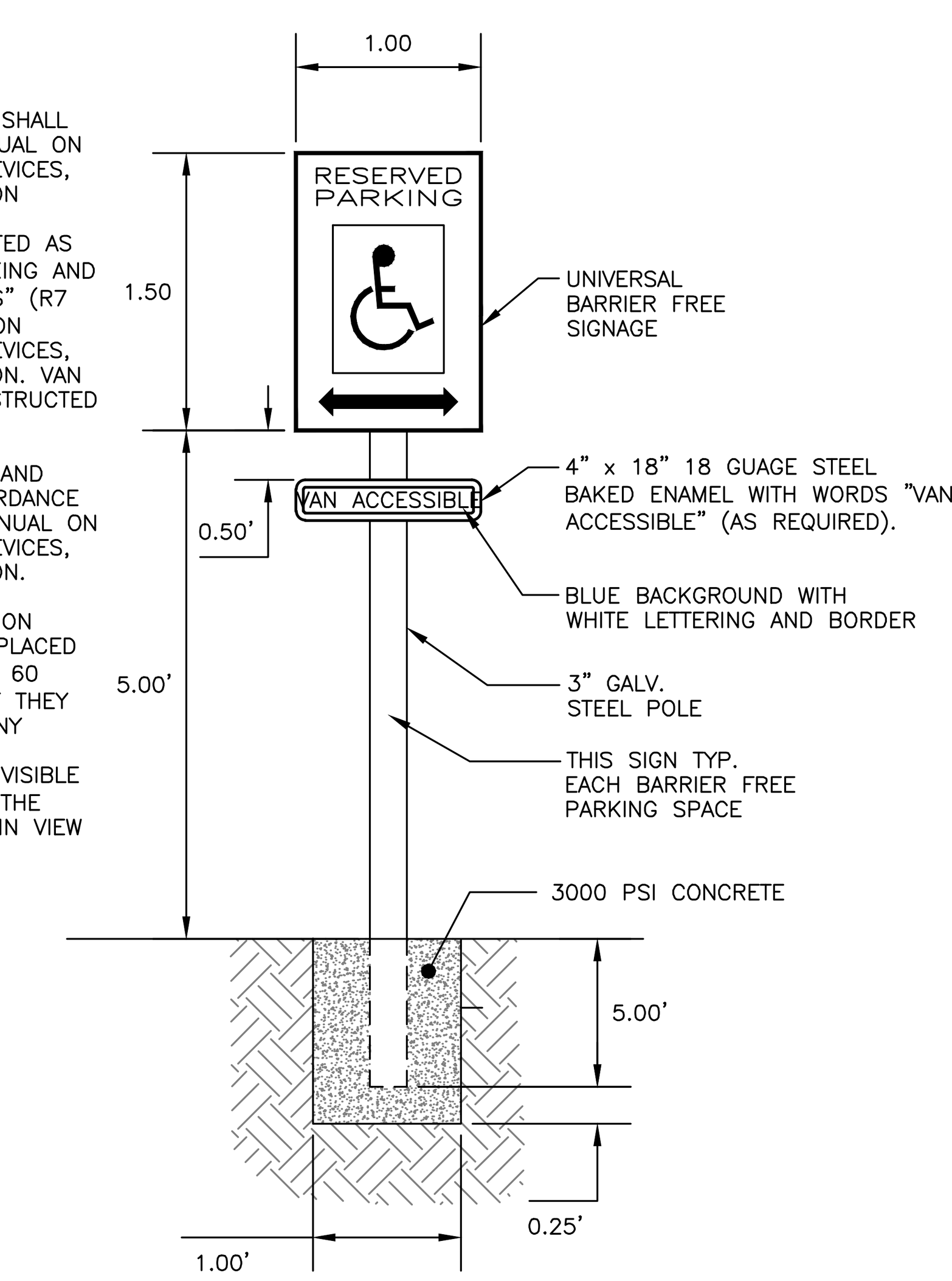


PIPE BOLLARD

NOT TO SCALE

NOTES:

1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7-8 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION. VAN ACCESSIBILITY SHALL BE CONSTRUCTED AS SIGN R7-8a OR R7-8b.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
4. SIGN SHALL BE INSTALLED ON BUILDING. SIGNS SHOULD BE PLACED AT SUCH A HEIGHT (AT LEAST 60 INCHES ABOVE SURFACE) THAT THEY DO NOT GET OBSCURED BY ANY PARKED VEHICLES OR OTHER OBSTRUCTIONS AND MUST BE VISIBLE FROM THE DRIVER'S SEAT OF THE VEHICLE AND LOCATED RIGHT IN VIEW OF PARKING.

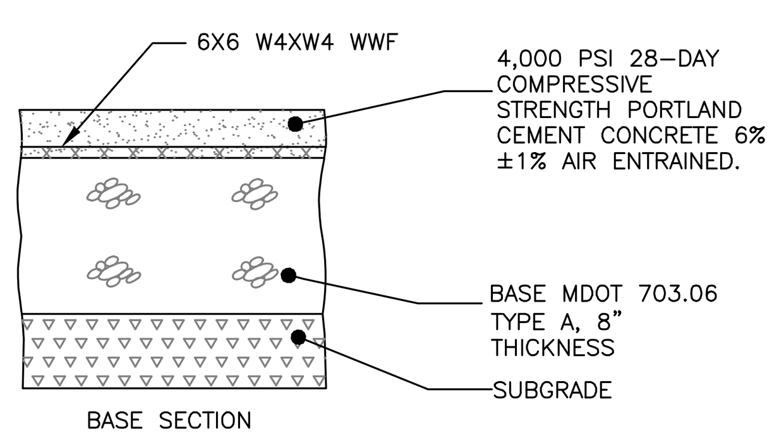


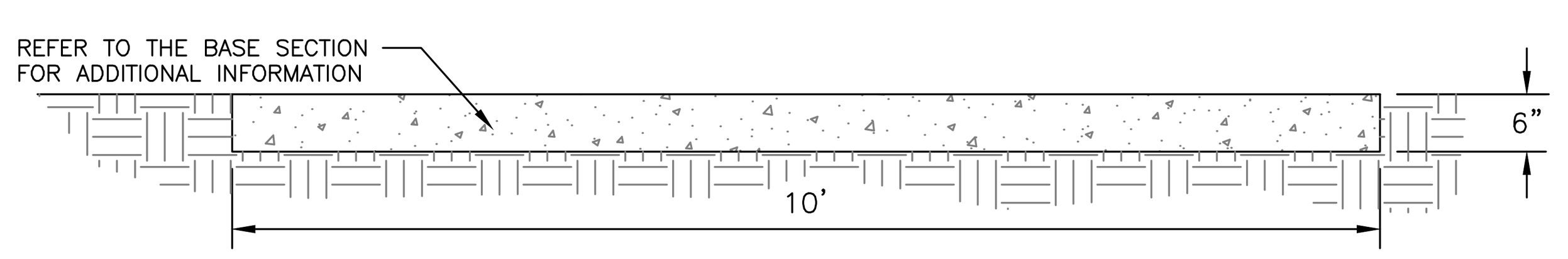
BARRIER FREE PARKING SIGN

NOT TO SCALE

NOTES:

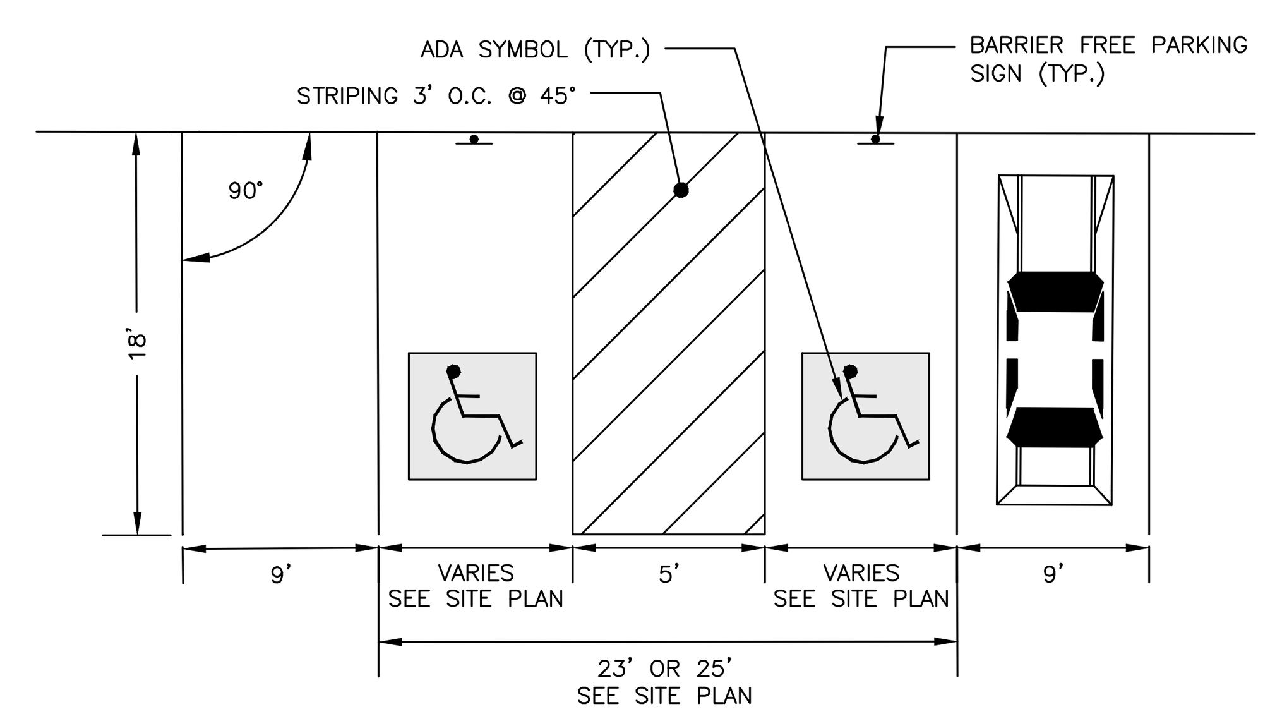
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
2. FINISH WITH A STIFF, COARSE, FIBER BROOM.





CONCRETE PAD DETAIL

NOT TO SCALE



PARKING SPACE DIMENSIONS

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: SITE DETAILS - 2

PROJECT NAME/ADDRESS: WHITE ROCK TERRACE - SKYVIEW DRIVE

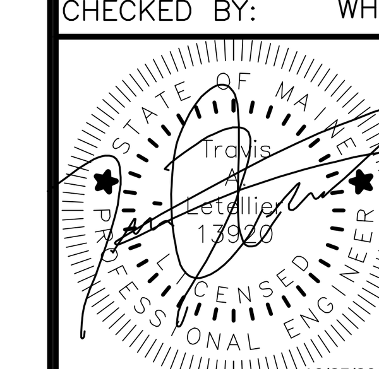
CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

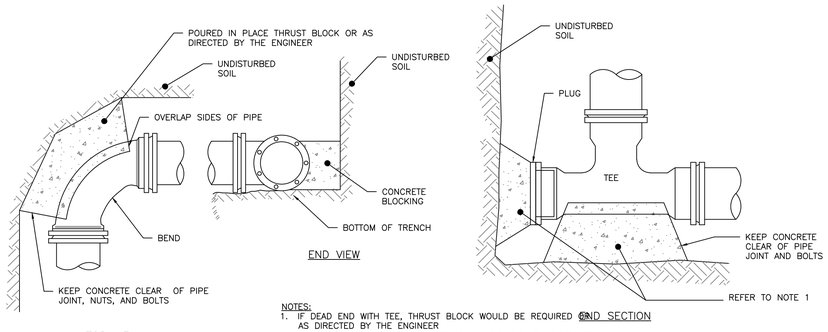
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS



DRAWING NO.

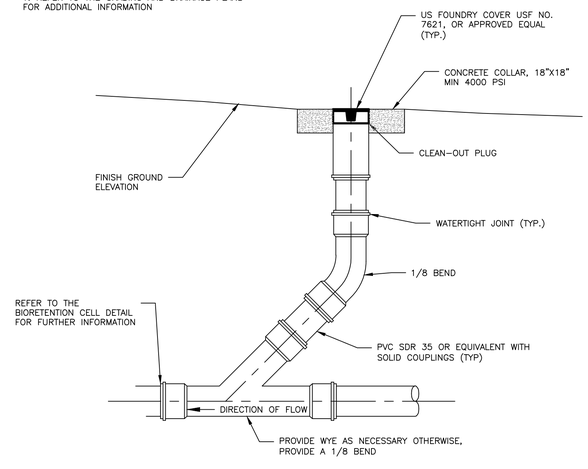
C-41



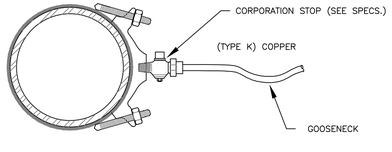
NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED ON ALL SIDES AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

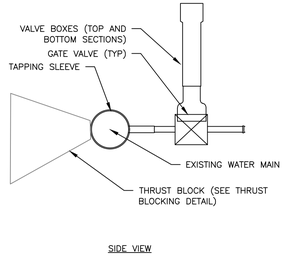
DESIGN NOTES:
1. REFER TO THE GRADING AND DRAINAGE PLANS FOR ADDITIONAL INFORMATION



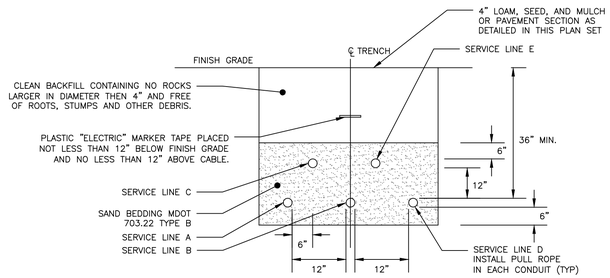
CLEANOUT DETAIL WITH CONCRETE COLLAR
NOT TO SCALE



SERVICE SADDLE: 4" C.C. THREAD
NOT TO SCALE



TAPPING SLEEVE AND VALVE
NOT TO SCALE

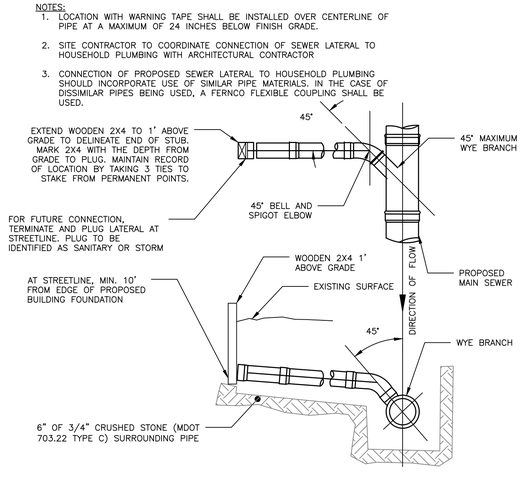


CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	2-4"	SCHEDULE 40 PVC	COMMUNICATION	–
D	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARE	SEE NOTE 1
E	2-4"	SCHEDULE 40 PVC	CABLE	–

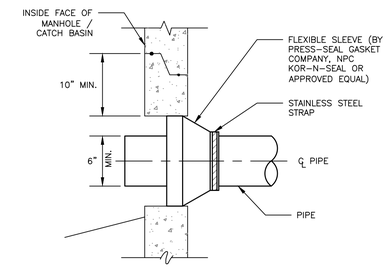
NOTES:
1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE TOWN RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:
1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO HOUSEHOLD PLUMBING WITH ARCHITECTURAL CONTRACTOR
3. CONNECTION OF PROPOSED SEWER LATERAL TO HOUSEHOLD PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

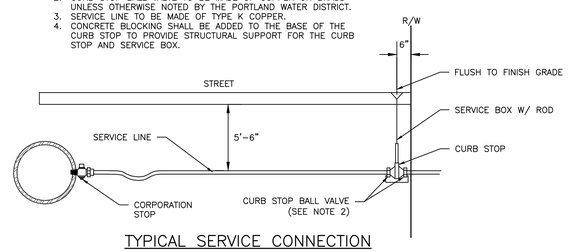


SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



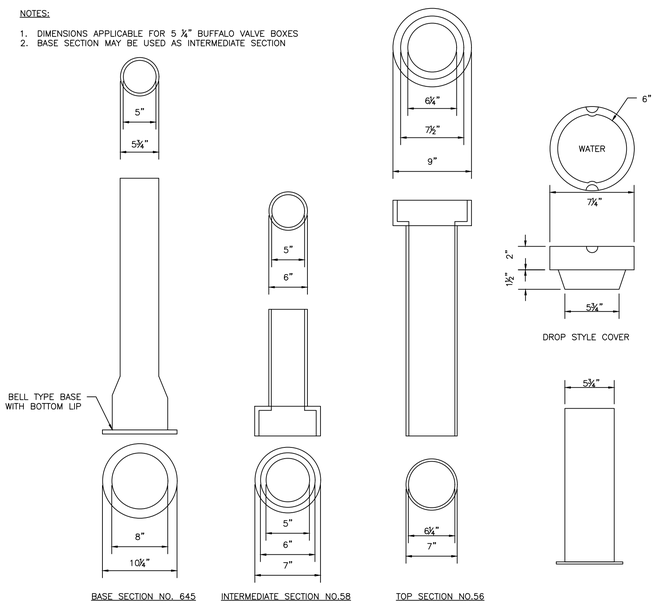
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE

NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES MUST COMPLY WITH THE PORTLAND WATER DISTRICT (PWD) SPECIFICATIONS.
2. CURB STOP BALL VALVE TO BE MADE OF COPPER OR BRASS UNLESS OTHERWISE NOTED BY THE PORTLAND WATER DISTRICT.
3. SERVICE LINE TO BE MADE OF TYPE K COPPER.
4. CONCRETE BLOCKING SHALL BE ADDED TO THE BASE OF THE CURB STOP TO PROVIDE STRUCTURAL SUPPORT FOR THE CURB STOP AND SERVICE BOX.



TYPICAL SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. DIMENSIONS APPLICABLE FOR 5 ¼" BUFFALO VALVE BOXES
2. BASE SECTION MAY BE USED AS INTERMEDIATE SECTION



VALVE BOX & COVER
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: **UTILITY DETAILS – 1**

PROJECT NAME/ ADDRESS: **WHITE ROCK TERRACE – SKYVIEW DRIVE**

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY, 10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

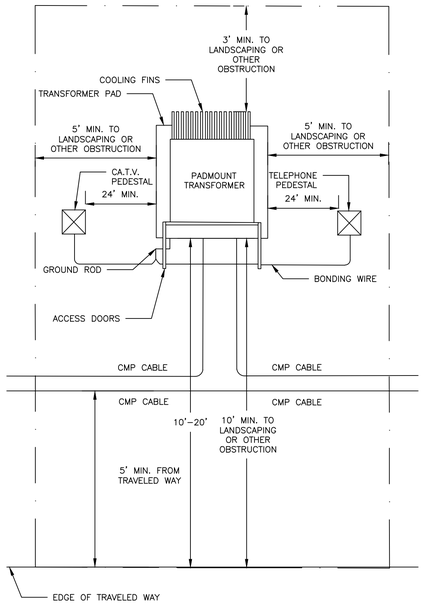
ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 MAIN STREET, SACO, MAINE 04101
PO BOX 3437, PORTLAND, ME 04104
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

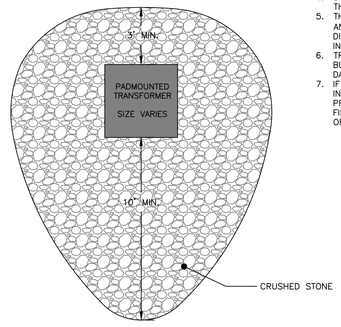
STATE OF MAINE — WILLIAM H. SCHOFIELD — 10125 — REGISTERED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.
C-42



PAD MOUNTED TRANSFORMER

NOT TO SCALE

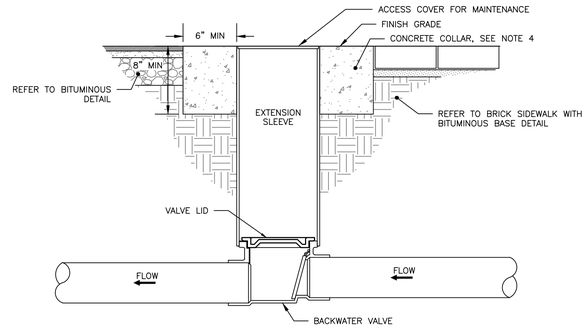


NOTES:

1. WHERE DANGER OF PLOW OR TRAFFIC DAMAGE EXISTS, BARRIERS CONSISTING OF CONCRETE FILLED 6 INCH IPS STEEL POSTS SET 4 FEET DEEP SHALL BE PROVIDED FOR PROTECTION (PRESSURE TREATED 6X6 INCH MIN. TIMBER POSTS MAY BE SUBSTITUTED IN RESIDENTIAL AREAS). POSTS SHALL NOT INTERFERE WITH TRANSFORMER ACCESS. GENERALLY THE POSTS SHALL BE LOCATED NEAR THE CORNERS OF THE TRANSFORMERS WITH A MINIMUM CLEARANCE OF 2' FROM EDGE OF POST TO EDGE OF PAD.
2. THE SETBACKS DEPICT CLEARANCES FROM OBSTRUCTIONS INCLUDING TREES, SHRUBS, AND FENCES.
3. THERE SHALL BE NO OPENINGS IN THE BUILDING WALL IN BACK OF, BESIDE, OR OVER THE TRANSFORMER UNLESS THE TRANSFORMER IS A MIN. OF 10 FEET FROM THE BUILDING.
4. SIDE CLEARANCES FROM DOORS OR WINDOWS SHALL NOT BE LESS THAN 10 FEET.
5. THERE SHALL BE A MIN. OF 10 FEET BETWEEN THE TRANSFORMER AND ANY GAS METER/REGULATOR, GAS RELIEF VALVE, GAS VENT DISCHARGE, GAS FILLING CONNECTION, OR PROPANE TANK. SOME INSURANCE COMPANIES MAY REQUIRE INCREASED CLEARANCES.
6. TRANSFORMER SHALL BE LOCATED FAR ENOUGH AWAY FROM BUILDING OVERHANGS SO THAT THEY WILL NOT BE SUBJECT TO DAMAGE BY FALLING ICE AND SNOW.
7. IF TRANSFORMER IS NOT INSTALLED IMMEDIATELY UPON THE INSTALLATION OF THE CABLE IN THE PAD, THE CONTRACTOR SHALL PROVIDE AND INSTALL A CMP APPROVED CONCRETE, STEEL, OR FIBERGLASS COVER OVER THE PAD OPENING TO ELIMINATE EXPOSURE OF THE CABLE.

CMP TRANSFORMER SETBACKS

NOT TO SCALE



NOTES:

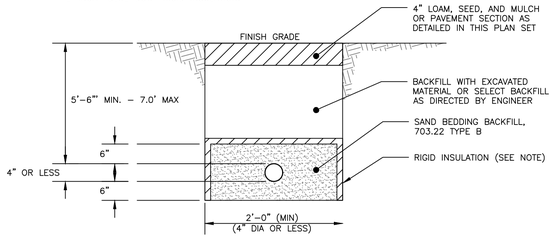
1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF BIDDEFORD TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

BACKFLOW VALVE ASSEMBLY

NOT TO SCALE

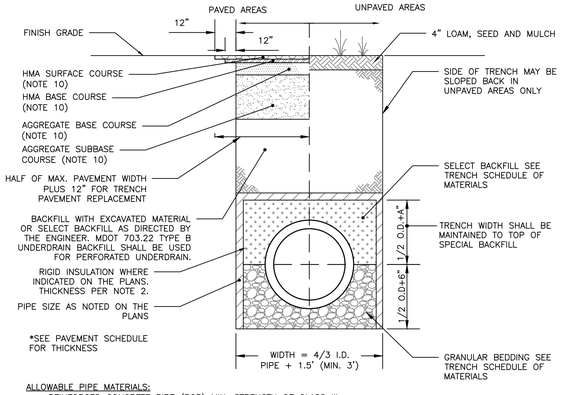
NOTES:

1. THE WATER TRENCH SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARD DETAILS & SPECIFICATIONS.
2. IF LESS THAN 5'-6" OF COVER IS POSSIBLE ADD TWO LAYERS OF 2-INCH "BLUE DOW" RIGID INSULATION.



WATER SERVICE TRENCH SECTION DETAIL

NOT TO SCALE



SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

ALLOWABLE PIPE MATERIALS:

- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF BIDDEFORD TECHNICAL STANDARDS FIGURE II-2.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF. SD) SHALL BE ORIENTED UP.
5. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
6. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
7. MINIMUM COVER
   7.1. 2'-0" - STORM DRAIN
   7.2. 5'-0" - SEWER
8. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
9. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF BIDDEFORD ROW.
10. THICKNESS AS NOTED BY SURFACE DETAILS
11. ALL PROPOSED TREES PLANTED WITHIN 10' OF A STORM OR SEWER PIPE SHALL BE PLANTED AT A DEPTH NO GREATER THAN 3' DEEP. PERMEABLE LANDSCAPE FABRIC SHALL CREATE A ROOT BARRIER AROUND THE PIPES. CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE DRAWINGS.

STORM DRAIN AND SEWER TYPICAL TRENCH SECTION

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: UTILITY DETAILS - 2

PROJECT NAME/ ADDRESS: WHITE ROCK TERRACE - SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY, 10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 3707, LEWISTON, MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

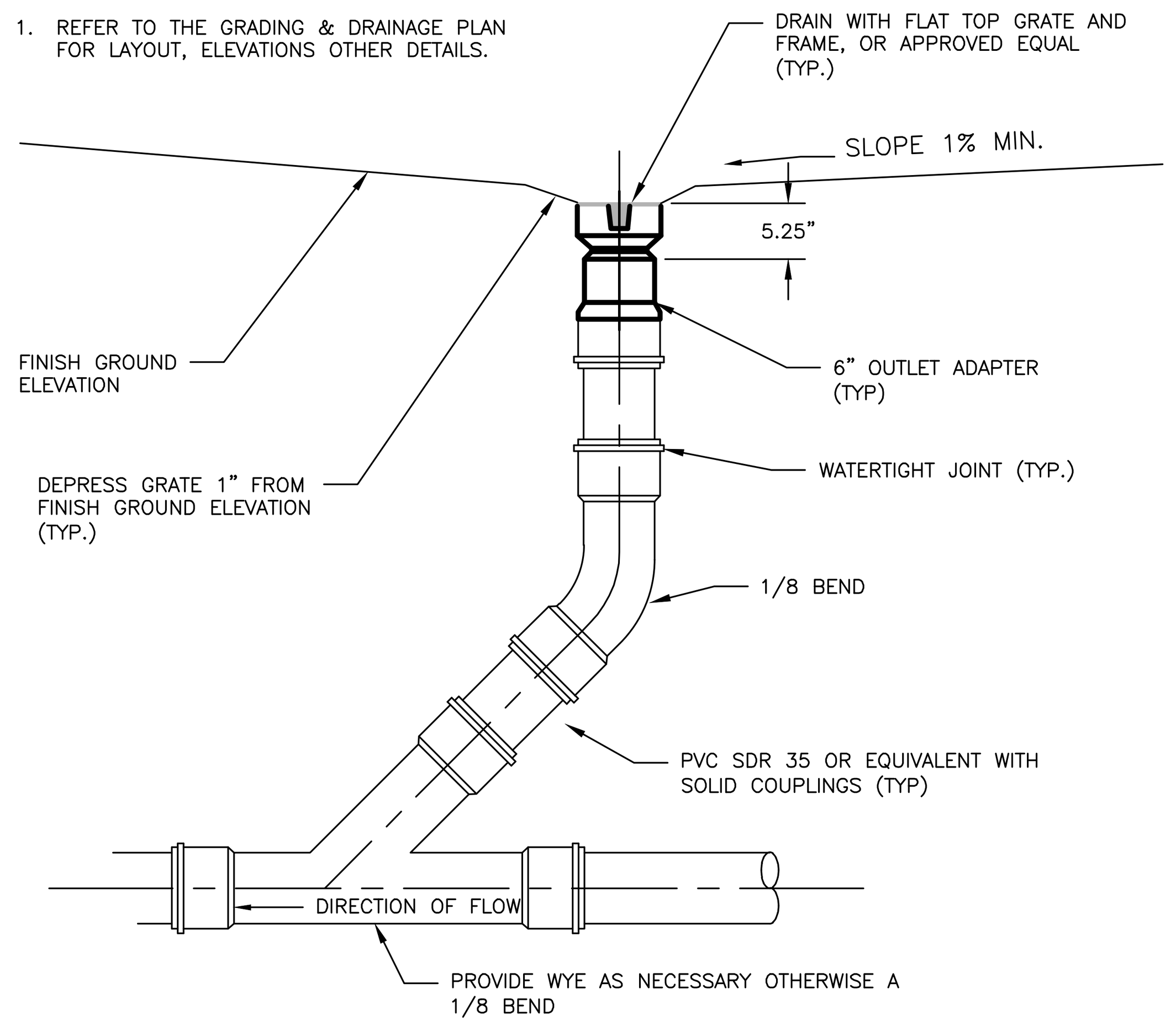
STATE OF MAINE · TIMOTHY A. LABBE · 10123 · REGISTERED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.

C-43

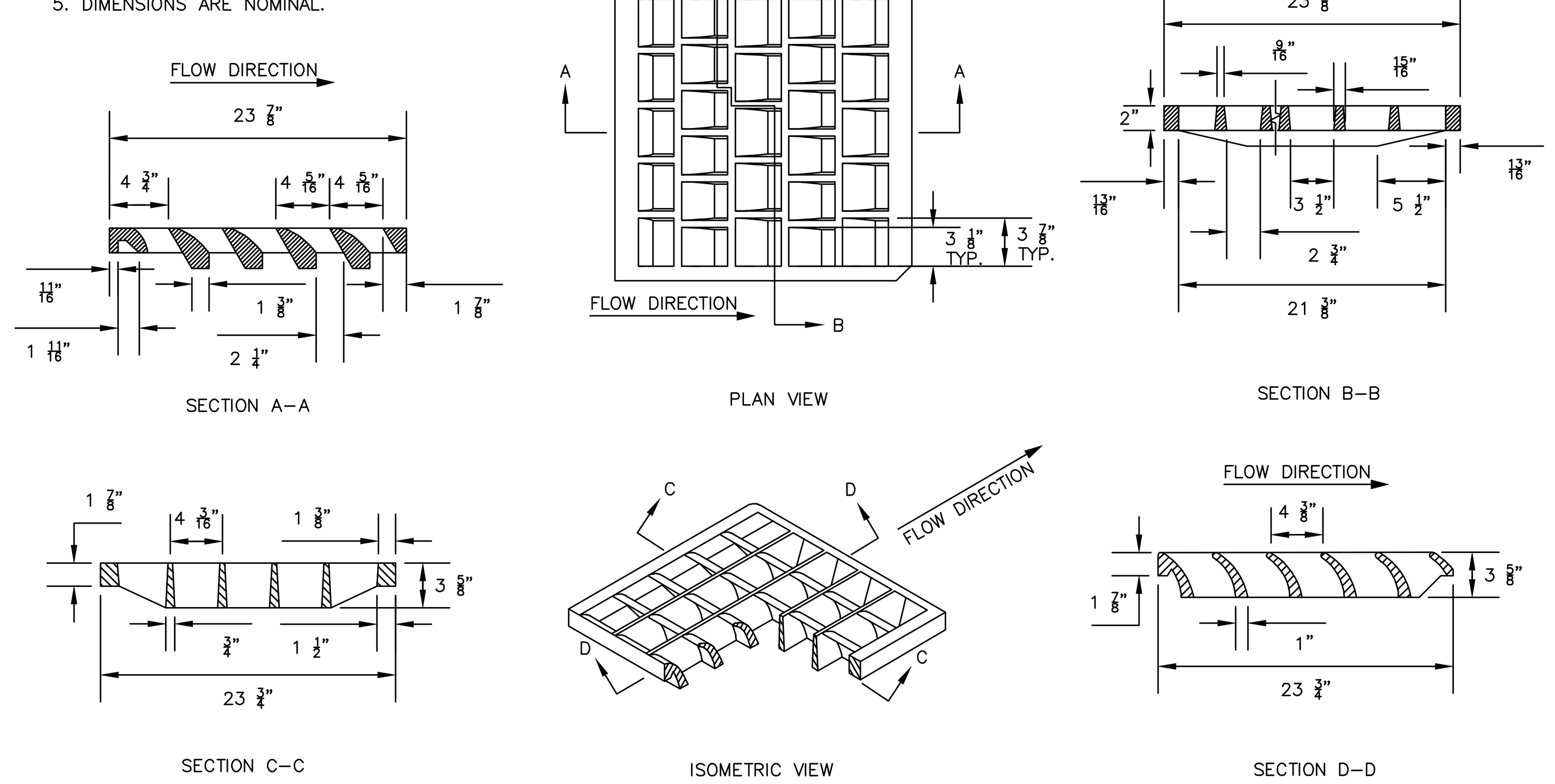
NOTES:

1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.

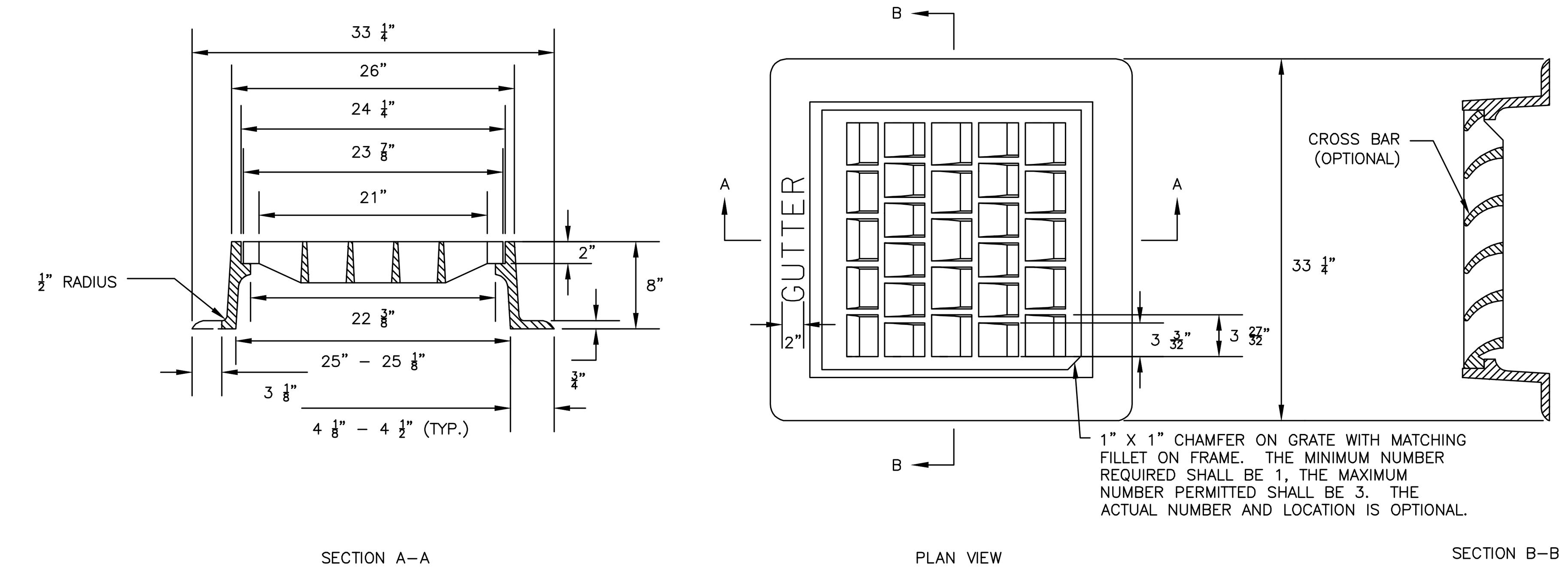


INLINE DRAIN DETAIL WITH GRATE
NOT TO SCALE

NOTES:
1. TYPE "A" FRAMES ARE TO HAVE 3 FLANGES.
2. TYPE "B" FRAMES ARE TO HAVE 4 FLANGES.
3. THE WORD "GUTTER" IS TO BE MOLDED INTO THE BACK FLANGE – TYPE "B" ONLY.
4. FRAMES AND GRATES ARE TO BE GRAY CAST IRON OR DUCTILE IRON CONFORMING TO AASHTO M306.
5. DIMENSIONS ARE NOMINAL.



GRATE DETAIL



FRAME DETAIL

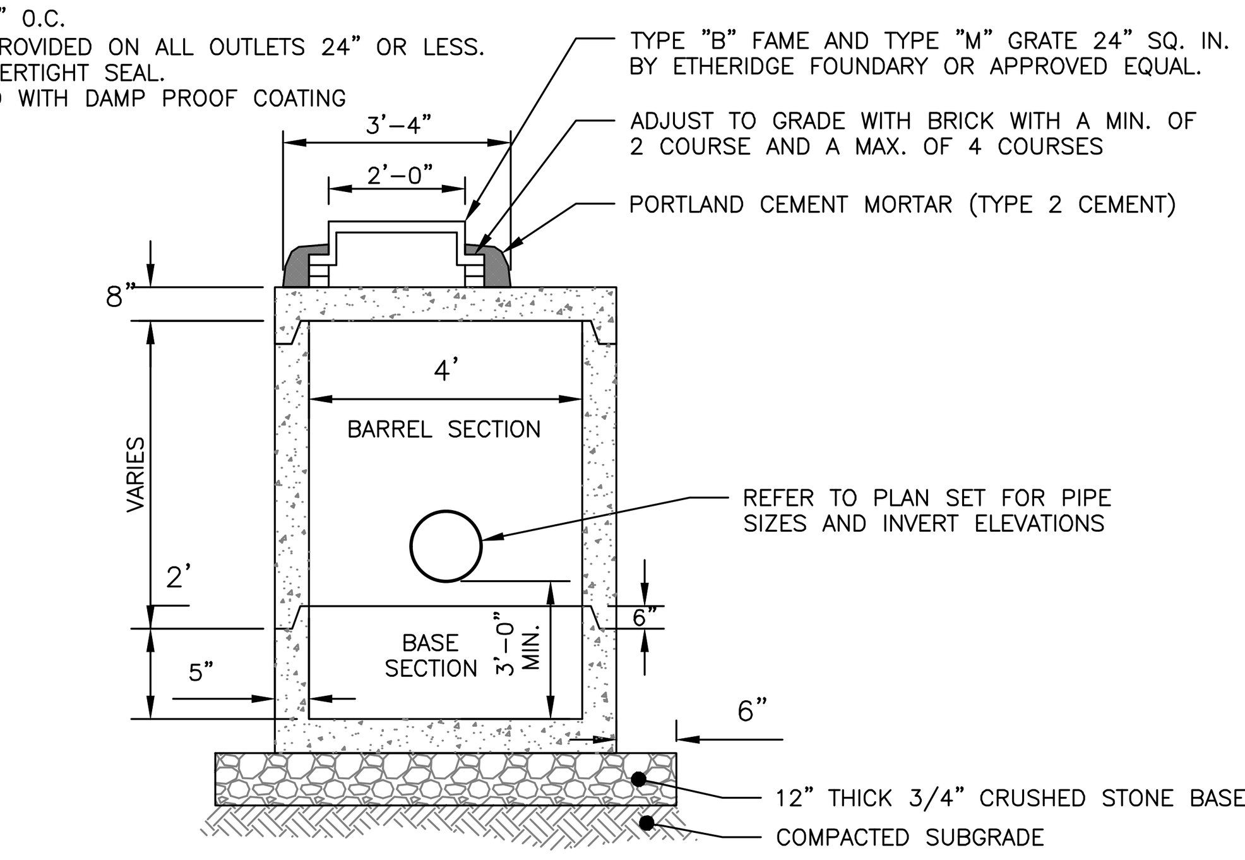
CATCH BASIN FRAME & GRATE – SQUARE
NOT TO SCALE

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLD AND SHALL HAVE ONE ⅞" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C–32–63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP PER DETAIL.

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

NOTES:

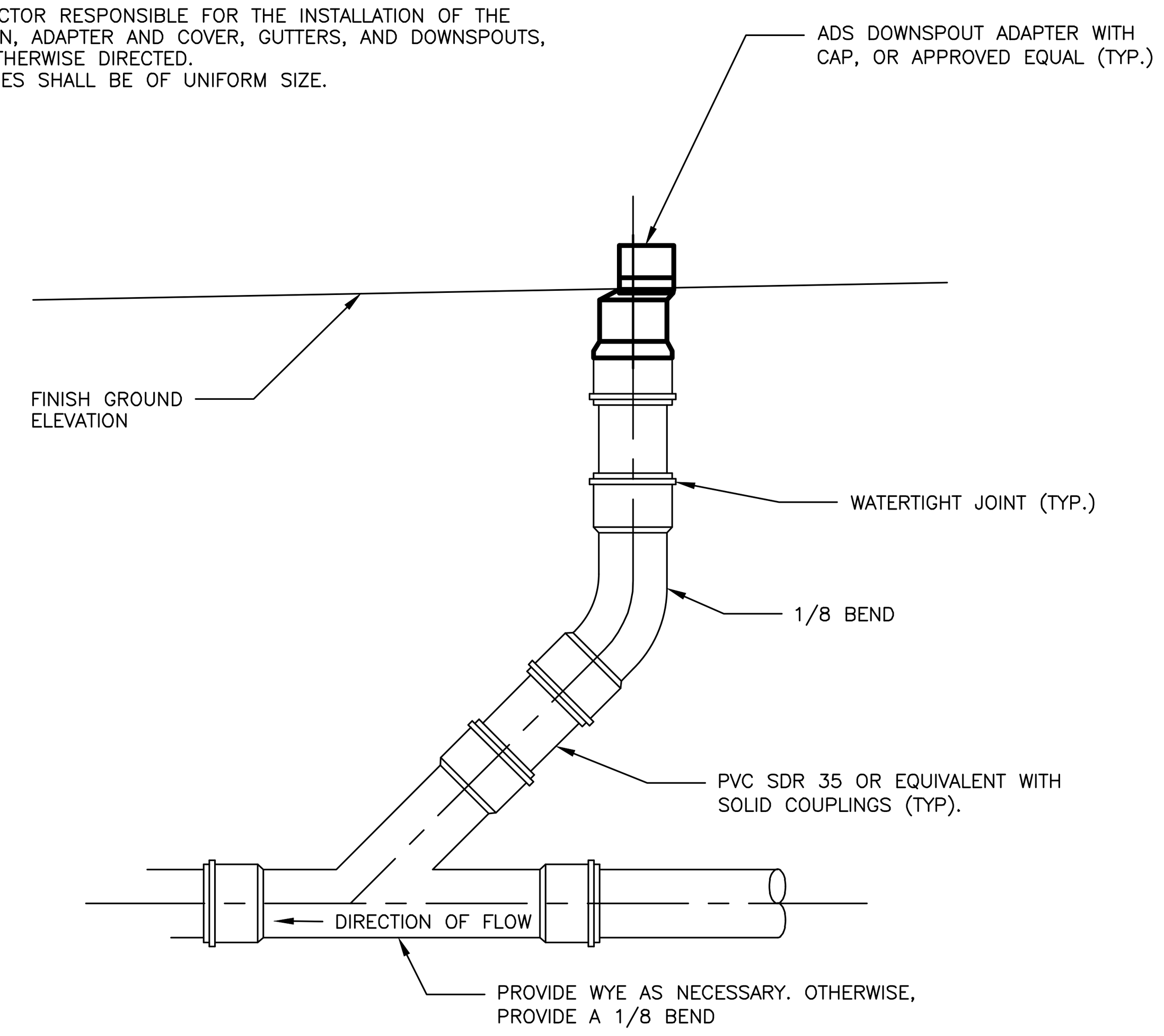
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H–20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM–C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL OUTLETS 24" OR LESS.
8. ALL PIPES TO HAVE A WATERTIGHT SEAL.
9. STRUCTURE TO BE APPLIED WITH DAMP PROOF COATING



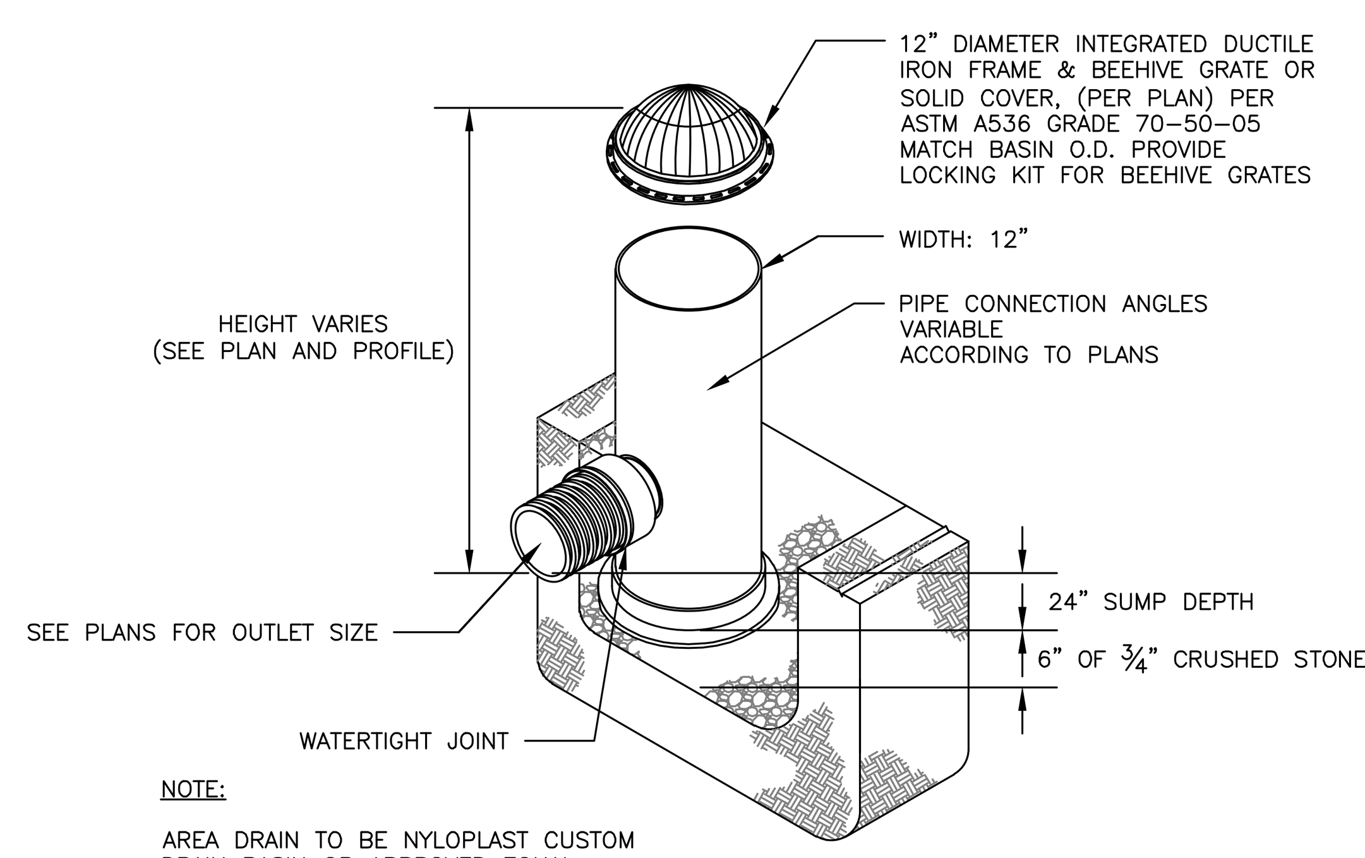
4'–0" PRECAST CATCH BASIN WITH FLATTOP
NOT TO SCALE

NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.



ROOF DRAIN DETAIL
NOT TO SCALE



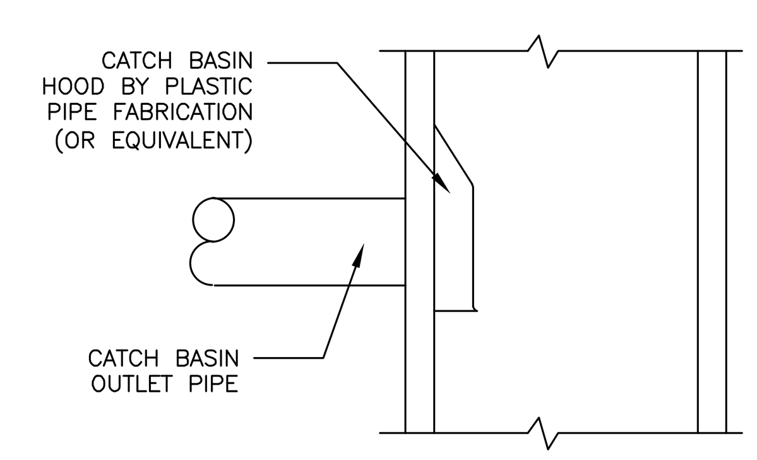
NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

BIOCELL OVERFLOW DETAIL
NOT TO SCALE

NOTES:

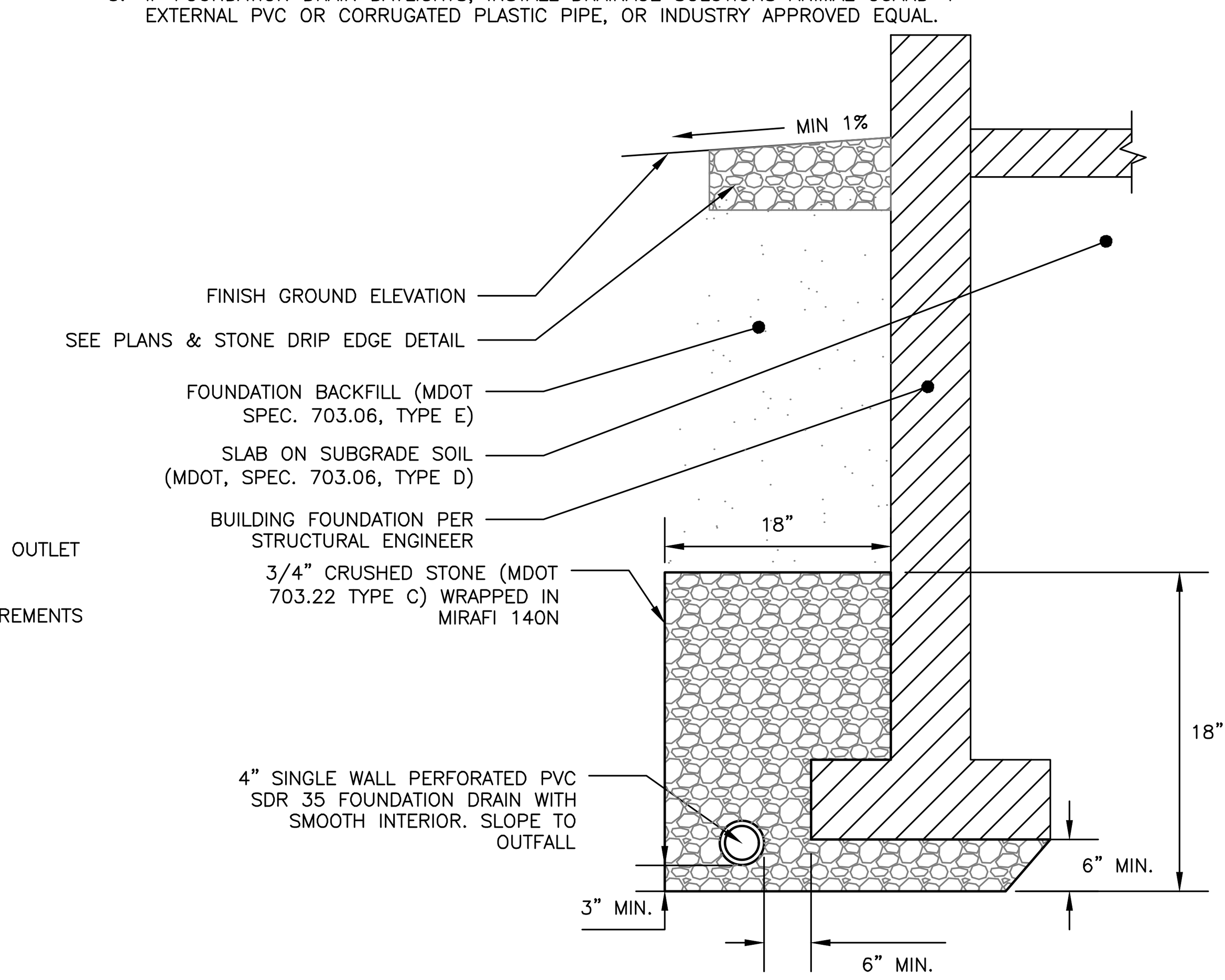
1. INSTALL CATCH BASIN HOODS IN ALL CATCH BASINS WITH A 12" OR 15" OUTLET PIPE.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS



CATCH BASIN HOOD DETAIL
NOT TO SCALE

NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. INSTALL STONE DRIP EDGE IN A LOCATIONS SUBJECT TO ROOF RUNOFF. WIDTH SHALL BE A MIN. 12" BEYOND THE PROJECTION OF THE ROOF EVE.
4. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.
5. IF FOUNDATION DRAIN DAYLIGHTS, INSTALL DRAINAGE SOLUTIONS ANIMAL GUARD 4" EXTERNAL PVC OR CORRUGATED PLASTIC PIPE, OR INDUSTRY APPROVED EQUAL.



FOUNDATION DRAIN DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: DRAINAGE DETAILS

PROJECT NAME/ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

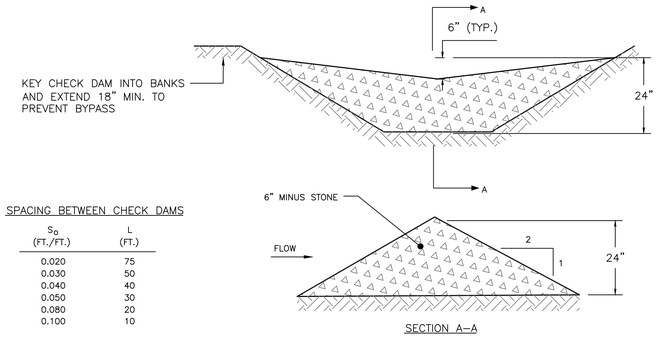
STATE OF MAINE
Travis A. Letellier
13923
LICENSED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.

C-44

NOTES:

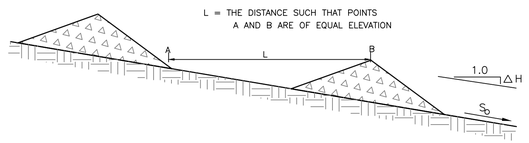
1. CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE.
2. THE AREA AROUND EACH CHECK DAM SHOULD BE FREE OF DEBRIS.
3. A STONE CHECK DAM SHOULD BE COMPRISED OF WELL-GRADED CRUSHED ROCK WITH A MAXIMUM SIZE OF 6 INCHES AND A MINIMUM STONE SIZE OF 1 INCH. LARGER STONES MAY BE USED ON STEEP SLOPES.
4. THE MAXIMUM HEIGHT OF A STONE CHECK DAM SHOULD BE 2 FEET WITH A 6-INCH DEPRESSION AT ITS CENTER FOR OVERFLOW. THE EDGES OF THE DAM SHOULD BE KEYED ONTO THE EMBANKMENTS TO PREVENT SIDE EROSION.
5. MECHANICAL PLACEMENT FOLLOWED BY HAND PLACEMENT WILL BE NECESSARY TO ACHIEVE A TIGHT MASS WITHIN THE CHANNEL AND TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES.
6. ANY EROSION DOWNGRADIENT OR AROUND THE EDGES OF STONE CHECK DAMS SHOULD BE CORRECTED IMMEDIATELY.
7. THE CHECK DAMS MAY BE REMOVED WHEN THE SWALE IS STABILIZED WITH VEGETATION (90% COVERAGE)



SPACING BETWEEN CHECK DAMS

S_o (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

SECTION A–A

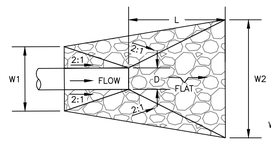


STONE CHECK DAM
NOT TO SCALE

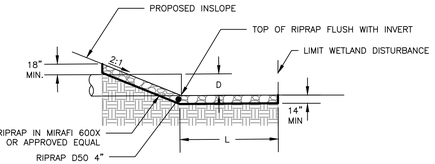
SCHEDULE – SINGLE CULVERT			
CULVERT DIAMETER (D)	LENGTH (L)	WIDTH (W1)	WIDTH (W2)
D	4.5D	3D	D+L
12"	4.5'	3'	7.5'
15"	5.6'	3.7'	9.3'

NOTES:

1. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26 EXCEPT SIZE SHALL BE AS SHOWN.
2. REFERENCE FOR ADDITIONAL INFORMATION: BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL – CULVERT INLET/OUTLET PROTECTION.



PLAN VIEW

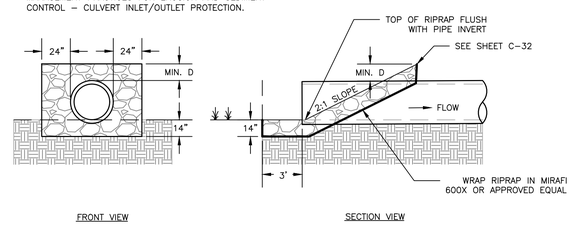


SECTION VIEW

RIPRAP OUTLET APRON DETAIL
NOT TO SCALE

NOTES:

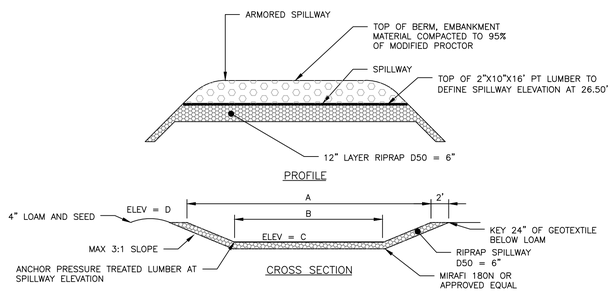
1. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26 EXCEPT SIZE SHALL BE AS SHOWN.
2. REFERENCE FOR ADDITIONAL INFORMATION: BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL – CULVERT INLET/OUTLET PROTECTION.



FRONT VIEW

SECTION VIEW

RIPRAP INLET APRON DETAIL
NOT TO SCALE

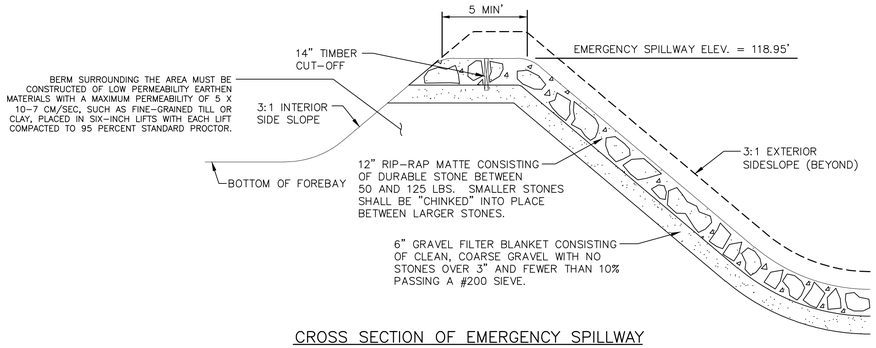


PROFILE

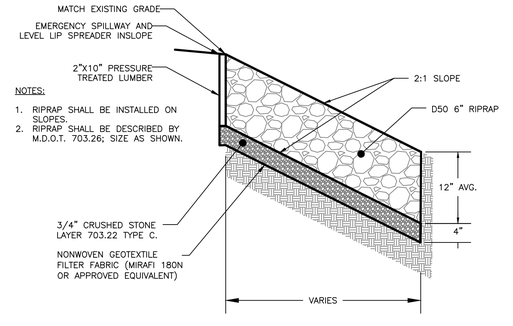
CROSS SECTION

SCHEDULE		
	ITEM	DIMENSION/ELEVATION
A	SPILLWAY WIDTH (TOP)	26'
B	SPILLWAY WIDTH (BOT)	20'
C	SPILLWAY INVERT ELEV.	118.75'
D	TOP OF BERM ELEV.	119.75'

OVERFLOW SPILLWAY DETAIL
NOT TO SCALE



CROSS SECTION OF EMERGENCY SPILLWAY
NOT TO SCALE



NOTES:

1. RIPRAP SHALL BE INSTALLED ON SLOPES.
2. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26; SIZE AS SHOWN.

RIPRAP CROSS-SECTION
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
TOWN SUBMISSION	TAL	10/25/22
COMMENT RESPONSE	TAL	11/28/22

DRAWING NAME: DRAINAGE DETAILS – 2

PROJECT NAME/ ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY, 10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

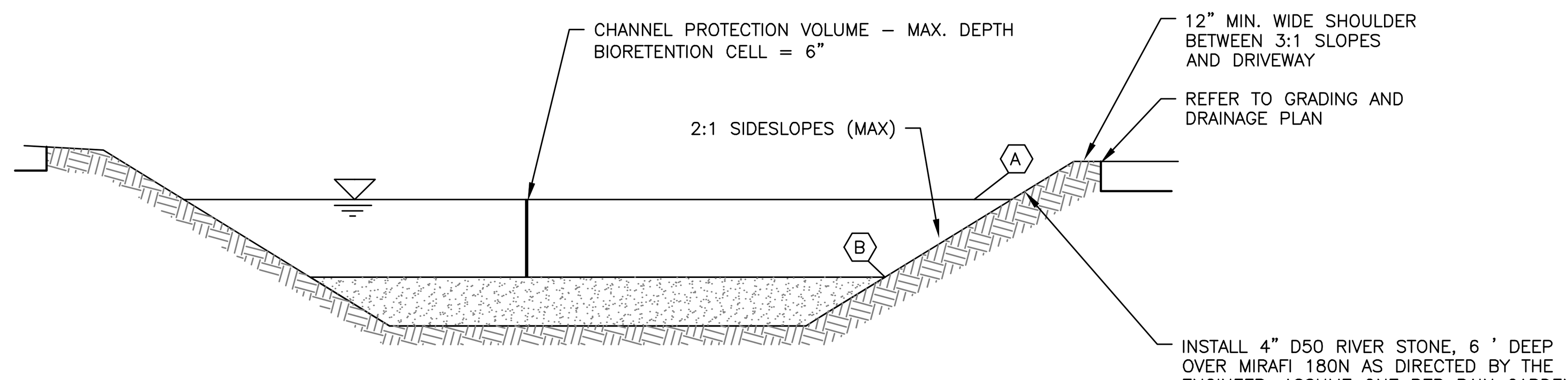
ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC.
70 JOHN ROAD, SUITE 2
CAMP ELLIS, MAINE 04101
PO BOX 3257
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

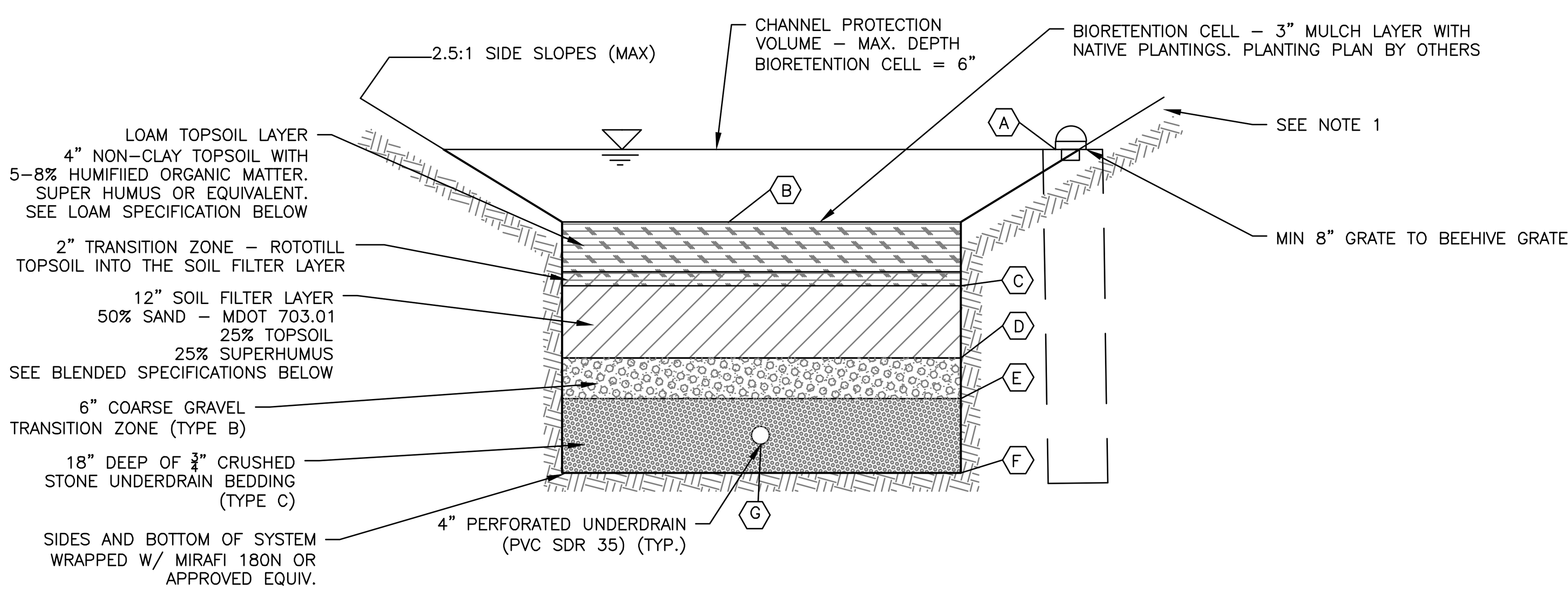
STATE OF MAINE — TIMOTHY A. LABRECQUE — 10/25/2022 — REGISTERED PROFESSIONAL ENGINEER

DRAWING NO.
C-45

SCHEDULE	
ITEM	BIOCELL
(A) PROPOSED OVERFLOW	118.60'
(B) TOP OF LOAM TOPSOIL LAYER	118.00'
(C) TOP OF FILTER	117.50'
(D) TOP OF TRANSITION GRAVEL	116.50'
(E) TOP OF CRUSHED STONE	116.00'
(F) BOTTOM OF CRUSHED STONE	115.50'
(G) UNDERDRAIN INVERT	115.90'



CROSS SECTION



SIDE VIEW

NOTES:
1. THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX.

2. LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.

3. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.

4. MINIMUM UNDERDRAIN SLOPE 0.0025.

5. TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO CONSTRUCTION. ALL TESTING AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MAINE DEP – TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.

6. ACORN ENGINEERING, INC., RECOMMENDS THE SOIL FILTER LAYER BE SUPPLIED BY JONES ASSOCIATES, INC., AUBURN, ME.

RAIN GARDEN CELL DETAIL
NOT TO SCALE

6" SOIL FILTER BED – LOAM TOPSOIL SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70

1. CLAY FRACTION <2% PASSING THE #200 SIEVE.

2. LOAM SHALL BE LOOSE AND FRIABLE AND SHALL BE FREE FROM ADMIXTURE OF SUBSOIL, REFUSE, LARGE STONES, CLODS OR ROOTS OR RHIZOMES OR "WITCH GRASS" OR OTHER UNDESIRABLE GRASSES.

SOIL FILTER BED – SUPERHUMUS OR EQUIV. SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
#200	0–5

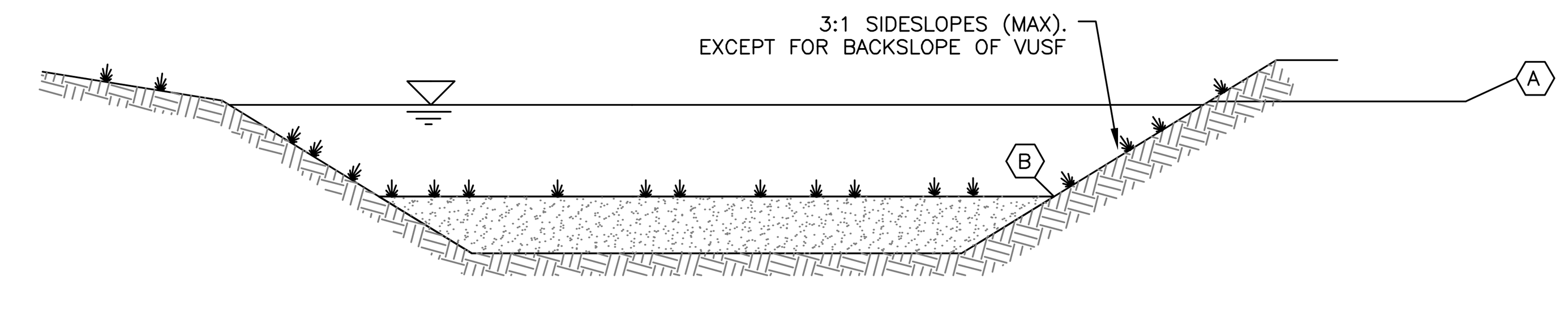
MINIMAL CLAY CONTENT, NO MORE THAN 3–5% PASSING #200 SIEVE

12" SOIL FILTER BED – BLENDED SAND, LOAM, SUPERHUMUS SIEVE ANALYSIS	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15

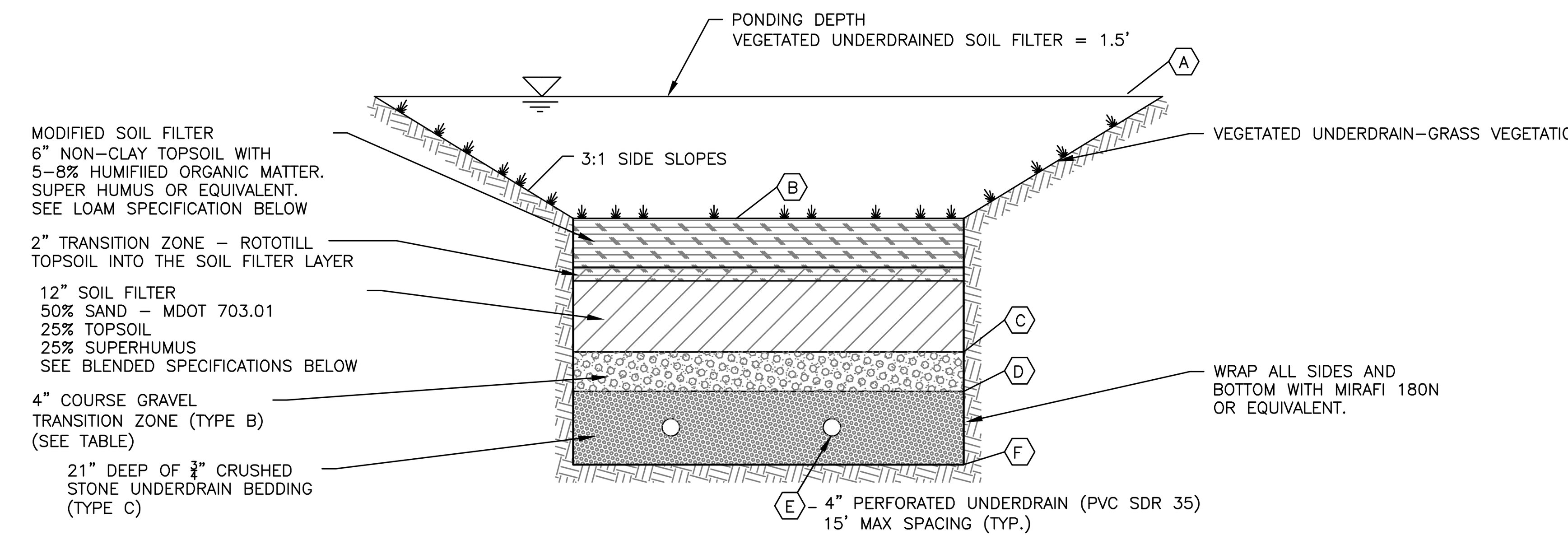
1. CLAY FRACTION <2% PASSING THE #200 SIEVE.
2. SUPERHUMUS OR EQUIVALENT

SOIL FILTER BED – TRANSISTION ZONE (TYPE B)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

SOIL FILTER BED – UNDERDRAIN BEDDING (TYPE C)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90–100
3/8"	0–75
#4	0–25
#10	0–5



CROSS SECTION



SIDE VIEW

NOTES:

1. THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX. THE BOTTOM OF THE VEGETATED UNDERDRAIN SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX
2. LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.
3. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
4. THE SEDIMENT FOREBAY SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF THE SOIL FILTER AND INSPECTED AND MAINTAINED DURING CONSTRUCTION. MAINTENANCE SHALL INCLUDE REMOVAL OF ANY ACCUMULATED SEDIMENT.
5. A LANDSCAPE DESIGNER OR ARCHITECT SHOULD BE INVOLVED TO TO SELECT THE APPROPRIATE PLANTS FOR THE BIORETENTION CELL AND FOR THE SITE CONDITIONS. PLANTING PLAN BY OTHERS.
6. MINIMUM UNDERDRAIN SLOPE 0.0025 FT/FT TOWARDS THE OUTLET.
7. TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO CONSTRUCTION. ALL TESTING AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MAINE DEP – TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.

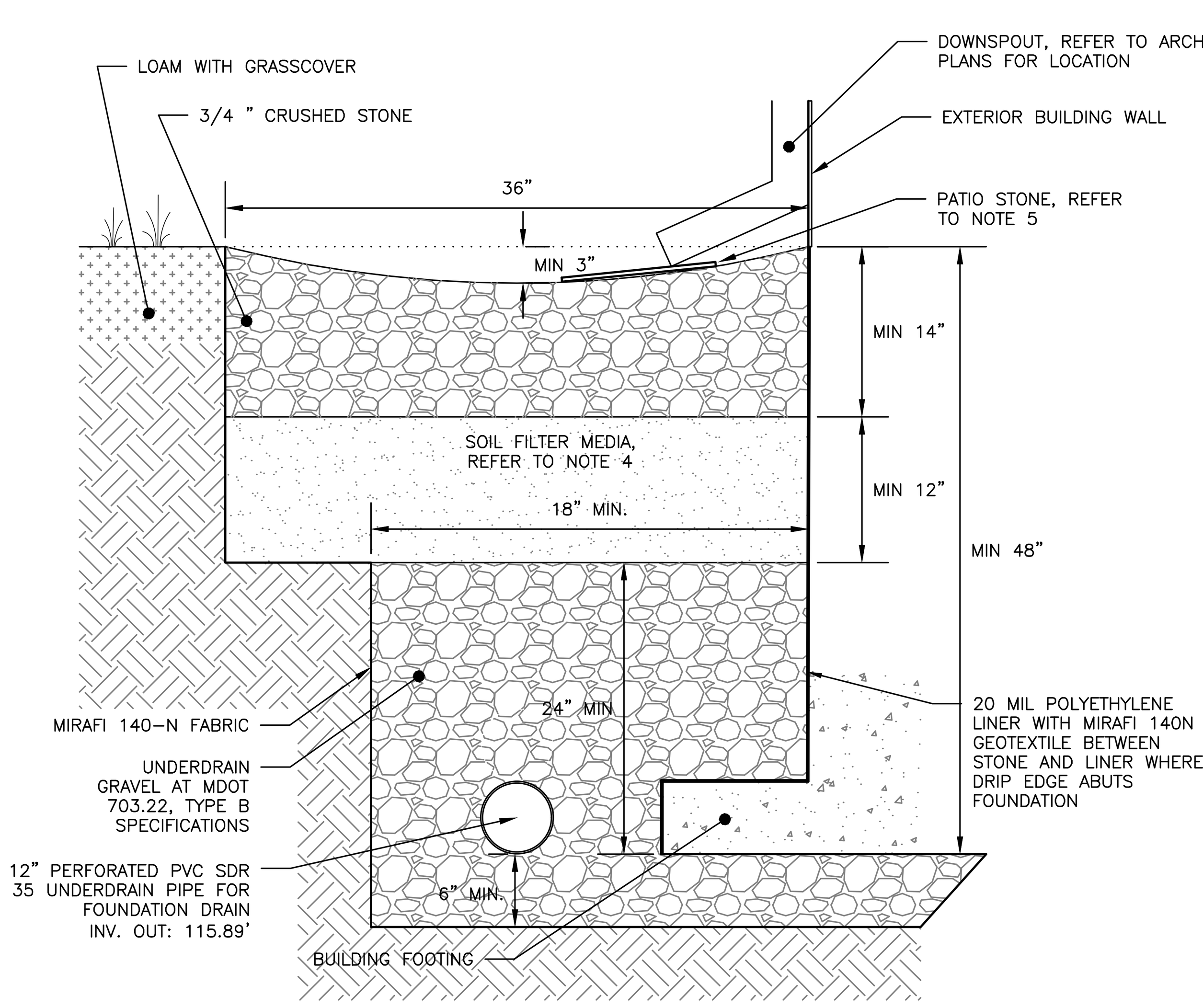
SCHEDULE	
ITEM	ELEV.
(A) OVERFLOW INVERT	118.60'
(B) TOP OF SOIL FILTER	117.10'
(C) TOP OF GRAVEL	115.43'
(D) TOP OF STONE	115.10'
(E) UNDERDRAIN INVERT	114.00'
(F) BOTTOM OF STONE	113.35'

VEGETATED UNDERDRAINED SOIL FILTER DETAIL
NOT TO SCALE

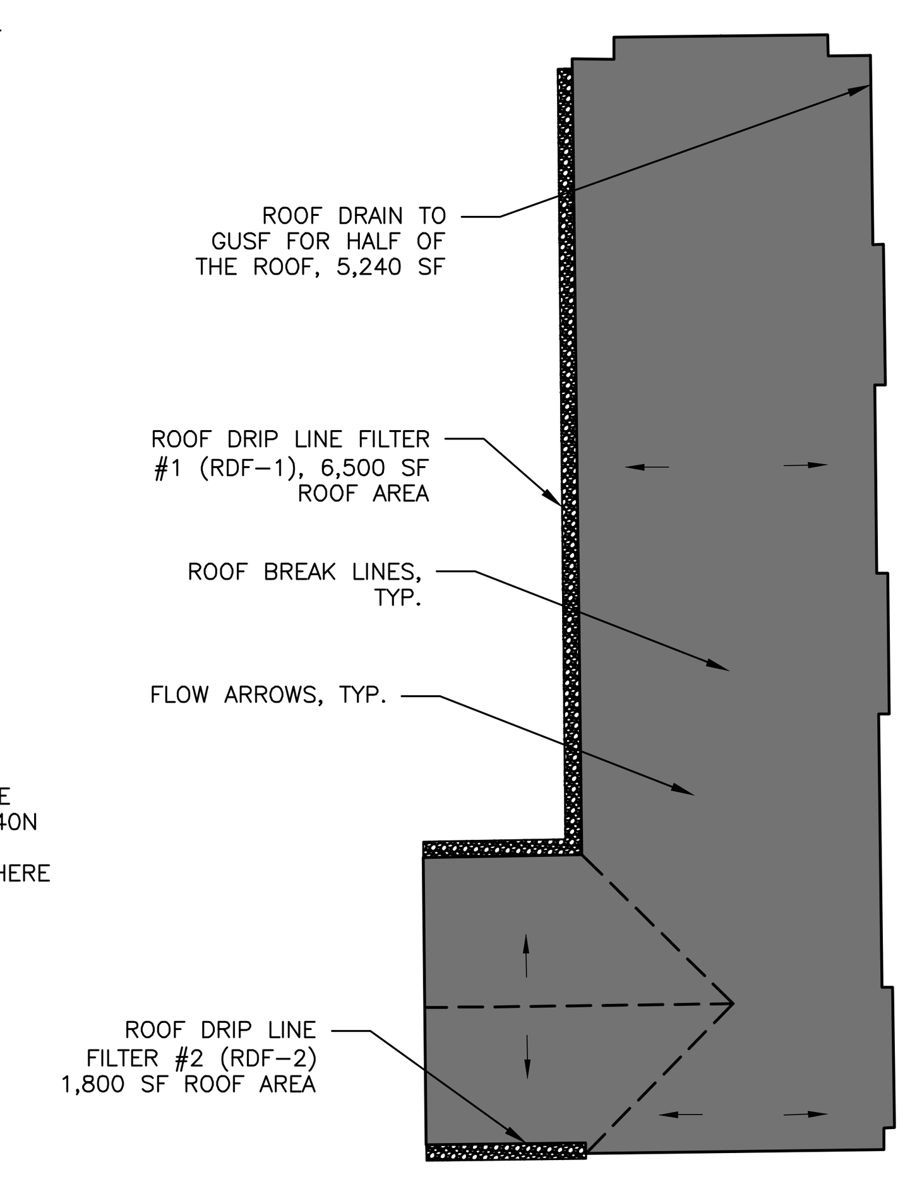
NOTES:

1. FINAL DESIGN MUST COMPLY WITH ALL APPROPRIATE SPECIFICATIONS FROM THE STORMWATER MANAGEMENT FOR MAINE BMP MANUAL, CHAPTER 7.
2. THE CRUSHED STONE RESERVOIR BED MUST CONSIST OF CRUSHED ROCK WITH A POROSITY OF 40%.
3. FOUNDATION BACKFILL MAY BE USED AS SOIL FILTER MEDIA AS LONG AS THE MATERIAL IS A MINERAL SOIL WITH BETWEEN 4–7% FINES (PASSING #200 SIEVE) AND IS 4" THICK AT MINIMUM.
4. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
5. PATIO STONE TO BE PLACED AS TO REDIRECT CONCENTRATED FLOW FROM DOWNSPOUT. CONTRACTOR TO FINALIZE STONE SIZE.

BMP SIZING TABLE					
ID	ROOF (SF)	TREATMENT VOLUME REQ. (SF)	AREA (SF)	DEPTH (FT)	TREATMENT VOLUME PROV. (SF)
RDF–1	6,500	541	525	2.58	550
RDF–2	1,800	150	90	4.17	150



SECTION VIEW



WHITE ROCK TERRACE SCHEMATIC PLAN VIEW

ROOF DRIPLINE FILTRATION DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: DRAINAGE DETAILS – 3
PROJECT NAME/ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE
CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

A C O R N ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

STATE OF MAINE
Travis A. Letellier
13920
LICENSED PROFESSIONAL ENGINEER
10/25/2022

DRAWING NO.
C-46

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 SKY VIEW DRIVE SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.
1.2.2 EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.
1.2.3 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.
1.2.4 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.

- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.

- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD BE RESHAPED AS NEEDED. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- Ø MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- Ø MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- Ø CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- Ø CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN SKY VIEW DRIVE.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P2O5–K2O) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	LBS / 1,000 SF	RECOMMENDED SEEDING DATES
WINTER RYE	112	2.6	8/15 TO 10/1
OATS	80	1.8	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYEGRASS	40	0.9	4/1 TO 7/1
SUDANGRASS	40	0.9	5/15 TO 8/15
PERENNIAL	40	0.9	8/15 TO 9/15
TOTAL	312	7.1	

PERMANENT SEED APPLICATION RATES

SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

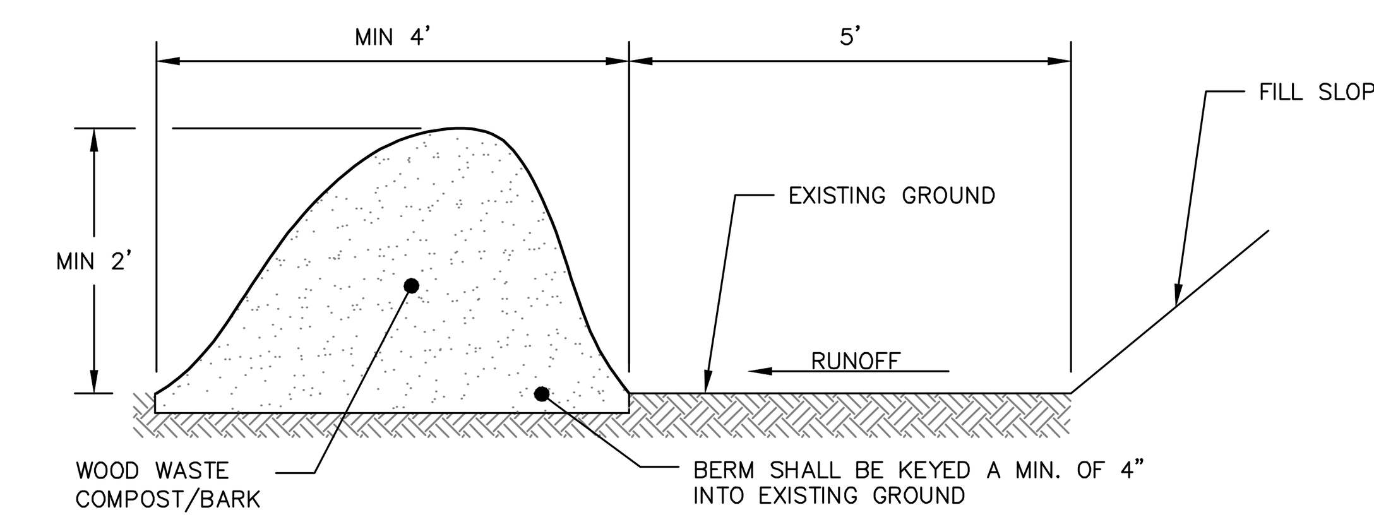
NOTES:

1. THE EROSION CONTROL MIX SHALL CONFORM TO THE FOLLOWING STANDARDS AND IN ACCORDANCE WITH THE MAINE DOT CHAPTER 700, SECTION 717.04(D):

1.1. pH BETWEEN 5.0 – 8.0
1.2. PARTICLE SIZE (BY WEIGHT):
1.2.1. 100% PASSING A 150 MM (6 IN) SCREEN
1.2.2. 75 TO 85% PASSING A 19 MM (0.75 IN) SCREEN
1.3. SOLUBLE SALTS CONTENT < 4.0 MMHOS/CM
1.4. ORGANIC MATTER 20 TO 100% , DRY WEIGHT BASIS

2. THE BERM SHOULD BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR, WHEN NECESSARY THE BERM MAY BE PLACED PERPENDICULAR TO THE SLOPE ALONG THE PROPERTY LINE TO CONTAIN THE SEDIMENT PROVIDED A BERM IS LOCATED AT THE BASE OF THE SLOPE.

3. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS STABILIZED OR 90% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED OFFSITE OR BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.



EROSION CONTROL MIX BERM DETAIL
NOT TO SCALE

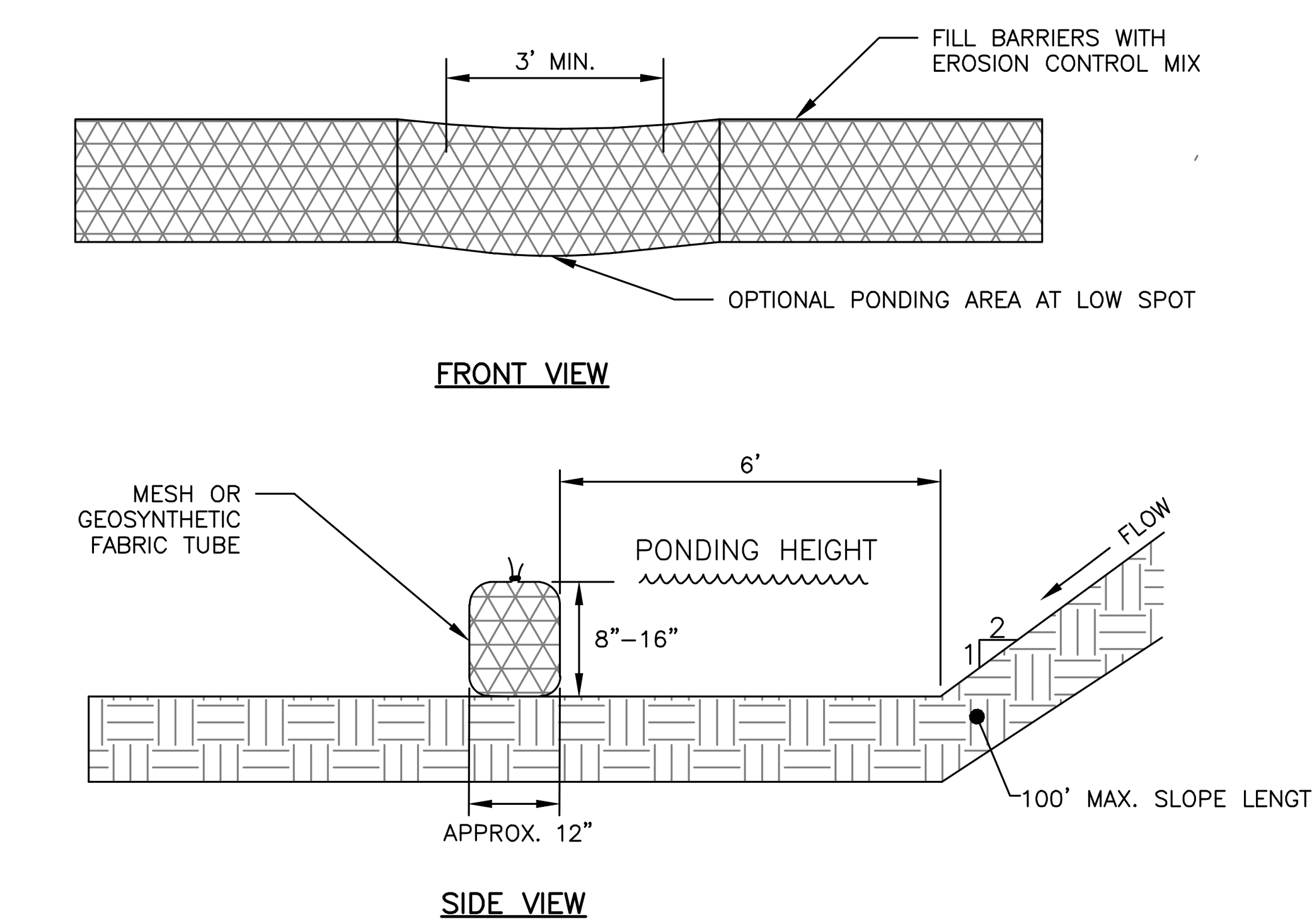
NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.

2. STAKING MAY BE NECESSARY ON STEEP SLOPES.

3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.

4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



FILTER SOCK DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY / DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: EROSION & SEDIMENTATION CONTROL NOTES

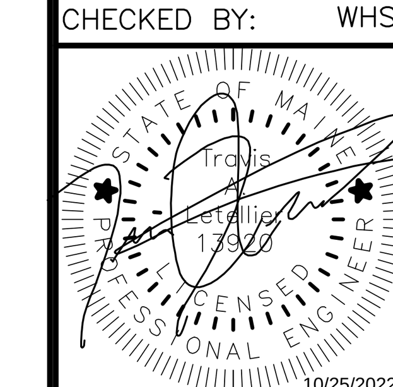
PROJECT NAME/ADDRESS: WHITE ROCK TERRACE – SKYVIEW DRIVE

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

A C O R N ENGINEERING, INC.

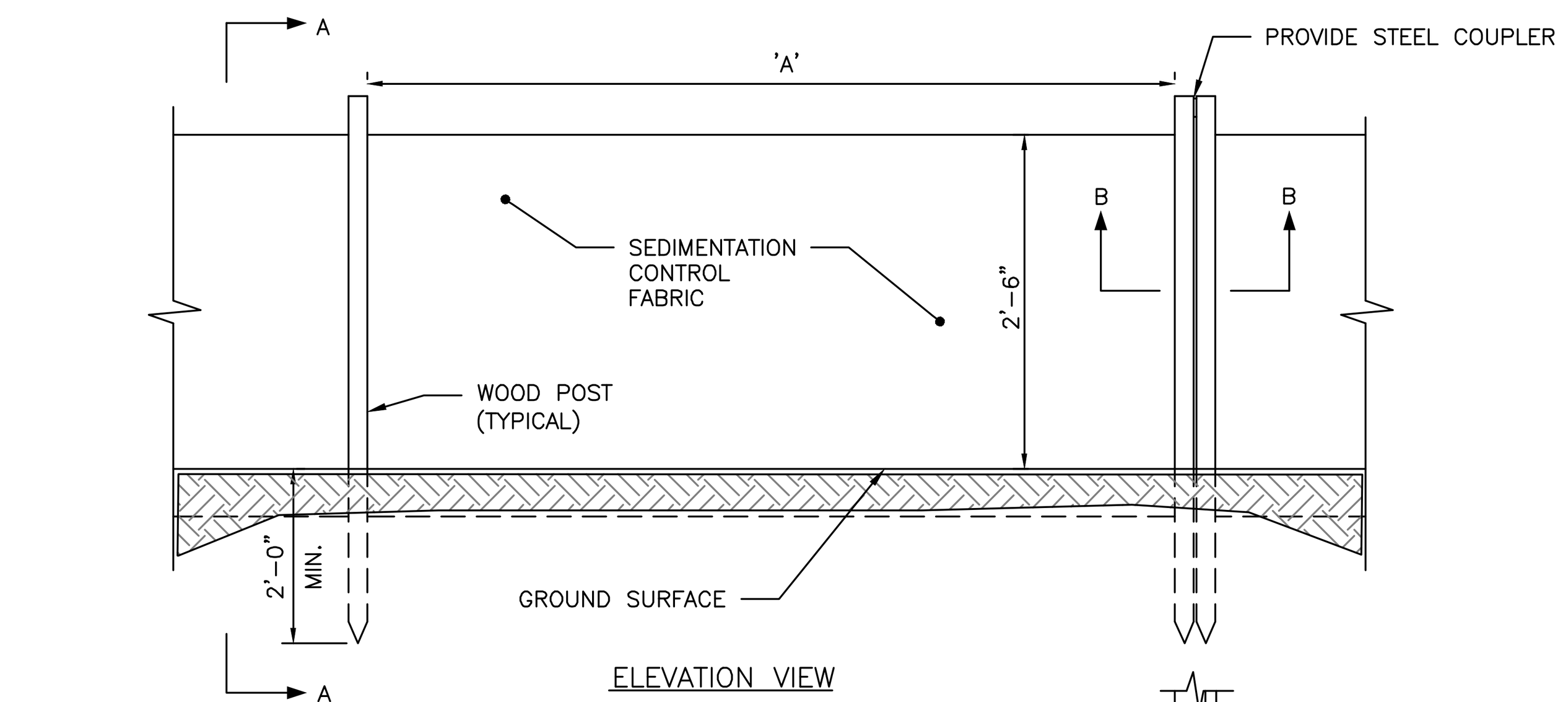
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775–2655

FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

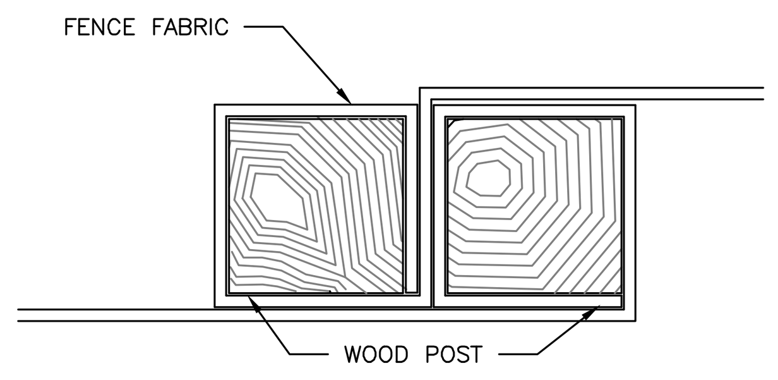


DRAWING NO.

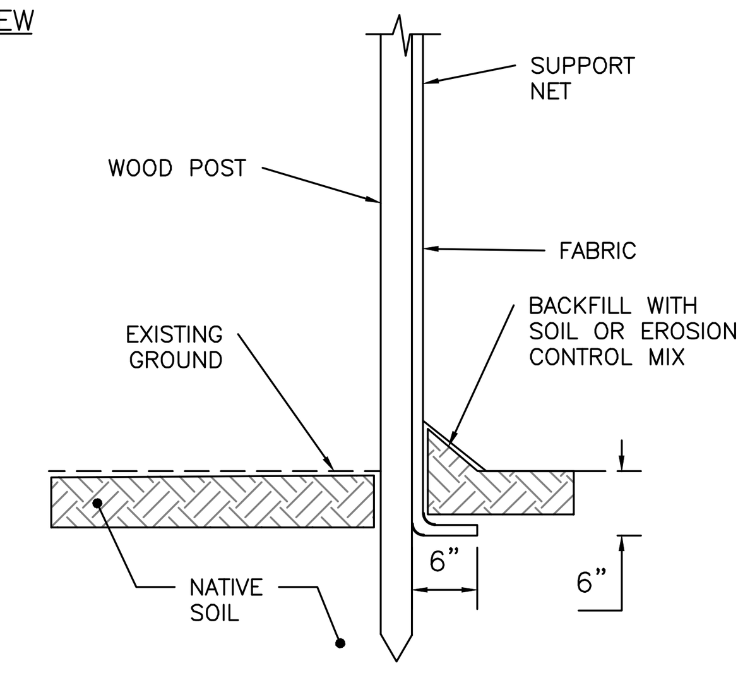
C-47



ELEVATION VIEW



SECTION B-B

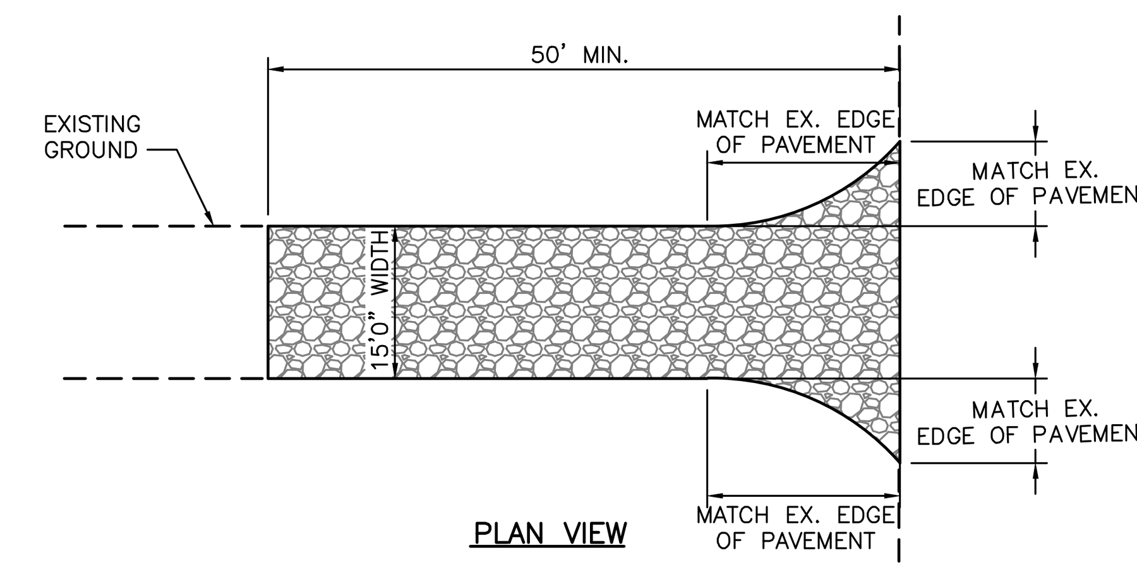


SECTION A-A

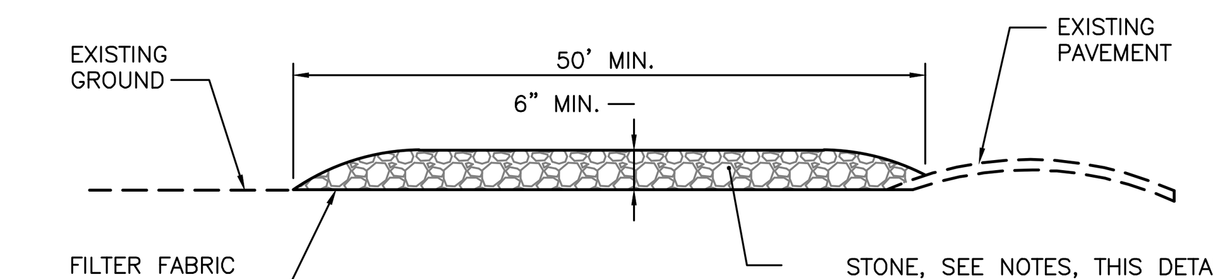
SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

SILTATION FENCE DETAIL

NOT TO SCALE



PLAN VIEW



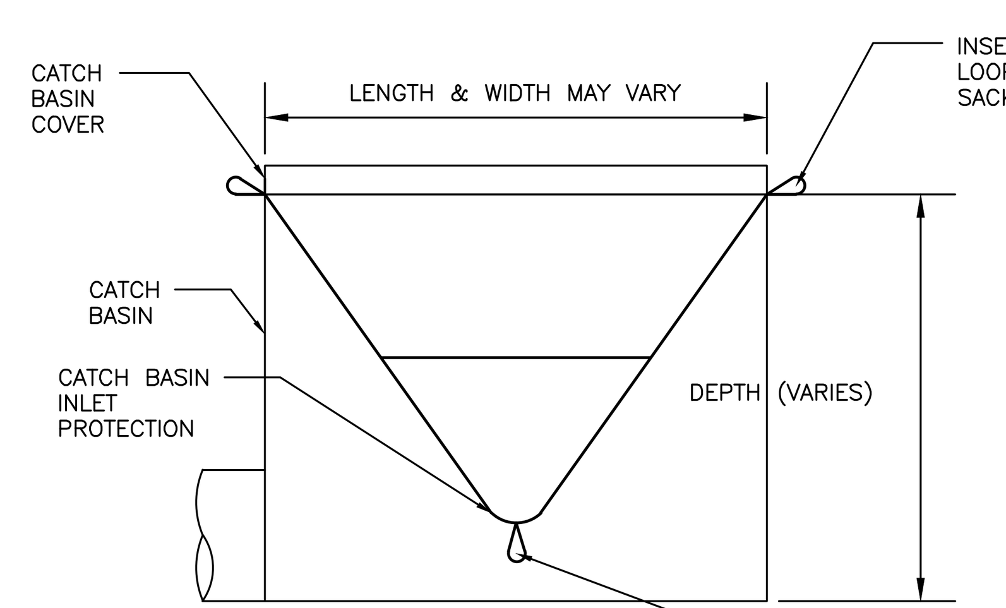
SECTION

NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"-3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON-SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT-OF-WAY

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



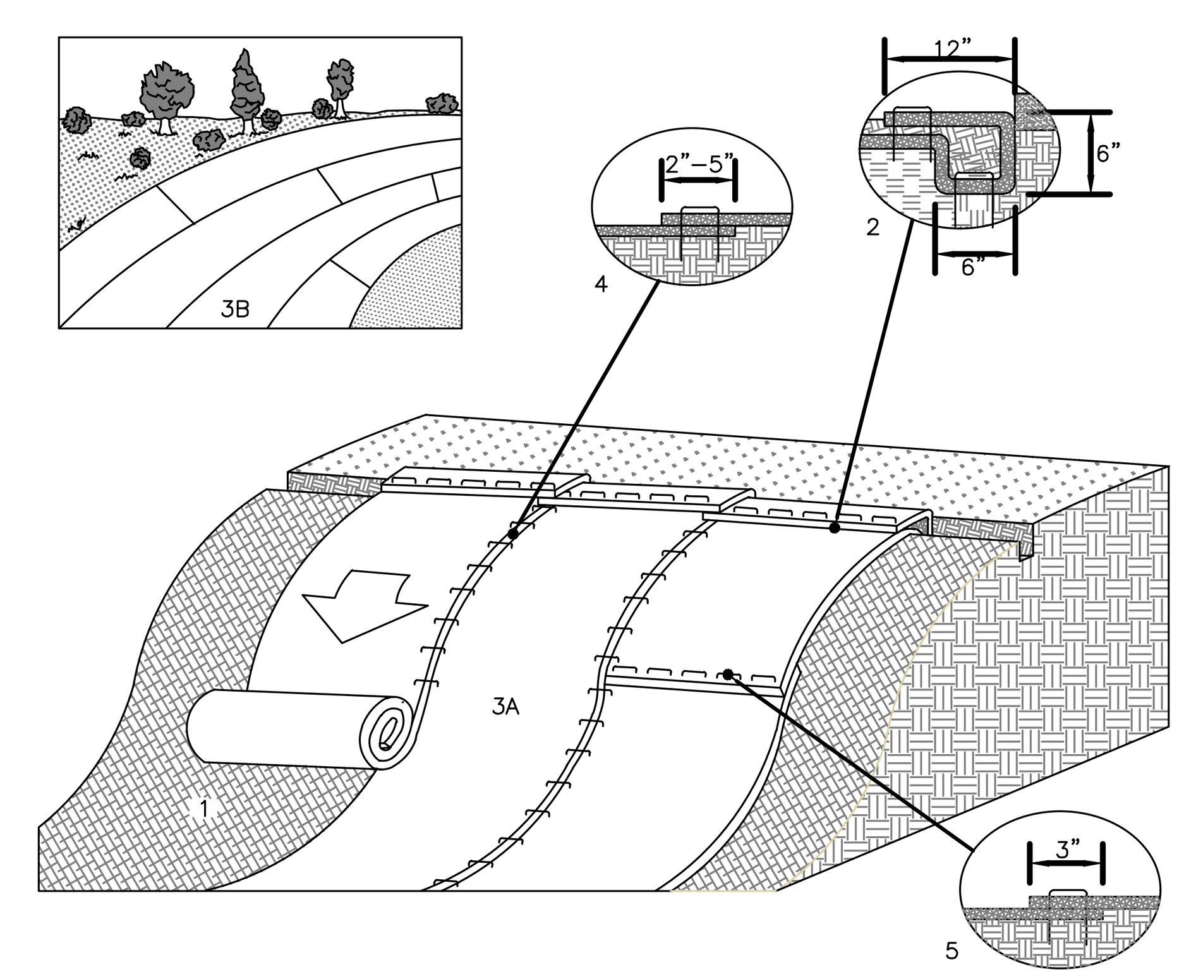
SIDE VIEW

NOTES:

1. CATCH BASIN INLET PROTECTION SHALL BE INSTALLED DOWNGRADIENT OF PROPOSED PROJECT AND ROUTINELY MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. CATCH BASIN SIZE VARIES. CONTRACTOR TO ENSURE CATCH BASIN INLET PROTECTION MATCHES CATCH BASIN DIMENSIONS.
3. SILT SACK SHALL BE ACF ENVIRONMENTAL SILT SACK, TYPE A, OR APPROVED EQUAL.

CATCH BASIN INLET PROTECTION

NOT TO SCALE



SLOPE
INSTALLATION DETAIL

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (ECB), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE ECB IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF ECB EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE ECB WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" PORTION OF ECB BACK OVER THE SEED AND COMPACTED SOIL. SECURE ECB OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE ECB.
3. ROLL THE ECB (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. ECB WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL ECB MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL ECB MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON THE ECB TYPE.
5. CONSECUTIVE ECB SPLICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE ECB WIDTH.

NOTE:
IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE ECB.

EROSION CONTROL BLANKET SLOPE INSTALLATION

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
TOWN SUBMISSION	TAL 10/25/22
COMMENT RESPONSE	TAL 11/28/22

DRAWING NAME: **EROSION & SEDIMENTATION CONTROL DETAILS**

PROJECT NAME/ ADDRESS: **WHITE ROCK TERRACE - SKYVIEW DRIVE**

CLIENT/OWNER OF RECORD: THE SZANTON COMPANY
10 FREE STREET, SECOND FLOOR, PORTLAND ME 04101

A C O R N ENGINEERING, INC.
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PO BOX 3372, PORTLAND MAINE 04101
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FILE:	1175.1_CIVIL
JN:	1175.1
SCALE:	AS NOTED
DESIGNED BY:	TAL
DRAWN BY:	AWG
CHECKED BY:	WHS

10/25/2022

DRAWING NO.

C-48

A C O R N
ENGINEERING, INC.

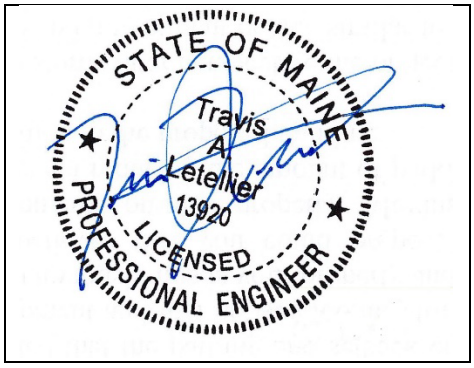
WHITE ROCK TERRACE STORMWATER MANAGEMENT REPORT

Prepared For:

The Szanton Company
Portland, Maine 04103

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



November 2022

INTRODUCTION

Acorn Engineering, Inc. has been retained by Szanton Company to provide civil engineering services for the proposed development at Sky View Drive. The property consists of approximately 4.47 acres of land and contains the following parcels (Map R1, Lot 107A).

A stormwater analysis was prepared to demonstrate that the project will meet the requirements set forth by Maine DEP Chapter 500 Basic and General Standards and the following requirements from the Town of Cumberland:

- Town of Cumberland Land Use Ordinance Article 14.6.2.D.
- Maine DEP Chapter 500 Stormwater Management.

EXISTING CONDITIONS

The project site is currently a portion of an undeveloped parcel, lot 107, within the Cumberland Foreside Village subdivision and will be accessed off Sky View Drive. The site has been partially cleared as part of the original subdivision build out and is a relatively flat site. No streams, wetlands or other protected natural resources are located on the property.

The site primarily consists of brush and wooded undeveloped area with two subcatchments.

- SC 1A – This subcatchment consists of primarily wooded land that slopes towards interstate 295.
- SC 2A – This subcatchment consists of woods and brush. A swale along Sky View Drive directs stormwater towards to Route 1 via stormwater BMP's within the Sky View Drive ROW.

It should be noted that the USGS soil survey has soil type HSG D in for the entire site.

PROPOSED DEVELOPMENT

The project features the development of a single four-story building with 55 one- and two-bedroom affordable rental units designated for senior housing. The building has a footprint of roughly 12,000 square feet and the development will provide 78 parking spaces and vehicular and pedestrian circulation. Overall the development will consist of 2.28 acres of disturbance, 1.86 acres of developed area including 42,700 sf (0.98 ac) of impervious cover.

The site has been graded to slope with the existing topography while providing for appropriate slopes in the parking areas. The slopes on the outside of the parking areas that are not part of a stormwater system will be appropriately stabilized per the specifications in the plans and are anticipated to be heavily landscaped for further slope protection and buffering. The majority of the site's runoff, including 97.6% of the new impervious area, will be piped or diverted to one of three stormwater BMP's on the property. The majority of stormwater treatment will be provided by a Grassed Underdrained Soil Filter (GUSF) located behind the dumpster enclosure. Additional treatment will be provided via two Roof Dripline

Filters and a Rain Garden.

The discharge from these systems will ultimately flow to a level lip spreader or riprap apron before entering the roadside ditch or surrounding woods. Two 15" storm drains are proposed to outlet into the existing ditch line with a proposed riprap apron to help reduce velocity, based on the peak 10-year flow rates the maximum water velocity discharging into the City's ditch system will be below 5 ft/sec. Maine DOT recommends grassed ditches be designed to ensure flow velocities are below 5 ft/sec for the 10-year storm, as such the stormwater outlet aligns with industry standard hydraulic design.

The development will be served by the Portland Water District, CMP, Spectrum, Consolidated Communications, and municipal sewer system. Utility mains and services have been coordinated with each respective utility company.

GENERAL STANDARDS – WATER QUALITY

All treatment BMPs proposed as part of this development were designed in accordance with The Maine Stormwater Management Design Manual Chapter 7.3 and 7.7.

Treatment Area
In accordance with Chapter 500, General Standard rules, treatment must be provided for no less than 95% of the impervious area and 80% of the developed area. As such, it is proposed that treatment is required via the GUSF, Roof Dripline Filter and Rain Garden BMP's.
The treatment of the impervious and developed surfaces by the BMPs are as follows:

Table 1 – New Impervious Area Treatment Area Table

Existing Imp. Area (SF)	Proposed Total Imp. Area (SF)	Net Change in Imp. Area (SF)	Proposed Imp. Area with Treatment (SF)	% Overall New Imp. Area Treated
0	42,710	42,710	41,686	97.6%

Table 2 – New Developed Area Treatment

Existing Dev. Area (SF)	Proposed Total Dev. Area (SF)	Net Change in Dev. Area (SF)	Proposed Dev. Area with Treatment (SF)	% Overall New Dev. Area Treated
0	81,225	81,225	65,000	80%

Grassed Underdrained Soil Filter

The grassed underdrained soil filter was sized to meet or exceed the requirements set forth within the MDEP Volume III BMPs Technical Design Manual, Chapter 7.3. Filter BMP

systems have shown to be effective at filtering out and removing a wide range of pollutants from stormwater runoff.
As shown above, the project anticipates meeting the required treatment for new impervious and developed surfaces with the filter BMPs.

Filter Area Sizing
A calculation for sand filter area is necessary to meet the requirements below the surface of the GUSF. As defined in the Volume III: BMPs Technical Design Manual, Chapter 7, the surface area of the filter shall be no less than the sum of 5% of the tributary impervious area and 2% of the tributary vegetated area. The filter area is calculated by the following formula:

[(Imp. SF x 0.05) + (Veg. SF x 0.02)] = Filter Area (SF)
Please refer to Table 2 below.

Table 2 – Total Filter Surface Area, displays the proposed USSF sizing requirements, actual size and the percentage of required area.

Table 3 – Total Filter Surface Area				
	Landscaped Area (SF)	Impervious Area (SF)	Required Filter Area (SF)	Actual Filter Area (SF)
GUSF	8,500	33,250	1,833	1,850

As shown, the size of the soil filter area will meet and exceed the surface area requirements.

Water Quality Volume
In accordance with the Volume III: BMPs Technical Design Manual, a water quality volume of 1.0 inches times the tributary impervious area plus 0.4 inches times the tributary vegetated area is required to be treated by the USSF. The water quality volume is calculated by the following formula:

$$\left(\frac{\text{Imp. SF x 1.0”}}{\text{12”/1’}}\right) + \left(\frac{\text{Veg. SF x 0.4”}}{\text{12”/1’}}\right) = \text{Treatment Volume (CF)}$$

The proposed water quality volume is as follows:

Table 5 – Water Quality Volume Table				
	Landscaped Area (SF)	Impervious Area (SF)	Treatment Volume Required (CF)	Treatment Volume Provided (CF)
GUSF	8,500	33,250	3,054	3,638

As shown, the size of the combined water quality volume will meet and exceed the treatment volume requirements. Values from the HydroCAD calculations are attached to this report.
The treatment volume was calculated by using the HydroCAD model and the rainfall that produces 18” of ponding within the pond.

A vertical orifice is modeled in HydroCAD at the end of the underdrain outlet to detain the stormwater for an approximate 24-hour time frame. The orifice is intended to be a PVC cap placed on the outfall pipe (no glue) with the orifice drilled into the cap eccentrically. The PVC cap can be easily inspected, removed, or replaced if necessary.

Rain Garden / Bioretention Cell

The rain garden bioretention cell was sized to meet or exceed the requirements set forth within the MDEP Volume III BMPs Technical Design Manual, Chapter 7.3. Filter BMP systems have shown to be effective at filtering out and removing a wide range of pollutants from stormwater runoff. As shown above, the project anticipates meeting the required treatment for new impervious and developed surfaces with the filter BMP.

Filter Area Sizing
A calculation for filter area is necessary to meet the requirements below the surface of the bioretention cell. As defined in the Volume III: BMPs Technical Design Manual, Chapter 7, the surface area of the filter shall be no less than the sum of 7% of the tributary impervious area and 3% of the tributary vegetated area. The filter area is calculated by the following formula:

[(Imp. SF x 0.07) + (Veg. SF x 0.03)] = Filter Area (SF)
Please refer to Table 2 below.

Table 2 – Total Filter Surface Area, displays the proposed USSF sizing requirements, actual size and the percentage of required area.

Table 3 – Total Bioretention Cell Surface Area

	Landscaped Area (SF)	Impervious Area (SF)	Required Filter Area (SF)	Actual Filter Area (SF)
Bioretention Cell	4,000	3,200	344	476

As shown, the size of the soil filter area will meet and exceed the surface area requirements.

Water Quality Volume
In accordance with the Volume III: BMPs Technical Design Manual, a water quality volume of 1.0 inches times the tributary impervious area plus 0.4 inches times the tributary vegetated area is required to be treated by the bioretention cell. The water quality volume is calculated by the following formula:

$$\left(\frac{\text{Imp. SF x 1.0”}}{\text{12”/1’}}\right) + \left(\frac{\text{Veg. SF x 0.4”}}{\text{12”/1’}}\right) = \text{Treatment Volume (CF)}$$

The proposed water quality volume is as follows:

Table 5 – Water Quality Volume Table				
	Landscaped Area (SF)	Impervious Area (SF)	Treatment Volume Required (CF)	Treatment Volume Provided (CF)
GUSF	4,000	3,200	400	401

As shown, the size of the combined water quality volume will meet and exceed the treatment volume requirements. Values from the HydroCAD calculations are attached to this report. The treatment volume was calculated by using the HydroCAD model and the rainfall that produces 18" of ponding within the pond.

A vertical orifice is modeled in HydroCAD at the end of the underdrain outlet to detain the stormwater for an approximate 24-hour time frame. The orifice is intended to be a PVC cap placed on the outfall pipe (no glue) with the orifice drilled into the cap eccentrically. The PVC cap can be easily inspected, removed, or replaced if necessary.

Roof Dripline Filter:

At variable depths, see chart below, with clean, free-draining crushed stone and a filter layer, the drip line filter will take the direct entry from the roof runoff before filtering this runoff through media. These systems are oversized in comparison to the tributary roof areas and provide storage for a 10-year storm or greater before overflowing away from the buildings.

Table 6 – Water Quality Volume Table				
	Impervious Area (SF)	Treatment Volume Required (CF)	Depth (FT)	Treatment Volume Provided (CF)
Drip Line #1	6,500	541	2.58	545
Drip Line #2	1,800	150	4.17	150

FLOODING STANDARD – WATER QUANTITY

The proposed project was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25-year storm events were used. The corresponding rainfall amounts for these storms are 3.10", 4.60", and 5.80" respectively. Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. to round to the nearest whole number. However due to the small size of the project and the minimal existing flows, the stormwater runoff shall be rounded to the nearest tenth of a cubic feet per second (cfs).

Time of Concentration (Tc)

The times of concentration for subcatchments in both the pre and post conditions were calculated by entering the flow path with the associated ground cover and slopes. HydroCAD then calculated the Tc's and incorporated the total Tc for each subcatchment into the model. When the calculated Tc was less than six minutes (0.1 hours), a direct entry of six minutes was used as advised by the TR-55 model. Consistent with previous submissions and best practices, the sheet flow length for any Tc path was capped at 100 feet.

Curve Number (CN)

Within the pre-development model, the wooded and vegetated ditches were conservatively considered good condition with appropriate underlying soil hydrologic group. In particular, the woods were given a "good" condition throughout the entire development. Based upon the understory, the CN value contained either light underbrush or dense underbrush, depending on the location as verified by multiple site visits. The site generally features denser underbrush towards the back of the parcels and less dense underbrush closer to Washington Avenue. Lastly, the wetlands were modeled as Woods in the D condition in both the pre and post.

The post development landscaped areas were given a good rating within the appropriate underlying hydrologic soil group. This assumption is reinforced given the aggressive landscape plan which will feature more porous conditions that are appropriately mulched along with future extensive root systems and canopy cover that will exist once the landscaping has matured.

Pre-development Calculations

The site consists of wooded area and wetlands in the predevelopment condition, for the purpose of this analysis the land has been divided into six separate sub catchments.

The existing cross culvert underneath Washington Ave, as well as the catch basin outlet for the northern Washington Ave ditch have been included in the model as reaches. The intent of this is to measure the capacity of the existing infrastructure down stream of any proposed peak flow alterations.

Peak flow rates for the pre-development storm events are as follows:

Table 6 – Pre-Development Peak Stormwater Flows

Drainage Area	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)
POI #1	4.3	8.8	12.6
POI #2	0.9	1.6	2.3

Post-development Calculations

The post condition features the same four point of interests that exist in the pre-development condition, but with multiple BMPs throughout the north and south parcel dedicated for the treatment of runoff generated primarily by roof and pavement via porous pavement and the two (2) USSFs. The subcatchments are as follows:

- Subcatchment 1P – This subcatchment consists of primarily undeveloped woodland that flows to towards Interstate 295. (POA #1)
- Subcatchment 2P– This subcatchment consists of a portion of the entrance driveway, patio area and landscaping that is treated by a rain garden and discharges to the Sky View Drive ROW (POA #2).
- Subcatchment 3P – This subcatchment consists primarily of parking lot and half the roof area. This subcatchment is collected and piped to the GUSF for treatment and discharges towards Interstate stared 295. (POA #1)
- Subcatchment 4P – This subcatchment consists of the western side of the roof and is collected and treated in a roof dripline filter adjacent to the building. Overflow from this BMP heads towards Interstate 295. (POA #1)
- Subcatchment 5P – This subcatchment consists of a small portion of the roof and is collected and treated in a roof dripline filter adjacent to the building. Overflow from this BMP heads towards the Sky View Drive ROW (POA #2).
- Subcatchment 6P – This subcatchment consists of developed area that bypasses treatment on the development site and is collected and drained to the Sky Vie w Drive ROW (POA #2).

The post-development calculations include changes to the land use, and the compensation provided by the GUSF and associated engineered orifices.

The ideology HydroCad uses to model porous pavement assumes the pavement has no surface runoff under ideal conditions and accepts several inches of precipitation. An extended Tc is used to simulate the travel time through the base and the pavement is modelled as a pond which represents storage in the base material.

Table 7 – Post-Development Peak Stormwater Flows

Drainage Area	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)
POI #1	3.7	7.4	14.2
POI #2	0.3	0.7	1.1

The post-development calculations include changes to the land use and the compensation provided by the stormwater BMPs. The following table represents comparison of pre-development and post-development condition peak runoff rates for the proposed development and tributary area.

Table 8 – Comparison of Peak Flows						
POI	2-Year Storm Event (cfs)		10-Year Storm Event (cfs)		25-Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post
POI #1	4.3	3.7	8.8	7.4	12.6	12.6
POI #2	0.9	0.3	1.6	0.7	2.3	1.0

As shown in Table 7 and 8, the net impact of the post development peak flows will remain at or below the predevelopment levels in all storm events modeled. There are no anticipated detrimental downstream effects due to storwater generated within this development.

A post-development watershed map developed for this project can be viewed in Attachment B, and a copy of the HydroCAD calculations is included within Attachment C of this report.

SOILS

Onsite soil information is sourced from the S*oil Conservation Service Medium Intensity Soil Survey for Cumberland County consistent with the USDA Soil Survey.*

The area within and surrounding the project includes soils types listed in the table below.

Table 8 – Hydrologic Soil Group	
Soils Type	**HSG**
Buxton silt loam	D
Lyman-Abram complex	D

The HSG for the soils, listed above, show soils having a high infiltration rate (low runoff potential). These consist mainly of deep, well drained sands, with a high rate of water transmission.

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County
- United States Department of Agriculture Web Soil Survey

CONCLUSION

The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A. § 420-D). The proposed project as designed is not anticipated to cause flooding or erosion problems within the subject site, abutters' sites, nor within the right-of-way. Overall, the project will provide an improvement to stormwater runoff and overall management from several perspectives as outlined above.

ATTACHMENTS

Attachment A: Pre-Development Watershed Map
Attachment B: Post-Development Watershed Map
Attachment C: HydroCAD Calculations
Attachment D: Soil Survey

Attachment A: Pre-Development Watershed Map

The pre-development watershed map has not changed from the original submission.

Attachment B: Post-Development Watershed Map

The post-development watershed map has not changed from the original submission.

Attachment C: HydroCAD Calculations

Subcat Reach Pond Link

Routing Diagram for 1175.1_PRE
Prepared by HP, Printed 11/28/2022

Project Notes

Rainfall events imported from "1176_POST.hcp"

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.701	80	>75% Grass cover, Good, HSG D (1A)
0.589	83	Brush, Poor, HSG D (2A)
3.183	77	Woods, Good, HSG D (1A, 2A)
4.474	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
4.474	HSG D	1A, 2A
0.000	Other	
4.474		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.701	0.000	0.701	>75% Grass cover, Good	1A
0.000	0.000	0.000	0.589	0.000	0.589	Brush, Poor	2A
0.000	0.000	0.000	3.183	0.000	3.183	Woods, Good	1A, 2A
0.000	**0.000**	**0.000**	**4.474**	**0.000**	**4.474**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: 1A Runoff Area=159,215 sf 0.00% Impervious Runoff Depth>1.10"
Flow Length=465' Tc=10.0 min CN=78 Runoff=4.33 cfs 0.335 af

Subcatchment 2A: 2A Runoff Area=35,658 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=352' Tc=22.1 min CN=81 Runoff=0.85 cfs 0.087 af

Link POA1: POA #1 Inflow=4.33 cfs 0.335 af
Primary=4.33 cfs 0.335 af

Link POA2: POA #2 Inflow=0.85 cfs 0.087 af
Primary=0.85 cfs 0.087 af

Total Runoff Area = 4.474 ac Runoff Volume = 0.423 af Average Runoff Depth = 1.13"
100.00% Pervious = 4.474 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: 1A

Runoff = 4.33 cfs @ 12.15 hrs, Volume= 0.335 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
128,675	77	Woods, Good, HSG D
30,540	80	>75% Grass cover, Good, HSG D
159,215	78	Weighted Average
159,215		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
3.1	365	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
10.0	465	Total			

Summary for Subcatchment 2A: 2A

Runoff = 0.85 cfs @ 12.32 hrs, Volume= 0.087 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
9,998	77	Woods, Good, HSG D
25,660	83	Brush, Poor, HSG D
35,658	81	Weighted Average
35,658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Link POA1: POA #1

Inflow Area = 3.655 ac, 0.00% Impervious, Inflow Depth > 1.10" for 2-year event
Inflow = 4.33 cfs @ 12.15 hrs, Volume= 0.335 af
Primary = 4.33 cfs @ 12.15 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.819 ac, 0.00% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 0.85 cfs @ 12.32 hrs, Volume= 0.087 af
Primary = 0.85 cfs @ 12.32 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: 1A Runoff Area=159,215 sf 0.00% Impervious Runoff Depth>2.21"
Flow Length=465' Tc=10.0 min CN=78 Runoff=8.78 cfs 0.672 af

Subcatchment 2A: 2A Runoff Area=35,658 sf 0.00% Impervious Runoff Depth>2.45"
Flow Length=352' Tc=22.1 min CN=81 Runoff=1.63 cfs 0.167 af

Link POA1: POA #1 Inflow=8.78 cfs 0.672 af
Primary=8.78 cfs 0.672 af

Link POA2: POA #2 Inflow=1.63 cfs 0.167 af
Primary=1.63 cfs 0.167 af

Total Runoff Area = 4.474 ac Runoff Volume = 0.839 af Average Runoff Depth = 2.25"
100.00% Pervious = 4.474 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: 1A

Runoff = 8.78 cfs @ 12.15 hrs, Volume= 0.672 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
128,675	77	Woods, Good, HSG D
30,540	80	>75% Grass cover, Good, HSG D
159,215	78	Weighted Average
159,215		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
3.1	365	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
10.0	465	Total			

Summary for Subcatchment 2A: 2A

Runoff = 1.63 cfs @ 12.31 hrs, Volume= 0.167 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
9,998	77	Woods, Good, HSG D
25,660	83	Brush, Poor, HSG D
35,658	81	Weighted Average
35,658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Link POA1: POA #1

Inflow Area = 3.655 ac, 0.00% Impervious, Inflow Depth > 2.21" for 10-year event
Inflow = 8.78 cfs @ 12.15 hrs, Volume= 0.672 af
Primary = 8.78 cfs @ 12.15 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.819 ac, 0.00% Impervious, Inflow Depth > 2.45" for 10-year event
Inflow = 1.63 cfs @ 12.31 hrs, Volume= 0.167 af
Primary = 1.63 cfs @ 12.31 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: 1A Runoff Area=159,215 sf 0.00% Impervious Runoff Depth>3.18"
Flow Length=465' Tc=10.0 min CN=78 Runoff=12.58 cfs 0.967 af

Subcatchment 2A: 2A Runoff Area=35,658 sf 0.00% Impervious Runoff Depth>3.45"
Flow Length=352' Tc=22.1 min CN=81 Runoff=2.29 cfs 0.236 af

Link POA1: POA #1 Inflow=12.58 cfs 0.967 af
Primary=12.58 cfs 0.967 af

Link POA2: POA #2 Inflow=2.29 cfs 0.236 af
Primary=2.29 cfs 0.236 af

Total Runoff Area = 4.474 ac Runoff Volume = 1.203 af Average Runoff Depth = 3.23"
100.00% Pervious = 4.474 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: 1A

Runoff = 12.58 cfs @ 12.14 hrs, Volume= 0.967 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
128,675	77	Woods, Good, HSG D
30,540	80	>75% Grass cover, Good, HSG D
159,215	78	Weighted Average
159,215		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
3.1	365	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
10.0	465	Total			

Summary for Subcatchment 2A: 2A

Runoff = 2.29 cfs @ 12.30 hrs, Volume= 0.236 af, Depth> 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
9,998	77	Woods, Good, HSG D
25,660	83	Brush, Poor, HSG D
35,658	81	Weighted Average
35,658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Link POA1: POA #1

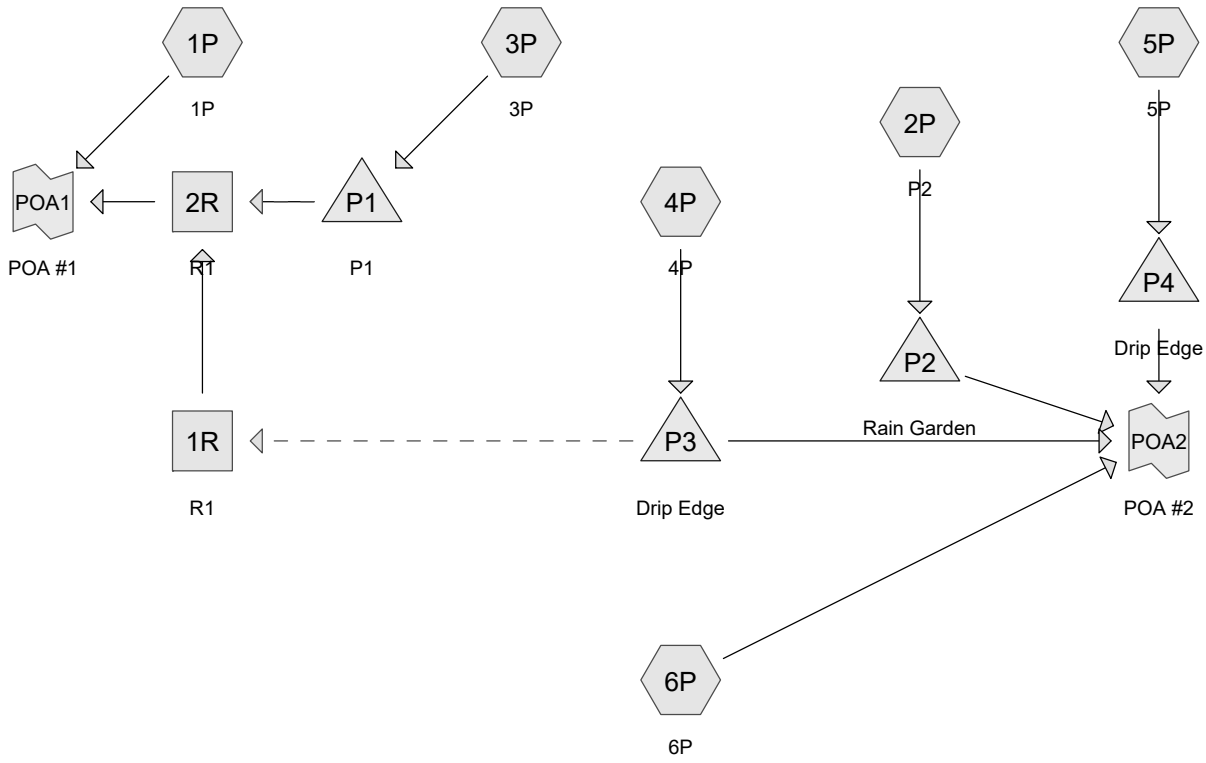
Inflow Area = 3.655 ac, 0.00% Impervious, Inflow Depth > 3.18" for 25-year event
Inflow = 12.58 cfs @ 12.14 hrs, Volume= 0.967 af
Primary = 12.58 cfs @ 12.14 hrs, Volume= 0.967 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.819 ac, 0.00% Impervious, Inflow Depth > 3.45" for 25-year event
Inflow = 2.29 cfs @ 12.30 hrs, Volume= 0.236 af
Primary = 2.29 cfs @ 12.30 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 1175.1_POST
Prepared by HP, Printed 11/28/2022

Project Notes

Rainfall events imported from "1176_POST.hcp"

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.607	80	>75% Grass cover, Good, HSG D (1P, 2P, 3P, 6P)
0.057	98	DRIVE/WALK (2P)
0.336	98	HALF BUILDING (3P, 4P, 5P)
0.603	98	PAVE (3P, 6P)
0.029	98	SIDEWALK (3P)
1.844	77	Woods, Good, HSG D (1P)
4.475	**83**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.451	HSG D	1P, 2P, 3P, 6P
1.024	Other	2P, 3P, 4P, 5P, 6P
4.475		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.607	0.000	1.607	>75% Grass cover, Good	1P, 2P, 3P, 6P
0.000	0.000	0.000	0.000	0.057	0.057	DRIVE/WALK	2P
0.000	0.000	0.000	0.000	0.336	0.336	HALF BUILDING	3P, 4P, 5P
0.000	0.000	0.000	0.000	0.603	0.603	PAVE	3P, 6P
0.000	0.000	0.000	0.000	0.029	0.029	SIDEWALK	3P
0.000	0.000	0.000	1.844	0.000	1.844	Woods, Good	1P
0.000	**0.000**	**0.000**	**3.451**	**1.024**	**4.475**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	P1	114.00	112.00	60.0	0.0333	0.010	12.0	0.0	0.0
2	P2	115.90	115.65	24.0	0.0104	0.011	4.0	0.0	0.0
3	P3	116.00	115.00	100.0	0.0100	0.015	6.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1P: 1P Runoff Area=129,181 sf 0.00% Impervious Runoff Depth>1.10"
Flow Length=400' Tc=9.5 min CN=78 Runoff=3.56 cfs 0.272 af

Subcatchment 2P: P2 Runoff Area=7,295 sf 34.13% Impervious Runoff Depth>1.62"
Flow Length=352' Tc=22.1 min CN=86 Runoff=0.22 cfs 0.023 af

Subcatchment 3P: 3P Runoff Area=42,669 sf 77.97% Impervious Runoff Depth>2.31"
Tc=6.0 min CN=94 Runoff=2.64 cfs 0.189 af

Subcatchment 4P: 4P Runoff Area=6,500 sf 100.00% Impervious Runoff Depth>2.68"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.033 af

Subcatchment 5P: 5P Runoff Area=1,800 sf 100.00% Impervious Runoff Depth>2.68"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.009 af

Subcatchment 6P: 6P Runoff Area=7,490 sf 7.42% Impervious Runoff Depth>1.29"
Tc=6.0 min CN=81 Runoff=0.27 cfs 0.018 af

Reach 1R: R1 Avg. Flow Depth=0.08' Max Vel=0.08 fps Inflow=0.21 cfs 0.008 af
n=0.400 L=200.0' S=0.0220 '/' Capacity=11.20 cfs Outflow=0.05 cfs 0.008 af

Reach 2R: R1 Avg. Flow Depth=0.10' Max Vel=0.29 fps Inflow=0.26 cfs 0.151 af
n=0.400 L=100.0' S=0.2200 '/' Capacity=35.42 cfs Outflow=0.26 cfs 0.149 af

Pond P1: P1 Peak Elev=118.69' Storage=3,970 cf Inflow=2.64 cfs 0.189 af
Primary=0.21 cfs 0.144 af Secondary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.144 af

Pond P2: Rain Garden Peak Elev=117.56' Storage=338 cf Inflow=0.22 cfs 0.023 af
Outflow=0.08 cfs 0.023 af

Pond P3: Drip Edge Peak Elev=122.40' Storage=522 cf Inflow=0.44 cfs 0.033 af
Primary=0.01 cfs 0.014 af Secondary=0.21 cfs 0.008 af Outflow=0.22 cfs 0.021 af

Pond P4: Drip Edge Peak Elev=122.40' Storage=148 cf Inflow=0.12 cfs 0.009 af
Outflow=0.01 cfs 0.004 af

Link POA1: POA #1 Inflow=3.69 cfs 0.421 af
Primary=3.69 cfs 0.421 af

Link POA2: POA #2 Inflow=0.32 cfs 0.058 af
Primary=0.32 cfs 0.058 af

Total Runoff Area = 4.475 ac Runoff Volume = 0.545 af Average Runoff Depth = 1.46"
77.11% Pervious = 3.451 ac 22.89% Impervious = 1.024 ac

Summary for Subcatchment 1P: 1P

Runoff = 3.56 cfs @ 12.14 hrs, Volume= 0.272 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
80,321	77	Woods, Good, HSG D
48,860	80	>75% Grass cover, Good, HSG D
129,181	78	Weighted Average
129,181		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
2.6	300	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.5	400	Total			

Summary for Subcatchment 2P: P2

Runoff = 0.22 cfs @ 12.31 hrs, Volume= 0.023 af, Depth> 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
* 2,490	98	DRIVE/WALK
4,805	80	>75% Grass cover, Good, HSG D
7,295	86	Weighted Average
4,805		65.87% Pervious Area
2,490		34.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Subcatchment 3P: 3P

Runoff = 2.64 cfs @ 12.09 hrs, Volume= 0.189 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	25,690	98	PAVE
*	6,320	98	HALF BUILDING
	9,401	80	>75% Grass cover, Good, HSG D
*	1,258	98	SIDEWALK
	42,669	94	Weighted Average
	9,401		22.03% Pervious Area
	33,268		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4P: 4P

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	6,500	98	HALF BUILDING
	6,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5P: 5P

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	1,800	98	HALF BUILDING
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6P: 6P

Runoff = 0.27 cfs @ 12.10 hrs, Volume= 0.018 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	556	98	PAVE
	6,934	80	>75% Grass cover, Good, HSG D
	7,490	81	Weighted Average
	6,934		92.58% Pervious Area
	556		7.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

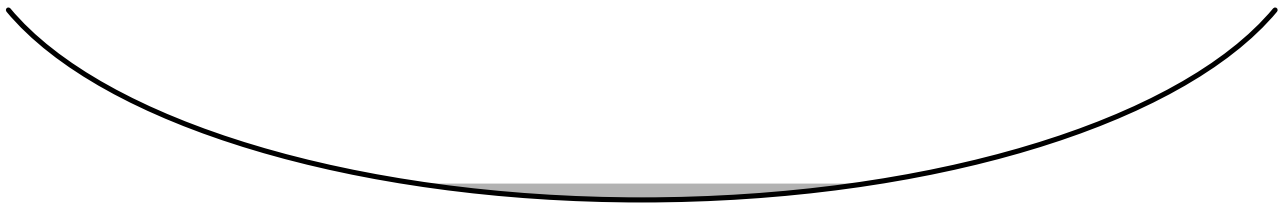
Summary for Reach 1R: R1

Inflow = 0.21 cfs @ 12.17 hrs, Volume= 0.008 af
Outflow = 0.05 cfs @ 13.25 hrs, Volume= 0.008 af, Atten= 74%, Lag= 65.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.08 fps, Min. Travel Time= 40.9 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 77.9 min

Peak Storage= 132 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 11.20 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 200.0' Slope= 0.0220 '/'
Inlet Invert= 122.40', Outlet Invert= 118.00'



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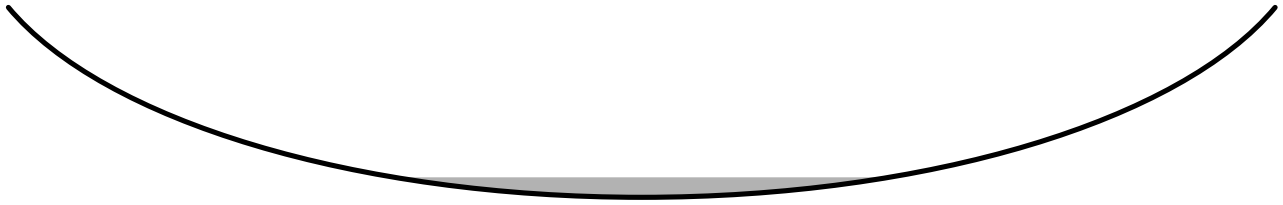
Summary for Reach 2R: R1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 1.85" for 2-year event
Inflow = 0.26 cfs @ 13.23 hrs, Volume= 0.151 af
Outflow = 0.26 cfs @ 13.41 hrs, Volume= 0.149 af, Atten= 1%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.29 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 7.7 min

Peak Storage= 89 cf @ 13.31 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 35.42 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 100.0' Slope= 0.2200 '/'
Inlet Invert= 102.00', Outlet Invert= 80.00'



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Summary for Pond P1: P1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 2.31" for 2-year event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.189 af
Outflow = 0.21 cfs @ 13.13 hrs, Volume= 0.144 af, Atten= 92%, Lag= 62.7 min
Primary = 0.21 cfs @ 13.13 hrs, Volume= 0.144 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 118.69' @ 13.13 hrs Surf.Area= 3,141 sf Storage= 3,970 cf

Plug-Flow detention time= 171.4 min calculated for 0.143 af (76% of inflow)
Center-of-Mass det. time= 112.8 min (871.6 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.10'	7,751 cf	**Ponding (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.10	1,850	0	0
119.75	4,000	7,751	7,751

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**12.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 114.00' / 112.00' S= 0.0333 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	117.10'	**2.400 in/hr Exfiltration over Surface area**
#3	Device 1	118.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	118.95'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.21 cfs @ 13.13 hrs HW=118.69' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 4.07 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.17 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.10' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P2: Rain Garden

Inflow Area = 0.167 ac, 34.13% Impervious, Inflow Depth > 1.62" for 2-year event
Inflow = 0.22 cfs @ 12.31 hrs, Volume= 0.023 af
Outflow = 0.08 cfs @ 12.78 hrs, Volume= 0.023 af, Atten= 64%, Lag= 28.6 min
Primary = 0.08 cfs @ 12.78 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 117.56' @ 12.78 hrs Surf.Area= 1,425 sf Storage= 338 cf

Plug-Flow detention time= 87.1 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 86.5 min (887.9 - 801.5)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	769 cf	**Ponding above surface (Prismatic)** Listed below (Recalc)
#2	117.50'	238 cf	**Topsoil direct entry ponding (Prismatic)** Listed below (Recalc)
#3	117.00'	24 cf	**Filter/Gravel Layers (Prismatic)** Listed below (Recalc) 238 cf Overall x 10.0% Voids
#4	115.50'	284 cf	**3/4" Crushed Stone (Prismatic)** Listed below (Recalc) 713 cf Overall - 1 cf Embedded = 711 cf x 40.0% Voids
#5	115.90'	1 cf	**2.0" Round Pipe Storage** Inside #4 L= 28.0' S= 0.0100 '/' 1 cf Overall - 0.5" Wall Thickness = 1 cf
		1,315 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	475	0	0
118.50	800	319	319
119.00	1,000	450	769

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	475	0	0
118.00	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.00	475	0	0
117.50	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.50	475	0	0
117.00	475	713	713

Device	Routing	Invert	Outlet Devices
#1	Primary	115.90'	**4.0" Round Culvert** L= 24.0' Ke= 0.600 Inlet / Outlet Invert= 115.90' / 115.65' S= 0.0104 '/' Cc= 0.900 n= 0.011, Flow Area= 0.09 sf
#2	Device 1	116.00'	**0.1" Vert. CPV Drawdown Model** C= 0.600

#3	Primary	115.50'	**2.410 in/hr Exfiltration over Surface area**
#4	Primary	118.60'	**17.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.08 cfs @ 12.78 hrs HW=117.56' (Free Discharge)
- **1=Culvert** (Passes 0.00 cfs of 0.44 cfs potential flow)
  - **2=CPV Drawdown Model** (Orifice Controls 0.00 cfs @ 6.01 fps)
- **3=Exfiltration** (Exfiltration Controls 0.08 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P3: Drip Edge

Inflow Area = 0.149 ac,100.00% Impervious, Inflow Depth > 2.68" for 2-year event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.22 cfs @ 12.17 hrs, Volume= 0.021 af, Atten= 50%, Lag= 4.7 min
Primary = 0.01 cfs @ 8.60 hrs, Volume= 0.014 af
Secondary = 0.21 cfs @ 12.17 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.40' @ 12.15 hrs Surf.Area= 525 sf Storage= 522 cf

Plug-Flow detention time= 121.2 min calculated for 0.021 af (64% of inflow)
Center-of-Mass det. time= 46.5 min (785.4 - 738.9)

Volume	Invert	Avail.Storage	Storage Description
#1	119.92'	542 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 1,354 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.92	525	0	0
122.50	525	1,354	1,354

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	**6.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 116.00' / 115.00' S= 0.0100 '/' Cc= 0.900 n= 0.015, Flow Area= 0.20 sf
#2	Device 1	119.92'	**1.000 in/hr Exfiltration over Surface area**
#3	Secondary	122.40'	**125.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.01 cfs @ 8.60 hrs HW=119.95' (Free Discharge)
- **1=Culvert** (Passes 0.01 cfs of 0.96 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.07 cfs @ 12.17 hrs HW=122.40' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.15 fps)

Summary for Pond P4: Drip Edge

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth > 2.68" for 2-year event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 12.39 hrs, Volume= 0.004 af, Atten= 91%, Lag= 18.0 min
Primary = 0.01 cfs @ 12.39 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.40' @ 12.39 hrs Surf.Area= 90 sf Storage= 148 cf

Plug-Flow detention time= 165.4 min calculated for 0.004 af (42% of inflow)
Center-of-Mass det. time= 56.1 min (795.0 - 738.9)

Volume	Invert	Avail.Storage	Storage Description
#1	118.30'	151 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 378 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.30	90	0	0
122.50	90	378	378

Device	Routing	Invert	Outlet Devices
#1	Primary	122.40'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	118.30'	**1.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.00 cfs @ 12.39 hrs HW=122.40' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.06 fps)
2=Exfiltration (Exfiltration Controls 0.00 cfs)

Summary for Link POA1: POA #1

Inflow Area = 3.945 ac, 19.36% Impervious, Inflow Depth > 1.28" for 2-year event
Inflow = 3.69 cfs @ 12.15 hrs, Volume= 0.421 af
Primary = 3.69 cfs @ 12.15 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.530 ac, 49.15% Impervious, Inflow Depth > 1.32" for 2-year event
Inflow = 0.32 cfs @ 12.10 hrs, Volume= 0.058 af
Primary = 0.32 cfs @ 12.10 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1P: 1P Runoff Area=129,181 sf 0.00% Impervious Runoff Depth>2.21"
Flow Length=400' Tc=9.5 min CN=78 Runoff=7.22 cfs 0.545 af

Subcatchment 2P: P2 Runoff Area=7,295 sf 34.13% Impervious Runoff Depth>2.90"
Flow Length=352' Tc=22.1 min CN=86 Runoff=0.39 cfs 0.040 af

Subcatchment 3P: 3P Runoff Area=42,669 sf 77.97% Impervious Runoff Depth>3.69"
Tc=6.0 min CN=94 Runoff=4.10 cfs 0.302 af

Subcatchment 4P: 4P Runoff Area=6,500 sf 100.00% Impervious Runoff Depth>4.05"
Tc=6.0 min CN=98 Runoff=0.66 cfs 0.050 af

Subcatchment 5P: 5P Runoff Area=1,800 sf 100.00% Impervious Runoff Depth>4.05"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.014 af

Subcatchment 6P: 6P Runoff Area=7,490 sf 7.42% Impervious Runoff Depth>2.46"
Tc=6.0 min CN=81 Runoff=0.52 cfs 0.035 af

Reach 1R: R1 Avg. Flow Depth=0.17' Max Vel=0.13 fps Inflow=0.62 cfs 0.024 af
n=0.400 L=200.0' S=0.0220 '/' Capacity=11.20 cfs Outflow=0.24 cfs 0.024 af

Reach 2R: R1 Avg. Flow Depth=0.25' Max Vel=0.53 fps Inflow=1.94 cfs 0.265 af
n=0.400 L=100.0' S=0.2200 '/' Capacity=35.42 cfs Outflow=1.74 cfs 0.263 af

Pond P1: P1 Peak Elev=119.03' Storage=5,068 cf Inflow=4.10 cfs 0.302 af
Primary=0.90 cfs 0.222 af Secondary=1.04 cfs 0.020 af Outflow=1.94 cfs 0.242 af

Pond P2: Rain Garden Peak Elev=118.20' Storage=652 cf Inflow=0.39 cfs 0.040 af
Outflow=0.11 cfs 0.039 af

Pond P3: Drip Edge Peak Elev=122.41' Storage=524 cf Inflow=0.66 cfs 0.050 af
Primary=0.01 cfs 0.015 af Secondary=0.62 cfs 0.024 af Outflow=0.63 cfs 0.038 af

Pond P4: Drip Edge Peak Elev=122.41' Storage=148 cf Inflow=0.18 cfs 0.014 af
Outflow=0.16 cfs 0.009 af

Link POA1: POA #1 Inflow=7.38 cfs 0.809 af
Primary=7.38 cfs 0.809 af

Link POA2: POA #2 Inflow=0.72 cfs 0.098 af
Primary=0.72 cfs 0.098 af

Total Runoff Area = 4.475 ac Runoff Volume = 0.987 af Average Runoff Depth = 2.65"
77.11% Pervious = 3.451 ac 22.89% Impervious = 1.024 ac

Summary for Subcatchment 1P: 1P

Runoff = 7.22 cfs @ 12.14 hrs, Volume= 0.545 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
80,321	77	Woods, Good, HSG D
48,860	80	>75% Grass cover, Good, HSG D
129,181	78	Weighted Average
129,181		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
2.6	300	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.5	400	Total			

Summary for Subcatchment 2P: P2

Runoff = 0.39 cfs @ 12.30 hrs, Volume= 0.040 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	2,490	98	DRIVE/WALK
	4,805	80	>75% Grass cover, Good, HSG D
	7,295	86	Weighted Average
	4,805		65.87% Pervious Area
	2,490		34.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Subcatchment 3P: 3P

Runoff = 4.10 cfs @ 12.09 hrs, Volume= 0.302 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	25,690	98	PAVE
*	6,320	98	HALF BUILDING
	9,401	80	>75% Grass cover, Good, HSG D
*	1,258	98	SIDEWALK
	42,669	94	Weighted Average
	9,401		22.03% Pervious Area
	33,268		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4P: 4P

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	6,500	98	HALF BUILDING
	6,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5P: 5P

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.014 af, Depth> 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	1,800	98	HALF BUILDING
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6P: 6P

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	556	98	PAVE
	6,934	80	>75% Grass cover, Good, HSG D
	7,490	81	Weighted Average
	6,934		92.58% Pervious Area
	556		7.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

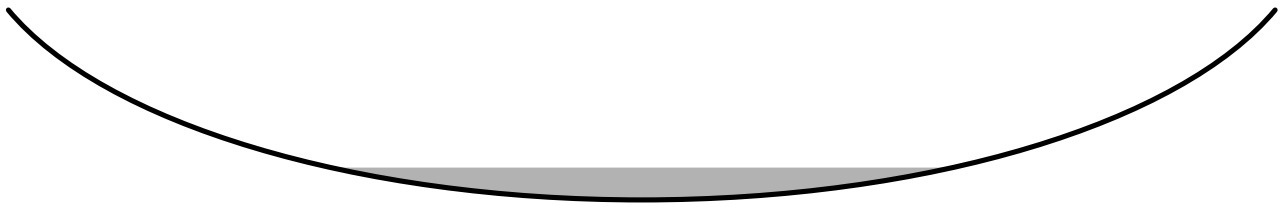
Summary for Reach 1R: R1

Inflow = 0.62 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.24 cfs @ 12.75 hrs, Volume= 0.024 af, Atten= 61%, Lag= 39.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 25.9 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 58.2 min

Peak Storage= 372 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 11.20 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 200.0' Slope= 0.0220 '/'
Inlet Invert= 122.40', Outlet Invert= 118.00'



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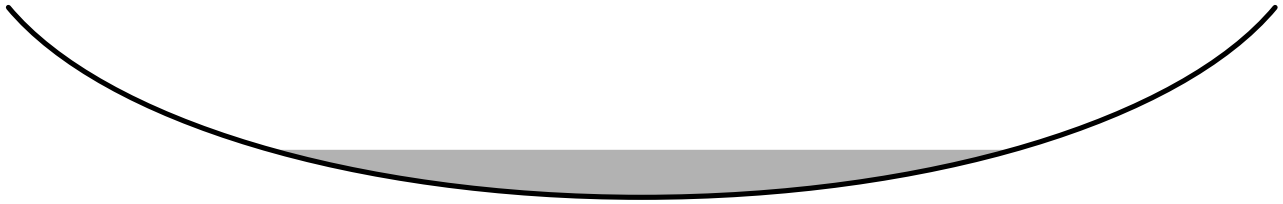
Summary for Reach 2R: R1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 3.25" for 10-year event
Inflow = 1.94 cfs @ 12.27 hrs, Volume= 0.265 af
Outflow = 1.74 cfs @ 12.38 hrs, Volume= 0.263 af, Atten= 10%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.53 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 6.7 min

Peak Storage= 332 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 35.42 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 100.0' Slope= 0.2200 '/'
Inlet Invert= 102.00', Outlet Invert= 80.00'



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Summary for Pond P1: P1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 3.69" for 10-year event
Inflow = 4.10 cfs @ 12.09 hrs, Volume= 0.302 af
Outflow = 1.94 cfs @ 12.27 hrs, Volume= 0.242 af, Atten= 53%, Lag= 11.1 min
Primary = 0.90 cfs @ 12.27 hrs, Volume= 0.222 af
Secondary = 1.04 cfs @ 12.27 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 119.03' @ 12.27 hrs Surf.Area= 3,413 sf Storage= 5,068 cf

Plug-Flow detention time= 123.7 min calculated for 0.242 af (80% of inflow)
Center-of-Mass det. time= 70.1 min (819.9 - 749.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.10'	7,751 cf	**Ponding (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.10	1,850	0	0
119.75	4,000	7,751	7,751

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**12.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 114.00' / 112.00' S= 0.0333 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	117.10'	**2.400 in/hr Exfiltration over Surface area**
#3	Device 1	118.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	118.95'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.88 cfs @ 12.27 hrs HW=119.02' (Free Discharge)
└**1=Culvert** (Passes 0.88 cfs of 4.23 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.19 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.70 cfs @ 2.21 fps)

Secondary OutFlow Max=0.95 cfs @ 12.27 hrs HW=119.02' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.95 cfs @ 0.67 fps)

Summary for Pond P2: Rain Garden

Inflow Area = 0.167 ac, 34.13% Impervious, Inflow Depth > 2.90" for 10-year event
Inflow = 0.39 cfs @ 12.30 hrs, Volume= 0.040 af
Outflow = 0.11 cfs @ 12.85 hrs, Volume= 0.039 af, Atten= 71%, Lag= 32.8 min
Primary = 0.11 cfs @ 12.85 hrs, Volume= 0.039 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 118.20' @ 12.85 hrs Surf.Area= 2,028 sf Storage= 652 cf

Plug-Flow detention time= 86.7 min calculated for 0.038 af (95% of inflow)
Center-of-Mass det. time= 69.9 min (858.0 - 788.1)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	769 cf	**Ponding above surface (Prismatic)** Listed below (Recalc)
#2	117.50'	238 cf	**Topsoil direct entry ponding (Prismatic)** Listed below (Recalc)
#3	117.00'	24 cf	**Filter/Gravel Layers (Prismatic)** Listed below (Recalc) 238 cf Overall x 10.0% Voids
#4	115.50'	284 cf	**3/4" Crushed Stone (Prismatic)** Listed below (Recalc) 713 cf Overall - 1 cf Embedded = 711 cf x 40.0% Voids
#5	115.90'	1 cf	**2.0" Round Pipe Storage** Inside #4 L= 28.0' S= 0.0100 '/' 1 cf Overall - 0.5" Wall Thickness = 1 cf
		1,315 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	475	0	0
118.50	800	319	319
119.00	1,000	450	769

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	475	0	0
118.00	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.00	475	0	0
117.50	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.50	475	0	0
117.00	475	713	713

Device	Routing	Invert	Outlet Devices
#1	Primary	115.90'	**4.0" Round Culvert** L= 24.0' Ke= 0.600 Inlet / Outlet Invert= 115.90' / 115.65' S= 0.0104 '/' Cc= 0.900 n= 0.011, Flow Area= 0.09 sf
#2	Device 1	116.00'	**0.1" Vert. CPV Drawdown Model** C= 0.600

#3	Primary	115.50'	**2.410 in/hr Exfiltration over Surface area**
#4	Primary	118.60'	**17.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.11 cfs @ 12.85 hrs HW=118.20' (Free Discharge)
- **1=Culvert** (Passes 0.00 cfs of 0.53 cfs potential flow)
  - **2=CPV Drawdown Model** (Orifice Controls 0.00 cfs @ 7.13 fps)
- **3=Exfiltration** (Exfiltration Controls 0.11 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P3: Drip Edge

Inflow Area = 0.149 ac,100.00% Impervious, Inflow Depth > 4.05" for 10-year event
Inflow = 0.66 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.63 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 4%, Lag= 0.2 min
Primary = 0.01 cfs @ 7.10 hrs, Volume= 0.015 af
Secondary = 0.62 cfs @ 12.09 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.41' @ 12.09 hrs Surf.Area= 525 sf Storage= 524 cf

Plug-Flow detention time= 88.4 min calculated for 0.038 af (76% of inflow)
Center-of-Mass det. time= 28.8 min (764.5 - 735.6)

Volume	Invert	Avail.Storage	Storage Description
#1	119.92'	542 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 1,354 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.92	525	0	0
122.50	525	1,354	1,354

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	**6.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 116.00' / 115.00' S= 0.0100 '/' Cc= 0.900 n= 0.015, Flow Area= 0.20 sf
#2	Device 1	119.92'	**1.000 in/hr Exfiltration over Surface area**
#3	Secondary	122.40'	**125.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.01 cfs @ 7.10 hrs HW=119.95' (Free Discharge)
- **1=Culvert** (Passes 0.01 cfs of 0.96 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.46 cfs @ 12.09 hrs HW=122.41' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 0.46 cfs @ 0.28 fps)

Summary for Pond P4: Drip Edge

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth > 4.05" for 10-year event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.009 af, Atten= 12%, Lag= 0.3 min
Primary = 0.16 cfs @ 12.09 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.41' @ 12.09 hrs Surf.Area= 90 sf Storage= 148 cf

Plug-Flow detention time= 112.7 min calculated for 0.009 af (67% of inflow)
Center-of-Mass det. time= 40.8 min (776.5 - 735.6)

Volume	Invert	Avail.Storage	Storage Description
#1	118.30'	151 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 378 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.30	90	0	0
122.50	90	378	378

Device	Routing	Invert	Outlet Devices
#1	Primary	122.40'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	118.30'	**1.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.12 cfs @ 12.09 hrs HW=122.41' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.12 cfs @ 0.25 fps)
2=Exfiltration (Exfiltration Controls 0.00 cfs)

Summary for Link POA1: POA #1

Inflow Area = 3.945 ac, 19.36% Impervious, Inflow Depth > 2.46" for 10-year event
Inflow = 7.38 cfs @ 12.14 hrs, Volume= 0.809 af
Primary = 7.38 cfs @ 12.14 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.530 ac, 49.15% Impervious, Inflow Depth > 2.21" for 10-year event
Inflow = 0.72 cfs @ 12.09 hrs, Volume= 0.098 af
Primary = 0.72 cfs @ 12.09 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1P: 1P Runoff Area=129,181 sf 0.00% Impervious Runoff Depth>3.18"
Flow Length=400' Tc=9.5 min CN=78 Runoff=10.34 cfs 0.785 af

Subcatchment 2P: P2 Runoff Area=7,295 sf 34.13% Impervious Runoff Depth>3.96"
Flow Length=352' Tc=22.1 min CN=86 Runoff=0.53 cfs 0.055 af

Subcatchment 3P: 3P Runoff Area=42,669 sf 77.97% Impervious Runoff Depth>4.80"
Tc=6.0 min CN=94 Runoff=5.27 cfs 0.392 af

Subcatchment 4P: 4P Runoff Area=6,500 sf 100.00% Impervious Runoff Depth>5.15"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.064 af

Subcatchment 5P: 5P Runoff Area=1,800 sf 100.00% Impervious Runoff Depth>5.15"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment 6P: 6P Runoff Area=7,490 sf 7.42% Impervious Runoff Depth>3.47"
Tc=6.0 min CN=81 Runoff=0.73 cfs 0.050 af

Reach 1R: R1 Avg. Flow Depth=0.22' Max Vel=0.15 fps Inflow=0.82 cfs 0.039 af
n=0.400 L=200.0' S=0.0220 '/' Capacity=11.20 cfs Outflow=0.42 cfs 0.038 af

Reach 2R: R1 Avg. Flow Depth=0.37' Max Vel=0.68 fps Inflow=4.58 cfs 0.363 af
n=0.400 L=100.0' S=0.2200 '/' Capacity=35.42 cfs Outflow=4.00 cfs 0.361 af

Pond P1: P1 Peak Elev=119.12' Storage=5,377 cf Inflow=5.27 cfs 0.392 af
Primary=1.19 cfs 0.260 af Secondary=3.36 cfs 0.065 af Outflow=4.55 cfs 0.324 af

Pond P2: Rain Garden Peak Elev=118.60' Storage=951 cf Inflow=0.53 cfs 0.055 af
Outflow=0.15 cfs 0.052 af

Pond P3: Drip Edge Peak Elev=122.42' Storage=524 cf Inflow=0.83 cfs 0.064 af
Primary=0.01 cfs 0.015 af Secondary=0.82 cfs 0.039 af Outflow=0.83 cfs 0.053 af

Pond P4: Drip Edge Peak Elev=122.41' Storage=148 cf Inflow=0.23 cfs 0.018 af
Outflow=0.23 cfs 0.014 af

Link POA1: POA #1 Inflow=12.65 cfs 1.146 af
Primary=12.65 cfs 1.146 af

Link POA2: POA #2 Inflow=0.99 cfs 0.131 af
Primary=0.99 cfs 0.131 af

Total Runoff Area = 4.475 ac Runoff Volume = 1.364 af Average Runoff Depth = 3.66"
77.11% Pervious = 3.451 ac 22.89% Impervious = 1.024 ac

Summary for Subcatchment 1P: 1P

Runoff = 10.34 cfs @ 12.14 hrs, Volume= 0.785 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
80,321	77	Woods, Good, HSG D
48,860	80	>75% Grass cover, Good, HSG D
129,181	78	Weighted Average
129,181		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0500	0.24		**Sheet Flow, A TO B SHEET** Grass: Short n= 0.150 P2= 3.10"
2.6	300	0.1500	1.94		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.5	400	Total			

Summary for Subcatchment 2P: P2

Runoff = 0.53 cfs @ 12.30 hrs, Volume= 0.055 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	2,490	98	DRIVE/WALK
	4,805	80	>75% Grass cover, Good, HSG D
	7,295	86	Weighted Average
	4,805		65.87% Pervious Area
	2,490		34.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, A TO B SHEET** Grass: Dense n= 0.240 P2= 3.10"
3.0	252	0.0400	1.40		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
22.1	352	Total			

Summary for Subcatchment 3P: 3P

Runoff = 5.27 cfs @ 12.09 hrs, Volume= 0.392 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	25,690	98	PAVE
*	6,320	98	HALF BUILDING
	9,401	80	>75% Grass cover, Good, HSG D
*	1,258	98	SIDEWALK
	42,669	94	Weighted Average
	9,401		22.03% Pervious Area
	33,268		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4P: 4P

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	6,500	98	HALF BUILDING
	6,500		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5P: 5P

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,800	98	HALF BUILDING
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6P: 6P

Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	556	98	PAVE
	6,934	80	>75% Grass cover, Good, HSG D
	7,490	81	Weighted Average
	6,934		92.58% Pervious Area
	556		7.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

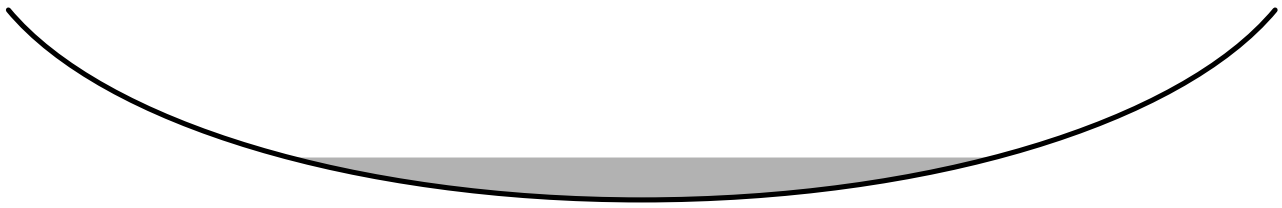
Summary for Reach 1R: R1

Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.039 af
Outflow = 0.42 cfs @ 12.59 hrs, Volume= 0.038 af, Atten= 48%, Lag= 30.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.15 fps, Min. Travel Time= 21.7 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 50.4 min

Peak Storage= 556 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 11.20 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 200.0' Slope= 0.0220 '/'
Inlet Invert= 122.40', Outlet Invert= 118.00'



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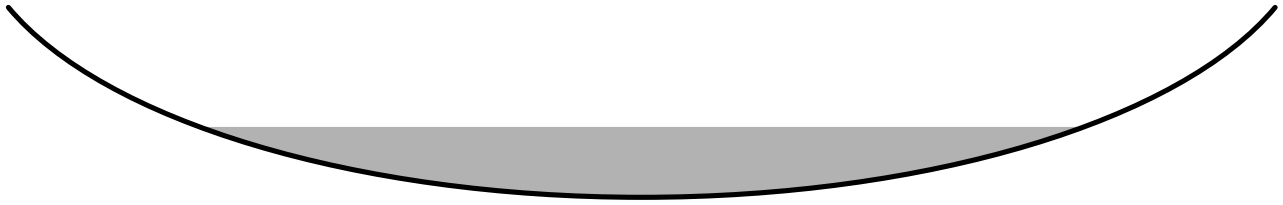
Summary for Reach 2R: R1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 4.44" for 25-year event
Inflow = 4.58 cfs @ 12.15 hrs, Volume= 0.363 af
Outflow = 4.00 cfs @ 12.24 hrs, Volume= 0.361 af, Atten= 13%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.68 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 6.2 min

Peak Storage= 601 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 35.42 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.400
Length= 100.0' Slope= 0.2200 '/'
Inlet Invert= 102.00', Outlet Invert= 80.00'



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Summary for Pond P1: P1

Inflow Area = 0.980 ac, 77.97% Impervious, Inflow Depth > 4.80" for 25-year event
Inflow = 5.27 cfs @ 12.09 hrs, Volume= 0.392 af
Outflow = 4.55 cfs @ 12.15 hrs, Volume= 0.324 af, Atten= 14%, Lag= 4.0 min
Primary = 1.19 cfs @ 12.15 hrs, Volume= 0.260 af
Secondary = 3.36 cfs @ 12.15 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 119.12' @ 12.15 hrs Surf.Area= 3,485 sf Storage= 5,377 cf

Plug-Flow detention time= 101.6 min calculated for 0.323 af (82% of inflow)
Center-of-Mass det. time= 53.0 min (798.6 - 745.6)

Volume	Invert	Avail.Storage	Storage Description
#1	117.10'	7,751 cf	**Ponding (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.10	1,850	0	0
119.75	4,000	7,751	7,751

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**12.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 114.00' / 112.00' S= 0.0333 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	117.10'	**2.400 in/hr Exfiltration over Surface area**
#3	Device 1	118.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Secondary	118.95'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.19 cfs @ 12.15 hrs HW=119.11' (Free Discharge)
└**1=Culvert** (Passes 1.19 cfs of 4.28 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.19 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.99 cfs @ 2.44 fps)

Secondary OutFlow Max=3.31 cfs @ 12.15 hrs HW=119.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 3.31 cfs @ 1.01 fps)

Summary for Pond P2: Rain Garden

Inflow Area = 0.167 ac, 34.13% Impervious, Inflow Depth > 3.96" for 25-year event
Inflow = 0.53 cfs @ 12.30 hrs, Volume= 0.055 af
Outflow = 0.15 cfs @ 12.85 hrs, Volume= 0.052 af, Atten= 71%, Lag= 33.2 min
Primary = 0.15 cfs @ 12.85 hrs, Volume= 0.052 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 118.60' @ 12.85 hrs Surf.Area= 2,267 sf Storage= 951 cf

Plug-Flow detention time= 91.0 min calculated for 0.052 af (94% of inflow)
Center-of-Mass det. time= 69.3 min (850.0 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	769 cf	**Ponding above surface (Prismatic)** Listed below (Recalc)
#2	117.50'	238 cf	**Topsoil direct entry ponding (Prismatic)** Listed below (Recalc)
#3	117.00'	24 cf	**Filter/Gravel Layers (Prismatic)** Listed below (Recalc) 238 cf Overall x 10.0% Voids
#4	115.50'	284 cf	**3/4" Crushed Stone (Prismatic)** Listed below (Recalc) 713 cf Overall - 1 cf Embedded = 711 cf x 40.0% Voids
#5	115.90'	1 cf	**2.0" Round Pipe Storage** Inside #4 L= 28.0' S= 0.0100 '/' 1 cf Overall - 0.5" Wall Thickness = 1 cf
		1,315 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	475	0	0
118.50	800	319	319
119.00	1,000	450	769

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	475	0	0
118.00	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.00	475	0	0
117.50	475	238	238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.50	475	0	0
117.00	475	713	713

Device	Routing	Invert	Outlet Devices
#1	Primary	115.90'	**4.0" Round Culvert** L= 24.0' Ke= 0.600 Inlet / Outlet Invert= 115.90' / 115.65' S= 0.0104 '/' Cc= 0.900 n= 0.011, Flow Area= 0.09 sf
#2	Device 1	116.00'	**0.1" Vert. CPV Drawdown Model** C= 0.600

#3	Primary	115.50'	**2.410 in/hr Exfiltration over Surface area**
#4	Primary	118.60'	**17.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.14 cfs @ 12.85 hrs HW=118.60' (Free Discharge)
- **1=Culvert** (Passes 0.00 cfs of 0.57 cfs potential flow)
  - **2=CPV Drawdown Model** (Orifice Controls 0.00 cfs @ 7.76 fps)
- **3=Exfiltration** (Exfiltration Controls 0.13 cfs)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.19 fps)

Summary for Pond P3: Drip Edge

Inflow Area = 0.149 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-year event
Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.83 cfs @ 12.09 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 6.15 hrs, Volume= 0.015 af
Secondary = 0.82 cfs @ 12.09 hrs, Volume= 0.039 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.42' @ 12.09 hrs Surf.Area= 525 sf Storage= 524 cf

Plug-Flow detention time= 72.8 min calculated for 0.053 af (83% of inflow)
Center-of-Mass det. time= 25.2 min (759.5 - 734.3)

Volume	Invert	Avail.Storage	Storage Description
#1	119.92'	542 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 1,354 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.92	525	0	0
122.50	525	1,354	1,354

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	**6.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 116.00' / 115.00' S= 0.0100 '/' Cc= 0.900 n= 0.015, Flow Area= 0.20 sf
#2	Device 1	119.92'	**1.000 in/hr Exfiltration over Surface area**
#3	Secondary	122.40'	**125.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.01 cfs @ 6.15 hrs HW=119.95' (Free Discharge)
- **1=Culvert** (Passes 0.01 cfs of 0.96 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.69 cfs @ 12.09 hrs HW=122.42' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 0.69 cfs @ 0.33 fps)

Summary for Pond P4: Drip Edge

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-year event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.23 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.09 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 122.41' @ 12.09 hrs Surf.Area= 90 sf Storage= 148 cf

Plug-Flow detention time= 87.5 min calculated for 0.014 af (81% of inflow)
Center-of-Mass det. time= 35.1 min (769.4 - 734.3)

Volume	Invert	Avail.Storage	Storage Description
#1	118.30'	151 cf	**3/4 Stone & Ponding (Prismatic)**Listed below (Recalc) 378 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.30	90	0	0
122.50	90	378	378

Device	Routing	Invert	Outlet Devices
#1	Primary	122.40'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	118.30'	**1.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=122.41' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.21 cfs @ 0.30 fps)
└**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Summary for Link POA1: POA #1

Inflow Area = 3.945 ac, 19.36% Impervious, Inflow Depth > 3.49" for 25-year event
Inflow = 12.65 cfs @ 12.19 hrs, Volume= 1.146 af
Primary = 12.65 cfs @ 12.19 hrs, Volume= 1.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link POA2: POA #2

Inflow Area = 0.530 ac, 49.15% Impervious, Inflow Depth > 2.96" for 25-year event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.131 af
Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Attachment D: Soil Survey

To save paper this section has been left out of this report, see previous submission for soil survey.